ISBN 978-602-8429-74-0

YOGYAKARTA INTERNATIONAL SEMINAR ON HEALTH, PHYSICAL EDUCATION, AND SPORT SCIENCES

YISHPESS 1st

PROCEEDINGS

The 1st Yogyakarta International Seminar on Health, Physical Education, and Sports Science.

Evidence-Based Practice of Sports Science in Education, Performance, and Health.

October 14th, 2017. Eastparc Yogyakarta, Indonesia

Published by
Faculty of Sport Sciences
Universitas Negeri Yogyakarta

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FAKULTAS ILMU KEOLAHRAGAAN
UNIVERSITAS NEGERI YOGYAKARTA
1 Oktober 1951 - 1 Oktober 2017

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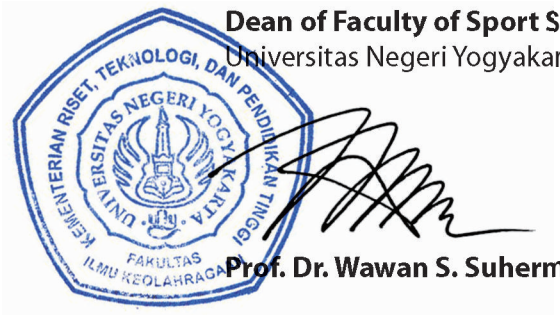
OPENING SPEECH

As the Dean of Faculty of Sport Sciences Universitas Negeri Yogyakarta, I would like to welcome and congratulate to all speakers and participants of the First Yogyakarta International Seminar on Health, Physical Education, and Sport Science (YISHPESS) 2017 entitled "Evidence-Based Practice of Sport Science in Education, Performance, and Health".

This international seminar is actually an implementation in the framework of the assessment of the achievements and sports culture in society that can support the achievements of the Indonesian people, so that there will be a significant role of practitioners, academicians, sport people, and sports observers from Universities, Institutions and Sports Organizations to help actively facilitate in the development, assessment of innovative sports science development so as to achieve sport achievements at the National and International level.

Finally, we thank all the committee of YISHPESS for their hard work in organizing this activity, and congratulate the invited speakers and all participants. Hopefully, this seminar is significant for the development of physical education, health, and sports sciences.

Dean of Faculty of Sport Sciences,
Universitas Negeri Yogyakarta



Prof. Dr. Wawan S. Suherman, M.Ed.

PREFACE

Alhamdulillahirobilalamin, thank Allah the First Yogyakarta International Seminar on Health, Physical Education, and Sport Science (YISHPESS) has been prepared well and on time. With all humility, we welcome and congratulate the speakers and participants of Yogyakarta International Seminar on Health, Physical Education, and Sport Science (YISHPESS) organized by the Faculty of Sport Sciences, Universitas Negeri Yogyakarta.

The YISHPESS 2017 is designed to updating and applying evidence-based practice in sports science aspects, including: education, performance and health. We hope that the invited speakers of this seminar can reduce the gaps between academic and field to get best output in the daily sport and health practices.

We would like to thank to Rector and the board of Universitas Negeri Yogyakarta for supporting this seminar come true. Praise and be grateful to the Lord, so that this proceeding can be issued. Hopefully, the publication of this proceeding can bring benefits to the participants in particular and readers in general.

Yogyakarta, October 14th, 2017
Chairperson of the Committee

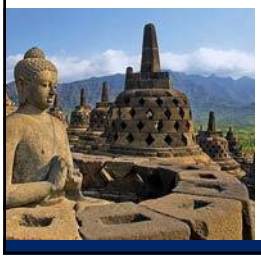
Dr. Or. Mansur, M.S.

CONTENT



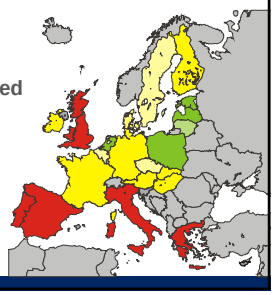
„Young people today – active and healthy?
– A European perspective on modern lifestyles“

Prof. Dr. Wolf Brettschneider
University of Paderborn, Germany



International Conference on „Evidence-Based Practice of Sports Science in Education, Performance, and Health“

Yogyakarta, 14-15 October, 2017



Prof. Dr. W.-D. Brettschneider
Sports Science
University of Paderborn

„Media freaks“

„Fast food junkies“

„Couch potato kids“

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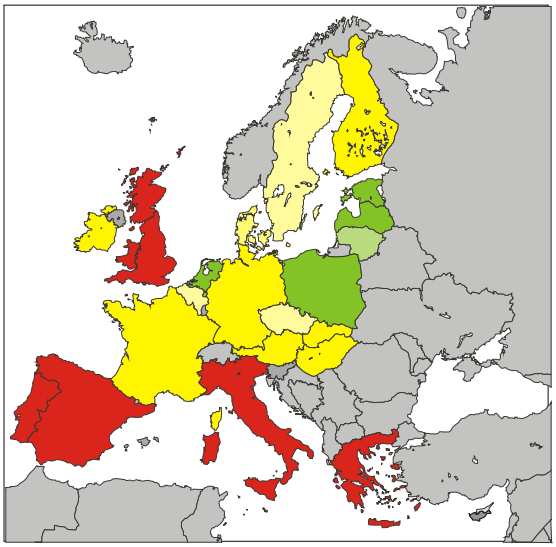
Prevalence rates of overweight in 13-15-year old children in Europe



green < 10 %

yellow 10-20 %

red > 20 %

Brettschneider & Naul,2007
WHO, 2017

Prof. Dr. W.-D. Brettschneider
Sports Science
University of Paderborn

Prevalence of overweight and obesity among young people in Indonesia

- Prevalence of O/O has increased over the past two decades and is still rising
- Wide range between low and high prevalence rates with mean values between 7 and 15 %
- Prevalence higher in boys among children and higher in females during adolescence
- Prevalence higher in urban areas compared to rural areas
- Prevalence in high SES families twice to three times higher

(Source: Rachmi, Li & Baur 2017)

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12-year old with overweight

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Nutrition

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Sedentary time

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Sports Science
University of Paderborn

Screen time

- Time for viewing TV varies across Europe between 90 and 250 minutes/day
- Computer time (gaming and nongaming) varies between 1,5 and 4,3 hours/day
- Total screen time ranges from 200 – 500 min/day
- TV time is slightly decreasing, computer time is increasing (has doubled between 2002 and 2010)

(Verloigne et al., 2016)

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Sport involvement and physical activity


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Involvment in sport activities

- Participation in organised sport remains stable on a high level
- Participation rates in informal activities are increasing
- Time allocated to school PE is declining

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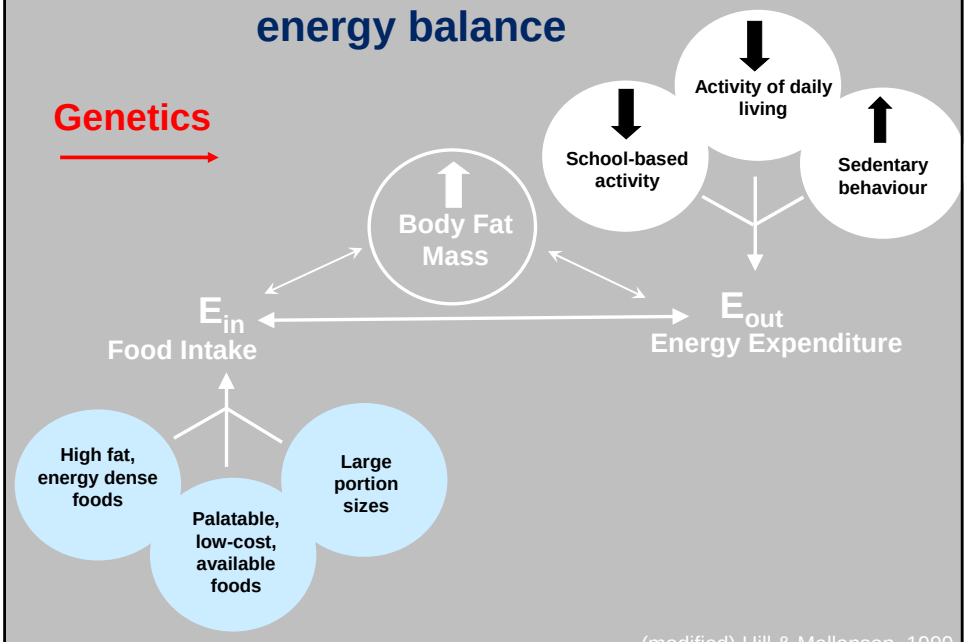
About 50% of young people in Europe do not meet the recommended standards for health enhancing physical activity

(1 hour of accumulated moderate physical activity per day)

The effect of environmental factors on energy balance



(modified) Hill & Mellanson, 1999

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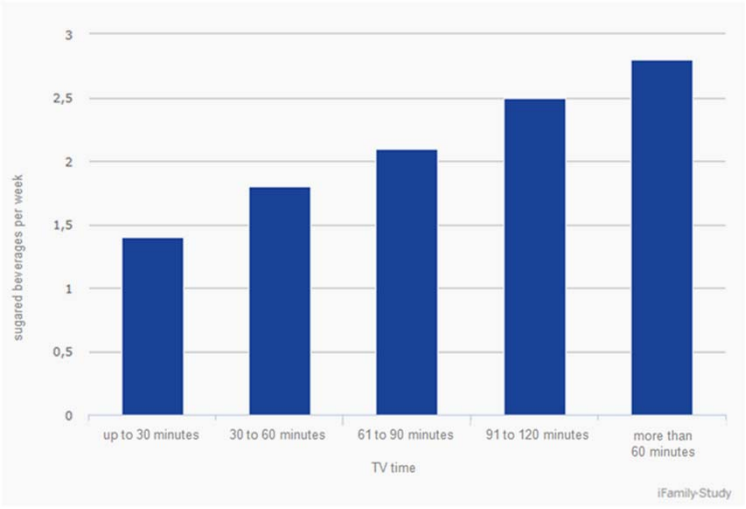
TV time and consumption of sugared beverages



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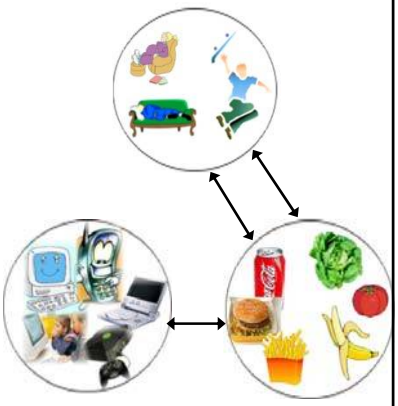
Relationships between different lifestyle-elements:

- Media use and physical activity:
  No relationship
- Media use and nutrition:
  Positive correlation
- Nutrition and physical activity:

Sporting activity and healthy nutrition:
Positive correlation

Sedentary behaviour and unhealthy nutrition:
Positive correlation

Sedentary behaviour and healthy nutrition:
Negative correlation



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Lifestyle factors as causes for the development of overweight and obesity

- Association between O/O and the level of physical activity; the inactive group having a three times higher risk.
- Association of viewing TV and nutrition with the BMI; the consumption of snacks and fast food makes the risk four times higher.

- Association between O/O and sedentary behaviour, especially gaming and nongaming computer time.

(Source: Rachmi, Li & Baur 2017)

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Multiple regression to predict BMI

BMI	
$R^2 = .148$, $F(14, 1767) = 21{,}791$, $p < .001$	
Change in R^2	
Gender + age	$R^2 = .103$
SES + ed. level	$R^2 = .012$
Sport	$R^2 = .001$
Way to school	$R^2 = .000$
Nutritional patterns	$R^2 = .027$
Meals	$R^2 = .000$
TV	$R^2 = .002$
Computer + play station	$R^2 = .002$

Explained variance of lifestyle elements 3,2 %

β-values to predict BMI	
Gender	-.050*
Age	.294***
SES	-.027
School type 1	.002
School type 2	-.086*
School type 3	-.122**
Migr. German	-.044
Migr. Foreign	.017
Sport	-.044
Way to school	-.022
Nutritional patterns	.192***
Meals	-.017
TV	.041
Computer & play station	.049*

* p<.05, ** p<.01, *** p<.001

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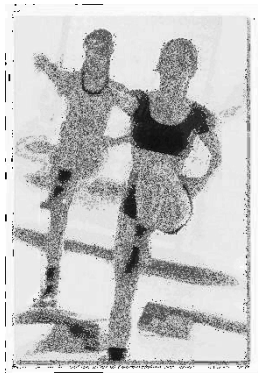
Are young people fit?



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Health risks associated with overweight and obesity

- Independent risk factor for CVD

- Associated with clustered risk factors (metabolic syndrome)
- Overweight and its risk factors track from childhood into early adulthood

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Relationship between overweight and obesity and self-esteem

Adolescents (13-18 year-old)

- Relationship between self-esteem and overweight; more girls than boys
- Decreasing self-esteem with increasing age
- Exposed to stigmatization; negative impact on life satisfaction

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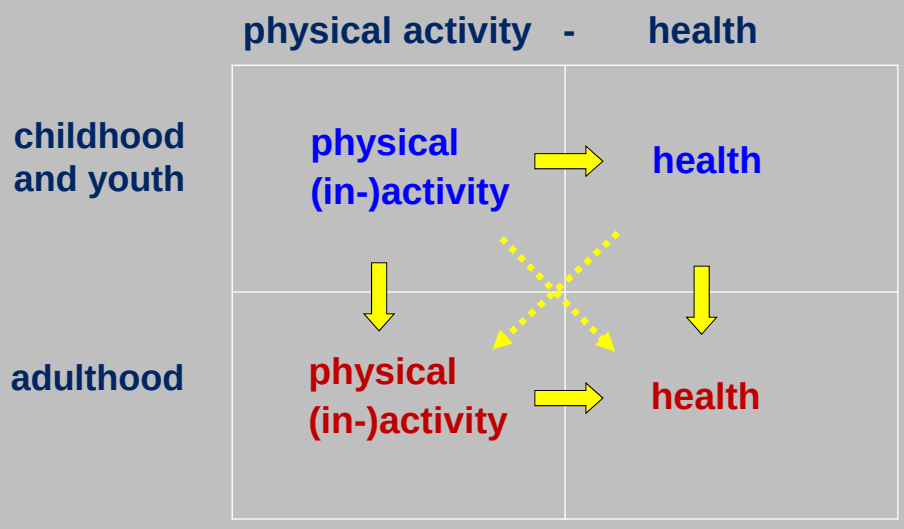
Tracking



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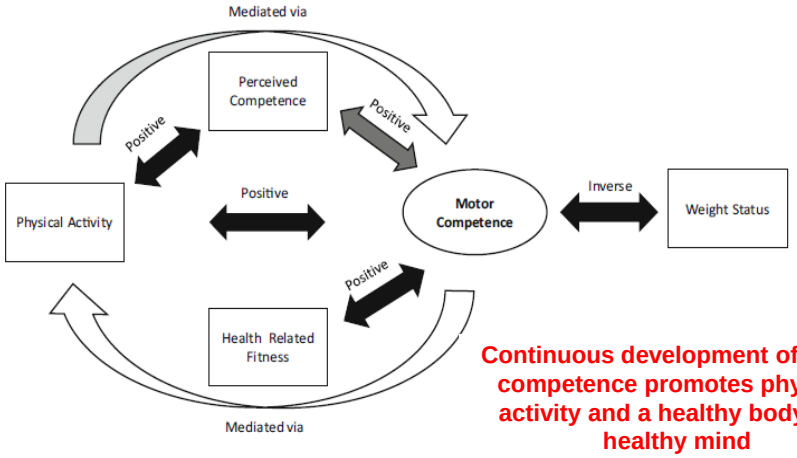

Continuous development of motor competence promotes physical activity and a healthy body and healthy mind

(Source: Robinson et al., 2015)

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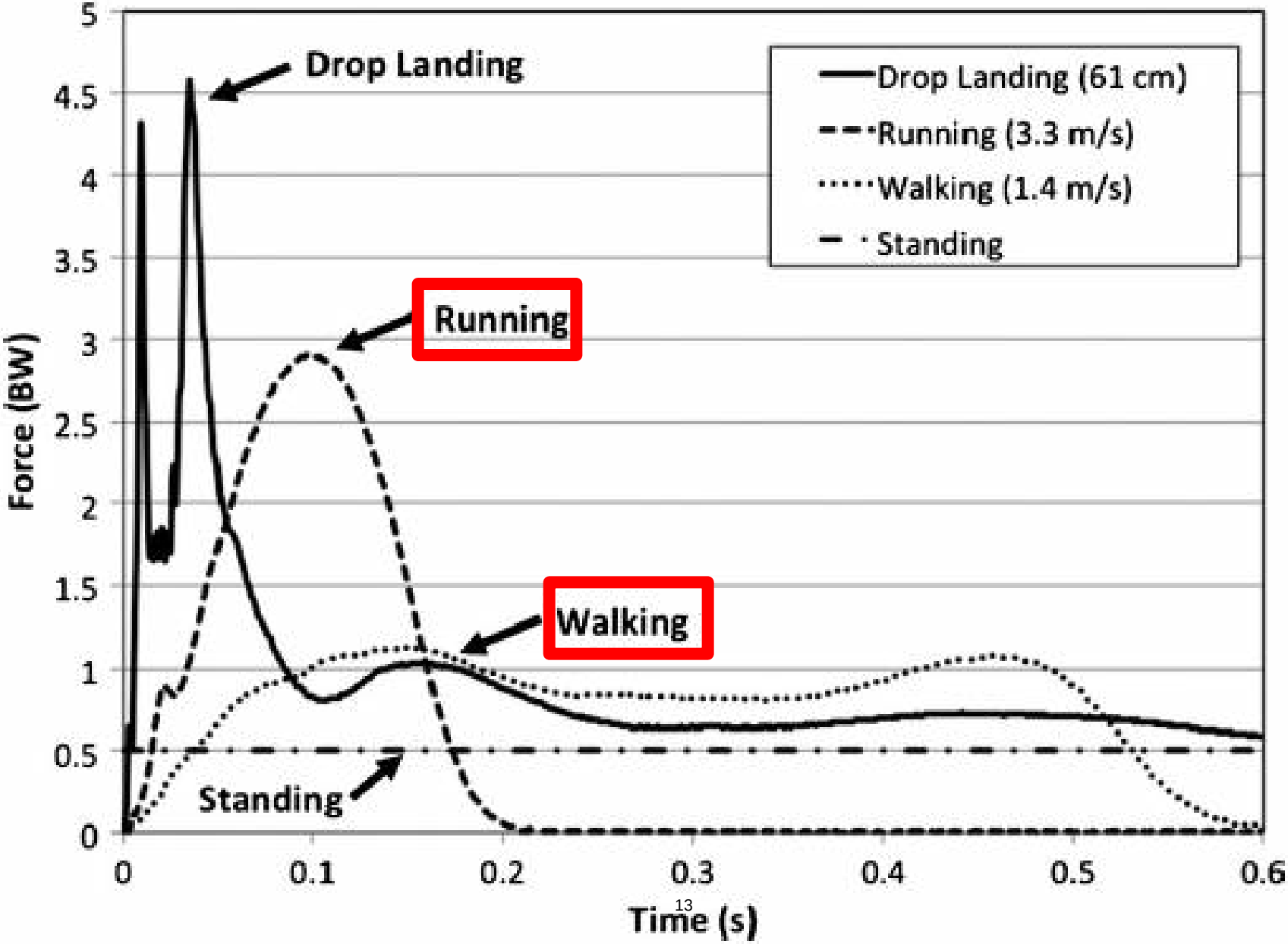
Thank you for your attention!!

Exploration of effective cross-training alternatives to running on land

Kenji Masumoto, Ph.D.

Impact Forces : Walking vs. Running



(Gunter et al., 2012)

Purpose

To **explore effective cross-training alternatives** to **running on land**

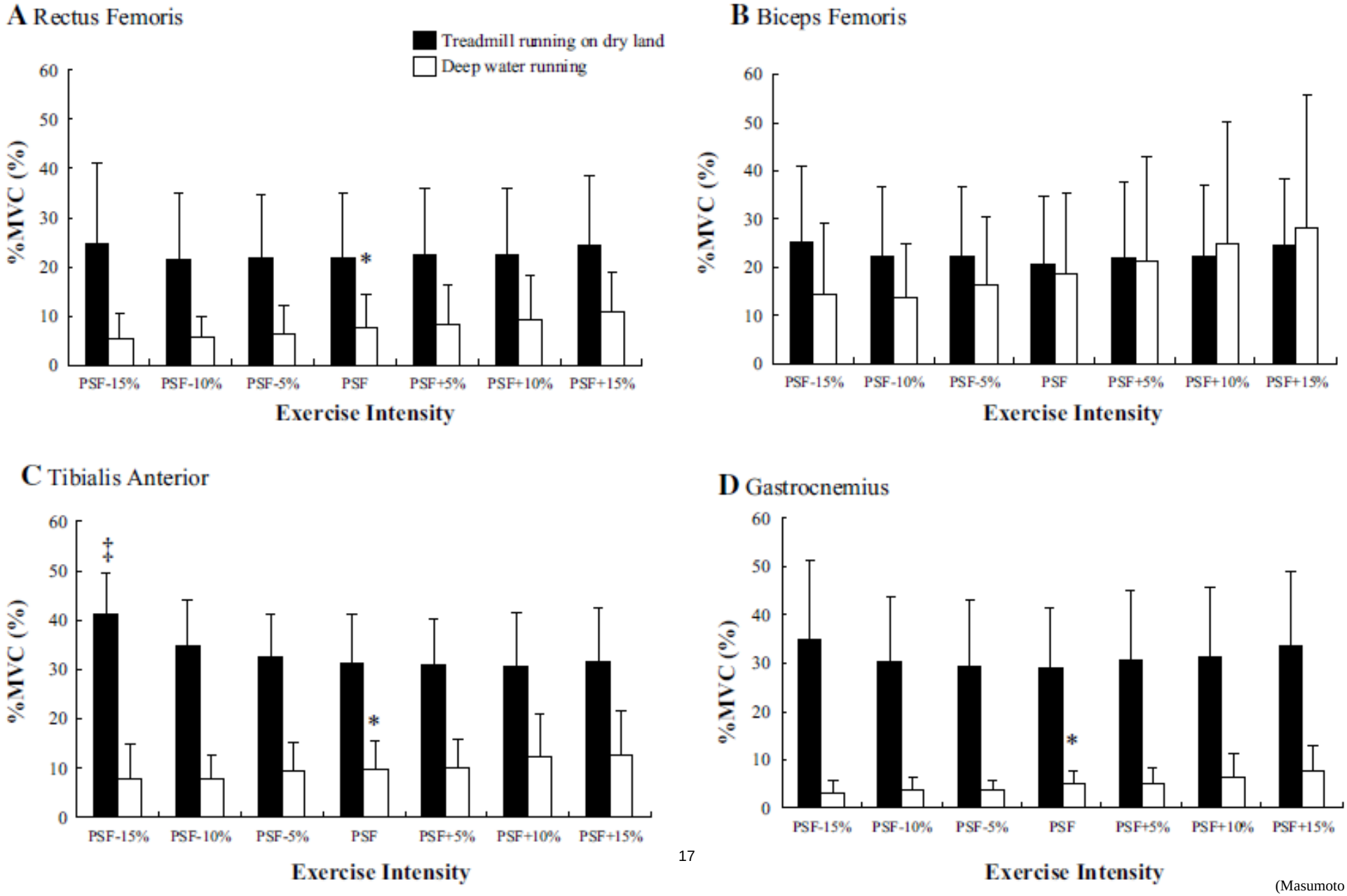
Manipulation of Impact Forces

- Stride Frequency
- Direction of Locomotion
- Body Weight Support Treadmill
- Aquatic Environment

Manipulation of Impact Forces

- **Stride Frequency**
- Direction of Locomotion
- Body Weight Support Treadmill
- Aquatic Environment

Stride Frequency Manipulation: Muscle Activity



(Masumoto et al., 2015)

Summary

A 10% increase in **stride frequency** from the preferred stride frequency during **running** may produce **similar metabolic costs/muscle activity** while **reducing loading on lower extremity/risk of lower extremity injuries**.

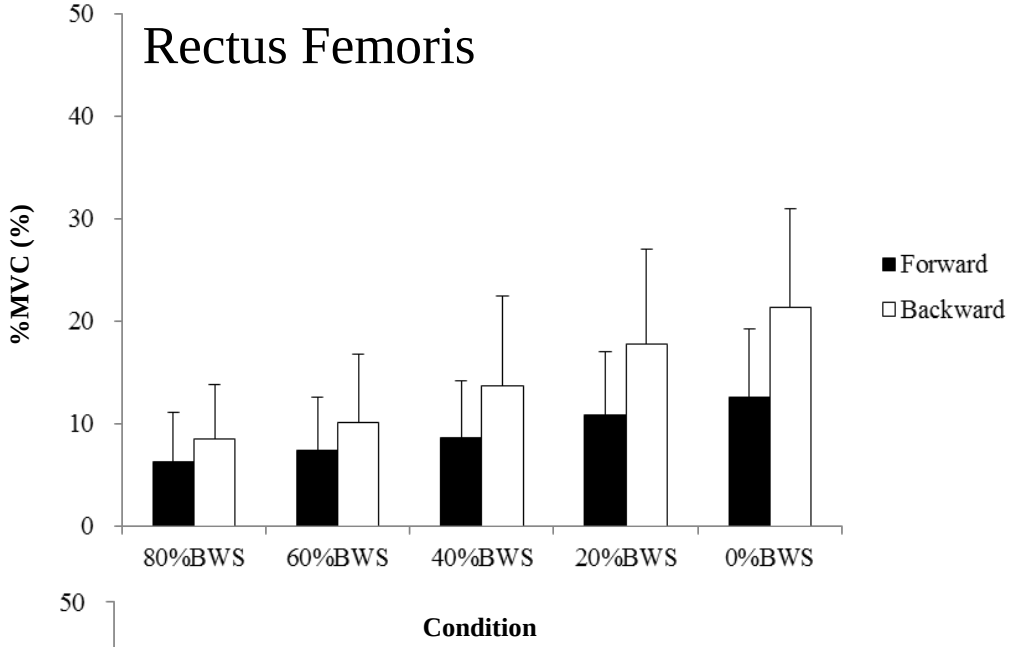
Manipulation of Impact Forces

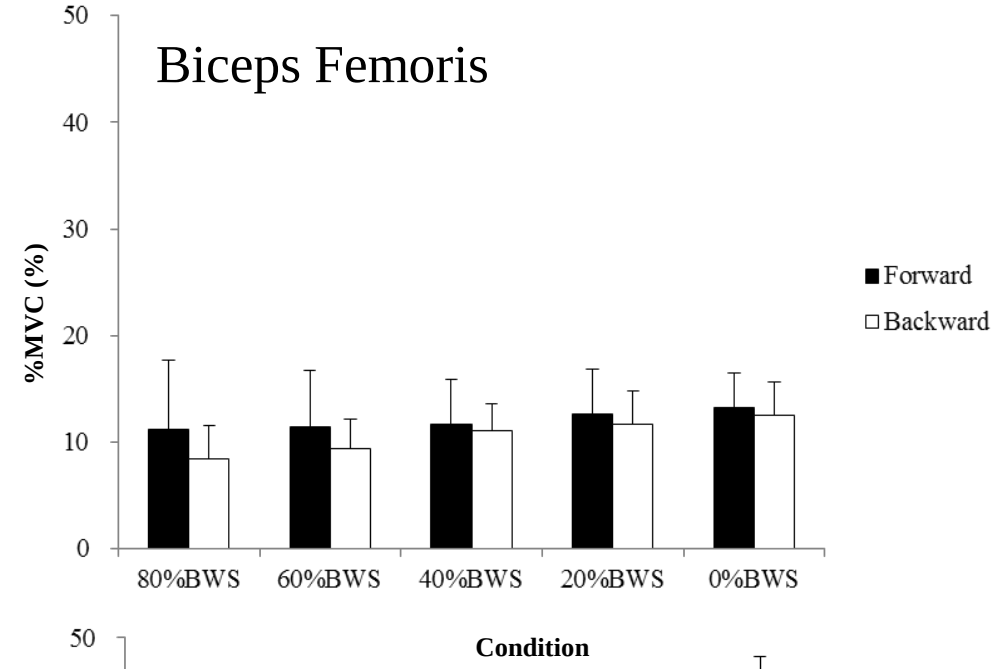
- Stride Frequency
- **Direction of Locomotion**
- Body Weight Support Treadmill
- Aquatic Environment

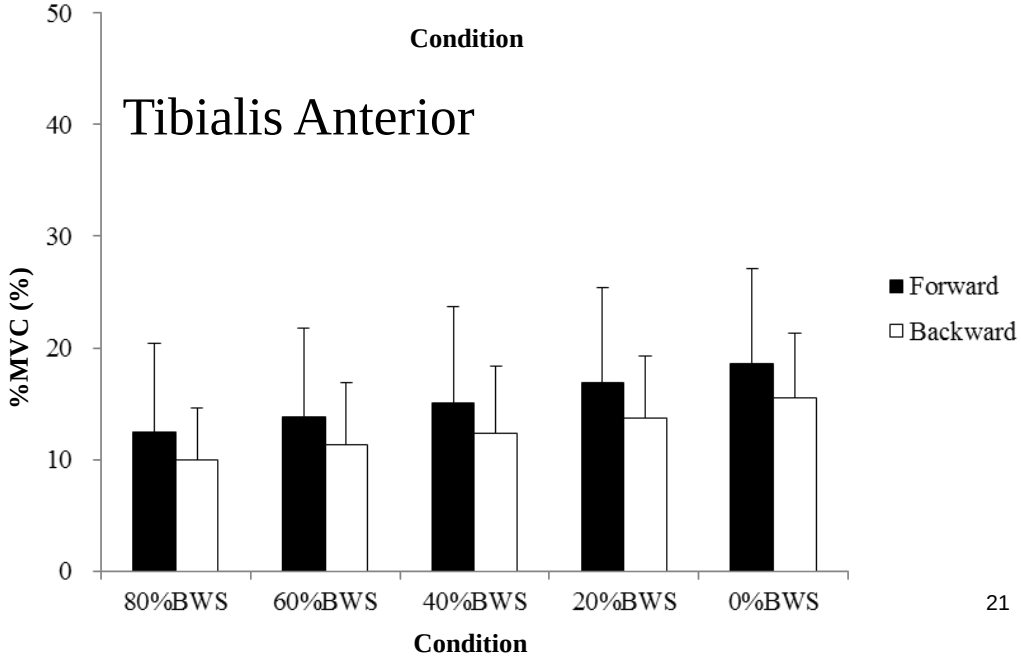
【Summary】

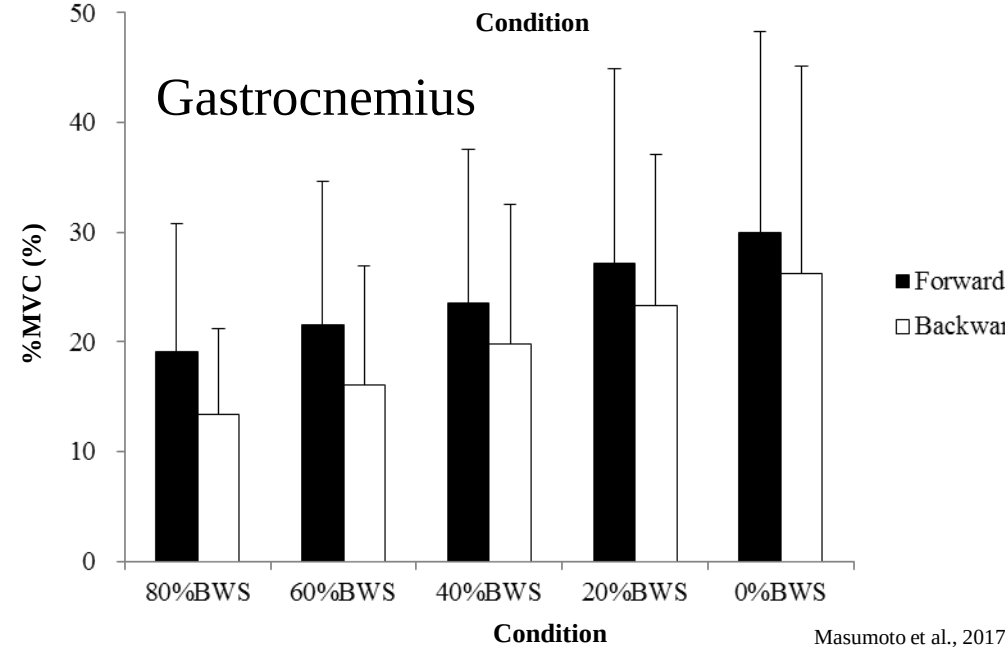
Backward running may produce **greater metabolic costs/muscle activity** while **reducing loading on lower extremity**

【Magnitude of Muscle Activity : Forward vs. Backward】





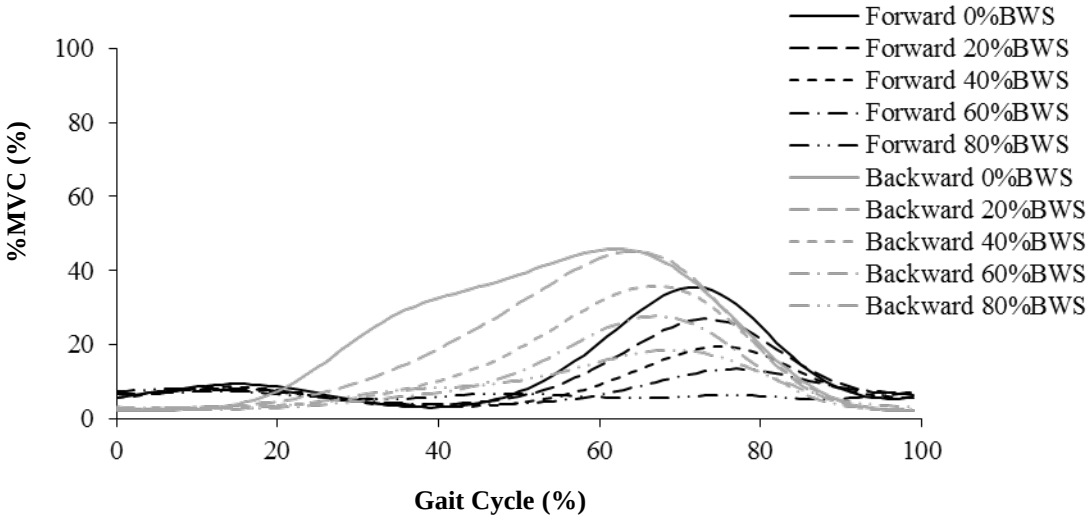




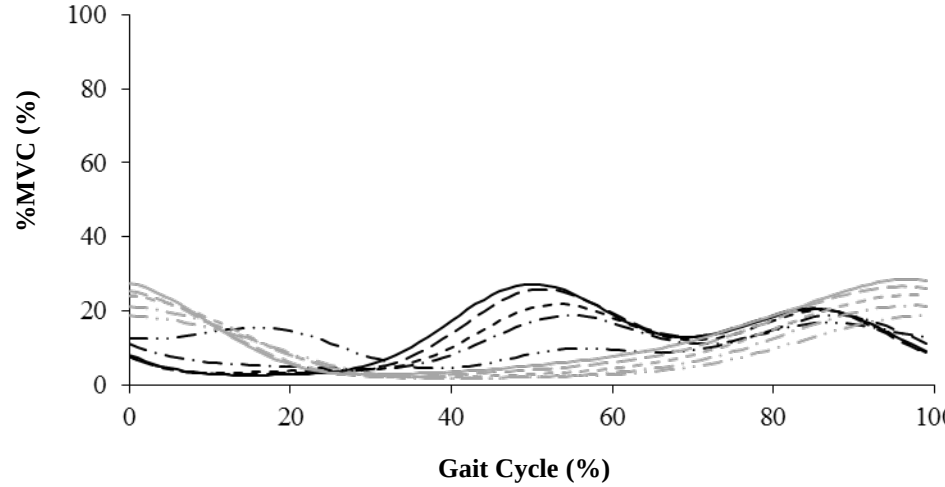
Masumoto et al., 2017

【Pattern of Muscle Activity : Forward vs. Backward】

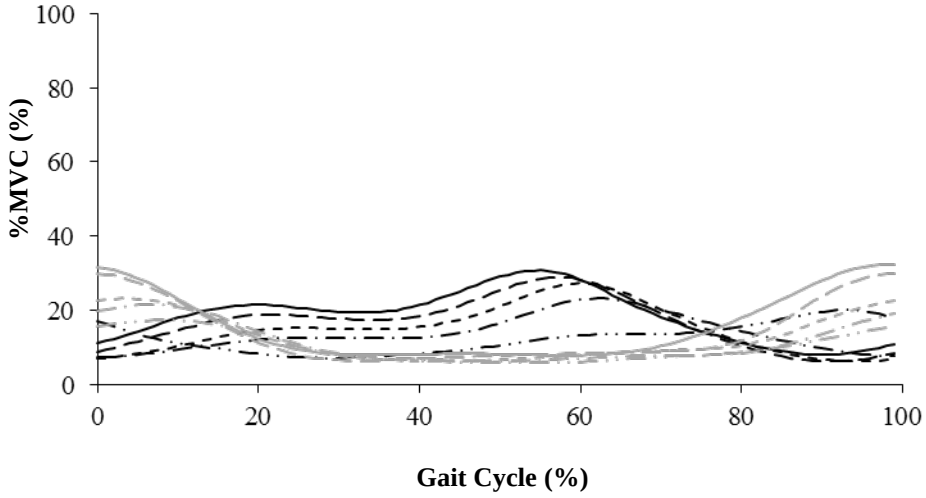
Rectus Femoris



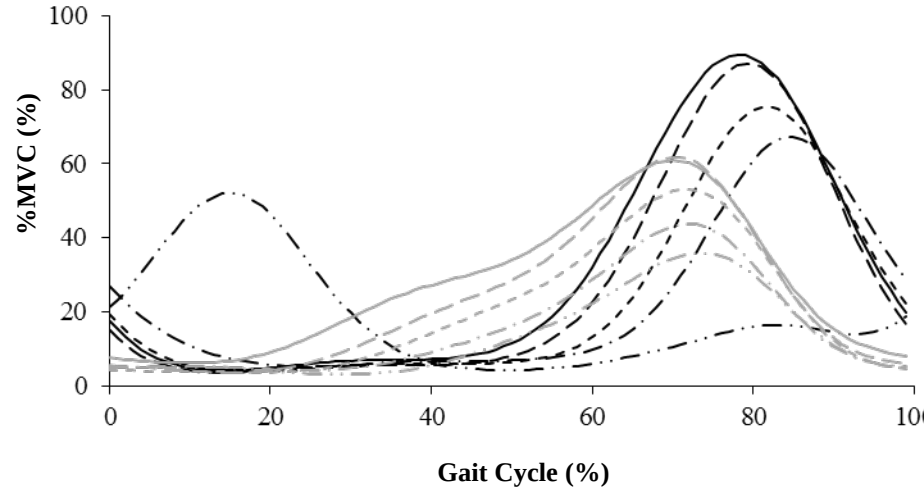
Biceps Femoris



Tibialis Anterior

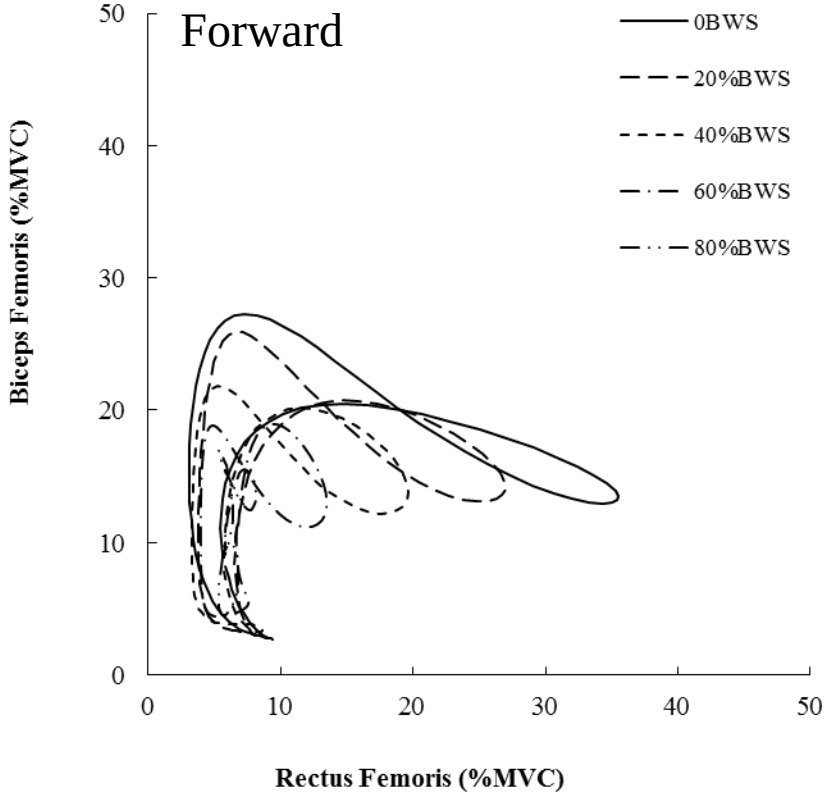


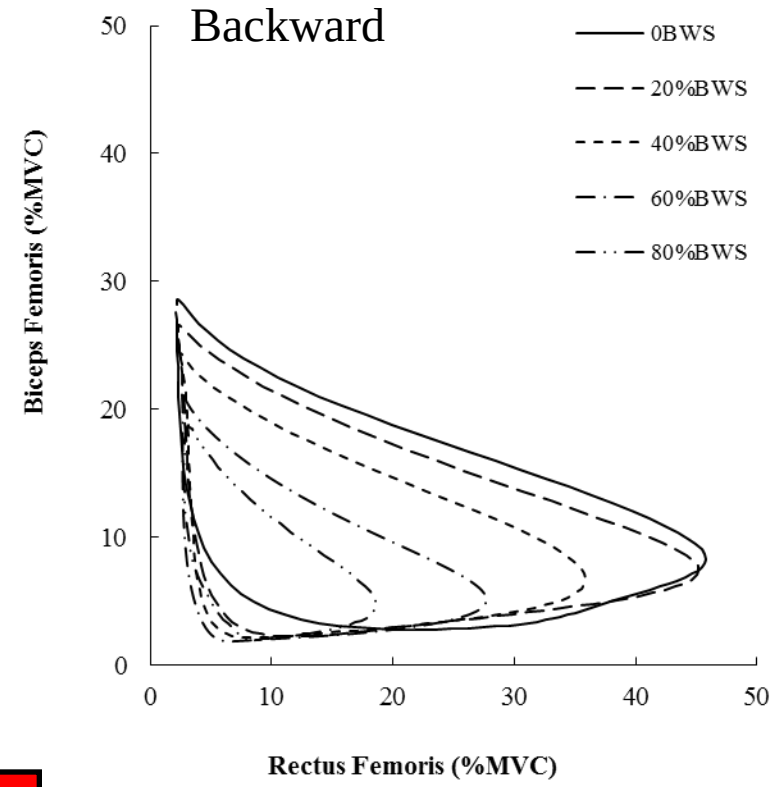
Gastrocnemius



Masumoto et al., 2017

Muscle Coordination Patterns: Forward vs. Backward





Muscle Coordination Patterns FWD ≠ BWD

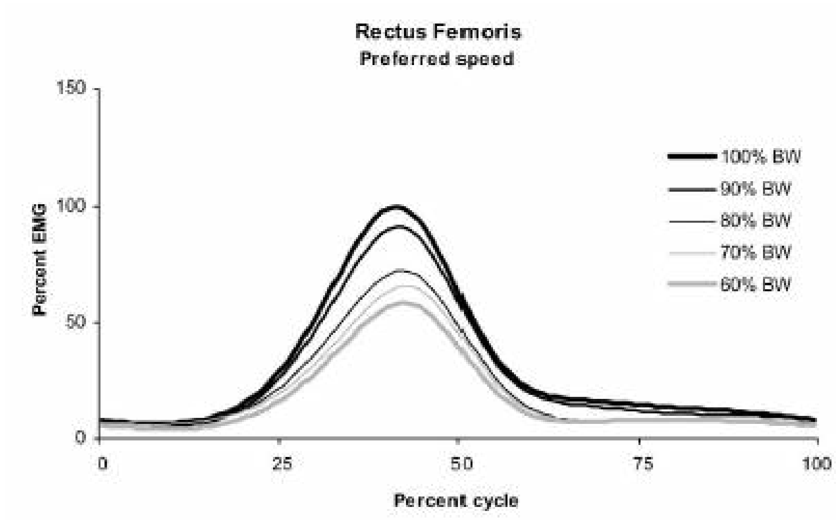
Masumoto et al., 2017

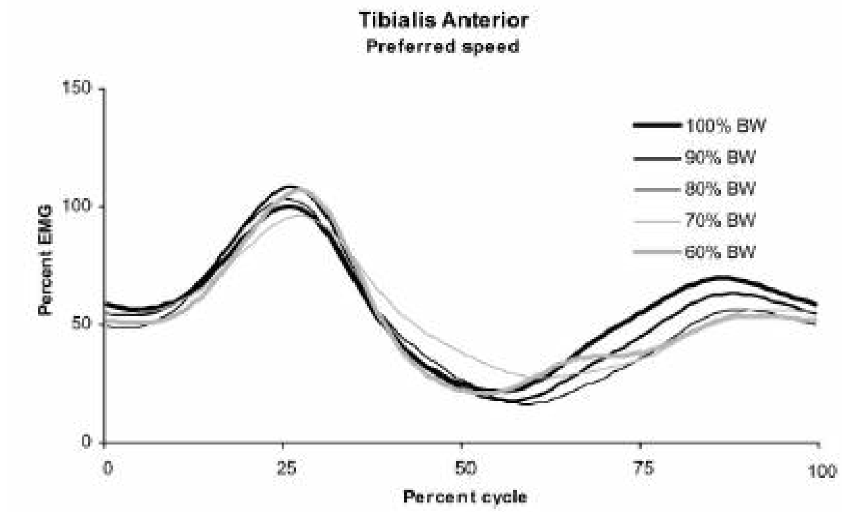
Manipulation of Impact Forces

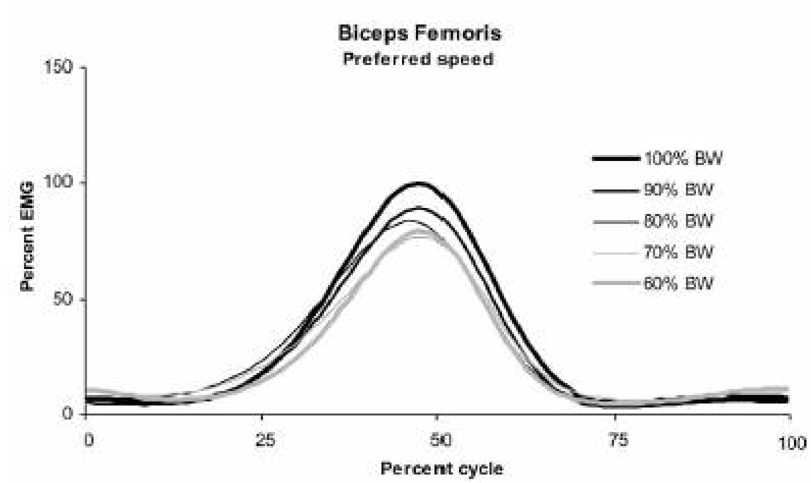
- Stride Frequency
- Direction of Locomotion
- **Body Weight Support Treadmill**
- Aquatic Environment

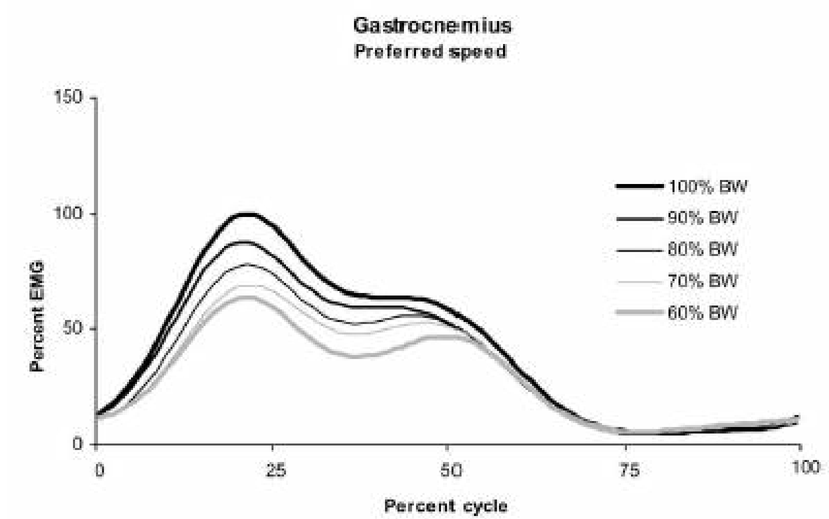
Lower Body Positive Pressure Treadmill

【LBPP Treadmill: Muscle Activity Pattern】





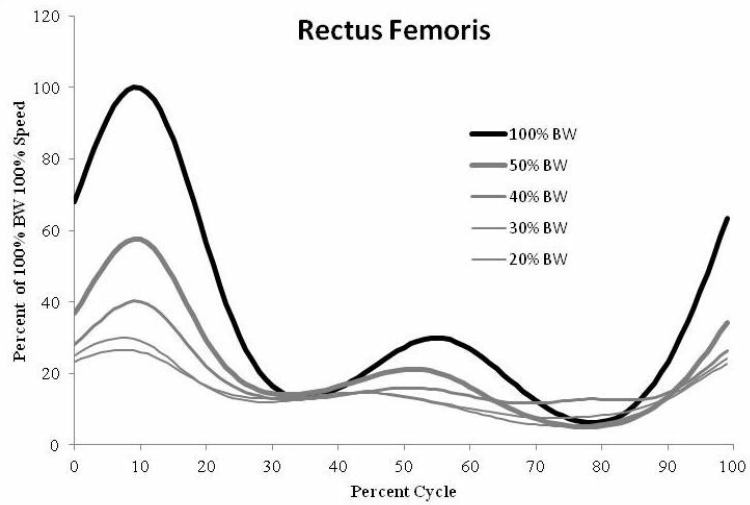


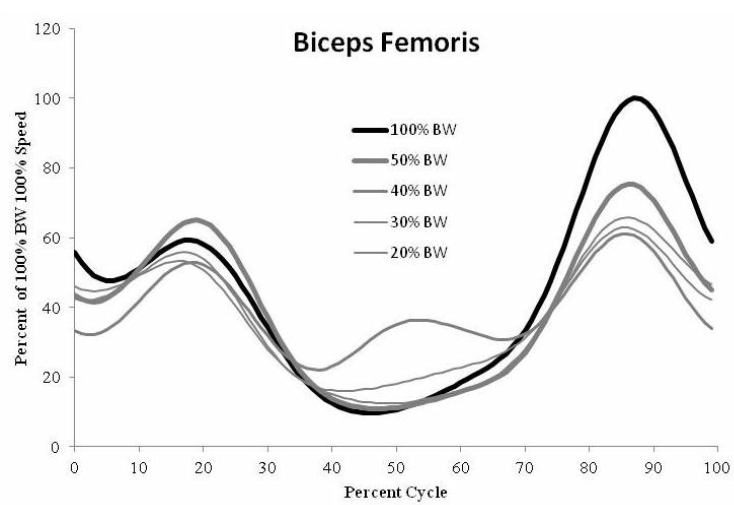


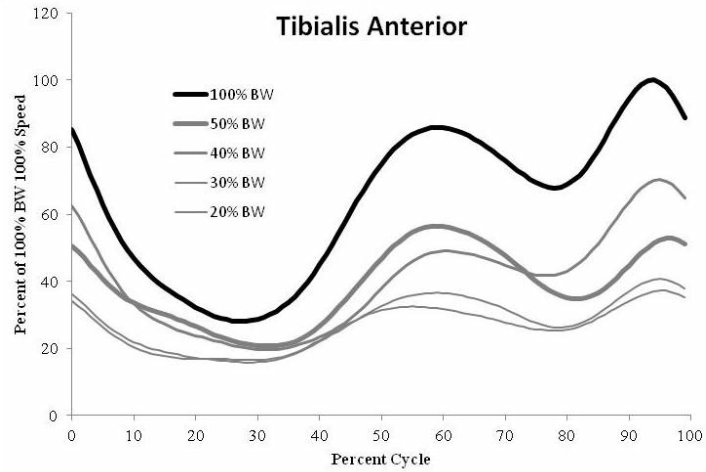
～40%BWS → Similar muscle activity patterns

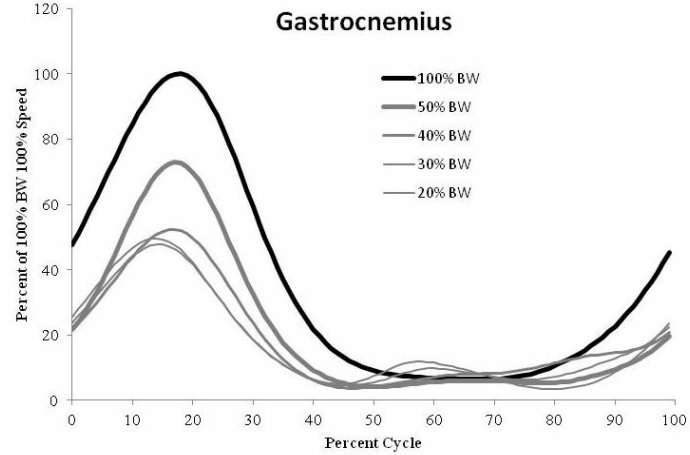
(Liebemberg et al., 2011)

LBPP Treadmill: Muscle Activity Pattern





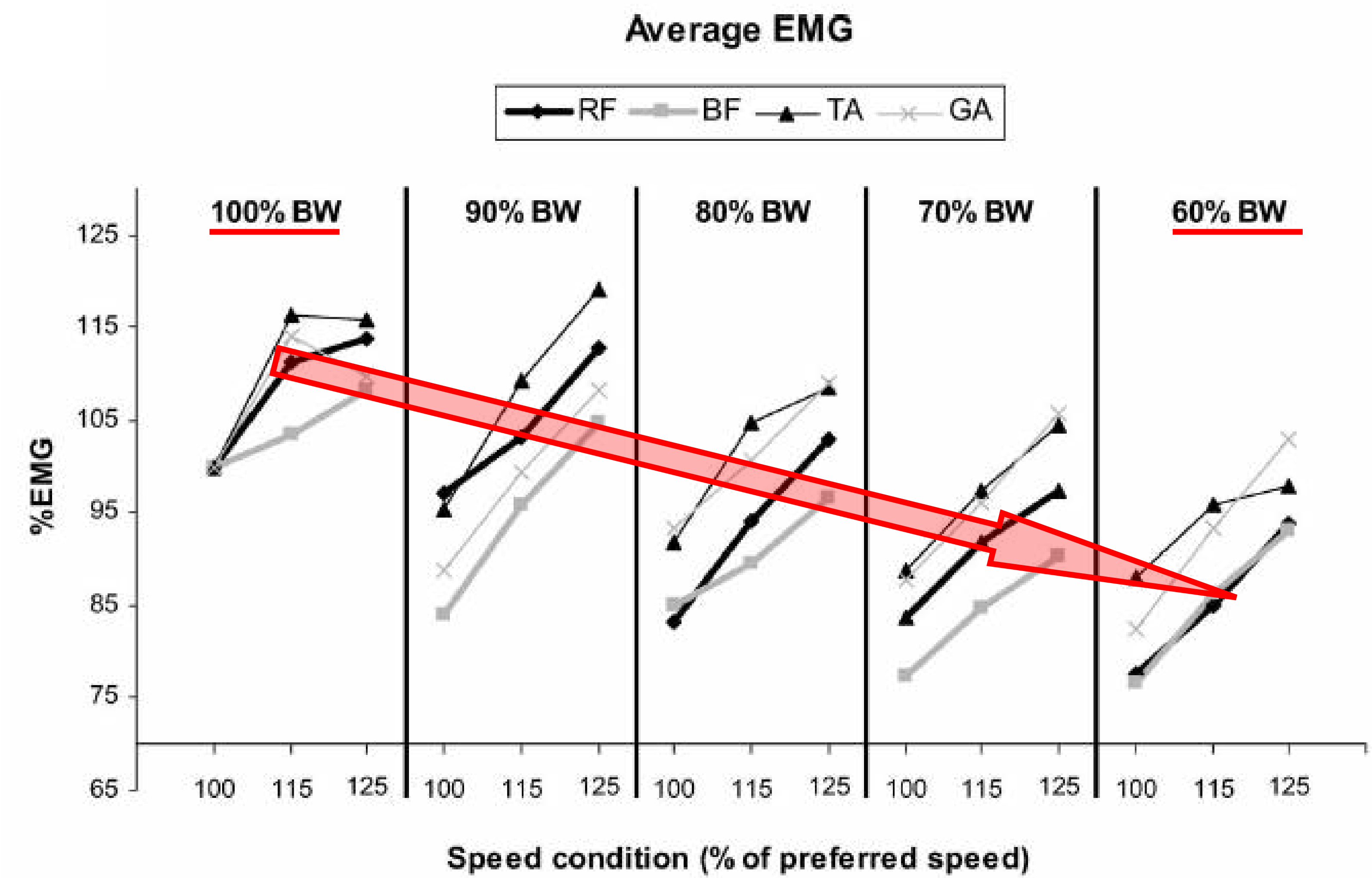




~80%BWS → Similar muscle activity patterns

(Mercer et al., 2013)

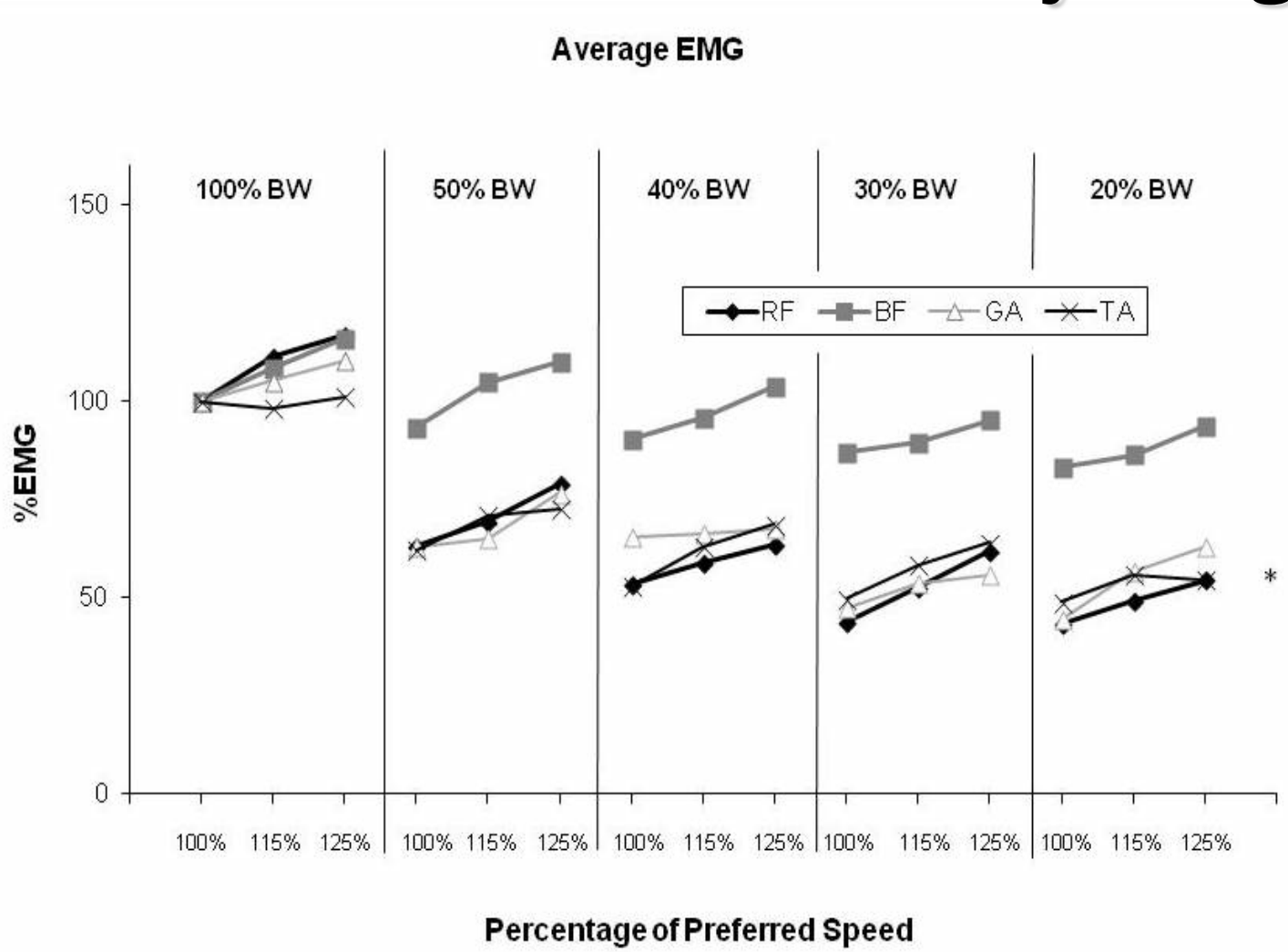
【LBPP Treadmill: Muscle Activity Magnitude】



～40%BWS → Magnitude of muscle activity↓

(Liebemberg et al., 2011)

LBPP Treadmill: Muscle Activity Magnitude



~80%BWS → Magnitude of muscle activity↓

(Mercer et al., 2013)

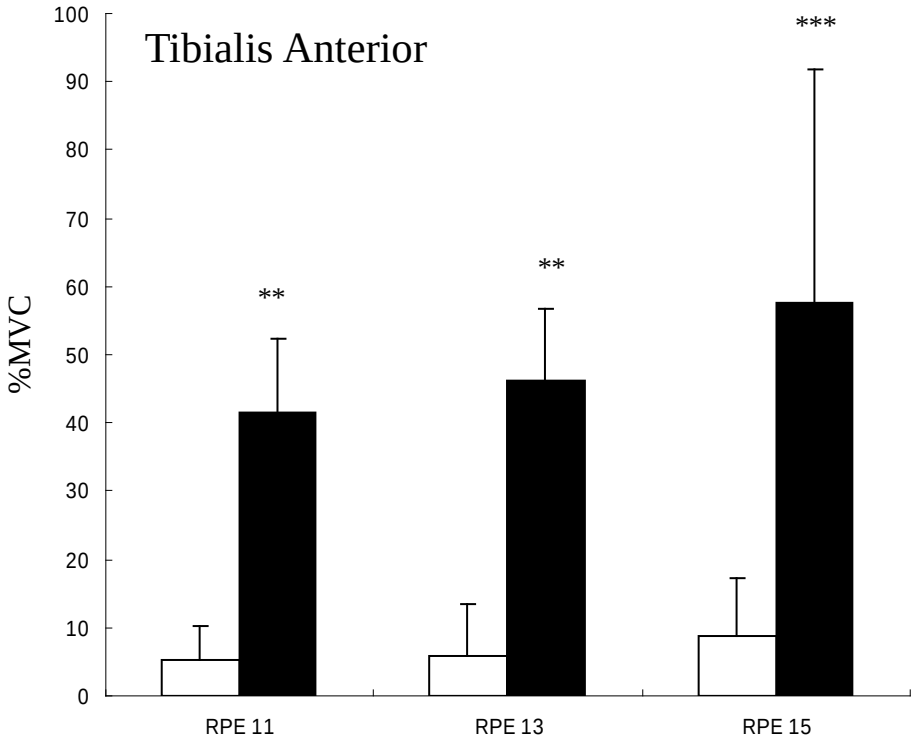
Summary

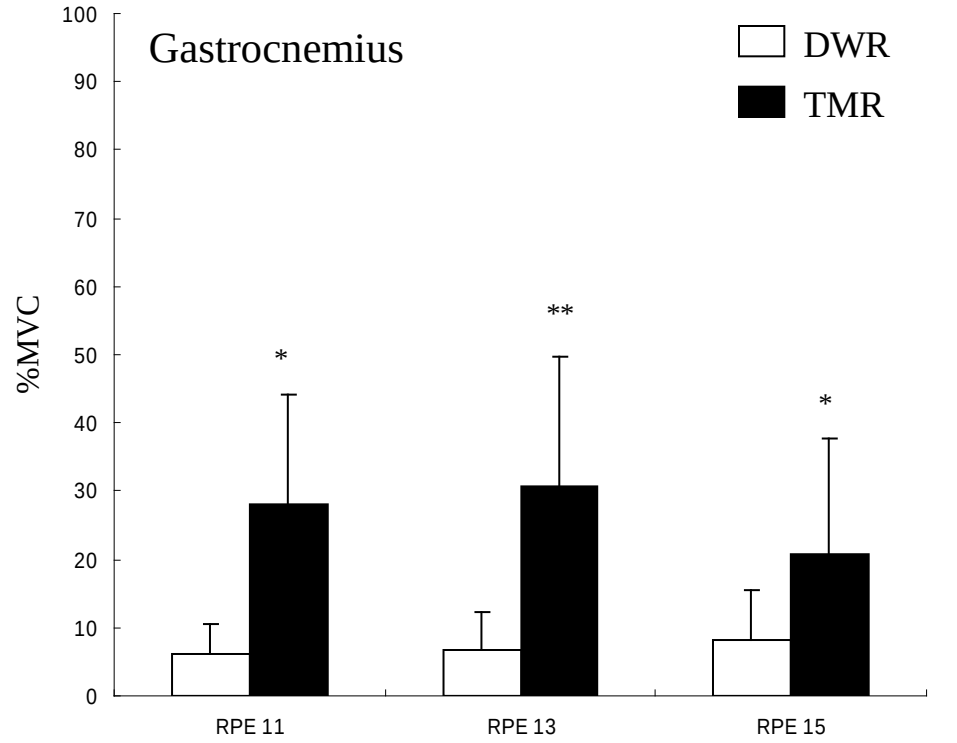
Running on the lower body positive pressure treadmill can be used as a **cross-training alternative** to running on dry land with **effective running speed** and **body weight support combinations** while **minimizing a change in the movement patterns**

Manipulation of Impact Forces

- Stride Frequency
- Direction of Locomotion
- Body Weight Support Treadmill
- **Aquatic Environment**

Muscle activity during DWR and TMR at matched RPE



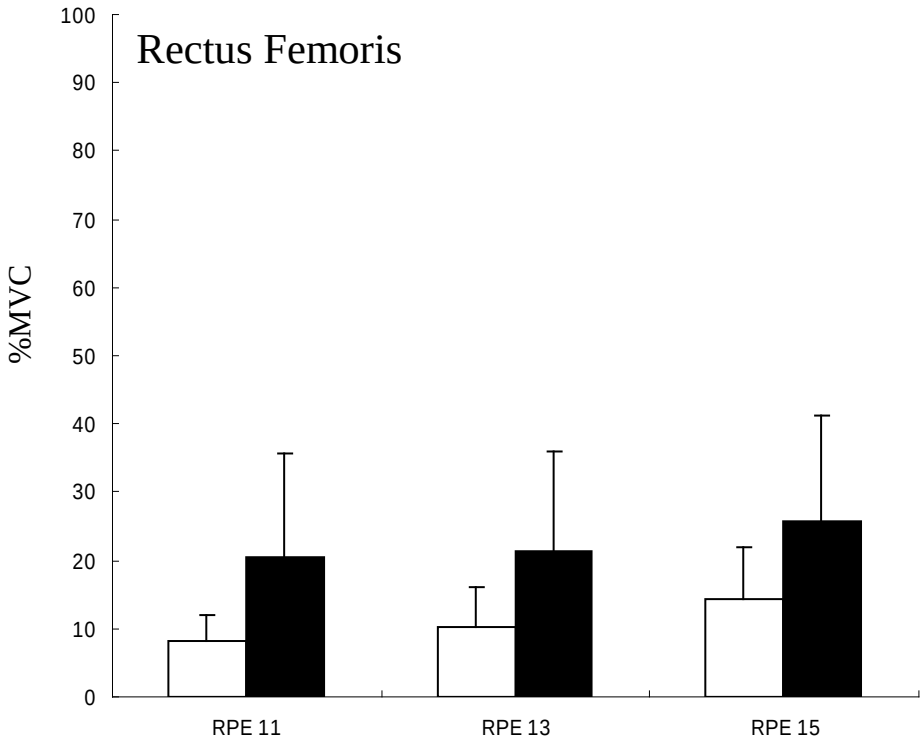


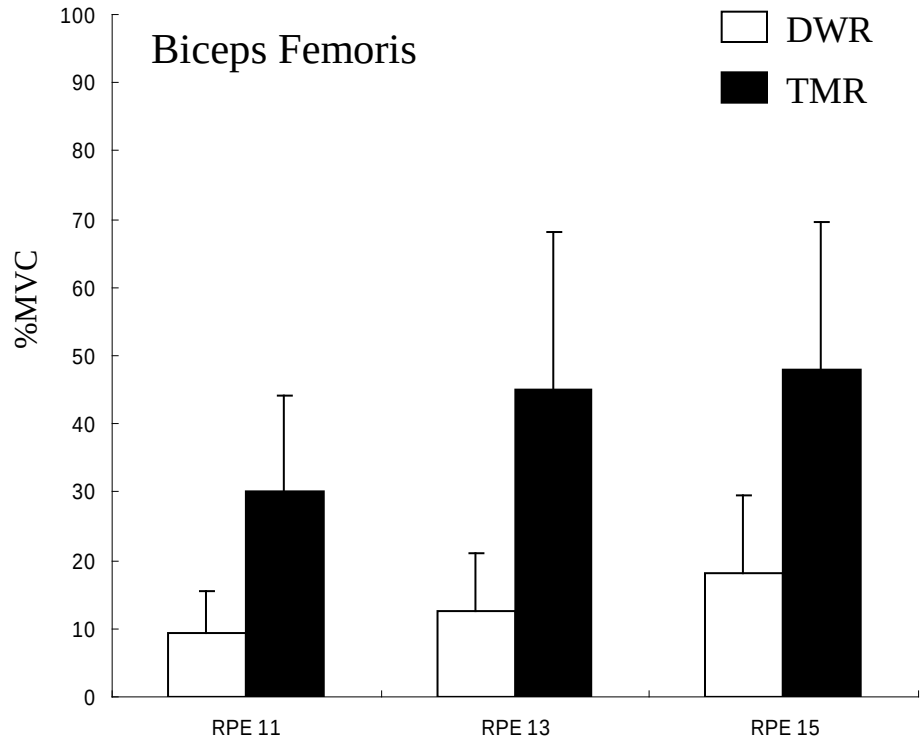
*P 0.05, **P 0.01, ***P 0.001, Within each RPE conditions

Tibialis Anterior Gastrocnemius DWR < TMR

Masumoto et al., 2009

Muscle activity during DWR and TMR at matched RPE

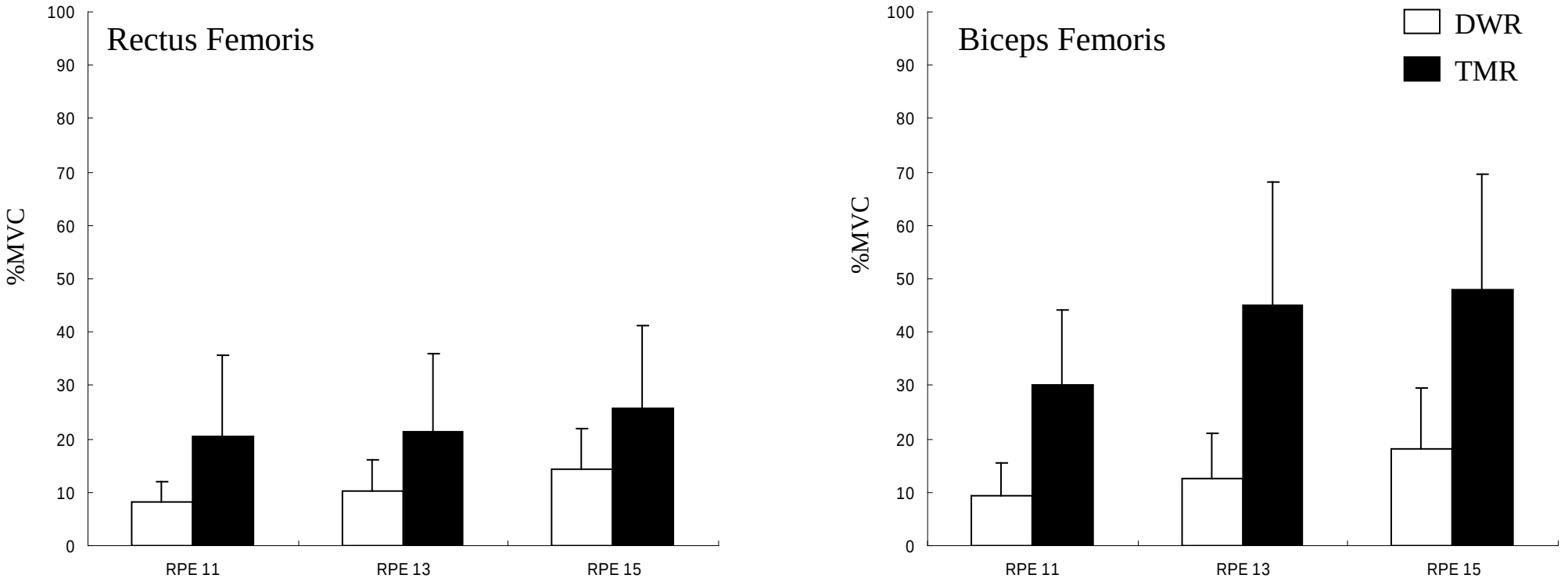




Rectus Femoris Biceps Femoris DWR < TMR (tendency)

Masumoto et al., 2009

Muscle activity during DWR and TMR at matched RPE

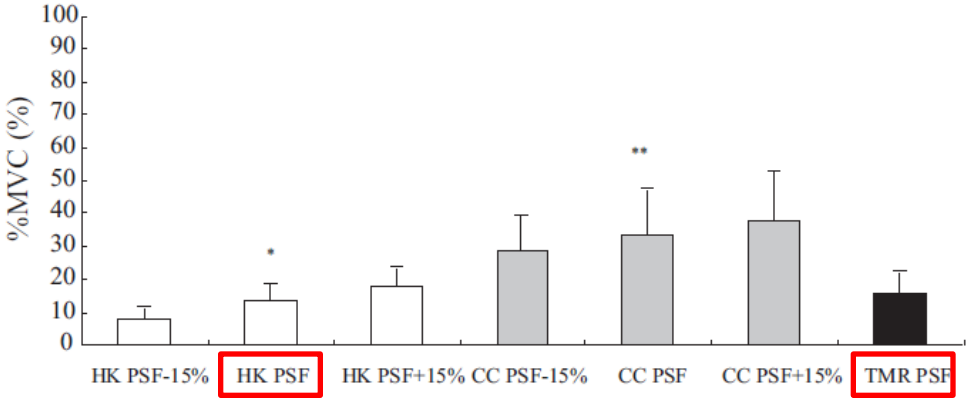


RF BF DWR (RPE 15) vs. TMR (RPE 11) **NS**

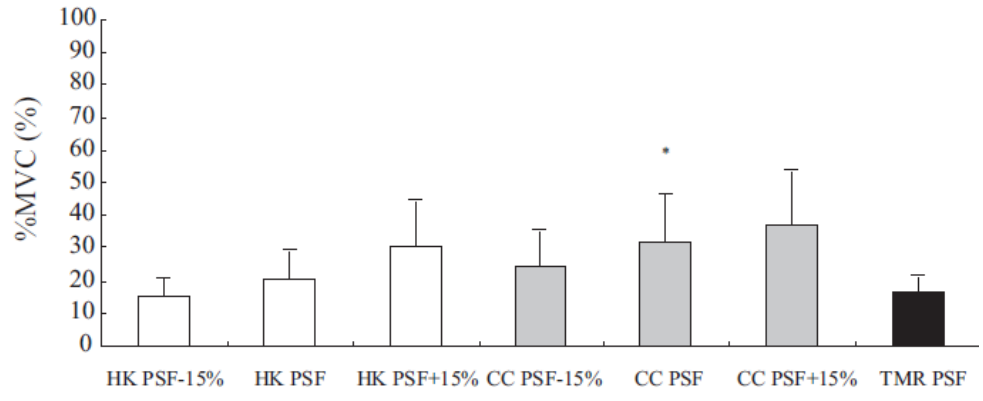
Masumoto et al., 2009

Muscle activity during DWR and TMR at matched SF

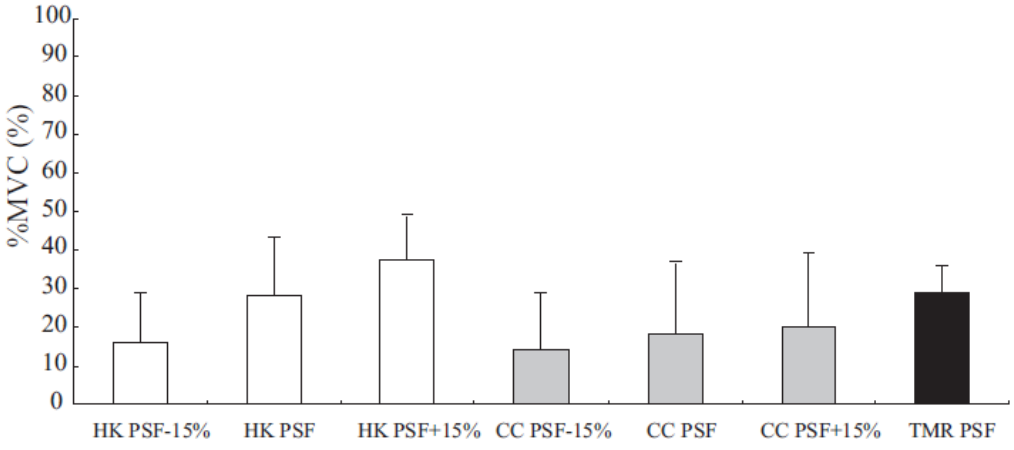
A. Rectus Femoris



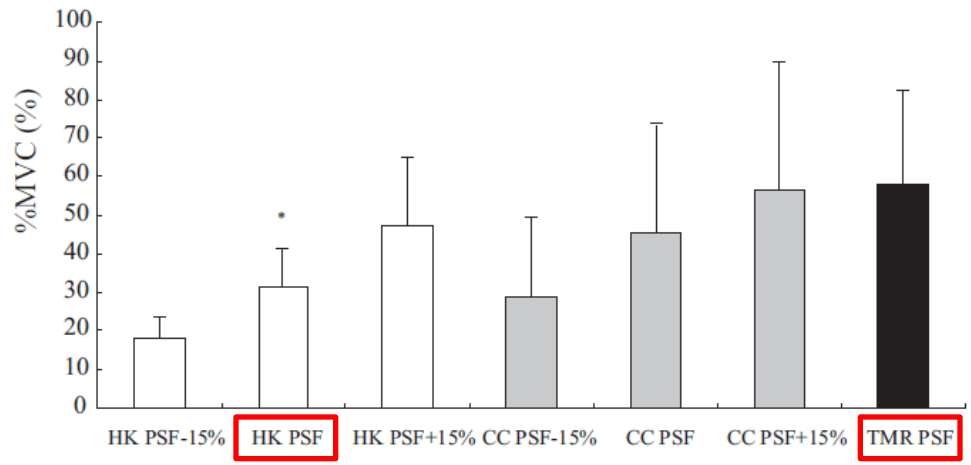
B. Biceps Femoris



C. Tibialis Anterior



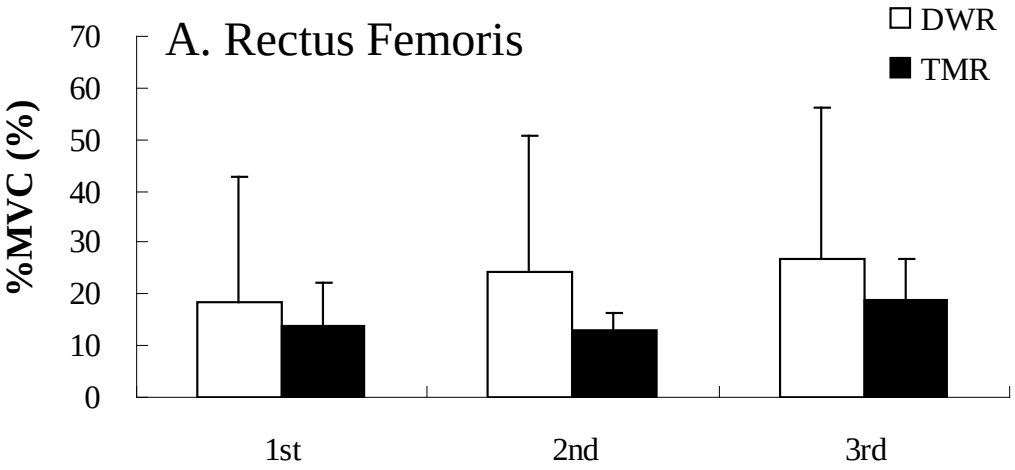
D. Gastrocnemius

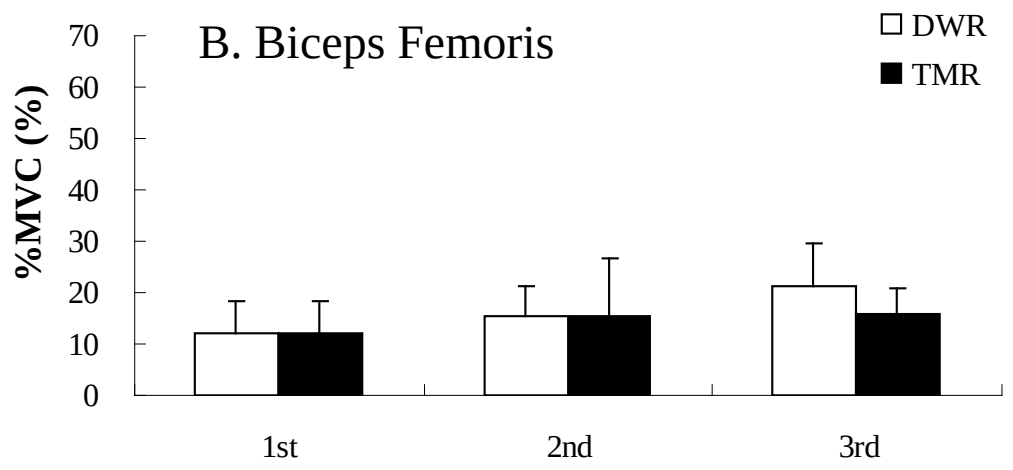


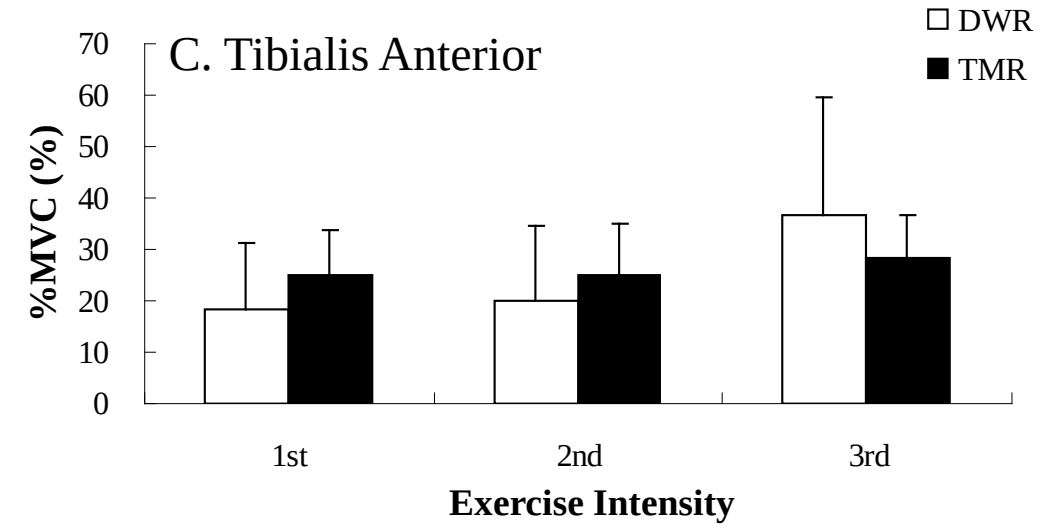
Rectus Femoris Gastrocnemius DWR < TMR

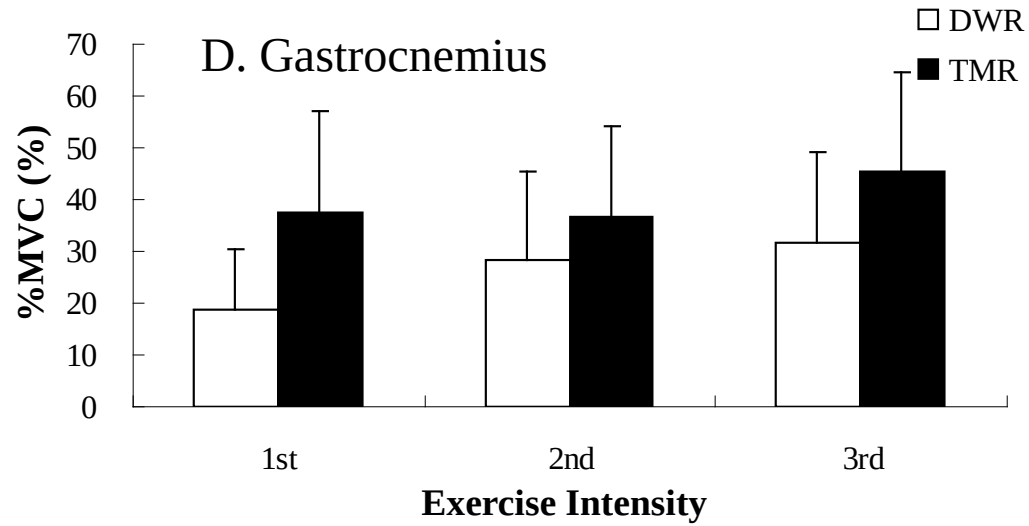
Masumoto et al., 2013

Muscle activity during DWR and TMR at matched HR









Rectus Femoris Biceps Femoris Tibialis Antaeior DWR = TMR

Gastrocnemius : DWR < TMR

Masumoto et al., 2014

【Summary: Magnitude】

- **RPE** Water < Land TA GA
- **Stride Frequency**

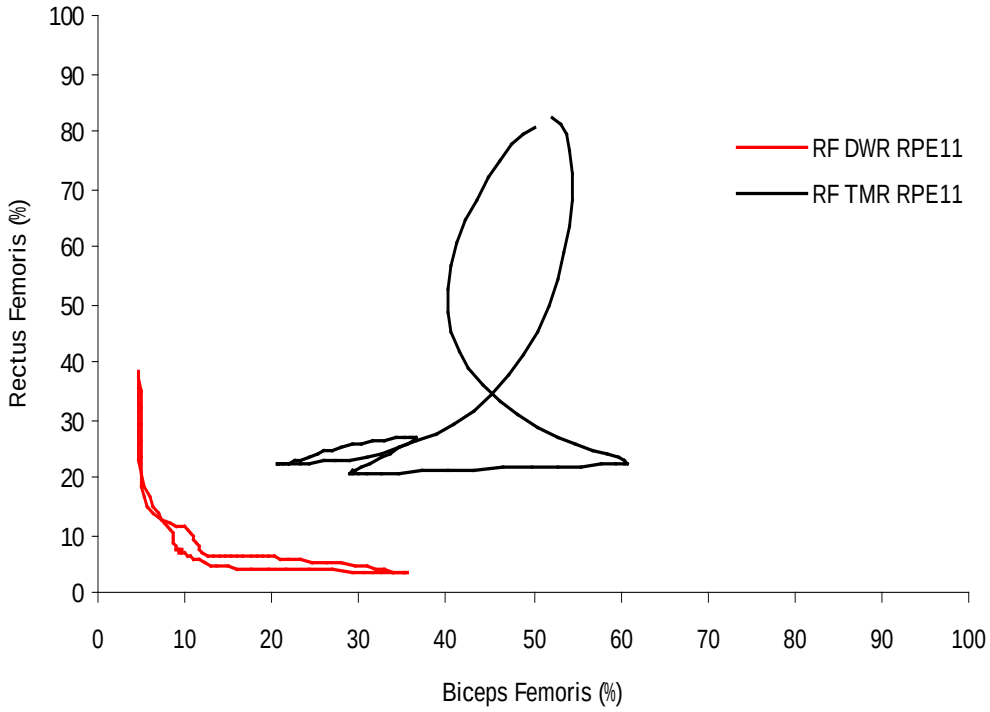
  Water < Land RF GA

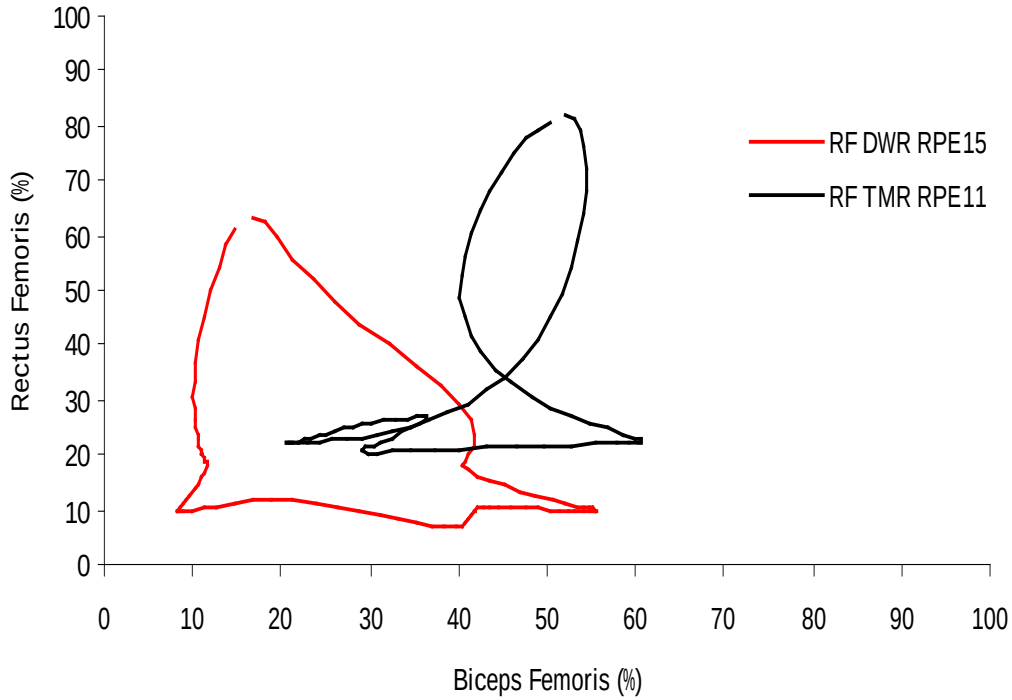
  Water = Land BF TA
- **Physiological Response (HR)**

  Water = Land *RF BF TA*

  Water < Land GA

【RF-BF Muscle Coordination Pattern】





DWR RPE11 vs. TMR RPE11

TMR　Complex

DWR　Peak-Inactive Pattern

→Buoyancy/Resistance ＞Antagonistic Muscle Force

DWR RPE15 vs. TMR RPE11

DWR and TMR ＝Similar

→Buoyancy/Resistance ＜Antagonistic Muscle Force

（changing direction of limb）

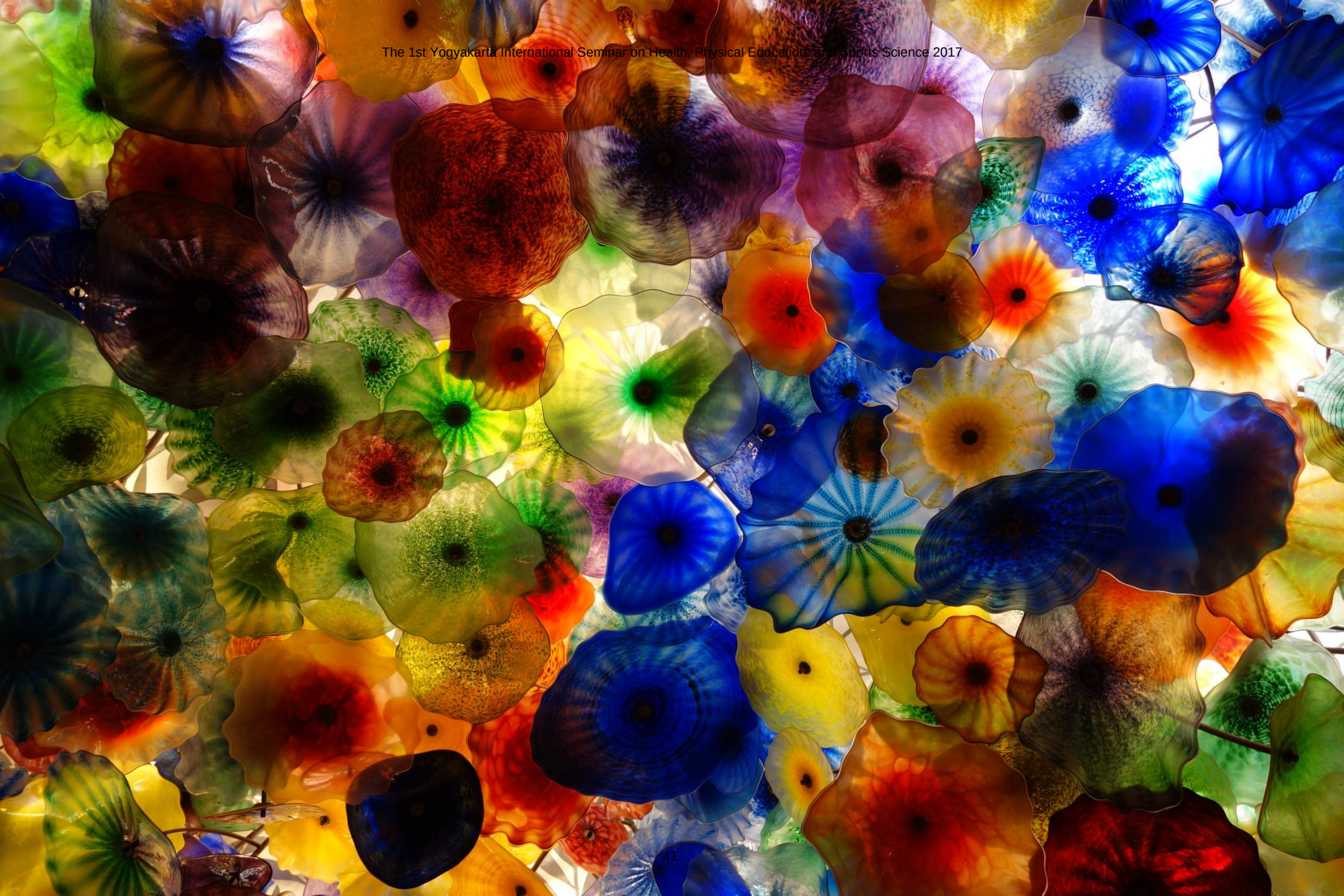
Masumoto et al., 2009

Summary

- **Matching HR** is **recommended** to **produce similar magnitude of muscle activity** during **DWR** to that of **TMR**
- **A higher RPE should be used** to **elicit similar magnitude/pattern of muscle activity** during **DWR** to that of **TMR**

Manipulation of Impact Forces

- **Stride Frequency**
- **Direction of Locomotion**
- **Body Weight Support Treadmill**
- **Aquatic Environment**



Title: ACUTE EFFECTS OF SHUTTLE REPEATED SPRINTS IN NORMOBARIC HYPOXIC ENVIRONMENTS IN FUTSAL PLAYERS.

Authors: Pattarawut Khaosanit (M.Sc.) [1], Kenneth Graham (Ph.D.) [2], Wanchai Boonrod (Ph.D.) [1]

Affiliations:

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[2]New South Wales Institute of Sport, Sydney, Australia

Abstract

Introduction: Futsal is one of intermittent team sport that requires the importance ability to sprint in short distance many times in the game called repeated sprint ability. Presently, training method to improve repeated sprint performance by using simulated hypoxic chamber is interesting method for athletes to increase intensity and produce better adaptations of training. Because of limited size of hypoxic chamber, long distance repeated sprints training cannot be perform but shuttle repeated sprints training is capable. However, the optimal normobaric hypoxic environment for training is necessary to establish. Accordingly, this present study focused especially on the acute effects of different oxygen environments from shuttle repeated sprints.

Methods: Futsal players from university team (N=16) enrolled to perform shuttle repeated sprints (6 × 10 s) in 5m distance. Recovery time was 20s by active rest between repetitions. Counter-balanced design was used in a random order to participants to complete 4 testing over 4 weeks in 4 oxygen environments with different inspired oxygen fraction (F_IO_2 = 20.9%, 14.5%, 13.5% and 12.5%). After shuttle repeated sprints, blood lactate concentration (BLa), heart rate (HR), pulse oxygen saturation (SpO_2), and rating of perceived exertion (RPE) were recorded. Furthermore, Electromyography (EMG) data were recorded from muscle vastus lateralis in each sprint.

Results and Discussion: The results showed that 12.5% may excessively decrease quality of exercise. Besides, in 14.5% and 13.5%, fatigue may increase but participants can maintained their performance. By evidence, EMG between 13.5% and 14.5% were not significantly in all reps but were significantly with 20.9% and 12.5% (P <.05). While, BL in 13.5% were not significantly when compared with 14.5% and 12.5% (P <.05). Moreover, HR in 4 trials were not significantly but RPE in 12.5% were significantly with 20.9% and 14.5% (p <.05). SpO_2 between 13.5% and 14.5% were not significantly before exercise but after exercise all testing were significantly (P <.05).

Conclusions: It is concluded that shuttle repeated sprints can be perform in F_IO_2 = 14.5-13.5%. Whereas, shuttle repeated sprints performance will drop when exercise in F_IO_2 = 12.5%.

Keywords: hypoxic training, acute effect, repeated sprints, fatigue, futsal

ACUTE EFFECTS OF SHUTTLE REPEATED SPRINTS IN NORMOBARIC HYPOXIC ENVIRONMENTS IN FUTSAL PLAYERS.

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Chulalongkorn University, Thailand

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Introduction

Futsal

High intensity intermittent sport (Castagna et al., 2009; Gorostia et al., 2009; Barbero-Alvarez et al., 2008; and Castagna et al., 2007)

- Medium-intensity running= 28.5%
- High-intensity running = 13.7%
- Maximal speed running = 8.9%

Average HR 90% of HRmax (Castagna et al., 2009 and Barbero-Alvarez et al., 2008)

- >85% of HRmax at 83% of the game
- 85-65% of HRmax at 16% of the game
- <65% of HRmax at 0.3% of the game

Required ability to sprint in short distance many times in the game called repeated sprint ability (Barbero-Alvarez et al. 2008).

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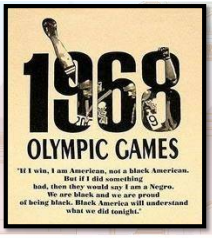
History of Altitude/Hypoxic Training

MEXICO 68



The study of altitude training was heavily delved into during and after the 1968 Mexico City Olympics, (Mexico City lies at an altitude of 2,240 metres or 7,349 ft).
It was during these Olympic Games that endurance events saw significant below-record finishes while anaerobic, sprint events broke all types of records.

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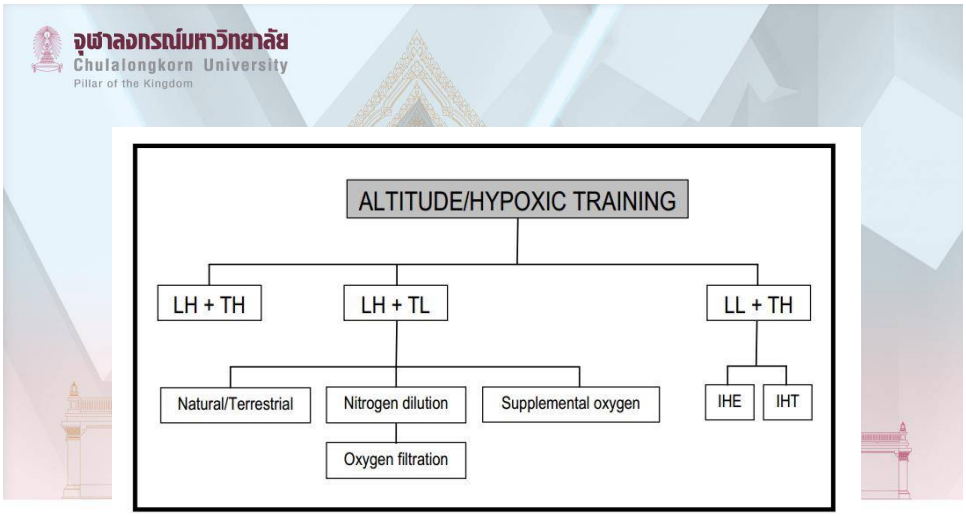
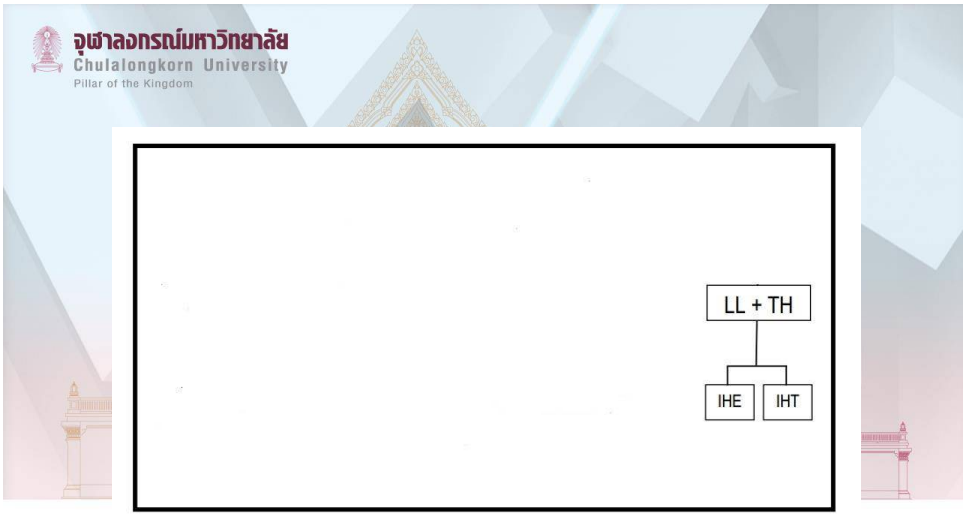
Altitude/Hypoxic Training

The fundamental theory behind altitude training is simple: by exposing an athlete to an environment that is low in oxygen (a mountain top or simulated altitude room) the body will eventually adapt to this stress by getting more efficient at transporting and using oxygen



IHE (intermittent hypoxic exposure), IHT (intermittent hypoxic training), LH + TH (live high + train high), LH + TL (live high + train low), LL + TH (live low + train high)

Contemporary altitude training models (Wilber, 2007)



IHE (intermittent hypoxic exposure), IHT (intermittent hypoxic training), LH + TH (live high + train high), LH + TL (live high + train low), LL + TH (live low + train high)

Live Low – Train High

- Intermittent Hypoxic Exposure (IHE): Exposure to hypoxia
- Intermittent Hypoxic Training (IHT) : Training in

What is Normobaric Hypoxic Training?

- Normal atmospheric air (Normoxia)
  - It contains 20.9% oxygen, 78% nitrogen, the balance is a mixture of gases known as argon.
  - Barometric pressure (P_b) is ~760 mmHg.
  - athletes can comfortably ventilate adequate air to meet

What is Normobaric Hypoxic Training?

- Hypobaric Hypoxia
  - Lower P_b from sea level

Altitude (feet)	Altitude (meters)	Air Pressure (mmHg)	Oxygen Pressure (mmHg)	Oxygen Pressure (% pressure at sea level)	Human SpO2 (%)
0	0	760	160	21%	96%
5,000	1,524	632	133	17.5%	95%
7,500	2,286	575	121	16%	93%
10,000	3,048	523	110	14.5%	89%
12,500	3,810	474	99.5	13.1%	87%
14,000	4,267	446	93.7	12.3%	83%
16,500	5,029	403	84.6	11.1%	77%
20,000	6,096	349	73.3	9.6%	65%

Data from : http://www.anesthesiaweb.org/hypoxia.php

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What is Normobaric Hypoxic Training?

- Normobaric Hypoxia
  - Same P_b as Normoxia
  - Normobaric hypoxic training Stresses the general Physiological functions to the Max at lower workloads without causing undue stress on local, Injured tissues and Muscles.
  - High intensity training at velocities and thus produc stress on the musculos system

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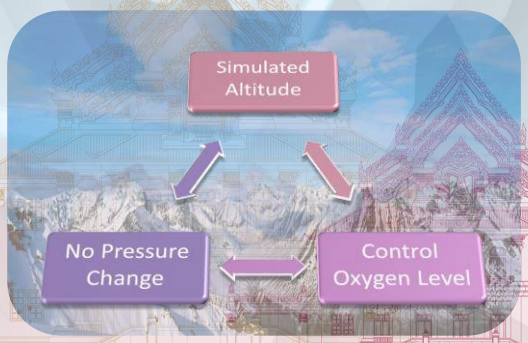
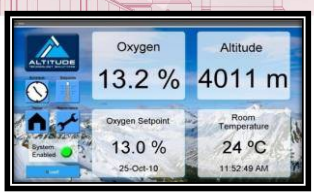
Simulated Altitude System/ Simulated Normobaric Hypoxic System





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Repeated sprints in hypoxia

- Many sports involve with repeated short duration sprints of <10s, followed by <60s of a brief recovery period.
- Repeated sprints training has been shown to improve oxygen utilization (Bailey et al., 2009) and increase anaerobic metabolism (Dawson et al., 1998).
- The aerobic system is involved in regenerating ATP during recovery from repeated sprints (Spencer et al., 2005).
- Incomplete recovery has been shown

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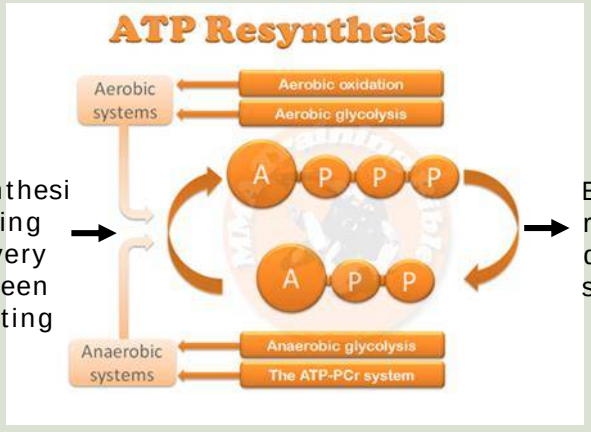
ATP resynthesis during recovery between sprinting



Energy released during sprinting

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Beneficial of Normobaric Hypoxia to Repeated Sprints Ability

- Increased anaerobic glycolytic activity (Faiss et al., 2013).
- Modified acid-base homeostasis (Nummela and Rusko, 2000).
- Increases the stress on the anaerobic metabolic pathways thereby resulting in upregulation of anaerobic metabolism (Faiss et al., 2013).
- Improved time to fatigue and power output (Faiss et al., 2013).
- Improved repeated sprint, but not endurance performance (Hamlin et al., 2017)

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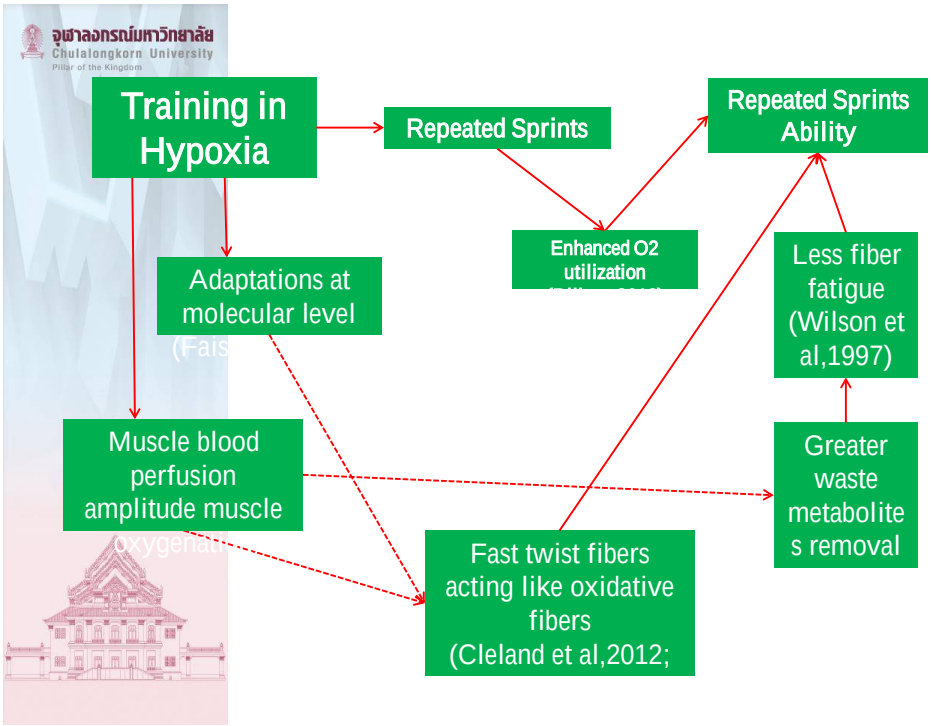
Authors	Subjects	Hypoxic Stimulus	Training Protocol	Hypoxic compared to Normoxic Group Repeated Sprint Performance Outcome
Galvin et al. (2013)	Rugby players	~ 3500m 12 sessions over 4 weeks (3/week)	10 reps of 6 s running	↓ 1.0%
Faiss et al. (2013)	Moderately trained cyclists	3000m 8 sessions over 4 weeks (2/week)	3 sets of 5 reps of 10 s cycling	↓ 1.0% (not-significant) in average power ↑ # of sprints completed
Goods et al. (2015)	Team sport athletes	~ 3000m 15 sessions over 5 weeks (3/week)	3 sets of 7reps of 5 s cycling	↑ 0.5% (not significant)
Brocherie, Girard et al. (2015)	Youth football players	~ 3000m 10 sessions over 5 weeks (2/week)	High intensity treadmill runs and repeated sprint exercises	↑ 1.3% (not significant)
Brocherie, Millet et al. (2015)	Team sport athletes	~ 3000m 6 session over 2 weeks (3/ week)	4 sets of 5 reps of 5 s running	↑ 2.9% immediately ↑ 2.8% 3 weeks post



Shuttle Repeated Sprints

- Many research equipped with much smaller hypoxic chambers are not allowing performing long distance sprints.
- Shuttle repeated sprints training is feasible in hypoxic chambers of limited size.
- Shuttle repeated sprints training in hypoxia, in comparison to normoxia, might lead to better running speed maintenance during the repeated sprint ability

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Gatterer et al. (2014). Shuttle-Run Sprint Training in Hypoxia for Youth Elite Soccer Players

Abstract

The purposes of the present study were to investigate if a) shuttle-run sprint training performed in a normobaric hypoxia chamber of limited size (4.75x2.25m) is feasible, in terms of producing the same absolute training load, when compared to training in normoxia, and b) if such training improves the repeated sprint ability (RSA) and the Yo-Yo intermittent recovery (YYIR) test outcome in young elite soccer players. Players of an elite soccer training centre (age: 15.3 ± 0.5 years, height: 1.73 ± 0.07 m, body mass: 62.6 ± 6.6 kg) were randomly assigned to a hypoxia or a normoxia training group. Within a 5-week period, players, who were not informed about the hypoxia intervention, performed at least 7 sessions of identical shuttle-run sprint training either in a normal training room (FiO_2 = 20.95%) or in a hypoxic chamber (FiO_2 = 14.8%; approximately 3300m), both equipped with the same floor. Each training session comprised 3 series of 5x10s back and forth sprints (4.5m) performed at maximal intensity. Recovery time between repetitions was 20s and between series 5min. Before and after the training period the RSA (6 x 40m shuttle sprint with 20 s rest between shuttles) and the YYIR test were performed. The size of the chamber did not restrict the training intensity of the sprint training (both groups performed approximately 8 shuttles during 10s). Training in hypoxia resulted in a lower fatigue slope which indicates better running speed maintenance during the RSA test ($p = 0.024$). YYIR performance increased over time ($p = 0.045$) without differences between groups ($p > 0.05$). This study showed that training intensity of the shuttle-run sprint training was not restricted in a hypoxic chamber of limited size which indicates that such training is feasible. Furthermore, hypoxia compared to normoxia training reduced the fatigue slope during the RSA test in youth soccer players.

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Acute Effect Studies

Authors	Subjects	Trial Conditions	Protocol	Recommended Conditions
Bowtell et al. (2014)	Well-trained multi-sport athletes	F_IO_2: 12%, 13%, 14%, 15%, 21%	maximum running repeated sprints (10 x 6 s) on a non-motorized treadmill separated with 30 s recovery	13% F_IO_2
Goods et al. (2014)	Trained male team-sport athletes	Sea level and simulated altitudes of 2000, 3000, and 4000 m	3 sets of repeated sprints (9 × 4 s) on a non-motorized treadmill	2000-3000 m (~16.5-14.5% F_IO_2)

ACUTE EFFECTS OF SHUTTLE REPEATED SPRINTS IN NORMOBARIC HYPOXIC ENVIRONMENTS IN FUTSAL PLAYERS.

Pattarawut Khaosanit (M.Sc.) [1], Kenneth Graham (Ph.D.) [2], Wanchai Boonrod (Ph.D.) [1]

Affiliations:

[1]Faculty of Sports Science, Chulalongkorn University, Bangkok, Thailand

[2]New South Wales Institute of Sport, Sydney, Australia

Participants

Futsal players from university team (N=16)

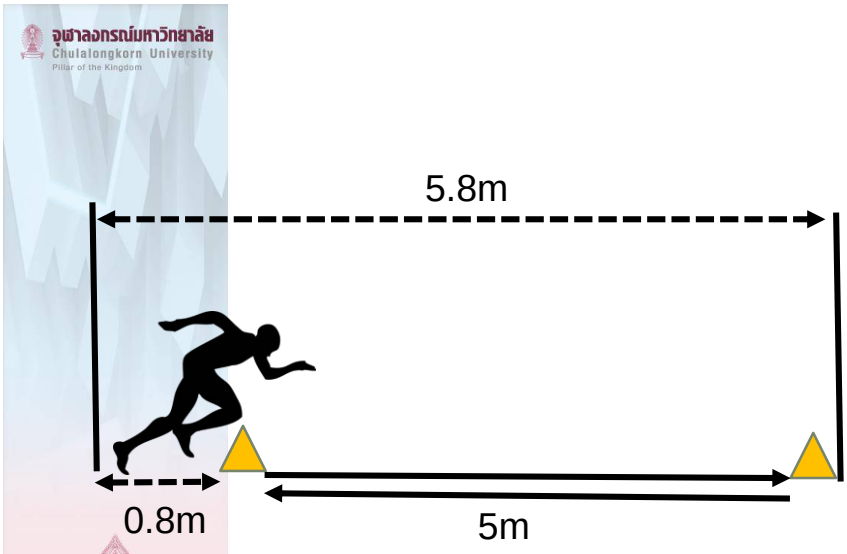
Protocol

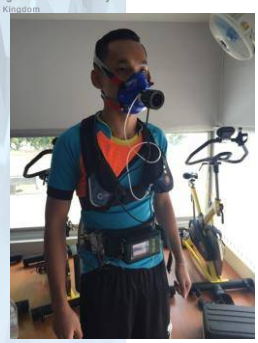
Shuttle repeated sprints (6 × 10 s) in 5m distance. Recovery time was 20s by active rest.

Counter-balanced design was used in a random order to participants to complete 4 testing over 4 weeks in 4 oxygen environments with different inspired oxygen fraction (F_IO_2 = 20.9%, 14.5%, 13.5% and 12.5%).

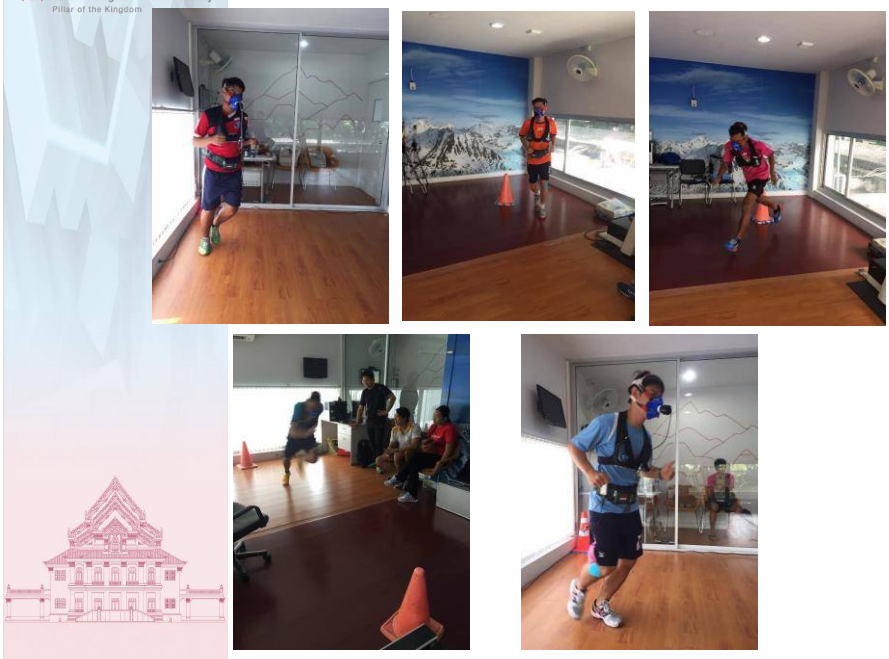
Variables

- Blood lactate concentration (BLa)
- Heart rate (HR)
- Pulse oxygen saturation (SpO_2)
- Rating of perceived exertion (RPE)
- Electromyography (EMG)


5.8m
0.8m
5m




Oxygen
12.8 %
Altitude
4169 m
Oxygen Target
12.5 %
Altitude Target
4387 m




Oxygen
13.5 %
Altitude
3739 m
Oxygen Target
13.5 %
3764 m

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Result

Variables	Period	FiO_2			
		20.9%	14.5%	13.5%	12.5%
Heart Rate: HR (bpm)	Pre	70 ± 10	72 ± 7	73 ± 13	74 ± 12
	Post	150 ± 11	156 ± 10	154 ± 7	157 ± 8
Blood Lactate Concentration: BL (mmol/L)	Pre	2.2 ± .7	3.35 ± 1[a]	3.94 ± 1[a]	4.48 ± 1[a,b]
	Post	4.33 ± 1.8	7.5 ± 1.75[a]	8.66 ± 2[a]	9.3 ± 2 [a,b]
Rating of perceived exertion: RPE	Pre	6 ± 1	6 ± 1	6 ± 1	7 ± 1[a,b]
	Post	14 ± 1	15 ± 1	15 ± 1	15 ± 1[a]
Oxygen saturation: SpO_2 (%)	Pre	97.4 ± .9	91.8 ± 2.1[a]	89.4 ± 2.3[a]	85.5 ± 2.7[a,b,c]
	Post	95.0 ± 2.3	84.4 ± 1.9[a]	81.3 ± 1.4[a,b]	75.6 ± 2.8[a,b,c]

Table 1. Heart Rate, Blood Lactate Concentration, Rating Perceived Exertion, and Oxygen Saturation During a Shuttle Repeated Sprints Exercise Performed at different inspired oxygen fraction (FiO_2 = 20.9%, 14.5%, 13.5% and 12.5%), Mean ± SD. [a] Significantly different from 20.9% ($P < .05$). [b] Significantly different from 14.5%($P < .05$). [c] Significantly different from 13.5% ($P < .05$).

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Result

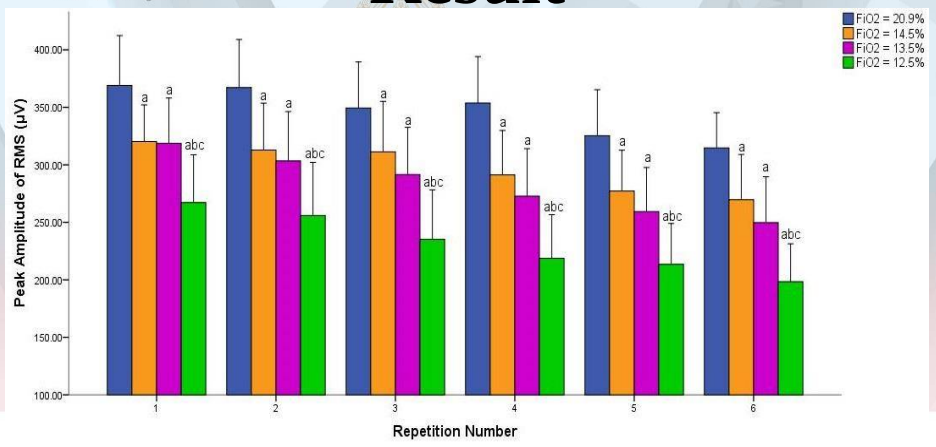

Figure 1. Peak Amplitude of Root Mean Square (RMS) from Electromyography (EMG) in each repetition at FiO_2 = 20.9%, 14.5%, 13.5% and 12.5%, Mean ± SD. [a] Significantly different from 20.9% ($P < .05$). [b] Significantly different from 14.5%($P < .05$). [c] Significantly different from 13.5% ($P < .05$).

Conclusion

From this study, it is concluded that shuttle repeated sprints can be perform in F_IO_2 = 14.5-13.5%. Whereas, shuttle repeated sprints performance will drop when exercise in F_IO_2 = 12.5%.

THANK YOU

Measurement and Evaluation on Sports Science

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The Concept of Testing, Measurement and Evaluation in Physical Education and Sports Science

Testing can be defined as a tool or an instrument which is used to obtain information about individuals or a group of students/athletes. Instruments can come in the form of verbal and written questions, interviews, observation and practical methods conducted at field tests. Regardless of the specific type of testing instrument used, it must contain both reliability and validity. Once a certain test is determined, the next step is to administer it. Measurement, on the other hand, is the process of accumulating information or empirical data which has to be accurate and reliable.

The process of measurement must be conducted by trained teacher/coach. Measurement results can be shown from the aspect of the measure of time, distance or numbers of things which were correctly done. Data or information acquired from the process of measurement will be analyzed using the correct statistical method. Results of this analysis, will be used to make an evaluation. Evaluation is the process of determining the value or grade of the data obtained. Evaluation also refers to an interpretation of test results to meaningful information. It will be used in making unbiased consideration or decision. Without the evaluation process, the data obtained are useless.

Success of evaluation process depends on the quality of data or information obtained. If the results obtained are based on invalid testing instrument that is also lacking in reliability as well as an invalid measurement, the evaluation made cannot produce result and it is considered as invalid. Evaluation is a dynamic process in producing results as it involves collecting suitable data, assessing the data based on an established standard and making decisions based on these data.

Significance of Measurement and Evaluation in Physical Education and Sports Science

Some of the significance in measurement and evaluation are listed below:

To assist in the identification of students/athletes' strength and weaknesses: this is to provide the real image of students/athletes' performance status.

To enhance students/athletes' will to strive to maintain and improve their level of performances in the real sports.

To provide advantages to students/athletes to choose the preferred type of sports and career.

To enable Physical Education teachers or coaches to use the information as the basis to place groups based on their actual sports' performances during lessons.

To assist teachers/coaches while planning for training strategies or teaching and learning for Physical Education and Sports Sciences and sport curriculum activities and games at school.

Teacher and Sports Coaches' Responsibilities

Structured approach in training or teaching and learning of Physical Education and Sports Science must go through standard and continuous testing and measurement: they also have to be suitable with the environment.

Physical Education and Sports Science teachers/coaches must understand the concept of testing and measurement since it is a process which involves making decisions for students/athletes' performances.

Effective evaluation requires good, comprehensible and easy-to-apply testing procedures which could produce consistent and reliable test scores.

The most challenging aspect in measurement and evaluation is to determine the important element in choosing a certain test. Choosing a test is often based on the ability to measure what is supposed to be measured as the result must be accurate, consistent and fair for all students/athletes.

Physical Education and Sports Science teachers/coaches today are less efficient since they are unable to choose the right test or plan the test procedures which results in the production of unreliable scores.

Physical Education and Sports Science teachers and sports coaches must focus on testing procedures, measurement and evaluation in implementing procedures for physical fitness and motor skills tests' procedures. The process of selection and procedures in conducting the test must be based on the right methods.

Right after administering the test on someone or a group of students/athletes, we have to give meaning to scores or information

obtained. Without an interpretation of scores collected, the test would be meaningless to them.

The success of an evaluation depends on the quality of the data gathered. Any evaluation conducted based on inconsistent and inaccurate test instrument and measurement is considered as inaccurate and doubtful.

Physical Education and Sports Science teachers and sports coaches often wonder about the type of test which is suitable to used. Moreover, they also think about the way to measure and conduct performance evaluation on students based on test results. Such predicaments might be challenging to be addressed without their understanding of the processes involved in actual testing, measurement and evaluation. Their ability to conduct test, measurement and evaluation is indicative of their accountability as Physical Education and Sports Science teachers and sports coaches.

Principles of Measurement and Evaluation

Measurement and evaluation program will be more effective if it can be meaningfully carried out. Tests are not solely carried out to fulfill one's free time. Instead, they must be seen from an academic perspective. Data obtained from the next measurement will be analyzed using suitable statistical methods in order to make decisions. Based on these results, teachers are able to produce performance evaluation for each student or group.

Measurement and evaluation conducted must be directly related to Physical Education and Sports Science subject goals or objectives as well as training. Measurement is often conducted to evaluate teachers' or coaches' teaching effectiveness in any unit of the relevant teaching and learning. Measurement and evaluations should also be used to enhance the quality of teaching methods or training as well as to determine the effectiveness of method, tools and facilities.

Physical Education and Sports Science teachers or sports coaches must be professional in conducting measurement and testing.

Validity and reliability of a test depends on the teacher or coach's ability to examine and conduct a test.

Ensure that all students or athletes receive accurate and consistent test procedure in similar testing environment. There must not be any bias element in providing motivation to the students.

Provide adequate instructions and training before conducting a test. Teachers or coaches will demonstrate as well as allow several trials as part of training. These methods enable the students to familiarize themselves with the test while giving them sufficient confidence to take the test.

Measurement should be carried out by the teacher or coach who is trained in the tested field. If the test is administered by inexperienced teacher or coach or those who are not reliable, the score will be questionable or invalid.

Trained teachers or coaches have high level of consistency in administering tests.

Consistency in giving instructions on test procedures, delivery of scores and mistakes done during the test are crucial in measurement.

Evaluation is a process in which the teacher or coach interprets information derived from measurement done based on standards of criterion referenced or norm referenced tests. Teachers or coach's ability to apply suitable statistical analysis is crucial in determining accuracy during the evaluation.

Teacher or Coach could also use Criterion Referenced Standard in order to determine students or athletes' performance is at a level which is attained based on 'Gold Standard".

Norm Referenced Standard can be used when one interprets performance of each student or athlete on a certain test by comparing it with the other students' performances in the same population.

Norm referenced standard is used in a percentile form, score Z and T as it is used to determine a grade. Norm referenced often deals with reports based on gender, age and school grades.

Choosing Test Instrument

Physical Education and Sports Science teachers or coaches have to first identify an instrument or test which they want to use to measure a certain physical fitness component or basic motor skills. Below are some guidance:-

Test instrument must have the reliability and validity values. Without them, the data or information obtained will be meaningless because invalid instrument or test will produce invalid data or information.

According to Baumgartner, Jackson, Mahar and Rowe (2003), a certain test which attain the coefficient correlation validity level of .85 to .93, validity score at .80 and objectivity at .85 to .93 must be accepted in Physical Education and Sports Science measurement which involves physical measurement.

Test Validity

A test instrument is considered valid when it measures what it is intended to measure. In addition, a valid test must be reliable while a test that is reliable may not be valid to be used.

If the data obtained come from an invalid test or test instrument, the data cannot be used in measurement and evaluation.

Any decision made about a subject based on inaccurate data might lead to mistakes or inaccuracy.

There are four types of validity measurement used in Physical Education and Sports Science namely logical validity, content validity , criteria validity and construct validity.

Factors that Influence Validity

In order to determine whether or not a test or measurement instrument has high level of validity, Physical Education and Sports Science teacher or coaches must take several things into consideration:-

Accurate selection of test to be made as criterion measurement .
Characteristics of students or athletes tested. For instance, a certain valid test to be used on 13-year-old students or athletes becomes invalid if it is used for those who are 17 years old.
A certain test is valid to be used on students or athletes who share the same age, gender and school grades.
A certain test is valid when it has reliability.
Test validity is generally influenced by reliability : the higher number of tests carried out on each student or athlete, the higher the value of reliability.

Reliability

A test is able to produce consistent result after several attempts is considered as reliable. Moreover, accurate and stable data can only be derived from a test that is reliable. For example, if a group of students or athletes sit for a push-up test on two different days, the scores that are obtained must be similar. In order to ensure the test reliability, the procedure, measurement techniques and the environment in which the test is conducted must remain the same.

There are several factors which can affect a test's reliability and the value of scores obtained in the process of measurement and evaluation testing for Physical Education and Sports Sciences. Some of them are:-

Inaccurate instructions given.
Inconsistent procedures in delivering test scores.
Differences between the equipment used during the tests.
Differences in the test environment.
The procedure which is often used to obtain testing validity is the test and retest coefficient method and Cronbach Alpha coefficient method.

Objectivity

Objectivity is often known as reliability among testers. A test is considered to have high level of objectivity when it receives close consensus between two or among more teachers/ coaches who administer similar test on similar group of students which has obtained almost similar scores.

Test objectivity depends on-
the unambiguous score system provided.

number of trials
test difficulty
instructions given
test environment
Objectivity can be determined based on inter-tester and intra-tester methods where the value of correlation coefficient is obtained through the method of correlation.
This method can be done by two or more different teachers/coaches with one panel of expert and they have to administer similar tests on the same students at different times.

Conclusion

Of late, the most frequent issue which is highlighted by the Physical Education and Sports Sciences teachers/coaches is the non-existent standard index to be used as references in assessing the level of fitness among secondary school students. Most sports teachers and coaches depend on the norms from abroad. Hence, the findings are inaccurate and questionable since aspects such as body shapes, diet patterns, training method and the local weather are different from what the local students have to face.

In addition, the difficulty in obtaining local norms for the purpose of reference or to make comparisons in fitness performance evaluation of students/athletes, causes the lack of research in the field of local Physical Education and Sports Sciences. Today, most measurement and evaluation in Physical Education and Sports Sciences on students/athletes have used norms which are taken from the western countries. Such practice is unsuitable to be applied continuously. Moreover, norms provided by FITNESSGRAM from the west cannot be used since they have exceeded five years: these norms are considered as annulled and must be re-studied.

Local students/athletes' physical fitness performance index is a tool which can be used to determine their level of fitness. Many physical fitness indexes which are used today are only based on something which is not related to local situation or level of local students/athletes ability. Until now, there is not a norm or fitness performance index for students/athletes which is successfully produced by any party that can determine the level of their physical fitness. Thus, our students/athletes' physical fitness performance index is no longer relevant when it is referred to foreign norms and this has aroused many issues.

National Physical Fitness Performance index is a criteria which can be used to interpret the level of students/ athletes physical fitness for a certain sport skill. National Physical Fitness Performance index which is derived from physical fitness test is able to assist Physical Education and Sports Sciences teachers and coaches in determining the level of physical fitness performance. Based on this index, teachers/coaches are able to identify students/athletes who have the strength and weakness in fitness. The

development of National Physical Fitness Performance index among students/athletes is required to assess their level of physical fitness.

The difficulty in obtaining National Physical Fitness Performance index has caused us to use tests which do not have standard procedures to measure physical fitness performance. For the Physical Education and Sports Sciences teachers/coaches, this is a huge stumbling block since there are many tests which do not have complete test procedures. Unfortunately, these tests are still being implemented in schools by Physical Education and Sports Sciences teachers or coaches at school. Physical fitness performance measurement among students/athletes is required to assess the command of their physical fitness. The use of old test battery will result in unreliable result. Most older battery for testing contains too many tests. One of the current challenges is that teachers/coaches fail to identify and choose valid test or the one that actually tests physical fitness. Teachers/coaches inability to identify valid and reliable test for physical fitness test will only lead to confusing results.

Challenges faced by Physical Education and Sports Sciences teachers and coaches today is to prove that the subject can contribute towards the improvement and development of intellectual, emotional, spiritual and physical aspects of the athletes. The objective will not be attainable if teachers/coaches do not have sufficient knowledge in measurement procedure and evaluation of Physical Education and Sports Sciences. In fact, they could also fail to measure students/athletes fitness performance.

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UTILIZATION OF CHILDREN-PLAY IN OPTIMIZING KINDERGARTENERS' PHYSICAL AND MOTOR SKILLS DEVELOPMENT

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Abstract

Physical motor skill is one aspect of the development of kindergarteners. Kindergarteners' physical and motor skills development is complex process, which includes not only physical growth but also the maturity of systems, development of functioning.

Significant physical growth in quantity changes experience of children, such as height, weight, and body size. There are two terms of development of the children's motor skills, i.e. gross motor skills, and fine motor skills. Because physical motor skills development will affect the development of other aspects, the development of physical motor skill needs to be developed since early childhood. Thus, physical motor skill development is an effort that needs to be prioritized by parents, educators, and society. One important factor that has contributed significantly to children's physical and motor skills development is physical activity. There are many types of physical activity, one of the physical activity that is known and suitable for children is a children play. *Children play* is very appropriate medium for the development of physical motor because children already know and *Children play* have various values and characteristics that fit to the needs of physical motor skill development of children.

By utilizing traditional children play, optimal physical and motor skills development will be experienced by children.

Keywords: Utilization of children play, physical and motor skills, kindergarteners

Introduction

The childhood is the most important stage of life for human development because the experience of development during that time will determine the development of life in the future. In addition, the childhood is the most developed growth period. Therefore, this period is often called the Golden Age. In order to experience optimal growth in this golden age, children need to have adequate opportunities and a conducive environment provided by parents, educators and the community.

Realizing this, the golden age optimization of children continues to be done by parents, communities, and governments. One of the efforts undertaken jointly is improving the quality of early childhood education (ECE). One type of

early childhood education (ECE) is kindergarten (TK). Mansur (2009) states that Kindergarten, Raudhatul Athfal (RA), Bustanul Athfal (BA) is one form of PAUD unit in the formal education channel that organizes educational programs for children aged four years to six years. TK, RA, BA for the next will be written kindergarten (TK).

The care and development process in kindergarten is designed to provide opportunities for children to experience optimal growth. Growing optimally is a learning process that provides opportunities for all developmental potentials to grow in harmony, harmonious, and balanced. One aspect of development that needs to be considered and developed adequately is the motor physics; because the physical aspects of motor is the foundation for growth of other aspects of development.

Payne and Isaacs (1995) state that there are two terms of growth and development of children physical motor skills which is the gross and fine motor skills. Morrison (1988) states that between the ages 3 to 5 years, children still experience rapid growth. Physical growth experiences slowdown between the ages of 5 and 8, while the proportion of body and motor skills of children is getting better. The ability to develop is the ability of gross and fine motor. When aged 5 years, most children demonstrate good control ability to pencil, crayon, and scissors. The achievement of gross motor skills is characterized by the mastery of jumping movements and holding balance with one leg.

To facilitate the physical motor skills development of children, it is suitable to be carried out using physical activity. Physical activity that children love and in accordance with the world of children is playing. Playing is a world filled with friendliness, joy, and happiness. Such an atmosphere is often encountered and is expected to occur frequently in childhood. Therefore, it has become a norm and learning when playing activities are utilized to the maximum extent possible to develop the physical motor skills. Willis and Hymon-Parker (2010) state that playing is an activity that shows how children learn and assimilate something new into their existing knowledge or abilities. Saskatchewan Education (1994) outlines that through playing, early childhood learning can be achieved. Because playing is a key factor in the kindergarten learning process. One type

of play activity is the traditional children game or *Dolanan Anak (children play)*. Various forms of Children play are available in DIY, teachers can choose to be used in the learning process adjusted to the needs and abilities of teachers and children to play them. Therefore, the learning process to optimize the development of physical motor skills' children need to use Children play. Thus, the use of children play in kindergarten learning process is an innovation that needs to be done.

Taking note of the above discussions, several questions can be raised to discuss the answer in this article. The questions are; (1) What is the physical and motor development of the children? (2) what is children play? (3) Why can Children play be used in the learning process to optimize the development of physical and motor skills?

Physical and Motor Skills Development

Learning in kindergarten has characteristics that is the process of care and development in accordance with the interests and stages of children development. Mansur (2009) states that learning in kindergarten is based on the developmental task of children that is in line with the stage of its development. Kindergarten learning program is a unity of whole learning activities program. The content of the learning activitiy program is the learning materials as a means to achieve the ability to be developed. Yuliani N. Sujiono (2009) adds the process of early childhood education using an appropriate approach to the characteristics of early childhood, namely (1) children need oriented, (2) children development oriented, (3) using playing as a medium for learning (4) using active, creative, effective, and fun learning, (5) using integrated learning, and (6) developing life skills.

One of the kindergarten education tasks is to facilitate the growth and development of all potential students. One aspect of children growth that needs to be facilitated is physical motor skills. Payne and Isaacs (1995) state that there are two terms of growth and development of children physical motor skills, the gross motor movements and fine motor skills. Gross motor movements are controlled by muscles or large muscle groups. One of the relatively large muscle groups is the upper limb muscles. The muscles are the parts that produce a

series of movements such as walking, running, and jumping. Fine motor skills are usually performed by small muscles or small muscle groups. Many movements done by hand are regarded as fine motor movements because the smaller muscles of the fingers, hands, and palms have an important role to produce the movement of fingers and hands.

Morrison (1988) says that between the ages of 3 to 5 years, children still experience rapid growth. Physical growth experiences retardation between the ages of 5 and 8, while the proportion of body and motor skills of children is getting better. Gross and fine motor skills develop when they are 5 years old, most children demonstrate good control over fine motor skills, such as holding a pencil, crayon, and scissors. The achievement of gross motor skills is characterized by the mastery of jumping movements and holding balance with one leg. Furthermore, Morrison (1988) states that human motor development takes place based on principles:

> *Motor development is sequential.*
> *Maturation of the motor system proceeds from gross behaviors to fine motor.*
> *Motor development is from the cephalo to the caudal – from head to foot (tail). The head is the most developed part of the body at birth; infants hold their heads erect before they sit, and sitting procedes walking.*
> *Motor development procedes from the proximal (midline or central part of the body) to the distal (extremities). Infants can control their arm movements before they can finger movements.*

Children Play (Dolanan Anak)

One important part of a child's life is playing. Playing is an integral part of children's lives. Garvey (in Wood and Attfield, 2005) considers playing as an attitude or orientation that can be manifested into various forms of behavior. Various possibilities can be realized for what purpose the child is playing, what can be played, and what fantasy can be created. Playing is the main medium and way for learning that is inseparable from children.

One type of playing activity that is wanted and mostly implemented by children is *Dolanan Anak (*children-play*)*. Children-play is one of the most popular activities in the past, but it has begun to be undermined by technological advances and information recently. In fact, children play has important

educational values. Vivi Wijayanti (2008) states that *Dolanan* derives from the word *dolan* that means to play. *Dolan* which means to play gets suffix –an to be *dolanan (*Javanese Noun of to play). The word *Dolanan* in the verb form is to play and as a noun is a game. Poerwadarminta (in Vivi Wijayanti, 2008) says that *dolanan* means (a) to play, (b) the means used for fun for children, and (c) games.

Dananjaya (1991) states that *children-play* anywhere in the world is usually distinguished by body moves such as running, jumping or based on simple social activities such as chasing, hide and seek, fights or on the basis of basic mathematics or dexterity of hands such as counting or throwing stones to a certain hole or a chancy.

Dananjaya's statement is in line with the thought of Ki Hadjar Dewantara. Ki Hadjar Dewantara (2009) states that ... Some Javanese children games, such as: *dakon, cublak-cublak suweng,* and *kubuk*, which educate children to be thorough (*titis pratitis*), deft, clear sight/ vision, and so on. Then also the game, such as: *dakon, cublak suweng*, and *kubak* that educates children about the notion of calculation and estimation. ... In addition, *gobak, trembung, raton, cu, geritan, obrog, panahan, si, jamuran, jelungan*, and other sports that will certainly educate the children in terms of: strength and body health, dexterity and courage, visual acuity, and others. Thus, *Dolanan Anak* can be interpreted as a variety of game activities conducted by children to get fun and held in leisure. In addition, children can benefit from the games they play in the form of facilitation of growth and development.

Regarding the above explanation, Ki Hadjar Dewantara states that *Dolanan Anak* has the function or benefit that is important for the growth and development of children. Sukirman Dharmamulya, *et al*. (2) categorizes traditional children games based on the meaning contained to be (1) game that imitates an act, (2) game that tries strength and skill, (3) game that is solely aimed at practicing the five senses, (4) game with language training, and (5) game with motion of the song and rhyme.

Suherman, Nopembri, and Muktiani (2013) collect various types of *Dolanan Anak* to be medium for growing children. After Children play were

collected from five 5 districts/cities in Yogyakarta, then analyzed to determine which Children play could be used as a medium for the development of six aspects of the children development: (1) cognitive, (2) physical-motor, (3) language, (4) socio-emotional, (5) art and creativity, and (6) moral and religious values.

From the six aspects of children development, one aspect of the study is physical motor skills. By looking at the elements of motion that exist in children play, and physical and motor skill characteristics, then the researcher obtained *children play* that can be used to develop the physical motor aspects, namely: *(1) Ambah-ambah lemah, (2) Benthik, (3) Bethet Thing Thong,(4) Blarak-blarak sempal, (5) Boy-boynan, (6) Dhul-dhulan, (7) Engklek/Sunda Manda, (8) Gamparan; (9) Gatheng. (10) Gobak sodor,(11) Ingkling Gunungan, (12) Jamuran, (13) Jeg-jegan, (14) Jethungan/Dhelikan, (15) Jlong-jling kitiran, (16) Kasti, (17) Kotak Pos, (18) Kucing-kucingan, (19) Lurah-lurahan, (20) Sekong, (21) Sobyung, (22) Tawon-tawonan, dan (23) Ular Naga.*

Using Children Play in Physical and Motor Skills Development

Laying the groundwork for the development of the children mindset and personality will be largely determined by the learning experience he/she has experienced since in pre-school. The experience received by children through the process of learning in the family environment, community environment, and educational institutions is an important and decisive learning process for the further development of children. Growing knowledge, skills, and attitudes and the nature of the child will depend on what the other child sees, gains, and teaches at an early age.

The growth period in the first five years of a child's life has a very decisive impact on the child's future. Therefore, parents need to provide a nurturing pattern and a conducive environment for the child to have all the potential they have growing in a balanced manner. Teachers should give the learners the opportunity to be fully prepared and experienced. In order for the educational process to go well, Haywood (1986) suggests that teachers understand the influence of environmental factors on child growth. The existence of the environment will determine whether a person's potential can develop further.

The environment includes birth process, nutritional intake, physical environment, and physical activity and regular exercise.

In addition to understanding and preparing the environment, Kelly and Melograno (2004) state that the prerequisite of any effort to maximize children learning is knowledge of children's readiness to learn. The children must be physically, socially, emotionally, and cognitively ready to learn. Children will not learn motor skills, social behavior, self-concept, or intellectual ability, if they are not prepared to do so. Therefore, in addition to paying attention to the environment and readiness of children, education at the initial level should not be concerned only one of the intelligence. All domains or potential intelligence should be given a balanced opportunity to grow and develop next. By providing a balanced opportunity for all potentials to be ready for growth, accompanied by the provision of a conducive environment, and an understanding of the readiness of the child, a firm foundation as a foundation for future growth has been established. A solid foundation is a condition that needs to be possessed by the individual as an adequate foundation for future growth in accordance with the capabilities they have.

Childhood is the golden age of children growing because this is the most crucial or decisive moment for the life of the next child. To optimize the golden age, all parties, especially parents and teachers need to continue to improve the quality of care and development since early childhood. One aspect of child development that needs to be considered and developed is physical motor.

In addition to developing other aspects of developmental aspects, physicsal motor should be a priority to be developed as its development will affect the development of other aspects. Since the children daily life is inseparable from playing activities, physical motor development can utilize physical activity. One form of physical activity is children play, well known to children.

In addition it has been well recognized by children and become an integral part of everyday life of children, *Children play* also have many advantages so suitable to be used as a medium for the development of children physical motor. The benefit of Children play is able to provide an interactive atmosphere, fun,

encouraging, challenging, motivating children to play an active role, and provide opportunities for initiative, creativity, and independence of children in line with the talents, interests, and stages of child development.

Yuliani N. Sujiono (2009) recommends that children education process use Play (children play) more as a medium for learning, in addition to other methods and approaches. Moeslichatoen (2004) adds that Play (children play) has characteristics that matches the characteristics and development of children. Characteristics of playing (children play) is to have various forms of activities that provide satisfaction in children, not serious, flexible, and game materials contained in the activity. *Children play* can be transformed imaginatively commensurate with the world of adults. Children play has an important meaning for the growth and development of children. Yet children play has a very important meaning for the life of children, the use of play activities (*children play*) is an integral part in the process of physical and motor skills development of children.

Children play has the function that is amazing for the development of children. As eating-drinking, breathing and sleeping, the *Children play* activities are very important for the health and welfare of children. Without *Children play* stimulation, children do not have the appropriate way to experience the development as they should be. Activities in the *children play* are not only instrumental in the physical development of children, but also in their intellectual, linguistic, social, and emotional development (Mayarina and Bahar, tt).

Trawick-Smith (2017) states that the results of the study show that in order for children to achieve motor development and the degree of appropriate fitness to their age, they must actively engage in physical activity. The intensity and duration of movement they do in school, will not be enough to ensure they can achieve the health and fitness levels, as well as the expected motor development. Therefore, regular and sustained *Children play* plays an important role for the children physical motor development, and their fitness level.

McMaster University (2011) states that physical activity is important for motor development, especially for improving locomotor skills. Research has found that children who spend the most time in moderate to vigorous physical activity tend to have the highest motor skill. This may be because physically active children spend more time learning and improving new motor skills. Children with better motor skills may also find physical activity easier and more fun. We know that motor skills do not always improve naturally. As a teacher, it is important to introduce children to new movements and create opportunities for them to practice. By encouraging physical activity, you not only help children improve their motor skills, but you also help them increase their confidence.

The research of Suherman, Guntur, Dapan, and Muktiani (2016) shows that many kindergartens in DIY are already using *Children play* as a medium to develop physicsal motor. The utilization of *Children play* in kindergarten learning process is still varied. There are kindergartens who have used it for all learning activities, not only for the development of physical motor, but there is only to develop motor physical with limited condition. One of the reasons presented by the teacher, why the use of children in the learning of *Children play* is still limited because the teachers find it difficult to use it and the knowledge of *Children play* is still limited.

Observing and realizing that *Children play* is beneficial for the development of physical motor, but some kindergarten teachers still face obstacles to take advantage of *Children play* in the learning process, it is necessary to formulate a learning model based on *Children play*. The research team, Suherman, Guntur, Dapan, and Muktiani (2017) are conducting research with the title "Development of *Children play*-based learning model to optimize the kindergarteners physical and motor skills development ". This study aims to create Children play-based learning model that can be utilized by kindergarten teachers to develop physical-motor skills kindergarteners. With this learning model, it is expected the difficulties of kindergarten teachers to take advantage of children in the process of *Children play* can be overcome.

Conclusion

Physical motor skill is one aspect of the development of kindergarteners. Because physical motor skills development will affect the development of other aspects, the development of physical motor skill needs to be developed since early childhood. Thus, physical motor skill development is an effort that needs to be prioritized by parents, educators, and society.

One inseparable part from children world is Play. One type of activity is *Children play*. Physical motor skill is an important potential for children to develop, while *Children play* is an integral part of children therefore in the development of physical motor skill of children will be better results when using a *Children play* as its medium. *Children play* is very appropriate medium for the development of physical motor because children already know and *Children play* have various values and characteristics that fit to the needs of physical motor skill development of children.

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THE STRUGGLE OF JERRY LOLOWANG: A CASE STUDY OF CANCER SURVIVOR IN ACHIEVING NATIONAL BASKETBALL ACHIEVEMENT

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Abstract

Objectives: Jerry Lolowang is one of the prominent basketball players in Indonesia, captain of the Satya Wacana basketball club and Indonesian National Team. In his career he was also involved in the DBL (Develpoment Basketball League) Camp as a translator for some NBA players (National Basketball Association) coming from United States embassy and was named after The Interpreter both inside and outside the court. Jerry had undergone a tumor removal on his leg, when he was 13 and recovered. Since then Jerry was appointed as the Child Cancer Ambassador for Solo City because it included cancer survivor, even achieving as a national basketball athlete. But surprisingly, in September 2013, Jerry had a testicular cancer and had undergone chemotherapy 16 times for 6 months at a special hospital in Mount Miriam Penang, Malaysia. When declared to be cleared from cancer after passing various treatments and therapies, Jerry returned to the basketball court as a professional athlete in order to realize the wishes of the people who had been supporting him.

Methods: The study was conducted with Jerry Lolowang by using a paradigm and qualitative method, to produce a comprehensive understanding of the observed phenomena. Specifically, this qualitative study used the Case Study-Life History research design. Four criteria were used, namely degree of credibility, transferability, dependability, and confirmability. The degree of credibility was assessed by using data Triangulation to informer considered close to Jerry Lolowang. Analysis in this study was conducted in four phases, namely; (1) the data collection stage, (2) data reduction stage, (3) data presentation stage, (4) conclusion / verification withdrawal stage.

Results: The results of the interview show that Jerry Lolowang's struggle as a cancer survivor in achieving national basketball achievement includes several aspects: high willingness, self-confidence, never give up, positive thinking, winner mentality, hypnotherapy and social support.

Cancer Survivor is a cancer patient who is undergoing treatment or has passed a cancer therapy period, cancer possibly strikes anyone including athletes.

Conclusion: Athletes who have winner mentality mean having a strong, sacrifice, disciplined and never give up including in dealing with illness or injury. Hypnotherapy can also be useful for athlete rehabilitation after illness or injury because mind is directed to improve the immune system and reprogram the individual behavior against the illness one should act positively, optimistic, enthusiastic, happy, and dauntless of the disease including cancer.

Keywords: Cancer Survivor, Winner Mentality, Hypnotherapy, Basketball

INTRODUCTION

Sports are a global phenomenon and an integral part of the everyday life of society. Through sports, national character building can be developed a nation so sports become a strategic means to build confidence, national identity, and national pride. Of the many sports achievements in Indonesia, basketball game is one of the fastest growing sports and begins to attract people, especially younger generation or teenagers. This can be seen from the many basketball championships in this country that are always filled with spectators. Among them: IBL (Indonesia

Basketball League) which is the highest basketball competition in the country. In addition there is also KOBATAMA (Basketball Premier League). Even for students themselves are LIBAMA (Student Basketball League) which is the competition between universities throughout Indonesia.

Jerry Natanael EB Lolowang who was born in Solo on December 17, 1986 was captain of Satya Wacana and Indonesia national team basketball club. In his career at the Satya Wacana Salatiga club, he had been the captain of the team in charge of helping communication between coach and player. In addition he was also involved in DBL Camp as a translator for some NBA players who were brought through the United States embassy. Jerry had undergone a tumor removal on his leg, when he was 13 and recovered. Since then he has been appointed as the Kid Cancer Ambassador in Solo City, because it includes cancer survivor, even achieving as a national basketball athlete. Surprisingly, in September 2013, he suffered from testicular cancer and had chemotherapy for 16 times during 6 months.

Cancer is a disease caused by abnormal growth of body tissue cells that transform into cancer cells. In its development, cancer cells can spread to other parts of the body, thus leading to death and currently becomes the leading cause of death worldwide, (Burhan: 2010). Cancer Survivor is a cancer patient who is under treatment or has passed a cancer therapy period, a cancer survivor can deal with new problems, such as their personal relationship may be chaotic, feeling tired all the time, very worried about symptoms, medication and death. Some cancer survivors are psychologically paralyzed by their fears because the threat of cancer disease will recur or deteriorate (Moleong: 2011). Cancer therapy can be done with medical and non-medical therapy. Medical therapy is performed with surgery, radiation / radiotherapy, chemotherapy, immunotherapy, and gene therapy (Bakhtiar: 2012). Non-medical therapy is performed through alternative therapies, hypnotherapy and religious.

Hypnotherapy can also be useful for the recovery of athletes after illness or injury because hypnotherapy accelerates the recovery of a patient's condition. This is highly possible because hypnotherapy is directed to enhance the immune system and reprogram the individual’s action against the illness with positive thinking, optimistic, enthusiastic, happy, and not afraid of the illness (Edward and Tymothy : 2011). Hypnotherapy is also a mind therapy and healing using hypnotic methods to give a positive suggestion or positive command to the subconscious mind for healing a psychological disorder or to change the mind, feeling, and performance to become better. Anxiety in athletes with a history of injury or illness is different from athletes without a history of injury or illness. The anxiety of athletes with a history of injury or illness develops as it prepares itself for pressure from the competition, athletes must also psychologically prepare for physical readiness for competition especially in athletes with a history of injury or recurring illness.

Based on that background, the formulation of the problem in this study is "What is the struggle of jerry lolowang as a cancer survivor in achieving national basketball achievement?" This becomes a phenomenon, given the importance of traveling and struggling of athlete / player life as team captain and suffering from injury or illness until back to court professionally after undergoing therapy and treatment. On the basis of the problem, the aim of the study is to get in-depth information about Jerry Lolowang's struggle as a cancer survivor in achieving national basketball achievement. The results of this study can be used as a source of information on the importance of raising awareness on health that can affect the individual or community's vision of the dangers of cancer testis particularly athlete with cancer history in Indonesia and broader region.

METHOD

This study used a descriptive qualitative research approach. Specifically this qualitative study used the Case Study-Life History Research design. That case study is a more appropriate strategy when the question of "how" and "why" is concerned and when the focus of the research lies in contemporary phenomena in real-life contexts (Robert: 2011). Burhan (2010) qualitative research does not use a rigid and rigid design, but is structured with designs that are constantly adapted to field realities. Qualitative methods are specifically oriented to exploration, discovery and inductive logic. Qualitative research emphasizes the importance of closeness with people and research situations.]. In this case researchers were involved in the process of speaking a reflective-relation experience between letting, delivering, reviving, and re-presenting life stories.

The data in this study was the result of the interview, while the source of the data was obtained through the main informant i.e. Jerry Lolowang and the informant considered to be able to provide adequate information related to this research. In this study the data was collected through six parts; sources and types of data, human beings as instruments and observations, interviews, field notes, and document use. [2] flow analysis conducted following an interactive analysis model There were four criteria used, namely degrees of trust (credibility), transferability, dependability, and confirmability. Analysis in this study was conducted in four phases, namely; (1) data collection, (2) data reduction, (3) data presentation, (4) conclusions withdrawal.

Implementation in interviews used an interview guide as an outline of what should be asked on interviews. Data collection technique through this interview aimed to obtain in-depth information about Jerry Lolowang's struggle as a cancer survivor in achieving national basketball achievement, so in this study obtained data from:

1. Jerry Lolowang as cancer survivor and national basketball player.
2. Family of Jerry Lolowang.
3. Coach of Jerry Lolowang.
4. Doctor Team of Jerry Lolowang
5. Team friend of Jerry Lolowang.

The selection of information was selected on the basis of answering the questions that researchers had provided.

RESULTS AND DISCUSSION

1. The Struggle of Jerry Lolowang as Cancer Survivor in Achieving National Basketball Achievement

Basketball is a game played by two teams, each consisting of five people players, each team tries to put the ball into the opponent's basket, prevent opponents from scoring. On the game of basketball for getting effective and efficient movement needs to be based on mastery good basic technique (PERBASI: 2012). Basketball player named Jerry Natanael EB Lolowang who was born in Solo on 17 December 1986 was actually a quite late to start his life as a basketball player. He just started his life as a basketball player when he was registered as Team B Basketball Team Widya Wacana Solo SMA. From then on, Jerry began to be interested in pursuing basketball with joining the Bhinneka Basketball Club. Since joining Bhinneka, he had begun to enjoy the sport that raised him up until now. At the time of the second-grade high school Jerry brought Bhinneka Junior to the first level for Central Java and DIY. Even in high school in third grade, he along with his team managed to bring Bhinneka Junior to become the champion of the National Two. Not to mention that, in the same year, he earned MVP (Most Valuable Player) degree for Central Java and DIY students for bringing Widya Wacana Senior High School Solo as National Champion. After high school, Jerry intended to pursue a more professional career in the basketball field. At that time, Bhinneka Basketball Club gave

Jerry the opportunity to find experience playing in the KOBATAMA event with Go Skate Surabaya with status as a player lent by Bhinneka. After several competitions in KOBATAMA along with Go Skate Surabaya and Bhinneka Solo, there was a situation that required Jerry to move to another club, because Bhinneka Solo had declared stopping to operate in professional basketball arena again. Coach Danny Kosasih saw this opportunity and recruited Jerry to enter Satya Wacana Angsapura team which eventually transforms into Satya Wacana Salatiga. In this new place Jerry got many opportunities and new experiences. He once supported Central Java to acquire silver in East Kalimantan PON in 2008, becoming the National MVP Surya Pro, delivering Semarang's Friend to be the two national champions with status being lent by Satya Wacana Salatiga. After a long career in KOBATAMA, Jerry had compiled a Basketball Fundamental book entitled "First Step to Win" along with Danny Kosasih and eventually Jerry started joining the NBL (National Basketball League) competition from the first season and contributing 19 points for Satya's first victory Salatiga's discourse in NBL's first season.

At the age of 13, he was detected with tumors in his legs and successfully lifted. Through that incident, Jerry was crowned as Child Cancer Ambassador in Solo, because he was a Cancer Survivor who could even be a national athlete. As a Kid Cancer Ambassador, Jerry often came in a fundraising event for a special ward for cancer-stricken children at Moewardi Hospital Solo, and even the children were more motivated to see Jerry not only as an athlete but able to finish his school until graduate level. Seeing the enormous social side made Jerry the first NBL player to receive the award to become the first donor in NBL's blood donor event. In his career at Satya Wacana Club Salatiga, he had been the captain of the team in charge of communication between coach and player. In addition he was also involved in the DBL Camp as a translator for some NBA players who were brought through the United States Embassy. Jerry was regarded as one of the senior who had helped to communicate amongst other players and he was a helpful translator in DBL Camp, so Jerry has a new nickname as The Interpreter both inside and outside the field. Having had enough experience as a basketball player, he began to think to take the opportunity of becoming a coach with the help of Danny Kosasih. The book they co-founded together, the Fundamental Basketball "First Step to Win" finally became the pedagogical guide for upgrading the basic licensees. Before being diagnosed with the cancer he suffered, Jerry was busy with holding several Coaching Clinic in Central Java every Saturday and was still a translator for foreign trainers coming to Indonesia. Surprisingly, in September 2013, Jerry had a testicular cancer and had undergone chemotherapy 16 times for 6 months at a special hospital in Mount Miriam Penang, Malaysia. In September of 2013, Jerry felt an intolerable dizziness with a cold sweat. He was advised to undergo blood checks, thorax photos, and ultrasound in RSUP dr. Sardjito, Yogyakarta. From the diagnosis, the doctor stated that there was a tumor in Jerry's right testis. Previously, Jerry had a history of tumors on his leg. On September 6, 2013, he underwent surgery at Kasih Ibu Hospital, Solo, using the total anesthetics. The operation went smoothly and Jerry had to wait for a doctor's analysis of his tumor. The tumors he suffered were malignant tumors (cancer). On September 19, 2013, Jerry returned to dr. Sardjito Hospital Yogyakarta, to undergo several other checking operations, but there he did not get a room and then Jerry was brought back to Kasih Ibu Hospital, Solo. Jerry was scheduled to do chemotherapy for the prevention and stopping of the tumor. The feedback from the family and friends made Jerry take a bigger step, departing for Lam Wah Ee Hospital in Penang, Malaysia. After CT Scan in Penang, the doctor stated that the cancer had spread to the lymph nodes. Jerry did his first chemotherapy on Monday, October 7, 2013. Cancer is a group of diseases characterized by uncontrolled growth of certain body cells that cause damage to other cells and tissues, often ending with death. Because of

its nature is "violent" (growing uncontrollably and resulting in death), cancer is also called a disease of malignancy, and cancer cells are also called malignant cells. Cancer is a disease marked by uncontrolled cell division and the ability of these cells to attack other biological tissues, either by direct growth of adjacent tissue (invasion) or by migrating cells to distant (metastatic) sites [8]. Jerry Lolowang was enjoying his status as a child cancer ambassador when he was finally surprised by the news that he also suffered from cancer. All goes well and smoothly for Jerry.

He was at the age of gold as a basketball player who defended Satya Wacana, he was also active in social activities, and he enjoyed his daily life. It then changed 180 degrees when the testicular testimonial came to him in mid-September 2013. At that time Jerry was a cancer ambassador but was diagnosed with cancer. Jerry was not as cancerous as he experienced in a difficult or light category. Testicular cancer, usually after surgery could be cleaned immediately, but for Jerry's case, the cancer had started to spread to the lymph nodes, Jerry admitted he had no specific symptoms before being diagnosed with cancer. Jerry's pain after the cancer was clearly obviously mixed. At that time he was in the golden age as an athlete. In the last few months before being diagnosed with cancer, Jerry was much more tired but he thought it was reasonable due to his busy schedule. Bad expectation began to haunt Jerry's mind after a cancer claim. He had cancer related to reproduction and Jerry was unmarried. Of course it was a deep thought for him. Jerry's mind began to foster the spirit of being able to win in the fight against cancer. However the struggle was not as he imagined. During surgery, he should undergo anesthesia more than three times because it was not anesthetized in a single process. The recovery process, usually only 2-3 days into two weeks, after surgery, he then prepared for chemotherapy in Malaysia. His spirits began to diminish in the beginning of chemotherapy. In the second chemotherapy, he experienced swelling in the liver and bile. He had already begun resigning with this process. Jerry had not been aware of God's intentions and it's just Jerry getting in the seventh chemotherapy. Chemotherapy is a cancer treatment with drugs. Chemotherapy can spread through the body and can kill cancer cells anywhere in the body. Chemotherapy can also damage normal and healthy cells, especially healthy cells in the lining of the mouth and the gastrointestinal system, bone and hair pouches [4]. There are several consequences caused by the side effects of therapeutic hair loss even until baldness can occur during administration of chemotherapy, bone marrow disorders that decrease hemoglobin, platelets, and white blood cells, make the body weak, feel tired, short of breath, easy bleeding , and easily infected, the skin is blackish, itchy and dry, in the mouth and throat there are sores, difficulty swallowing, and feeling dry, stomach pain in the gastrointestinal tract, nausea and vomiting, hormone production disrupted to lower sexual desire and fertility [1]. While undergoing chemotherapy, some friends of other patients died. It then made Jerry do not want to be guarded by the family because he did not want them sad, then in the seventh chemotherapy process, he claimed to have a spiritual experience that was a turning point in his fight against cancer.

He gets the shadows to meet the known people, and does some activities like basketball and charity. That makes him sure it will not die in the chemo process. There is still something he must do in this world and he must undergo this chemotherapy well. Since then Jerry has become more resilient and undergoing chemotherapy process with firmness of faith. After undergoing chemotherapy and being cleared of cancer at the first stage of examination, he wants to win the battle again. As a cancer survivor He does not want the cancer in his body to block him back like the original figure. Cancer Survivor is a cancer patient who is in treatment or has passed the time of cancer therapy, cancer survivors need social support to help them face various fears. Many cancer patients who experience psychosocial problems stem from changes in relationships with family

members and friends. Jerry then uses hypnotherapy to calm his mind. Susana and Hendarsih (2012) Hypnotherapy is a hypnotic application for relaxation of thoughts and feelings in helping patients overcome feelings of anxiety, stress and depression . In some cases, cancer patients begin to withdraw from social contact because they feel ashamed of their condition (Edward and Tymothy : 2011. Jerry wants this cancer to not change his character. When he was previously a person who did not want to lose and insist, he wanted to remain a figure like that. Jerry was Jerry who had previously been risky. He then contacted Satya Wacana and said he wanted to return as a basketball player. But he stressed that he did not want to be part of the team just because of his compassion. If he felt deserved, the club could call him back and he would return to practice. However, if the quality of Jerry was not worthy, then they did not even call Jerry. Jerry's decision to return to Basketball did not necessarily get support from his colleagues and relatives. Many colleagues and relatives suggested Jerry not to play basketball anymore. It was enough for Jerry to be healthy again without having to be a athlete again. But many also supported Jerry's desire and determination. He understood those who advised him not to play basketball showed their love for him, but Jerry felt he had to do that.

Jerry's determination to return to the basketball court finally received support from a coach from the United States. The coach provided a special program for Jerry who wanted to return to the basketball court. The Sriwedari field in the city of Solo witnessed how he started the first day to realize his determination in February. Jerry devoured his first menu of 2 km run. The training menu was certainly mild for Jerry in a healthy condition, but became very tough for him who had just recovered from the pain and long time of break. Jerry had coughed at the training session and his breath was tingling. In addition to struggling to restore his physical condition, Jerry also still had to visit physiotherapy to restore his left arm. The veins in Jerry's left arm are problematic as a result of the chemotherapy process he performed. The following days were days of full weight training. And eight months later, Jerry was back the field became an explosive Satya Wacana point guard. Basketball was Jerry's desire. When Jerry was ill, basketball man gave full support to Jerry. Returning to the basketball court was not just to win or to do something fun, but thanked to all those who supported Jerry, he still had the opportunity to extend his contract to play basketball but he decided to step down. Jerry was busy with various activities, ranging from as trainer at the coach academy, to marketing consultant, to completing several seminars because he enjoyed teaching and was happy to communicate with many people. Jerry himself now looked at life with a clear mindset by hypnotherapy. Hunter (2011) the benefits of hypnotherapy that is curing mental disorders, digging information, self-development, eliminate bad habits, blood circulation and as an anesthetic effect. Although Jerry earned more money as a marketing consultant, he still wanted to be known as a trainer at the coach academy. Jerry's principle is "do what you love, not love what you do." Living only once, he had to do what he liked and what became his passion in his life. Money does mean, but not everything. That's what he's trying to instill with the seminar participants he has done so far.

CONCLUSION AND SUGGESTION

Based on the analysis of the data and the discussion done some efforts as cancer survivor shown by Jerry Lolowang is a winner mentality following an exellence willingness and self-confidence. Those then become a good example for other survivor during his social work as cancer ambassador. Medical effort had been through, hypnotherapy to reduce the growing of cancer but in proceed, he still worked in basketball court as player and later coach after his early retirement.

For further reserach, the authors suggest that there will be more attention put towards the treatement of cancer survivor athlete. Since prior researches tend to uncover the medical treatment,

psychologycal treatment will open more chance to be unravelled in the future so both side of physical and psychologial healing is achived well.

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PHYSIOLOGICAL PROFILE OF MEMBERS HATHA YOGA EXERCISE AT MELIA PUROSANI HOTEL YOGYAKARTA

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ABSTRACT

Objectives: Smoking and abuse of drugs or dangerous substances give bad effect toward physiology of human body. Hatha Yoga that is known well can repair body's physiology through fixing the cardio-respiration and increase body's immunity. This study aimed to determine physiological profile's members of Hatha Yoga at Melia Purosani Hotel Yogyakarta.
Methods: This study used quantitative descriptive. The survey was used as a method in this study. Subjects in this study were 10 members of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta whose gender were male and female and had renge of age from 21 until 41 years. The sampling technique which is used is purposive sampling. Technique of data Collection was used test and measurement. Technique of data analysis using descriptive analysis was set in percentage of pulse rate, respiratory rate, blood pressure, circumference of waist-hip ratio, togok flexibility, and body mass index.
Results: The results showed that 40% of members had a good pulse category, 60 % of members had a normal respiratory rate by category, 50% of members had normal blood pressure by category, 60 % of members had medium circumference waist-hip ratio were categorized, 50% of members had good category of togok flexibility, 60% of members had a normal body mass index category.
Conclusions: Based on the data above, it can be concluded that the physiological profile of members Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta includes in good category.

Key word: Physiology, profile, and Hatha Yoga.

INTRODUCTION

Yoga is sport system of thorough health (*holistic).* Yoga has formed from ancient India culture, since 3.000 B.C. In ancient Sanskrit, it means *union* (integration) that is integration between *atman* (self) and *brahman* (God). There are nine forms of Yoga flow that was fitted for special needing someone that are Ina Yoga, Karma Yoga, Bhakti Yoga, Yanta Yoga, Tantra Yoga, Mantra Yoga, Kundalani Yoga, Hatha Yoga, Raja Yoga (Pujiastuti Sindhu, 2007 : 17).

One kind of sport that has known all over the world was Yoga, and also it has been known since thousands of years ago. Yoga already has many fans in that Indonesia is increasingly known and popular. Developing Yoga can be seen with a lot of growing gymnastics studio and Yoga learning places spread across the cities throughout Indonesia.

Yoga is a physical activity that has many benefits. Psychologically, the benefits of Yoga is to calm the mind, because there is a breath processing that is actually accompanied by imagining something soothing. This Era a lot of types of therapy, breathing is one of the best way that can cure various diseases of breathing with cancer through the ability of breathing by improving blood circulation. Breathing done as a process in the body, psychological, sport, aesthetic, spiritual, and healing can all be enhanced to an extraordinary level by developing breathing and breathing done by true and important breathing. The benefits of Yoga toward physiology can be increasing body flexibility, improving posture, increasing muscle strength, increasing capacity and effectiveness of breathing, increasing body's visual strength, increasing body, increasing body strength (Sophia Hage, 2013: 4).

Melia purosani Hotel is one of the best hotel in Yogyakarta which is located in center of Yogyakarta city which is address on suryotomo street, gondomanan, Yogyakarta. Yoga that was

taught in Melia Purosani is kind of Hatha Yoga exercise. Kadek yudhiantara (2012: 2) states that characteristic and structural the transfer Hatha Yoga were considered physic activity that was able to give contribution toward developing motoric quality and physic quality someone directly. Seeing movement of pattern locomotion, Hatha Yoga exercise can increase strength aspect, endurance, agility, and dynamic balance. Seeing movement non-locomotion, Hatha Yoga exercise was able to increase flexibility aspect and static balance.

Exercising Hatha Yoga by physiology can increase body flexibility that was including bone and muscle, and it makes fixing body posture, increasing muscle of strength, increasing capacity and effectivity breathing system, increasing agility and skill, increasing coordination of motoric visual, increasing of balancing body, then increasing endurance or immunity of body (shopia Hage, 2013: 4)

According to the result of observation author, generally members of Hatha Yoga at Melia Purosani Yogyakata Hotel were more like Hatha Yoga exercise that was kind exercising breath and essence in exercise of Hatha Yoga then stretching before starting Hatha Yoga. It will be effected risk of injury, so healthy body of members Hatha Yoga exercise in Melia Purosani Hotel Yogyakarta will be down.

A person's fitness will decrease as a result of health problems caused by an unhealthy lifestyle and aggravated by habits that can damage health. Smoking, substance abuse or dangerous substances have to become one of the customs of the general public in big cities like Yogyakarta city. The consequences of cigarettes and drugs are very harmful to the community in terms of physiological. Hatha Yoga exercise is expected to reduce and can eliminate bad habits that were performed to achieve a better physiological body for members.

From the above background, formulated the problem is how physiological profile of members Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta. The purpose of this study was to find out the physiological profile of members Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta.

METHODS

Type of research

This research uses quantitative descriptive. The method in this research was made survey method. Data collection techniques use test and measurement. Suharsimi Arikunto (2006: 116) states that research variables are the object of research or what the research concerns.

The variables in this study is single variable that is the physiological profile of members of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta.

Time and Place of Study

This research was conducted at Melia Purosani Hotel Yogyakarta. Taking of data was conducted on December 20, 2013.

Population and Sample Research

The population of this research is members of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta as many as 13 members. Total of Samples were 10 people whose gender are women and men in that are 6 women and 4 men. Sampling technique which was used is purposive sampling that is yoga members registered in Melia Purosani Hotel and members who actively follow Hatha Yoga exercise training for at least two months.

Research procedure

In this study members were given physiological tests that are included pulse, breath frequency, blood pressure, waist-to-hip ratio, flexibility togok, and BMI (body mass index).

Instruments and Data Collection Techniques

Instruments which were used in this study is a tool to measure the time required to perform pulse and breath frequency that is stopwatch, blood pressure measuring tool is digital tensimeter, hip-waist circumference measuring instrument is the fabric meter, the gauge of togok flexibility is fleksometer, the gauge of weight and height are the scale and stadiometer.

Data which has collected in this research was data obtained by using test and measurement from sample that is members of Hatha Yoga exercise in Melia Purosani Hotel Yogyakarta. Data collection in this study was used survey method with test and measurement which include pulse

rate, breath frequency, blood pressure, waist-to-hip ratio, togok flexibility, and BMI (body mass index).

Data analysis technique

The data analysis technique used in this research was a rough profile of physiological profile consisting of pulse rate, breath frequency, blood pressure, waist-to-hip ratio, togok flexibility, and body mass index, then data confirmed to table into value. Furthermore the value was analyzed by percentage method which includes pulse rate, breath frequency, blood pressure, waist-hip ratio, flexibility togok, and body mass index. The formula is:

$$\text{Percentage} = \frac{\Sigma}{\Sigma} \times 100\%$$

Information:

Σ category: The resulting physiological profile test score that includes the categories of good, medium, and less.

Σ Total: Number of members who become the object of research.

RESEARCH AND DISCUSSION

Research result

The result of data analysis physiological profile of members Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta has measured by physiological test then the research was determined according to the norms that already exist on each test item. The test results data that have been done in accordance with the norms of each test item, including pulse, breath frequency, blood pressure, waist-to-hip ratio, flexibility togok, and BMI (body mass index).

1. Pulse Rate Test

Rob Wood & Clare Wood (2008) states that the determination of pulse test result can be determined by looking at the age classification. Classification can be seen the table below.

Men						
Classification	Age					
	18-25	26-35	36-45	46-55	56-65	65+
Athlete	49-55	49-54	50-56	50-57	51-56	50-55
Excellent	56-61	55-61	57-62	58-63	57-61	56-61
Good	62-65	62-65	63-66	64-67	62-67	62-65
Above Average	66-69	66-70	67-70	68-71	68-71	66-69
Average	70-73	71-74	71-75	72-76	72-75	70-73
Below Average	74-81	75-81	76-82	77-83	76-81	74-79
Poor	82+	82+	83+	84+	82+	80+

Women						
Classification	Age					
	18-25	26-35	36-45	46-55	56-65	65+
Athelte	54-60	54-59	54-59	54-60	54-59	54-59
Excellent	61-65	60-64	60-64	61-65	60-64	60-64
Good	66-69	65-68	65-69	66-69	65-68	65-68
Above Average	70-73	69-72	70-73	70-73	69-73	69-72
Average	74-78	73-76	74-78	74-77	74-77	73-76
Below Average	79-84	77-82	79-84	78-83	78-83	77-84
Poor	85+	83+	85+	84+	84+	84+

The detail from the table above that members of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta can put to the some categories were 10 samples in this research and members who had athlete category of pulse rate was 1 person (10%), very good category was 1 person (10%), good category were 4 people (40%), above average category was 1 person (10%), enough category was 0 people (0%), below average category were 3 people (30%), and less 0 people (0%).

2. Breath Frequency Test

Nazarudin Umar (2004) states that the determination of breath frequency test result can be determined by looking of the table below.

Number	Classification	Number of breath frequencies (x / minute)
1.	Good	< 12
2.	Normal	12-15
3.	Poor	>15

The detail from table above that members categories of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta can put to the some classification were 10 samples in this research and members that had a good respiratory frequency category were 2 people (20%), normal category were 6 people (60%), and less category were 2 people (20%).

3. Blood Pressure Test

Martin Jeffery (2008: 4) states that the determination of blood pressure result test can be determined by looking at the classification. Classification can be seen the table below.

Classification	Systolic	Diastole
Low Blood pressure	Below 90	Below 60
Normal	90-120	60-80
Pre-hypertension	120-140	80-90
Hypertension (stadium 1)	140-160	90-100
Hypertension (stadium 2)	Above 160	Above 100

The detail from table above that members categories of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta can put to the some classification were 10 samples in this research and members who had blood pressure with low blood category was 0 people (0%), normal category were 5 people (50%), pre-hypertension category were 3 people (30%), hypertension (stadium 1) category were 2 people (20 %), and hypertension (stadium 2) category was 0 person (0%).

4. Waist-to-Hip Ratio Test

Isnaini (2013) states that the determination of waist-to-hip ratio result test can be determined by looking at the classification. Classification can be seen the table below.

No.	Risk / type of obesity	RLPP	
		Men	Women
1.	Low	< 0.9	< 0.8
2.	Medium	0.9	0.8
3.	High	≥ 1	≥ 0.9

The detail from table above that members categories of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta can put to the some classification were 10 samples in this research and members who had less waist-to-hip ratio category were 4 people (40%), medium category were 6 (60%), high category was 0 person (0%).

5. Togok Flexibility Test (Sit and Reach Test)

Janiss Moris (2011: 3) states that the determination of togok flexibility result test can be determined by looking at the classification. Classification can be seen the table below.

Classification	Men					Women				
Age	20-29	30-39	40-49	50-59	60-69	20-29	30-39	40-49	50-59	60-69
Excellent	38-42+	37-40+	34-37+	32-37+	30-35+	40-43+	39-42+	37-40+	37-40	34-37+
Good	33-37	32-36	28-33	27-31	24-29	36-39	35-38	33-36	32-36	30-33
Enough	29-32	27-31	23-27	22-26	18-23	32-35	31-34	29-32	29-31	26-29
Les	23-28	21-26	16-22	15-21	14-17	26-31	25-30	24-28	23-28	23-25
Poor	<23	<21	<16	<15	<14	<26	<25	<24	<23	<23

The detail from table above that members categories of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta can put to the some classification were 10 samples in this research and members who had the flexibility of togok with the excellent category were 5 people (50%), good category was 0 people (0%), enough category were 2 people (2%), less category were 2 persons (20%), and very less category was 1 person (10%).

6. BMI Test (body mass index Test)

Caballero (2005) states that the determination of togok flexibility result test can be determined by looking at the classification. The Classification can be seen the table below.

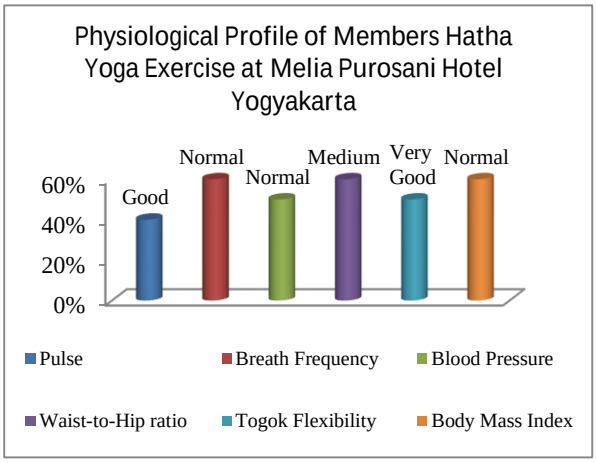
Nu.	Classification	BMI (kg/m²)
1.	Under weight	<18,5
2.	Normal	18,5-24,9
3.	Over weight	25,0-29,9
4.	Obese I	30,0-34,9

5.	Obese II	35,0-39,9
6.	Obese III (extreme)	>40

The detail from table above that members categories of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta can put to the some classification were 10 samples in this research and members who had underweight category were 2 people (20%), normal category were 6 people (60%), over weight category was 1 person (10%), obese I category was 1 person (10%), obese II category was 0 person (0%), obese III category was 0 person (0%).

Discussion

This study aims to determine the physiological profile of members of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta. The physiological profile of Hatha Yoga exercise has measured by the test. The tests used in this study including pulse rate test, breath frequency test, blood pressure test, hip waist circle ratio test, flexibility togok (sit and reach test), and body mass test (Body weight test).



In the histogram table above shows that, the average of each item of measurement test had good category. there were good pulse rate with good 40%, breath frequency with normal category were 60%, blood pressure with normal category were 50%, ring ratio waist-to-hip with moderate category were 60%, flexibility togok with good category were 50%, and BMT with normal category amounted were 60%. It can be concluded that the physiological profile of exercise members of Hatha Yoga at Melia Purosani Hotel Yogyakarta can be categorized good.

The physiological profile of members of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta who fall into this good category in because of several factors, at list:

1. Internal factor

   It means factors of the members themselves. Motivation and members interest following Hatha Yoga exercise giving affects the physiological profile of members. The seriousness of members of Hatha Yoga exercise at Melia Purosani Hotel to practice is a very influential factor for members toward the successful exercise. This is because members have the motivation to improve the physiological body, so the results of the Hatha Yoga training was good.
2. Nutrition

   Members who get enough nutrition is better toward their physiological profile. Nutrition has obtained from healthy, balanced diet, enough energy and nutrients. To get a good physiological profile requires a balanced food intake. Members of Hatha Yoga exercise at Melia Purosani Hotel Yogyakarta is the economic condition of family members from the middle to upper class, the success of nutrition received by members can be well.

3. External Factors
   a. Instructor

      The main instructor's job is to provide training in accordance with the characteristics of the members who want to achieve the goal that was instructor of Hatha Yoga exercise in Melia Purosani Hotel using a variety of training methods, so members not to be bore, then the members to participate in Hatha Yoga exercises will be increased even interested and goals of these exercises can be maximally achieved.

   b. Environment

      Support from the surrounding environment also encourages the success of the exercise. Hatha Yoga exercises will be achieved if the surrounding environment want to try and to keep the atmosphere. It can be comforted for Hatha Yoga exercise then wiil be performed well. The place for Hatha Yoga exercise at Melia Purosani Hotel is a beautiful environment so that when practicing gymnastics Hatha Yoga members feel relaxed, because one of the principles of Hatha Yoga gymnastic this requires tranquility.

CONCLUSION AND SUGGESTIONS

Conclusion

Based on the results of research and discussion in this study can be concluded that the physiological profile of members Hatha Yoga exercise in Melia Purosani Hotel Yogyakarta entered the good category.

The results of this study are useful inputs for Hatha Yoga exercise toward instructors and members at Melia Purosani Hotel Yogyakarta, which can provide information about the physiological state of its members. In addition, the results of this study can be a reference in taking the right steps and correct in determining the training programs to support physical activity and health, so Hatha Yoga exercise can improve physiological function for members.

Limitation of researcher

Researcher has strived to meet all of the requirements that has termed, but it does not mean this research without weaknesses and shortcomings. Weaknesses and shortcomings that can be put forward in this study is the sample used only 10 people.

Suggestion

Based on the results of the research that has been done, that the researchers has hoping and providing suggestions as follows:

1. For members, it is expected to be enhanced in following Hatha Yoga exercise because if the exercises can run continuously that will give a positive thing for members especially in physiological function.
2. For the instructor is expected to be more active in justifying the movement of members movement, so members will be more motivated to follow Hatha Yoga exercise.
3. For Hotel have to be more enhanced cleanliness of the hotel environment, facilities and infrastructure to be treated properly because the cleanliness of the hotel, facilities and infrastructure are one of the important things for Hatha Yoga exercise.
4. For further research can develop this research by adding other elements such as research subjects and adding branches of physiology in the ability of Hatha Yoga exercises to further refine the results of research.

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THE EFFECT OF INTERACTIVE VIDEO IN TEACHING VOLLEY BALL THROUGH BASIC PASSING TECHNIQUE

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Abstract

Objectives: The objective of this study is to find out the effect of interactive video in teaching volley ball through basic passing technique.
Methods: This research used quantitative apporoach with quasi experimental design. The population and simple of this study was tenth grade of students at private senior high school in Karawang that consist of 80 students. In this study, performance skill test was administred as an instrument for both experimental and control groups.
Results: The findings revealed that t observed = 2,61 and t table = 2,00 with the standard of significance 0,05. It means that t observed was higher than t table (2,61 > 2,00). Therefore, there is a significant effect of interactive video in teaching volley ball through basic passing technique.
Conclusion: Besides the result, it can be concluded that teaching volley ball through basic passing technique by using interactive video gave significant effect. Besides, teaching volley ball through basic passing technique by interactive video was better than traditional media.

Keywords : interactive video, basic passing techniques.

INTRODUCTION

In an effort to achieve the goals of physical education, sports and health, teachers need to have a strategy and learning media that fit the stage of development and growth as well as characteristics of learners. The weaknesses in learning lie in the selection of media and the development of material that is not tailored to the condition of learners so that learning is not effective. Teachers should apply appropriate strategies, methods, approaches and instructional media in accordance with the materials and teaching aid so that the learning objectives are achieved. Efforts can be made by developing the ability of motion through games and sports. The use of appropriate medias in learning will facilitate the implementation of learning.

Learning physical education, sports and health in SMK Karawang have been done conventionally. Similarly, volleyball learning is done as a training without media that can stimulate motion skills, interests and liveliness of learners so that learning outcomes are not achieved with the maximum.

Interactive video in learning media has the function of clarify, facilitate and create interesting learning messages to be conveyed by teachers to learners so as to motivate learning and streamline the learning process. Ruswandi and Badruddin (2008:7) The results showed that teaching and learning activities will be more effective and easier when assisted by visual means, 11% are learned

through the sense of hearing, 83% through the sense of sight, and 20% through what is seen and heard." Arsyad (2002:36) explained: interactive video is a teaching system that presents video recording material with computer control to learners who do not only hear and see moving images and sound, but also provide an active response, and the response that determines the speed and frequency of presentation."

The form in this research is how the influence of interactive video on the learning result of basic technique of passing volleyball game. The objective of this research is to know the influence of interactive video on learning result of basic technique of passing volleyball game. Theoretical research benefits to add insights, educational references and provide an understanding of the influence of interactive video media on the learning outcomes of basic passing techniques on volleyball games. Practical benefits for students, it can improve motion skills, for teachers, they will have the opportunity to apply interactive video in physical education, sports and health, for schools can improve the quality of learning, for researchers to increase knowledge and development of learning, especially physical education research.

METHOD

The method of this research is quasi experimental with nonequivalent control pre-test post-test with causal design, to analyze relationship or influence between variable that is interactive video (X) with learning result of passing basic technique (Y). The object of research is the students of grade X (ten) SMK Karawang as many as 80 students, divided into 40 students for the experimental class and 40 students for the control class.

Data collection techniques use skill and observation techniques. The instrument in this research is a test to measure motion skills in performing basic technique of passing and in the assessment form of base motion quantity in passing within 1 minute.

Data analysis technique in this research using normality test with Chi-Squre test. For the accepted criterion test H0 if the cumulative frequency graph is at or near a straight line (normally distributed subject) and rejected H1 if the cumulative frequency graph is not close to a straight line (the subject is not normally distributed). After the normality test, tests of similarity (homogeneity), ie the variance of the population taken from the same population. Testing using Fisher test at significant level α = 0,05. Then, testing hypotheses and statistical hypotheses.

RESULTS

After the two classes are normally distributed and have homogeneous variance, then two equity tests are tested with two-party test left and rightside test with significance value 0,05. The test criteria were performed by using independent sample t-test with the assumption of two homogeneous variance (equal variance assumed) with significance level of 0,05. In this case research

using t test in order to know which class is better. The hypothesis is formulated in the form of statistical hypothesis as follows:

$H_0 : \mu_1 \leq \mu_2$

$H_1 : \mu_1 > \mu_2$

Information:

H_0: The result of learning test in passing basic technique of the students who get the learning through interactive video media is better than the result of the basic passing technique of the students who get the classical learning.

H_1: There is no difference in the results of the basic passing technique learning outcomes that gain learning through interactive video rather than classical learning.

With the following test criteria:

If t hits ≤ t tab then H0 is rejected, H1 accepted

If t hits> t tab then H0 is accepted, H1 is rejected

After data processing, the result of standard deviation is 34,03. Based on the difference between the two average initial tests in the experimental and control classes, the combined deviation standard and the number of samples from each class, obtained t count is 2,61.

Next is to determine t table with significant level α = 0.05 and dk = n1 + n2-2 = 40 + 40-2 = 80-2 = 78 (since it is a two-party test). By looking at the value of t table on t test table distribution with dk = 78 and significant level 0.05 obtained t table = 2.00 (table t test attached).

Based on these data, obtained t count> t table = 2.61> 2.00. From the results of these calculations, it can be seen that the significance value with the t-test is 2.61. Because the significance value is greater than 2.00 then H0 is accepted, H1 is rejected or the conclusion is the result of passing the basic learning technique of the students who get the learning through the interactive video media is better than the basic learning passing technique test for the students who get the classical learning.

DISCUSSION

Interactive video learning media is an essential element in basic passing technique learning. In the process of learning basic passing techniques with interactive video stimulates students in two types of skills, namely basic skills and integrated skills. These basic skills include observing movement, imitating, practicing and differentiating movement, and communicating. The integrated skills include systematic modification and development of movement. With the development of these skills, make learners enthusiastic and modify directly the learning process, so that the results obtained are also optimal learning.

CONCLUSION AND SUGGESTION

Based on the discussion, a study entitled "The Influence of Interactive Video on Learning Outcomes of Basic Passing Up Techniques on Volley Ball Games in SMK ", this has the following conclusions:

1. The basic passing technique learning result by using interactive video on volleyball game at SMK shows significant result. This conclusion is evidenced by the average of the basic passing technique learning outcomes of the experimental class by using interactive video having a significant increase, from an average of 47.38 in the initial test to 69.95 in the final test, or an increase of 22.57.
2. The result of the basic passing technique learning using interactive video (IV) media shows better result from the learning result of the basic passing technique without using interactive video media on the volleyball game at SMK. This conclusion is proved from the result of hypothesis test with independent sample t test, it is found that t count more than t table (2.61> 2.00), the fact shows that in the final test with different treatment, the final test result of the experimental class differs significantly with the control class. The experiment class results are larger than the control class. Enhancement of the basic passing technique learning result of passing over the experimental class 22.57, improvement of the control class test result 3.72, it means the improvement of the experimental class test result is better than the improvement of the baseline passing test results on the control class.

From the conclusion obtained that the Interactive Video effect on the learning outcomes of basic passing techniques of volleyball game in SMK Karawang. Therefore, it is suggested to:

1. Education Office and other related institutions should pay attention and monitor the activities undertaken by teachers, especially teachers who are conducting scientific studies in an effort to improve the quality of learning.
2. Teachers or other fields of study to constantly improve the learning process by implementing interactive video learning media.
3. Other researchers, to always study the models of learning and its application in teaching and learning activities as an effort to optimize learning objectives.
4. The relevant parties in the education world should pay close attention to the shortcomings and weaknesses of learning and education practices in the form of coaching.

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THE EFFECT OF DOMINANT PHYSICAL COMPONENTS, AND SELF-BASKET PLEEMBAN ATLET PALEMBANG TOWN SUCCESS FREE THROW

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Abstract

Objectives: This study aims to determine how much influence between the four independent variables of arm muscle power, leg muscle power, elasticity of the wrist, confident with the dependent variable of free throw success.
Methods: The method used in this research is (1) phat analysis (2) simple correlation (3) coefficient of determination. The population in this study is 30 athletes of Palembang city.
Results: 1). There is a direct influence of arm muscle power on the success of free throw with a value of 0.756 (2). There is a direct influence of leg muscle power on the success of free throw with a value of 0.675 (3). There is a direct influence between the flexibility of the wrist on the success of a free throw with a value of 0.673 (4). There is a direct influence between confidence in the success of free throw with a value of 0.769 (5). There is a direct influence between arm muscle power to confidence with a value of 0.475 (6). There is a direct influence of leg muscle power on self-esteem with a value of 0.587 (7). There is a direct influence between the flexibility of the wrist on confidence and the value of 0.684 (8). There is a direct influence of arm muscle power on leg muscle power with a value of 0.573 (9). There is direct influence between leg muscle power on the flexibility of the wrist with a value of 0.765 (10). There is a direct influence between the flexibility of the wrist on the arm muscle power with a value of 0.931.
Conclusion: There are significant lasung influence, from 10 problem formulation shown in this research, the influence of lasung between the flexibility of the wrist to the arm muscle power most greatly affect the success of free throw with value 0,931.

Keywords: power muscle arm, leg muscle power, elasticity of wrist, confidence and success free throw

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INTRODUCTION

The game of basketball is one of the most popular sports in the world, the United States can be regarded as the country's number one basketball fan. United States basketball competition, the NBA (National Basketball League) is always waiting for fans around the world. In Indonesia alone, more and more people are interested in this sport. This can be evidenced by the emergence of many communities of basketball fans and basketball competitions in Indonesia.

Basketball games in Indonesia are well known in the Dutch colonial era, at that time in Yogyakarta and the solo for the first time basketball games competed diajang highest sports event in Indonesia is better known national sports week (PON). The development of basketball game very rapidly in Indonesia, this proved the number of regional and national championships held. Many young people come to adults, both male and female in favor of sports basketball.

Basketball games include a complex game movement, meaning the movement consists of a combination of elements that are coordinated neatly so as to play the ball well. Stamina, autonomous muscle coordination, agility or mobile agility and fast thinking ability are prerequisites for being a reliable

player. Before throwing a ball, a player must be able to hold the ball well. If the wrong way to hold the ball, of course he can not throw it well. Before he receives the ball, must be able to catch the ball well in order to be able to handle the ball well.

Shooting is the ultimate goal of every basketball game. Mastery of this technique has an important role in the game of basketball, because shooting is the key and the ultimate goal that can determine success in the game of basketball. The success of a team in this game is always determined by its success in firing. To be able to succeed in the shoots needs to be done the correct techniques.

In the game basketball shot divided into two parts, namely the field and free throw. Field shot is a shot attempt to enter the ball into the basket while the game is in progress, field shots can be done all players who are in the game while doing a free throw inversely proportional, free throw is a prize given by the referee to the player to score a number in the right position behind the free throw line, Giving free throw is usually given if the player opponents violate the area forbidden. Basketball player sometimes gets difficulty in doing free throw, according to the players is not easy to do the free throw, most of the players tend to be difficult and sometimes weak at the time of doing a free throw. This is due to the fact that he does not believe he is a basketball player or a distraction from the viewers who support the opposing team during the game, so a player can not easily perform a free throw.

This problem is also a problem in the basketball athletes Palembang city, athletes basketball city of Palembang get difficulty when doing free throw. Based on observations in the field during exercise, especially when doing free throw shots made athletes basketball city of Palembang result is not maximal. it is worthy of attention, the outcome is beyond the expectations of the city of Palembang Perbasi. In other words the free throw results of athletes palembang city is still lacking, whereas the training process and guidance of the dominant physical condition (power muscle arm, leg muscle power, wrist flexibility and confidence).

According Harsono (1988: 200) power is the ability of muscles to exert maximum power in a very fast time. Power is one of the most important components of motion to perform very heavy activities because it can reflect how strongly people can throw. This includes shooting on a basketball game. Based on the description above, can be drawn an understanding that arm power is a muscular ability of the arm to perform activities quickly and strongly to perform activities quickly and strongly to generate power. According to Mahendra (2000: 35) strength is the amount of power that can be produced by a muscle when the muscle is contracted. Power is also called the necessary power in the sport of basketball games.

The muscle strength of the arm referred to in this study is the ability of the muscles that exist in the strong and fast arms in performing the free throw, the necessary energy source is mainly obtained from the strength of the muscles in the arm. Therefore, a good power is needed to produce a good shot while pushing the ball so that in addition to the exact direction of the target, the ball jga to the destination.

Power or explosive power is the ability of muscle work (effort) in units of time (seconds). (manual of human physiology practicum, 2004: 45). According to Ismaryati (2006: 59) that power concerns the strength and speed of muscle contraction is dynamic and explosive and involves the expenditure of maximum muscle strength in the fastest time. The definition of explosive power usually refers to a person's ability to perform maximum strength with the effort deployed in a short time.

The definition of explosive power usually refers to a person's ability to perform maximum strength with the effort deployed in a short time. Explosive power is often called explosive power, or muscular power. According to Suharno HP (1981: 37) points out that: "explosive power is the ability of a muscle or a group of muscles to overcome the load with high strength and speed in one complete motion". According to M.Sajoto (1988: 58), that "muscular power (muscular power) is the ability of a person to exercise maximum strength, with effort deployed in the shortest time.

In doing a free throw is needed to work otoT legs to help in encouraging a good shot. The precision for performing an optimal jump of the sting depends on the leg muscle sections that each basketball player has in mind. The larger the leg muscle power the player may have, the thrust of the limbs will be maximized, which will eventually enshrine the free throw in accordance with the direction of the basket basket. At the time of bolting the ball to the opponent's basket, it takes the muscle of the arm muscle so that the arm can move perfectly so that the shot will fit the target. From the description is thought to power the arms and leg muscle power has contributed to the free throw skills.

Flexibility is an important factor in all aspects of human movement. Flexibility or flexibility is a necessary requirement automatically for the ongoing movement in everyday life including when exercising. Of the many components of physical fitness, the flexibility for an athlete is an absolute component that is necessary and very dominant to be the basis of almost every motion technique. Spasticity in sports activities is needed, because with a good flexibility, athletes can perform various tasks of movement with efficient and effective. Flexibility can be defined as a series of movements in a joint. It deals with the movement and limitations of body or body parts that can be bent or twisted with flexion and muscle stretching devices. Flexibility refers to the extent of movement of the joints and muscles of the body. Sajoto states that flexibility (flexibility) is the effectiveness of a person in adjusting for all activities with broad body stretching.

The wrist is one of the wrist joints of the arm, exactly is the wrist joint (art radiocarpal). In basketball games, the flexibility of the wrist is used to perform pasing, catching, shooting and dribbling. In the discussion of the term flexibility includes two interrelated matters: flexibility closely tied to the state of bones and joints, while the flexibility is closely related to the elasticity of the muscles, tendons and ligaments. For that purpose both flexibility and flexibility) will ensure the width of motion in the joints and facilitate the muscles, tendons and ligaments and joints when, in motion.

Self confidence is the belief in one's own ability to achieve a certain achievement and if the achievement is high then the individual will be more self-confidence. Self-confidence will create a sense of security that can be seen from the attitude and behavior that looks calm, not easy to hesitate. Not easily nervous, and firm. A confident athlete (full-confidence) usually sets targets according to his or her capabilities so as to strive to achieve those targets. In the event of failure, will be faced and accepted with the field of chest tampa must be frustrated, Apta Mulsidayu (2013: 102). According to Ria Lumintuarso (2013: 119) Confidence is the result of a goal match and the ability of athletes will have self confidence if they believe in the ability to achieve goals (you only achieve what you believe). Confidence is the internal control of one's feelings about the existence of strength in himself, awareness of his ability, and responsible for the decisions he has set, Komarudin (2014: 69).

Based on the above description can be concluded that confidence is very important to have every individual basketball players, with high confidence people become convinced of the success of free throw shots.

METHOD

Based on the study of problems to be studied and objectives to be achieved, then the method used in this study is the test is the right method, with path analysis techniques for data analysis. This study involves four independent variables of arm muscle power, leg muscle power, flexibility of the wrist, confidence, .. While the dependent variable is the success of free throw. The linkage between the independent variables and the dependent variable. In accordance with the study design, there are five kinds that must be collected: (1) data on the success of free throw (2) arm muscle power data (3) data muscle power tunggkai (4) data wrist flexibility and (5) confident. To obtain data of free throw success, arm muscle power, tunggkai muscle power, wrist flexibility, and self-confidence. Using test and measurement. According to the type of given variables involved in this research is available, then to obtain the data processed in this study. then the instrument used: (1) free throw test (2) test two-hand

medicine ball put (3) test vertical power jump, (4) test wrist flexibility with goniometer tool (5) test questionnaire.

In this research, the data analysis technique used in testing the hypothesis of this research is (1) path analysis (2) simple correlation (3) coefficient of determination. Prior to testing the hypothesis is done priority testing is the normality test by using lilefors test and homogeneity test by using kolmogorof smirnov as route path analysis. Besides that, the significance analysis with α = 0.05 influence the independent variable to the dependent variable either together or individually.

Target population (Target Population) in this study is all athletes basketball in the city of Palembang which amounted to 30 athletes. Since the population is only 30 athletes, the entire population is subjected to research. The sample was taken from population with total sampling which is all athletes basketball city of palembang which amounted to 30 athletes.

RESULTS AND DISCUSSION

The study was based on five data as predetermined variable, ie free throw success variable (Y) using free throw test, leg muscle power (X1) using two-hand medicine ball put test, leg muscle power (X2) using vertical test power jump, wrist flexibility (X3) Test using goniometer tool, confident (X4) test questionnaire. This study examines the effect of exogenous and endogenous variables. This research study was conducted to answer the problems revealed first. As for the study in this research to know: (1) direct influence of arm muscle power to the success of free throw, (2) direct influence of tunggkai muscle power on free throw success (3) direct influence of wrist flexibility on free throw success, (4) (5) direct influence of leg muscle power on self-confidence, (7) direct influence of wrist flexibility on self-confidence, (8) direct influence of power on the arm arm muscle to leg muscle power, (9) direct influence of leg muscle power on elasticity of the wrist, (10) direct influence of wrist flexibility on arm muscle power.

Table 1. Data Description

No.	Deskripsi Data	power muscle arm	leg muscle power	elasticity of wrist,	confidence	success free throw
1	the number of samples	30	30	30	30	30
2	value manimum	10	10	9,18	126,53	9
3	the maximum value	41	30	30,05	171,40	34
4	range	31	20	20,87	44,87	23
5	Mean	21,103	20,931	18,720	134,506	21,931
6	standard deviation	9,6189	5,7874	6,8521	6,0688	7,7502
7	variance	92,524	33,493	46,951	36,830	60,065

Based on the results of data processing using SPSS 23, then obtained the results of hypothesis testing in this study, path analysis based on theoretically formed causal model. The theoretical causal model is as follows:

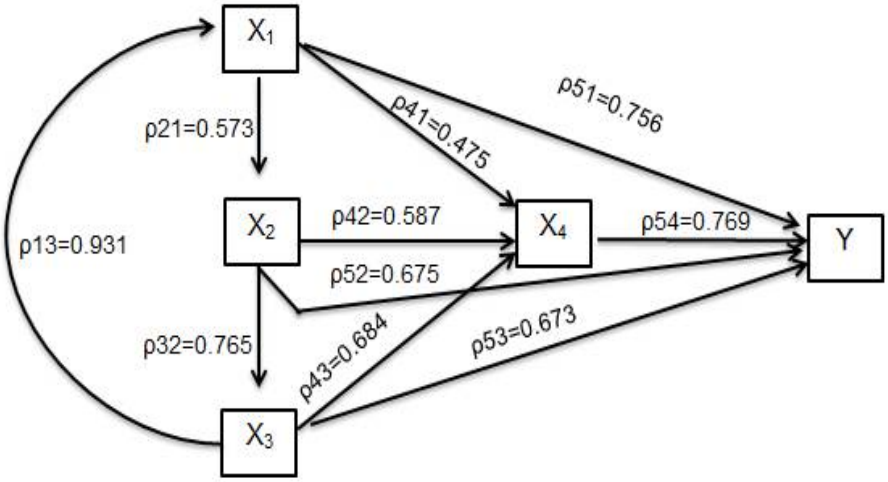

Figure 1. Relationship Structure X 1 X 2 X 3 and X 4 Against Y

The above causal model there are 10 path coefficients namely, ρ51, ρ52, ρ53, ρ54, ρ41, ρ42, ρ43, ρ21, ρ32, ρ13. Each path coefficient will be tested by using t-test (t-test). If the value of t arithmetic> T table value for each path coefficient then it can be concluded that the causal model of the path coefficient is significant. Based on the results obtained after doing the model analysis used as the basis in answering the hypothesis and draw conclusions in this study. The explanation of the hypothetical answer can be described as follows:

Direct Effect of arm muscle power (X1) on the success of free throw (Y)

From the results of path analysis, the direct influence of arm muscle power (X1) on the success of free throw (Y), coefficient value of 0.756 where the coefficient of t count is 6, 137 while the ttable value at dk = 29 for α = 0,05 is 1, 69 therefore the value of tcount coefficient is greater than ttable then H0 is rejected and H1 is accepted thus arm muscle power (X1) has a positive direct effect on the success of free throw (Y) is acceptable.

Direct influence of leg muscle power (X2) On the success of free throw (Y)

From the calculation of path analysis, the direct influence of leg muscle power (X2) on the success of free throw (Y), coefficient value of 0.675 where the coefficient tcount of 4.787 while the ttable value at dk = 29 for α = 0.05 of 1.69 by therefore the value of tcount coefficient is greater than ttable value then H0 is rejected and H1 is accepted thus leg muscle power (X2) has a positive direct effect on the success of free throw (Y) is acceptable.

Direct Effect of Wrist flexibility (X3) To free throw (Y).

From the analysis of path analysis, the direct influence of the flexibility of the wrist (X3) on the success of free throw (Y) coefficient value of 0.673 where the coefficient tcount of 4.783 while the ttable value at dk = 29 for α = 0.05 of 1.69 because the value of tcount coefficient is greater than ttable then H0 is rejected and H1 is accepted thus wrist flexibility (X3) has a direct positive effect on free throw (Y) is acceptable.

Direct Self - Confidence Influence (X4) Against free throw (Y).

From the results of path analysis analysis, the direct influence of self-confidence (X4) to the success of free throw (Y), the coefficient value of 0.769 where the coefficient tcount of 6.241 while the ttable value at dk = 29 for α = 0.05 of 1.69 because the value of tcount coefficient is greater than ttable then H0 is rejected and H1 is accepted thereby self-confidence (X4) has a positive direct effect on the success of free throw (Y) is acceptable.

Direct Influence of arm muscle power (X1) Against Self-Confidence (X4).

From the analysis of path analysis, direct influence of arm muscle power (X1) to confidence (X4), coefficient value of 0,475 where coefficient tcount 2,937 while ttable value at dk = 29 for α = 0,05 equal 1,169 therefore value thitung coefficient is greater than ttable value then H0 is rejected and H1 is accepted thus arm muscle power (X1) has positive direct effect on confidence (X4) is acceptable.

Direct Influence of Limb Muscle Power (X2) Against Self-Confidence (X4)

From the results of path analysis calculation, direct influence of leg muscle power (X2) to confidence (X4), coefficient value of path equal to 0,587 where coefficient tcount equal to 3,775 while ttable value at dk = 29 for α = 0,05 equal to 1.69 because the value of tcount coefficient is greater than ttable then H0 is rejected and H1 is accepted thus leg muscle power (X2) has a positive direct effect on self confidence (X4) is acceptable.

Direct Effect of Wrist flexibility (X3) Against Self-Confidence (X4).

From the analysis of path analysis, the direct influence of the flexibility of the wrist (X3) to the confidence (X4), the coefficient value of 0.684 where the coefficient tcount of 4.893 while the ttable value at dk = 29 for α = 0.05 of 1.69 because the value of tcount coefficient is greater than ttable then H0 is rejected and H1 is accepted so that the flexibility of the wrist (X3) has a direct positive effect on self-confidence (X4) is acceptable.

Direct influence of arm muscle power (X1) on leg muscle power (X2).

From the calculation of path analysis, the direct influence of arm muscle power (X1) on leg muscle power (X2), the coefficient value of the path of 0.573 where the coefficient tcount of 3, 743 while the ttable value at dk = 29 for α = 0.05 of 1, 69 therefore the value of tcount coefficient is greater than ttable then H0 is rejected and H1 is accepted thus arm muscle power (X1) has a positive direct effect on leg muscle power (X2) is acceptable.

Direct influence of leg muscle power (X2) Against elasticity of the wrist (X3)

From the calculation of path analysis, the direct influence of leg muscle power (X2) on the flexibility of the wrist (X3), the coefficient of the lane of 0.765 where the coefficient tcount of 6.235 while the ttable value at dk 29 = for α = 0.05 of 1.69 by therefore the coefficient value of tcount is bigger than ttable then H0 is rejected and H1 is accepted thus leg muscle power (X2) has positive direct effect on wrist flexibility (X3) is acceptable.

Direct Effect of Wrist flexibility (X3) Against arm muscle power (X1).

From the results of path analysis calculation, the direct influence of the flexibility of the wrist (X3) on the arm muscle power (X1), the coefficient value of 0.931 where the coefficient tcount of 12.045 while the ttable value at dk = 29 for α = 0.05 of 1.69 by therefore the value of tcount coefficient is greater than ttable then H0 is rejected and H1 is accepted so that the flexibility of the wrist (X3) has a direct positive effect on arm muscle power (X1), is acceptable.

CONCLUSIONS AND RECOMMENDATIONS

The conclusion is based on the research findings with five variables, namely exogenous variables, one intervention variable and one endogenous variable. Exogenous variables consist of arm muscle power (X1), leg muscle power (X2), wrist flexibility (X3) and confident intervention variables (X4), while endogenous variables are the success of free throw (Y). based on data analysis and statistical calculation in the discussion before it can be concluded as follows:

1. There is a direct influence between arm muscle power on the success of free throw.

2. There is a direct influence between leg muscle power on the success of free throw.
3. There is a direct influence between the flexibility of the wrist to the success of the free throw.
4. There is a direct influence between confidence in the success of free throw.
5. There is a direct influence between arm muscle power to confidence.
6. There is a direct influence of leg muscle power on self-confidence.
7. There is a direct influence between the flexibility of the wrist against self-confidence.
8. There is a direct influence between arm muscle power on leg muscle power.
9. There is an immediate influence between leg muscle power on the flexibility of the wrist.
10. There is a direct influence between the flexibility of the wrist on the arm muscle power.

RECOGNITION.

Thanks to all parties who assist in the completion of this research, especially to PERBASI Palembang city has provided facilities for this research and basketball athletes Palembang city is willing to be a sample of this research.

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DIFFERENCES IN FUTSAL SKILL BETWEEN CLUB AND HIGH SCHOOL PLAYERS

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Abstract

Objectives: The aim of this study was to determine differences in futsal skills between club and high school players. Subjects were 110 futsal players from club competitions (n=62) and high school competition (n=48).
Methods: Futsal skill was measured according to the instructions of the Futsal Skill Test–FST. The FST requires players to pass, receive, dribble, and shoot the ball as quickly as possible whilst making the fewest mistakes. Participants completed two main trials on the same day. Independent samples t-test were used to examine possible differences between groups ($p < .05$).
Results: The performance time in club players (68.702 ± 11.16 s) was 10.2% significantly faster ($p < .05$) than in high school players (76.513 ± 9.90 s) and the taken time in club players (57.897 ± 9.17 s) was 11.6% significantly faster ($p < .05$) than in high school players (65.491 ± 7.92 s).
Conclusion
In conclusion, the club and high school futsal players differ in the agility, but not in the accurate as futsal skill.

Keywords: futsal skills, club and high school players.

INTRODUCTION

Futsal is a recent ball team sport with a significant increase in popularity over last years. In this decade, futsal became one of the most attractive team's sports. The fundamental principle of futsal is to score more goals than the opposing team. Futsal players cooperate with team member in pursuit of common aims, the principal ones being to score goals for the team when in possession of the ball, and to prevent goals being scored against the team when the opposing players have the ball (Travassos, et all., 2011: 1247).

The team sport differs from individual sports in that there is no definitive index of each player's performance. Talent identification is more complex process in team sports than in individual sports (Serrano et all., 2014). The coach may consider that the individual played well if he/she has contributed to executing the overall game plan (Reilly, 2007). Futsal is a team sport, so it takes the performance of each player to be able to support the team's performance. Performance players have a minimum standard that must be mastered. Every player must have the futsal skills as an indicator the futsal team player. It would appear that skillful performances are crucial to winning futsal matches.

Futsal has incredibly fast passing, and is the epitome of a team sport that still allows room for individual demonstrations of skill, tricks and feints that are relished by players and spectators like (Herman and Engler, 2011). Skill was more than technique. The skill aspect is the where the player has a learnt ability to select and perform the correct technique as determined by demands of the situation (Williams et all., 2007). A futsal player might have good patterns of movement but if he/she does not perform the right action at the right time then he/she becomes an almost useless player. The fundamentals of futsal game were controlling, driving, and shooting the ball. Futsal players must be able to demonstrate techniques of controlling, passing, dribbling, and shooting as the circuit is limited by space and time. A farther aid to the coach attempts to get to know the need of the players is by using tests (Worthington, 1984). The Futsal Skill Test-FST have been shown to be valid and reliable methods of assessing futsal skill performance (Agus, 2014).

The aim of this study was to examine mastery skill in futsal players of different competition, between club and high school players. Information regarding the mastery skills of futsal players, in

turn, may be of interest for the development of training protocols and for talent selection. It was hypothesized that mastery skills was a competitive level dependent factor in futsal.

METHODS

Subjects

Sixty two futsal club players from Yogyakarta Futsal League and 48 high school players from School Championship players volunteered for this study. The club players from 4 clubs, which is prepared to compete on Yogyakarta Futsal League. The high school players from 4 high schools, which is prepared to compete on PAF Region Yogyakarta. The participants were from a range of outfield playing positions and were involved in regular training and match-play.

The Futsal Skill Test

Fig 1 illustrates the layout of the FST. Test area needed free space 800 x 1200 cm. Prior to placement, two wooden rebound boards (100 x 40 cm) as passing target, a goal (200 x 300 cm), three passing areas (100 x 100 cm), two shooting areas (100 x 100 cm), a place for six balls (100 x 60 cm), two dribbling pivot areas (100 x 20 cm), and 13 cones (diameter 20 cm). Before their placement, five colored passing target areas (white, red, yellow, red, and white; 40 x 20 cm) were taped each rebound board. Shooting target area (dark; 100 x 200 cm) was hanged on the middle of the goal.

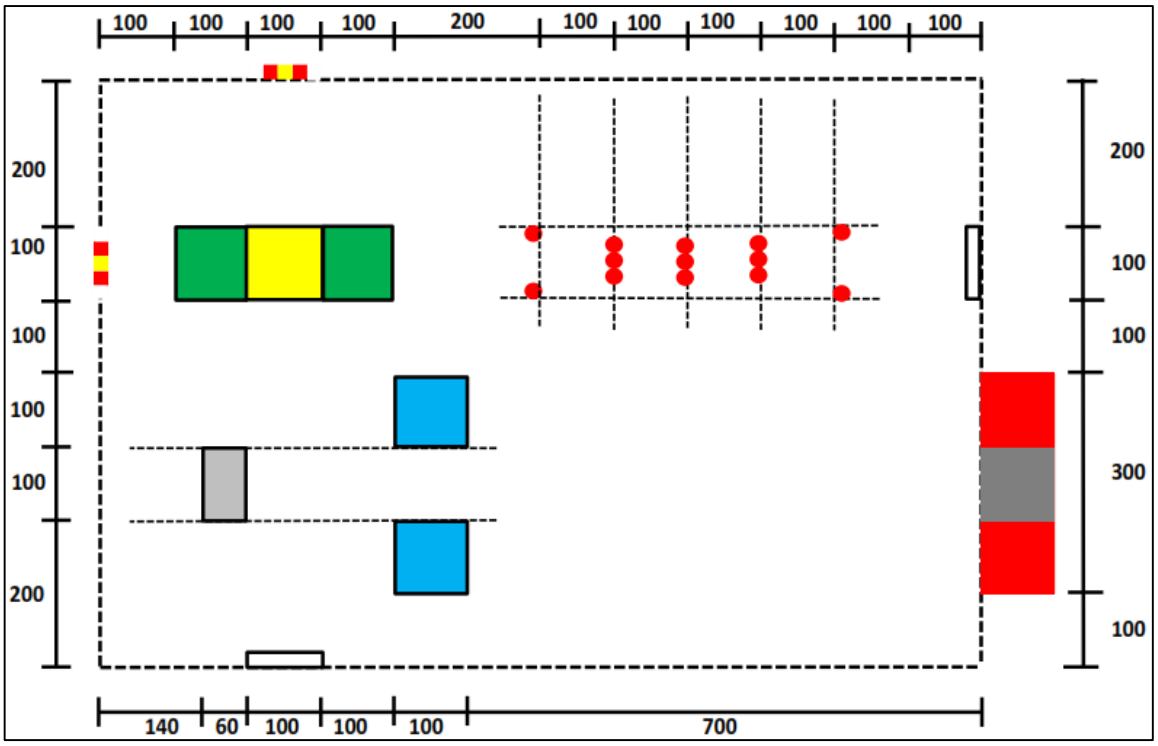

Fig. 1 Diagrammatic representation of the FST in centimeter.

Participant started with the futsal ball by the centre passing area (yellow rectangle). The first perform; the participant was doing sequence of passes six times to the coloured target, and the first examiner started timing the test, using a hand-held stopwatch, from the moment the ball was passed at the first time. The second perform; the participant was strike dribbling to the pivot area, than dribbled back to the centre passing area again. The third perform; the participant was required sequence passes six times to the two coloured target by turns. The fourth perform; the participant was required dribbling zigzag to the other pivot area. The fifth perform; the participant are required sequence passes six times to the coloured target at the two passing area (green rectangle) by turns. The final perform; the participant was required shooting into the net (goal) three times, two times with dominant leg and one with the other leg, at the two shooting areas (blue rectangle). If three balls had shot into the net two times with dominant leg and one time with the other leg, the shooting has been completed. But if it has not been able to shoot the three balls was given a chance

up to seven balls. If seven balls have not been able into the net, the shooting has been also completed.

The first examiner started timing the test when the participant was kicked the ball and stopped timing test to the shooting has been completed. The second examiner was to record penalty time points accrued during trials. Penalty time was awarded for the following errors. Three second for handling the ball. Shooting errors are two second for missing goal, one second for hitting the bar and shooting out if the designated area, and a half second for hitting the middle target. Dribbling error is one second for touching the cone and pivot out of the designated area. Passing and receiving errors are one second for receiving and passing out the designated area and hitting the white target area, and a half second for hitting the red target area.

Furthermore, the players were informed that for best performance on the FST they would have to perform the test as quickly as possible whilst making the fewest mistakes. Score test such as time taken and penalty time in performing a series of tasks. Penalty manifested in a sentence with the addition of time, according to the mistakes made. So the total test score (performance time) is derived from the sum of the time that execution time and penalty time. The score test was the best score of the two trials.

Procedure

The participants completed two mail trials, at the one day. Participants are given the opportunity to try out the protocol of futsal skills test before recording the data. While between the two trials, participants did not have a chance to practice. A 15-minutes standardized warm-up, consisting of jogging, striding, sprinting, and stretching exercises, preceded the trials.

Data analysis

Data reported as mean standard deviation. Kolmogorov Smirnov test and Levene test ware used to test if data were normally distributed and equality of variance. Independent samples t-test were used to examine possible differences between groups. Significance was assumed at 5% ($p<0.05$) a priori. The statistical Package for IBM SPSS Statistics 21 was used for the statistical analysis.

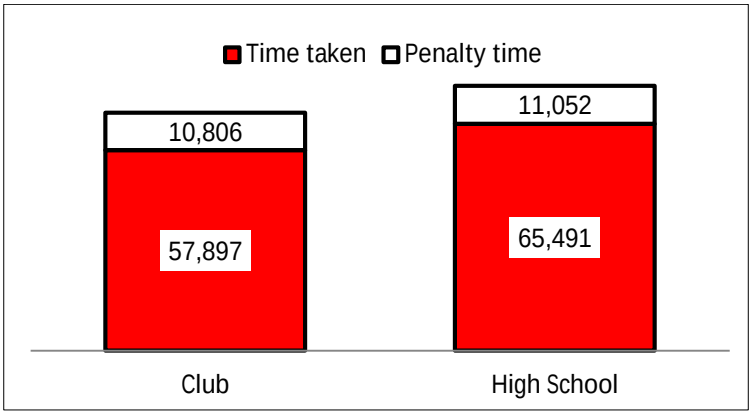

Fig.2 FST performance time (s) between club and high school futsal player

RESULTS

A summary of the FST performance score for club and high school futsal players is presented in Table 1. The actual performance time comprises two variables: the time taken to complete the FST and the penalty time for poor control or inaccurate passing, receiving, dribbling, and shooting. Fig.2 shows the contribution of these two variables that make up the total performance time. The performance time in club players (68.702 ± 11.16 s) was 10.2% significantly faster ($p < .05$) than in high school players (76.513 ± 9.90 s). The taken time in club players (57.897 ± 9.17 s) was 11.6% significantly faster ($p < .05$) than in high school players (65.491 ± 7.92 s). The penalty time in club players (68.702 ± 11.16 s) was 2.2% no significantly faster ($p > .05$) than in high school players (76.513 ± 9.90 s). Club players presented better result than high school players, indicating that club futsal players have better agility than high school futsal players.

Table 1. Mean (±sd) futsal skill, t-value (t), and significant (p) between groups

Variable	Group players		t	p
	Senior	Junior		
Time taken	57.897 (± 9.17)	65.491 (±7.92)	-4.558 *	.000
Penalty time	10.806 (± 3.85)	11.052(± 3.34)	- .351	.726
Performance time	68.702 (±11.16)	76.513 (±9.90)	-3.822 *	.000

* Show significant difference (p< .05) between senior and junior players.

DISCUSSION

The steps in learning skill were; understanding, practice and performance (Schemp, 2003). At performance's stage, the skill is executed in a match or activity. When executing the skill, players should focus on the purpose of the activity and not the process. When a skill is being performed conscious thought is replaced by automaticity. Knapp suggested that skill is also synonymous with the minimum outlay of time and energy (Benevenuti, 2014). Consequently, the more skillful players, they are quicker able to perform the skill test without compromising their ability to make accurate passes, smooth receives, dribbles and shoots the ball. More mastery players are more automaticity, making it quicker and more accurate to adapt the situation. Club players are better in futsal skills than high school players.

The high school players can be called as junior players, while the club players as senior players. The senior players have a physical component that is more leverage than junior players. International and professional players have better anthropometry and physical fitness than amateurs players in soccer (Gall Te all., 2010). Playing skills, the use of the technique in the circumstances of play, supported by the physical component owned.Players can perform zigzag dribbling quickly when it has the agility, can perform passing firmly (hard and directed) if it has the leg strength and a good foot eye coordination.Departing from the different physical components, due to aging, the club players have the skills to play futsal better than high school players.

Highly skilled players produced significantly faster movement times and decision times than less skilled players (Young and Willey, 2010). The player with the higher level of skill required to choose the right technique is common. Thus high-skilled players who struggle effectively and efficiently in determining and performing motion techniques tailored to the conditions and situations. Players from clubs are quicker and precise in decision making and execution of futsal playing skills. It should be like any other invasion game. The high-speed actions performance during an invasion game as futsal can be categorized as requiring straight sprint components and agility (Hughes and Bartlett, 2002). The futsal game requires quick and fast in moving and acting.

The futsal playing skills are estimated from the execution time and the penalty time in demonstrating the sequence of motion series of futsal playing skills. Futsak skill players is significantly better than high school players for the execution time, while the penalty time is not significantly different. The average difference of club and high school players for penalty time .24 seconds. Thus, at the penalty time club players no significantly difference than the high school players. More power is less accuracy, less power is more accuracy (Worthington, 1984). The ball execution skill is a blend of power and accuracy, when it is linked to the difference between club and extracurricular players, so club players have better power than high school players but the accuracy is no significantly different. If based on their age, senior and junior group, then senior players have more trained power than juniors. The senior players have been allowed temporary weight training junior players are advised to use the load (the body itself), so they have a better power.

Agility plays as important role in creative futsal skills (Worthington, 1984). The futsal playing skills of club players better than high school palyers affected by the agility difference. Agility is the ability to change velocity and direction of body rapidly in response to a stimulus (Hossein et all.,2014). Agility is defined as the combination of strength, speed, balance, and coordination (Drust and Gregson, 2013). Based on some aspects of biomotor that affect agility, so it needs to be explored

more deeply about it. If their biomotor aspects are no different, then it is certain their mastery of techniques is different. But if the biomotor club players is better than the high school players, then the difference is in the biomotor aspect rather than the mastery of the technique. Skills are technical executions combined with biomotor capabilities based on environmental conditions and situations.

CONCLUSION

Based on our results, we can conclude that the senior and junior futsal players differ in the agility, but not in the accurate as futsal skill. Speed is a very important component of futsal and it represents a common characteristic. Based on that fact it can be said that the players in this two levels are very difference in futsal skill performance.

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DEVELOPMENT OF INTEGRATED PHYSICAL EDUCATION LEARNING MODEL

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Abstract

Objectives: this study is to obtain an integrative physical education learning model that refers to integrative thematic learning for elementary school. To produce a product that is expected to be carried out a two-year development study using four-d model, which in the first year study includes three stages: define, design, and develop. Research subjects are physical education experts and physical education teachers in the city of Yogyakarta who have not received assistance curriculum 2013 and physical education teachers elementary school in Yogyakarta City who served as the National Instructor curriculum 2013.

Methods: The design of the model in this study only to the stage of development, so it only includes three stages of the define, design, and develop. The model was chosen with due consideration as it is appropriate and practical to implement in the educational context

Results: Integrative thematic learning model in physical educatioan learning, learning tools in the form of draft teacher manual tested feasibility of 98.75% and RPP (lesson plans) model that has been tested by 96.75% by experts. Integrative thematic learning model device in the form of teacher guidance and lesson plan model proved can be used by physical education teacher. With the implementation of integrative thematic teaching model, teachers who have not received mentoring stated that the teacher guidance has 73.5% feasibility level, the teacher who has got mentoring stated 92.5%. As for the model RPP has a feasibility level according to teachers who have not received mentoring 83% and according to teachers who have got assistance 93.75%.

Conclusion: This research can conclude several things, as follows: thematic learning in physical education subjects has not been based on the expected thematic learning rules as in the curriculum, integrative thematic learning model device in the form of teacher guidance and RPP model proved can be used by physical education teacher of elementary school, with the implementation of integrative thematic teaching models of teachers who have not received mentoring Curriculum 2013 states that teacher guidance has a level of 73.5% eligibility and teachers who have received mentoring states the feasibility rate of 92.5%, with the implementation of integrative thematic teaching model the teacher has not received assistance Curriculum 2013 states that the lesson plan model has a feasibility level of 83% and teachers who have received mentoring stated 93.75% feasibility level.

Keyword: learning, physical, education, integrative, thematic

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INTRODUCTION

A. Background

Changes in Curriculum from 2006 to 2013 Curriculum we should appreciate with a positive, let alone formulated and develop with a high optimism to produce school graduates who are more intelligent, creative, innovative, have high confidence as individuals and as a nation, and tolerant of all differences which exist. Based on the public test materials of the 2013 curriculum it is mentioned that the 2013 Curriculum Theme is a curriculum that can produce productivity, creativity, innovation, and effectivity of Indonesian people through strengthening attitudes, skills, and integrated knowledge.

Some of the changes that occur in the 2013 Curriculum are: (1) various types of learning content materials are taught in a related and integrated way to each other (cross or integrated curriculum), and (2) thematic approach is done for all levels (from grade one to six) the basic concepts of learning proposed in the 2013 Curriculum are those that emphasize personal experience through observation (including listening, seeing, reading, and listening), asking, associating, summarizing, communicating,

and the like. Meanwhile, the main advantages offered at Elementary School level (SD) are the thematic-integrative designed learning design. So no longer every lesson has a purpose of learning or competence that is different from each other, but all subjects are directed to support the same competence. The concept is to offer some specific themes that can be learned and supported by all or some of the lessons at once. For example, to support the competence of values of honesty and anti-corruption, for example, can be learned through the lessons of Religious Education, Pancasila, Language, and others. Thus, all the lessons, including the Physical Education of Sport and Health, have the responsibility to support the achievement of core competencies.

The main consideration on the strengthening of the learning process in the 2013 Curriculum, is based on the analysis of competencies required in the 21st century. The bottom line is: life in the 21st century is an ever-changing world every minute and second, the development of information and communication technology (ICT) is so rapid and filling all the joints of human life, the reality of economic, cultural and other globalization mediated by media. Therefore, in social life and the world of work requires individual competencies that: (1) have flexibility and adaptivity to change; (2) have initiative and independence; (3) have social and cultural skills; (4) have productivity and accountability; (5) have leadership and responsibility; (6) have lifelong learning skills and innovation; and (7) media literacy, technology, and information. That's why there is a significant change in the learning process.

It shows that the learning process in the classroom and school is not enough only through the improvement of knowledge, but also must be equipped with creativity and critical ability, strong character, that is individually responsible, high social spirit, tolerant, productive, adaptive to change, and others, and supported by the ability to utilize technology, information, and media. Some of the things that can be done include: (1) preparing educators and education through training and infrastructure support; (2) enable education to collaborate, share experiences, and integrate them in the classroom; (3) enabling learners to learn many things that are relevant to the ever-evolving world context; and (4) support community involvement in learning.

So far, physical education lessons contain fairly complex material: mastery of motor skills, physical fitness, and health education. This is in line with the goals and functions of physical education that includes aspects of cognitive, affective, psychomotor, emotional, and social.

However, in the implementation of the teacher prefer the psychomotor aspect or mastery of the sports branches, so that other aspects are often ignored. Similarly, health education materials that are performed by the main tasks and functions of physical education teachers, it is unfortunate there are still weaknesses inherent in teachers of physical education, sports, and health in delivering materials related to health education to the learners in school. This is characterized by the weak competence of health education, which can be seen from the teaching process that only prioritizes the implementation of sports education in schools. Weak teacher competence is quite different from the national structure of educational staff. This is reinforced by a research of Suherman (2007) which mention that teacher competence inversely proportional to the employment.

Teacher of physical education as a learning agent, in practice the teaching and learning process of physical education is less reflective of the learning occurrence that provides a set of knowledge about health to the learners. Less skilled physical education teachers in the selection of approaches, models, and learning methods are allegedly the cause of less optimal learning outcomes of learners. This can be observed through learning tools that have been made by teachers, such as syllabus and lesson plan. Limited knowledge and reluctance to try to learn to be better, anti-innovation in physical education teachers should be addressed. The research result of Komnas Penjasor (2007) shows that professional competence during pre-service, that is when they are in university is still very less, that is equal to 52,78% and only 5,56% which stated adequately. The lack of knowledge gained during pre-service training also seems to have an effect on the beliefs of teachers in carrying out their profession. A total of 36.11% stated that they felt unworthy of carrying out teaching duties professionally. Those who stated quite feasible of 55.56%, and only 2.78% who stated very worthy.

Taking into account the experience of curriculum change that has happened several times, for PE teachers it does not become a disturbing thought because they consider the PE subjects as a

separate learning with other subjects. This erroneous opinion needs to be addressed immediately, limited knowledge needs to be balanced with training that is appropriate to the curriculum changes. Teachers need to be provided with a handbook as a reference in a themed and integrative learning process. So that physical education learning can really work properly, as it is believed to be.

An integrative approach becomes an option that can assist in the implementation of the 2013 curriculum in accordance with the mandated, that is, the implementation of integrated material is not separate. Integrative physical education in a school curriculum works in two directions, integrates the content of other subjects into the physical education curriculum and integrates concepts and skills in physical education into other areas of the curriculum. Different types of integrative curriculums seem to arouse the nature of new awards and increase interest among teachers and about their respective field of study. A physical education teacher who integrates a lesson unit with a mathematics and science curriculum in elementary school says she feels the appreciation of other teachers at school who see a more significant contributor to the school curriculum's wholeness (Placek, 1992; in Graham, 2004: 666).

B. Problem Formulation

Based on the identification of the above problems, it can be formulated research problems as follows:

The problem formulation to be answered in Phase I: How to develop physical education using integrative approach?

The problem formulation to be answered in Phase II research: What is the effectiveness level of physical education learning design using an integrative approach, so that teachers are able to make and apply in learning?

Based on previous research, it can be explained that the various learning needs of physical education are integrated with other subjects, namely: (1) understanding the different learning objectives of physical education so that there is need for equalization of understanding, (2) interest in the current physical education learning change (3) possible implementation of integrated physical education learning in the future, and (4) obstacles to integrated learning of physical education (Galih, 2013: 8). From these findings, the development of physical education learning model is based on integrative approach.

C. Goal and Benefit of The Research

The main objectives of this research are: (1) to improve the mindset of PJOK teachers, (2) to improve PJOK teacher's competence in PJOK teacher planning using integrative thematic approach, and (3) produce PJOK teacher guidance to make a lesson of PJOK learning using integrative thematic approach.

This research will be very useful especially for Physical Education teachers at the elementary school in the implementation of the 2013 curriculum implemented from the 2013-2014 academic year. Improving the quality of learning process of physical education along with the improvement of teacher competence which is equipped with knowledge and training, so it is expected to support the learners' overall learning outcomes.

METHOD

A. Development Model

The development of integrative thematic learning model in primary school in this study using four-d model (Thiaragajan et.al, 1994). The four-D stage models include the define, design, develop, and disseminate stages. The first stage in the development of integrative thematic learning model in physical education (define), the first step is to conduct preliminary research about the extent of knowledge and understanding of physical education subject teachers in the elementary school in integrative thematic learning. The next step is the design phase, at this stage is done the development of integrative thematic learning model format in PE subject, in the form of teacher manual, lesson plan, and assessment. Develop stage is done by model development and test to get

the master model, and the last stage is the disseminated stage. In the latter stages, dissemination of the model for application at a wider level is applied.

The design of the model in this study only to the stage of development, so it only includes three stages of the define, design, and develop. The model was chosen with due consideration as it is appropriate and practical to implement in the educational context. Have the steps in each of these stages completely as follows:

1. Stage of Preparation

   In this stage, the researcher undertakes activities in the form of developing integrative thematic learning model in physical education learning and a set of required instruments.

2. Phase Review Experts

   After the draft integrative thematic learning model in physical education, learning was developed, then it reviewed by experts and revised the model.

3. Stage of Trial

   The experimental activity of the use of integrative thematic learning guides was conducted by researchers on teachers of physical education learning in Yogyakarta. In this research, there are 2 testing:

   a. Trial on Physical Education Teachers who have not received mentoring 2013 Curriculum.

      The trial is limited to the development of integrative thematic learning models in the physical education lesson of teachers who have not received mentoring 2013 Curriculum using sample physical education teacher at Muhammadiyah elementary school in the city of Yogyakarta.

   b. Trial on Teachers who have received 2013 Curriculum mentoring.

      Limited trials for the development of integrative thematic learning models in physical education subjects in teachers who have received mentoring 2013 Curriculum with a sample of four teachers.

4. Research Data Collection Phase

   At this stage researchers and assistants jump in the field to collect data. In this case, the researcher conducted observation, interview, and spread the questionnaire.

5. Data Processing Stage

   This activity is carried out after all the necessary data are collected. Some activities that undertaken in this phase are the implementation of data tabulation, data reduction, data grouping, and data analysis.

6. Stage of Assessment and Interpretation

   At this stage carried out the assessment and interpretation of the results of data analysis. This interpretation is done both to qualitative and quantitative data. The results of this interpretation are used as the basis for making research reports. In this stage also carried out the assessment whether the data obtained have met and answered the problems studied. If it is then will be done the assessment of solutions offered in solving the problem. However, if the problem is not answered then held data collection back to data that is not complete.

7. Report Writing Stage

   After all the required data is complete and the issues raised in this research can be answered then the next step is to carry out the activities of writing the final report of research. All relevant data will be displayed in the report.

B. Research Subject

The subject of this first-year research is a physical education expert, an elementary school teacher in Yogyakarta City that has not been and has received assistance 2013 Curriculum. Sampling technique used purposive sampling technique. The first sampling step is a sample of physical education teachers from private schools who have not received the 2013 curriculum assistance as target schools. In the city of Yogyakarta, there are some private schools that have not been targeted school, it is determined by physical education teacher of Muhammadiyah Elementary School for 10

(ten) persons. The next step is taken a sample of physical education teacher who has become a National Instructor (IN) a number of four people.

C. Data Collecting Technique

Data collection techniques used in this study are:

1. Observation

   Data collection techniques used in this study observation is a method of collecting data done intentionally by observing directly the object to be examined through FGD. Observation techniques in this study were used to reveal data about the targeted schoolteachers' understanding of the current school curriculum in 2013 and the model trial process.

2. Questionnaire

   The questionnaire is a technique of data collection conducted by giving a set of questions or written statement to the respondent to answer. Questionnaires used in this study were a closed questionnaire and an open questionnaire. Questionnaire closed is the questionnaire that has been equipped with an alternative answer so that the respondents just choose one of the answers that have been provided. While the questionnaire is open when the respondent is given the freedom to give answers.

3. Documentation

   Arikunto (2006: 158) points out that "Documentation from the origin of the word document, which means written items such as books, magazines, value documents, regulations, meeting minutes, diaries and so on". This method is used to obtain data about the facilities and infrastructure owned by schools related to the implementation of integrative thematic learning in physical education subjects.

D. Data Analysis Technique

In this research, data analysis technique used is by using descriptive statistic analysis technique by using percentage. The descriptive statistical analysis serves to describe or provide an overview of the object under study through sample data or population as is, without doing analysis and make conclusions generally accepted (Sugiyono, 2009: 29).

The technical descriptive statistical analysis used in this study is through the calculation of mean or average. The description is as follows. To perform the descriptive analysis is done by categorizing the score of each variable. From the scores are then grouped into three categories, namely low, medium, and high. Categorization is done based on the ideal mean (Mi) and ideal deviation standard (SDi) obtained.

The formula used to determine the ideal mean (Mi) and ideal deviation standard (SDi) is as follows:

$$Mi = \frac{1}{2}(\text{highest score} + \text{lowest score}) \quad (1)$$

$$Sdi = \frac{1}{6}(\text{highest score} - \text{lowest score}) \quad (2)$$

In the opinion of Azwar (2009: 109), to determine the category of score components using the following norms:

$$\geq (\quad + 1. \quad) \quad = \text{High Category} \quad (3)$$

$$(\quad - 1. \quad) \leq \quad < (\quad + 1. \quad) \quad = \text{Medium Category} \quad (4)$$

$$< (\quad + \quad) \quad = \text{Low Category} \quad (5)$$

Meanwhile, to clarify the distribution of frequency distribution data in the presentation of data, it can be presented in the form of the line, graph or diagram.

To measure the inter-rater reliability level of the assessment sheet, the observation sheet, the model effectiveness questionnaire, model implementation, and validation model assessment sheet

used the coefficients of Cohen's Kappa (Wilkerson & Lang, 2007: 270) and percentages of agreements Grinnell, 1988: 160). To calculate the coefficient of Cohen's Kappa (k), the formula Cohen (2001: 657) proposes follows:

$$= \frac{\sum_{0} - \sum}{- \sum} \qquad (6)$$

Where:

K: level of agreement of the appraiser (coefficient of reliability between assessors)
f_0: frequency of observations
f_e: expected frequency
N: the number of items assessed (classified)

Then, to calculate the percentages of agreements between the two assessors, the following formula is given by Grinnell (1988: 160):

$$= \frac{\qquad\qquad\qquad\qquad}{+} \; 100 \qquad (7)$$

The lower limit of the reliability coefficient used for a good test is 0.70 (Linn, 1989: 106; Wilkerson & Lang, 2007: 270).

RESULTS AND DISCUSSION

A. Initial Design of the Product

The implementation of physical education in elementary school that is taking place today, both in the preparation of lesson plans, implementation, and assessment of learning has not been in line with the models and principles of integrative thematic approach. Physical education teachers in elementary schools have not made lesson plan based on themes, nor do they characterize themes, let alone integrate the competencies of other subjects. Preliminary analysis shows that teachers' knowledge and understanding in preparing the lesson plan and conducting lessons with integrative thematic approach has not been good enough.

Based on the preliminary analysis and taking into account the theories and basic concepts of integrative thematic learning in general and specifically on the subject of physical education of sports and health, it is designed Integrative Thematic Learning Tool for elementary school physical education teachers, as follows:

1. Integrative thematic learning model in physical education learning

In general, learning model refers to three stages: planning, implementation (implementation) of learning, and evaluation. At the planning stage, there is a syntax of integrative thematic learning in physical education subjects, Teacher Guide, Lesson Plan Model, theme network, and assessment. While in the implementation stage using a scientific approach and integrative thematic approach that takes into account the theme and relevance of Basic Competence of Physical Education with Basic Competence from other subjects. Lastly at the evaluation stage take into account authentic assessments as well as benchmark reference assessments.

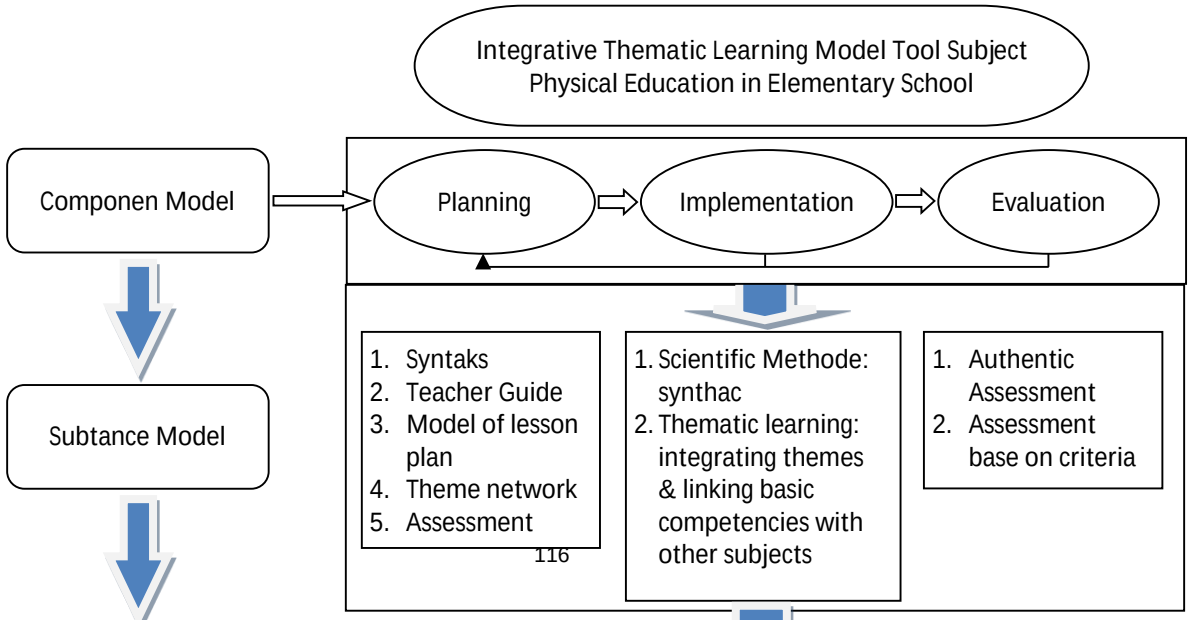

Figure 2. The Integrative Thematic Learning Model of Physical Education Elementary School

2. The concept of developing integrative thematic learning tools in Physical education subjects.

Further attention to the integrative thematic learning model then compiled the model of integrative thematic learning tools for elementary school physical education teachers, including: teacher guides, model of lesson plan, model of Basic Competence of physical education with Basic Competence of other subjects as follows:

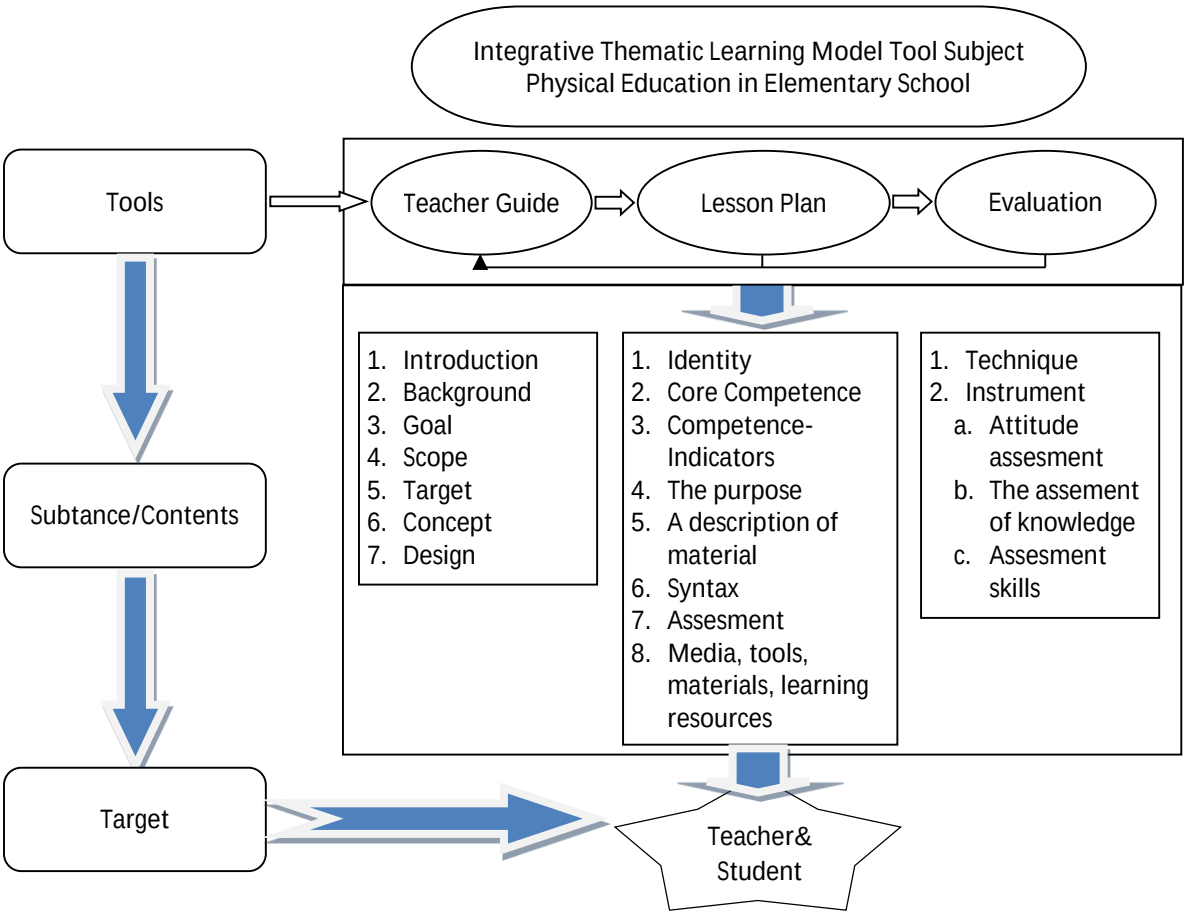

Figure 3. The Integrative Thematic Learning Tool Model Subjects of physical education

3. Sintak Integrative Thematic Learning Model

The syntax (steps) of thematic learning basically follows the syntax of integrated learning (integrative) in general covering three stages: planning, implementation, and evaluation stage. According to Prabowo (2000) in Trianto (2013: 167-168), integrated learning steps can be made specifically in the form of new steps with little difference as follows: first, the planning stage consisting of; (1) determining basic competencies and (2) determining indicators of learning outcomes; second, implementation phases that include sub-stages; (i) the learning process by the teacher, as for the steps taken by the teacher, among others; (1) conveying the supporting concepts to be mastered by learners; (2) convey the basic concepts that will be mastered by

learners; (3) presenting the process skills to be developed; (4) delivering the necessary tools and materials; and (5) convey key questions. (ii) Management phase, which includes the steps; (1) class management, where classes are divided into several groups; (2) process activities; (3) data recording activities; and (4) discussion.

Third, the evaluation, which includes: (1) process evaluation consisting of (a) the accuracy of observation result; (b) the precision of the preparation of tools and materials; (c) accuracy of analyzing data. (2) evaluation of results, namely the mastery of the concepts according to predetermined indicators. (3) psychomotor evaluation, which is the mastery of the use of measuring instruments. In general, it can be concluded that in designing integrated learning there are at least four things to note as follows: (1) determining objectives, (2) determining material/media, (3) determining learning scenarios, and (4) determining evaluation.

The subject of Physical Education of Sport and Health becomes specific in its planning because its implementation is separate and taught by physical education teachers. Even if no physical education teacher can be done by the classroom teacher. On that basis then the planning stage of thematic learning for subjects physical education also become special based on permendikbud no. 65 about process structure and The Regulation of The Minister of Education and Culture of The Republic of Indonesia No. 57 attachment III on thematic learning, as well as the theories and concepts of integrative learning in physical education.

a. Planning Stage
   1) Determining the Hook Theme
      As subjects whose implementation is done by a special teacher (separate), the teacher physical education must know and determine the theme that will be used as hook all subjects per week. This activity is often called theme mapping.
   2) Determining Types of Subjects and Types of Combined Skills
      Characteristics of footholds for this preliminary activity. As an example given Fogarty (1991: 28), for the type of social and language subjects can be combined thinking skills (thinking skills) with social skills (social skills). As for the subjects of science and mathematics can be combined skills of thinking and organizing skills (organizing skills).
   3) Selecting Material Studies, Basic Competencies, and Indicators
      This stage the teacher determining the material that will be developed on the subjects physical education and other subjects to be linked. Next, determining the basic competencies and learning outcome indicators for Physical Education Subjects.
   4) Formulating indicators of learning outcomes
      Stage formulate indicators of learning outcomes based on the basic competencies and sub-skills that have been selected. Each indicator is formulated based on the rules of writing that include: audience, behavior, condition, and degree.
   5) Determining the Learning Steps
      This step is needed as a teacher strategy to integrate each sub-skill that has been selected at each learning step.

b. Implementation Phase

   The main principles in integrating integrated learning in the subject of Physical Education include: first, the teacher should not be the single actor who dominates in the learning activities. The role of the teacher as a facilitator in learning allows learners to become independent learners; second, the giving of individual and group responsibilities must be clear in every task that requires group cooperation; and thirdly, teachers need to be accommodative of ideas that are sometimes unthinkable in the planning process.

   Thematically integrated learning according to The Regulation of The Minister of Education and Culture of The Republic of Indonesia No. 57 the year 2014 on Elementary School Curriculum, has the following principles:

   1) Learners find out, not be told.
   2) The separation between subjects becomes less visible. The focus of learning is directed to the discussion of competence through themes that are closest to the lives of learners.

3) There is a theme that unites a number of basic competencies related to various concepts, skills, and attitudes.
4) Learning resources are not limited to books.
5) Learners can work independently or in groups according to the characteristics of the activities undertaken.
6) Teachers should plan and implement lessons to accommodate learners who have different levels of intelligence, experience, and interest in a topic.
7) Basic Competencies Unmatched subjects can be taught separately.
8) Provide direct experience to learners (direct experiences) from the concrete things to the abstract.

The learning implementation phase also follows the scientific learning steps as desired in the 2013 Curriculum, which includes the following steps: observing, asking, trying or gathering information, reasoning or associating, and communicating, and if possible until creation.

c. Evaluation Phase

The evaluation phase can be the evaluation of learning process and evaluation of learning outcomes should pay attention to the principles of integrated learning.

1) Provide an opportunity for learners to conduct self-evaluation in addition to other forms of evaluation.
2) Teachers need to invite the learners to evaluate the learning achievement that has been achieved based on the success criteria of achieving the objectives to be achieved.

Concretely syntax or integrated thematic learning steps in the subject of elementary physical education are developed by adopting a syntax of scientific learning integrated with the cooperative learning model. The scientific learning model is seen from the stages used or the steps taken by the teacher, while the syntax of cooperative learning is shown in the teacher's activities in stages 3 and 4.

Table 1. Integrative Thematic Learning Syntax
in the Setting of Scientific Learning and Cooperative Learning

Steps	Teacher Activities
Stage 1 Introduction	1) Associate the lesson now with the previous lesson 2) Motivate learners 3) Giving questions to learners to know the concept of prerequisites that have been mastered by learners 4) Explain the learning objectives (basic competencies and indicators) 5) Warming up (while digging up learners' experiences on the material to be taught by story, motion, or game).
Stage 2 Observing	1) Facilitating learners to recognize concepts that must be mastered through the learner's books, reading materials, demonstrations, pictures, videos. 2) Facilitating learners in process skills developed 3) Presentation of tools and materials needed. 4) Model the mastery of the use of equipment through pictures.
Stage 3 Question	1) Directs the learner to reveal the things you want or do not know about the thing observed, asks a number of tracer questions, such as what, where, who, when, why, how, how, etc. 2) Identify the things that the student wants or does not know yet. 3) Adding things that students need to know related to teaching materials that have not been questioned learners but are included in the learning indicators.
Stage 4	1) Facilitate learners to explore, try, discuss, demonstrate, imitate shapes /

Try or collect information	moves, perform experiments in pairs and small groups. 2) Provide a source book other than a textbook so that learners are informed about the material being studied. 3) Become a resource for learners.
Stage 5 Reasoning or Associating	1) Facilitating learners to discuss in small groups about the various movements being studied, so as to identify concepts. 2) Facilitate the model of the movement learned from both the right and wrong concept so that learners can distinguish it. 3) Concluding with learners about the concept of motion being studied.
Stage 6 Communicating	1) Preparing the group to practice the movements being learned 2) Ask the group to lead demonstrate the gestures learned. 3) Ask other group members to respond to the demonstration results or demonstrations of the group performing. 4) Helping learners to reflect on or reflect on their performance.
Stage 7 Closing	1) Checking and providing feedback on the task performed 2) Guiding learners to deduce all learning materials that have just been learned. 3) Giving homework. 4) Ending learning with prayer of gratitude.

The second stage of testing by experts shows that the overall guidance has met the expected criteria that are obtained from the total score of 79: 80 = 0.9875 or 98.75%, meaning that the guidance is feasible for teachers in implementing integrative thematic learning.Teachers need to invite the learners to evaluate the learning achievement that has been achieved based on the success criteria of achieving the objectives to be achieved.

The results of calculations per aspect can be seen in the following table

Table 2. Percentage Per Aspect Test 2 Feasibility of Physical Education Teacher's Guide by Expert.

Aspects to be observed	The feasibility of the Physical Education Teacher's Elementary School Guide
Systematic	100 %
Integrated thematic concept	100 %
Readability	100 %
Content depth	100 %
Easy to use	93,75 %

Lesson Plan testing at stage two shows that the lesson plan model scores 77: 80 = 0.9675 or 96.75% of the expected criteria, meaning it is appropriate to use as a model for physical education teachers in integrated thematic learning planning.

Table 3. Percentage of Test Aspect 2 Feasibility of Lesson Plan Model by Expert

Aspects to be observed	Eligibility of the RPP Model
Sistematic	93,75 %
Integrated thematic concept	100 %
Readability	100 %
The scientific concept	100 %
assessment	87,5 %

Table 4. Results of Trial of Teacher Guidance on group of physical education teachers

Aspects to be observed	Teachers who get mentoring	Teachers who get mentoring
Sistematic	70 %	93,75 %

Integrated thematic concept	80 %	100 %
Readability	67,5 %	100 %
The scientific concept	75 %	87,5 %
Asessment	75 %	87,5 %

The result of teacher suitability test of teacher group which has been the target of curriculum advisory in 2013, obtained score 75 so that feasibility 75: 80 = 0,9375 or 93,75% from expected criterion. Meanwhile, according to the group of teachers who have not received mentoring the total score of 147: 200 = 0.735 or 73.5% of the expected criteria.

Table 5. Percentages per Aspect of the Lesson Plan Model Test to teachers who have not been and have received mentoring.

Aspects to be observed	Teachers who get mentoring	Teachers who get mentoring
Sistematic	72,5 %	100 %
Integrated thematic concept	80 %	100 %
Readability	90 %	87,5 %
The scientific concept	92,5 %	100 %
Asessment	80 %	75 %

The overall feasibility of the lesson plan model according to teachers who have not received mentoring is 166: 200 = 0.83 or 83%. Meanwhile, according to teachers who have received assistance 2013 curriculum as a whole is 74:80 = 0.925 or 92.5% of the expected criteria.

Through FGDs with primary school physical education teachers the following records are obtained:

Needs training of physical education subjects:

1. Needs sufficient understanding for physical education
2. Need a formula or system that simplify the assessment
3. Many teachers are still minimal use of learning media
4. Experiencing difficulties in developing indicators
5. Need further coaching application of curriculum 2013
6. Needs assessment exercises

CONCLUSION AND SUGGESTION

This research can conclude several things, as follows.

1. Thematic learning in physical education subjects has not been based on the expected thematic learning rules as in the curriculum.
2. Integrative thematic learning model device in the form of teacher guidance and RPP model proved can be used by physical education teacher of elementary school.
3. With the implementation of integrative thematic teaching models of teachers who have not received mentoring Curriculum 2013 states that teacher guidance has a level of 73.5% eligibility and teachers who have received mentoring states the feasibility rate of 92.5%.
4. With the implementation of integrative thematic teaching model the teacher has not received assistance Curriculum 2013 states that the lesson plan model has a feasibility level of 83% and teachers who have received mentoring stated 93.75% feasibility level.

Some of the things that can be suggested are Integrative thematic learning models in physical education subjects can be applied in the implementation of learning with the 2013 curriculum, with the steps: 1) teachers get training first how to use the guide of integrative thematic learning teachers in physical education subjects, 2) explanation of model RPP needs to be done so that teachers keep adjusting to the situation and condition of each school.

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THE EFFECT OF BLOCK PRACTICE, SERIAL PRACTICE AND RANDOM PRACTICE TO IMPROVE BASKETBALL FUNDAMENTAL SKILL FOR BEGINNER

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Abstract

Objectives: This study aimed to determine differences in improvement of fundamental skills training basketball practice methods block practice, practice serial, and random practice.
Methods: This research method is with three group pretest-posttests design. Population of this research was the beginner student athletes amounting to 30 athletes. The samples were taken as many as 30 athletes with purposive sampling. All data were obtained through this study to test and measurement using AAHPERD skill test Basketball 1984. The data analysis technique used is three ways ANOVA test followed by Tukey range test significance level $\alpha = 0.05$.
Results: The results of this study indicate there is a significant difference in the improvement of basic skills of basketball practice between block practice, serial practice and random practice, proved to be of the value of $p = 0.000 > 0.05$. To improve the basketball fundamental skill for the more appropriate if trained with block prctice.
Conclusion: There is a difference in the effect of exercise using the method block practice, serial practice, and random practice in improving basic basketball skills. Exercise methods that have the most results both in training the basic skills of basketball for a beginner athlete is the block practice method.

Keywords: practice method, block practice, serial practice, random practice, motivation, fundamental skills of Basketball

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INTRODUCTION

The game of basketball is a team game consisting of five people from each team or team. This game is played by bouncing the ball on the floor with one hand to move the ball in all directions (dribbling). Basketball games require players to be stronger, faster, and smarter in controling the ball to win the game. To get to that level a player or a basketball athlete at least master the fundamental skills of playing basketball well. Mastery of fundamentalskill of basketball is the absolute capital that must be owned by someone to be able to play basketball well.

Basketball is a team game or team with a big ball. To be able to play this game, one must master the basic skills in this game. As revealed by Tennyson (2011: 8) is: "If you want to play basketball better, then you most definitely have to understand and master the basics of this game". If the athlete performs good basic skills then it will get the efficiency of motion, motion accuracy and avoid unwanted injury.

To have good basic skills, what should be done is to master the basic techniques well. Because if the basic skills have been mastered well by the player, then the player can play well. To increase the mastery of higher skills needs to be coupled with repetition of the exercise, so it can be an automatic movement. All of these basic skills are important to the player because they determine the outcome of a basketball team match to determine victory.

The fundamental of basketball aims to enable players to move effectively, efficiently, and avoid injury. The fundamental skill in basketball are dribbling, shooting, passing, rebounding, block, screening , and defense (Perbasi, 2010: 18). In training beginners athletes in basketball, very emphasized to practice fundamental skills to play. This fundamental skill is the foundation of the extent to which the athlete's achievement. A good fundamental technique allows one to develop the skill to the next stage, so it must be mastered by the student athlete in order to play basketball well and be able to score achievements.

In the practice of training a beginner athlete is very important to be careful in training. Every beginner athlete is a different individual, be it about the nature, character, ability to learn, physical abilities and others. In addition, athletes athletes if trained too hard and boring will cause athletes are reluctant and deterrent in practice. Therefore, in practicing basic techniques should be fun to attract athletes' interest and motivation. Already a nature that every human being wants to grow and become better. As an athlete ways in which to be able to get better is to practice with the right training methods. This method of training is one way to improve performance in sports. This method of training is a way to achieve the desired goals in the sport. According to Magill (2011: 375) in the regulation of training variations a trainer can use block practice, serial practice, and random practice as a reference used for training.

Applying appropriate training methods in the fundamental basketball skills training process will provide opportunities for trainers to optimize the facilities and infrastructure available for practice. There is no reason for the coach to not be able to do the exercises optimally due to lack of adequate facilities and infrastructure available. Based on field observations conducted by the author is known there is no specific training methods used in training basic basketball skills within Binadarma University. Trainers only use well-regarded methods to practice basic basketball skills. From this it is known that the result of the exercise has not been maximal to train basic basketball skills despite winning the championship. Things that cause the exercise has not been maximized, among others, because not yet known differences in the effect of these exercise methods in improving basic skills of playing basketball, exercise time or frequency of exercise per week is different, and the difference in motivation that is owned by the athlete. For that, it is necessary to know which method of training is most effective for training basic skills of playing basketball so that the method is obtained pailing suitable to train fundamental skills of basketball.

Blocked practice is when a learner performs a single skill over and over, with repetition being the key. Variance in training is minimized or nonexistent. The learner then moves on to practice another discrete skill in the same way (Belger, 2013). According to Zipp and Gentille (2010) block practice is a variation of a task practiced during several trials before switching to another task variation. This method is an exercise method which concentrates on only one aspect of the skill and is repeated over a period of time or until the athlete has mastered the technical aspect before switching to another technical aspect. The advantages of the block practice method lie in the repetitive performance that enables learners to correct and adapt to the skills aspect that is being taught (Edward, 2011: 409). While the lack of block practice methods is a temporary performance and makes learners dependent on the context of the exercise so that it will make learners will have difficulty in adapting to the new training context (Magil and Anderson, 2011: 390).

Serial practice is the arrangement of a skill practice that contains more than one aspect of the skill in a sequence of practice settings that is always the same or sequential in each training session. Practicing using serial practice methods reduces the risk of dependence on the context of the exercise as caused by block practice and helps participants to adapt to the context of random practice exercises that have the highest difficulty level because serial practice incorporates more than one skill aspect but has a sequence that always the same in every practice session (Edward, 2011: 413).

Random practice, motor learners work on a number of different skills in combination with each other, randomly working trials and patterns of one and then the next and the next, with each trial interleaved on the previous one. (Belger,2013). Random practice method in which the sequence of engineering aspects is changed and unpredictable and involves some technical aspects in one practice session. The advantages of random practice are that learners continue to compare and distinguish aspects of the skills taught so as to make the memory for each skill more distinctive and meaningful. While the lack of random practice method is difficult to learners take a longer time in adapting and responding to aspects of skills taught by trainers so that performance during practice will decrease (Edward, 2011: 410).

In practicing the basic skills of playing basketball, the method of exercise is the decisive factor in achieving the goal of the exercise. This is because the method of training is the way used by the trainer in training basketball skills so that it is succeed or not the target of a training exercise method is the main factor. The purpose of this research is to know the difference of exercise effect using methods in improve basketball fundamental skill beginer.

Method

The method used in this is an experiment. The experiment used in this research is the experimental method using the design of Three Group Pretest-Posttests Design. Experimental research is a study intended to determine whether there is a result of something imposed on the subject inquiry (Arikunto, 2006: 207). In this study independent manipulative variables are block practice, serial practice and random practice and dependent variable is the fundamental skill of basketball. Here is the design of the experiment in this experiment.

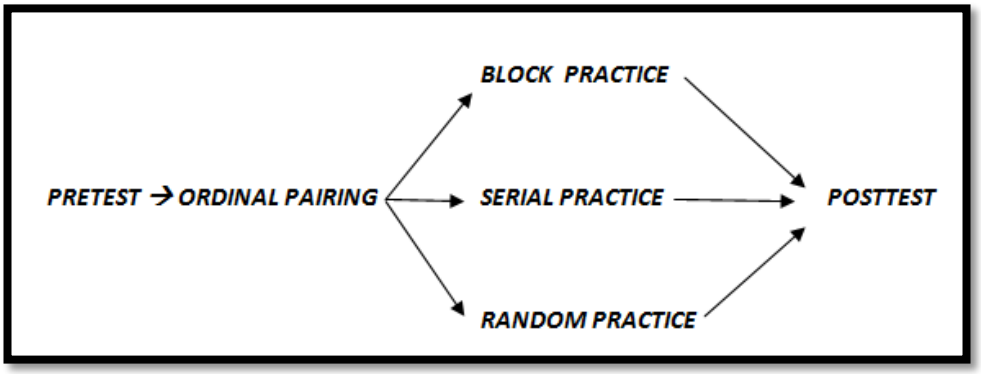

Figure 1. Research design

This research is done at Binadarma University basketball court . The population in this research is beginer athletes of BinadarmaUniversity basketball as many as 30 people. The number of samples of 30 beginner athletes was taken with total sampling technique. The distribution of sample groups in this

study is with MSOP (Matched Subject Ordinal Pairing) based on the ranking of pre-test results by using AAHPRED basketball skill test before experimenting with treatment. AAHPERD basketball skill test is a battery test that aims to measure fundamental skills of basketball. This test consists of several test items among others: Speed spot shooting test (to evaluate the shooting ability at a specified point and distance), passing test (measure the ability of athletes to pass and catch the ball accurately when moving), control dribble test (measuring dribbling skill on predetermined routes and distances), dan defensive movement test (measure basic motion skills in defense by way of slide step on point and distance that has been specified).

Data analysis techniques used in this research using SPSS 20 which is One Way ANOVA (significance level α= 0.05. To fulfill the assumption of ANOVA then normality tests were performed using Kolmogorov Smirnov and homogeneity using Levene test using SPSS version 20.0 for windows software program.

RESULTS AND DISCUSSION

Results

The results of this research form of data that isan overview of each of the related variables in the study. Here are the results of post test of basketball skills possessed by the beginner athlete.

Tabel 1. Statistic Description

No	Metode	Statistik	Hasil
1	*Block Practice*	*Mean*	222,68
		SD	28,52
2	*Serial Practice*	*Mean*	194,78
		SD	7,59
3	*Random Practice*	*Mean*	178,25
		SD	10,95

Data Analysis

Normality Test

Tabel 2. Normality Test

Data	p	Sig	Keterangan
Block Practice	0,200	0,05	Normal
Serial Practice	0,200		Normal
Random Practice	0,166		Normal

Homogenity test

Levene Statistic	df1	df2	Sig	Keterangan
2,46	2	27	.104	Homogen

Hypothesis Test

Sum of Squares	*df*	*Mean Square*	*F*	*Sig*
10087,006	2	5043,50	15,26	,000

Based on the results of the calculation table is known there is a difference the effect of exercise between block practice methods, serial practice and random practice in improving the basic skills of basketball. This matter evidenced from the significance value of 0.00 <0.05 which means that smaller than the significant level. Thus means the block method practice, serial practice and random practice have an influence different to the fundamental basketball skill improvement of acceptable. From the advanced analysis it was found that the practice of block method practice has the best improvement than the serial method practice in second and random practice in third.

Discussion

Discussion of the results of this study provides more interpretation continue on the results of data analysis that has been proposed. Based on testing the first hypothesis has resulted ie not have different effects between block practice method, serial practice and random practice in improving the basic skills of basketball. This is because these three methods have the same influence in improving the fundamental skills of basketball.

Further analysis found that block practice has the best influence among the three methods. This is because block practice has a low level of constexuality, this is because in the block practice learners or athletes can adapt at a predetermined distance, as Edwards (2011: 409) discloses that with repetitive work allows learners to search and adjust focus and attention on appropriate environmental cues, achieve and maintain the right level of passion, and can increase the level of motivation due to increased levels of success in a single movement or skill.

The third is serial practice. From the results of the study found that the mean value of the effect of practicing with serial pratice and random pratice the difference is not too obvious, this is it because these two methods of difficulty are not much different. As it is known that serial practice has a moderate contextual level, in other words the method of serial practice is between high and low contextual disturbances. As stated by Al-Ameer and Toole (1993) and Landin and Herbert (1997) in Edward (2011: 413) that serial practice can provide an introduction to the variability of practice that will help learners in the introduction of random practice methods and provide more learning both from the dependence of using the block practice method.

In training the basic skill of basketball is part of motor learning. motion learning (motor learning) is the process underlying the mastery of a skill, or mastering a certain skill that is difficult to do or can not do because of injury, disease and so forth. In practicing a skill, a person will not necessarily master the technique in an instant. In the mastery of a technique that someone learned will go through several stages to be skilled in doing such techniques. As described in the following figure:

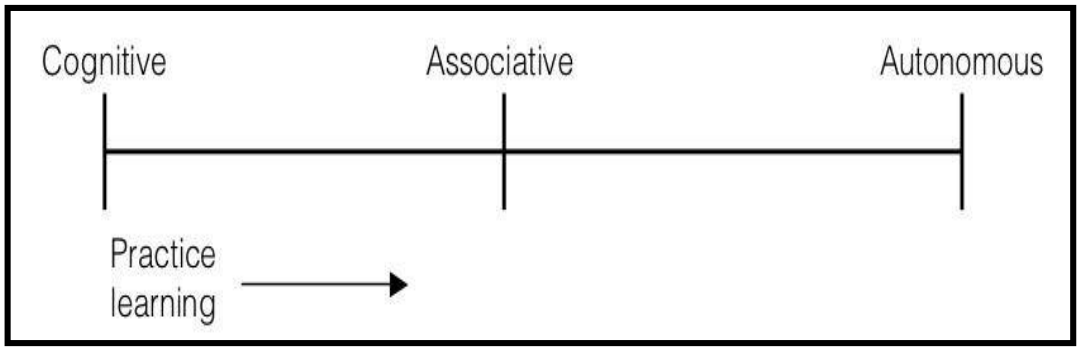

Figure 1. Fittsdan Posner Motor Learning Stage Model
Sumber: Edward (2011: 251)

According to Fitts and Fosner (Magil and Anderson, 2011: 274) the cognitive stage of learning (cognitive stage) is where learners focus on cognitive-oriented issues related to what to do and how to do it. While Fitts and Fosner (Edwards, 2011: 251) call this stage a cognitive stage because conscious mental processes dominate the early stages of learning. Edwards (2011: 251) adds that in this stage almost completely learners depend on declarative memory and information is consciously manipulated and trained in formulating motor commands. Based on the explanation of experts can be concluded that in the cognitive learning stage of learners involve many elements of cognitive in learning motion, such as thinking about how to do the skills being studied.

According to Edwards (2011: 274) in the associative stage of learning, learners try to associate environmental cues with the movements required to achieve the goal of the skill. In fixation stage or often called associative stage. Schmidt and Lee (2008: 430) state that most of the cognitive problems associated with environmental cues previously focused and actions that need to be done have been resolved. So it can be concluded that at this stage the focus of the students shifted to a more effective movement patterns in performing a movement. Such a movement will be more effective, flexible and Fast

After enough practice, students gradually enter the autonomous stage of learning. According to Schmidt and Lee (2008: 430) the autonomous stage is the stage usually associated with the achievement of a more expert performance that requires the perception of expert anticipation. According to Edwards (2011: 255) in the autonomous stage the underlying knowledge for skill has been entirely transferred from declarative memory into procedural memory. In short, in this stage learners no longer need to think about how to do a skill, even from time to time learners may even have forgotten how to perform such skills even though they can perform these skills proficiently. Moreover, the effect of this effect is the number of skills and skill sequences that are included in one training session. Block practice only concentrates on one skill in each model of practice in one practice session. Serial practice includes three basic skills: dribble, pass, and shoot in the exercise model and the order of skills aspect is always the same in each model of practice and practice session. While random practice includes three aspects ketarmpilan namely dribble, pass, and shoot, which distinguish this method with the serial practice method is the order of skills aspect that is entered is always changing or not the same in each model and practice session.

Based on these explanations, it is very clear that the differences ranging from high contextual disturbance to the form of exercise that causes differences in the influence of each training method used in this study.

CONCLUSION AND SUGGESTION

Conclusion

There is a difference in the effect of exercise using the method block practice, serial practice, and random practice in improving basic basketball skills. Exercise methods that have the most results both in training the basic skills of basketball for a beginner athlete is the block practice method.

Suggestion

Based on the results of research that has been done to provethat the block practice method is more effectively used than the method random practice and serial practice. For that suggested to the coach,sports teachers and builders of basketball to use block practice methods in improving the fundamental skill of basketball.

Based on this, it is known that the accuracy is the ability possessed by individual learners / athletes. Based on this it takes a lot of balls for every learner / athlete has a lot of repetition of movement. Because the number of repetition of this movement is the reason for how high the accuracy of a basketball athlete. For that to the policy makers in the school in this case the principal and policy makers at the basketball club in this case club owners or club officials are recommended to provide fasitas in the form of a lot of balls to support fundamental basketball skills training for beginners athletes.

Based on this, it is known that the accuracy is the ability possessed by individual learners / athletes. Based on this it takes a lot of balls for every learner / athlete has a lot of repetition of movement. Because the number of repetition of this movement is the reason for how the accuracy of a basketball athlete. Basketball club training forum for basketball skills training for beginners athletes.

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THE DIFFERENCES OF INTRUCTIONAL MEDIA AND COORDINATION IN LEARNING OUTCOMES OF GROUNDSTROKES TENNIS ON NOVICE LEVEL ATHLETES (AN EXPERIMENT RESEARCH IN BENGKULU)

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Abstract

Objectives*:* The purpose of this study was to find out the differences in instructional media and coordination to learning outcomes on tennis groundstrokes of novice athletes.
Methods: This experimental research with 2 x 3 of factorial design was conducted in the Bengkulu city, Bengkulu province in 2016. Data was collected through groundstrokes tennis test.
Results: The analysis of data outcomes was stated (1) demonstration and video tennis training media gave different learning outcomes of groundstrokes tennis on students. (2) demonstration and tennis video game media gave different learning outcomes of groundstrokes tennis on students. (3) video tennis training and tennis video game media gave different learning outcomes of groundstrokes tennis on students. (4) there were differences in instructional media and coordination skill on learning outcomes of groundstrokes tennis on students. (5) demonstration and video tennis training media gave different learning outcomes of groundstrokes tennis on students with high coordination skill. (6) demonstration and tennis video game media gave different learning outcomes of groundstrokes tennis on students with high coordination skill. (7) no learning outcomes differences of groundstrokes tennis between video tennis training and tennis video game media on students with high coordination skill. (8) no learning outcomes differences of groundstrokes tennis between demonstration and video tennis training media on students with low coordination skill. (9) no learning outcomes differences of groundstrokes tennis between demonstration and tennis video game media on students with low coordination skill. (10) video tennis training and tennis video game media gave different learning outcomes of groundstrokes tennis on students with low coordination skill.
Conclusion: The results were recommended that video tennis training media should be used to train the skill of groundstrokes tennis on student with low coordination skill, while demonstration media should be used for novices with high coordination skill.

Keywords : Instructional Media, Coordination, *Groundstrokes.*

INTRODUCTION

Tennis is including in compulsory courses because it has been considered as one of sports that capable to bring anyone become more sociable, this course also given a place in student activity unit. Difficulties in tennis learning also occur in students of study program of health education and recreation Bengkulu University, despite it should be easier for the students to learn the movement skill. However, in fact students who took tennis course for 1 semester and had joined the tennis student activity still incapable to cope the basic techniques of tennis. Therefore, to be able to cope the technique skills the students need to learn by practice.

Learning is a continuous process. Learning is a permanent outcome which is a result from practice and experience. Wingkel (2007 : 58) said that learning is a process or a mental activity which is unseen from outside. Learning outcomes, according to Rustam, is a number of experience which have been achieved by student include cognitive, affective and psychomotor aspects (2015 : 32). Learning outcome is ability that student had been obtained after going through the learning activities, Abdurrahman dalam Jihad, A dan Haris A (2013 : 14).

In the same way, learn the tennis groundstrokes skill will give the tennis groundstrokes skill as learning outcomes. According to Brown (2007 : 31) g*roundstrokes* is a blow after the ball bounced in the court, that means groundstrokes can be interpreted as a blow after the ball touches

the ground. To be able to do this movement, the athlete must have coordination. Siedentop, D dan Van der Mars, H, (2012 : 35) stated coordination is the ability to use body parts to perform motor skill smoothly and accurately. From this statement, it can be explained that coordination is the ability to use parts of the body to perform motion skills smoothly with good accuracy. However, Instructional media is also required to be able to learn well.

Media is any person, material, tool, or event that can create a condition which can provide an input for learners to receive knowledges, skills, and attitudes, Samsudin (2014 : 2). Smaldino, Lowther, dan Russell (2011 : 7) stated media as a plural of medium (intermediaries), as communication tools, the media are classified into six categories, namely text, audio, visual, video, modification, and human. Then, learning is a process of student learning which has been provided by educators and have the basic word "learn". Learning is a relatively permanent change and occurs either directly or indirectly as the result after the learning process is finish, Hergenhanh dan Olson (2014 : 2-3). Magill dan Anderson (2011 : 257) stated that learning: a change in the capability of a person to perform a skill that must be inferred from a relatively permanent improvement in perfomance as a result of practice or experience.

Based on the above description, it is obvious that a learning needs the right media, therefore a study of media in tennis practice learning for novices are needed.

In the previous research, Sukadiyanto had been investigated open and closed learning model on novices with high and low coordination. The results showed that novices with high coordination more dominate forehand and backhand groundstroke techniques compare to novices with low coordination. Therefore, this study will focus on the differences instructional media and coordination to groundstrokes practice on novices.

In general, this research is conduct to know the differences of instructional media and coordination to groundstrokes practice on novices.

RESEARCH METHOD

2 x 3 Factorial Design.

Instructional Media (A) / Coordination (B)	Demonstration (A_1)	Dvd Tennis Training (A_2)	Video Game Tennis (A_3)	∑B
High (B_1)	A_1B_1	A_2B_1	A_3B_1	μ_{B1}
Low (B_2)	A_1B_2	A_2B_2	A_3B_2	μ_{B2}
∑K	μ_{A1}	μ_{A2}	μ_{A3}	

The method that had been used in this research is experiment. This research has groundstrokes learning outcome as dependent variable. While treatment using demonstration, video tennis training, and tennis video game as free variable, in addition coordination skill as attribute-free variable.

Population has been represented by sample. Based on this opinion, the sample in this research is students on the second and fourth semester. Sampling is done gradually:

a. Purposively, selecting Bengkulu University as the place for experiment.
b. Randomly, determining treatment groups by using human, video tennis training, and tennis video game which are given on second and fourth semester in A or B group along with one group as instrument test group. The determination instructional media usage and instrument test group is done by lottery.

The next step is collecting data using instrument. The instrument in this study is test. The test was used to measure the student learning outcome in this study is Hewitt groundstrokes test. The data of each student has been collected in the end of class with groundstrokes test by hit a ball to target, the score is accumulated from 10 times trial. In addition, another instrument test is performed by modification of tennis ball throw test to measure the coordination skill of the student. Two way Anova is used as a technique to analyze the data. Normality and variant homogeneity tests is done as preliminary test and Tukey test is done after Anova test.

RESULT AND DISCUSSION

The result, in Table 1, showed that there are differences instructional media usage to tennis groundstrokes learning outcomes of students or novice athletes. Also, there is an influence from the interaction between instructional media and coordination skill.

Table.1. Hypothesis Testing of Differences Instructional Media and Effect of Interaction of Tennis Groundstrokes Learning Outcomes.

Tests of Between-Subjects Effects

Dependent Variable:HG

Source	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	300.987[a]	5	60.197	10.633	.000
Intercept	13455.038	1	13455.038	2.377E3	.000
MP	180.625	2	90.313	15.952	.000
Koor	75.938	1	75.938	13.413	.001
*MP * Koor*	44.425	2	22.212	3.923	.026
Error	305.725	54	5.662		
Total	14061.750	60			
Corrected Total	606.712	59			

a. R Squared = ,496 (Adjusted R Squared = ,449)

a. Testing of First Hypothesis, Differences of demonstration and video tennis training media on tennis groundstrokes learning outcome of students. (A1)(A2)

Table.2. Hypothesis Testing of Differences Instructional Media on Tennis Groundstrokes Learning Outcomes.

Multiple Comparisons

HG

(I) MP	(J) MP	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Demonstration Media	Video Tennis Training Media	2.1250*	.86459	.044	.0444	4.2056
	Tennis Video Game Media	4.2500*	.86459	.000	2.1694	6.3306
Video Tennis Training Media	Demonstrastion Media	-2.1250*	.86459	.044	-4.2056	-.0444
	Tennis Video Game Media	2.1250*	.86459	.044	.0444	4.2056
Tennis Video Game Media	Demonstrastion Media	-4.2500*	.86459	.000	-6.3306	-2.1694
	Video Tennis Training Media	-2.1250*	.86459	.044	-4.2056	-.0444

*. The mean difference is significant at the ,05 level.

Based on the results of hypothesis test on Table 2, the calculation result is showed the differences of demonstration and video tennis training media on tennis groundstrokes learning outcomes of students. The calculation also give the coefficient value as 0.044, this value is then compare with a significance level of 0.05.

The coefficient value of hypothesis testing as 0.044 which is smaller than the significance level of 0.05, therefore it can be concluded that H_o is rejected while H_1 is accepted. Generally, both instructional medias have had different or significant impact on tennis groundstrokes learning outcomes of students. In which demonstration media give better impact than video tennis training media.

b. Testing of Second Hypothesis, Differences of demonstration and tennis video game media on tennis groundstrokes learning outcome of students. (A1)(A3)

Based on the results of hypothesis test on Table 2, the result is showed the differences of demonstration and tennis video game media on tennis groundstrokes learning outcomes of students. The result give the coefficient value as 0.000 and compare with a significance level of 0.05.

The comparison showed that the result of hypothesis testing give smaller value that the significance level, therefore it can be stated that H_o is rejected and H_1 is accepted. In general, both of these instructional medias have had different or significant impact on tennis groundstrokes learning outcomes of students, where demonstration media give the real movement compare to tennis video game media. Hence it gives better impact in the learning process.

c. Testing of Third Hypothesis, Differences of video tennis training and tennis video game media on tennis groundstrokes learning outcome of students. (A2)(A3)

According to Table 2, the calculation of the result of hypothesis testing is indicated the differences of video tennis training and tennis video game media on tennis groundstrokes learning outcomes of students. The coefficient value of 0.044 is obtained from the calculation, this value is then compare with a significance level of 0.05.

The calculation give smaller value compare to the significance level, in this case, H_o is rejected while H_1 is accepted. Both instructional medias have had different or significant impact on

tennis groundstrokes learning outcomes of students. Based on this test it is obvious that both instructional media give different influence to tennis groundstrokes learning outcomes of students. It is because video tennis training provides a more realistic model motion than tennis video game. Tennis video game media is a manmade media that resemble to human movement on tennis and this movement is abstract therefore it tends to be more difficult to learn than video tennis training media which is a recording of learning process.

d. Testing of Fourth Hypothesis, Interaction between Instructional Media and Coordination Skill to Tennis Groundstrokes Learning Outcomes. (A x B)

Based on the result of hypothesis testing on Table 1, the coordination difference test give coefficient value as 0.001 which is compare to the significance value of 0.05. It turns out the coefficient value is smaller than significance value. Thus, it can be concluded that there is significant difference between tennis groundstrokes learning outcomes of student with high coordination skill and student with low coordination skill. This result suggests the most appropriate instructional media for each group that teachers or trainers can consider to use based on the coordination skill of students.

The calculation result for fourth hypothesis also shows in Table 1, which is the interaction between instructional media and coordination skill on groundstrokes learning outcomes. The coefficient value for this calculation is 0.026 which is smaller than the significance value of 0.05. In this case H_o is rejected while H_1 is accepted, this is indicating the effect of interaction between instructional media and coordination skill on tennis groundstrokes learning outcomes of students.

Due to the number of sample is exactly the same, the test is followed by Tukey test. This test is done to know the differences of groundstrokes learning outcomes for each group. Therefore, the next step is differences test between each group.

e. Testing of Fifth Hypothesis, Differences of demonstration and video tennis training media on tennis groundstrokes learning outcome of student with high coordination. (A1B1) (A2B1)

Below is the result of Tukey test, as presented in Table 3. The calculation result is compare to significance level of 0.05.

Table.3. The Result of Tukey Test on Groundstrokes Learning Outcomes

(I) KLMPK	(J) KLMPK	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
A1B1	A2B1	3.30000*	1.06654	.035	.1489	6.4511

	A3B1	4.30000*	1.06654	.002	1.1489	7.4511
	A1B2	4.50000*	1.06654	.001	1.3489	7.6511
	A2B2	3.45000*	1.06654	.024	.2989	6.6011
	A3B2	6.90000*	1.06654	.000	3.7489	10.0511
A2B1	A1B1	-3.30000*	1.06654	.035	-6.4511	-.1489
	A3B1	1.00000	1.06654	.935	-2.1511	4.1511
	A1B2	1.20000	1.06654	.869	-1.9511	4.3511
	A2B2	.15000	1.06654	1.000	-3.0011	3.3011
	A3B2	3.60000*	1.06654	.016	.4489	6.7511
A3B1	A1B1	-4.30000*	1.06654	.002	-7.4511	-1.1489
	A2B1	-1.00000	1.06654	.935	-4.1511	2.1511
	A1B2	.20000	1.06654	1.000	-2.9511	3.3511
	A2B2	-.85000	1.06654	.967	-4.0011	2.3011
	A3B2	2.60000	1.06654	.162	-.5511	5.7511
A1B2	A1B1	-4.50000*	1.06654	.001	-7.6511	-1.3489
	A2B1	-1.20000	1.06654	.869	-4.3511	1.9511
	A3B1	-.20000	1.06654	1.000	-3.3511	2.9511
	A2B2	-1.05000	1.06654	.921	-4.2011	2.1011
	A3B2	2.40000	1.06654	.233	-.7511	5.5511
A2B2	A1B1	-3.45000*	1.06654	.024	-6.6011	-.2989
	A2B1	-.15000	1.06654	1.000	-3.3011	3.0011
	A3B1	.85000	1.06654	.967	-2.3011	4.0011
	A1B2	1.05000	1.06654	.921	-2.1011	4.2011
	A3B2	3.45000*	1.06654	.024	.2989	6.6011
A3B2	A1B1	-6.90000*	1.06654	.000	-10.0511	-3.7489
	A2B1	-3.60000*	1.06654	.016	-6.7511	-.4489
	A3B1	-2.60000	1.06654	.162	-5.7511	.5511
	A1B2	-2.40000	1.06654	.233	-5.5511	.7511
	A2B2	-3.45000*	1.06654	.024	-6.6011	-.2989

*. The mean difference is significant at the 0.05 level.

According to Tukey test above, A1B1 and A2B1 groups give coefficient value of 0.035. Compare to the significance value of 0.05. this result is indicating that H_o is rejected while H_1 is accepted. Hence, there is differences in the use of demonstration and video tennis training media on tennis groundstrokes learning outcome of student with high coordination.

f. Testing of Sixth Hypothesis, Differences of demonstration and tennis video game media on tennis groundstrokes learning outcome of student with high coordination. (A1B1) (A3B1)

The Tukey test result give coefficient value as 0.002 for A1B1 and A3B1 groups. This value is smaller than the significance value of 0.05 and indicate that H_o is rejected while H_1 is accepted. Based on the comparison result, there is differences of demonstration and tennis video game media usage on tennis groundstrokes learning outcome of student with high coordination.

g. Testing of Seventh Hypothesis, Differences of video tennis training and tennis video game media on tennis groundstrokes learning outcome of student with high coordination. (A2B1) (A3B1)

According to Tukey test result between A2B1 and A3B1 above, it gives the coefficient value as 0.935. This value is bigger that the significance value of 0.05. Therefore, it can be concluded that H_o is accepted while H_1 is rejected and no differences of the use of video tennis training and tennis video game media on groundstrokes learning outcomes of student with high coordination.

h. Testing of Eighth Hypothesis, Differences of demonstration and video tennis training media on tennis groundstrokes learning outcome of student with low coordination. (A1B2) (A2B2)

The coefficient value for A1B2 and A2B2 groups in Tukey test is 0,921. With a bigger value than significance value of 0.05, it can be stated that H_o is accepted while H_1 is rejected. Therefore, no differences of the use of demonstration and video tennis training media on groundstrokes learning outcomes of student with low coordination.

i. Testing of Ninth Hypothesis, Differences of demonstration and tennis video game media on tennis groundstrokes learning outcome of student with low coordination. (A1B2) (A3B2)

The coefficient value for A1B2 and A3B2 groups in Tukey test as 0,233 which is bigger value than significance value of 0.05. Hence, H_o is accepted while H_1 is rejected. It can be concluded that there is no difference of the use of demonstration and tennis video game media on groundstrokes learning outcomes of student with low coordination.

j. Testing of Tenth Hypothesis, Differences of video tennis training and tennis video game media on tennis groundstrokes learning outcome of student with low coordination. (A2B2) (A3B2)

Based on Tukey test result as shows in Table 1, the coefficient value of 0.024 is given from A2B2 and A3B2 groups. Compare to the significance value 0f 0.05, this value is smaller. Hence, H_o is rejected and H_1 is accepted. It is show that there is difference of video tennis training and tennis video game on tennis groundstrokes learning outcome of students with low coordination.

CONCLUSION AND RECOMMENDATION

According to the results of hypothesis testing, it can be concluded that:

1. Demonstration and video tennis training media gave different tennis groundstrokes learning outcomes on students.
2. Demonstration and tennis video game media gave different tennis groundstrokes learning outcomes on students.
3. Video tennis training and tennis video game media gave different tennis groundstrokes learning outcomes on students.
4. There is an interaction between instructional media and coordination skill on tennis groundstrokes learning outcomes of students.
5. Demonstration and video tennis training media gave different tennis groundstrokes learning outcomes on students with high coordination skill.
6. Demonstration and tennis video game media gave different tennis groundstrokes learning outcomes on students with high coordination skill.
7. No difference between video tennis training and tennis video game media on tennis groundstrokes learning outcomes of students with high coordination skill.
8. No difference between demonstration and video tennis training media on tennis groundstrokes learning outcomes of students with low coordination skill.
9. No difference between demonstration and tennis video game media on tennis groundstrokes learning outcomes of students with low coordination skill.

10. There is difference between video tennis training and tennis video game media on tennis groundstrokes learning outcomes of students with low coordination skill.

Based on the above conclusion, it can be recommenced as:

1. Demonstration media have showed as an excellent instructional media for tennis groundstrokes on student with high coordination skill. Hence, academics are encouraged to use this result in tennis groundstrokes learning on individuals with high coordination skill.
2. Video tennis training have shown as an excellent tennis groundstrokes instructional media on students with low coordination skill. Therefore, this study result is applicable by academics in learning tennis groundstrokes on individuals with low coordination skill.

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ANDROID BASED REFERENCE MODEL OF STUDENT'S SKILL COACHING IN GYMNASTICS BRANCH

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Abstract

Objectives: This research aims to develop gymnastics scouting application media using android based applications. As a medium in facilitating trainers of gymnastics branch.
Methods: This research is a research development or Research and Development (R&D). This research is conducted with several steps: identification of potentials and problems, information gathering, product design, product creation, expert validation, product revision, testing, final production. The media development of gymnastics scouting applications was validated by material experts, 5 trainers for small group trials, 10 trainers for large trials. The subject of this research is the coach of gymnastics branch. Instrument used in this study is questionnaire. Data analysis techniqueof this research is descriptive qualitative and descriptive quantitative percentage.
Results: The result shows that the development of gymnastics scouting app is feasible. The results are obtained from the validation results of a) material experts of 75% or adequately Eligible; b) a media expert of 71.15% or reasonably feasible; c) the response of small group trial trainers was 79.23% or viable and large group trials of 89% or viable. Thus the application of gymnastics scouting is declared eligible to use for gymnastics scouting skills

Keywords : android apps, scouting, gymnastics

INTRODUCTION

Education has a strategic and very decisive role, not only for individual development and manifestation but also for the development of a nation and state. The 1945 Constitution: 31 states that "every citizen is entitled to education". The mandate contained in the article is getting education is the right of every individual regardless of the background and conditions that exist in them. Quality education should include two dimensions of essential life skills orientation. Academic-oriented means promising academic achievement learners as a benchmark, while the essential lifeskill is education that can make learners can survive in real life. To obtain good achievement, it requires an instrument for the selection of interests and special talents of sport that meet the rules of giftedness. Selection of gifted students is not only taken from the marks of subjects, but it is also can be taken from other elements.For gifted students in the gymnastics, their technical skill and their physical condition obviously become one of the reference in determining student's talent.

Instruments for monitoring student talent vary widely, both physically and technically related instruments, but in fact they are still in the form of written/manual. To do the data recording track still requires input data first. This way requires twice of works to know the outcome.

Sports evaluation is necessary because evaluation provides information about the design of training activities used by trainers in their activities. Sports evaluation is the process of collecting data, information processing, to determine the level of student development and decision-making. Sports evaluation can be useful for everyone involved in the growth and training process of students. Especially for trainers will be able to know how the state of their students during the training process. For parents of students will know the level of development of children in practice at club/school sports early age. For the children, sports evaluation is useful to provide encouragement and motivation to improve and develop the capabilities possessed.

Club/gym classes especially for early childhood are still very rare that use the book development outcomes. This is a big problem that must be overcome by the sport club/class. Data

development of students in doing sports activities can be used as a guide in evaluating students. The data of the evaluation guideline which has been encountered is still very conventional, using paper widely. Though a paper will be very vulnerable to weather, climate, or fungus that gnaws at paper. With the advancement of technology today it is hoped to embrace a new innovation of paper madness in observing and evaluating students. Digital technology is believed to be able to answer this challenge, to create a better evaluation guide, more durable, and certainly can be used anywhere.

Scouting of sports talent is an effort to find sportsmen candidate who are expected to perform higher achievement in the future. Thus, the talent of scouting process must be continuous from the identification stage, the selection of sports, the coaching of basic sports skills and the training of the achievement sport (Yuanita Nasution, 2000). Talent guidance can be defined as a process of participation of children in sports to achieve optimal performance based on the results of tests from selected parameters."TALENT": describes the special dexterity of a person who can be further developed. The goal of talent scouting is to identify and select a child who has a potential talent in the field of sport to be developed into a qualified athlete and maximum achievement. Why talent scouting needs to be done: (1) The process of scouting talent becomes a crucial part in sports coaching to deliver the greatest performance achievement, (2) Sports is an art, so finding talented individuals, choosing from an early age, constantly monitoring and helping to achieve mastery levels.

Talent scouting is an important element in developing athletes in the future. The principles of scouting Reigner, Salmela and Russell (1993) are: (1) Scouting of sports talent should be seen as a process, in the context of wide-ranging talent development, (2) Sports talent scouting is a long-term predictor of a child's sporting achievement, (3) Sports talent should consider the specific demands of each sport, (4) Sport talent scouting based on various disciplinary approaches, due to the appearance of the sport influenced many aspects, (5) Sports talent should be able to determine the sporting determinants of achievement, which are influenced by heredity or innate, (6) Scouting sports talent should consider the dynamic aspect of sporting performance, due to age, growth and exercise.

Talent is a pent-up capability brought by birth. Someone's talent can be known through talent scouting. Recognizing one's talent from an early age is essential for high achievement to be achieved. Talent tests are generally tests designed to measure the potential for achievement. Charter (2010) states that there are nine different talent types:

a. General learning: learning and understanding, reasoning and decision making. Example of how well achievement in school

b. Verbal talents: general lexical abilities - understanding words and usage effectively

c. Numerical talent: general math skills - handles numbers quickly and accurately

d. Spatial talent: understanding geometric forms and understanding and identifying patterns and their meanings. An example of understanding how to construct pieces of two-dimensional furniture from a series of instructions

e. Form perception: examine and understand the details of the object and make visual comparisons between the forms. Example: research an object using a microscope and inspection of the quality of objects

f. Clerical perception: reading, analyzing and compiling details of written data or tabulated material. Examples: editing, report analysis and understanding of graphs

g. Motor coordination: eye and hand coordination and make quick and accurate movement response. Example: can install pieces of two-dimensional objects at the time understand how to do it, can operate computer keyboard quickly and accurately and the ability of sports

h. Finger dexterity: manipulate small objects quickly and accurately. Example: playing musical instruments and sewing.

i. Manual dexterity: the ability to work with your hands. Example: paint and decorate, build something and operate the machine.

Process of recognizing or predicting a person's potential is called talent scouting. Talent scouting in principle aims to predict with a high probability, how much chance a person to successfully achieve maximum achievement, in the future.

Talent identification is a systematic effort to identify a potential person in sports. Based on these limitation, it can be predicted the intended talent scouting is a process of selecting athlete candidates that involves the process of measurement of various internal qualities of athletes (including anthropometric quality, physical quality, motor quality and psychological quality) using predefined instruments. This talent scouting is therefore often called a selection stage, before an exercise process is conducted, to provide confidence that the child or prospective athlete involved really has good potential in accordance with the needs and demands of the sport will succeed in training and can achieve peak performance (Cholik, 2002).

Olaru (2009) suggests that in performance sports, the role of selection is to choose children who have outstanding or most talented skills and qualities from a large number of children. Gymnastics as a sport with complex techniques requires special qualities for anyone who wants to achieve extraordinary results in this sport. One of the determinants of value in excellent artistic performance is the process of selecting and training children and junior-level gymnasts. Selection is the basis of exercise performance. Early selection of gymnastics exercises performed when 6 year olds only reveal the skills of the subject being investigated. Olaru in his research (2009) suggests success in the selection process related to the concept and personal experience of the models, methods, standards, experiments used, and maintenance of the ideal ability. Athletes are a decisive factor in achievement, so choosing athletes through talent identification and development must be done in earnest. Related research has been conducted in various countries, and it can be concluded that:

1. Skills and attitudes shown at a young age actually show a person's talent and performance.
2. Talent can disappear or not appear if there is no chance to display it.
3. Learning, practice and high motivation is needed to bring out one's talent.
4. There are differences in patterns of development, and speed between individuals.
5. The quality, type and intensity of training is crucial to the development of one's talents.
6. It takes more than ten years with concentrated training to develop talent and achieve maximum performance.
7. Children will not practice or not bring up their talents if this is not a push from around them.
8. Children will prefer to practice when they feel a progress. Likewise, it will be more enjoy an activity that matches their talent.
9. The development of talents depends on heredity, the environment, the impulses that give effect to the physical and psychological characteristics of a person (Macquaker, downloaded from http://www.sportscotland.org.uk/diakses tanggal 15 Maret 2010).

Identification of potential athletes of early age need to be born in order to obtain talented early age athlete so as to facilitate the coach's guidance in detail. The advantages of scientific criteria in identifying talents according to Bompa (1999) include:

a. It substantially reduces the time it takes to reach the highest ability by choosing talented individuals in the sport.
b. Reduce the volume of work and energy the trainer has to work on. The effectiveness of the training provided by the trainer is usually supported by the effectiveness of the athletes who have the superior ability.
c. Improving competitive atmosphere and the number of athletes included and achieving high levels of ability
d. Improves the athlete's confidence because the display is better than the other athletes of the same age who are not through the selection process.
e. Indirectly provide motivation on the application of scientific training, assistant sports coaches who assist in the introduction of motivated talent to continuously monitoring oftraining athletes.

Prime physical health and fitness can only be achieved if supported by the right sports activities, systematic, regular, directional and continuous. To be able to exercise rightly, which has a positive impact on the optimization of muscle and nervous development, as well as endurance and brain, the correct understanding and satisfaction of motion activity needs to be done since early

childhood. Activity of movement that is important and need to be developed early especially related to aspect of agility, flexibility, balance, endurance, and coordination between body/five senses.

Gymnastics is one of the oldest and famous sports in the Olympics. In the gymnastics competition includes 4 types of rhythmic gymnastics, trampoline and artistic man and woman gymnastics (Siahkouhian, 2013). Mahendra (2008) stated artistic gymnastics is defined as a gymnastics that combines aspects of tumbling and acrobatics to get the artistic effects of the movements made by the instrument there are two artistic for the man and artistic for the woman. Furthermore Mahendra (2008) asserted the artistic effect resulted from the magnitude (amplitude) of the movement and the perfection of tumbling combined with acrobatics performed in a controlled manner, capable of giving a surprising effect that invites a sense of beauty. In addition to attracting artistic gymnastics can also improve fitness for the culprit. Therefore, gymnastics is a form of physical activity that involves several elements supporting the body's fitness process. Physical activity is greatly affect the development of all components (organs) of the body as a whole, in other words the body organs can develop well in accordance with its function. On the other hand gymnastics activities can also be directed to the achievement of athletes achievement in the championship.

Adisuyanto (2009) states that artistic gymnastics is a sport that has a very complex range of motion. In addition must be able to master perfectly each part of the motion, gymnasts need to be able to complete the series of motion in a sustainable manner. This sport has a very important role in the development and coaching of individuals and groups. Therefore, gymnastics education prioritizes the following: (1) fulfilling the child's talents and interests for physical activity; (2) to stimulate the intelligence and development of health and physical fitness; (3) assist in the improvement of motion growth abnormalities; (4) instilling mutual respect for the elderly, courtesy, discipline and hard work; and (5) reduce the influence of bad and child delinquency to adulthood. This research has a goal to develop android applications for gymnastics talent scouting, to make it easier and can be stored more safely.

RESEARCH METHODS

This research is a research development. The research design used with Borg and Gall approach. Research and development method is a research method used to produce a specific product, and test the effectiveness of the product (Sugiyono, 2011: 297). Research and development is a type of research product oriented. The product is in the form of software development for the selection of application programs android based gymnastics talent scouting.

Operational definition with Software (basen) development for selection of special interest and talent development program android based branch of gymnastics is a development by combining sport science and technology with the technology. This development is a creative idea designed carefully planned in developing, producing and validating a product.

Instruments for collecting data in this development study is to use a questionnaire. Questionnaire is a data collection technique that is done by giving a set of questions or written statement to the respondent to answer (Sugiyono, 2011: 142).

The data collection in this development study uses open questionnaire and closed questionnaire, which on the next page is accompanied by a suggestion column. Validity is a measure that indicates the validity level of an instrument. Validation of instruments for material experts and media experts is conducted through consultation and solicits assessments to the experts on the material to be tested and the product criteria to be produced.

DISCUSSION

At the beginning of this development was designed and produced into an early product of "gymnastics scouting app" to help early childhood gym trainers. In this application there are three kinds of capabilities that are identified and able to be stored as data base, namely speed, flexibility and agility. Development process through research and development procedures. Through some planning, production and evaluation. Then the product is developed with the help of app inventor 2, after the initial product is generated it will need to be evaluated to the experts through expert validation and need to be tested to the trainers. The evaluation is done to the material expert and the

media expert. While the research phase is done by testing the product of one opponent one, small group trials, and field trials.

The quality of these "gymnastics scouting apps" included in the "Eligible" criteria of the statement can be substantiated from the results of the "Eligible" assessment analysis of both expert materials and media experts, as well as in the assessment of one-on-one trials, small group trials, and field trials. The coach is excited and enthusiastic about this product because the coach is interested in learning and hopes this product can be disseminated to other trainers.

Coach welcomes this product. According to them, the advantages of this product include an attractive display, easy to use, easy to store data, and can be taken anywhere. Interestof "gymnastics scouting application" is a motivation that can improve the process of practice. This product also allows children to provide an understanding of talent scouting to trainers and motivate learners to practice gymnastics.In addition, with this product the child can practice actively and independently because this product is easy to use.

CONCLUSION

This research is able to create " an aapplication of gymnastics scouting " android based. Trials that have been passed, gymnastics scouting applications "is categorized as worthy of use as a talent scouting product and the evaluation of gymnastics trainers to athletes.This product facilitated the trainers to store talent scouting data and provide ratings to their athletes. It can be reviewed from the results of the assessment of "gymnastics scouting application" products:

1. Overall, the product of "gymnastics scouting app" with material and media subjects categorized as eligible for use in fitness talent scouting of 92.7% eligibility is categorized as feasible.
2. Application media of this talent gymnastics assist the trainers in the process of scouting talent, especially the gymnastics branch.
3. Media application guidance talent easy to use gymnastics
4. Media applications for gymnastics scouting can be stored with a long resistance level

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TEACHING BADMINTON SMASH BY USING TEAM GAME TOURNAMENT (TGT) MODEL IN SMP MUHAMMADYAH KARAWANG

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Abstract

Objectives: The aim of this research is to find out the student's responses toward the use of Team Game Tournament (TGT) model in teaching badminton smash.
Methods: The researcher used qualitative approach and case study method, the researcher selected 9th grade at SMP Muhamadiyah in Karawang. The subject of this research are a physical education teacher and four students. The data were gathered through observation, interview, and documentation. After finishing the observation, interview, and documentation the data were analyzed by using data reduction and data display.
Results: The result of this research shown that the students have self-confidence, cooperation, and appreciation. Besides, the students can improve good relationship with other groups and also they can improve their knowledge of badminton smash.
Conclusion: The conclusion of this research that the students were responded well and the students were very active when learning badminton smash by using Team Game Tournament (TGT) Model.

Keywords : cooperative learning, team game tournament (TGT), badminton

INTRODUCTION

According to UU Sisdiknas no 20 year 2003 stated that "education is a conscious and planned effort to create learning atmosphere and learning process so that learners actively develop their potential to have spiritual power of religion, self-control, personality, intelligence, noble character, and society ". The purpose of education are to create a quality of person and character so that has a broad view of the fore to achieve a goal that is expected and able to adapt quickly and precisely in various environments. Because education itself motivates ourselves to be better in all aspects of life.

Physical education according to kepmendikbud number 413/U/2004 stated that "physical education is an integral part of education as a whole which aims to increase individuals organically, neuromuscularly, intellectually and emotionally through physical activity". Physical education means educational programs through motion or games and sports. It contains the meaning that certain movements, games, or branches are simply educational tools.

In the United States of physical education, according to Nixon and Jewet stated that "one aspect of the whole educational process with respect to the development and use of voluntary that useful individual motion capabilities as well as direct contact with mental, emotional and social responses". The physical education concept described by Nixon and Jewet can be said in the same direction as the Indonesian understanding described by Rusli Lutan (2001: 18), that "physical education is an important subject for physical formation which is viewed as physical in the context of physical education containing contents education through physical activity ". Therefore the concept of physical education needs to be mastered by the prospective teachers (students pemas) and teachers concerned, so that in its application shows the equivalence of understanding. Besides, it is expected to mapping the concept in the application of physical education based on education level (conformity of physical education curriculum), including maximizing local potency, in this case traditional game that can be modified.

As a limitation or formulation of the concept of physical education, Arma Abdoellah (2003: 42) stated that "physical education as one aspect of the educational process of all learners through carefully designed, consciously programmed physical activities in an effort to improve skills and skills

physical and social as well as intellectual development ". The essence of the substance of physical education is the knowledge of the human movement in the educational context associated with all aspects of knowledge which is undertaken in a didactic, recreational way to be understood and can be done by the learners as a whole.

Therefore, physical education and sport is a process of learning through physical activity designed to improve physical fitness, develop motorik of skills, knowledge and behavior of healthy and active life, sportive attitude, and emotional intelligence. The learning environment is carefully regulated to promote the growth and development of all aspects, physical, psychomotor, cognitive, and affective of each student. The ultimate goal of physical education and sport lies in its role as a unique container. The perfection of character, and as a vehicle for possessing and forming a strong personality, good character and noble character. So people who possess such moral virtues will become good and useful citizens.

The position of physical education and sport in a very strategic position as a tool of education, as well as culture, because the two terms are so close. The meaning is that none other than as a process of diversion and acceptance of values. "In the context of sports as a whole, we are more aware of the changes that occur as a result of globalization in the economy spurred by communications technology and also carried in the sport" (Coomb 2004: 7).

Looking at the concept of education and physical of education with the same concepts and goals, physical education as part of education can be said to have the same goal but with different concepts of delivery. In the delivery of the concept of physical education through learning many methods that can be used to achieve the desired goals in accordance with the goals of education and physical education goals. So the educator must pack the method as best as possible to be able to reach the goal of physical education, whether it is the purpose of learning.

The various learning methods revealed to be a solution to the problems faced, but of course different handling, depending on who faced in learning, in order to achieve the goals of education and physical learning. So in this study researchers want to know the use of learning methods Team tournament games (TGT) on smash in learning badminton.

Limitation of the problem

Based on the background above, the researchers limit the problem in order the problem in this study more focused. So, the writer limit the problem as follows:

1. using of Cooprative learning model of Team Game Tournament type (TGT)
2. Smash skills in badminton learning

Formulation of the problem

The formulation of the problem in this research is "How used the Cooperative Learning Model Type Game Tournament Team (TGT) on Smash Skill in Badminton Game at Smp Muhamadiyah Students Karawang?"

The objective of Research

The objective of this research is to know how to use cooperative learning model Team Tournament Type (TGT) on smash skill in badminton game at SMP Muhamadiyah Karawang Students.

Teams Games Tournament (TGT)

Teams Games Tournament (TGT) is a cooperative learning technique that enhances students' academic achievement and attitudes towards the content material. TGT has three basic elements: (1) teams— students are assigned to equal teams categorized by equivalent academic levels, (2) games —skill exercises relating to content material are played during weekly tournaments, (3) tournament —students represent their teams and compete individually against students from other teams. The winnings are brought back to their teams. Total winnings are tallied across teams and team champions are announced. Not only is TGT a fun activity, it helps students review what they have just learned in the unit for a future test. There is an incentive for playing the game. The team that wins the tournament gets a reward. For example, stickers or extra time to play outside.

Badminton Smash

Badminton Smash is the most potent of all badminton shots. There is almost no defense against a well executed smash. It can be played both on the forehand and backhand sides.

METHOD

Research Approach

In this study, the writer was conducted a research with qualitative approach. There are expert who support the theory of qualitative approach. Qualitative approach is an approach called investigation because researchers usually collect data in direct face to face and interact with people in the research site (McMillan & Scumacher, 2003).

In addition, according to Sugiono (2013: 15) stated that "qualitative research method is a research method based on the philosophy of postprovism, used to examine the conditions of natural objects, as opposed to experiments. Where the researcher is a key of instrument, data collection technique was done by purvosie and snowball that combined techniques with triangulation, analysis and inductive/ qualitative, then the results of qualitative research suppress the meaning of generalization".

Literally as the name implies, qualitative research is a type of research whose findings are not clearly defined by quantification procedures, statistical calculations, or other forms of numerical measures (Strauss and Corbin, 1990, 1997 and Golafshani, 2003). Qualitative is an aspect relating to quality, the value or meaning that can be expressed and explained through linguistics. Language or words. Therefore the form of data not used an integer, number, score or value; values or frequencies typically analyzed by using mathematics or statistics (Crewell, 2002).

According to Creswell (2003), the qualitative approach is the approach to construct a knowledge statement based on the Constructive Perspective, (eg meanings derived from individual experience, social and historical values with the aim of constructing a particular theory or pattern of knowledge), or from a perspective Pastisipatori (eg: Orientation to politics, Issues, Collaboration, Or Change), Or both. More specifically, the qualitative explained as follows.

A qualitative approach is one in wich the inquiner often knowledge claim based primaly on contructivist persvectivs(i.e. the multi meanings of individual eksperiences, meanings socially and historically constructed, with and intend of develoving political, issue-oriented, collabarative or cnhange oriented) or Both (Creshwell, 2003)

Furthermore, Cresswell explains that in qualitative research, Knowledge is constructed through multiple interpretation of perspectives from the input of all participants involved in the research, not just the research. Some sources of data that can be used in a research such as observation records, interview records Individual experience and history.

This study was used qualitative research that aims to understand the object of the study in depth. Lincoln and Guba (1982) explain that qualitative research aims to build Ideographic of Body Of Kneowledge. So it is inclined to do not to find the laws and not to make generalizations, but to make an in-depth explanation or exploration of the object.

Qualitative research can use as a type of research which findings not obtained through statistical procedures or other forms (Strauss & Corbin, 2003). Nevertheless, the data collected from qualitative research allows for analysis through calculations.

Qualitative Research (Qualitative Research) Starting from the philosophy of constructivism which assumes that the reality is multi-dimensional. Interactive and an exchange of social experience (a shared Soscial experiment) Which is interpreted by individuals (Nana Syaodih, 2001). Meanwhile, according to (Sugiyono, 2009) qualitative research method is a research method based on Post Positivism philosophy, which is used to examine the condition of natural objects (as opposed to experiments) where researchers are as a key instrument, source and data sampling is done by purposive and snowball, data collection techniques called triangulation (composite) data analysis is inductive/qualitative and qualitative research results more pressing on the meaning of the generalization.

Qualitative research method is often called Naturalistic Research (Naturalistic Research), Because research is done in natural conditions (Natural Setting). Also called ethnographic research, Because at first this method is widely used for cultural anthropology research. Besides qualitative research is called because the data collected and analyzed, more qualitative. In qualitative research, research is done on a natural object. The purpose of the object that develops as it is the object that is

not manipulated by the researchers and the presence of researchers is not so affect the dynamics of the object.

Research method

In this study, the writer used case study, a study that will involve researchers in more in-depth investigations and thoroughly examine the behavior of individual individuals. Researchers will pay attention to how the behavior to adjust and react to the environment. In the case study the researcher will find and identify all the important variables that have contributed to the history and development of the subject. This is in accordance with the opinion of Bogdan and Taylor (1992: 32) which states as follows "Case study is a collection of all the useful materials of someone written in someone in such a way that gives a clear picture of one's background at this time is the basis for further investigation of the case ".

In this study, the case study is the students of class IX SMP Muhamadiyah Karawang during and after following the learning process. This case study research method is used to reveal the fact that there is or happened in the field to be understood in depth, so that can be found findings obtained in accordance with the purpose of the study. In this research is data related to the use of cooprative learning model Tpe Team Game Tournament (TGT), smesh blow in badminton game.

First in-depth search data about the use of Cooprative learning model Team Game Game Tournament (TGT), smesh blow in badminton game. Starting from the execution stage of the learning process and then the results obtained.

Both search data in depth about the results of the implementation of the learning process when teachers use cooprative learning model.

Research Subject

In this research, the subjects of research are one sport teacher and IX class students as much as four people. "Sources of information of learners who become the subject of research is a number of individuals (Population) contained in certain groups consisting of objects / subjects that have certain qualities or characteristics that are accepted by researchers to learn and pull conclusions" Sugiyono, (2005: 90).

Instrument and Data Collection

Research instruments are the means used to collect data required by the researcher. According to Suharsimi Arikunto (2010: 192), "Instruments are tools that are used at the time of research by using a method or way of collecting research data". In this study the researcher uses the interview instrument, the researcher serves as the Observer as participant.

While in this study, data collection techniques that are used by interview, observation, and documentation.

Interview

Interviews are used as data collection techniques if the researcher wants to do a preliminary study to find the problem to be researched and also if the researcher wants to know the things of the more in-depth respondent and the number of respondents is little / small. Interviews can be done in a structured way (the researcher knows exactly what information will be obtained) or unstructured (the researcher does not use interview guidelines that have been arranged systematically and completely as data collector) and can be done directly (face to face) or not directly (via media such as telephone).

In this research, data collection technique is a treatment that is done directly on the individual to obtain data or information related to the focus of research on the use of Model Team Games Tournament (TGT) on smash in Badminton Game. In this case the object of the interview is the teacher, the technical implementation of the teacher will witness directly the process of research conducted by researchers from beginning to end. The intention is to provide concrete feedback about the deficiencies and excess data that has been done in order to improve further research or as an evaluation material.

In addition, interview guidelines will be conducted also on students who become the object or sample of research. To know the success rate of Research. Next will also be done interviews In the

parents of students about the improvement of what changes have been seen in their children. In learning especially on learning Physical education through the method of Teams Games Turnament (TGT) on samsh in Badminton game. The last interview was also conducted on the principal. The principal is a stakeholder in his school who knows everything exactly. Concerning the real conditions in the school, especially those related to the improvement of the quality of learning that is carried out by Master.

Observation Guidelines

Observation is a data collection technique that has specific characteristics when compared with other techniques of interviews and questionnaires. Because observation is not always with human objects but also other natural objects. Sutrisno Hadi, in Sugiyono (2012: 145) suggests that, "observation is a complex process, a process composed of various biological and psychological processes". Two of the most important are the processes of observation and memory. In terms of the process of implementation, the observation can be divided into 2 ie participant observation and non-participant observation.

Document

Sugiyono (2012: 240), "expressed his opinion on the document, the document is a record of events that have passed. Documents may be in the form of writings, drawings, or monumental works of a person ".

Triangulation

Sugiyono (2012: 241), "Triangulation is defined as data collection techniques that combine from various data collection techniques and data sources that already exist". When the researchers do data collection with triangulation, then the researchers actually collect data that simultaneously test the credibility of the data, which checks the credibility of data with various techniques of data collection and various data sources. Triangulation techniques, means researchers use different data collection techniques to get data from the same source. researchers used participatory observation, in-depth interviews, and documentation for the same data source simultaneously.

Stages of research

In order to collect qualitative research information data According to moleong (1993: 239), covering three stages, namely:

1. Stages of orientation to get information about what is important to find,
2. Exploration Stages to determine a focus and,
3. Stages Member check is the stage to check the findings according to the procedure and get the final report.

The stages in doing research as follows:

Orientation Stages which include the following:

a. Requesting permission to the appropriate authorities.
b. The assessment to the research location is SMP Muhamadiyah Kabupaten Karawang.
c. Preparing for various reverencies.
d. Construct the research interview's grid and guide.

Exploration Stage

a. Conducting interviews to respondents directly.
b. documentation of the use of cooprative learning model Team Tour Game Type (TGT), smesh blow in badminton game in junior high school students Muhamadiyah Karawang.
c. Making a rough note of the data collected from the respondents.
d. Selecting and compiling and clarifying the data in accordance with the Research Aspect.
e. Fixing the focus of research that is considered not perfect.

Stages of Member Check

Evaluation of the checking stage of the data obtained for the benefit and simplify the data processing in the following way:

a. Prepare the interview guidelines in accordance with the research questions of the interview results are confirmed to all data sources.

b. Increase the validity and reliability of data by triangulation with information sources and observations.

Data analysis techniques

Alya (2014: 31), "Analysis of data used in this study is descriptive data analysis". The activity in data analysis, carried out continuously at each stage of the research so that until the thoroughly saturated until saturated. Activities in data analysis of data reduction, display data and conslusion. while checking the validity of data in the way as follows:

Data collection

At the stage of collecting data taken from observations, interviews, and study literature on respondents who do researchers and sources of information, and find out the results of study documentation of learning outcomes. The results of observations and interviews in the collection and in pour into the writing and in the analysis.

Data reduction

At this stage, it is a review of all field notes obtained from interviews, observations and documentation studies. At this stage will get the main things related to the focus of research on the use of cooprative learning model Team Game Tournament Type (TGT), smesh blow in badminton game in junior high school students Muhamadiyah Karawang.

Presentation of Data

The stages of this research is to compile the results of the principal that has been summarized by way of systematic based on aspects studied, at this stage obtained the theme and pattern clearly about the research problem so easy to take conclusions.

RESULTS AND DISCUSSION

The result of cooperative learning model of Team Game Tournament (TGT) type on smash in badminton game at junior high school student Muhamadiyah Karawang. The data from this research were obtained from the interviews and documentation done by a teacher of instruction (R1) and four students of class IX (R2, R3, R4 and R5).

Respondent 1 = (R1)

After the teacher follows the basic skills learning about smash in a badminton game through cooperative learning model Team Game Tournament (TGT), the teacher can gain knowledge about the students that is to achieve their personal goals, that each group member should help his team-mates to do what have been learned to make their group successful in achieving goals and more importantly to encourage members of one group to do their best.

According to R1, students already have basic smash skills on badminton games because in co-operative students who strive to always be present in the class and help each other.

According to R1, after the implementation of cooperative learning model of Game Tournament Time (TGT) on basic skill of samash in badminton game, students can have a sense of confidence, cooperation and mutual respect, because cooperative learning is expected to improve student achievement in developing inter groups, acceptance of friends' efforts and in enhancing mutual respect for friends.

Respondent 2 = (R2)

According to R2, after using the cooperative learning model of Team Game Tournament (TGT) type, on basic smash skills in badminton game, it was found that R2 can master smash hit technique after studying the technique.

According to R2, after using cooperative learning model Team Game Tournament (TGT) type on smash skills in badminton game can be obtained result that R2 has basic smash skills in badminton game.

R2 revealed that after the use of cooperative learning model Team Game Tournament type (TGT) on smash skills in badminton game, students have confidence, cooperation and mutual respect.

Respondent 3 = (R3)

According to R3, after using cooperative learning model Team Game Tournament type (TGT) on smash skills in badminton game, it was found that knowledge of R3 has increased.

According to R3, after using cooperative learning model Team Game Tournament (TGT) on smash skills in badminton game, the results obtained that R3 able to play badminton correctly and have good basic skills.

R3 reveals that after using the Game Game Tournament (TGT) type coercion model in smash skills in badminton game, it can be found that R3 has an attitude of confidence, cooperation and mutual respect.

Responden 4 = (R4)

According to R4, after using cooperative learning model Team Game Tournament (TGT) type on smash skills in badminton game, it was found that understanding of R4 on smash skills in badminton game improved well.

According to R4, after using Cooprative learning model Team Game Tournament type (TGT) on smash skills in badminton game obtained the result that R4 has smash skills and how to play properly in badminton game.

R4 reveals that after the use of Coordinate Teaching Model type Game Game Tournament (TGT) on basic smash skills in badminton game has a confidence attitude of cooperation and mutual respect

According R5, after using Cooprative learning model Team Game Tournament type (TGT) on smash skills in badminton game was obtained knowledge R4 increased because with the holding of cooprative learning to make it easy. It also not makes students shy to ask his friend.

According to R5 after using Cooprative learning model Team Game Tournament type (TGT) on smash skills in badminton game obtained the result that R5 already has smash skills and how to play properly.

R5 revealed that after the use of Coordinate Teaching Model Team Game Tournament type (TGT) on smash skills in badminton game has a confidence attitude of cooperation and mutual respect because this learning model groups.

Discussion of Research Results

Cooperative learning model Team Game Tournament type (TGT) on smash skills in badminton games in junior high school students Muhamadiyah Karawang

Learning smash skills in a badminton game devoted to junior high school in class IX because students of class IX are students who do not all master basic skills in badminton games. Especially basic smash skills in badminton games, because these skills are very important that should be introduced to the students involved in badminton games.

Therefore, in learning physical health education using good and proper learning model that is cooperative learning model Type Game Tournament Team (TGT), because this learning model can motivate students to be able to support each other and help each other in mastering the ability in teaching by the teacher (slavin, Robert 2009: 12). In addition, this learning model can also grow knowledge in terms of skills, confidence, cooperation and mutual respect for fellow friends. Because this learning is done in groups that can help a friend who has not been able to master basic smash skills. After the implementation of this learning model, students become confident, and interaction between friends can be maintained well, students can also support each other at the time of learning so that communication between friends can be maintained properly.

After the teacher gives basic learning materials smash skills in badminton game using cooperative learning model of Team Game Tournament (TGT) type, the teacher knows the ability of the students to reach their personal goals. For example, every member of the group must help each other's team members in doing whatever it takes to get the team to succees, and more importantly every member should make the most of the game.

After using the Game Team Tournament (TGT) learning model on smash skills in badminton games, students can have confidence, cooperation and mutual respect, and other positive impacts that can develop relationships between groups of acceptance of classmates.

Results of cooperative learning model of Team Game Tournament (TGT) type, on smash skills in badminton game in junior high school students Muhamadiyah karawang.

The results of the use of Teams Game Tournament (TGT) learning model, it is known that the students' knowledge in doing badminton smash technique is increased from before because the group learning makes it easier for them to ask their friends so that students can master the basic skills of badminton smash correctly, steps in doing smash can be more appropriate in doing.

In addition to improving the ability of smesh in badminton also has an increased ability in controlling the punch to be more focused in performing basic skills smash blows on badminton become more varied. In addition, students also have more confident attitude, mutual respect of friends, mutual cooperation and mutual directing learning in groups.

Conclusion and suggestion

conclusion

Based on the descriftive analysis of data, the result of this research shown that the students have self-confidence, cooperation, and appreciation. Besides, the students can improve good relationship with other groups, and also they can improve their knowledge of badminton smash. The conclusion of this research that the students were responded well and the students were very active when learning badminton smash by using Team Game Tournament (TGT) Model.

suggestion

Based on the results of research on the implementation of model learning model cooprative learning type Team Game Tournament (TGT) on smesh blow in the game badminton students smp muhamadiyah karawang, is expected to use cooprative learning model Teams Game tournament type to improve students' skills both from skills and from psychological.

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EFFECT OF INTENSIVE AND EXTENSIVE INTERVAL METHODS AGAINST ENHANCED SPEED ENDURANCE SPRINT 400 METERS

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Abstract

Objectives : This research is motivated by the author's observation on several factors supporting the athletic sports branch. One of the most important in athletic sports is the method of training given to athletes. Training methods that can be used to train speed endurance sprint 400 meters is the Intensive and Extensive Interval Methods. Both of these practice methods have different suitability, strengths and weaknesses. The aim of the study the authors propose is to see the different impacts of intensive interval training methods and extensive to increase speed endurance sprint 400 meters.

Methods: This study used an experimental method, with intensive and extensive interval training methods as independent variables, and speed endurance as the dependent variable. The sample used in this research is UPI Bandung students who follow the athletic club as many as 10 people using total sampling technique, and divided into two groups by way of ranking.

Results: Data processing obtained t-test p = 1.37 (≤ t-table = 2.78). Meanwhile intensive interval method increased significantly (p = 6.72, mean = 1.41, SD = 0.47) than extensive interval method (p = 3.35, mean = 0.93, SD = 0.62).

Conclusions: Based on data analysis, it can be concluded that there is no significant difference of impact between intensive interval training method with extensive interval training method to increase speed endurance of 400 meters at the Athletes of Athletic club in UPI Bandung

Keywords: *Intensive and Extensive Interval Methods, Interval training, Speed Endurance*

INTRODUCTION

One of the most important elements of physical condition in sprint and put into an training program is the element of endurance speed, as proposed by Dintiman (1998: 189), namely: (A) repeated short sprints all the same speed can be made with minimum rest, (b) maximum speed is reached more quickly, and (c) maximum speed is held for a longer distance before slowing occurs.

The above opinion suggests that with good endurance conditions, there will be some advantages including (a) all short sprint repetitions eg speed training can be done with short breaks, (b) the maximum speed can be achieved quickly , (c) the maximum velocity can be maintained in a long distance before slowing occurs. Speed resistance is the development of basic endurance. That is, the improvement of the training program for basic endurance toward the speed endurance training program. Examples of such improvements are in terms of exercise intensity, decrease of time in the exercise break, decrease in mileage and increase in travel time.

Running athletes such as Carl Lewis and Asafa Powell are athletes who are able to maintain maximum speed in longer and longer periods of time from other athletes. Thus, it is absolutely necessary ability to run at high speed in a relatively long time. When examined, the sprint number can be divided into several parts or phases that represent each movement per distance, this can also be seen from the running style. (2) Acceleration start, (3) transition from acceleration to maximum speed, (4) maximal speed, (5) speed maintenance, and (6) end of movement (1) finish). More sprint runners require endurance speed. Pesurnay (1986: 11) describes the notion of durability as follows. Speed endurance is the ability to fight fatigue during work / workout with work intensity submaximal to maximum. Performance of endurance at work / training that requires endurance for a short time this may be said to take place entirely with anaerobic process.

From the above opinion, it is clear that sprinter work is dominantly influenced by anaerobic process (without using oxygen), which is characterized by activity in a short time, but using high intensity. Oxygen intake is not enough balance of energy expenditure, so the muscles experience oxygen deprivation or oxygen debt. However, it does not mean aerobic endurance or aerobic work is

not needed, but more importantly, aerobic work (using oxygen). It was stated by Santosa (2003: 49) that the anaerobic work process is always followed and always cultivated offset by aerobic work process.

In fact, the runner's achievement for the sprint number has decreased considerably after having maximum speed. According to experts, a sprinter at one-third of the initial distance (after sprint) speed increases and is called a positive acceleration, then one-third of the center distance is constant or constant, and before the finish line the velocity decreases or is called negative acceleration. Schmolinsky (1983: 29) discloses, for testing the physical condition of the following exercises are recommended speed endurance: 100 m sprint from crouch start; 150 m, 300 m, and 400 m run. That is, the parameter of the speed endurance test has several types of tests, namely: 100 m from crouch start, 150 m, 300 m, and 400 m.

In this study, the authors chose a method that allegedly can improve the durability of speed is the method of Interval Training in the Running Interval method. In the IAAF book written by Ballesteros (translated by SDS 1993: 17) it is explained that the training for durability of speed with Interval Training method required the provision of distance, time (in percentage), repetition, and recovery clearly. Exercise with Interval Training form aims to prepare the athlete against the pressure of hard work and improve his ability to experience oxygen deprivation and the formation of lactic acid.

Therefore, this exercise is very tiring and not recommended for beginners. The training method consists of two training methods is intensive interval training and an extensive interval method which each has its own distinct characteristics, as Schmolinsky (1983: 66) points out. The total load result from a great volume of work in time and space, we speak of extensive interval work; the intensive interval of work is characterized by greater application of power and reduced volume in one unit of time.

The statement indicates that the total load is a form of the amount of work volume in time and space, hereinafter referred to as the extensive work interval, while the intensive work interval is characterized by the use of greater power and the decrease in volume in a single unit. It has advantages and disadvantages of each according to its application. That is the background of this research with the aim to know the effect of exercise on improving the ability of speed endurance at 400 m run. To know the truth of this matter is needed an empirical proof through study of field research.

METHOD

Participants

The sample consists of 10 athletes in Bandung, West Java. These participants come from athletes of Athletics club in UPI Bandung selected through full sampling technique. This is done because the population is relatively small, less than 30 people, or research that wants to make generalizations with a very small error. Prior to data collection, we obtained permission from the club's leadership to conduct research. In addition, participants or athletes provided an approval form before participating in the study. Participants were placed in a group of extensive training methods (n = 5) and a group of intensive training methods (n = 5).

Procedure

Experimental procedures from the research stage are preliminary tests, interventions, and final tests. The experiment runs for 6 weeks. Within 1 week 3 meetings are held, bringing the total number of meetings to 18 times.

Training Program: Intensive training methods

Meet	Intensity	Recovery Set/Seri	Program	Volume
1	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 400 b. 2 x 300 c. 3 x 200 3. Cooling down : jogging	2000 m

2	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 400 b. 2 x 300 c. 3 x 200 3. Cooling down : jogging	2000 m
3	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 400 b. 2 x 300 c. 3 x 200 3. Cooling down : jogging	2000 m
4	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 1 x 400 b. 3 x 300 c. 3 x 200 d. 3 x 100 3. Cooling down : jogging	2200 m
5	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 1 x 400 b. 3 x 300 c. 3 x 200 d. 3 x 100 3. Cooling down : jogging	2200 m
6	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 1 x 400 b. 3 x 300 c. 3 x 200 d. 3 x 100 3. Cooling down : jogging	2200 m
7	80 % - 90%	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 350 b. 2 x 250 c. 4 x 200 3. Cooling down : jogging	2000 m
8	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 350 b. 2 x 250 c. 4 x 200 3. Cooling down : jogging	2000 m
9	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 350 b. 2 x 250 c. 4 x 200 3. Cooling down : jogging	2000 m

10	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 3 x 350 b. 3 x 250 c. 2 x 200 3. Cooling down : jogging	2200 m
11	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 3 x 350 b. 3 x 250 c. 2 x 200 3. Cooling down : jogging	2200 m
12	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 3 x 350 b. 3 x 250 c. 2 x 200 3. Cooling down : jogging	2200 m
13	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 4 x 300 b. 4 x 200 c. 4 x 100 3. Cooling down : jogging	2400 m
14	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 4 x 300 b. 4 x 200 c. 4 x 100 3. Cooling down : jogging	2400 m
15	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 4 x 300 b. 4 x 200 c. 4 x 100 3. Cooling down : jogging	2400 m
16	80 % - 90 %	4' – 5' / 6' – 8'	1. Warm-up : stretching, jogging 2. Program : a. 4 x 300 b. 4 x 200 c. 4 x 100 3. Cooling down : jogging	2400 m

Extensive training methods

Meet	Intensity	Recovery Set/Seri	Program	Volume
1	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. Program : a. 1 x 600 b. 1 x 500 c. 3 x 300 3. Cooling down : jogging	2000 m

2	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 150 b. 2 x 120 c. 2 x 80 d. 2 x 50 3. Cooling down : jogging	800 m
3	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. Program : a. 1 x 600 b. 1 x 500 c. 3 x 300 3. Cooling down : jogging	2000 m
4	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 500 b. 4 x 300 3. Cooling down : jogging	2200 m
5	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. Program : a. 10 x 100 3. Cooling down : jogging	1000 m
6	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. Program : a. 2 x 500 b. 4 x 300 3. Cooling down : jogging	2200 m
7	60 % - 80%	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 2 x 400 b. 4 x 300 3. Cooling down : jogging	2000 m
8	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 2 x 120 b. 4 x 80 c. 4 x 60 3. Cooling down : jogging	800 m
9	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : Stretching, jogging 2. program : a. 2 x 400 b. 4 x 300 3. Cooling down : jogging	2000 m
10	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 2 x 400 b. 4 x 300 c. 1 x 200 3. Cooling down : jogging	2200 m

11	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program: a. 10 x 100 3. Cooling down : jogging	1000 m
12	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 2 x 400 b. 4 x 300 c. 1 x 200 3. Cooling down : jogging	2200 m
13	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 3 x 400 b. 4 x 300 3. Cooling down : jogging	2400 m
14	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 4 x 100 b. 5 x 80 c. 5 x 60 d. 2 x 50 3. Cooling down : jogging	1200 m
15	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 3 x 400 b. 4 x 300 3. Cooling down : jogging	2400 m
16	60 % - 80 %	2' – 3' / 4' – 5'	1. Warm-up : stretching, jogging 2. program : a. 3 x 400 b. 4 x 300 3. Cooling down : jogging	2400 m

Instrument

In this research the measurement is done twice that at the beginning and end of research or before and after treatment is given. The instrument type used to measure the speed resistance at the sprint number is a 400 m, sprint test according to Schmolinsky's (1983: 29) for testing physical condition of the following exercises are recommended - speed endurance: 100-m sprint from crouch start; 150-m, 300-m, and 400-m run.

Data analysis

After data collected based on preliminary and final test results, then the next step is to process the data by means of statistics.

RESULTS AND DISCUSSION

Results

The result of data processing shows that the intensive training method has increased the speed resistance (p = 6.72, average = 1.41, SB = 0.47). While the method of extensive training, (p = 3.35, average = 0.93, SB = 0.62) .The results of statistical analysis can be seen in table 1 below:

Table 1. Significant Test Results From Both Forms of Exercise

Group sample	t_{count}	t_{table}	Result
Group A	6,71	2,78	Significant
Group B	3,35	2,78	Significant

The calculation and the significant test of the improvement of training form is done by using two significant test of two parties namely t-test. from the results of the test contained in table 1 obtained that:

Intensive training methods

For the form of group exercise A obtained t-test p = 6.71 > t-table 2.78 at the level of trust / significant α = 0.05 with dk (4.4). The test criterion is, accept if -t1-$^{1}/_{2}$ α <t arithmetic <t1-$^{1}/_{2}$ α. In this case t-count is in the rejection area Ho, meaning Ho is rejected. The conclusion is that there is a significant influence of the form of intensive interval training on the speed resistance at 400 meter sprint run.

Extensive training methods

For the form of group exercise B obtained t-test p= 3.35 > t-table 2.78 at the level of trust / significant α = 0.05 with dk (4.4). The test criterion is, accept if -t1-$^{1}/_{2}$ α <t arithmetic <t1-$^{1}/_{2}$ α. In this case t-test is in the rejection area Ho, meaning Ho is rejected. The conclusion is that there is a significant effect of the form of extensive interval training on the speed resistance at 400 meter sprint run.

The next step is to calculate and analyze the difference in the influence of both forms of exercise on increasing the speed resistance at the 400 meter sprint run. It is necessary for the data to be in the form of the difference from the initial test result and the final test of each training group as the data of the increase of training result. Data on the calculation of the difference can be seen in table 2 below:

Table 2. Average Score and Standard Deviation Data for Increasing Results of Exercise of both Training Groups

Group	T_{count}	t_{table}	Result
Group A-B	1,37	1,86	No Significant

From table 2 can be seen t-table of 2.78. While the t-count of 1.37. The test criteria accept Ho if t-count ≤ t-table, in other case Ho is rejected. Because t-count (1.37) is smaller than t-table (2.78). Thus the hypothesis is accepted, in other words there is no significant difference in impact between intensive interval training methods with extensive interval training methods to increase the durability of sprint 400 meters at Athletic club in UPI Bandung.

Discussion

Based on the results of research and data analysis obtained from tests with intensive and extensive interval methods, the authors draw the conclusion that intensive interval training is better improved than in extensive interval training. This conclusion is consistent with the hypothesis that training with intensive intervals is better for increased durability, but that does not mean that extensive interval training is no better than intensive interval training, since intensive interval training is theoretically better applied to well trained athletes on untrained athletes.

Thus the intensive interval training method gives a significant effect for the improvement of the speed resistance, while the practice with extensive interval method although it gives effect to the speed endurance, but the difference of the increase gives a real indication that there are factors that can influence the achievement of maximal ability of a person. Physiologically, the closer a person's ability to his or her maximum ability (the higher one's ability), the more difficult it is to improve it. However, many factors can influence it both externally and internally. For example, running techniques that have not been properly mastered and correct or motivation to improve physical capabilities such as endurance speed by each sample. These factors may be one of many obstacles that can hinder the

increase in endurance speed. However, interval training is an effective and intimate strategy for the efficiency of time (Zhaowei Kong, 2016). During the 6 weeks of training, the interval training showed an average increase in VO2max of 4.5 ml / kg / min (11.7%) while the SCT group showed an average increase in VO2max of 2.2 ml / kg / min (6.0 %). This training is an effective resistance training method that provides better VO2max improvement than SCT (Gordon Fisher, 2015).

CONCLUSION

Based on data analysis, it can be concluded that there is no significant difference of impact between intensive interval training method and extensive interval training method. However, intensive interval training methods have a more significant impact on increasing the run speed of 400 meters at Athletic club in UPI Bandung when compared with extensive interval training methods.

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THE ATTEMPT OF IMPROVING POWERFULL KICK IN SOCCER USING WEIGHT TRAINING

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Abstract

Objectives: The objective of research was to find out the attempt of improving powerful kick in soccer using weight training in the sport students of Sebelas Maret University.
Methods: This study employed an experimental method. The population of research consisted of 40 students. The sampling technique used was random sampling. Twenty people were taken as the sample in weight training group. The data collected was powerful soccer kick test. Technique of analyzing data used was variance test (t-test) at significance level of 5%, using prerequisite test including normality and homogenity test.
Results: The result of research showed that the group had the mean pretest score of 46.975 m and posttest of 52.485 m, and had an increase of 11.7296%.
Conclusion: The conclusion of the research was weight training method had good improvement of powerful kick soccer in the students of Sebelas Maret University.

Keywords: Soccer/Football, Powerful Kick, Weight Training.

INTRODUCTION

Football is one of the many popular sports in the world. Even soccer has become the name of a country. In America and Europe football has gained the support of the private sector and the govermment so that the learning process becomes better. Government and private in Indonesia is pioneering football coaching not only for the interest of the group that politicized the goal, but has really plunge to advance the nation football.

The coaching effort starts from a young age, not just an instant program that forces management and accomplished players in a short period of time. Superior seeds need to go through a process of scientific and controlled training, both in terms of exercise, diet, lifestyle and others. Then the maximum achievement of athletes will come in certain age groups . Statement Andi Suhendro (1999: 34) that, "Training is a systematic work process and done repeatedly with the burden of increasing training".

Improving the basic skills of playing football is closely related to the ability to coordinate physical, technique, tactical and mental movements. Efforts to improve and achieve the highest possible achievement for an ideal athlete or player include four key aspects:
(1) Development of technical exercises,
(2) Development of physical training,
(3) Development of tactical exercises, and
(4) Development of psychic exercises.

Physical condition and physical freshness is strongly influenced by the age factor, in adolescence physical ability will increase maximal around age 20-30 years, then with age will gradually decrease. To be good at playing soccer, physical factors and mastery of basic motion skills is a must. In order for physical and basic motion skills to be mastered it needs to be a serious and well-planned exercise. Physical and basic movement skills are some of the factors in the basic ability for a player to play football.

The movements of Football players, there is a movement running, jumping, kicking, stopping and catching the ball for the goalkeeper. Movement is strung in a pattern of movement that required players in performing their duties in playing soccer. One of the dominant techniques in football is kicking.

Kicking a ball is a technique with the most ball done in a soccer game. Then kick ball technique is the basis in playing soccer. A player who does not master the technique of kicking the ball well, will

not be a good player. The technique of kicking the ball must be controlled by all players so that the tactics and strategies that the coach runs can run well as expected. Without having a good kicking technique, it is unlikely that a team will be a solid team and can play an interesting game. According to (Sucipto et al, 2000: 17) in the book "Sepakbola" Kicking the ball is one of the most dominant characteristics of football games. Players who have a good kicking technique will be able to play efficiently. The goal of the ball is to pass (passing), shoot into the goal (shooting), sweep to thwart the opponent's attack (swepping). Free kick to the goal (free kick).

In the football game, to be able to produce long range pass is more appropriate when using the inner foot side, because it will produce a kick in the direction of the parabola, so the distance will be further. To do a powerful kick requires maximum leg muscle power. In training leg muscle power, can use the method of training that is by Weight training method. Kicking of the ball to reach a long distance then the explosive leg muscle movement is needed to obtain a great power.

In observation of the field, professional league players can kick the ball to ¾ the length of the field, while for amateur players only about 40 meters. Though the gastric kick function is very beneficial, such as distance from the point of safe (Near goal), to score goals (Shooting), long ball (Long pass). There are several methods of exercise to increase leg muscle power.

Weight training is a kind of sport activities for developing forces using gravity, to defy the forces produced by muscles through concentric or eccentric contractions. This form of exercise where the muscles of the body contracted using their own weight or other devices to stimulate growth or muscle work, strength and power by targeting certain muscle groups and types of movement. The basis for the success of weight training consider to the dose of exercise that includes frequency, intensity, duration and type of exercise. In weight training, there are many types and ways to exercise, tailored to the muscles which part you want to add capabilities. The burden of training is also uniformed with the goal to be achieved.

Researchers chose Weight training methods because has a good influence in improving power and can be adjusted with the technique of kicking the ball, so it is suspected to get a significant increase in the ability of a significant kick result. The sample selected is football students in Sebelas Maret University, because most of them have not had a far long pass, but for the average kick technique is good. Because of that researchers want to improve from the physical aspect, so the ability to kick can increase.

Based on the description above, researchers want to identify the practice of powerful long pass. entitled: " the attempt of improving powerful kick in soccer using weight training ".

Problem Identification

Based on the background of the problems mentioned above, the problems in this study can be identified as follows: Power has a good benefit for powerful kick in football , the result of powerful long pass by students is not far enough, and the increase of the results of football powerfull kick through weight training on the students of sebelas maret university is not yet known.

Problem Formulation

Based on problem identification, this research can be formulated as follow: How to increase powerful kick in football through weight exercises ?

Research Goal

Based on the problems that have been formulated above, this research has a purpose to increase the results of powerful kick in football through weight training on the students of Sebelas Maret University.

Research Benefits

The problem in this research is important to be studied, in hope that it can give benefits such as: It can increase the result of football powerful kick on the students of sebelas maret university, It Could be an manual for coaches and football coaches, the importance of physical exercise and appropriate to improve the ability of players, and It Could be used as a guide to determine and to choose a better and an effective exercise on the improvement of the results of powerful kick in football.

RESEARCH METHODS

Place of Research

The place of this research was conducted at Sebelas Maret University Stadium (Kentingan, Solo, Indonesia) and Fitness Center JPOK FKIP UNS (Manahan, Solo, Indonesia).

Time of Research

This study was conducted for 18 meetings, with 1 initial test, 1 final test, and 16 treatments. This research was conducted 3 times a week, ie Tuesday, Wednesday, Friday for 6 weeks. This is in accordance with M. Sajoto's (1995: 35) opinion that, "Today's trainers generally agree to run an exercise program three times each week, in order to avoid chronic fatigue. The length of exercise required is for 6 weeks or more ".

Research Design

This research is a quantitative research, research method that used is experimental method. The basic use of this method is an experimental activity that begins by giving treatments to the subject, then ended with a test to determine the effect of the treatment that has been given. Sugiyanto (1995: 21) states, "The purpose of experimental research is to examine the presence or absence of causal relationships as well as the magnitude of causal relationships by way of treatment to experimental groups whose results were compared with the results of control groups that were not treated or treated different".

The dependent variable in this study is the result of football powerful kick, while the independent variable is weight training/exercise. The design in this study is "Pretest-Posttest Design".

The division of the experimental group is based on the ability of a gastric kick in the early test. After the initial test results are ranked, then subjects with equivalent capability are paired into groups 1 (K1) and group 2 (K2). Thus the two groups before being given treatment were a balanced group. If in the end there is a difference, then this is due to the influence of the treatment given. The division of groups in this study by ordinal pairing.

Population and Sample

Population in this research is students of Sebelas Maret University. There are 60 students. The sample technique is random sampling. "The desired sample can be taken arbitrarily (randomly) only" (Arikunto S, 2007: 95). Importantly, according to Sugiyono (2007: 62) is a sample taken from the population must be really representative (representing). Grouping is divided into two by ordinal pairing.

Suharsimi Arikunto (2007: 95) revealed "there are several formulas that can be used by researchers to determine the number of sample members. If the researcher has several hundred subjects in the population, they can determine approximately 25-30% of the population". In the sample determination there is no definite formula limiting the sample should be how. Therefore, taking into account the ability of the researchers, the sample used in this study as much as 30% of the population, there are 20 people samples. Group 1 of 10 people received weight training and Group 2 as many as 10 people as a control group.

Data Collection Technique

The measurement test against the far reaches of the powerfull longpass kick using the Warner Test of Soccer Drill, (Barrow and McGee, 1979: 281). The test instruction manual is attached.

Data Analysis Technique

Test of Reliability

The degree of test results is known through the reliability test. The reliability test of this research uses Interlevel correlation from Mulyono B. (2001: 42) with the formula:

$$= (\quad - \quad) /$$

Explanation :

R = Reliability coefficient

MSA = Average number in group

MSW = Average number between groups

Test Requirements Analysis

The prerequisite analysis test used in this study includes reliability test, normality test and homogenity test. As for the steps of each prerequisite analysis test as follows:

Test of Normality

The prerequisite analysis test used in this study is the normality test. Test of data normality in this research using Lilliefors method from Sudjana (2002: 466). The normality testing procedure is as follows:

Observations x1, x2, ... xn are made raw numbers z1, z2, ... zn by using the formula:

= (−) /

Explanation:

Xi = From the variable of each sample

X = Average

S = standard deviation

For each of these raw numbers use the standard normal distribution list, then calculated the probability F (zi) = P (z≤zi).

Next is calculated the proportion of z1, z2, ... zn which is smaller or equal to zi. If the proportion is expressed by S (zi).

Then ( ) = (1, 2,. . .) /

Calculate the difference ( ) − ( ) then determined the absolute price.

Take the greatest price among the absolute prices of the difference. Call this biggest price Lo.

Homogeneity Test

In the homogeneity test is done by dividing the larger variance with smaller variance. According to Sutrisno Hadi (2004: 312) the formula is:

: = (2) / (2)

Explanation :

Fdbvb: dbvk = The degrees of freedom 1st and 2nd

SD2bs = Standard deviation (1^{st})

SD2kt = Standard deviation (2^{nd})

Test of the Difference

Data analysis in this research is done by difference test from Sutrisno Hadi (1995: 457) as follows:

= | | / √ (2 / ((− 1)))

Explanation :

t = Value of difference test

Md = Mean difference of pair

Σd2 = Quadratic deviation of each sample of the mean difference

N = Number of pairs

To find the mean deviation used the following formula:

= ( ) /

Explanation:

D = Differences of each subject

N = Number of pairs

Calculate the percentage increase in soccer kick ability on weight training by using the following formula:

= ( ) / ( ) × 100%

Mean different = mean posttest - mean pretest

RESULTS

Data Description

Description of data to achieve the desired objectives in this study using soccer kicking ability test. The data collected consisted of the initial test as a whole, then grouped into two groups, namely group 1 (weight training) and group 2 (control group), as well as the final test data of each group. The data is then analyzed by t-test statistics as shown in the appendix.

Group 1 has an average 46.975 m, while after getting treatment has an average at 52.485 m. The average value of group 2 was 47,350 m.

Discussion of Research Results

Increasing results in this study go hand in hand with the techniques that the sample has. The sample has good kicking techniques, according to the theory (Toto Subroto, et al, 2007). The technique includes the legs, eye sight, ball parts and swing legs.

This research is carried out according to the training program without reducing or increasing the training load on the sample, so as to create real results. In group 1 the weight training group had an average initial test score of 46.975 m and a mean value of the final test of 52.485 m, from that data seen an increase result of 11.730%. In group 2, the control group had an average initial test score of 47.350 m.

CONCLUSION AND SUGGESTION

Based on the results of research that has been done, can be obtained the following conclusions: The increase of soccer powerful kick results through weight training on students of Sebelas Maret University = 11.7296 %.

The implication given that the results of soccer kicks can be increased through the given method, using the weight training method.

That way, coaches and extracurricular teachers can also use the treatment for athletes / learners, because it has a good influence in increasing the power of soccer kicks.

With regard to the conclusions that have been drawn and the implications outlined, so to the students, coaches and especially further researchers, the following is suggested: From the results of this study can be used as a guide to determine and choose the method of exercise to improve the results of soccer kicks.

Training Program *(Weight Training)*

Week	Meeting	Repetion and *Set*	*Recovery* every set	Information
The Beginning Test				
I	Monday Wednesday Friday	55% (1RM) 7 reps & 5 sets	4 minutes	The training load starts from mild to heavy in order for the muscles to adapt and avoid injury.
II	Monday Wednesday Friday	60% (1RM) 7 reps & 5 sets	4 minutes	Increased load by 5% per week
III	Monday Wednesday Friday	65% (1RM) 7 reps & 5 sets	4 minutes	The number of reps is made slightly due to the increase in power.
IV	Monday Wednesday Friday	70% (1RM) 7 reps & 5 sets	4 minutes	Type of weight training performed: kick simulation, leg press, leg raises.
V	Monday Wednesday Friday	75% (1RM) 7 reps & 5 sets	4 minutes	Each sample in group 1 performs 3 types of weight exercises.
VI	Monday Wednesday Friday	80% (1RM) 7 reps & 5 sets	4 minutes	The exercises are done under the supervision of the researcher.
The final test				

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IMPROVING STUDENTS' LEARNING ACHIEVEMENT IN RUNNING BASIC LOCOMOTION MOVEMENT THROUGH GAME AT FIFTH GRADE STUDENT OF SD NEGERI 1 SURAKARTA IN THE ACADEMIC YEAR 2013/2014.

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Abtract

Objectives: This research is aimed to improve students' learning achievement in running basic locomotionmovement in the Athletics through game approach at the fifth grade students of SD N Sumber 1 Surakarta in the academic year of 2013/2014.
Methods : This research was using classroom action research method (CAR). This research was done in one cycle,phases of the cycle were planning, acting to implement the plan, observing and reflecting. The subject of this research was fifth grade student of SD Negeri Sumber 1 Surakarta in the academic year 2013/2014 which consists of 33 students, 15 male students and 18 female students. The researcher collected the data from teacher and students for this research. The techniques of collecting data which was used by the researcher were observation and assessment of running basic locomotors movement. The data analysis used descriptive technique which is based on qualitative analysis using percentage.
Results : From the data analysis, can be gotten the significant improvement from the beginning of the cycle. From the beginning of the cycle, the students who can reach the minimum grade of 75 for running subject were 8 students or 24.24%. And the rest of students, about 75.76 cannot reach the minimum grade of 75 for running subject. From the first cycle, the students' achievement of locomotion basic movement which were included all of aspects of psychometric, cognition, and affective is about 97% or 32 students from 33 students with 75 points for the minimum grade. The students' achievement of locomotion basic movement for psychometric reach 88% or about 29 students from 33 students passed. And for cognition point in first cycle, students who passed are 91%, for affection point in first cycle, students who passed are 100%. It means all of students passed for affection point. The acting phase in the first cycle made an affective, active, efficient and interesting learning activity, so it created great atmosphere in class.
Conclusion : The conclusion from this research is we can improve students' achievement in basic movement locomotion using game for grade V students of SD Negeri Sumber 1 Surakarta in the academic year 2013/2014.

Keywords: students' achievement, game, basic movement locomotion

INTRODUCTION

The good sport learning activity should improve students' knowledge about the principle of the movement. Those knowledge will make students understood how a skill can be learned to the higher level. Therefore, it makes all of the movement has been done are meaningful. Through sport learning activity, students will get experience which is related to self-impression which is creative, innovative, movement skill, physical fitness, healthy life style, knowledge, and the understanding of human movement, and also it will create a positive personality to students. For example, students should understand why they should open their feet and lowering the shoulders while they try to keep their balance.

Improvement and refinement of basic movement are the most important things in elementary school. All of normal students can develop and learn many kinds of movement from the simple one to the complicated one. Basic movement is a movement which is done repeatedly by students and made as basic from their experience and as their environment. Basic motion development is a process to get an improving movement. The characteristic of elementary school age students is active. Every students use their free time to be active even a coarse motion such as running, jumping, and throwing.

Until now, athletics still become one of subject which is students less interest on it. Very ironic, it is because athletic is a basic branch of all of sports. The cause is traditional teaching method which is bounded to the rule and basic technique with sport oriented. How can we do to make athletic to be an interesting subject?

A game-modified athletic has not known yet. Athletic was modified in form of game is not a new athletic and is not a replacement of the old athletic, but an athletic which is taught in new form and interesting way, so the students will be motivate to learn athletic.

To achieve those purposes of sport learning activity, it can be achieved by developing the ability of basic locomotors movement and learning achievement by game.

To achieve the aim of athletic learning activity, a physical and health education teacher should pay attention to the students' development, students' characteristic, students' ability and students' favourite. The sport branches that are covered by athletic consist of four kinds. They are walking, running, javelin and shot put. From those kinds of sports, there are some numbers that are contested. For running, there are: sprint, middle-distance running, long-distance running we usually called it as marathon, hurdling, and relay.

The way to adjust physical education for student which is based on elementary students' characteristic, ability, and development can be done by game approach.

For adult, they already have proper equipment for sport, so students should have the proper equipment and method to implement in physical education based on their characteristic and nature. This condition is really needed by the teacher in case their students will do physical activity and sport according to their development and improvement.

The most important thing for student isthe mastery toward the basic technique of game. The main element in basic technique of game should be taught to the students since elementary school age.

Based on the observation that has been done by the researcher about sprint at fifth grade students of SD Negeri 1 Sumber Surakarta, there are still a lot of students who do not achieve an optimal learning achievement in sprint. It was happened because the students do sprint without obeying the correct basic technique of sprint. From 33 students, only 8 students or 24.24% get score higher than the minimum score which has been determined that is 75 and the others 29 students or 75.76% get lower than that. There are some factors which affect the phenomenon above, one of them is students low motivation toward subject that is given. It can be proven by students' low actively and enthusiastically during athletic learning activity.

Game approach is a learning method which has a purpose to help students to understand the benefit of game method in real situation. With this approach, students will be given the freedom to express their ability and skill to achieve the purpose of the learning activity. Through game, students will be more active that can help them to improve their physical healthiness, improve their competitive aspect, develop their team work, and improve their skill. Because of basic locomotors movement in sprint at students fifth grade of SD Negeri 1 Sumber Surakarta are far from good, classroom action research through game is needed to improve their sprint skill.

Based on the description above, the researcher wants to know how far game approach can help students to improve their skill and learning achievement about basic locomotors movement in sprint.The researcher was interested to do research at fifth grade students of SD Negeri 1 Sumber Surakarta. The research method which was used by the researcher was classroom action research. The research was conducted in SD Negeri 1 Sumber Surakarta which is located in Kecamatan Banjarsari, Kota Surakarta. From this curiosity, the researcher was interested in choosing the topic of the study under the title "IMPROVING STUDENTS' LEARNING ACHIEVEMENT IN RUNNING BASIC LOCOMOTION MOVEMENT THROUGH GAME AT FIFTH GRADE STUDENT OF SD NEGERI 1 SURAKARTA IN THE ACADEMIC YEAR 2013/2014.".

1. Basic Movement
   a. Definition of Basic Movement

      The development of motion skill for elementary students can be explained as improvement and smoothness of many kinds of basic skills and skills related to sports.

Children's basic movement create basic for movement itself. According to Yudha M. Saputra (2012: 130) "For children in elementary school age, getting the ability to move in sequence should be improve from the simple one to the complex one and the movement should be the coordination one". That basic movement ability is supported by motion pattern. Motion pattern is a series of motions which are connected and organized each other. For the example is the series motion of lifting hand from the beside of the body to the top of the head. From this series of motion, it can be formed the basic motion.

Based on *Department of Education* (1996:4) *"Fundamental motor skills are common motor activities with specific observable patterns. Most skills used in sports and movement activities are advanced versionsof fundamental motor skills"*.

It means that the motor skill is the common activity which is observed by specific pattern. Most of skills that are used in sport and motion activity are the advanced version of basic motion. Children in this stage build the motion which is studied and prepare their selves to the advanced skill.

According to AipSyarifuddin and Muhadi (1992: 19), stated that physical education program through development basic skill activity that should be taught in elementary school should be cover; (1) the development of children motion ability must be done from one place move to the other, like: walking, running, jumping, tiptoeing, stepping, gliding, lifting, and rolling (locomotion), (2) the activities of motion development ability that are done in place, such as: bending over, turning, flipping, stretching, stalling, twisting, and dodging (no locomotion), (3) development activities that are used to do some body movement skilfully, such as: throwing, catching, shooting, passing, lifting, hitting, pulling, and pushing (manipulation).

b. The Period of Development of Elementary Students' Basic Movement

The development of elementary students' basic movement can be divided into three periods, they are: (1) development phase of basic movement that happens on children 2-7 years old, (2) transition phase for children 7-10 years old, (3) specification phase for children 10-13 years old (Yudha M. Saputra, 2001: 14). In development phase that is happened to children 2-7 years old, children start to learn how to walk in the year two and start to learn another form of locomotors motion. On the transition phase that is experienced by children 7-10 years old, children start to combine and apply the basic movement that related to appearance in physical activity. The movement consists of the same element of basic movement, but its implementation is more accurate and controlled. In this period, children look more active in looking and combining any kinds of motion patterns and skills. Commonly, their skill will improve rapidly. In the specification phase year 10-13, children will make a choice of sport branch that they like, commonly they already have the better ability in coordination and agility.

From those three phases, the development of basic movement that is happened in 0elementary school age should be improved by physical education teacher based on students' level.

c. The Variety of Basic Movement

Ma'mun and Yudha M. Saputra (2000: 20) stated that the basic movement ability is divided into there, they are:

1. Locomotors skill

   Locomotors skill is used to move the body from one place to other place or to lift up the body like jumping and skipping. The other skills are walking, running, skipping, jumping, sliding, and running like a horse (gallop).

2. No locomotors skill

   No locomotors skill means that this skill is done without movement or is done in a place. This skill can be done without need a lot of space to make a motion. The examples of this skill are bending over and stretching, pushing and pulling, lifting up and lifting down, folding and rotating, shacking, circling, soaring, and so on.

3. Manipulating skill

Manipulating skill will be improved while children are mastering many kinds of objects. This skill uses a lot of hand and foot activities but the other part of body will be used in small intensity. Manipulating object is higher level than coordinating eyes-feet and hands-eyes which are important to do these items: walking (step movement) around a room. Another varieties of manipulating skill are:

a) Pushing (throwing, hitting, and shooting)
b) Receiving movement (catching) object is an important skill which is taught using a ball that is made rubber or other kind of balls.
c)Bunching the ball or passing the ball.

Before entering the elementary school age, children usually can control the rough movement. Those movements involve some parts of body that used to walk, run and jump. After that age passed, there is a significant improvement in controlling the better coordination which involve the smaller muscles while grasping, throwing, catching the ball, writing, and using the tools.

d. Locomotion Movement

Locomotion movements are movements or motions which go everywhere. Experts describe the locomotion movement as movement or motion which makes the body move from place to place or we can call it as *traveling*.

Movements that are included to the locomotion movement are walking, running, jumping, rolling, and floating, and so on. These movements will be the basic of improvement of coordination movement which is involved the gross muscles. Muscles growth, body endurance and stamina will part of that makes happy the children.

e. Variety of Basic Locomotion Movement

Based on *Fundamental Skills*,

"*Locomotor skills involve the body moving in any direction from one point toanother. Locomotor skills in this resource include walking, running, dodging, jumping, hopping and skipping*". (hal.3)

It means that locomotion skill will make the body to move to all direction from one spot to other spot. This movement is a source which involves walking, running, avoiding, jumping, and skipping.

f. Basic Locomotion Movement in Running

Compared to walking, running uses ankle to move quicker alternately. Running is divided into four based on the acceleration from the quickest that is sprint to the lowest one. Body should lean a bit due to the acceleration. To create the quicker acceleration, the body should be leaned more too, knees are leaned and both hands are swung to the front and back from the shoulder with leaned elbow.

g. The Purpose of Locomotion Learning in Running

The purpose of this study is to improve the skill of basic fundamental movement which is mostly used in daily activity. It is naturally happens to every children who already mastery in basic movement in their early age. It does not mean that the children do not need to train anymore. Training or gaining many experiences while walking and running will improve the efficiency of those movements. Besides, it can help the children to improve their power and body endurance and muscles endurance.

2. Playing

a. Definition of Playing

Playing is a fun activity. According to Hidayatullah (cited in Loy, Pherson, and Kenyon 1987) playing is an activity with same natures as follow:

1) Free,
2) Separated,
3) Changeful,
4) Spontaneous,

5) Do not care about the result,
6) Governed by rules

According to Hidayatullah (2008) playing is a fun activity because children do something fun and do not need much thought.

From those explanations above, we can see that playing will give fun learning experience to the students.

b. The Function of Playing

Playing will give a unique contribution toward children development. It also help children in developing their physical potential, cognitive, social, and emotion. Hidayatullah (2008) stated that there some effect caused by playing, they are:

1) Motion skill development
2) Physical and health development
3) The urge to communicate
4) Channelling inner emotion
5) Channelling the needs and wants
6) Learning source
7) Creativity stimulation
8) Self-knowledge development
9) Social
10) Self-development (pg. 8)

Playing activity is realized in form of game. Game can play an important role in development and smoothness basic movement skill if the proper game involves in the material. According to Hidayatullah (2008) game is chosen toimprove locomotors movement and manipulation which has characteristics as follow:

1) Give a maximum activity to all of the children;
2) Improve more in inclusion rather than in exclusion;
3) Easy to varied and modified;
4) Help to improve all movement skills;
5) Fun for children (page 16).

Teacher will modify game that can be played by students maximally and can reach the movement skill that is aimed.

c. Game Approach

Students of fifth grade age are children who love to play, so in this sprint learning can be applied the game approach.

This approach is a form of physical learning which is packed in form of game. In this approach, student will be given a freedom to express their skill toward the purpose of learning. With this approach, the researcher hopes students will get an initiative and creativity to solve the problem that occurs during learning activity. Besides, competitive will be improved to make students compete and show their skill.

Game approach is a study in form of game. According to Wahjoedi (1999), “game approach is a study that is given in form and situation of game” (page 121).

Based on the explanation above, it can be concluded that game approach is a learning activity that is packed in form of game.

METHOD OF RESEARCH

In this research, the researcher used descriptive qualitative to collect and analyse the data. This technique analysis was used because almost all of the data were in form of descriptive explanation which explained the process development in learning activity such as participation of the students on learning activity in basic locomotors movement material. The techniques collecting data in this research were practice test and field observation. The research data which were collected were data variable, data source, technique collecting the data, and instruments that were used. Test

validity was used to know the validity of the collected data. In this research, the research used triangulation data to check the validity of the data.

CONCLUSION

Classroom Action Research which was conducted on fifth grade students of SD NegeriSumber 1 in the academic year of 2013/2014 has been done only in one cycle. There were four phases in that cycle, they were: (1) panning, (2) action research, (3) observation and interpretation, and (4) analysis and reflection. Based on analysis and explanation that has been explained on the CHAPTER FOUR, it can be seen that from the very beginning there were only 8 students from 33 students who passed with the score more than standard minimum score 75 or 24.24% has been passed and 75.76% were not.

On the first cycle, students could passed psychological score in running locomotors learning. Students who passed are 88% with cognitive score was 91% and affective score was perfect 100% with standard minimum score 75. On the whole aspects that are cognitive aspect, affective aspect, and psychomotor aspect, it can be concluded that 97% or 32 from 33 students passed all aspects criterion.

From explanation above, it can be concluded that game approach can improve learning achievement of running locomotors and running learning activity at fifth grade students of SD Negeri 1 Sumber Surakarta in the academic year of 2013/2014. From the data analysis, there is a significant improvement on the first cycle.

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THE INFLUENCE OF EXERCISE ON HOW TO THROW SOFTBALL, BY USING THE TARGET TOWARDS THE ACCURACY OF THROWING SOFTBALL IN BUFFALOES UNS ATHLETE FACULTY OF TEACHER TRAINING AND EDUCATIONAL, UNIVERSITY OF SEBELAS MARET SURAKARTA

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Abstract

Objectives : This study aims to improve the accuration of over-head throw by using targeted at men's softball athletes Buffaloes University of Sebelas Maret Surakarta.
Metods :The method used in this research is quasi-experiment, based on experimental design of pre-test-post-test. The subject of this research is the men of club softball athlete at University of Sebelas Maret Surakarta, 20 members in group. As the subject in this research is all of population. Data collection techniques gained by the softball throwing accuracy tests according to The O'Donnell Softball Test (Nurhasan, 2007:243) to measure the accuracy of over-head throw, college level. Data analysis techniques by using the computer program SPSS-18.
Results : The results of over-head throw between the pre-test to post-test there are not significant difference and the average post-test 14.60 is higher than the value of pre-test is equal to 13.85 so there is an increased reaching 5.24%.
Conclusion: From the results of research and data analysis has been done apparently hypothesis can be accepted. Thus the conclusion can be obtained as follows: (1) There are significant differences between early and final data on the ability of throwing the softball men's athletes of Buffaloes UNS in 2012 (thit 2319> ttabel 5% of 2,093). (2) After the training was held on the softball throw at the target, then the ability to throw the ball up on the softball men's athletes UNS Buffaloes softball in 2012 amounted to 5.24%.

Keywords: accuration, overhead throw, softball

INTRUDUCTION

Sport is a body movement that is fun for everyone and healthy. Nowdays people are spending more time and even money for sports. Sport has become a necessity for all societies. One kind of of the sports is softball sport. Softball is still assumed an expensive and foreign sport for people in Indonesia. The assumption was reasonable because softball needs large capital to be able for playing it. Spanker, gloves, ball etc., is equipment that must be owned by softball players which of course is not cheap and not easy to get it, so there is still need for socialization to socialize softball sport. Softball which is a simplification of baseball game, it is a fun sport and has started growing rapidly in big cities of Indonesia.

Based on the results of field observations found that the overhead throw is a technique often used by players in softball games, for it needs a good mastery by all softball players. For the beginner the first throwing technique that needs to be mastered is the top throwing technique, because the top throw is an easy-to-learn throw and if there is an error in throwing it can be blocked by the body by catching the ball from the other two throws ie the sideways and throws (Parno , 1992: 18). In this case Housewarth and Rivkin in the book Parno recommend to teachers and trainers to teach the top throw until the player understands and can do well before teaching other techniques. If the basic throw can not be mastered properly, do not go first to the toss that is more difficult, that is the throw down and throw sideways.

In the softball game is needed stamina and good concentration to win the game. The throw is one of the most important techniques in surviving the softball game. The technique of throwing the correct softball ball is throwing the ball with one of the strongest hands and throwing with the target player's head. Players in good condition can make mistakes in throwing over softball ball especially if

the player in a tired condition, very potential to make mistakes in the technique of throwing softball ball. This condition is often experienced by softball athletes, especially in the Buffaloes team.

In each exercise several techniques are always trained and repeated to achieve automatic movement in the game. The throw up of the softball ball is trained with the opposing player's method of starting with close distance, once it is enough then one of the players to move away backward until the maximum distance of the throw bias is reached. This way is perceived the writer has not been so effective considering not a few players make mistakes, when doing a throw over the softball ball.

The key to being able to throw well is that the ball is always right on target in that it can be captured by other players. The goal to make it easier for other players to catch the ball when thrown is the head. With the exercises that exist in the Buffaloes team as already written above need to be added to be able for training the accuracy of throwing softball ball. Target use is one way to make it easier for players on focusing the throw at a point.

Based on the problems that have been raised above the research will examine and reasearch. The effect of softball ball throwing practice by using the target against the accuracy of throwing softball balls. Thus the problem arises is there any effect of softball throwing exercises using the target against the accuracy of throwing softball's balls.

To know and answer the problem, it needs to be studied and researched more deeply both in theory and practice through pre-experimental research. Buffaloes softball man's athlete is the person to be the subject of this research. Hopefully by following this research can help the athlete in mastering technique to throw the ball softball well. To improve the ability in throwing the ball softball's athlete in an optimal need to exercise, but has not achieved maximum results. This condition need to be explored for the cause and all aspects of both the player, the trainer and the exercise method used.

The problems that have been raised above is the foundation that can be the background of the research title " Influence Of Exercise How To Throw Softball, By Using The Target's Accuracy In Buffaloes Uns Athlete, in 2012.

From the research problem above, the purpose of this study are:
To know: to improve the accuration of over-head throw by using targeted athletes Buffaloes Sebelas Maret University Surakarta. The benefits from the results are:
Can be used to improve the accuracy of over-head throw on softball athletes. The benefits are:
1. Theoretical benefits

a. Get new knowledge on how to improve the throwing accuracy of softball athletes.
b. The results of this study can be used for further research reference related to the same thing.
c. Can be used as an alternative medium for trainers at other universities for improving engineering or material skills more effectively for students or athletes.

2. Practical Benefits

a. For Students

   By using of training aids, technical skills in the throwing up of softball can increase students are expected to be more excited and encouraged in training.

b. For Coach

   This research can be used as input and reference for trainer that using target as a training tool can improve students' technical ability, so it can support the achievement maximally.

c. For Researchers

   Researchers get the fact that through the use of exercise aids can improve the ability of techniques or materials.

d. Other Researchers

This research can be used as Bibliography and frameworks.

Sofball or known as softbal is a team ball sport consisting of two teams. The softball game was born in the United States, which was created at the Chicago Office of Chicago's Illragut Boat Club, Ill. On September 16, 1887 by George Hancock. Since 1933 "softball" has become an official name. And in 1934, the establishment of a joint regulation to further standardize the rules of softball. There have been many regulatory changes since then, especially in 1946, where there was a change in the number of players in a team from 10 to 9 people. The tenth player was named the "shortfielder" at that time

serving as the outer shallow area guard who explored in the back inside. In 1950 the distance between the pitcher's plate and home plate was added for the son from 43 feet to 46 feet (13,114 meters). The duration of the game in a softball game, arranged by inning, ie each team has experienced being a hammer team and squad with the same amount. In a softball game consisting of seven innings, each team experienced seven innings of guards and a bat. As proposed by the PB Commission of Arbitration. Perbasasi (1993: 7) as follows:

An inning is part of the game on the two teams that compete with each other, who alternately being an offensive and defensive team and there have been three dead for each squad. Inning just begins as soon as the last dead from the previous inning. Based on it above, the switch to be a team of hitters and field guards, after three field teams can kill off the bat. (Dell Bethel 1987: 31) suggests a player is declared dead or out if:

1) It has hit three times and the third one is not hit, while the catcher can catch the pitcher's ball before the ball falls. If the catcher can not capture any pitcher , but all the base is charge, then the hitter is still dead.
2) Hit the right or wrong, while the field party can catch the ball punch.
3) Not yet in base I, while this base I has been burned.
4) He did not step on the base that was passed.
5) He avoids being left out of the ball, deviating more than a meter beyond the line between the two bases.
6) Can be touch at any time and anywhere, provided he does not step on the base.
7) Make "Infield fly".
8) Make "Bunting" on the third blow, while the result is a wrong blow.
9) When “incumbency running” they do not get the base, and the base is burned, or he is on the way.
10) Direct hit from his friend

In softball game, from 9 (nine) players in a group or field party get to the each of the position. A Sarumpet and friends (1992:144) said that : “Player’s positionis defined as : “pitcher, catcher, first basemen, second basement, third basement, shortstop, left fielder, center fielder, right fielder.” Here is the duty of each of the players :

1. The first position is the pitcher, he has a responsible to bounce the ball.
2. The second position is the catcher, he has a responsible to catch the ball from pitcher and save the home base,
3. The third position is the first base, he has a responsible to save the first home base
4. The fourth position is the second base, he has responsible to save the first and the second bases
5. The fifth position is the third base, he has a responsible to save the third base
6. The sixth position is the shortstop, he has a responsible to save the second and the third bases
7. The seventh position is the left fielder, he has a responsible to save the left side of the outer field
8. The eighth position is the center fielder, he has a responsible to save the center side of the outer field.
9. The ninth position is the right fielder, he has a responsible to save the right side of the outer field.

The minimal equipment that is needed to play softball is a ball. Softball uses a yellow ball within red strand grip which previously it has white ball within white strand grip. All of the player use glove to catch ball. Meanwhile, the first baseman and the ball’s catcher use *mitt* (glove has fingers but *mitt* does not have fingers). The bat that is used for official game is a special bat that only uses for softball game. The use and characteristic condition of a bat is noted in the rule of International Softball federation. The pitcher’s helmet is used to protect the head of the pitcher from ball and injury. Meanwhile, the gear protective is used for catcher and a cleats. The last one is uniform. Every player use the same clothe, trousers, and hat or have the same basic colour. The higher the level of the game, more difficult the condition of the uniform. Ever equipment and gear are must for each of team to play an official game.

In sofball game there are at least one or seven adjudicator or umpire. One plate and three line umpire that is keeping the game. The rest of it, the umpire take control to the outer field. In game play,

fast pitch is judged by four umpires (one plate and three line umpire). An umpire is calles as “blue”, it is because their uniform is always blue. The position of the umpire is standing behind the catcher and the beater. He has to watch the incoming ball that is throwed by pitcher to the catcher. He has to decide whether it is strike or ball.

An umpire is also watching the game play carefully to decide the actual event and keeping the player to obey rules. The leader of the game play is an umpire plate. Because of the state of being a leader, the authority of an umpire plate in a softball game is absolute. Even if player, coach, or manager are appealed, the decision of an umpire plate is absolute. But the appealing works just if the umpire plate has wrong implementation of rules. If there is a game that is proceeded under the protest (game under protest, rules of a softbal game play can be read from rule of a softbal game play published by ISF, in detail). An umpire can expel whoever he wants wheter player or coach just if palyer and coach interupt the game play.

a. Ready stand
   Standing by the readiness of legs, so when body is ready and steady, it is possible to throw the ball as free as he can. The body is curving with the left shoulder is higher, lining with the left front leg aim the target and the right leg left behind. For right hand pitcher, the ball is grasped like when the ball insides glove within the favorite grip, concentration and clear sight eyes to the target.
b. First movement
   At the start of movement, the position change from the position is ready by moving the weight on one of the legs in the back or left foot for the right thrower and right foot for the left thrower, while the other legs do the striding by lifting the foot toward the front side toward the target. At the same time, the hand that holds the ball swings back to its full by holding up the wrist. This moment is a crucial moment when the pitcher will maximize the throw or prefer to slow the ball to outwit the opponent.

c. Throwing Ball Motion
   The motion of throwing the ball is the most vital movement of the entire series of overhead throw (softhead) movement. Throwing a ball will produce a precise and distant throw if all parts of the body have the technique to do a good throw At the time of throwing the ball, weight on the front of the foot to push forward the position of the foot slightly bent. This helps maintain the balance of the body to move the power of the foot to the target. After stepping or striding move and put the foot on the front, roll the upper body or thorak toward the target.
   This will help raise the arms around the body toward the target. Before the arm is moved forward, release the ball accompanied by a wrist strap. Hand scuffs should be more attention because if wrong when removing the ball from the throw is not maximal, and the result of the throw must be an error and will allow the opponent to save or print the value. The right moment to whip is the ball in front of the eye.
d. Advanced Motion
   Advanced motion is the last movement in the overhead softball circuit. Further movement is done after the loose ball from the hand is accompanied by hand motion, as if the movement follows the movement of the ball thrown. The motion ends on the sides of the body or legs on the hands that wear the glove. The position of the body leaning forward and the eyes still staring at the target throw.At that time the weight is on the front leg, while the hind leg pushing following forward motion still on the ground as a stabilizer with a glove on the side of the foot. Further movement should also be considered because if wrong in doing further movement will result in injury and will affect the existing muscles in the body.

Softball Technique of upper bounce

The technique is called as upper bounce because of the distance of the bounce surpassing horizontal line of shoulder joint. Technique of upper bounce is a favorite for players in softball game from two kinds of technique that is usually used. This technique has an advantage from the movement of the hand line which is moved from upper to lower curve movement, so the possibility of errorneous lower curve can be eliminated by impeding and blocking the ball from player.

Mistake that is usually happen is when the ball is bouncing up, it is quite difficult for player to handle the ball. On the other hand, the upper throw is possible to be throwed as strong as we can, so the ball can moves in high speed. This high speed movement can be reached when all of the body is moving from the legs, hips, and hand together.

Analysis of the movement of the upper bounce :

Exercise Method

Exercise is a process that must be executed by a player to achieve the highest achievement. This is a general definition of practice presented by several experts, as follows:

1) According to Suharno HP. (1993: 7), "the exercise is a process of consciousness or maturation consciously to achieve the maximum performance quality with physical and mental burdens regularly and purposefully, increasing, gradually and over and over in time ".
2) According to Yusuf Hadisasmita and Aip Syarifuddin (1996: 145), "practice is a systematic process of rehearsing, increasingly increasing the amount of training and intensity of training."
3) According to A. Hamidsyah Noer (1996: 6), "practice is a systematic and continuous process of practice or work done repeatedly in a continuous manner with increasingly increasing the amount of workload to achieve the goal".

Based on the above limits can be concluded that, training (training) is a process of work or practice a systematic and continuous and repeated with the burden of training and intensity of training is increasing. Increasing the load and intensity of this exercise is done gradually in suitable with the ability to practice. In the implementation of the exercise there are several aspects that are very important to achieve the achievement. Yusuf Hadisasmita and Aip Syarifuddin (1996: 145) suggested that aspects need to be trained and developed to raise achievement include, (1) physical exercise, (2) technical training, (3) tactical exercises, and (4) mental training ".

According to Kamus Besar Bahasa Indonesia Third Edition (2005: 735) the target is: "kb, monthly, targeted object, something to be a purposed. Target is the the last aims in throwing up softball's ball. Players can play well in defense when every throw can hit the target desired by another player to turn off the rival

METHODS

This quasi experimental research (PEK) is conducted from September to October 2012. The place of this research is done at the Softball Field of Manahan Solo Stadium.Subjects in this research is athletes softball men's Buffaloes UNS in 2012 which amounted to 20 people. As the subject of this study is the entire population. The data sources in quasi experimental research (PEK) are as follows:
Men's softball buffaloes athlete, to get data on the accuracy of throwing softball at softball athletes Buffaloes UNS 2012.

Data collection technique

The data in this study was obtained through the softball top accuracy throwing test according to The O'Donnell Softball Test (Nurhasan, 2007: 243), to measure the basic techniques of college level softball game (student / coed).
This test is used as a test to measure the accuracy of the softball throw in Softball sports. The test instruction manual is attached.

Test Data Validity

Validity used in this study is the validity of the content (content validity) which the test techniques to be given to the subject research is suitable with the content that should be given. Meanwhile, to obtain valid data used Ttest which is standardized.

Data analysis technique

The data obtained from this research is quantitative data. Quantitative data in the form of the results of the test of precision overhead before and after the exercise, is calculated using T Test to know the improvement of training results. Data analysis technique using computer with program SPSS-18.

RESULTS

The result of statistical data analysis with T test test obtained t value count 2,319 and t table with 5% significance level equal to 2,093. Therefore thitung> ttable it can be concluded that there is a

significant difference between pretest and postest. While seen from the percentage increase showed an increase of 5.24%.

This suggests that after subjects are subjected to throwing softball skills that are throwing exercises with targets, the ability to throw over the softball ball are increases, because by using of the necessary throw over is the power to get the ball to the player in the field other than that the round of the ball will affect away the ball, meaning with spin back spin then the ball will go with the fight against the gravity of the earth so the ball does not fall quickly down. Unlike the other second throws are only for close range because the ball spins with the side spin and the top spin of the ball will quickly fall to the ground.

According to Suharno HP. (1993: 7), practice is a process which an athlete must accomplish to achieve the highest possible performance. Throwing softball ball in softball game is a technique that many do, then technique of throwing softball ball is base in playing softball. This technique is used by the player while defending to prevent other teams from scoring points. Means the player must master the skills of throwing the ball. Throwing this softball's ball must be right on the target desired by other players to turn off the rival. As stated by Sudjarwo (1993: 44) that, "The repetitive technique exercise aims to automate the movement according to the desired technique. In essence, the development of technique is part of the effort to improve the skills toward the movement carefully, efficiently and effectively ".

According to A. Hamidsyah Noer (1996: 6), "practice is a systematic and continuous process of practice or work done repeatedly in a continuous manner with increasingly the amount of workload to achieve the goal". So it can be concluded that the exercise (training) is a process of work or practice a systematic and continuous and repeated with the load of training and intensity of training is increasing. While the increased load and intensity of the exercise is done in stages in accordance with the ability of athletes who practice.

According Sudjarwo (1993: 44) that, "Techniqe exercises are done repeatedly aims to automate movement according to the desired technique. In essence, the development of technique is part of the effort to improve the skills toward the movement carefully, efficiently and effectively ". The suggestion can be concluded that repetition of the form of the learned movement is very important to master the technique of a sport or improve physical ability. Repetition of movement should be done with the frequency as much as possible. It is intended to develop the technique learned into effective and efficient motion automation.

CONCLUSIONS

Conclusion

Based on the results of data analysis statistically the hypothesis test proposed in this study can be accepted truth. So it can be concluded as follows:

1. There is a significant difference between baseline and final data on the ability to throw softball ball on the softball athlete of men's son UNS in 2012 (thit 2.319> ttable 5% of 2,093).
2. After the training is thrown on softball ball with the target, then there is the effect of overthrowing practice (softhead throw) softball by using the target against the accuracy of throwing softball ball, the ability to throw the softball ball increased on the softball athlete son of UNS 2012 in the amount of 5, 24%.

Implications

Based on the results of training research throws over softball ball with the target can improve the ability to throw over the ball softball. The throwing up technique is a technique that many players perform in the game rather than other types of throwing techniques. This throw is called the throw up because it likes swing movement of the arm carried upwards over the horizontal line on the shoulder joint. Besides this technique allows the ball to be thrown strongly, so it has a high speed and further and by using the necessary top throw is the power to get the ball to the player in the field otherwise it spin the ball will affect the ball away, that means with the spin back spin then the ball will move by defying the earth's gravitational force so the ball did not fall quickly down.

Suggestion

Based on the above conclusions and implications, it can be suggested as follows:

1. To improve the ability of the top throwing needs to be held a continuous training and optimal.
2. Although the throw up is used by many players out of the players in fields but if not properly controlled it will be failed, so need for training with the right method, for the mastery of the throw up.

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MANAGEMENT OF DEVELOPING SWIMMING ACHIEVEMENT IN NATIONAL PARALYMPIC COMMITTEE OF INDONESIA

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Abstract

Objectives: The main objective of this study were understanding and analizing about: 1) structural organization of NPC (*National Paralympic Committee*) of Indonesia on managing swimming achievement, 2) Recruitment system of NPC of Indonesia on managing swimming achievement, 3) Infrastructure management of NPC of Indonesia on managing swimming achievement, 4) Funding management of NPC of Indonesia on managing swimming achievement 5) Implementation of the exercise management NPC of Indonesia on managing swimming achievement.
Methods: This study was conducted at Head Office of NPC Indonesia and Kartasura Swimming Pool, Central Java Province. This study was qualitative study, and presented in descriptive approach. The data was collected by doing observation, document analysis, and interviews.
Results: The results of the management of developing swimming achievement in NPC (*National Paralympic Committee*) of Indonesia was summarized as follows: 1) There are general chairman, the head of the achievement division, the head of the sports department, coach manager which then directed to the coach coordinator and coach's assistant in the organizational structure 2) Recruitment of the organization was held by choosing people who concerned about NPC of Indonesia, recruitment of coach was also held without any special tests, which was selected by: giving priority to athletes who ever have got medals and have experienced as coaches, recruitment of athletes was held using special test by NPC of Indonesia, 3) Facilities, in the form of swimming's support tools, were given gradually by Ministry of Youth and Sport by submitting proposals, while the infrastructure as Kartasura swimming pool was still rented, 4) the funding was purely obtained from Ministry of Youth and Sport without any sponsorship, but this was enough for the coaches and athletes, 5) in the training, the coaches gave the training appropriately by doing general preparation, special preparation, pre match, and also considering athletes' physical condition, technique, and mental status, then training program can be developed according to the condition of each athlete.
Conclusion: Based on performed data analysis, it can be concluded that management of developing swimming achievement in NPC (*National Paralympic Committee)* of Indonesia had been going pretty well, but there were still weakness, such as: recruitment of organization and coaches had not done by special test, and swimming pool was still rented, therefore there should be any effort to reduce these weaknesses and to improve the good achievements.

Keywords: Sport management, swimming, NPC of Indonesia

INTRODUCTION

Sports basically have a very important and strategic role for efforts to establish and improve the quality of human resources for development. Sport is considered essential to support the formation of character and personality, discipline, sportsmanship is high, and an increase in performance can evoke a sense of pride and national unity. Sport has other equally important role is to form a complete human being inwardly and outwardly. Sports in general, can be divided into several kinds of them: (1) a recreational sport that is exercise done just to fill any spare time, for fun, relaxing, and conducted informally both the means and rules, (2) Sports education is to educate the sport as exercise done in schools taught by sports teachers that aims to educate and shape the character of the students at an early age, (3) Sports achievements to the achievement of an achievement as the ultimate objective.

Interest someone to do different sports activities, a lot of choice in the exercise, and of course the election depends on the interests of each individual. Based on the values contained in the sport, then it should exercise the highest placed in the position or priority, because these values are indispensable to a nation if you want to look up. Sporting achievement is a sport that foster and develop the sport in a planned, tiered and sustainable. The competition for achievement in science and technology support sport (Republic Act 3 of 2005 on National Sports System Article 1, paragraph 13). Sporting achievement was at first and usually only done by

normal people, but as many advances in technology as the impact of globalization, sporting achievement also made by the special-need athletes as a multi-sport event to be contested in order to achieve a feat that is as high as possible and can boast of Indonesia.

The participation of athletes at the Games International diffabel like ASEAN Paragames, ASIAN Paragames and Paralympic Games have provided evidence that exercise achievement for persons with disabilities began to grow and prosper in Indonesia. With the development of sports for athletes with disabilities this achievement it takes an organization to overshadow everything to the needs and support the achievement of the athletes with disabilities. Therefore formed the *National Paralympic Committee* (NPC) Indonesia. At an outdoor sport itself has put some swimmers the best athlete in the event Asian Paragames, and was able to qualify to attend sporting events with disabilities highest Paralympic Games, even in 2014, Indonesia won the public in one of the international events, namely the Asean Paragames.

Achievements of athletes with disabilities Indonesia would have no doubt at all international matches that followed. In carrying out the exercises on NPC *(National Paralympic* Committee) Indonesia primarily on an outdoor sport must not be separated from good management. Management is a integral component and cannot be separated from the process of coaching and the overall training because without good management, it will be very difficult achievement of athletes with disabilities, especially in the sports pool can be realized. To support the management there are several aspects that must be considered, such as organizational structure, recruitment patterns, infrastructure, funding, and implementation of the exercise. Organizing is a function both in management and organization is defined as the process of preparing the organizational structure in accordance with the objectives, resources, and environment, thus the results of the organizing is the organizational structure. Recruitment is the process of looking for and set a number of people from inside and outside as candidates with certain characteristics as specified in the planning of human resources. Implementation of recruitment course through the selection and qualification openly. Infrastructure can support the process of training and are expected to create comfort for the athlete to exercise more effectively and efficiently. As a support to other important management is a vital source of funding that must be managed properly programmed and supervised in order to achieve the objectives as planned. Furthermore, supporting the latter is the implementation of management training must be arranged through an exercise program in order to obtain optimal results.

Based on the description above then formulated the problem of how the organizational structure, recruitment systems, infrastructure management, financial management, management of the implementation exercise NPC Indonesia on swimming coaching sports achievements. The purpose of this study was to determine the organizational structure, recruitment systems, infrastructure management, financial management, the management of the implementation exercise NPC *(National Paralympic* Committee) Indonesia on swimming coaching sports achievements. While the benefits of research for the board as one of the materials and information that can be taken into consideration in advancing the swimming sport athletes with disabilities Indonesia and spawned outstanding athletes of national and international level. For a coach to guide trainers to implement training programs in accordance with the methods and theoretical approaches that can improve the performance of athletes with disabilities Indonesia swimming sports. For athletes as one measure to help improve performance in sports and swimming as well as athletes with disabilities can find out the barriers and the difficulty administrators and trainers in fostering achievement. For the author, this research is expected to increase the knowledge and practical experience according to the results of direct observation and can add to the discipline gained while studying in college education. For general could theoretically be used as material and source of information about the management conducted NPC *(National Paralympic* Committee) Indonesia on swimming coaching sports achievements that can be used by anyone who needs a treasury of scientific papers.

METHOD

This study was conducted at the Central Office NPC Indonesia and Swimming Pool Kartasura, Central Java Province. This study uses qualitative research and presented with descriptive approach. Data collection techniques used in this research is observation, document analysis, and interviews.

RESULT AND DISCUSSION

Result

This study uses data collection techniques of observation, analysis of documents, and interviews. The analysis, conducted by researchers is to make a list of questions for interviews, data collection, and data analysis conducted by researcher. In order to determine the extent of the information given by the informant study, researchers used several stages; 1) Prepare draft interview questions based on the elements of the credibility of the informant or informants, 2) Conducting interviews with several sources that has researchers expected to provide information to answer questions that have been compiled in the formulation of the problem.

a. Organizational Structure

NPC *(National Paralympic* Committee) Indonesia has an important position within the framework of the disabled sports achievements coaching thoroughly. Coordination within the organization NPC *(National Paralympic* Committee) Indonesia is required to obtain optimum support of the various stakeholders as the outstanding athletes with disabilities. According to the results of observations in the field, the organization NPC *(National Paralympic* Committee) Indonesia already has an organizational structure that is well documented and has basic AD / ART so that its management can proceed smoothly in accordance with what has been planned. The organizational structure of the NPC *(National Paralympic* Committee) of Indonesia, especially in sport swimming suit SK consist of a manager, head coach, coordinator coach and assistant coach. The entire coach selected based on considerations of former athletes as well as people who already have experience in the field. From the results of interviews, observations, and analysis of the documents shows that the NPC *(National Paralympic* Committee) Indonesia has a good organizational structure and meet the standards of the organization. NPC *(National Paralympic* Committee) Indonesia supervise and coordinate all activities across the province NPC Jurisdiction Homeland. Up to NPC district / city level based listed on AD / ART.

b. Management of Recruitment

For now NPC *(National Paralympic* Committee) Indonesian branch has 33 athletes swimming sports to be prepared to follow international events, recruitment of athletes adapted to the necessary criteria. The criteria in question are considered in accordance with the posture of the sport and allow it to be trained, as well as through their national championships gave birth to athletes with disabilities with a record time in accordance with the national limit. Recruitment of athletes referring to national events such as peparnas, pepapernas, peparprov, peparkab / city with the best limit and be based on certain criteria that are considered able to be trained to be an athlete. Recruitment coach to get the maximum performance has its own procedure. Not done openly, as NPCs*(National Paralympic* Committee)Indonesia has its own way to recruit coaches.

Recruiting coach of NPC *(National Paralympic* Committee) Indonesia in sports pool based special consideration in order to obtain the most out of the coach that is reliable and is experienced directly when training in the field. Recruitment manager at NPC *(National Paralympic* Committee) Indonesia the process is inversely proportional to coach the national athletes in general. However, all the processes are carried out has been considered the ultimate goal is to get as many achievements and as high as possible. However, the recruitment process is still done traditionally, in the sense of not having guidelines. Recruitment daily caretaker NPC *(National Paralympic* Committee) Indonesia is still done traditionally and not through an open selection process or the public, but based on special considerations that are caring and loyal to their organization NPC *(National Paralympic* Committee) Indonesia.

c. Management of Facilities and Infrastructure

Facilities and infrastructure practice is very supportive of the activities of athletes NPC *(National Paralympic* Committee) of Indonesia, especially in the sports pool. The means used for everyday athletes exercise is the pool. Exercise still use the public swimming pool located in Sukoharjo Kartasura, so the training schedule implemented afternoons at certain hours after the pool was closed to the public and the use of an early morning still have to share with the general visitor. Besides the gym, training equipment other used athletes NPC *(National Paralympic* Committee) of Indonesia, especially sports pool ie swimsuit, cap, goggles, hand paddles, fins for legs, float arm, as well as the stick and rope exercises as a sign of finish for tuna visual impairment. In addition to exercise equipment, based on observations in the field, a swimming athlete NPC *(National Paralympic* Committee) Indonesia get a boarding facility to hire the hotel as a gathering place for all the athletes to rest unwind. Facilities and infrastructure are used can be said is still worth it, because almost every year there are procurement of Ministry of Youth and Sport, and for treatment every day handed to the coach. For coaches and assistant coaches also get the same rights as what is earned by athletes.

d. Funding Management

NPC *(National Paralympic* Committee) Indonesia including those funded by the state budget, through Ministry of Youth and Sport. The funding system in the NPC *(National Paralympic* Committee) Indonesia is a self in terms of direct funding distributed by Ministry of Youth and Sport, and NPC *(National Paralympic*

Committee) Indonesia act as implementers of activities. The needs include training facilities and other forms of purchases fulfilled by the State in the form of goods according to the filing by NPC *(National Paralympic* Committee) Indonesia, then NPC *(National Paralympic* Committee) Indonesia just accept what is given, honor coaches and athletes as well as athletes' accommodation directly distributed by Ministry of Youth and Sport to the relevant parties. For the budget cannot say how much the index. Regarding the funding is so sensitive that researchers asked outline.

e. Management Training Implementation

In the implementation of the exercise, the coach is the highest leader in NPC *(National Paralympic* Committee) Indonesia swimming sports. The role very important in carrying out any exercise program. At an outdoor sport NPC *(National Paralympic* Committee) Indonesia has coordinators coach who coordinates five other coaches. Coach in providing exercise program always coordination and communication with assistant coaches.

Pool exercises on the NPC *(National Paralympic* Committee) Indonesia is carried out five times in one week for the afternoon session (pool), three times a week for a morning session (swimming), and three times a week for physical exercise in the morning. Exercises are closed on Saturday afternoons and Sundays to provide rest periods in athletes. Morning pool exercises starting from 05.30 am to 07.30 pm. For the afternoon swimming practice starts at 16:30 pm until 19:00 pm. Meanwhile, to physical exercise in the morning starts at 6:30 pm until 8:00 pm. according to the results of observations in the field, in the exercise pool sport grouped into 5 groups, so that the trainer had seven to eight athletes to maximize results. Grouping based on the speed of swimmers.

The training ground was in Swimming Pool Kartasura Sukoharjo that are borrowed or rental use, so the training schedule tailored to the schedule of public visitors. As for physical exercise performed in the venue that is at Lor-in.

Trainer exercise program given in accordance with the plans that have been made at the beginning of the period. Coach program planning long term, short term, as well as pre-competition. Coach always give an evaluation of each exercise in order to tell the athletes what was achieved and targets are not achieved in practice. According to the results of field observations, structured exercise program that coaches have been booked and always do evaluation and reporting of achievement athlete to NPC *(National Paralympic* Committee) Indonesia regularly every week.

At an outdoor sport NPC *(National Paralympic* Committee) Indonesia every athlete doing exercises with the same swimming style as athletes in general, the difference is the specificity of regulation and the athletes perform swimming movements in accordance with the ability of the muscles and nerves that can still be used. From all the interviews with coaches and observations in the field stated that the training process adapts to the needs of athletes. But always pay attention to physical development, mental development, and evaluation techniques that are always held after practice. In the implementation of the exercise has reached the perfect point so that the targets to be reached with good practice and generate maximum performance.

DISCUSSION

1. Structure of Organization

NPC *(National Paralympic* Committee) Indonesia has an important position within the framework of the disabled sports achievements coaching thoroughly. Coordination within the organization NPC *(National Paralympic* Committee) Indonesia is required to obtain optimum support of the various stakeholders as the outstanding athletes with disabilities. NPC *(National Paralympic* Committee) Indonesia has a good organizational structure and meet the standards of the organization. NPC *(National Paralympic* Committee) Indonesia supervise and coordinate all activities across the province NPC Jurisdiction Homeland. Up to NPC district / city level based listed on AD / ART. The organizational structure of NPC *(National Paralympic* Committee) Indonesia has attached an outdoor sport.

With the organizational structure, the development process is expected to run effectively and efficiently without the overlapping of authorities and responsibilities, as well as the lack of mutual interests between one party and another.

2. Recruitment Management

Based on the results of the study, NPC *(National Paralympic* Committee) Indonesian branch has 33 athletes swimming sports, recruiting athletes adapted to the necessary criteria. The criteria in question are considered in accordance with the posture of the sport and allow it to be trained, as well as through their national championships gave birth to athletes with disabilities with a record time in accordance with the national limit. Recruitment of athletes referring to national events such as peparnas, pepapernas, peparprov,

peparkab / city with the best limit and be based on certain criteria that are considered able to be trained to be an athlete.

Recruitment coach to get the maximum performance has its own procedure. Not be selected openly, because NPC *(National Paralympic* Committee) Indonesia has its own way to recruit coaches. Recruiting coach of NPC *(National Paralympic* Committee) Indonesia in sports pool based special consideration in order to obtain the most out of the coach that is reliable and is experienced directly when training in the field. Recruitment manager at NPC *(National Paralympic* Committee) Indonesia the process is inversely proportional to coach the national athletes in general. However, all the processes are carried out has been considered the ultimate goal is to get as many achievements and as high as possible. In the recruitment process is still done traditionally, in the sense of not having guidelines.

As for the daily caretaker recruit NPC *(National Paralympic* Committee) Indonesia is still done traditionally and not through an open selection process or the public, but based on special considerations that are caring and loyal to their organization NPC *(National Paralympic* Committee) Indonesia. Management recruitment of athletes and coaches in the NPC *(National Paralympic* Committee) Indonesia does not have specific guidelines, all still done traditionally.

3. Management Facilities and Infrastructure

Facilities and infrastructure sufficient to support the process of exercise training activities athlete NPC *(National Paralympic* Committee) of Indonesia, especially in the sports pool. The means used for everyday athletes exercise is the pool. Exercise still use the public swimming pool located in Sukoharjo Kartasura, so the training schedule implemented afternoons at certain hours after the pool was closed to the public and the use of an early morning still have to share with the general visitor.

Picture 1. Rope For The Blind

Picture 2. Pull Bouy

Picture 3. Stick Marker Finish

Picture 4. Fins

Picture 5. Hand Paddle

Picture 6. Hand Bouy

Besides the gym, training equipment other used athletes NPC *(National Paralympic* Committee) of Indonesia, especially sports pool, swimsuit, cap, goggles, hand paddles, fins for legs, float arm, as well as the stick and rope exercises as a sign of finish for blind visual impairment. In addition to exercise equipment, based on observations in the field, a swimming athlete NPC *(National Paralympic* Committee) Indonesia get a boarding facility to hire the hotel as a gathering place for all the athletes to rest unwind. Facilities and infrastructure are used can be said is still worth it, because almost every year there are procurement of Ministry of Youth and Sport, and for treatment every day handed to the coach. For coaches and assistant coaches also get the same rights as what is earned by athletes.

4. Management Funding

NPC *(National Paralympic* Committee) Indonesia including those funded by the state budget, through Ministry of Youth and Sport. The funding system in the NPC *(National Paralympic* Committee) Indonesia is a self in terms of direct funding distributed by Ministry of Youth and Sport, and NPC *(National Paralympic* Committee) Indonesia act as implementers of activities. For the budget can not say how much the index. Regarding the funding is so sensitive that researchers asked outline. Management of the fund on the NPC *(National Paralympic* Committee) Indonesia concluded self-managed, directly from the center down to the sport one pool, and categorized enough for operational activities and also to provide facilities and infrastructures.

5. Management Training Implementation

In the implementation of the exercise, the coach is the highest leader in NPC *(National Paralympic* Committee) Indonesia swimming sports. Its role very important in carrying out any exercise program. At an outdoor sport NPC Indonesia has coordinators coach who coordinates five other coaches. Coach in providing exercise program always coordination and communication with assistant coaches.

Swimming exercises on the NPC *(National Paralympic* Committee) Indonesia is carried out five times in one week for the afternoon session (pool), three times a week for a morning session (swimming), and three times a week for physical exercise in the morning. Exercises are closed on Saturday afternoons and Sundays to provide rest periods in athletes. Morning pool exercises starting from 05.30 am to 07.30 pm. For the afternoon swimming practice starts at 16:30 pm until 19:00 pm. Meanwhile, to physical exercise in the morning starts at 6:30 pm until 8:00 pm.

Trainer exercise program given in accordance with the plans that have been made at the beginning of the period. Coach program planning long term, short term, as well as pre-competition. Coach always give an evaluation of each exercise in order to tell the athletes what was achieved and targets are not achieved in practice. Structured exercise program trainers have been booked and always do evaluation and reporting of achievement athlete to NPC Indonesia regularly every week.

At an outdoor sport NPC *(National Paralympic* Committee) Indonesia every athlete doing exercises with the same swimming style as athletes in general, the difference is the specificity of regulation and the athletes perform swimming movements in accordance with the ability of the muscles and nerves that can still be used. Athletes perform swimming movements corresponding special regulations referring to the IPC, in accordance also with the level of the athletes with disabilities. And so far no significant obstacles during the implementation process of the exercise.

The training process adapts to the needs of athletes. But always pay attention to physical development, mental development, and evaluation techniques that are always held after practice. In the implementation of the exercise has reached the perfect point so that the targets to be reached with good practice and generate maximum performance.

CONCLUSION AND SUGGESTION

Based on the analysis of data that has been determined, it is concluded that the development achievements of the sports pool on NPC *(National Paralympic* Committee) Indonesia as container sports persons with disabilities Indonesian authorities coordinate and develop any and all sports activities accomplishments of persons with disabilities in Indonesia in particular and in the event this international has gone well. In particular it can be concluded well as some of the following:

1. The organizational structure of coaching sports achievements swimming in NPC *(National Paralympic* Committee) Indonesia is good which already has the elements of the organization, such as: management

and organization management, constitution and bylaws, budget and work plan. Of all the elements have been implemented.

2. Recruitment in coaching sports achievements swimming in NPC *(National Paralympic* Committee) Indonesia is divided into three, namely the recruitment of athletes made through the selection criteria for athletes who are considered to be in accordance with the posture of sports pool, allowing it to be trained, as well as through the championships nationwide who gave birth to athletes disabilities to record a good time. Recruitment to the two that coaches do not open selection, but through a certain way based on specific considerations in order to obtain the most out of the coach that is reliable and is experienced directly when training in the field. Recruitment manager at NPC *(National Paralympic* Committee) Indonesia the process is inversely proportional to coach the national athletes in general. However, all the processes are carried out has been considered the ultimate goal is to get as many achievements and as high as possible. Namely recruitment to three daily caretaker, done traditionally and not through an open selection process or the public, but based on special considerations that are caring and loyal to their organization NPC *(National Paralympic* Committee) Indonesia.
3. Facilities and infrastructure in the swimming sports achievements coaching NPC *(National Paralympic* Committee) Indonesia sufficiently support the athletes training activities. The means used to practice using the public pool located in Sukoharjo Kartasura, so the training schedule implemented afternoons at certain hours after the pool was closed to the public and the use of an early morning still have to share with the general visitor. For other means have been met, such as dormitories, gym or physical training, transportation, and other facilities to support their daily needs. Supplies other exercises that use athletes NPC *(National Paralympic* Committee) of Indonesia, especially sports pool ie swimsuit, cap, goggles, hand paddles, fins for legs, float arm, as well as the stick and rope exercises as a sign of the finish for the blind met by Ministry of Youth and Sport according to the filing.
4. Funding in coaching swimming sports achievements in the NPC *(National Paralympic* Committee) Indonesia sourced from the state budget through Ministry of Youth and Sport, no sponsor from the outside to the problem of funding. Funding in the NPC *(National Paralympic* Committee) Indonesia is a self in terms of direct funding distributed by Ministry of Youth and Sport, and NPC *(National Paralympic* Committee) Indonesia act as implementers of activities.
5. The exercise in the swimming sports achievements coaching NPC *(National Paralympic* Committee) Indonesia has been using an exercise program. Coaches plan and exercise program adapts to the needs of the athletes to pay attention to physical development, mental development and engineering, because each athlete has different advantages and disadvantages. Coach always give an evaluation of each exercise in order to tell the athletes what was achieved and targets are not achieved in practice. Structured exercise program trainers have been booked and always do evaluation and reporting of achievement athlete to NPC *(National Paralympic* Committee) Indonesia regularly every week.

Sports achievements coaching swimming at the NPC *(National Paralympic* Committee) Indonesia is a foundation in the process of formation of national achievement. With a good performance management coaching will be generated special-need athletes swimming sports with the achievement of quality and can support the achievement of the swimming sport both nationally and internationally. It is therefore recommended:

1. For the NPC (National Paralympic Committee) board of Indonesia, it is expected that the development data of the athlete achievement will be more complete, so that not only the trainer has the document.
2. For the recruitment of the board is done by open selection so that members of the Indonesian community to support the progress of NPC (National Paralympic Committee) Indonesia.
3. NPC (National Paralympic Committee) Indonesia especially in sports swimming has its own training ground. So in the implementation of the exercise does not need to adjust the exercise schedule with others and exercise more leverage with the place of the practice itself.
4. To finalize the technique and mentally programmed try-in and try-out are scheduled and periodic.

ACKNOWLEDGMENT

Thanks to Prof. Dr. Agus Kristiyanto, M.Pd and Prof. Dr. Muchsin Doewes., Dr., AIFO that has provided many science, feedback, and motivation. NPC Indonesia, which has given permission research data retrieval.

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CORRELATION OF BODY MASS INDEX AND CARDIORESPIRATORY FITNESS TO THE RISK OF METABOLIC SYNDROME IN ADOLESCENTS

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Abstract

Objectives: The prevalence of obesity in childhood and adolescence is a major public health problem and has increased dramatically over the last few decades. More attention is needed because it is closely related to some non-communicable diseases and metabolic syndrome. The aim of this study was to investigate the correlation of body mass index and cardiorespiratory fitness to the prevalence of metabolic syndrome in adolescents.
Methods: This research is a descriptive study with observational analytic approach. The adolescents sample of this study calculated body mass index by measurement of height and weight, measurement of cardiorespiratory fitness level (VO2max) with Multistage Fitness Test (MFT), and risk of metabolic syndrome through measurement of abdominal circumference, blood pressure, triglycerides, HDL-cholesterol, and blood fasting glucose. The sample of the study was 44 adolescents (22 male and 22 female, age 16.18 ± 0.44 y.o., weight 68.41 ± 18.45 kg, height 1.61 ± 0.07 m, BMI 26.27 ± 6.25 kg/m^2, VO_2Max 29.76 ± 6.75 ml/min, BP SYS 131.34 ± 16.98 mmHg, WC 81.95 ± 15.02 cm, TG 103.43 ± 46.88 mg/dl, HDL 57.45 ± 8.50 mg/dl, BFG 82.52 ± 4.87 mg/dl). The results of all the measurements obtained were analyzed using logistic regression with the Statistical Package for Social Sciences (SPSS) 22program.
Results: The results of the simultaneous test showed that both body mass index and cardiorespiratory fitness had a significant effect on the risk of metabolic syndrome (p = 0.000). Through partial test, the correlation of body mass index to metabolic syndrome had significant effect (p = 0.000), but the correlation of cardiorespiratory fitness to metabolic syndrome was not significant (p = 0.451). The higher BMI, tended having metabolic syndrome 1.746 times more than not having metabolic syndrome. In an inadequate cardiorespiratory fitness, the tendency having metabolic syndrome was 4.283 times more than not having metabolic syndrome. Both high body mass index and inadequate cardiorespiratory conditions had a higher influence on the prevalence of metabolic syndrome. This logistic regression model was quite good because it could predict correctly 72.7% of the conditions that occur.
Conclusions: This study showed that the higher body mass index and inadequate cardiorespiratory fitness conditions can be used as predictors of metabolic syndrome in adolescents.

Keywords: body mass index, cardiorespiratory fitness, metabolic syndrome, adolescents

THE EFFECT OF SOLO LAST FRIDAY RIDE AS A SPORT COMMUNITY IN SOLO A PHENOMENOLOGY STUDY OF MASS CYCLING ACTIVITY IN SOLO

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Abstract

Objectives: The objectives of the study are: 1) to explore the implementation and the organization of mass cycling activity around the city, 2) to discover participants' creativity at Solo Last Friday Ride, 3) to explore the benefits of mass cycling activity at Solo Last Friday Ride for the participants and society around the event.
Methods: This research was conducted in Solo, Central Java. This research was used qualitative research, using phenomenology approach. The data were collected through observation, in-depth interview, and documentation. The validity of the data used technique trangulasi methods. Besides, there were four phases used to analyze the data. Those were data collection, data reduction, data display, and drawing conclusions.
Results: The result of the research shows that Mass cycling activity at Solo Last Friday Ride is a mass cycling community as a means of strengthening the brotherhood among cyclists, mode of sport, recreational facilities, and to promote the use of the bike as a form of health transportation and environmentally friendly. This activity is held once a month, every last Friday of the month. There are usually around 7000 - 10.000 cyclists joined this activity. The participants consist of the people in Solo Raya and other citizens in any level of age and gender. They join together as one to cycle around Solo. This mass cycling activity starts at 7 p.m. from *Air Mancur Stadion Manahan Solo*. Then, the route is ended at two finish points, *Perempatan Ngarsopuro* and *Benteng Vastenburg* in front of *Bank Indonesia Gladag*. It was found that there was no official committee who organize this mass cycling activity, there was a coordinator for Solo Last Friday Ride and Marshal. The internal coordination usually holds in two or three days prior to the due date of cycling activity. The internal coordination was held to discuss and decide the interesting theme; then, the coordinator had to coordinate with *Dishubkominfo* and police to report the selected route for cycling activity. The participants showed their creativity by wearing unique costume and accessories that suit with the themes. Thus, all of the participants were able to choose and design their own costume. Most of the participants modified their bikes with colorful lamps, music on their bikes, or even with some posters. Those were the way how participants showed their creativity and enthusiasm to welcome the upcoming event. Benefits for participants is as a means of exercise, for recreation and for getting fun, as a place to meet, stay in touch, play and get a lot of new friends, help reduce air pollution. The benefits the general public is particularly felt directly by merchants and service providers that is, bring up a small business, launching the economy of communities who depend on anything related to bikes and equipment, improve the income trader and service provider even though only once a month obtainment.
Conclusions: The conclusion are: 1) mass cycling activity, Solo Last Friday Ride is initiated by bicycle community to improve physical fitness, have fun, and social involvement. Then, the committee of this event is coordinated with the representative of *Dishubkominfo* and the police to decide the route, 2) the participants' creativity is shown from the costume and accessories, 3) the benefits which obtained by the participants are as a means of exercise, recreation to have fun, means of socialization, and reduce air pollution, while the society around the activity can increase their economic income.

Keywords: physical activity, sport for all, cycling.

INTRODUCTION

Recreational sport is a kind of sports activity which most people do in accordance with the people's passion and ability that grow and develop based on the local and national wisdom. The aims of recreational sports are about to improve physical fitness, fun, and social involvement. Recreational sport is suitable for any kind of people, educational level, certain institution, or sports organization. Instead of improved physical fitness and enjoyment, recreational sport can build up a good social involvement, so that, it will preserve the local and national wisdom. In this globalization era, a

recreational sport is important as the alternative way to reduce the level of stress, increasing health, and an effort of balancing the quality of life. Sport is one of the media to make life healthier and more qualified.

Recreational sport can be held either individually or together. Mass recreational sport is one of the recreational sports which follows a group of people or many people. One of the recreational sports is cycling. Cycling never limits to any social boundaries, so that, people love to do this activity. Moreover, cycling can across the boundaries because its existence can be found both in the city and in the village. As time goes by, it is found that the people who use to bike are significantly reduced. People prefer to use modern vehicle than a bicycle because it is faster and save the time. There are many various modern vehicles such as motorcycle and car which have been used by people in the city and village. Thus, it causes air pollution and traffic.

By cycling, people can get many advantages. Those are cycling can improve our body fitness, can save our environment from the air pollution, and save our financial. Recently, the local government attempts to promote to our society to recycle things around us and using environmentally friendly energy. In line with the government's idea, a bicycle is one of the environmentally friendly forms of transport. Hence, the cyclists' physic also gets healthier than before.

Solo is one of the cities that has a program which is called a cyclist-friendly city. Besides, Solo begins to create an environmentally friendly city for the future. To achieve that goal, the government has to start from now on to provide the supported facilities. Therefore, the government has to know the existence phenomenon around the society to make the policy.

Recently, Solo people are attracted with the existence of mass cycling event which participated by a large number of masses. They name it as Solo Last Friday Ride. The implementation of mass cycling activity becomes an interesting topic to describe, with such a large amount of people, how to organize and coordinate it. The participants of the cycling activity also appear unusual; they are able to attract the attention of the community through their creativity. Year by year, this mass cycling community still continues to exist and routinely held a cycling activity. Then, it raises a question what the benefits of mass cycling activity are for both participants and the people of Solo. So the purpose of this study was describes implementation and organization of mass cycling events around the city in Solo Last Friday Ride. Identifying the creativity shown participants of mass cycling events around the city in Solo Last Friday Ride. Explaining the benefits of participants who take part in a mass cycling Solo Last Friday Ride and the general public who were around activities Solo Last Friday Ride.

METHODS

This research was held in Solo, Central Java. This research is applied qualitative research and presented using phenomenology approach. This research is focused to describe and analyze the phenomenon of mass cycling activity Solo Last Friday Ride started from the implementation, organization, participants' creativity, and the advantages for participants and society around the event. The data were collected using observation, in-depth interview, and documentation. The validity of the data used technique triangulation methods. Data collection was done by using different methods. The data presented in this study are valid because of the retrieval of data by different methods have shown similarities. Besides, there were four phases used to analyze the data. Those were data collection, data reduction, data display, and drawing conclusions.

RESULT

1. The implementation and organization of mass cycling activity around the city at Solo Last Friday Ride

Mass cycling activity at Solo Last Friday Ride is a mass cycling community as a means of strengthening the brotherhood among cyclists, mode of sport, recreational facilities, and to promote the use of the bike as a form of health transportation and environmentally friendly. This activity is held once a month, every last Friday of the month. There are usually around 7000 - 10.000 cyclists

joined this activity. The participants consist of the people in Solo Raya and other citizens in any level of age and gender. They join together as one to cycle around Solo. This mass cycling activity starts at 7 p.m. from *Air Mancur Stadion Manahan Solo*. Then, the route is ended at two finish points, *Perempatan Ngarsopuro* and *Benteng Vastenburg* in front of *Bank Indonesia Gladag*.

It was found that there was no official committee who organize this mass cycling activity, there was a coordinator for Solo Last Friday Ride and Marshal. The internal coordination usually holds in two or three days prior to the due date of cycling activity. The internal coordination was held to discuss and decide the interesting theme; then, the coordinator had to coordinate with *Dishubkominfo* and police to report the selected route for cycling activity.

2. The participants' creativity showed in Solo Last Friday Ride

The participants showed their creativity by wearing unique costume and accessories that suit with the themes. Thus, all of the participants were able to choose and design their own costume. Most of the participants modified their bikes with colorful lamps, music on their bikes, or even with some posters. Those were the way how participants showed their creativity and enthusiasm to welcome the upcoming event.

3. The benefits got by the cyclists and society around Solo Last Friday Ride activity

The benefits of Solo Last Friday Ride activity

The Cyclists	The Society Around The Event
To improve their physical fitness	Rise of economic growth especially for those who run a business related to bike and its equipment
To have fun	Increased revenue for the traders and service providers although they get it once a month.
To have recreational activity	
To eliminate fatigue from work and school through fun sports activity	
Could make the participants have more friends by meeting many people	
Could reduce the air pollution	
Could be the best place for bike lovers to share many things by cycling together	

CONCLUSIONS

1. The implementation and organization of mass cycling activity around the city at Solo Last Friday Ride

   Mass cycling activity in Solo Last Friday Ride is a kind of community that introduces by cycling communities in Solo. This activity is aimed to invite the society to ride a bike as a means of sports activity, recreation, and gathering among cyclists. This activity is also as a medium to promote the use of a bicycle as a healthy mode of transportation and environmentally friendly.

   The coordination of this activity holds prior to the due date of cycling activity by having internal coordination to discuss and decide the interesting theme; then, the coordinator coordinate with *Dishubkominfo* and police to report the selected route for cycling activity.

2. The participants' creativity showed in Solo Last Friday Ride

   Participants show their creativity by wearing unique costume and accessories that suit with the theme and sometimes the idea comes from the participants. Thus, all of the participants are able to choose and design their own costume. All participants are free showing their creativity and imagination since it does not harm themselves and others.

3. The benefits got by the cyclists and society around Solo Last Friday Ride activity

   Cycling activity is beneficial to keep participants' physical fitness, have fun, have recreational activity, and eliminate exhaustion from any activity, make friends, reduce the air pollution, and as a gathering moment among cyclists. Meanwhile, the benefits obtained by the society around the event particularly are felt by the traders and service providers. The benefits

are in terms of economic growth especially for those who run a business related to bike and its equipment, increased revenue for the traders and service providers although they get it once a month.

SUGGESTIONS

Based on the conclusions and the implications that has been explained, the researcher suggests:

a. To Solo City Government :
   1) Should give more attention to the existed phenomenon around the society by supporting, controlling, and facilitate the positive activity; so that, it can support Solo government's program and policy.
   2) Renovate and equip facilities for cyclists in the city of Solo in order to create security and comfort for cyclists and other road users.
   3) socialize the program to the society in order to support the planned program to create an environmentally friendly and cyclist-friendly city in the future.
b. To Committee of Solo Last Friday Ride :
   1) Have coordination soon with *Federasi Olahraga Rekreasi Masyarakat Indonesia* (FORMI) as the parent organization of all recreational sports in Indonesia. Therefore, the community event can get legality from the government, so the event status becomes clear and the corporation run well.
   2) Improve the organization to make the activity run smoothly and interesting because it involves so many people that need good preparation and well coordination.
c. To Communities for bicycles :
   1) Continue to be creative and create activities that are positive and useful in society mengolahragakan through the sport of cycling.
   2) Helps utilize and maintain public facilities for cyclists who have been provided by the Government of Solo.
d. To the Solo society :
   1) their participation and support are very important to make Solo as environmentally friendly and cyclist-friendly city in the future.
   2) Utilizing mass cycling movement Solo Last Friday Ride as a means of recreation and a means of socializing exercise.
   3) Utilizing mass cycling movement Solo Last Friday Ride as a means for creating new businesses are able to increase revenue and the local economy.

ACKNOWLEDGEMENT

1) My parents, Mr. Bimo Wisuko and Mrs. Misrini for their endless praying and support.
2) Prof. Dr. Sugiyanto, Prof. Dr. Muchsin Doewes.,dr., AIFO, as thesis supervisors who have adviced and enlighten me during this master journey.

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Yulius Eka Agung Saputra. 2014. *Manajemen dan Perilaku Organisasi*. Jogjakarta: Graha Ilmu

DEVELOPING SNAKE LADDERS GAME FOR LEARNING MEDIA OF PHYSICAL EDUCATION SPORT AND HEALTH TO FOURTH GRADE STUDENTS OF MADANI ELEMENTARY SCHOOL IN PALU CITY

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Abstract

Objectives: The goal of this developing research were: 1) Generate a snake ladders game which appropriate for the learning media of physical education sport and health to fourth grade students of Madani Elementary School in Palu City. 2) Determine the effectiveness of snake ladders game that was developed for learning of physical education sport and health to fourth grade students of Madani Elementary School in Palu City.
Methods: The developing research model which used was procedural development. The procedure used consists of five main stages: 1) analyzing the product to be developed, 2) developing the initial product model for elementary school students, 3) validating by experts, 4) applying field trials and 5) revising the product. Subjects used were the fourth grade students of Madani Elementary School, amounting to 50 students consisting of 24 male and 26 female students. The data used were qualitative and quantitative data. Technical analysis was using Anova One Way.
Results: The study produced a model for learning physical education sport and health of snake ladderss in Madani Elementary School, with developing the infrastructure that includes an extensive games 4 meters x 3,4 meters with the number of boxes of 30 pieces, each box has an area of 0,6 square meters. The dice is made of foam, plastic and cloth cube with sides of 0,2 meters. Inside the box there are numbers and images of right foot, left foot, ladders and snakes. By the time players threw the dice and saw acquired number then the player must perform step with one foot, jumped with two feet as much as the number of steps or crawled by following the shape of a snake that is appropriate to the image. The player was declared as the winner when he/she was able to reach 30 with a picture trophy. Number of player for one round was between 2 to 6 players. Where these results were packaged in a book and VCD learning.
Conclusions: Based on the research results could be summarized as follows: 1) The form of this snake ladders game development was appropriate with the learning media of physical education sport and health to fourth grade students of Madani Elementary School in Palu City, 2) snake ladders game was also very effective for learning media of physical education sport and health. Teachers of physical education sport and health were advised to use this game model as an alternative way to deliver games learning lesson for elementary school students. The product of this game can be harnessed for the media to learn the motion for elementary school students. The results of this research can be used as a base for relevant research in the future.

Keywords: snake ladders game, media, physical education sport and health

INTRODUCTION

The purpose of Physical Education Sport and Health (penjasorkes) basically is the process of education through physical activity and at the same time the education process to increase ability (Suherman, 2000). Pangrazi (2004) states that penjasorkes is the phase of general education program that contributes to the overall growth and development in children, especially through the experience of the movemalet. This is a learning program that provides the attention on all the domains of learning, namely: (1) psychomotoric aspects, (2) cognitive and (3) affective.

The scope of subject penjasorkes includes game and sport, development activity, aerobic activity, rhythmic activity, water activity, and education outside the school. Game and sport include traditional sport, games, skills lokomotor-nonlokomotor, and maleipulative, athletic, kasti, rounders, kippers, soccer, basketball, volleyball, table tennis, tennis, badminton, and martial arts and other activities (Depdiknas, 2006:703).

Learning game has maley types but the tendency was not carried out by teacher penjasorkes due to various reamales. Based on the survey and the initial interview conducted on August 25th–27th, 2017 in Madani Elementary School in Palu City to know application of teaching penjasorkes

especially in learning the game. Following the results of the survey and interview done in various Madani Elementary school that learning game was done was still limited, this can be seen on the game material was taught. The material was taught include soccer, kasti and hadang, its pain points in addition to the facilities and infrastructure that less support was also due to the lack of innovation teachers in making learning media, learning objectives were still focusing on the strength on certain parts of the body, therefore there is a need for innovation games where the game will be able to improve the experience of movemalet of students and the game can be used as a learning media penjasorkes is effective in elementary school level.

Elementary school students in the grade four that the average age of ten years is the transition period from motoric development coarse to good motoric, at the times the students were hoped to get more experience of movemalet through learning the game. The form of the game was expected easily to be understood by the students and ever done previously when playing at house or school, the students are easily understand the game that was given and has spirit to complete the game. The form of the game can adjust also with the existing infrastructure and helps penjasorkes teacher for more varied in giving game material. The game in the learning process also requires a media or tools that support the teaching learning activities, using media is expected to be able to stimulate aspects of the development of children optimally. One of the game needs trying to be taught is a snake and ladders game.

According to Sriningsih (2009: 98) explained that the snake and ladders game can be given to children five-six years old in order to stimulate the various development aspect such ascognitive, language and social. Language skill which can be stimulated through this game for example vocabulary up and down, go back to the top to bottom and etc. Social skill is trained in this game in which the willingness to follow and obey the rule of the game, playing in turns. The stimulated penjasorkes cognitive skill are able to state some basic movemalet and various games in the branch of the sport. So it can be concluded that snake and ladders game is a board game played by two or more people using dice and pawns as players. To Create a pleasant conditions for the children and the snake and ladders game techniques can be developed to help control of children toward the aspects of development, especially on the material development of the ability to motion of the children.

The game has been played the children now, but it has not yet been made as learning media penjasorkes by teachers. The design of the model of teaching snakes for Elementary School students how to modify the means and the rule of the game is one effort form so that students can follow the learning activities with happy and can provide innovation for penjasorkes teachers to teach the snake and ladders game as a game materials.

The goal of this research include; 1) to produce forms of snake and ladders game that is appropriate for the learning media penjasorkes for the learning media of physical education sport and health to fourth grade students of Madani Elementary School in Palu City, 2) to know the effectiveness of snake ladders game that was developed for learning of physical education sport and health to fourth grade students of Madani Elementary School in Palu City. Through this development research is expected to produce a product in the form of the development model of the game that is modified in accordance with the learning process of elementary school students so that they can realize the active learning, innovative, creative and effective and enjoyable and can cover learning aspects (cognition, affective and psychomotor), it also can increase the students intrest to the penjasorkes learning and help penjasorkes teachers for more innovative in presenting a game material. The development of the game can be played in the field that is not too extensive and should not use the field hard or grass but adjust the existence of infrastructure in schools. School has hard yard as a local company dealing in ceramics, plaster or asphalt, snake and ladders game can be made with painted on he floor according to the lesmale need.

METHODS

Research and development called as research based development *(research-based development)*. In this research that development model used is the procedural development model,

because this model is a descriptive, which is a procedure that describes the steps should be followed in the produce of the product.

Prosedur is used in the development of the game for teaching elementary school students penjasorkes covers five main stages namely; 1) Analysis products will be developed, including: a) bibliographical studies examine the concept of the snake and ladders game, the development and characteristics children of elementary school especially motoric development, b) survey about snake and ladders game, students ever play this game, c) studying of the snake and ladders game in general to know the characteristics of this game. 2) Developing early products snake and ladders game for elementary school students, including: a) analysis of purpose and character of product, b) analysis of student characters, c) deciding the purpose and form of the game, d) assigning organisation strategy and learning. 3) Expert validation results from the development of the product was the first done validity test involving three of the experts consisting of two of the experts penjasorkes (Sri Hartati, M.Pd and Onesimus Ervan, S.Pd) and 1 of the experts modify game materials (Teguh Hariyadi, M.Pd), this validation was meant to anticipate the errors on the user (students). 4) field try out; a) test small group, b) test large groups. 5) the revision of the product.

The design of this try out will be done two stages such as : 1) test small group, 2) test large groups. As the representation of the try out of small group using 25 students in one class. Large group tests use the fourth grade students from the two class as much as 50 students that consists of 24 the male students and 26 female students . The subject of the try out is the target of users of the product, are the fourth grade students from Madani Elementary School.

The Data used in this research was data qualitative and quantitative. Qualitative data was obtained from the results of the interview in the form of an opinion from the experts penjasorkes and resource permales orally and in writing as a constructive inputs for the revision of the product. Qualitative data was obtained from the results of the effectiveness development of the snake and ladders game. The instrumalet was used in product development in the form of questionnaire and field observation. Questionnaire was used for striving after the information systematically and focused from the experts and resource permales.

Data analysis technique was used in this research was test one factor of Anova analysis if data distrubuted normal, but if data was not distributed normal so used the alternate test non parametrik namely *wilcoxon tests*. Description of the data about the interest or the students interest to the snake and ladders game divided into three categories, were low (score< $\overline{X}$ - SD), middle ($\overline{X}$ - SD < score < $\overline{X}$ + SD), and high (score $\overline{X}$ + SD) (Azwar, 2003:108).

RESULTS AND DISCUSSIONS

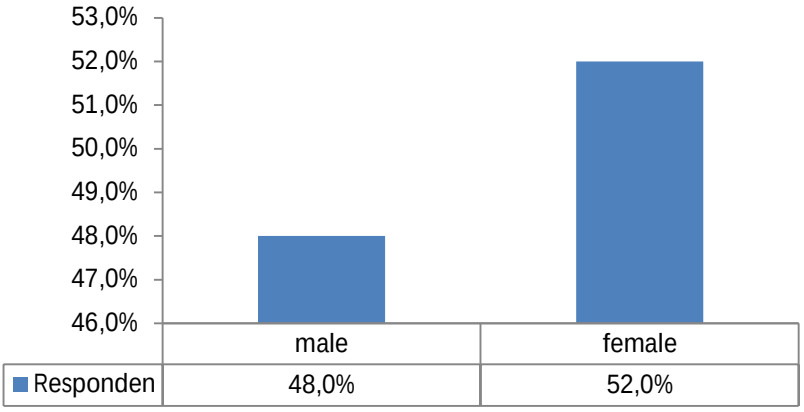
Results

This research was conducted at Madani Elementary School. The process of taking data during 14 days began on the seven of 7th August, 2017. The new model in learning penjasorkes especially snake and ladders game were with the change to the rule of the game and modifying the facilities and infrastructure. The distribution of respondents based on gender can be seen in the table below:

Table 1. The Distribution of Respondents Based on Gender

No	Gender	The number of	%
1	The Male	24	48
2	The Female	26	52
	The Total	50	100,0

Based on the table above can be known that the most of respondents are female amounting by 52% (26) and 48% (24) male. For more details can be seen on the following graph.



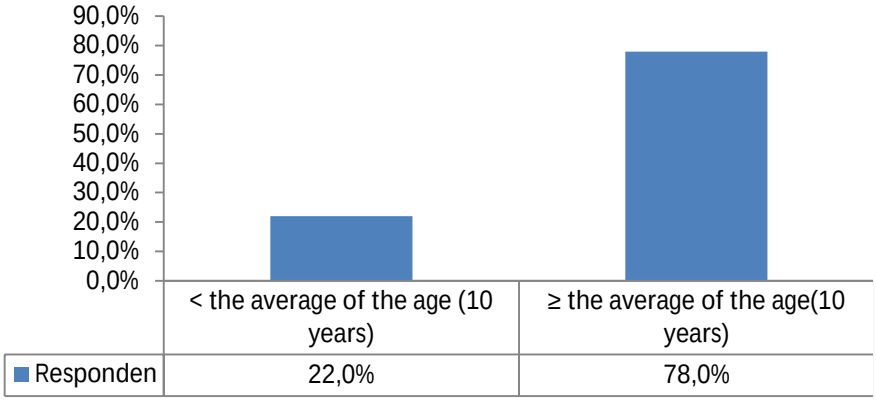
Graph 1. Gender of Respondents on The Student of Elementary School

The distribution of respondent based on age can be seen the following table.

Table 2. The Distribution of Respondents Based on Age

No	Age	The number of	%
1	< the average of the age (10 years)	11	22
2	Age Average (10 years)	39	78
	The Total	50	100,0

The average age of respondents in this research is 9.7 years rounded 11.3 years. Based on the table above can be seen, that the most of respondents are more or the same with the average age of 78% (39 student) and 22% (11 student) is less than the age of the average. For more details can be seen on the following graph.



Graph 2. The Age of Respondents at The Student of Elementary School

Developent product of snake and ladders game of Madani Elementary School done by giving materials snake and ladders game on penjasorkes learning Elementary School student. The material in learning physical education especially snake and ladders game by modifying on the facility and infrastructure or the rule of the game.

The expert validation can help in the development process for the specified form of snake and ladders game for student of elementary school. The experts in this research were experts penjasorkes Sri Hartati, M.Pd and Onesimus Ervan, S.Pd and One of the experts modify game material was Teguh Hariyadi, M.Pd.

The indicator snake and ladders game asked to some of the experts in the snake and ladders game include compliance and ease of product, the benefits of the product and the purpose of the product. The Data quality of the game reveal using the scale of the questionnaire with the number of items was as much as 15 items that have the highest score 4 and the lowest score 1. In order to

express the illustration of the quality of the snake and ladders game as a whole can be seen by using calculation as follows.

High : total score Mean + SD
Being : Mean - SD < total score < Mean + SD
Low : total score < Mean - SD (Azwar, 2003: 108).

Based on the category above, the proof the illustration about the quality of the snake and ladders game according to three of the experts in detail can be seen in the following table:

Table 3. The Distribution of Quality of Game According to the Experts

No	The quality of the Game	The number of	%
1	Less Good	1	6.7
2	Good	14	93,3
3	Very Good	0	0.0
	The Total	15	100,0

Based on the table above, it can be concluded that from 15 items questions that covers the compliance indicator and ease of product, the benefits of the product and the purpose of the product, according to some of the experts in the game most of the model of the snake and ladders game have quality in the less good category as much as 6.7% (1 questions), categories good 93,3% (14 questions) and very good category of 0.0%. So it can be concluded that the snake and ladders game according to several indicators that is made in the category of good, amounting 93,3%.

The result of the validation expert on the development of the game in penjasorkes elementary school students is as follows:

Table 4. The Result of the Validation Experts

No	The aspects were Validated	Comments and general suggestions		
		The experts I	The experts II	The experts III
1	The field (media of snake and ladders game)	The size of the side of each box was widened again, so it wouldbe easy for students to move.	The size of the field could be expanded again in order that it wasnot hard for students	The gift of better color was preferred student of elementary schoolso that the students will be interested in playing.
2	Cube	The size of the dice could be enlarged again. Making material was more secure	Making materials should begot easily and made. The size of the small circles in the dice could be zoomed	The weight of the dice was not too heavy when it was thrown by the students, paying attention to the comfort and security of the students when playing.
3	The form of a picture	Image of the snake was not lurid because this game for students elementary school, making as well as possible.	Picture of the snake could be added to be three or four according to the number of ladder	The number form must be clear and the size of the number was not too different and must contrast with basic colour.
4	Game Rule	Given the limit time when playing so that students could be shared in the game.	The number of players must be adjusted with the size of the field. Rule of the Game was still confusing, need to be simplified again	Rule would become more clear when socialized to students, what everis difference from the actual game and modification.

Small group test were done at Madani Elementary School which numbered 25 students, during test small groups, the material development of the snake and ladders game was not running well. This may be due to the students still feel confused and fear to step when

playing, this was due to the rules of the game that had been modified in order that they need time to adjustmalet, the students were still confused with the foot on the right or left of the two feet on each of the box. After several times the game or given instruction so they could do the game happily, happy without fear was wrong step again. Female Students did not want to play with male students because female students felt fear to be cheated and shame if they played with male students.

The effectiveness of development of the snake and ladders game when test the small group was marked with the increasing indicator of heart rate compared when the survey for the first time and the intensity of student playing also become improve that was marked with the male students or female play a game of the snake and ladder development. Increasing their pulse average of 15,5% from their pulse maximum.

The revision of this stage was based on the result of the field observation when testing small groups and entered the experts snake and ladders game. Changing product development of the model of snake and ladder was located on the infrastructure such as field will be used for playing, game rule and gaming equipment used.

Test large groups that field try out conducted in two class in Madani Elementary Scool numbered 50 students consisted of 24 male students and 26 female students. This was due to the fact that they have ever played this game previously, different from the class other where at the beginning of the try out they had not been able to play well, after given the gains and the result of the product improvement by game experts so the obstacle could be addressed and the students could do happily.

The effectiveness of the model modifications snake and ladders game, indicator which shows the effectiveness of the model modifications snake and ladders game can be seen as follows:

a) The heart rate of respondents

Based on the survey which was done only able to raise the heart rate until it reaches the average 10.50 pulse per minute.When the age of the average Madani Elementary School were between 9-11 years so the maximum heart rate of 220-10 = 210 pulse per minute.

Based on the results of the research has been done that heart rate of respondents before playing was to have the value of the average 88,8, minimum value was 60, maximum value was 108. While for the average value of heart rate after playing the snakes and ladders was 106,68 with minimum value was 72, and its maximum value was 150. Seen from the average before doing the snakes and ladders was lower than after doing the snake and ladders game. Until the rising the heart rate after doing snake and ladders game was 21,50 % of maximum heart rate.

b) Normality Test

Test of normality conducted with the aim to see normality of distribution of the variable data research. The result of the test table of normality data using *One-Sample Kolmogorov-Smirnov Test* that the processing done with the help of the computer. The rule that was used to know the normal or not the distribution of the data if the value of $p>0.05$ then the spread of the data berdistribusi normal, if $p<0.05$ so the spread of the data was unnormal contributed.

Test result of variable normality showed the spread of the data was not contributed normal. This could be seen from the beginning variables pulse and the last pulse that has the significance of 0,039 and 0.108 where $p<0.05$. Then to know the effectiveness of the model modifications of snake and ladders game, then it was done *wilcoxon tests*. *Wilcoxon tests* was used to know whether there was a difference between their pulse students before snake and ladders game with their pulse students after the snake and ladders game.

Based on the test statistic showed results of *Wilcoxon test*. With test wilcoxon obtained the value of the significance of 0,000 ($p<0.05$). Thus it could be concluded that there was difference heart rate sample before doing the snake and ladders game with widened the heart after doing snake and ladders game.

Discussion

The development model of the game was designed for the purpose of enabling all students in accordance with the roles played in sports education so it gave more learning time for each student.

The development model of the snake and ladders game was effective and efficient for the learning process penjasorkes student elementary school as follows:

The player was stated as the winner if you were able to reach the number 30 cup picture. The number of players in playing between 2 to 6 players. The result of this game was packaged in a book and vcd learning. There were several facilities and equipment that has been developed, as follows:

a) The Field

Wide game of 4 meters x 3.4 meters with the number of the box (30 pieces), each box have a large box 0.6 square meters. The field could be used on the floor of the plaster, ceramics, asphalt even the grass. The field form of snake and ladders game also could be drawn or painted directly on the plaster field or ceramic so that it could be used whenever students.

Picture 1. The Field Snake and Ladders Game

b) Dice

Dice was made from a combination of foam, sterofoam and lakban, a dice with sides 0.2 meters from each side was given a small circle that consists of 1 circle 2 circle and so on until there were 6 circle in one side.

Picture 2. The Dice

c) The picture form

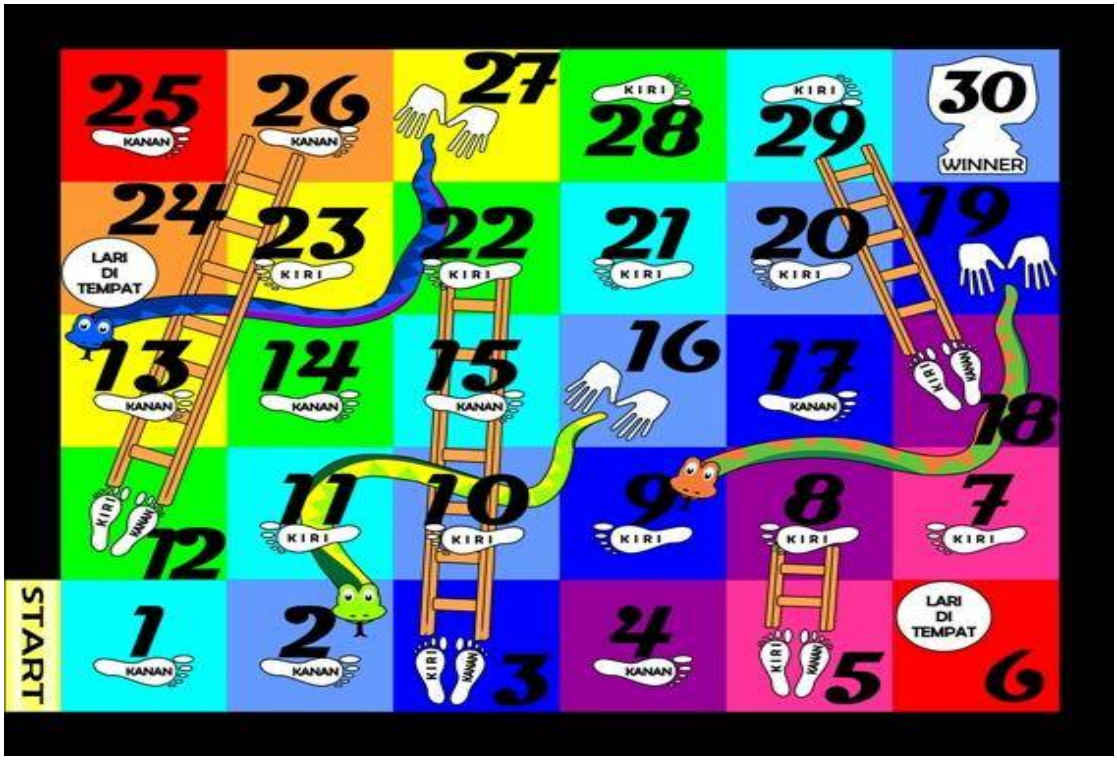
In the box there were number and the image of the soles of the right feet, left feet, snakes and ladders. When the player throwed dice and visible numbers are granted then the player must perform the step with one foot, jump two feet as much as the number of snake and ladder or creeping follow the form of the serpent based on the picture.

Picture 3. The Picture Form

d) Game Rules

(1) Players started the game from the start line or number box number one
(2) the player diddrawing to determine the player who will throw dice first and so on.
(3) the player was only allowed to step as far as the numbers out on the dice
(4) the player was only allowed to throw dice in one time chance
(5) the player can pass from number to number with the following commaled or instructions, whether using jump one feet by using the right or left foot, jumping with both feet or creeping follow the form of the serpent, jumping with both feet follow the stairs and running in place.
(6) The Winner was the player that reach into thethirtienth box, but if in the thirtienth minutes no player that came in the 30 box so it was determined by the way the players had reached box in the greatest number or at the furthest.

The model of the snake and ladders game in its development experience changes, improvement and revision. The revision was done based on the input and evaluation of the experts penjasorkes. This research involved two experts penjasorkes and one expert modification game. After done some revision of the good products product revision one and two so model snake and ladders game as learning media penjasorkes of elementary school studentas follows:



Picture 4. Snake and Ladders Game

There are several advantages in the snake and ladders game developed as follows:

a) Tool and equipment the game are easy to be made and adjust with the characteristics of the students
b) The rule of the game encourage all students to be active in playing.
c) The product of these games can be played by the male students and females of elementary school.
d) This research encourages students to develop the movemalet skill, attitude and knowledge to solve the problems in achieving the purpose individuallyor the team.
e) The research products provide direct experience on the students to the techniques and strategies to play snakes and ladder.

Some limitations in the snake and ladders game developed as games in learning penjasorkes, limitations areas follows:

a) The development of the game time is relatively short because adjust with the clock time of lesmales penjasorkes.
b) The field that is used was too simple because it only used the field as size as badminton field or takraw.
c) The number of the box that is thirty box still considered less to competition a team.

CONCLUSION AND SUGGESTION

Conclusion

Based on the result of research and discussion so it could be drawn conclusions namely; 1) the form of the development of the game was appropriate for learning media penjasorkes in elementary school covers facilities (means and infrastructure) and playing equipment and the rule of the game. The existence of the game was expected to play in the learning penjasorkes to be more exciting and interesting. 2) the development of the snake and ladders game was very effective for learning penjasorkes, it could be shown with data research that widened the heart of an average of students got increasing after doing a snake and ladders game of 21,50% of maximum heart rate, it showed that the snake and ladders game could improve students fitness so it was effective for learning.

Suggestion

The development of the game is a product that has been produced from this research and can be used in penjasorkes and as an alternative for the delivery of learning materials games for elementary school students by penjasorkes teachers. suggestions that can be presented with the necessity of the utilization of products namely: 1) this game products can be used for learning media movemalet for elementary school students both male students and female students, 2) product can be utilized in all categories of schools either superior schools, state schools or private schools, 3) utilization of gaming products should still refers to the purpose of the penjasorkes learning, 4) for further research in order to develop more rules, the number of the box and the number of players.

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THE EFFECT OF PLYOMETRICS TRAINING AND ACHIEVEMENT MOTIVATION TOWARDS LEG MUSCLE EXPLOSIVE POWER OF VOLLEYBALL ATHLETES IN UNIVERSITAS NEGERI PADANG

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Abstract

Objectives: The objective of this study is to determine the differences of plyometrics training using knee tuck jump and box jump and achievement motivation towards leg muscle explosive power of volleyball athletes in Universitas Negeri Padang.
Methods: The specific objective of this study is to determine the differences in the level of leg muscle explosive power ability between four groups of athletes who were treated differently. It was an experimental studyusing by level 2x2 designs. There were 75 males volleyball athletes of UNP taken as the population.. The sampling technique used was total sampling. The techniques of data collection used wereinstruments of leg muscle explosive power andachievement motivation. The technique of data analysisused was two ways analysis of variance (ANOVA) at the level of 5% (α 0.05) and Tukey test.
Results: The result shows that: (1) the leg muscle explosive power of the athletes trained by knee tuck jump was better/higher than those who were trained by box jump plyometrics, (2) there was interaction between the methods of training and achievement motivation towards leg muscle explosive power of volleyballathletes, (3) the explosive power of leg muscle trained with knee tuck jump plyometrics was better than box jump training on a group of athletes whose high achievement motivation (4) there was difference explosive power ofleg muscle performed by low achievement motivation athletes trained with knee tuck jump and box jump plyometrics.
Conclusion: Plyometrics training supported by achievement motivation will influence the leg muscle explosive power of volleyball athletes.

Keywords: Plyometrics Training, Motivation, Explosive Power of Leg Muscle

INTRODUCTION

Development in various fields is being actively undertaken by the current government which aims at actualize the ideals of Indonesia's independence movement. One of these goals is to create a justice and prosperous society. The realization of these ideals must be supported by qualified human resources as the doers of development.

One indicator of high quality human resources is a high level of physical health and fitness, both physically and psychologically. The growth and development of physical and the psychic must be in line. Someone who has a high level of intelligence will be less able to do much if he has low level of health and physical fitness. Therefore, one of the ways to obtain physical fitness is by doing exercises.

According to *Undang-Undang* no. 3 *Tahun* 2005 about the National Sport System Chapter II article 4: “national sport is aim at maintain and improve health and physical fitness, achievement, human quality, inculcating moral values and noble character, sportsmanship, discipline, fosteringof the nation, national security, and raising the dignity, prestige and honor of the nation”.

In addition, it is necessary to improve the athlete and coaches training, the provision of sports facilities and infrastructure and the development of a good sports system to actualize what is desired. To achieve these goals, it is need to take concrete steps towards the pattern of sports training in this country.

In every kinds of sport, the needs of physical fitness elements are different. This is directly related to the characteristics or the needs of the sport itself. There are sports that require strength,

speed and endurance, but there are sports that only require flexibility and strength. This is the concern of the coaches and trainers so that the desired achievement is achieved well.

Volley ball is one of the most popular sports in Indonesia. The volley ball branch is also expected to bring the name of the nation and the country in the International event. However, the facts show that volley ball's achievements in Indonesia in general, and West Sumatra in particular, are still relatively low. This can be seen with the lack of achievements that have been attained by the volley ball team of West Sumatra at the National Sports Week (PON) or other national championships.

Volley ball needs various elements of physical condition, such as: strength, speed, agility, balance of explosive and other power. All those components are needed to support the activities of the game such as: jumping, blocking, smash and defense. The optimal vertical jump will allow an athlete to do blocking and smash. For that, at every volley ball athlete is required to have a perfect jumping ability.

The ability to jump must be developed on every volley ball athlete. There are many ways to improve that skill. To be able to jump driftly and to do a fast and maximum movement requires explosive power,that is a fusion of strength and speed.

One method for developing explosive power is by pliometric exercise. It is a form of exercise that stimulates the muscles to perform work activities quickly. This pliometric exercise activity consists of; knee tuck jump, squat jump, box jump, split squat jump and depth jumptraining. Thus, the pliometric exercises consist of a jumping motion with a beat and a hover.

Volley ball club in Universitas Negeri Padang is one of the existing clubs in West Sumatra. Based on the observation, it was seen that those athletes still have low ability to jump. It was proved by the results of the researchers' preliminary survey of 23 volley ball athletesin Universitas Negeri Padang. The result is as follows: 2 athletes or 8.69% were in a very good classification, 5 athletes or 21.74% were in good classification, 6 athletes or 26.08% were in sufficient classification, 8 athletes or 34.78% were in the poor classification, and 2 athletes or 8.69% were in very poor classification.

According to Radcliffe (1985: 50), there are so many exercises in order to be able to jump higher; they are decline hop(a forward jump exercise), sidehop (jumping hurdle), squat jump, knee tuck jump, split squat jump, box jump and depth jump. Of the many forms of exercise above, the knee tuck jump and box jump are forms of pliometric exercises aimed at improving the ability of explosive power of the lower limbs muscles. These exercises will stimulate the occurrence of stretch reflex in the lower leg muscles, in which it will eventually lead to an improvement in explosive power capabilities.

In addition to the above factors, the element of motivation is also important in increasing the explosion power of leg muscle. Soemanto (2008: 205) achievement motivation are conditions or circumstances that activate or give encouragement to behave or to achieve the goals generated by the motivation. Motivation achievement will be directly related to the desire and willingness of the athlete in undergoing the training process. Athletes who have high achievement motivation in the practice are expected to have good leg muscle explosiveness, because with the motivation of achievement, athletes will undergo all series of exercises vigorously. In contrast, athletes with low achievement motivation are assumed to have low limb muscle explosiveness.

While external factors includes the quality of the trainer, that is how a trainer makes an exercise program to increase the explosive power of his athlete's lower limbs and how it is practiced. A good coach should be able to explain and demonstrateany form of practices to the athletes. So the athlete will easily digest and apply it in the field. Existing facilities and infrastructure also affect the training process to increase the explosive power of the leg muscles. Facilities and infrastructure have important role in the training process.Without equipped facilities and infrastructure,it is difficult for the trainer to organize the training. This will affect the quality of the training itself.

Based on the problem, the researchers wanted to prove in the research to see the "influence of pliometric training (knee tuck jump and box jump) and achievement motivation to increase the ability of lower limb explosive power ". it is hoped that this research will contribute significantly to

increase the achievement of volley ball athlete in Universitas Negeri Padang in particular and West Sumatera in general.

METHOD

The objective of this study is to determine the differences of plyometrics training using knee tuck jump and box jump and achievement motivation towards leg muscle explosive power of volleyball athletes in Universitas Negeri Padang. This research was conducted at UNP which was carried out in April - May 2016. The research method used was experimental study, since Ref [4] experimental method is a method that can correctly test the hypothesis about causality. The research design used was ANAVA by level 2 x 2. But before the data is analyzed, first tested the requirements of the normality test and homogeneity test. For normality test using Lilliefors, while for homogeneity test using bartlet test. For all tests performed with a 5% confidence level.The controlled variable (attribute) was level of achievement motivation (high and low). Dependent variable was the ability of muscle limb explosive power. Limb muscle explosive uses a vertical jump test with a Lewis formula. Furthermore, the experimental units are grouped into such a way to be homogeneous.

RESULTS AND DISCUSSION

Based on the measurement results obtained data as follows:

Table 1. Descriptive analysis result

	A_1		A_2		Total	
B_1	N	10	n	10	N	20
	$\sum X$	1491,82	$\sum X$	1332,40	$\sum X$	2824,22
	$\sum X^2$	223680,10	$\sum X^2$	179631,55	$\sum X^2$	403311,65
	Mean	149,18	Mean	133,24	Mean	141,21
B_2	N	10	n	10	N	20
	$\sum X$	1369,98	$\sum X$	1432,05	$\sum X$	2802,03
	$\sum X^2$	191631,65	$\sum X^2$	208095,65	$\sum X^2$	399727,30
	Mean	137,00	Mean	143,20	Mean	140,10
Total	N	20	n	20	N	40
	$\sum X$	2861,80	$\sum X$	2764,45	$\sum X$	5626,24
	$\sum X^2$	415311,75	$\sum X^2$	387727,20	$\sum X^2$	803038,95
	Mean	143,09	Mean	138,22	Mean	140,66

Based on the calculation results presented in the two-way ANAVA table above, the following is the description of each hypothesis:

The first hypothesis, in the ANAVA table, it was found that $Q_{counted}3.50$ is higher than Q_{table} = 2.95 at level of 0.05 ($Q_{counted}3.50 > Q_{table\ (\ = 0.05)}$ = 2.95. It proves that the volley ball athlete's limb muscle explosive power with pliometric knee tuck jump exercises is better / higher than the group trained with plyometrics boxjumpexercise.

The method of plyometricsknee tuck jump and box jump are ones of the training methods that can be used in increasing the explosive power of volley ball athletes muscle. The characteristic of this method is the intensity of moderate training load, high volume and repetition. In order to increase the athletes' explosive power, the plyometrics knee tuck jump and box jump methods are well appropriate. With a lot of repetition and a little rest, this method will provide stimulation to the leg muscles so that the process of jumping and smash is maximum.

If the process of doing a jump and smash is good, it will has a good impact on the muscle explosive power. A good leg muscle explosive power will support to attainthe desired achievement.in line with the results of research that is one of the most effective ways in relation to increased

strength and increased endurance, physical speed and energy of athletes is plyometric training (Aghajani, 2014).

Second hypothesis, in ANAVA table, it was found that$F_{counted}$14,57 is bigger than F_{table} 4,11 at level of 0.05 ($F_{counted}$ = 14,57 >$F_{table\ (\ =0.05)}$ = 4,11. It proves that there is an interaction between the exercise method and the achievement motivation for the leg muscle explosive power of volley ball athletes. The choice of suitable training methods to increase the explosive power of the leg muscles is the responsibility of a trainer. The trainer must be able to determine the appropriate method which is relevant to the training objectives. In addition, the characteristics of athletes can also be a reference for trainer in determining the method used. It is assumed that the athlete will perform poorly if he is treated with inappropriate method of training. This will certainly affect the iimprovementofleg muscle explosive power. Besides, psychological factor of the athletes is also a particular concern to the coach. One of the indicators that can make the atmosphere more vibrant in doing exercise is the motivation that is owned by the athlete.

According to Setyobroto (2005: 24) states motivation is the process of actualization of moving sources and drivers of individual behavior meet the needs to achieve certain goals. Motivation is an encouragement that exists within the individual athlete, the impulse can come from within and also come from outside the athletes. A high motivation athlete is assumed will have high leg muscle explosive power in undergoing the training because high motivation will support the athlete during training process. In contrast, athletes with low motivation are suspected to have low leg muscle explosiveness.

The third hypothesis, based on advanced testing of volley ball athletes'leg muscle explosive power using plyometrics knee tuck jump exercise compared to those who treated using plyometrics box jump exercise for high motivation group (A_1B_1 vs A_2B_2), it was found that $Q_{counted}$ = 8.11is higher than Q_{table} = 3.79 at level of 0.05. Thus, the athletes' leg muscle explosive power trained with plyometrics knee tuck jump exercises is better than those who were trained with plyometric box jump exercise in high achievement motivation group.

In the process of training, the symptoms that often appear is a sense of laziness especially related to physical condition exercise. Thus, the coach should be able to provide understanding to the athlete during the training process in order to achieve the goals. Selecting another method is one of solutions that can be done by the coach. This research used plyometrics knee tuck jump training method. The plyometrics knee tuck jump method is a method that starts from a standing position with feet shoulder width apart, then jumps vertically as high as possible by bending the knee to the chest, and finally landed with previous body gesture. Another method used was plyometrics box jump method. In order achieve the initial plan, then every athlete needs achievement motivation. Good achievement motivation will encourage athletes to always complete each series of exercises maximally. A well-motivated athlete will not think of any negative things duringthe training. Thus, it can be concluded that achievement motivation hasvery important role during the training process.

The fourth hypothesis, based on advanced testing of volley ball athletes'leg muscle explosive power using plyometrics knee tuck jump exercise compared to those who treated using plyometrics box jump exercise for low motivation group (A_1B_1 vs A_2B_2), it was found that $Q_{counted}$ = 4.17is higher than Q_{table} = 3.79 at level of 0.05. Thus, there were differences between the athletes' leg muscle explosive power trained with plyometrics knee tuck jump exercises and those who were trained with plyometric box jump exercise inlow achievement motivation group or the null hypothesis is rejected.

Hypothesis testing results reinforce those differences. It was proved that there are highly significant differences of athlete's leg muscle explosive power trained by plyometric knee tuck jump exercises and those who were given plyometric exercise jump box.This fact shows that the training method using plyometric training knee tuck jump is better than box jump training in improving the leg muscle explosive power of volley ball athletes who have high motivation. On the other hand, the low motivation groups perform better when using box jump exercise than using knee tuck jump exercises, ie 143.20 and 137.00, respectively.

According to the results of the study Riggs MP, Sheppard JM (2009) the findings of this study suggest that relative peak and average power outputs are factors highly associated with vertical jump height in elite male and female beach volleyball players.The difference between these two average scores is proved by the results of inferential testing, so the data shows a difference. These results represent that the training method using plyometric knee tuck jump exercises is lower thanbox jump exercise in low achievement motivation group.

CONCLUSION

Firstly, overall,it was proved that the leg muscle explosive power of volley ball athlete trained by plyometric knee tuck jump training is better / higher than those who were trained by box jump exercises.

Secondly, there is an interaction between the training method and the achievement motivation toward the leg muscle explosive power of volley ball athlete.

Third, the leg muscle explosive power of highly motivated volley ball athletes treated by plyometric knee tuck jump exercises is better than those who were treated bybox jump exercises.

Fourth, there are different explosive powers shown by the low motivated athletes who were treated by knee tuck jump exercises and those who treated by box jump exercises. In other words, the null hypothesis is rejected.

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The Psychological Characteristics of Indonesian SEA Games Athletes in 2017 Viewed from Sport Martial Arts and Accuracy

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Abstract

This research was aimed to investigate, the psychological characteristics of Indonesian SEA Games athletes in Martial Sport, the psychological characteristics of Indonesian SEA Games athletes in Sport Accuracy, the psychological characteristic differences of Indonesian SEA Games athletes in Martial Sport and Accuracy.
This research employed the quantitative approach using the survey method with a restrospective causal-comparative design. This research was population research. All subjects in the population were included in this research with a total of 128 athletes. The subjects consisted of 93 from Martial Sport and 35 athletes from Sports Accuracy. The data were collected using the Psychological Skills Inventory for Sports (PSIS) questionnaire and analyzed using the independent sample t test at the significance level of 0.05.
The research findings revealed that: (1) the psychological characteristics of SEA Games athletes martial sports Indonesian were “high” with the mean score of 144.5806, (2) the psychological characteristics of Indonesian SEA Games athletes in Sport Accuracy are in high category with mean values = 154,8286; (3) there were a significant differences in the psychological characteristics of Indonesian SEA Games athletes in Martial Sport and sports Accuracy with sig.values = = ,000 > 0,05.

Keywords: characteristics, psychological, sea games, martial sports, accuracy, Indonesian

INTRODUCTION

Indonesia's achievements at the SEA Games sporting event continue to decline and inconsistent, even in 2015 in Singapore, Indonesia was ranked fifth with 47 gold which was the worst achievement at the Asia Pacific's biennial sporting event.

A serious assessment of Indonesia's achievement factor in the SEA Games is needed. Evaluation of all the factors causing the decline in achievement must be comprehensive, transparent and objective to generate meaningful feedback in National sports improvement and coaching. Various studies prove that for the successful achievement and organization of sporting events one of them is determined by the support of science and technology (science and technology) sports.
Herbert haag (halbert haag,1994) said there are seven main theorems of sports science one of them is Sports Psychology. This means that Sports Psychology is one of seven theoretical areas that become the body (body of knowledge) of sports science. Furthermore, Cox, R.H (Cox, R.H.,2002) explained that sports psychology is a science that applies the principles of psychology in a sports situation or environment, with the aim of improving the appearance or achievement of athletes.

The success and failure of the player in the sport achievement is largely determined by the combination of physical and mental factors. According to (Weinberg, R.S & Gould, D, 2011) that coaches believe no less than 50% success in sports is shaped by mental factors, even for sports such as golf, tennis, and figure-skating of these mental factors reaches 80% to 90%. In addition to 45 out of 45 studies, 38 of them or 85% indicates a positive effect of a psychological exercise program on improving performance.

Each sport has different characteristics, ranging from gesture activities, rules used in sports and psychology as well as athletes' behavior generated from each sport will form different characteristics. Such as martial arts, sports games and sports that have very different characteristics. (Gunarsa, SD, 2008) noted that in strenuous sports such as boxing or taekwondo, the characteristic of aggressiveness must be possessed. Added by him is that aggressiveness here certainly not be interpreted as a form of cruel or destructive attacks, but is closely related to the characteristic of the sport itself is a martial sport that does require an aggressive attitude.

The martial arts branches, such as taekwondo, karate, martial arts, judo, wrestling and boxing in the exercise activity always make physical contact or full body contact and have a strategy to attack and survive to get points by kicking or hitting the opponent in the direction of the hearts and heads, can influence the social behavior of individuals who pursue martial arts become tougher, aggressive and have high courage (Hermawati, L.R, 2014). In line with (Gunarsa, SD, 2008) that "In rough sport like boxing or taekwondo, then aggressiveness must be owned". Characteristics inherent in the sport of martial arts as exposure above, among others, very strong element of aggressiveness. Thus it is believed that athletes who cultivate martial arts generally have a level of bravery above average.

Other unique sports branch are accuracy sport branch, such as, archery, billiard and shoot. The unique meaning is because this sport requires high concentration to get good results when targeting (Hermawati, L.R, 2014). According Hidayat (Hidayat, Y, 2008) explained that the concentration is needed especially for sports that require high concentrations such as archery, shooting or chess. For the sport of archery or shooting demands accuracy, precision, consistency, and sharpness of every action of every arrow or bullet fired.

Both sports have different characteristics and bring different effects on athletes who pursue the sport. So do not be surprised if every athlete has a different behavior in accordance with the impact of the sport performed.

The above study shows that the psychological aspects affecting athlete performance differ from each other. Hermawati (Hermawati, L.R, 2014) stated that the athlete must possess the psychological and moral characteristics required by the sport exercised for achievement. Both sports have different characteristics and bring different effects on athletes who pursue the sport. So every athlete has different psychological characteristics in accordance with the impact of the sport engaged in.

Differences can be caused by many factors, including the exercise process, the environment, personality, rules of the match and the task of motion that must be done in different sports. The psychological aspects that are necessary and influential on the performance of martial arts are concentration, anticipation, emotional control, self-control, confidence and fighting power (Dosil, J, 2006). (Mahoney, M.J., Gabriel, T.J., & Perkins, T.S, 1987) that potential and influential psychological aspects of appearance, namely motivation, trust, anxiety control, mental preparation, team attention, and concentration. These psychological aspects are developed to be instruments for measuring the psychological skills of athletes in the specific context of the so-called sport *The Psychological Skill Inventory for Sport* (PSIS-R-5).

Based on this explanation, this study will specifically distinguish the psychological characteristics of sports athletes and martial arts accuracy that the author has no knowledge to have presented. Psychological characteristics in this study is directed to psychological skills consisting of aspects of motivation, confidence, anxiety control, mental preparation, team attention, and concentration. To obtain accurate data, this study focuses on athletes who pursue the sport of martial arts and accuracy that will plunge in *SEA Games* 2017.

METHOD

The method used in this research was survey method with ex post facto research design. This research was conducted from February until April 2017 at Pelatnas location of sport martial arts and accuracy, namely: Jakarta, Bandung, Sukabumi, Bogor.

The population of this research were pelatnass athletes of Indonesia in the sports of martial arts and accuracy that will be competed in SEA Games 2017. Sampling technique was done with purposive sampling namely athletes of pelatnas who have obtained SK in March 2017 from Satlak Prima. The sample consisted of martial arts sports namely; taekwondo, karate, wushu, martial arts, boxing, and judo which amounted to 93 athletes, and from the sport's accuracy namely; archery, golf, billiards, and bowling totaling 35 athletes.

The instruments and techniques of data collection in this study used was an instrument called The Psychological Skills Inventory for Sport (PSIS-R-5). The instrument consisted of 44 questions that reveal the six psychological skills: Motivation aspects, Aspects of self-confidence, Aspects of anxiety control, Aspects of mental preparation, Aspects of team importance, and Aspect of concentration, which is also a single variable of this study the psychological characteristics. Scoring of the subject's response to the instrument, the score moved from one to five with respect to the nature of the questionnaire / instrument whether favorable or unfavorable.

Instruments are first translated by an English expert; rated by three experts; and then tested against 76 PON DIY athletes as they were considered to have similar characteristics to the sample. Tests were conducted with the aim of selecting items and to see how far they can reveal the variables to be measured in collecting data on actual research. The test results were obtained then analyzed items by correlating the score of each item with the total item score. Norm of Rtabel 0,222 for N = 76. Thus, statement item in instrument is good if corrected total correlation value greater than 0,222. Based on the results of the analysis of several items of statements that were not good, namely, items 14,17, 32, 33, 34, and 38. From the statistical analysis instrument value of cronbach's alpha of 0.890. If the value of conbach's alpha is greater than 0.60 then the instrument is said to be reliable (Sugiyono, 2012).

Before the research data was analyzed, first created criteria. The athletic psychological characteristics of the athlete can be identified by the assessment criteria obtained on the athlete's answer. The category of criteria determination was obtained using the formula Mi = (ST + SR)/2andSDi = (ST - SR)/6. The criteria determination can be seen in the following table:

Table 1. Formula Determination Criteria

Interval	Category
above (Mi + 1,8SD) to (Mi+ 3SD)	ST
above (Mi 0,6) to (Mi + 1,8SD)	T
above (M –0,6SD) to (Mi + 0,6SD)	S
above (Mi–1,8SD) to. (Mi - 0,6SD)	R
(Mi–3SD) to. (Mi–1,8SD)	SR

Information

Mi : Mean ideal
Sdi : Ideal Standard deviation
ST : Highest score
SR : Lowest score

The data obtained were analyzed in accordance with the main objectives of the study, namely to describe the psychological characteristics of martial arts athletes and accuracy. To answer the hypothesis then carried out different test using t test, with 5% significance level. Before testing the hypothesis it was done the first test namely normality test and homogeneity test.

RESULTS AND DISCUSSION

The result of descriptive analysis in the form of N (number of respondents) of athletes of sport martial arts that will plunge in SEA Games 2017, average score from raw score data from test items adjusted to Table criteria to obtain category of each psychological aspect of athlete of martial arts, as follows:

Table 2. Category Psychological aspects

Branch of Martial Sports		N=93	
No	Aspects	Mean	Category
1	Motivation	36.4	ST
2	Confidence	26.8	T
3	Anxiety Control	23.4	S
4	Mental Preparation	23.2	T
5	Team Importance	13.7	T
6	Concentration	21.0	T

Based on Table 2 the results obtained: very high category motivation, high confidence category, medium category anxiety control, high category mental preparation, the importance of high category teams, high category concentration.

The result of descriptive analysis in the form of N (number of respondents) athlete of sports branch of accuracy that will plunge in SEA Games 2017, average score from raw score data from test items adjusted to Table criteria to obtain category of every aspect of psychology athlete accuracy, as follows:

Tabel 3. Category Psychological aspects

Branch of Accuracy		N=35	
No	Aspects	Mean	Category
1	Motivation	37	ST
2	Confidence	31	ST
3	Anxiety Control	27	T
4	Mental Preparation	24	T
5	Team Importance	16	T
6	Concentration	24	T

Based on Table 3 the results obtained: very high category motivation, very high category confidence, high anxiety control category, high mental preparation category, high team importance category, high concentration category.

Before hypothesis testing, firstly prequest test with normality and homogeneity test. Normality test data was done to know the distribution of data obtained normal data or not. Normality test results with Kolmogorov Smirnov Test can be seen as follows:

Tabel 4. Normality test

One-Sample Kolmogorov-Smirnov Test

		Martial Arts	Accuracy
N		93	35
Normal Parameters[a,b]	Mean	144,5806	154,8286
	Std. Deviation	10,90505	13,17414
Most Extreme Differences	Absolute	,087	,071
	Positive	,044	,071
	Negative	-,087	-,050
Test Statistic		,087	,071
Asymp. Sig. (2-tailed)		,076[c]	,200[c,d]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Based on Table 4 obtained the results with the largest martial arts mean of144,58, and the mean value of accuracy of 154,82. The standard deviation of martial arts is10,90, and standard deviation accuracy of 13,17. *Asymp. Sig.* (2-*tailed*) martial arts amounting to 0,076 (*p*> 0,05), and*Asymp. Sig.* (2-*tailed*) accuracy amounting to 0,200 (p> 0,05), thusin martial arts and accuracy comes from a population that is normally distributed.

Homogeneity test was used to find out whether the data has a homogeneous variance, because different tests required that data must have homogeneous variance. Levene's Test analysis results can be seen in table 5.

Tabel 5. Homogeneity Test Results

		Levene's Test for Equality of Variances	
		F	Sig.
Cabor	Equal variances assumed	2,436	,121
	Equal variances not assumed		

Based on SPSS output above, it can be seen that the value of Sig. Levene's Test for Equality of Variances = 0.121> 0.05, then the data has a homogeneous variance.

Testing of research hypothesis with different test using t test ie independent sample T test. The result of t test can be seen in the following table:

Tabel 6. Test Results t Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
								95% Confidence Interval of the Difference	
		F	Sig.	t	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Cabor	Equal variances assumed	2,436	,121	-4,470	,000	-10,24793	2,29264	-14,78500	-5,71086
	Equal variances not assumed			-4,103	,000	-10,24793	2,49750	-15,25838	-5,23747

Based on SPSS output above, it can be seen that the value of t_{count} = -4,470 with the value of Sig. = ,000 > 0,05, then Ho is rejected.

Thus it can be concluded that at the level of significance 0,05 there is a significant diferenceof physical characteristics betweenmartial arts and accuracy sports.

CONCLUSION AND SUGGESTION

The psychological characteristics of sports athletes in martial arts and the accuracy of Indonesia are in the high category. Details in each of the psychological aspects of martial arts are as follows; Very high category motivation, High self-categorization, Medium category of anxiety control, high category of mental preparation, high category of team importance, and high category of concentration, while the details in each psychological aspect for the sport's accuracy are as follows; Very high category of motivation, Very high category of self-categorization, high category of anxiety control, high category of mental preparation, high category of team importance, and high category of concentration and there is a significant difference between sports athletes and the accuracy of Indonesia at SEA Games 2017 in terms of psychological characteristics consisting of motivation, confidence, anxiety control, mental preparation, team importance and concentration.

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EXPECTATION APPRECIATION AND PUBLIC PERCEPTION TO THE PHENOMENON OF STREETWORKOUT COMMUNITY

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Abstract

Objectives: The main objectives of this research are 1) What are the forms of appreciations given by the community on the phenomenon of Lampung's streetworkout community 2) What are the public expectations on the phenomenon of Lampung's streetworkout community and 3) What is the public perceptions on the Lampung's streetworkout community.
Methods: This research was conducted at Enggal as the center of Lampung's street workout community and also as a place for public gathering. This research uses descriptive qualitative method with naturalistic approach with the subject of this research are public which is in public space during sport activity. Data collection techniques such as observation, interviews, and documentation.
Results: The results of research on the public in terms of expectations, appreciations, and public's perceptions of the phenomenon of Lampung street workout community are, 1) Very large public expectations from the beginning of this community established until now, and the public considers that this community is a community that gives a positive value in the public. 2) Public response to Lampung's street workout community as a form of appreciation shows very good and positive, of the many people who have been in their interviews know that in Lampung's province there is a community that introduces calisthenics sports. 3) Public perception of this community is also good, from what is seen and explained by public about how public appraisal to Lampung's street workout community such as explaining that the street-workout community is a community whose sports use their own weight in terms of daily exercise, as well as from the public way of describing what motion movements are performed in the exercise, and how to do the movements correctly, and also the community is able to explain the ease of accessing information if they want to join the community, and be able to explain about this community that Lampung's street workout community emphasizes of affective value in the exercise routine, the public also knows that the community is able to recruit all layers of the public, whether from gender differences, social strata, or age groups, as a basis that this community for all circles.
Conclusions: The presence of community in the public make the public have great expectations for this community in terms of raising awareness of the sport and the public greatly appreciates all community activities in sports or social activities, and then all apreciation and expectation is due to the positive perception of public about streetworkout community of all aspects

Keywords: Expectation, Apreciation, Perception, Public, Community, calisthenics, Streetworkout

INTRODUCTION

Calisthenics is a weight training method using bodyweight as resistance to achieve desired stimulation (Kavadlo, Danny. Kavadlo Al. 2016), calisthenics itself is a method of practice that has been applied for centuries and of course is a long history that will be interesting to explore, and now calisthenics is more popularly known as Streetworkout as a culture of the young generation who perform calisthenics in public spaces such as city parks or on the streets (Geraghty, Jamie. 2014). Sport is not different from fitness that is to strengthen and build muscles in the body, it also can increase muscle flexibility such as Push ups, Pull ups, Sit ups, Squats, Jumping jacks, Leg raise, Planks, Chin up and many others. From very simple to very extreme also exist. Calisthenics can also be done by men or women. And calisthenics can be used to gain weight, and for a thin person can do this

sport as an alternative to fitness and also for those who want to lose weight can do this exercise (Kavadlo Al. 2014). Calisthenics can be done anywhere and do not have to go to the gym.

All sports have their respective advantages, the presence of calisthenics is not to negate the needs of other sports, but it becomes a perfect complementary because calisthenics train many muscles and various movements that are commonly found in a variety of sports activities. The basic difference between calisthenics and other sports is the equipment used, it can be said that calisthenics does not require equipment or need a bit of equipment. Public spaces and pull up bars are more than enough to do this multi-purpose sport. In addition to calisthenics there are various techniques and drills to develop the body posture to the ideal shape and make the body become healthy and fit every day so as to be able to work normally without experiencing significant fatigue, such as aerobic sports, running, and so on, however, in this era of sports not only limited to healthy and fit, psychological interventions are also able to become the basis for a person to practice and follow one of the exercise models in the sport (Suharman. 2005) with a great understanding of the importance of chalisthenic in Lampung province which is based on expectations, appreciation and public's perception.

Streetworkout Lampung is a community that was founded in 2012 and known as Indobarian Lampung, but Indobarian is the name of a method, it is considered inappropriate that the community finally agreed to change the frame into Lampung's streetworkout community starting in May 2013 and renamed and joined the streetworkout Indonesia. This community has a very well-organized program, there are two programs namely cardio to reduce weight and also there is a program to raise muscle mass for men who want to shape the body into a six pack, especially for the program to increase muscle mass, there are several schedules that must be obeyed, These communities also often exchange information to increase their knowledge in sports and health. Some other communities such as L-Men Lampung and Lampung teamshroff who share information about the correct method for the addition of muscle mass and also the right food nutrition to keep the body look fit and healthy. Not only provide knowledge for sports but street workout Lampung also educate about the diet that also affects the exercise program taken. There are two types of diet that is specifically for those who have body fat foods that enter the body do not be too excessive, especially containing kabohidrat, diet should also be healthy and may eat a lot but must be nutritious and unscheduled. For those who have a thin body must certainly increase the portion of food, especially those containing protein one of the foods that are good for the muscle is raw eggs. Street workout Lampung now has members who are not few in number and always do regular exercises every night except Thursday held at Saburai court, and especially for the day of the week this community gathered at Pahoman Stadium, Bandar Lampung. In addition to physical activity, this community also has other activities to eliminate boredom during practice. and for beginners will get special training from tutors who already understand the movements of each exercise and most important is the intention to practice and motivate themselves to build a healthy life.

The public of Lampung also hope that this community will spread and known by the public of Lampung and members of this community increased, especially women whose participation and motivation is still lacking in exercise. The street workout community of Lampung is one of the largest communities accommodation along with the running community, but with positive ratings and expectations of public of all ages and social strata make this community look and feel more attractive. Therefore, researchers feel it is necessary and interested to find the findings by describing based on the facts that exist such as expectations, appreciation and public perception that appears to the public from the implementation of activities such community with the title "*Expectations, Appreciation and Public Perception Against Street Workout Community Phenomenon in Lampung Province"*

METHOD

The research was conducted in lampung's street workout community, Enggal (as community training center), pahoman, and Gedung meneng, The method used in this research is descriptive

qualitative with naturalistic approach. This study examines the expectations, apresiations and public perceptions of street workout communities, Data collection techniques used in this study are observation and interviews and documentation. Data analysis techniques used are data collection, data reduction, data display, verification and affirmation of conclusions.

RESULTS AND DISCUSSION

The result of the research shows the expectation from society to street workout community of Lampung and also shows the public appreciation of the street street community of Lampung from all aspects that exist and that have been passed by the community and some have a broad positive impact in the community as well as public perception of the existence of Lampung street workout community since its establishment until now. The Interviews show that respondents welcomed the existence of community street workout Lampung in city and regency of Lampung province.

The support from the city and provincial government to this varied sport, the existence of variations in the exercise, contribute knowledge to certain movements, of respondents interviewed, the most dominant is the form of socialization of the community through official account instagram where the public hopes to increase the socialization of all aspects both at the time of training and at the time of organizing a sporting event. And the public also hopes that the broad concept of friendships built from scratch is not eliminated, Because they think that the concept of exercising by not distinguishing all aspects becomes more fun. And for the general public who are practicing in calisthenic facilities expect the mutual care of the facility well, and also want additional calisthenics facilities in the public space that is often used by people such as saburai. Respondents also hope to the government that this community needs support from the aspect of licensing and financial support in terms of facilities and the implementation of sports events for the welfare of the pblic of Lampung province, especially in terms of health. And the most important hope is the public to know more about healthy lifestyle.

Appreciation is a form of positive public appraisal of Lampung's street workout community, and appreciation of the respondents themselves based on the results of interviews are varied and general, the public interviewed have a high and relatively equal appreciation for this community, however, each respondent has a different sensation when they participate directly to this community when sporting activities are in progress, in the sports spots provided either in the morning or in the afternoon. The public's appreciation of the Street workout community that seeing and training with them is very positive, among others, the public is very appreciative because this community can be used as a means to maintain and improve public health, and can be one indication for healthy living. Appreciation also came from the respondents about the concept and culture of the community is very appropriate for Lampung public who often exercise, especially among young people who want a more challenging exercise and happy with new things, and respondents appreciate the public space used for the exercise site is very good and ample, especially in the center of calisthenics activities where the public itself has a favorite movement of this community exercise, although they can not and do not usually do it like freestyle movement, and appreciation also for this community because this community has a concept 'just for fun' for the public who join or who just see it from a distance, because they often make choreographic movements and concepts that like this become one that is fun for them and the public. This community is also able to recruit young children to join the community in order to practice and healthy together, with the hope that young people can reduce or eliminate bad habits that can damage their health, and also try to avoid young people to do negative things that could harm the public, and this is one that makes the public very appreciative of this community. And then, public appreciate this community from the aspect of membership because of the many members who joined many who are still students and who work. Nevertheless, they can still take the time to exercise together and even enter a community that has the same concept and thought to live healthy.

Public's perceptions of the street workout community provide a more positive direction for other community sports, including those who join the community or not, when the public is able to

properly describe a community it can be seen that the public knows substantially the street workout community, and what kind of exercises do every day and to know the direction and benefits of this community. Of all the respondents who were successfully interviewed, all were able to explain it simply, what is a street workout community, and from some public too many have joined to practice with the community, from public who meet in field and who have become member of community to be invited to exercise together, but in addition there are still many people who are know but do not participate in training together, because the lack of socialization from the community as well as never been invited to exercise together. Lack of socialization and few public view of community accounts such as instagram, facebook, and others, probably just an active public in the virtual world who know the activities of Lampung's street workout community. And information obtained from the respondents that this community has held events other than routine activities, such as the contest in the mall and events anniversary, sharing, and traveling, perhaps it is to strengthen solidarity among members and build a sense of brotherhood and become one of the community's appeal to public. This community has also visited the orphanage where as a form of community concern for the public as well as introducing calisthenics, sports that can be done anywhere.

However, there are respondents who do not know the activities that have been done by the community, even if information is accessible quickly, such as because it is not too follow the community activities, and perhaps because it is too busy with other activities, and because it is not his passion to follow the sport in this community but in other communities. For the affective values of this community during practice, the public explains it clearly that at the time of practice, those values are in them, such as courtesy to other facility users, rebukes, and engages in joint exercises, Because usually if young people are in the community, apathy will always be present, but society does not find it in this community, the members of the community know that the existing facilities to be used together in exercise, in terms of responsibilities, the public explains that the facilities that are and often used by them are well preserved both function and aesthetics, so it can remain in use until now, and this is described earlier as a form of public appreciation to this community. The public are also aware that this community receives members from different walks of life, from starting young people coming from students, from this perception also formed the public's appreciation of this community, young people who usually do negative things in the middle of public. they have a spirit in exercising, minimally avoiding cigarettes, and young people who joined can also use this community as a training place to take the exam in one of the institutions, and also this community does not close the possibility of the elderly to join, because there are members of the community who follow this community training, although not young anymore, they don't want to be left with the changing times of calisthenics sport that is usually done among young people, apart from age differences, street workout communities can also be followed by all gender and the public knows this, the difference is only to the intensity of the exercise each day and not to do freestyle. And from the public perception that this community is able to balance the concept of cheap exercise, without using tools, only using their own weight, and of the many communities that exist,This community also encourages the public to always maintain their health by using the facilities already provided.

CONCLUSION AND SUGGESTION

The Based on the research result, the streetworkout community in lampung province which is centered in BandarLampung city is highly appreciated by the public both in terms of training, membership, and activities that lead to the public by holding sports event, and if seen from the large expectations of the community on this community, where people can take advantage of this community in sports that includes sports and health, Able to keep the community especially young people to avoid negative activities, and can also be a place of gathering and sharing for fellow members and the surrounding public in terms of increasing knowledge, especially in the field of calisthenics, and positive perceptions of the public's knowledge of this community are also very well seen from the people who are able to explain about the community of street workout although still simple but understood substantially. And also from the many people who know because often

practice and just look from a distance, the public is also able to explain the form of community socialization that explains what activities are obtained directly or from social media, and also the public is able to explain the exercises, characteristics and existence of communities that contribute positively to public.

For municipal and provincial government of Lampung, the need for additional public space as a public facility to exercise, For municipal and provincial governments of Lampung, the provision of adequate Bar and grounding facilities is necessary to increase the good interest in sports, For the public always participate in sports activities to maintain health especially in calisthenics, for the public, participate in maintaining the facilities already provided by the government, to the public to help each other and maintain security in all public space in order to create a conducive situation and conditions during the exercise.

ACKNOWLEDGMENT

Allah azza wa jalla who has bestowed everything for me, Both parents never stop supporting and praying, Prof. Dr. Mukhsin Doewes, Mars ,. AIFO, Prof. Dr. Kiyatno, M.Or, Prof. Dr. Agus Kristiyanto, M.Pd who has provided guidance and input until this thesis is complete.

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DEVELOPING OF TRADITIONAL GAMES AS NATION CULTURETHROUGH IN PHYSICAL EDUCATION LEARNING FOR ELEMENTARY SCHOOL STUDENTS

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Abstract

This study aims to develop traditional games to preserve the nation's culture through learning physical education in elementary school, stimulate students' motor development, as one of the solutions of the lack of sports facilities and infrastructure in schools, to stimulate optimal growth of students and stimulate creativity and innovation of teachers in creating or develop physical activity. This research type is research and development with steps: research and development (R and D) is an insdustry-based development in which the findings of research are used to design new products and prosedure, which then are systematically field-tested, evaluate, and refined until they meet specified criteria of effectiveness, quality, or similar standards". These research and development steps are: Research and information collecting, planning, develop preliminary form of product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation. Research and information collecting. Preliminary field testing were conducted at State Elementary School 222 Palembang with a total of 30 students. This research of result in five kinds of traditional games: (1) the Panting game, (2) the Throw cans game, (3) the Pikak game, (4) The Cas-casan game and, (5) the yeye game. The conclusion of this research is that the development of traditional games is very good, effective, and fFrom the results of assessment and analysis can be concluded that the development of this traditional game is very good, effective, and has been feasible, so that through the physical education of the nation's culture can be maintainedeasible.

Keywords: traditional games, learning, physical education.

INTRODUCTION

Play activities and students are an inseparable whole, both of which have a very close attachment relationship, because the daily activities of the students are spent through playing Homo Ludens. Play is one of the media students to express the excess motion through the surrounding environment. From the statement it can be concluded that play is very important for students, because through the activity of playing students will find and get various experiences such as experience of motion, get information, and add language.

Based on the writer's observation that the traditional game has a triumphant period, meaning that the traditional game period is still often played by elementary school students is estimated in 2005 down. It cannot be denied gradually the traditional game began to be abandoned due to technological developments. The abandonment of traditional games has many factors such as the rise of digital games such as online games, mobile apps, PS (Play Station), traditional neglected gaming regeneration, narrow playgrounds (development), especially in urban areas, , and feelings of prestige (Asriansyah, 2014).

The last few years significantly in these countries has been growing awareness of the culture of one of them is in the State of Denmark (Nordic), In the world of education and in the cultural policy, health and integration, to play and the game has become the world's attention."Also inside the Nordic countries themselves, a growing awareness for the significance of play culture has developed during the last years. In the world of education as well as in the policies of culture, health and integration, play and game has become a plus-word" (Eichberg, H, 2005). In order to preserve and maintain the nation's culture (traditional game) the author realizes it by conducting research. The results will be socialized to schools through physical education in schools. The implementation of traditional games will be more effective, efficient, and more meaningful because of the supervision of teachers of Physical Education. This traditional game can also be used as one of the solutions of the lack of sports facilities and

infrastructure in schools, from the observation of the authors show that there are still many schools that do not have enough facilities and infrastructure.This study therefore expected to stimulate creativity and innovation of physical education teachers in developing lesson study of motion and increase the physical education field.

According to the Law of the Republic of Indonesia on the National Sport System which is contained in Chapter VI Article 17 on the scope of sports which includes "sports education, recreational sports, and sports achievements". Traditional games can cover all three sports scopes. Traditional games can serve as educational sports because traditional games can develop psychomotor aspects, cognitive and affective aspects, as well as physical education. Traditional games can be used as a recreational sport, to play traditional games and effect inflicted like pleasure, it can be used as an antidote of routine learning activities of students, hoping to minimize boredom / bored in students. Achievement sports in this case as a starting point for achievement sport (athlete candidate) because one of the benefits of traditional game activity students will have experience of biomotor motion.

Based on observations and literature review above, it must needs be done research with the title "Developing of Traditional Games as Nation Culture Through in Physical Education learning for Elementary School Students".

(Rosdiani, D, 2012) learning model is a plan that is utilized to design. The content contained in the learning model is a teaching strategy used to achieve instructional goals. Some opinions about the learning model above, it can be concluded that the learning model is a form of learning that is planned and designed by the teacher into a form of learning from the beginning to the end of learning. The traditional game is one of the models of movement learning approach that is through a planned, structured, and programmed play activity.

"Play" is spontaneous, internally driven and utilized for fun and relaxation (Odok, E.A., et.al, 2013). Some sense of play above, it can be concluded play is a fun activity done individually or group, intentionally or unintentionally to explore themselves through objects or without objects, environment, and circumstances to get pleasure.

Playing is one approach to learning, "Play and game are a source of creativity from below, renewed by each young generation" (Eichberg, H, 2005), play and play is one source of creativity for young generation of students. Thus play can be the main medium for the teaching-learning process, this process is also motivated because the world of students is playing and learning students through play.

From some opinions about the benefits, it can be concluded that the game is an activity that is important for the growth and development of students. The benefits of the game for students, namely:
1) With students playing physiologically the students' organs grow optimally.
2) With students playing brain students will actively work.
3) By playing the potential students will be seen.
4) By playing the character students will be formed.
5) By playing the students will gain satisfaction, joy, pleasure.
7) By playing the social psyche students will be formed.
6) By playing emotionally students will be formed.

Playing is one way students express the thoughts, feelings and ways students explore the environment. Between playing with students is a unity that has a very close relationship because every day students do play activities, needs or instincts play students can be likened to adults who work every day whose purpose to meet the needs of every day. Through play can activate brain function as a solution to develop students' intelligences. In the learning process students are mostly through the play done by the students themselves, be it with friends, teachers, parents and adults. Students who play will gain a valuable experience for the further development and growth of students. Play is increasingly imaginative and is an important part of kids' growth and development now (Nermour, 2014), meaning that playing makes students more imaginative and an important part of the growth and development of students, thus strongly recommended to teachers, parents, and people adults should allow students the opportunity to play so that students grow and flower properly according to the age of the students, but play must have positive benefits for students, as well as the safety of students. Students today are given and burdened with good tutoring is skill, language or academic. All programs are good, but the physical

activity and play of students is reduced so that will hamper the development of student movement and also hamper the process of growth and development of students optimally.

Traditional games are part one's heritage and cultural tradition, but, with the passing of time, they are being forgotten and are not passed on to younger generations, due to modern lifestyle and growing alienation (Kovacevic, T., & Opic S, 2014). Traditional games have humanity and cultural values, beliefs translate by these from one lineage to other (Akbari H., et.al, 2009). Based on the above explanations it can be concluded that the traditional game has the characteristics of having no standard rules, either the rules of the game, the tools used, the size of the field, and the duration of the game. From these characteristics the author took the initiative to develop a traditional game tailored to the characteristics of elementary school students both from aspects of growth (physical / motor) and development. Once the traditional game is developed it is hoped that it can be applied in schools as a motion learning (multilateral game). Multilateral is the development of various motor skills by adapting various training load needs to develop overall adaptation (Lumintuarso, 2013).

A quality physical education program has the potential to make (at least) four unique contributions to the lives of students: (1) daily physical activity, (2) a personalized level of physical itness, (3) development of competency in a variety of physical and sport skills, and (4) acquiring the requisite knowledge for living an active and healthy lifestyle (Darst, P. W., Pangrazi, R. P., Sariscsany, M. J., & Brusseau, T. A, 2012).

There are several specific purposes of physical and health education that include:

a. Improve the development and growth of harmony between the physical, spiritual, mental, and social life.
b. Develop basic motor skills.
c. Embedding positive values and attitudes.
d. Developing the necessary knowledge and healthy living habits.
e. Embedding a sporting passion.
f. Improving physical fitness.
g. Identify, develop and preserve the culture, (Rosdiani, D, 2012)

Motion is a very simple coordination pattern with other body devices through impulse delivery by nerves. Basic motion is a move that is done in life to move to improve the quality of everyday life, such as play activities (traditional games), sports, learning, and so forth.

Thus the basic motor skills of this future will be useful for the growth and development of students. Basic motion is a movement that is produced through large muscles, and or small muscles. Basic motor skills can be classified into two fine motor movement and gross motor movement. Gross movement are primarily controlled by the large muscles group. These muscles are integral in producing an array of movement, such as walking, running, and skipping". Fine movement are primarily governed by the small muscles or muscle groups. Therefore, such as movement as drawing, typing, or playing a musical instrument are fine movement". Smooth motor movement is a movement that is governed by small muscles or muscle groups. Like the motion of drawing, typing, or playing a musical instrument is fine motor movement (Payne, V.G.,& Issac, L.D, 2012). In the development of basic motor movement ability, each student will experience a difference in their development.

There are several factors that influence motor development, including:

a. Genetic properties, including body shape and intelligence.
b. The more active the fetus the faster the student's motor development.
c. A favorable prenatal condition, especially nutrition, encourages faster motor development in the post partum period.
d. A difficult birth if there is brain damage slows motor development.
e. Good health and nutrition early in life will accelerate the development of motor.
f. Students with high IQ progress more rapidly than normal or under normal IQ.
g. The existence of stimulation, encouragement and opportunity to move all parts of the body will accelerate motor development.
h. Excessive protection will cripple the readiness of developing motor skills.

i. The stimulation and encouragement of parents, the tendency of first born students is better than those born later.
j. Pre-term birth usually slows motor development.
k. Physical disabilities will slow down the development of motor.
Based on the above research descriptions, there are several objectives in this study as follows:
a) Maintain and socialize traditional games to elementary school students through physical education education.
b) Developing traditional games as motion learning in elementary school through physical education.
c) Develop traditional games as recreational sports through physical education in elementary school.
d) As one of the solutions of the lack of sports facilities and infrastructure in schools.
e) Stimulate the creativity and innovation of physical education teachers in creating or developing and enriching material in the field of physical education in elementary schools.

METHOD

This research method is Research and Development (R/D). (Borg, W.R., & Gall, M.D, 2007) "research and development (R and D) is an insdustry-based development in which the findings of research are used to design new products and prosedures, which then are systematically field-tested, evaluate, and refined until they meet specified criteria of effectiveness, quality, or similar standards". These research and development steps are: Research and information collecting, planning, develop preliminary form of product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation.

Research and information collecting.

Based on the observation and information obtained there are some potentials and problems to be raised in this research that are: 1) through learning physical education in traditional game schools can be socialized to students as a form of maintaining and maintaining the culture of the nation, 2) traditional games can stimulate student motor (game multilateral), 3) traditional games can be used as teaching materials in physical education as an alternative to the lack of sports facilities and infrastructure in schools, 4) through traditional games can stimulate growth and optimal development of the students and, 5) to stimulate creativity and innovation of physical education teachers to create or develop a learning movement on physical education in elementary school. The problem in this research is the abandonment of traditional game by society (students).

Planning

From the information and observation results obtained, then made the planning and design of traditional games that will be developed.

Develop Preliminary Form of Product

The design of traditional game products can be described as follows, each student will undergo a series of physical activities in accordance with the type of game being played. This traditionally developed game is one of the student's motor learning (multilateral games) as an effort to optimize the student's progress. The traditional game developed there are 5 kinds of games, namely; (1) the Panting game, (2) the throw cans game, (3) the Pikak game, (4) The Cas-casan game and, (5) the yeye game. Of the five designs, traditional games can develop aspects of psychomotor, cognitive aspects, affective aspects.

Preliminary Field Testing

The traditional game development research was tested early by involving the fifth grader of Public Elementary School 222 Palembang, with a total of 30 students. From the results preliminary field testing, and then the experts and practitioners providing value through a questionnaire and suggestions

Main Product Revision

After the results of the assessment / suggestions obtained from experts and practitioners in accordance with their respective expertise, then revised according to suggestions for product perfection developed.

Main Field Testing

Main field testing of the subjects involved namely Muhammadiyah Elementary School 17 Palembang class five with a total of 30 students; (2) Integrated Islamic Primary School Muh'hab Bin Umair Palembang fifth grade with 20 students.

Operational Product Revision

From the results of the assessment / advice obtained from experts and practitioners in accordance with their respective expertise, then revised according to suggestions for perfection of products developed.

Final Product Revision

The final product in this research is in the form of guide book and traditional game DVD.

Dissemination and Implementation.

The final product dissemination is to report the product to a scientific meeting in the seminar while the product implementation is published in the journal.

RESULTS AND DISCUSSION

Preliminary field testing conducted in 222 public elementary school in Palembang, the subject of small-scale testing of the fifth grade students of State Elementary School 222 Palembang number of subjects 30 students, the execution time Saturday 22 April 2017.

Results of Preliminary Field Testing Observations by Experts and Practitioners

The results of preliminary field testing conducted in the field were assessed by experts and practitioners, the expert assessment of the video recordings in the field, while practitioners assessed directly when the game in the field. From the results of the questionnaire results assessed by experts and practitioners, then converted from quantitative data to qualitative data with a scale of five.

Table 1.
Conversion of Quantitative Data into Qualitative Data with Scale Five

Quantitative Data Classification	Total Rating Score	Qualitative Data Classification
5	256 s/d 304	Very Good
4	207 s/d 255	Good
3	158 s/d 206	Enough
2	109 s/d 157	Less
1	60 s/d 108	Very Less

Table 2.
Conversion of Small Scale Product Test Results by Experts and Teachers

No	Game	Total Score of Expert	Category
1	The Panting Game	280	Very Good
2	The Lempar Kaleng Game	286	Very Good
3	The Pikak Game	278	Very Good
4	The Cas-casan Game	287	Very Good
5	The*Yeye*Game	276	Very Good

Based on the above table it can be explained that, The panting game has a score of 280 which means categorized very well, the Lempar Tangkap game the number of scores 286 into the category very well, the Pikak game has a total of 278 score which means categorized very well, the Cas-casan game has the total score of 287 went into very good category, and the yeye game has 276 score figures very well categorized.

Results of Small Scale Trial Observations by Students

After students perform traditional games, then students fill out a questionnaire. From the result of the student data, a table of frequency distribution and analyzed by using quantitative approach, to

facilitate the result of operational measurement given the answer "yes" or not ", answer yes given value 1, while answer is not given value 0. The range used 0% to 50% is called "approaching unsuitable", for the 50% range used the term "approaching incompatible and approaching fit" while the 50% to 100% range uses the "appropriate" title.

Table 3.
Conversion of Small Scale Product Test Results by Students

Games	Answer Yes	Answer No	Percent Yes	Category
The Panting Game	297	3	99%	appropriate
The Lempar Kaleng Game	293	7	97,6%	appropriate
The Pikak Game	289	11	96,3%	appropriate
The Cas-casan Game	298	2	99,3%	appropriate
The *Yeye*game	291	9	97%	appropriate

From the assessment results in the above table filled by students of the State Elementary School 222 Palembang can be summed up as a whole that the development of traditional games categorized "appropriate". Category according to its purpose is in accordance with the ability of students, in accordance with the character of students, thus the traditional game developed has been effective. The effectiveness of traditional games can be seen from the students' performance in following the traditional game activities that all students can do the game well, the effectiveness can also be known from the students who express the expression of joy, happy, cheering, spirit, and enthusiasm. Effectiveness can also be corroborated from the results of the assessment or performance of students assessed by physical. From the results of traditional game development research to preserve the culture of the nation through learning physical education in Elementary School produces five kinds of games developed namely:

(1) The Panting Game.




(2) The throw cans game.


(3) The Pikak Game,


(4) The Cas-casan Game


(5) The*Yeye Game.*


CONCLUSION

From the results of assessment and analysis can be concluded that the development of this traditional game is very good, effective, and has been feasible, so that through the physical education of the nation's culture can be maintained.

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CONTRIBUTION OF FLEXIBILITY, STRENGTH, AND BALANCE ON THE CARTWHEEL OF PKO STUDENTS CLASS 2016

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Abstract

Objectives: This study aims at determining the contribution of biomotoric factors (flexibility, strength, and balance) on the cartwheels on PKO students of FIK Yogyakarta State University year 2016.
Methods: It is a descriptive quantitative research. The population and samples of research were 60 students of PKO year 2016. The data were obtained using survey methods with tests. The data were analysed using correlation analysis of product moment, partial correlation analysis and multiple regression analysis, and partial eta squared. The prerequisite test included normality, linearity, and multicollinearity tests.
Results: The results of the research are as follows. There are significantly positive effects ($p<0,05$) of flexibility, strength, and balance, both individually and all together on cartwheels of PKO students of FIK UNY year 2016. Flexibility, strength, and balance provide effective contribution (37.5%) on the cartwheels of PKO students of FIK UNY year 2016. Partially (partial eta squared), each of which contributed as follows: flexibility 11,0%; strength 10,7%; and balance 8,0%.
Conclusions: There is contribution of flexibility, strenght, and balance on the cartwheel of PKO students class 2016.

Keywords : flexibility, strength, balance, cartwheels

INTRODUCTION

Basic gymnastics skills is a compulsory subject for students of sports coaching education taking gymnastics sports specifications. This course consists of 3 credits with 1 credit for theory and 2 for practice. In the practice courses, students are given materials which consists of 2 types of exercise, fitness and gymnastics: gymnastics formation. Through fitness gymnastics training materials consisting of aerobic gymnastics, the student is expected to make a choreography gymnastics movements consisting of warming, core, cooling, while for the formation of gymnastics the training there are 12 basic motions of artistic gymnastics items, namely: split, bridge stretch, forward rolls, backward rolls, tiger vault, headstand, handstand, cartwheel, neck spring, round off, stuut, and handspring.

On the cartwheel movement there are several factors that affect the perfection of his movement. Some of the factors are the strength of the arm muscles, abdominal muscles, strength, and flexibility power. Cartwheel movement is a movement to form the blades with the prefix body facing fore and then both arms touch the floor in turn followed by the movement of the legs open as wide as possible at the top of the head so that it forms a propeller and at the end is the beginning of the movement. Cartwheel is a fairly complex movement so that physical components involved are quite a lot too. Based on the observations, the researchers are to examine the Contributions of Flexibility, strength and balance against the motion Cartwheel on Students of Sports Coaching (PKO) class 2016. As for the purpose of this research is to explore the contribution of flexibility, strength, and balance on the cartwheel movement of PKO students 2016.

Biomotor Aspects

Biomotor abilities of human motion are affected by conditions of the organ systems, i.e. neuromuscular, respiratory, circulatory, digestive, energy, and bones and joints (Sukadiyanto, 2011). (Bompa, Tudor O, 1999) added that the basic components of a biomotor include strength, endurance, speed, coordination, and flexibility. As for the other components are combinations of

several components forming a certain terminology, such power is the combination or the product of strength and speed; Agility is the combination of speed and coordination.

It is therefore easy to understand that in the training process and in the selection process, the five gymnast aspects of physical ability (physical competencies) always get serious attention. Ref. (Bompa, Tudor O, 1999) identifies some of the test criteria for each sport. In gymnastics, the criteria includes coordination, flexibility, power, vestibular balance, persistence, ability to overcome pressure, emotional balance, high anaerobic power, and height of lower trunk. The physiological aspects of biomotor that will be examined in this study include:

1) Flexibility, is the ability of joint to do maximum movement in the joint space. The natural motion of each joint depends on the tendons, ligaments, and muscles fibres. According to (Sukadiyanto, 2011) the flexibility contains senses of the broad motion of one or some joints. There are two kinds of flexibility i.e. (1) static flexibility, and (2) the dynamic flexibility. Flexibility take precedence in gymnastics, especially in the competitive one.
2) Balance, is the ability to maintain the attitude and position of the body rapidly upon standing (static balance) or at the time of the movement (dynamic balance). The ability to maintain balance is influenced by several factors including visual and vestibular. Static or dynamic balance is a component of physical fitness which is often performed by children and adults (Sanusi, Anwar, 2011). Even there are types or kinds of training called balance training, for example, Y balance, even the tool there is also called a balance beam.
3) Power, is one of the basic biomotor components necessary in any sport. (Sukadiyanto, 2011) states that the notions of power generally is the ability of a muscle or group of muscles to cope with the loads. In terms of neuromuscular Physiology, strength is the ability to resolve external loads and internal loads. The level of power sportsmen affected by short lengths of small muscles, big muscles, much nearby point load and fulcrum, level of fatigue, the dominance of red or white muscle types, potential muscle, exploiting the potential of the muscles, and the ability of muscle contraction . An athlete in its activities cannot be separated from exerting to overcome barriers such as overcoming weight, the equipment used and the obstacles that come from the environment or nature.

Formation Gymnastics

Body Formation Gymnastics

Formation gymnastics is one with selected movements created on purpose and planned, drawn up systematically and by using certain methods with the aim to form the ideal body posture, both in passive attitudes of standing, sitting, squatting, and lying down or in active attitudes such as walking, running, jumping, hitting, and kicking.

Balance Formation Gymnastics

Balance formation gymnastics includes balance trainings with resting on feet, resting on the hand, and resting on bottom.

METHODS

This research is descriptive research. According to (Sanusi, Anwar, 2011) states that the descriptive method is a method in researching the status of groups of human beings, objects, conditions, and systems of thought. The goal of the research is to make a description, picture, or painting in systematic, factual and accurate ways regarding the facts and relationship of the phenomena investigated. The present research took place in Faculty of Sports Science, Yogyakarta State University (FIK UNY) in May 2017. The population was the student of Faculty of Sports Coaching Education (PKO). The sample used was the PKO student year 2016.

The data were collected through surveys. As expressed by (Sugiyono, 2011) the survey method is used to obtain data from a particular place naturally (not man-made) but the researcher conducted treatment in data collection for example giving the questionnaires, tests, structured interview, and so on.

Data analysis techniques used in this research are: correlation of product moment partial correlation, and multiple regression analysis.

RESULTS AND DISCUSSION

All data on this research were obtained from tests, each participant performed tests twice and were taken for the best results. The dependent variable in this research was the cartwheel movement and the independent variable was flexibility (X_1) taken from the sit-reach test, strength (X_2) as measured by the three tests, namely, push-ups, crunches, and chin-up; as well as the balance (X_3) as measured by tests of balance. The following table presents the results of the variables

Table 1.
Statistical Analysis of Research Variables

No.	Test	Central Tendency			
		Min	Max	Mean	SD
1.	Flexibility (X_1): Sit & Reach	21.0	46.0	38.325	4.980
2.	Strength (X_2):				
	Push-Up	15	68	37.3	13.054
	Sit-Up	26	66	42.517	8.353
	Chin-Up	1.06	50.00	25.881	14.302
3.	Balance (X_3)	1.5	7.9	3.381	1.394
4.	Cartwheel Movement (Y)	5.0	8.5	7.150	0.917

The table above shows that the best score on the sit and reach test results was 46.0; tests of push-ups 68, crunches 66, chin-up 50.00; the balance of 7.9, and 8.5 for the cartwheel test results. The average test results were 38.325 for the sit and reach; 37.3 for push-ups, 42.517 for sit-up, chin-up with the average score of 25.881; balance 3.381, and 7.150 for the cartwheel.

Due to the size of the data, the data were converted into a standard score with a t-score, so that the obtained data is already standardized, so that the score can be determined the sum and average. For example in the strength test consisting of three different types of tests, the final result is the average of the three scores using the t-score.

1. Hypothesis Testing in the Data Analysis

Hypothesis testing in this study was performed through the techniques of partial correlation, linear regression, and multiple regression with the requirements including: (a) a test for data normality, (b) a test of linearity relationships, and (c) a test of multi-linearity. The summary of the hypothesis testing is presented in the attachment.

a. The Normality Test

Testing the normality of the data on this research was performed through Kolmogorov Smirnov Z. The results of the normality test are presented in the following table.

Table 2.
Results of the Normality Test

No	Variable	*Kolmogorov Smirnov*		Category
		KS Z	p (sig.)	
1.	Flexibility (X_1)	0,638	0,810	Normal
2.	Strength (X_2)	0,498	0,966	Normal
3.	Balance (X_3)	1,246	0,090	Normal
4.	Cartwheel Movement (Y)	1,233	0,096	Normal

The normality test summary table above indicates that all of the data in this study were normal indicated by the insignificant coefficient of Kolmogorov-Smirnov at Z-level of 5% ($p > 0.05$).

b. The Test of Linearity

The linearity test was carried out with the computer software of SPSS. From the results of the analysis, it is known that the whole F_{count} values (Deviation from Linearity) obtained the values with $p > 0.05$ the data were linear. The results of the linearity test can be seen in the following table.

Table 3.
The Results of the Linearity Test

No.	Functional Relationship	F_{count}	p	Category
1.	Flexibility (X_1) with the cartwheel movement (Y)	1,207	0,303	Linear
2.	Strength (X_2) with the cartwheel movement (Y)	1,240	0,278	Linear
3.	Balance (X_3) with the cartwheel movement (Y)	0,912	0,579	Linear

Note:

F_{count} is $F_{Deviation}$ from Linearity, which means a deviation of linearity, with $p > 0.05$ indicating linearity.

c. The Multicolinearity

The multicolinearity test aims to find out whether or not there is an overlapping relationship between variables. This test is necessary, because this study used multiple regression analysis. The multicolinearity test was carried out with a view on *Tolerance* and *VIF*. If the acquired tolerance approaches is 1, and VIF is not more than 10, then it is not multicolinearity.

Table 4.
The Results of the Multicolinearity Test

No.	Independent Variable	*Collinearity Statistics*		Category
		Tolerance	VIF	
1.	Flexibility (X_1)	0,857	1,166	Not multicolinearity
2.	Strength (X_2)	0,860	1,163	Not multicolinearity
3.	Balance (X_3)	0,886	1,129	Not multicolinearity

Based on the above table it is evident that all the independent variables in this study does not indicate the existence of multicolinearity, indicated by the value of tolerance "approaches 1, and VIF is not more than 10.

The above results determined that the data were eligible, so that it can be continued with further tests i.e. correlation product moment, partial correlation, and regression analysis.

2. Data Analysis and Hypothesis Testing

On the previous analysis, it is determined that all the data in this study meets the prerequisites of data analysis, therefore, the data can be analysed with statistical parametric analysis, i.e. the analysis of the correlation, partial correlation, and multi linear regression. The results of the analysis of the correlation of product moment presented in the following table.

Table 5.
Results of Product Moment Correlation Analysis

Correlations

		Kelentukan (X1)	Kekuatan (X2)	Keseimbangan (X3)	Gerak Meroda (Y)
Kelentukan (X1)	Pearson Correlation	1	.322*	.277*	.463**
	Sig. (2-tailed)	.	.012	.032	.000
	N	60	60	60	60
Kekuatan (X2)	Pearson Correlation	.322*	1	.273*	.459**
	Sig. (2-tailed)	.012	.	.035	.000
	N	60	60	60	60
Keseimbangan (X3)	Pearson Correlation	.277*	.273*	1	.410**
	Sig. (2-tailed)	.032	.035	.	.001
	N	60	60	60	60
Gerak Meroda (Y)	Pearson Correlation	.463**	.459**	.410**	1
	Sig. (2-tailed)	.000	.000	.001	.
	N	60	60	60	60

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The table indicates that the correlation between independent variables and the dependent variables were significant. This is evidenced by the sig (p-value) is less than 5% ($p < 0.05$). The further analysis of multiple linear regression using the SPSS obtained the following results.

Table 6.
Results of Multi Linear Regression Analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613[a]	.375	.342	8.078

a. Predictors: (Constant), Keseimbangan (X3), Kekuatan (X2), Kelentukan (X1)

b. Dependent Variable: Gerak Meroda (Y)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2196.804	3	732.268	11.223	.000[a]
	Residual	3653.779	56	65.246		
	Total	5850.583	59			

a. Predictors: (Constant), Keseimbangan (X3), Kekuatan (X2), Kelentukan (X1)

b. Dependent Variable: Gerak Meroda (Y)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	2.669	8.392		.318	.752			
	Kelentukan (X1)	.299	.114	.299	2.625	.011	.463	.331	.277
	Kekuatan (X2)	.402	.155	.295	2.592	.012	.459	.327	.274
	Keseimbangan (X3)	.246	.112	.247	2.202	.032	.410	.282	.232

a. Dependent Variable: Gerak Meroda (Y)

The results of the regression analysis presented in the tables above determine the multi-correlation coefficient (R) of 0.613; the coefficient of determination (R^2) 0.375; and $F_{regression}$ 11.223 with significance (sig) or p-value 0.000. It turns out that the significance is less than the specified significance level, i.e. 5% ($p < 0.05$); then the $F_{regression}$ was significant meaning that the multi-correlation coefficient was significant. Thus the determination coefficient was also significant, meaning that the results of the regression analysis can be used as a basis of prediction.

The coefficient of determination of 0.375 means that the contributions of flexibility, strength, and balance on the motion cartwheel in PKO students class 2016 of 37.5%. As for the calculation of the contribution of each dependent to independent variables, can be seen in the calculation of partial eta squared and the results of the analysis with SPSS software are presented in the following table.

Table 7.
Results of Effective Contribution of Each Independent Variable
(*Partial Eta Squared*)

Tests of Between-Subjects Effects

Dependent Variable: Gerak Meroda (Y)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2196.804[a]	3	732.268	11.223	.000	.375
Intercept	6.600	1	6.600	.101	.752	.002
T_X1	449.693	1	449.693	6.892	.011	.110
T_X2	438.321	1	438.321	6.718	.012	.107
T_X3	316.254	1	316.254	4.847	.032	.080
Error	3653.779	56	65.246			
Total	155351.000	60				
Corrected Total	5850.583	59				

a. R Squared = .375 (Adjusted R Squared = .342)

The above table shows partial eta squared for flexibility (X_1) is 0.110 and this proves that the variable of flexibility contributes effectively towards the cartwheel movement of PKO students class 2016 with the amount of 11.0%. The results of the analysis on strength (X_2) determine the partial eta squared of 0.107 indicating that the variable of strength contributes effectively to the cartwheel movement on PKO students class 2016 in the amount of 10.7%. The results of the analysis on balance (X_3) show partial eta squared of 0.080 determining that the variable of balance contributes effectively to the cartwheel movement on PKO students class 2016 in the amount of 8.0%.

a. Testing the First Hypothesis

The first hypothesis in this study was "there is the influence of flexibility on the cartwheel movement of PKO students class 2016". The hypothesis is an original hypothesis or an alternative hypothesis and for the purposes of testing the hypothesis, the hypothesis is changed into the zero hypothesis (Ho), i.e., "there is no influence of flexibility on the cartwheel movement of PKO students class 2016." The results of the analysis of the correlation of product moment, partial, beta coefficient of multi linear regression analysis are presented in the following table.

Table 8.
The Influence Coefficient of Flexibility to the Cartwheel Movement of PKO Students Class 2016

Variable	Product Moment (r_{xy})	Partial Correlation	Beta Coefficient (β)	T_{count}	P
X_1 Y	0.463	0.331	0.299	2.625	0.011

From the results of the analysis of flexibility (X_1) on the variable of cartwheel (Y) on PKO students class 2016, the correlation coefficient values of product moment was 0.463 and partial correlation was 0.331; beta coefficient (β) was 0.299 and t_{count} was 2.625 with p value = 0.011. The p-value is less than the specified significance level, i.e. 5% ($p < 0.05$) and the direction is positive, therefore the correlation coefficient and the beta coefficient are significant with the direction of positive influence. Thus, the null hypothesis (Ho) was rejected, and the alternative hypothesis (Ha) was received, and it can be concluded that there was a significant positive influence flexibility on the cartwheel movement on PKO students class 2016 of FIK UNY.

From the results of data analysis using partial eta squared analysis techniques, the contribution of flexibility on the cartwheel movement on student PKO 2016 FIK UNY was 11.0%.

b. Testing the Second Hypothesis

The second hypothesis in this study was "there is the influence of strength on the cartwheel movement of PKO students class 2016". The hypothesis is an original hypothesis or an alternative hypothesis and for the purposes of testing the hypothesis, the hypothesis is changed into the zero hypothesis (Ho), i.e., “there is no influence of strength on the cartwheel movement of PKO students class 2016.” The results of the analysis of the correlation of product moment, partial, beta coefficient of multi linear regression analysis are presented in the following table.

Table 9.
The Influence Coefficient of Strength to the Cartwheel Movement of PKO Students Class 2016

Variable	Product Moment (r_{xy})	Partial Correlation	Beta Coefficient (β)	T_{count}	P
X_2 Y	0.459	0.327	0.402	2.592	0.012

From the results of the analysis of strength (X_2) on the variable of cartwheel (Y) on PKO students class 2016, the correlation coefficient values of product moment was 0.459 and partial correlation was 0. 327; beta coefficient (β) was 0. 402 and t_{count} was 2. 592 with p value = 0. 012. The p-value is less than the specified significance level, i.e. 5% ($p < 0.05$) and the direction is positive, therefore the correlation coefficient and the beta coefficient are significant with the direction of positive influence. Thus, the null hypothesis (Ho) was rejected, and the alternative hypothesis (Ha) was received, and it can be concluded that there was a significant positive influence strength on the cartwheel movement on PKO students class 2016 of FIK UNY.

From the results of data analysis using partial eta squared analysis techniques, the contribution of strength on the cartwheel movement on student PKO 2016 FIK UNY was 10.7%.

c. Testing the Third hypothesis

The third hypothesis in this study was "there is the influence of balance on the cartwheel movement of PKO students class 2016". The hypothesis is an original hypothesis or an alternative hypothesis and for the purposes of testing the hypothesis, the hypothesis is changed into the zero hypothesis (Ho), i.e., “there is no influence of balance on the cartwheel movement of PKO students class 2016.” The results of the analysis of the correlation of product moment, partial, beta coefficient of multi linear regression analysis are presented in the following table.

Table 10.
The Influence Coefficient of Balance to the Cartwheel Movement of PKO Students Class 2016

Variable	Product Moment (r_{xy})	Partial Correlation	Beta Coefficient (β)	T_{count}	P
X_3 Y	0.410	0.282	0.246	2.202	0.032

From the results of the analysis of balance (X_3) on the variable of cartwheel (Y) on PKO students class 2016, the correlation coefficient values of product moment was 0. 410 and partial correlation was 0. 282; beta coefficient (β) was 0. 246 and t_{count} was 2.202 with p value = 0. 032. The p-value is less than the specified significance level, i.e. 5% ($p < 0.05$) and the direction is positive, therefore the correlation coefficient and the beta coefficient are significant with the direction of positive influence. Thus, the null hypothesis (Ho) was rejected, and the alternative hypothesis (Ha) was received, and it can be concluded that there was a significant positive influence strength on the cartwheel movement on PKO students class 2016 of FIK UNY.

From the results of data analysis using partial eta squared analysis techniques, the contribution of balance on the cartwheel movement on PKO students class 2016 of FIK UNY was 8.0%.

d. Testing the Forth Hypothesis

The third hypothesis in this study was "there is the influence of flexibility, strenth, and balance on the cartwheel movement of PKO students class 2016". The hypothesis is an original hypothesis or an alternative hypothesis and for the purposes of testing the hypothesis, the hypothesis is changed into the zero hypothesis (Ho), i.e., “there is no influence of flexibility, strength, and balance on the cartwheel movement of PKO students class 2016.”

The results of multiple linear regression analysis multiple regression, which have been presented earlier, it was determined that the multiple correlation coefficient (R) was 0.613; the coefficient of determination (R^2) was 0.375; and $F_{regression}$ was 11.223 with significance (sig) or p-value of 0.000. It indicates that the significance level was less than the specified significance level, i.e. 5% ($p < 0.05$); the $F_{regression}$ was significant meaning that the multiple correlation coefficient was very significant. As seen from positive beta coefficients (β), with null hypothesis (Ho) was rejected, and the alternative hypothesis/original (Ha) was received, it can be concluded that there was a significant positive influence of flexibility, strength, and balance simultaneously on the cartwheel movement for PKO students class 2016.

From the results of regression analysis, the resulting beta constants and coefficients (β) of each variable can be made into the following regression equation:

$$\hat{Y} = 2.669 + 0.299\ X_1 + 0.402\ X_2 + 0.246\ X_3$$

Based on the regression line equation, every one rough unit increasing flexibility value are, the cartwheel movement of PKO students class 2016 will increase by 0.299 if other variables do not change. When the power rises one rough unit, the cartwheel movement of PKO students class 2016 will increase by 0.402 if other variables do not changed, and if the balance is increased one unit rough, the cartwheel movement PKO students class 2016 will increase 0.246 if other variables do not change.

The results of the regression analysis show that the multiple correlation coefficient (R) was 0.613 and the determinant coefficient of R^2 was 0.375 indicating that flexibility, strength, and balance effectively contributed on the cartwheel movement of PKO students class 2016 at

the amount of 37.5% and the remaining (62.5%) was affected by variables that are not examined in this study.

RESULTS AND DISCUSSION

In this section are presented the discussion against the results of the study, which is based on statistical analysis and hypothesis testing on top.

a. The Influence of Flexibility on the Cartwheel Movement

The first hypothesis testing proves that there is a significant positive influence of flexibility on the cartwheel movement on PKO students class 2016 of FIK UNY. This result was proved by the correlation coefficient values of product moment was 0.463 and partial correlation was 0.331; beta coefficient (β) was 0.299 and t_{count} was 2.625 with p value = 0.011. significance ($p < 0.05$).

Significant positive influence means that the higher the flexibility of the students, the higher the ability in the cartwheel movement on PKO students class 2016 of FIK UNY; and conversely the lower the flexibility of students, the lower ability in the cartwheel movement on PKO students class 2016 of FIK UNY.

The contribution of the flexibility the cartwheel movement on PKO students class 2016 of FIK UNY was at the amount of 11.0%; It is seen from the coefficients of partial eta squared of 0.110. This level of contribution was presumably large enough to increasing students' ability in the cartwheel movement through the flexibility test of *sit & reach*.

b. The Influence of Strength on the Cartwheel Movement

The second hypothesis testing proves that there is a significant positive influence strength on the cartwheel movement of PKO students class 2016 of FIK UNY. This result was proved by the correlation coefficient values of product moment of 0.459 and partial correlation of 0. 327; beta coefficient (β) of 0.402 and t_{count} of 2. 592 with p value = 0. 012.

Significant positive influence means that the higher the strength of the students, the higher the ability in the cartwheel movement on PKO students class 2016 of FIK UNY; and conversely the lower the strength of students, the lower ability in the cartwheel movement on PKO students class 2016 of FIK UNY.

The contribution of the strength the cartwheel movement on PKO students class 2016 of FIK UNY was at the amount of 10.7%; It is seen from the coefficients of partial eta squared of 0.107. This level of contribution was presumably large enough to increasing students' ability in the cartwheel movement through strength on the student, which includes push-ups, sit-ups, and chin-up.

c. The Influence of Balance on the Cartwheel Movement

The third hypothesis testing proves that there is a significant positive influence balance on the cartwheel movement of PKO students class 2016 of FIK UNY. This result was proved by the correlation coefficient values of product moment was 0. 410 and partial correlation was 0. 282; beta coefficient (β) was 0. 246 and t_{count} was 2.202 with p value = 0. 032.

Significant positive influence means that the higher the balance of the students, the higher the ability in the cartwheel movement on PKO students class 2016 of FIK UNY; and conversely the lower the balance of students, the lower ability in the cartwheel movement on PKO students class 2016 of FIK UNY.

The contribution of the balance on the cartwheel movement on PKO students class 2016 of FIK UNY was at the amount of 8.0%; It is seen from the coefficients of partial eta squared of 0.080. The contribution of it presumably large enough to increasing students ' ability in motion cartwheel through improved balance on college students.

d. The Influence of Flexibility, Strength, and Balance on the Cartwheel Movement

The results of hypothesis testing, it is evident that there is a significant positive influence of flexibility, strength, and balance simultaneously on the cartwheel movement for PKO students class 2016. This is evidenced by the values of the multiple correlation coefficient (R) was 0.613;

the coefficient of determination (R^2) was 0.375; and $F_{regression}$ was 11.223 ($p < 0.05$) revealing significant levels of correlation.

The determinant coefficient of 0.375 or 37.5% proves that flexibility, strength and balance simultaneously contributes effectively on the cartwheel movement for PKO students class 2016 at the amount of 37.5%. the rest 62.5% was determined by variables outside the research variables.

The contribution to the three variables was high i.e. 37.5%; indicating the need for training in order to increase the ability of cartwheel movement for PKO students class 2016 FIK UNY.

CONCLUSION AND SUGGESTION

Based on the results of research and discussion, it can be concluded that:

a. there is significant positive influence ($p<0,05$) of flexibility on the cartwheel movement meaning that the higher the flexibility of the students, the higher the ability in the cartwheel movement on PKO students class 2016 of FIK UNY; and conversely the lower the flexibility of students, the lower ability in the cartwheel movement on PKO students class 2016 of FIK UNY. Flexibility contributes effectively 11.0% on the cartwheel movement.
b. there is significant positive influence ($p < 0.05$) of strength on the cartwheel movement on PKO students class 2016 FIK UNY. The higher the power, the higher the capabilities in the cartwheel; In contrast the lower strength, the lower the cartwheel motion ability anyway. Strength contributes effectively towards the cartwheel at the amount of 10.7%.
c. there is significant positive influence ($p < 0.05$) of the balance on the cartwheel movement on PKO students class 2016 of FIK UNY. The higher balance, the higher the capabilities in the cartwheel; In contrast the lower the balance, the lower the cartwheel ability anyway. Balance contributes effectively on the cartwheel at the amount of 8.0%.
d. there is significant positive influence ($p < 0.05$) of flexibility, strength and balance simultaneously on the cartwheel movement of PKO students class 2016 of FIK UNY. Flexibility, strength and balance contribute effectively on the cartwheel movement of PKO students class 2016 of FIK UNY at the amount of 37.5% and the remaining 62.5% is determined by variables outside the research variables.
e. there is a need for further research related to the components of the biomotor

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EFFECT SHORT-TERM AQUAROBIC EXERCISE ON DHEA-S LEVELS IN WOMEN

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Abstract

Objectives: Dehydroepiandrosterone (DHEA) is precursor of sex steroid hormone, DHEA hormones produced by the adrenal cortex which decline in concentration with age. Decreased DHEA levels are associated with age-related disease and oxidative stress. The purpose of this study is to investigate the effect of short-term Aquarobic Exercise on DHEA-S Levels in Women.
Methods: 30 females, who they had not regular exercise in their daily program, voluntarily take a share in this research. Cases of this research divided into three groups of the Aquarobic (n=12) and control group (n=12). This research performed in the form of quasi-experimental that studies the changes of biological cycle by pre-test and post-test. Blood samples were collected prior to exercise, immediately, and 1h post exercise. Independent T test and Anova was used to comprehensive analyze of data and significant level (p=0.05) was considered.
Results: DHEA levels significantly increased immediately post exercise, however, DHEAS levels only significantly increased in aquarobic exercise. Cortisol significantly decreased immediately post exercise, and 1 h post exercise compared to pre. There were no significant differences in resting hormone levels, non hormonal responses to exercise between training status groups.
Conclusion: The findings suggest that aquarobic exercise can stimulate DHEA production in older women, and that hormonal responses to exercise differ between aquarobic exercise and weight training exercise.

Keywords: hormone, BMI, cortisol

THE PREDICTION OF THE INCIDENCE RATE OF CARDIOVASCULAR DISEASE FOR THE EMPLOYEES AND LECTURERS OF YOGYAKARTA STATE UNIVERSITY BASED ON THE POST-EXERCISE RECOVERY HEART RATE

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Objectives: The purpose of this study were to determine: (1) the fitness levels of Yogyakarta State University lectures and employees, and (2) the magnitude of risk for the occurrence of cardiovascular disease.
Methods: This study is a cross sectional descriptive study on Yogyakarta State University lectures and employees who volunteered to take a fitness test by Department of Health Education and Recreation FIK UNY. The subject of this research amounted to 63 people. All subjects were given a fitness test of the rockport method and measured recovery heart rate after fitness test. From the result of recovery heart rate obtained then determine the magnitude of risk for the occurrence of cardiovascular disease. Data was presented descriptively qualitatively by percentage.
Results: he result of this study indicate that: (1) the fitness level of total 63 subjects, showed 31 (49%) subjects has very low fitness level, 10 (16%) subjects has low fitness level, 20 (32%) subjects has medium fitness level, and 2 (3%) subjects has good fitness level, (2) the results of the study also indicate that 37 (58,73%) subjects has high risk of cardiovascular disease, and 26 (41,27%) subjects has low risk of cardiovascular disease.
Conclusions: Measurements of fitness level and prediction of cardiovascular disease occurrence on subjects showed that the majority of subjects were 31 (49%) subjects has low fitness level, and 37 (58, 73%) subjects has a high risk of cardiovascular disease.

Key Words: The Incidence Rate Of Cardiovascular Disease, Post-Exercise Recovery Heart Rate

INTRODUCTION

Every individual who works for an institution, either government and private institution, is always required to have maximum work productivity. Maximum work productivity will be achieved if a person has an optimal level of health and fitness. On the other hand, due to the advancement of technology that will facilitate every activity of a person, it will encourage a person to be inactive by trying to reduce his/her physical activities which will eventually lead to decreased fitness and even trigger the incidence of diseases. One of the diseases that is closely related to the level of physical activity of a person is cardiovascular disease, such as, heart disease, hypertension, and stroke.

In general, fitness is defined as the ability to perform daily activities efficiently without causing excessive fatigue, so that a person can still enjoy his/her spare time. (Giriwijoyo, S., dan Sidik, D.Z, 2012) said that fitness is a state of physical ability that can adjust the function of the body to certain physical tasks and/or to the environmental condition that must be overcome efficiently, without excessive fatigue, and has been perfectly restored before performing the same tasks in the following day. There are several components of fitness, one of which is cardiovascular fitness or heart and lung fitness that describes the ability of the lungs and heart to meet the oxygen demand for muscles' work for a long time. It can only be achieved by performing regular and programmed exercise.

The more fit a person, the more efficient the work of heart in fulfilling the blood circulation to all tissues and organs of the body. It can be seen by the decreasing frequency of resting heart rate which is close to 60 beats per minute. In contrast, the more unfit a person, the faster the heart rate which will approach to 90 beats per minute. Thus, the heart rate is an indicator of a person's fitness that can be easily observed. When performing any physical activity or exercise, the body will strive to meet the needs of oxygen and energy for muscle contraction by increasing heart rate. This reaction is an acute reaction of the body in an effort to meet the needs for muscle contraction. However, the

long-term effects of the regular and programmed exercise will improve the efficiency of cardiovascular work as the stroke volume increased as a result of the left ventricular hypertrophy.

As with the measurement of body composition and muscle strength, the measurement of cardiac capacity is also important in assessing the performance of a person or overall cardiovascular fitness. There are several heart rate measurements that can be used to monitor a person's health, such as, resting heart rate, maximum heart rate, *reserve heart rate*, and *recovery heart rate*. *Recovery heart rate* (RHR) is a measurement of heart rate after performing aerobic physical exercise. It is well known that RHR is one of the best indicators that can assess both overall and cardiovascular health conditions (Stone, J., 2011).

The fitness of a person can be identified by conducting an objective and standardized fitness test, which is by measuring the status of fitness components that includes the measurements of heart and lung resistance, muscle strength and endurance, flexibility, and body fat percentage. Physical fitness test is a procedure in the form of physical exercises which is aimed at measuring fitness level according to the purpose. The level of physical fitness can be known by physical fitness test and measurement. In the measurement test, there are several principles and procedures which have to be performed. The Rockport method is one of the safest methods of heart and lung fitness measurements for all ages, especially for older people. This method is also safe for groups of people suffer from certain diseases. In addition, the implementation of the Rockport method also does not require for medical examination before performing the fitness test (Adams, G.M., 2002).

The heart rate is intrinsically regulated from the heart, both autonomously and extrinsically, as a response to physical and mental activities and is also influenced by the autonomous and hormonal nervous system. Reflect of heart rate regulation is related to the excitatory input from the cardiorespiratory and baroreceptor systems in the blood vessels. The heart rate describes the dynamic balance between the sympathetic and parasympathetic nervous system. The parasympathetic activation inhibits the heart rate by acetylcholine release from efferent fibers of vagus nerve. While the sympathetic activation will trigger the heart rate by releasing either epinephrine in the circulation or norepinephrine in the nervous system, or both (Robertson D, Johnson GA, Robertson RM, Nies AS, Shand DG, Oates JA., 1979).

The abnormality of autonomic nervous system is closely related to the increased mortality and morbidity of cardiovascular disease in both healthy populations and populations suffering from certain diseases. There are many markers of cardiovascular activity used clinically in identifying patients at high risk for sudden cardiac death. One of the markers is the *exercise stress test* which is used as the diagnostic and prognostic tool that is used extensively in evaluating cardiovascular function. It is known that the exercise response is acutely influenced by the activity of autonomic nervous system, where there is increased sympathetic and decreased parasympathetic activities while performing a physical activity. While after performing an activity, there is a combination of decreased sympathetic activity and parasympathetic reactivation. Thus, Recovery HR after performing the maximum physical activity is one of the simplest parameters that can describe the autonomic activity of the heart and can predict the presence of cardiovascular disorders (Cole CR, Blackstone EH, Pashkow FJ, Snader CE, Lauer MS., 1999).

It is known that there are several types of heart rates that can be used for monitoring the health and fitness levels, such as, resting heart rate, maximal heart rate, *heart rate reserve*, and *recovery heart rate*. There are several ways in measuring the heart rate. Resting heart rate is calculated in the morning when awaken from sleep before performing any activity, expecting that the cardiac output at that time is reserved for basal metabolism without being affected by either physical or mental activity (Stone, J., 2011). Normal heart rate ranges from 60 – 100 beats per minute. The heart rate less than 60 beats per minute is referred to bradycardia and which is more than 100 beats per minute is referred to tachycardia, both of which are the conditions of cardiovascular abnormalities.

The maximum heart rate can be determined by measuring the heart rate immediately after performing a very heavy exercise. However, it is very dangerous to do by someone who does not have

a good level of health and should be under the supervision of a doctor. To avoid this risk, there has been many ways that are used recently for measuring the maximum heart rate. There are several calculations to estimate the maximum heart rate by ages, among others, as follows: (Stone, J., 2011)

- 220 - Age (th) for Men, and
- 226 – Age (th) for Women

The *heart rate reserve/HRR* is the difference between the maximum heart rate and resting heart rate, or it can be calculated by using the following formula:

HRR = HR max – HR rest

The greater the number of HRR, the higher the fitness of a person, which also means that the lower the HR rest, the more excellent the fitness of a person (Stone, J., 2011).

Recovery Heart Rate (RHR) is a measurement of heart rate after performing aerobic exercise. This measurement is performed during the cooling-down period, so that it can monitor changes in heart rate back to normal after performing an exercise. RHR measurement can be performed by measuring the heart rate immediately after performing an exercise and measuring the heart rate two minutes after the exercise. RHR is the difference between the two heart rate calculations (Stone, J., 2011).

It is known that increased heart rate during physical exercise and decreased heart rate after the exercise is a role of the change to the sympathetic and parasympathetic nervous systems. The slow decrease in RHR after performing any physical exercise is associated with higher mortality, cardiac death, and incidence rate of cardiovascular disease associated with ischemic processes (Ghaffari, S., Kazemi, B, Aliakbarzadeh, 2011). Based on the formulation of the problems above, the objectives of this study are to determine the fitness level of the lecturers and employees of Yogyakarta State University, and to find out the level of risk against the incidence of cardiovascular disease.

METHOD

This study is a *cross-sectional* descriptive study conducted on lecturers and employees of Yogyakarta State University who voluntarily took a fitness test held by the Department of Health Education and Recreation of Yogyakarta State University. The subjects of study were taken by conducting *purposive sampling*. All subjects were given for a Rockport fitness test and measured for their *recovery heart rate* (RHR) after performing a fitness test. The RHR measurement was obtained by subtracting the maximum heart rate after performing a Rockport test with a heart rate two minutes after the completion of Rockport test. The RHR is abnormal if the RHR ≤ 12 beats. From the *recovery heart rate* obtained, the level of risk was then able to determine regarding the incidence of cardiovascular disease. There were also anthropometric measurements conducted in the form of body height, abdominal circumference, and hip circumference measurements. The whole data would be presented descriptive-qualitatively in a percentage.

RESULTS AND DISCUSSION

The characteristics of the subjects of study were lecturers and employees of Yogyakarta State University who voluntarily took a fitness test held by the Department of Health Education and Recreation, which were briefly presented as follows: the subjects consisted of 50 men (79%) and 13 women (21%). The distribution of the subjects of this study by sex was dominated by men. The majority of subjects in this study were in a late-adolescence age of 17-25 years old as many as 46 people (73%), while the characteristics of the subjects based on physical fitness level with a very poor level were 31 people (49%). The data characteristics of the subjects can visually be seen in the following diagram:

Data characteristic of the research subject can be visually seen in the following diagram:

Figure 1. Characteristics of Research Subjects by Sex

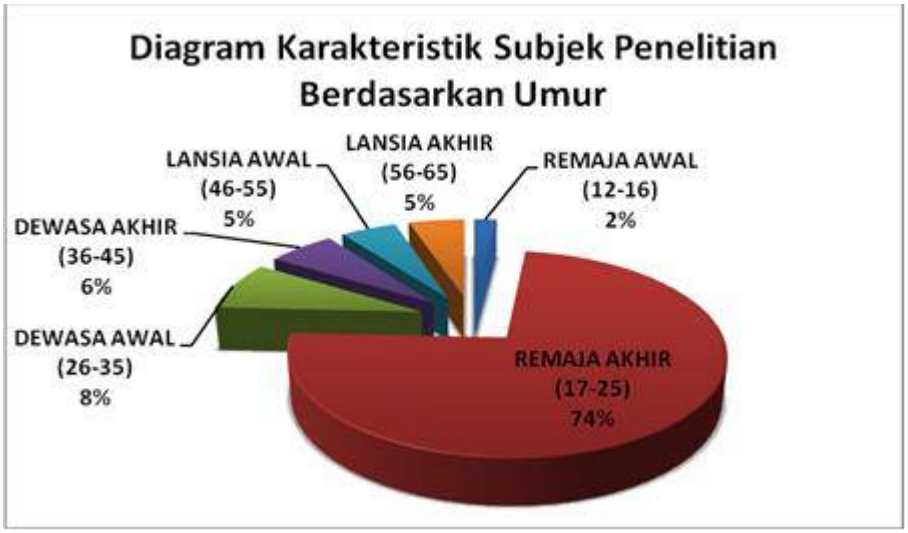

Figure 2. Characteristics of Research Subjects Based on Age Distribution

Figure 3. Characteristics of Research Subjects by Level of Fitness

RESULTS

The assessment of the prediction of incidence rate of cardiovascular disease in this study was based on the results of measurement of *recovery heart rate* (*RHR*) of the subjects. All subjects were given for a Rockport-method fitness test and measured for their *recovery heart rate* (*RHR*) after performing the fitness test. The RHR measurement was obtained by subtracting the maximum heart rate after performing a Rockport test with a heart rate two minutes after the completion of Rockport test. The *RHR* is abnormal if the *RHR* ≤ 12 beats. The results of data analysis can be seen in table 4.2 below:

Table 4.2 The Results of Analysis of the Prediction of Incidence Rate of Cardiovascular Disease

No.	Cardiovascular Disease Category	Norm/Interval Category	Frequency	
			f (n)	%
1.	High Risk	≤ 12	37	58,73
2.	Low Risk (Normal)	12	26	41,27
	Total		63	100

Based on the distribution of frequency above, it can be seen that 37 (58,73%) of 63 employees of Yogyakarta State University, as the subjects of this study, have a high risk of cardiovascular disease, and 26 employees (41,27%) have a low risk of cardiovascular disease. The data shows that the majority of the subjects has a high risk of having cardiovascular disease.

From the table results of prediction analysis of the incidence rate of cardiovascular disease, can be visually presented in the form of histogram as follows:

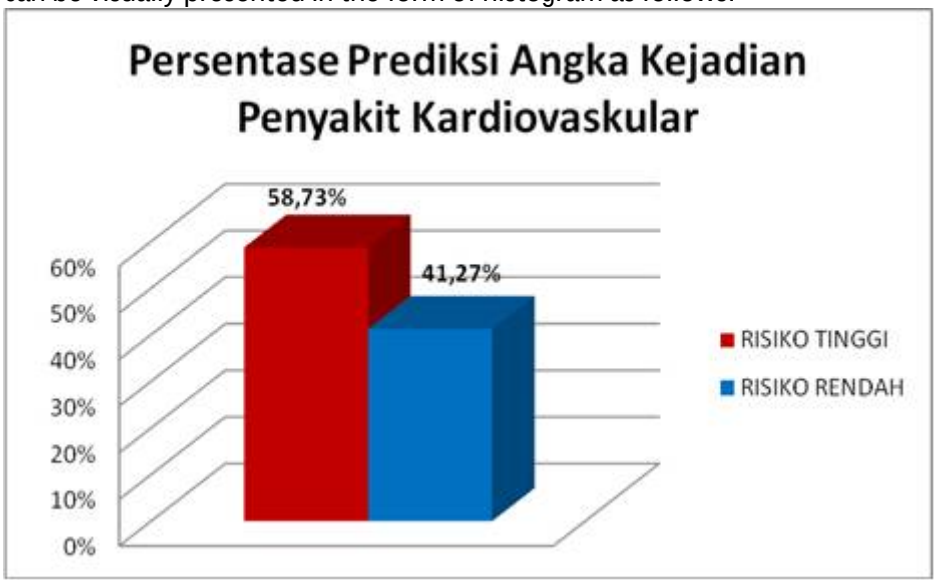

Figure 4. Histogram Prediction of Cardiovascular Disease Occurrence Rate at Employees State University of Yogyakarta

DISCUSSIONS

Nowadays, the mortality and morbidity rates of cardiovascular disease are increasing. The abnormality of autonomic nervous system is closely related to the increasing mortality and morbidity rates of cardiovascular disease in both healthy populations and populations suffering from certain

diseases. There are many markers of cardiovascular activity used clinically in identifying patients at high risk for sudden cardiac death. It is known that the exercise response is acutely influenced by the activity of autonomic nervous system, where there is increased sympathetic and decreased parasympathetic activities while performing a physical activity. While after performing an activity, there is a combination of decreased sympathetic activity and parasympathetic reactivation. Thus, Recovery HR after performing the maximum physical activity is one of the simplest parameters that can describe the autonomic activity of the heart and can predict the presence of cardiovascular disorders (Cole CR, Blackstone EH, Pashkow FJ, Snader CE, Lauer MS., 1999).

The prediction of incidence rate of cardiovascular disease in this study was accurate as based on the *recovery heart rate* measurement. A previous study showed that the patients with abnormal *RHR* showed the decreased parasympathetic activity after performing maximum exercise and abnormal autonomic function (Gayda, M. et al, 2012). In addition, (Stone, J., 2011) stated that RHR is one of the best indicators that can assess both overall and cardiovascular health conditions. The results of data analysis showed that 37 people (58,73%) of the subjects have RHR < 12 which means that the majority of the subjects, which were the employees of Yogyakarta State University, have a high risk of having cardiovascular disease.

The condition of the majority of the subjects who have a high risk of cardiovascular disease can be caused by many factors. One of the factors is the physical activity which has an effect on the fitness level of a person. The fitness level of the subjects showed that the majority of the subjects are in the very poor level which was nearly a half (49%) of the subjects, so that it has an effect on the RHR of the subjects. (Stone, J., 2011) stated that the greater the number of HRR, the higher the fitness of a person, which also means that the lower the HR rest, the more excellent the fitness of a person. It can be concluded that the routine physical activity can have an effect on the level of risk of having cardiovascular disease. It is known that increased heart rate during physical exercise and decreased heart rate after the exercise is a role of the change to the sympathetic and parasympathetic nervous systems. The slow decrease in RHR after performing any physical exercise is associated with higher mortality, cardiac death, and incidence rate of cardiovascular disease associated with ischemic processes (Ghaffari, S., Kazemi, B, Aliakbarzadeh, 2011).

(Dimopoulos S, Manetos C, Panagopoulou N, Karatzanos Land Nanas S, 2015) stated that the activity or position after performing a physical activity has an effect on Recovery HR. Recovery HR ≤ 12 beats per minute in the first minute in standing/upright position or ≤ 18 beats per minute in the first minute in laying/supine position or ≤ 22 beats per minute in the first minute in sitting position shows the abnormal condition. There are several evidences which show that the recovery phase after performing a physical activity can be used as the prognostic factor of the presence of cardiovascular disorders.

CONCLUSION

Based on the results and discussion presented in the previous chapter, there are some conclusions as follows: The results also showed that 37 subjects (58,73%) have a high risk of having cardiovascular disease, and 26 subjects (41,27%) have a low risk of having cardiovascular disease. In measuring the fitness level (VO2 max) the test must be created in such a way that the pressure on the supply of oxygen to the heart muscle should last a maximum. This Lung Heart Fitness Activity by using ROCKPORT method with run / walk as far as 1.6 km. Study of normality analysis Fitness Level Level of fitness (test rockport) for employees and lecturers Universitas Negeri Yogyakarta Prodi Ikor get fitness test norms that can be in accordance with the conditions of the people of Indonesia so it is expected that a lecturer or employee UNY able to work with productive, efficient and not easily attacked by disease , eager to perform optimally, and tough in completing tasks. Optimum physical fitness can be obtained through proper physical practice, regular, and measurable. With fitness test, employees at Yogyakarta State University get the chance to know the norm and profile of health and fitness level,

so that by knowing the fitness level of lecturer and employee of UNY can do special intervention if found that fitness level is not optimal.

SUGGESTION

Based on the conclusions above, it is suggested for the employees of Yogyakarta State University to improve their physical activities or excercises and to perform exercises measurably and regulars.

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EFFECTIVENESS OF UMAC-CPF EXERCISE MODEL ON MOTOR ABILITY OF INDONESIAN CP FOOTBALL PLAYERS

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Abstract

These study objectives were determined the effectiveness of exercise model of Umar Motor Ability Circuit-Cerebral Palsy Football (UMAC-CPF) to the improvement of motor abilities of Indonesian CP Football player of national training center for Asian Paragames Malaysia of 2017. The research design was used quasi-experimental. The research subjects are 12 Indonesian CP Football players of national training center for Asean Paragames Malaysia of 2017. The data collection technique was used a modification of motor abilities tests. Data analysis technique was used difference test (t-test significance level of α = 0.05).
The research results from the pretest and posttest value were obtained t-count = 22.656 greater than the value of t-table = 2.201 (at significance level of 0.05), then null hypothesis was rejected. Also, the average posttest value of 502.33 is larger than average pretest value of 432.25, so there are significant differences between pretest and posttest value of motor abilities tests result.
The research conclusion is model exercise of UMAC-CPF effectively improve the motor ability of Indonesian CP Football players of national training center for Asian Paragames Malaysia of 2017.

Keywords: effectiveness, exercise model, motor ability, CP football

INTRODUCTION

The fostering and development of sporting achievements in Indonesia are not only directed at improving the performance of normal athletes but also concerning "defect athletes/*outlet para*" (term for disabilities athletes). Act No. 3 of 2005 article 30 stated that paragraph 1: "The fostering and development of disabled sports were carried out and directed to improve health, confidence, and sporting achievements" and paragraph 2 stated that: "Fostering and development of disabled sports was carried out by the disabled sport organization through upgrading and training activities as well as tiered and sustainable competition in local, national, and international levels" (Biro Humas, Hukum dan Kepegawaian, 2011).

CP Football or 7 a-side-football is a paralympic sport of football is specifically for *Cerebral Palsy* (CP) athletes. A good team sport, fun and can be played as a recreational activity, as well as achievement sporting and provides the opportunity to achieve. Players who qualified in the field of play a team consisting of 7 (seven) cerebral palsy athletes ranging from grades 5 to 8. A total of fourteen (14) players can be included on the list of team composition. Athletes who compete in Paralympic sports have the disruption leading to competitive losses in sport.

Requirements as CP Football players were classified into four classes, namely FT5, FT6, FT7 and FT8. The explanations of the classes are as follows: (1) Class of FT 5 is an athlete who has hypertonia or spasticity or stiffness in both lower limbs and to some degree in both upper limbs. The players have difficulty walking, turning and stopping because of limited activity in the lower limbs. (2) Class of FT 6 is an athlete affected by coordination and balance problems in all four limbs and torso. FT6 players are usually having difficulty in dribbling the ball when walking, accelerating and stopping. (3) The class of FT7 is an athlete or hemiplegia player, meaning that only one side of the body of them was affected, causing the player limp to walk and run. In addition to these disorders the athlete may have a balance problem, so often their legs were disturbed when used to shoot the ball. (4) The class of FT8 is an athlete who meets the minimum requirements for disorder in CP

Football. No visible impact of the decline when watching athletes run or control the ball. However, involuntary muscle contractions and hesitate before making an explosive movement is an activity limitation compared with able-bodied players (International Paralympic Comitee, 2014).

For CP Football players based on shortcomings classification of motor skills or motor abilities are become a dominant factor in the activity. Motor skills or also called as the motor ability is a capacity of a person related to the implementation of the physical ability to be able to carry out a movement (Widiastuti, 2015).

The medals results of each sport contingents of NPC Indonesia at the Asean Para Games Singapore of 2015 under the order of medals (gold-silver-bronze), namely: Athletics (27-24-16), swimming (17-17-16), Tables Tennis (15-13-10), Chess (9-10-6), Badminton (8-4-7), Weightlifting (5-2-2), Archery (0-2-0), Shooting (0- 1-4), Tenpin Bowling (0-1-1), Goalball (0-0-1) and Cerebral Palsy Football (0-0-0) (NPC Indonesia Report on APG VIII Singapore, 2015). Thus the Indonesian team of Cerebral Palsy Football (CP Football) is the sports contingent that has not been able to donate a medal. The urgent problem must be solved immediately because the AP Football match in APG IX Malaysia of 2017 is waiting.

The evaluation results of a field study on the team of Indonesian Cp Football APG VIII in Singapore 2015 obtained data were showed that (1) the motor ability of Indonesian CP Football players is on "less" category (data of table 1), (2) coaches in the exercise process yet to develop a specific exercises model to improve the motor ability of cp football player, (3) The coaches are lack of reference in developing models to improve motor skills exercises specifically for cp football players.

Table 1. Data of Motor Ability of Indonesian CP Football Players of APG VIII Singapore, 2015.

NO	NAMA	PROVINSI	KELAS CP	20m		Arrow H				SBJ		Hop 10		VO2 Maks		Hasil Akhir	
						Kanan		Kiri						Lyon 3m & Balke			
				T	H	T	H	T	H	T	H	Terbaik	H	T	H	T	H
1	SONY	JABAR	CP/FT5	3,45	C	6,75	K	6,64	K	1,82	C	23,05	B	45,40	C	**1,8**	**K**
2	FADLI	NAD	CP/FT6	3,40	C	6,38	C	6,68	K	1,67	C	21,80	K	41,10	K	**1,5**	**K**
3	SIGIT	JABAR	CP/FT7	3,14	B	5,86	B	6,21	C	2,05	B	17,70	K	48,55	B	**2,5**	**B**
4	MARYONO	JATIM	CP/FT7	3,74	K	6,62	K	6,77	K	1,80	C	16,60	K	41,10	K	**1,2**	**K**
5	SOBIRIN	JAMBI	CP/FT7	3,31	B	6,46	C	6,29	C	1,67	C	19,60	K	41,10	K	**1,8**	**K**
6	I GEDHE	BALI	CP/FT7	3,56	C	6,74	K	6,61	K	1,45	K	14,60	K	43,45	K	**1,2**	**K**
7	PUTRA	RIAU	CP/FT7	3,31	B	6,20	C	6,55	K	1,55	C	15,65	K	46,89	C	**1,8**	**K**
8	ADI	JATENG	CP/FT7	3,61	K	6,34	C	6,54	K	1,65	C	15,75	K	41,50	K	**1,3**	**K**
9	HABIB	JATENG	CP/FT8	3,11	B	6,22	C	6,21	C	2,40	B	20,20	C	45,40	C	**2,2**	**C**
10	AMIN	JATENG	CP/FT6	3,79	K	6,19	C	6,15	C	2,07	B	23,75	B	43,45	K	**1,8**	**K**
Rata-Rata				**3,44**	**C**	**6,38**	**C**	**6,47**	**C**	**1,81**	**C**	**18,87**	**K**	**43,79**	**K**	**1,7**	**K**

It needs the science and technology approach to improve the ability of Indonesian CP football player. Based on that background then conducted the study of "Effectiveness of UMAC-CPF Exercise Model on Motor Ability of Indonesian CP Football Players". The research objective was determined the effectiveness of the UMAC-CPF exercise model to improve motor abilities of Indonesian CP Football players of APG Malaysia of 2017.

THEORETICAL REVIEW

Cerebral palsy is a non-progressive lesion or brain lesions and caused a decrease in coordination variables, voice and power of muscle work with due to the inability to maintain normal postures and perform normal movements (Winnick, Joseph P., & Short, Francis X, 2014).

Table 2. Disorders Types of CP Football Athlete (International Federation of CP-Football, 2015)

Type of Disorder	Description of decrease in each value based on ICF and Sanger et al, 2003, 2006 & 2010
Hypertonia	Muscle tone rises
• Spasticity	Spasticity is the speed of resistance hanging from stretched muscle
• Dystonia	Dystonia is intentionally changed in the pattern of muscle activation during conscious movement or maintain sustainable body position or intermittent muscular contractions
• Rigidity	Rigidity is resistance against passive movement and not dependent on body position and speed of movement. Rigidity unspecific for task or certain body positions.
Ataxia	Unconscious motion control
Athetosis/*Chorea*	Deliberate muscle contraction

Movement is something that is essential in everyone's life. In human terms of motor (movement) was used when by itself to underlying the biological and mechanical factors that affect movement. Richard A. Magill has explained some terms in motion behavior such as: (1) Skill is an activity or task that has a specific purpose or to achieve goals; as an indicator of performance quality. (2) The action is voluntary limb movements. (3) Movement is characteristic of the behavior of a particular limb or combination of limbs which is a part of the action or motor skills. (4) A motor skill is activities or tasks requiring the head, body, and voluntary limb movements to achieve a goal. (5) The motor learning (movement learning) is a study of motor skills, improving the performance of motor skills learned or very experienced, or difficult recovery skill to do or can not do because of injury, illness, and the like. The particular interest is the behavioral and neurological changes that occur as one learns the motor skills and the variables that influence the change. (6) Motor control (control/mastery of motion) studies on how our neuromuscular system functions to activate and coordinate the muscles and limbs that are involved in motor skill performance. (7) Motor development is study of human development from infancy to old age with a special interest in issues related to good motor learning or motor control (Magill, Richard A, 2011).

Individual differences in the motor skills performance largely depend on the extent to which the person has the essential motor skills to display that skill. Motor skills were derived from the English term translation of motor abilities. Motor ability is the motion result quality in performing motion supporting in exercise activities (Sukintaka, 2001).

Exercise is the process of preparing an athlete to achieve performance or a higher level (Bompa,Tudor O., & Haff, G. Gregory, 2009). The exercise purposes are (1) reach and increase physical development multilaterally, (2) improve and secure the development of specific physical, (4) improving and perfecting the necessary techniques and strategies, (5) managing the quality of the will, (6) ensuring and securing individual and team preparations optimally, (7) strengthen the soundness of each athlete, (8) to prevent injury, and (9) increase knowledge of theory (Tangkudung, James & Puspitorini, Wahyuningtyas, 2012). The efficiency program of physical exercise is the result of manipulation of the key variables of exercise which consists of volume (duration, distance, repetition, or load volume), intensity (load, speed, or power output), and density (frequency) (Bompa,Tudor O., & Haff, G. Gregory, 2009).

Exercise Model of UMAC-CPF (Umar Motor Ability Circuit-Cerebral Palsy Football) is an exercise model that contain forms of exercise various physical components such as flexibility, strength, balance, coordination, speed, power, agility, and endurance was packed in circuit exercise method.

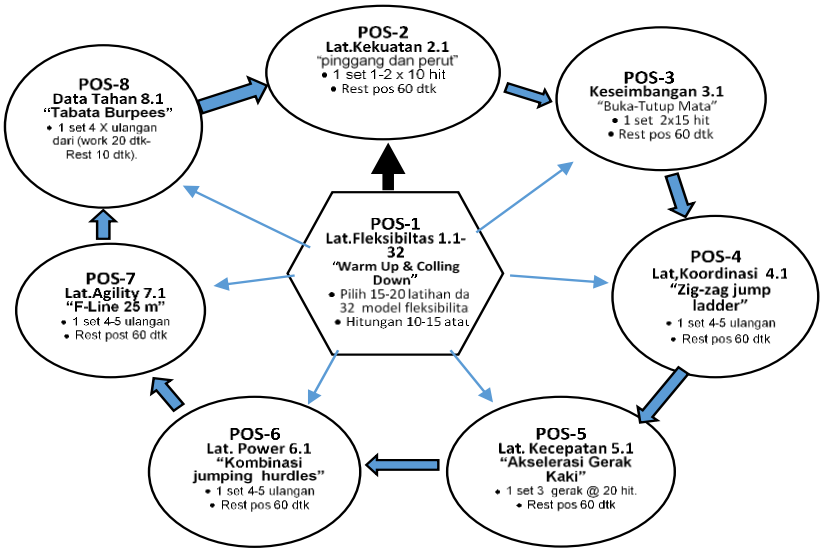

Figure 1. Chart of UMAC-CPF-1 Program Circuit

Circuit exercise model is an exercise that consists of several stations or posts that were arranged in a circle so that the muscle groups are working sequentially from station to another station. Westcott Wayne was stated circuit exercise is an exercise model that involved a series of different exercises are carried out sequentially and continuously in one round or circuit (Westcott, Wayne, 2003).

METHOD

The research was used quasi-experimental methods (Pre-experiment), with the study design in the form of one group pretest-posttest design (Creswell, W. John, 2012). The research subjects are 12 CP Football Indonesia team player of national training center for Malaysia APG of 2017. The data collection technique has used a modification of motor abilities tests. Data analysis techniques were test the difference (t-test at significance level of $\alpha = 0.05$).

Table 3. Research Design Draft

Subject	Pre-Test	Treatment	Post-Test
R	O_1	P	O_2

Steps were taken in this trial including of (1) determined groups of research subjects; (2) carry out the pre-test (O_1); (3) try the developed model; (4) conduct post-test (O_2); (5) seeking an average score of pre-test and post-test and compared between them; (6) find the difference between the two averages through statistical methods (t-test) to determine whether there is a significant influence from the used model.

Circuit training model was designed to be 8 posts or circuits consisting of post 1 is the forms of flexibility exercises (warm up and colling down), post 2 is strength exercises, post 3 is balance exercises, post 4 is coordination exercises, post 5 is speed exercises, post 6 is power exercises, post 7 is agility exercises, and post 8 is endurance exercises. The flexibility exercises are always given at the start or end the exercises for anything components of the motor abilities were trained or developed. In other words, flexibility exercises given at the any part of warming-up or colling down.

The exercise program was given for 8 weeks with each week 1 circuit model with 4 times frequency per week. UMAC-CPF exercise programs were described as follows:

Table 4 UMAC-CPF Exercise Programs

Week	UMAC-CPF Model	Number of Exercise Post	Frequency of Exercise/Day	Set	Reps	Information
I.	Circuit-1	8 posts: 1-Flexibility 2-Strength 3-Balance 4-Coordinate 5-Speed 6-Power 7-Agility 8-Endurance	3 times/week Monday Wednesday Friday	3 Set 4 Set 5 Set	5-10 times	Every Saturday is introduction of the exercise form for each circuit model
II	Circuit-2	8 posts:	4 times/week Saturday Monday Wednesday Friday	1 set 3 Set 4 Set 5 Set	5-10 times	
III	Circuit-3	8 posts:	4 times/week Saturday Monday Wednesday Friday	1 set 3 Set 4 Set 5 Set	5-10 times	
IV	Circuit-4	8 posts:	4 times/week Saturday Monday Wednesday Friday	1 set 3 Set 4 Set 5 Set	5-10 times	
V	Circuit-5	8 posts:	4 times/week Saturday Monday Wednesday Friday	1 set 3 Set 4 Set 5 Set	5-10 times	
VI	Circuit-6	8 posts:	4 times/week Saturday Monday Wednesday Friday	1 set 3 Set 4 Set 5 Set	5-10 times	
VII	Circuit - 7	8 posts:	4 times/week Saturday Monday Wednesday Friday	1 set 3 Set 4 Set 5 Set	5-10 times	
VIII	Circuit-8	8 posts:	4 times/week Saturday Monday Wednesday Friday	1 set 3 Set 4 Set 5 Set	5-10 times	

RESULT AND DISCUSSION

Description of the pretest and posttest results of motor abilities of cerebral palsy football players used a motor ability test instrument can be described as follows.

Table 5. Results of Pretest and Posttest Motor Ability of Cerebral Palsy Football Players

No.	Statistics	Motor Abilities Test Results	
		Pretest	Posttest
1	Number of Samples	12	12
2	Average value	432.25	502.33
3	Standard Deviation	39.525	37780
4	Variance	1562.205	1427333
5	Range	123	117
6	Minimum Value	375	448
7	Maximum Value	498	565
8	Total	5187	6028

Data from the motor abilities pretest was obtained an average value of 432.25 with a standard deviation value of 39.52, as well as variants value obtained of 1562.205 and range values obtained a value of 123 from the difference between the highest value of 498 and lowest value of 375, and obtained total value of 5187. While the posttest test values were obtained an average value of 502.33 with a standard deviation value of 37.78, and the variance value of 1427.33 and the range value obtained value of 117 from the difference between SK.

Based on Table 5, seen the difference in the average value of the both motor abilities tests with the posttest average value higher than the pretest average value.

To proven the effectiveness of the significance of UMAC-CPF exercise models to improve the motor abilities of cerebral palsy football player, it is necessary to test statistically with "t-test". Before data analyzed, was performed the normality test to the motor abilities pretest and posttest results used Lilliefors test at significance level α = 0.05. Whereas a summary of the calculation results was shown in Table 6.

Table 6. Summary of Normality Test Results of Motor Ability Pretest and Posttest of Cerebral Palsy Football Players

Test Results	N	$L_{\_count}$	$L_{\_tab\ (0.05:\ 12)}$	Conclusion
Pretest	12	0.147	0.242	Normal
Posttest	12	0.138	0.242	Normal

Note:

n = Testee number

L_o = L_{-count} value

L_t = L_{-table} value at significance level of α = 0.05

Based on Table 6, it appears that the value of Liliefors count (L_h) on the pretest and posttest groups are smaller than value of Liliefors table (L_t). It can be concluded that the research sample origin from the normally distributed population. This conclusion was given implication that the parametric statistical analysis can be used to test the effectiveness of the model proposed in this study, so that the first condition for testing the effectiveness test model has been fulfilled, for more details, can be described as follows: (1) The calculation of normality test used data in the form of

motor abilities pretest results of cerebral palsy football players, where the sample number are 12 players were obtained L_h = 0.147, and L_t = 0.242 with significance level of α = 0.05. Thus for L_h less than L_t it can be concluded that the motor abilities pretest data of cerebral palsy football player overall population was derived from normal distribution; and (2) Results of normality test calculations used data of motor abilities posttest results of cerebral palsy football player, where the samples number are 12 player obtained L_h = 0.138 and L_t = 0.242 with a significance level of α = 0.05. Thus because of L_h less than L_t, it can be concluded that the data of motor abilities posttest of cerebral palsy football player overall population derived from normal distribution.

Furthermore performed effectiveness test used "t-test". Calculation of the measures of effectiveness test of exercise models of motor abilities cerebral palsy football player with the circuit method on CP Football team players of Malaysia ASEAN Paragames of 2017 has it under the table 7.

Table 7. Summary of Effectiveness of Motor Ability Test used t-test

Average of *Motor Ability* Test Results		t_{count} (t0)	table
Pretest	Posttest		
432.25	502.33	22656	2,201

Based on effectiveness test results used t-test, differences of motor abilities tests results of cerebral palsy football players between pretest and posttest obtained the value of $_{count}$ = 22.656 is greater than t $_{table}$ = 2.201 (at significance level of 0.05), then the null hypothesis was rejected. So it can be concluded that there are significant differences between pretest and posttest results of motor abilities tests that have been developed by researchers by the requirements of cerebral palsy football players. Also, the average value of the pretest results of 432.25 is smaller than the average of posttest result of 502.33. Thus it can be stated that, motor ability exercise model of cerebral palsy football players with circuit method (UMAC-CPF) was effective used to increase the motor ability of cerebral palsy football players.

When referring to the average value between before and after treatment then there is a rise in the average value of motor abilities tests at 70.08 which is pretest value of 432.25 and posttest value of 502.33. Improvement of motor abilities of cerebral palsy football players also can be seen from motor abilities category in table 8.

Table 8. Summary of Motor Ability Category of Cerebral Palsy Football Players with Circuit Method

No	Test Results	Category	Frequency	Percentage
1	*Pretest*	Good	0	0.00%
		Enough	5	41.67%
		Less	7	58.33%
2	Posttest	Good	6	50.00%
		Enough	6	50.00%
		Less	0	0.00%

When viewed from table 8, it can be seen that there is an increasing number of cerebral palsy football players that fall into the category of "good" motor ability from the beginning is not in either category or equal to 0% and increased to 6 athletes in good categories or 50%. At the motor ability category of "enough" from the previous of 5 cerebral palsy football players into the motor ability category of "enough" or 41.67% and after exercise used motor ability exercise models, there are 6 players who fall into the motor ability category of " enough " or 50%.

In addition, in motor ability category of "less" is also a significant decrease from the 7 cerebral palsy football players fall into the motor ability category of "enough" or of 58.33% and then after exercise none of the players who fall into the motor abilities category of "Less", or 0%. The comparison before and after the motor abilities test results after treated using motor abilities

exercise model to cerebral palsy football player with circuit method (UMAC-CPF) can be seen in the following graph

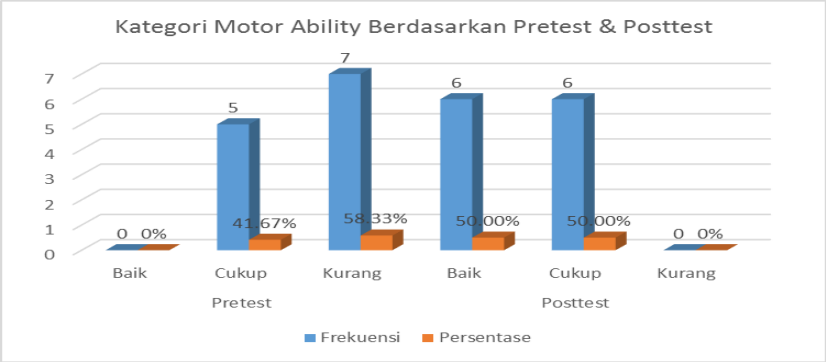

Figure 2. Result Category of Motor Ability Test

Based on the results of tests and measurement of motor abilities tests that have been developed by researchers in accordance to the requirements of cerebral palsy football player, showed that:

1. Various results of existing research (from literature study), every research only given one model exercises of dominant component from various motion components were required by cerebral palsy, then to improve motor skills (motor abilities) of cerebral palsy football player needed a comprehensive exercise model that covering all components of the motor abilities such as exercises of flexibility, strength, balance, coordination, speed, power, agility, and endurance.
2. Exercise model of "UMAC-CPF (Umar Motor Ability Circuit- Cerebral Palsy Football)" was provided some advantages, including of:
   a. The model is very effective and efficient because it contains exercises that include all components of the motor abilities that can simultaneously be improved in a short time with circuit training methods
   b. The model is more comprehensive because it provides a portion of the motion ability development of body parts that evenly on the players, such as part of right-left, and part of the body gestures that normal or not normal function, especially for CP players.
   c. This circuit model was more varied so it is more interesting and eliminates the player's boredom feeling because although it consists of the arrangement of same motor ability components every circuit the model or the kind of movements are always different (varies)
   d. The model was provided many opportunities for cerebral palsy players who has limited moves to carry out various forms of activity that are packed in the exercise so that the player becomes active to move and enthusiastic following a whole series of training programs, stimulated the players to active communicated with players/coaches, and foster player's high self-confidence because of the success done a lot of movement variations.
   e. Originally, the training model was designed for CP Football players but it can be used for the motor abilities development of other CP players as well as normal children/athletes
   f. The resulting model was provided the opportunity for all users to be able to select and modify the exercise forms to be a series of new circuit form or a new exercise program according to the needs and purposes of the exercise.

While the lack of the motor ability exercise models of cerebral palsy football player with the circuit method is:

1. Exercise models were developed by researchers only present or emphasize on forms of motor activity abilities related to fitness only, whereas in the motor abilities there are still other aspects that could be developed relating to skills.
2. This exercise model still provides exercise forms with equal portions for players of all levels of classification in CP Football class consisting of FT5, FT6, FT7, and FT8
3. Common difficulties for CP football players including of:

a. The average of understanding level ability of CP Football players are weak as an example if given the material or the form of a new exercise model then they take a long time to conceiving the information, the rhythm of information delivering of verbal and visual explanation should be adjusted to the conditions, they easily forget the material or movement ever trained or done so need to be re-demonstrated. It was needed more extra attention for those CP who also experienced mentally handicapped that very limit their understanding level.
b. The CP Football player in addition to the ability of their limbs was disturbed; their verbal or speech abilities are also disrupted so it is necessary to speak slowly to them.
c. The concentration level is low and the anxiety level is high, the CP football player if their concentration was disturbed or out of focus while doing the motion activity they will make mistakes on the task/action, if it cannot fix the error and then there will be anxiety and eventually will make it always wrong to do/move.
d. CP football players' motivation level is high, it takes conducive atmosphere and conditions to maintaining this motivation level, if they are already distracted and anxiety arises it will be difficult to recover.
e. In relation to the difficulty in performing motor ability they usually will often have difficulty in performing the components motion, especially coordination, agility and balance than other components.

CONCLUSION

Based on the research results and discussion, it can be concluded that "the exercise model of UMAC-CPF (Umar Motor Ability Circuit-Cerebral Palsy Football") is effective to increase the motor abilities of Indonesian CP Football player of national training center for Malaysia Asean Paragames of 2017.

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THE DEVELOPMENT OF WEB-BASED TRACER STUDY AT THE DEPARTMENT OF SPORTS COACHING EDUCATION

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Abstract

The amount of interest enrolled into the Department of Sports Coaching is caused by the attractiveness of job opportunities available for sport coaching graduates to work in the field of coach. The goal to be achieved through this research development is to make a tracer study web-based education coaching to make easier in fill and assist in majors accreditation. This research is a research of development (Research and Development). In this case, development is carried out to obtain a web-based tracer system in sports coaching department. The development research model is chosen because the development research is oriented to the product which is expected to be able to solve the existing problems where the final product is the tracer study that can be accessed through the web in the Departments and the filling process will be easy because it can be accessed everywhere. It tends to has a good grace and easy to understand in filling it.

Keywords: Coaching Education, Tracer Study, Web

INTRODUCTION

Faculty of Sport Sciences, the department of Coaching Education, Yogyakarta State University (UNY) is one of the favorite department, it can be seen from the high numbers of SMA/SMK graduates enrolling from year to year. The magnitude of the interest is due to the attractiveness of job opportunities available to graduates of the sport coaching to work in the field of coaching. This is in accordance with the curriculum of the Department of Coaching Education which is designed to equip its graduates with competencies relevant to the field needs, whether as trainers in clubs, sports schools, or in early-age schools. However, graduates of this department are not entirely able to get jobs immediately, one of the reasons is the lack of competitiveness in the search for available job opportunities.

Department of Coaching Education as one of the higher education institutions is expected to produce graduates that can be accepted by the work field. In fulfilling these demands there are two issues faced namely the quality of learning and the relevance of competence with market needs.It means that the quality of learning is determined by relevance to the competencies demanded by the field of work. Thus. the development of the department requires accurate information from the field, so that development is in accordance with the progress and demands of the times.

Accreditation is a formal appeal to a college institution, including departments within each Faculty. Many factors are assessed in achieving good grades on accreditation, one of them is the existence of a study tracer that belongs to the department. Lots of benefits can be gained from tracer study for the Department of Education, University, Faculty, or department at a college institution. These benefits are: (1) Can know the spread of our college graduates (alumni information), (2) As a material for the evaluation of universities to the graduates whether it has met the appropriate competency standards in the field of work, (3) As information on competencies relevant to the field of work which can improve curriculum and learning systems, (4) As one of the added value in the accreditation process of higher education, (5) Can see deeper information about college graduates through tracer study, (6) As reference materials in making more relevant training for new job seeker graduates .

Tracer study is a tracking study of graduates or alumni traces conducted to alumni who have completed the lecture. Tracer study aims to know the outcome of education in the form of transition from the world of higher education to the field of work, the output of education is self-assessment of control and acquisition of competence, the process of education in the form of evaluation of learning process and the contribution of higher education to the acquisition of competence and educational input in the form of further digging information sociobiographical graduates. In addition to accreditation purposes, Directorate General of Higher Education Kemdiknas also using tracer study as a tool to monitor adaptation of university graduates in Indonesia when entering the workforce since 2011. Tracer Study can measure and track the performance and suggestions of graduates and graduate users so that a clear indicator of the number, future work profile, and competencies required by the world of work can be obtained. Thus, the Department of Sport Coaching Education can prepare the content and education system so that the graduates produced can adapt to the field of work. This indicates the importance of information from alumni and alumni users, as a consideration for the preparation of competency standards. In the next turn, the competency standard is used by the department as a consideration in the development program, especially the preparation of curriculum and learning materials.

Based on observations in the field, there is problem indicated in collecting data of tracer study. The use of manual system becomes the biggest problem that needs to be solved. By using the manual data (fill in the questionnaire) there are still many things that less, such as not returning questionnaires, loss of questionnaire when it will be used and much more. Thus, this education majors will make software in the form of web containing tracer study of the graduates of Education Coaching. In order to support the efforts of UNY, Faculty and departments in obtaining good accreditation, the quality of the materials assessed should be improved as good as possible, one of which is to facilitate the filling and recording tracer study trail the web-based in coaching department.

In order to support the efforts of UNY, Faculty and departments in obtaining good accreditation, the quality of the assessed materials should be improved as best as possible, one of which is to facilitate the filling and recording tracer study trail in the web based coaching department.

WEB DEVELOPMENT

Tracer Study or often referred to as an alumni survey or a follow-up survey is a study of graduates of higher education institutions. This study is able to provide a variety of useful information for the purposes of evaluation of higher education outcomes and then it can be used to improve and guarantee the quality of higher education institutions. Tracer study aims to find out the results of education in the form of transition from the field of higher education to the field of work, the output of education is self-assessment of control and acquisition of competence, the process of education in the form of evaluation of learning process and the contribution of higher education to the acquisition of competence and educational input in the form of further digging graduate information.

The benefits of tracer study are not limited to college. Furthermore, it can provide important information about the relationship between the field of higher education with the field of work. Tracer study can provide in-depth and detailed information on horizontal (interdisciplinary) and vertical (between various education/stratum) work levels. Thus, tracer study can help to overcome the problem of job opportunity gap and improvement effort. Tracer study has been used as one of the college requirements. Tracer Study becomes an increasingly important role because it can provide a variety of important information for the development of universities. It serves as a tool for evaluating the relationship between the field of work and the field of education, which can present useful inputs for lecturers and aministrators for performance improvement, as well as input for parents in their children's education (Schomburg, Harald., 2003) .

The Tracer Study is an approach that enables higher education institutions to gain information about possible deficiencies in educational processes and learning processes and can be the basis for planning activities for future improvements. Tracer Study results can be used by universities to know the success of educational process that has been done to their students. In today's era, there are many vendors that provide web server services, both paid and free, with each offering the advantages of their own web server. Existing vendors such as IIS are proprietary to Microsoft, Apache, Nginx and Google GWS. The market share that is controlled by each vendor is also different. The examples of web server are:

1. Apache Web Server

It considered as the best web server based on research from Netcraft with the most users. The advantage is the level of reliability and high stability and features that are fairly complete make many users entrust Apache as their web server. In addition to its nature as open source makes this web server into a web server for free. Apache is open source that makes the web server users favored and a lot of support coming from communities and sponsors to come develop this web server to make this web server more reliable. Apache web server can run on Windows or Unix based operating system.

2. IIS Web Server

IIS Web Server is a web server made by Microsoft. Unlike the open source Apache, to get full technical support then automatically we as users have to buy IIS license from Microsoft. IIS offers an easy, secure and stable network interface system. In accordance with the company where IIS was developed, IIS can only run on Windows based operating systems.

3. Nginx Web Server

Another alternative open source web server is Nginx. The advantages of Nginx web server is almost the same as Apache, even some riview from the user is Nginx configuration which is easier than Apache. So for users who want to run a lightweight web server with an easy operating system, then simply use Nginx.

4. Google Web Server (GWS)

GWS is a web server made by Google, Inc. which is closed and only used by Google itself as their web server. Not much information can be obtained about this web server because it is still in the research phase by Google.

Web server is a server application that serves HTTP or HTTPS requests from the browser and sends them back in the form of web pages. Web pages sent by the web server are usually HTML and CSS files that will be parsed or organized by the browser so that the web pages are nice and easy to read. Web server using port 80. The most common use of web server is to place the website, but in practice its use is expanded as a data storage place or to run a number of business class applications. The main function of a web server is to transfer files at the request of a user through a predefined communication protocol. Because a web page can consist of text files, images, video, and other web server utilization functions also to transfer all aspects of filing in a related web page; including text, images, videos, or otherwise. Currently most web servers are also equipped with a script language translator engine that allows web servers to provide dynamic website services by utilizing additional libraries such as PHP, ASP. The current use of web servers is not limited to website publishing on the World Wide Web, in practice many web servers are also used in other hardware devices such as printers, routers, web cameras that provide http service access in a local network intended to provide devices management and simplify the review of the hardware.

This research is a research development (Research and Development). In this case, development is carried out to obtain a tracer study system of web-based sports coaching. The research with the development model is chosen because the development research is oriented to the product which is expected to be able to solve the existing problems. Web-based tracer study is required in the development of majors, it is used to facilitate the filling of data and can be done anywhere. There are several ways to make this web-based tracer study able to accommodate the needs of the department. One of the easiest is to insert in the legalized diploma as a condition of taking a diploma. With web-based filling, it is not necessary to worry about the destruction of data

compared to using paper as a medium that has been used. The development is by using smartphone applications that are now very sophisticated and owned by all walks of life. Web-based tracer study is very helpful especially to graduates who are already living far outside Yogyakarta in filling it. The graduates do not need to come directly to fill in the questionnaire, or send a questionnaire by post / fax, but simply connect to the internet will be able to fill this tracer study. Through the media mobile phone or pc, the web can be accessed easily and quickly.

Server-side script used is PHP 5.0. (Hypertext Processor), PHP developed by Rasmus Lexdorf since version 3 using a parser developed by Zend Technologies. PHP 5 has full support for object-oriented programming with features such as object models, private and protected members, private and protected methods, abstract classes and methods, interfaces, object cloning, constructors, destructor and exceptions.

HTML (Hyper Text Markup Language) is a programming language used to create a web page, displaying various information within a web and formatting simple hypertext programming languages written in ASCII format so as to produce an integrated view. There are many web programming languages intended to manipulate HTML code, such as JavaScript and PHP. But before learning JavaScript and PHP, understanding HTML is the earliest. HTML is not a programming language, but markup language, in HTML will not find the usual structure found in programming languages such as IF, LOOP, or variables. HTML is just a structural language whose function is to mark parts of a page. In addition to HTML, also known as xHTML which stands for eXtensible Hypertext Markup Language. xHTML is an older version of HTML (before the HTML5 era as it is today). xHTML uses stricter writing rules. If you find an article that discusses xHTML, it can be equated with HTML, because the difference is not too much.

Database Server to be used in the system is MySQL which includes ORDBMS (Object Relational Database Management System) which has standard facilities RDBMS (Relational Database Management System) and has the ability of object-oriented.

CONCLUSION

The Tracer Study is an approach that enables higher education institutions to gain information about possible deficiencies in educational processes and learning processes and can be the basis for planning activities for future improvements. Tracer study is very important in improving the quality of faculty or department. Incomplete data tracer study is often even damaged or lost should be immediately fixed with the right solution. Web-based tracer study allows users to fill in. By easily filling up is expected to multiply the data that can be used to develop faculty and majors.

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MOUNTAINEERING ACTIVITIES OF MERBABU AS SPORTS RECREATION SOCIETY (phenomenology study About Society Conducting Activities of Mountaineering in the Mount Merbabu National Park)

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Abstract

Objectives: The purposes of this research is to know: 1) The society such as what activities of mountaineering Merbabu, 2) The activities carried out in mountaineering, 3) Motive and motivation, 4) Expectation and appreciation, 5) the benefits of mountaineering for climbers and for the surrounding society, 6) Risk of mountaineering.
Methods: The research was conducted in the Mount Merbabu National Park, Central Java Province. It is a qualitative research which uses phenomenological approach. Data collection techniques used in this research are observation, interview, and documentation.
Results: Research Mountaineering Activities of Merbabu As Sports Recreation Society summed up as follows: 1) The activity was carried out by people from different layers, both men, and women, ranging in age from children to the early elderly. They are students to office workers, coming from a variety of both urban, rural areas, and foreign, some are doing this activity as a group or individually. 2) The activities carried out in mountaineering include: hiking, climbing, resting, enjoying the scenery, staying there with setting up tents or not, a bonfire, cooking, praying, getting together and playing, taking pictures or recording videos, cleaning up the environment and helping each other. 3) The motive in doing mountaineering is to unwind mingle with nature, as a recreation and hobby. The motivation is a satisfaction to reach high places and get a new experience. 4) The expectation of the climbers before the climbing are to improve fitness, mental training and to see the beautiful natural scenery. People's appreciation after climbing is activities that provide valuable experience in their life, and the activity of making hooked. 5) The benefits of mountaineering are as a mean of exercising, recreation gaining pleasure, refreshing, relaxation, physical training, learning to live independently, character building, making new friends, and as a mean of socializing. As for the surrounding society is an income enhancement. 6) The risk of mountaineering include: out of provisions, exhausted, fell into a ravine, wounded, injured, lost, attacked wild animals, bad weather, mountain sickness: hypothermia and hypoxia.
Conclusions: Mountaineering activities of Merbabu are as sport and recreation facilities for the society. These activities are carried out by people from different layers, both men and women, ranging in age from children to the early elderly, which are students to office workers. They come from different regions of both urban and rural areas also foreign. The people engage the activity as a group or individual

Keywords: physical activity, sports recreation, mountaineering, mount merbabu.

INTRODUCTION

Humans are living beings with a variety of events and activities, as well as the high-level of workload is. This causes people to become stressed due to various minds of daily working as well as a lack of motion which can invite a wide range of non-infectious diseases, such as physical diseases like cardiovascular disease spiritual or mental stress, difficulty in concentrating, impaired emotional, social interactions and others. Daily routines can be supported by the psychological and physical condition of the body balancing, in order to minimize stress levels and to maintain healthy physical condition. The balance of physical and psychological conditions can be achieved by human effort one through recreational activities that aim to reduce tensions on the mind and body (refreshing and relaxation).

Recreation becomes a basic necessity for every human being to achieve the welfare of all mankind. Recreation with all forms of activities that are recreational, which can restore body and soul even become fresher and fitter than previously came under pressure from the routine of daily work that can result in burnout, boredom or fatigue. Recreational purposes lead to improving the quality and welfare of human life achievement. Therefore, recreational activities and its implementation must be aligned with the efforts of a healthy state, this means fun activities that can threaten the mental and physical health really should be avoided. Every individual has the same right to get satisfaction and enhance the use of the spare time.

The spare time which many people use it is to do sports activities. Sports have become a trend or lifestyle for humans and become a basic necessity in life.

In this globalization era, sport becomes very important as an effort to decrease stress levels and prevention, health promotion and maintenance efforts and maintaining a balance of quality of life. In Article 19, Section VI of Law no. 3 the Year 2005 on National Sports System states that "recreational sports do as part of a process of restoration of health and fitness". Recreational sport is a sport which was performed during leisure time in order to get health, fitness, attitude and mental refreshment that can restore both physical and mental strength, or to obtain excitement or simply to gain pleasure and relaxation from the daily routine.

So that recreational sport becomes a fundamental requirement for any human activity exists that begins by traveling somewhere or playing games. Information technology today provides a fertile ground for the growth of the instigators of the open nature activities in Indonesia and makes the outdoors as a recreational sports activities. Sports activities are often used as a means of recreation, especially related to the natural one is a recreational sports mountaineering nature exploration. Previously, people assume that the mountain is a dangerous area, spooky, eerie and mystical so as to climb up or down a mountain area into something percussion. Looking mountaineering dozen years ago may not be a place of recreation options, just nature lovers or a limited circle who choose to climb the mountain. As the name implies activities of mountaineering, is not an easy activity to do, or to do spontaneously, but must prepare themselves to remember walking for days to carry the heavy load carrier bag that contains provisions and in a haunted sense of dread and fears of something undesirable is a challenge that must be faced by climbers.

Mountain now becomes a lovely site and people like to do the browsing activity of nature as a recreational sport, even climbing or mountaineering has already been a pride to do. Thousands of people chose to spend their vacation with mountaineering activities. This phenomenon becomes public attention lately.

METHOD

This study was conducted in the Mount Merbabu National Park, Central Java Province. This study is a qualitative research and is presented using a phenomenological approach. The research was done to explore and to examine the phenomenon of mountaineering activities of Merbabu as the recreational sports community. The group did the climbing, the activities of mountaineering, motives and motivations, expectations, and appreciation of climbers, benefits for climbers and to the surrounding society, as well as the risk of the mountaineering. Data collection techniques used in this research are observation, interview, and documentation. Data analysis in this study conducted in four phases: data collection, data reduction, data display, and the stage of conclusion.

RESULTS AND DISCUSSION

1) The society such as what activities of mountaineering Merbabu.
   The phenomenon of mountaineering which is becoming a trend today make this activity as a means of sport or exercise and recreation community of the various layers, both male and female, ranging in age from children to the early elderly. The people are students to office workers,

coming from different regions of both cities and the countryside, also for foreign and done either in groups or individually.

2) The activities of society during mountaineering.
   The activities carried out in mountaineering are: hiking or walking, climbing, resting or sleep, enjoying the scenery such as see of nature, the sunset or sunrise, staying up with the tents or not, make a bonfire for warm themselves, cooking, eating, praying, getting together and playing, taking pictures or recording video of climbing activity, cleaning the environment and helping each other.
3) Motives and motivation of people doing mountaineering activity.
   Motives in doing mountaineering were to relieve fatigue and boredom of the routine work, recreation, like to mingle with nature and hobby. The motivations are for the self-satisfaction, to enjoy the view and to reach high places and new experience.
4) Expectations of society's appreciation before and after the mountaineering.
   The expectation of the society before the climb is to improve fitness, mental training and to see the beautiful natural scenery of altitude, sunrise or sunset. And appreciation after doing the mountaineering is to provide valuable experience in their life and the activity of making hooked.
5) The benefits of the mountaineering activities for climbers and for the surrounding society.
   The benefits of climbers are as a mean of exercising, as a recreation gaining pleasure, refreshing, relaxation, as a physical training, as a mental training, as a character building, as a way to learn independent living and making new friends, as a social mean for both humans and nature. While the benefits for the society around the mountain is particularly felt directly by merchants and service providers that are; bringing the micro, launching an independent economy communities of all things related to the ascent and equipment, as well as merchants, and increasing revenue for climbing equipment providers, rent the bathroom and toilets, trade food and drink, parking for vehicles, services porter and shuttle climbers services.
6) Faced Risks while doing the mountaineering activity.
   The risks involved in mountaineering, include; running out of provisions, exhausted because energy drained, falling into ravine, injured, wounded by slipped or hitting hard by objects such as stones, wood, etc., being lost, attacked by wild animals such as monkey, snake bites, or insects, facing bad weather (heavy rain, heat, storms, etc.), having mountain sickness such as hypothermia, hypoxia, dehydration, cramps etc.

CONCLUSIONS AND SUGGESTION

Mountaineering activities of Merbabu are as sport and recreation facilities for the society. These activities are carried out by people from different layers, both men and women, ranging in age from children to the early elderly, which are students to office workers. They come from different regions of both urban and rural areas also foreign. The people engage the activity as a group or individual. The activities carried out in climbing include: hiking, climbing, resting, enjoying the scenery, staying up with a tent or not, a bonfire, cooking, praying, getting together and playing, taking pictures or recording videos of climbing activities, cleaning up the environment and helping each other. Motives in doing mountaineering are to unwind blend in with nature, as a hobby and a recreation. While the motivation is for the satisfaction of reaching high places. Expectations of society before the climbing are to improve fitness, mental training and to see the beautiful natural scenery. People's appreciation after climbing is that mountaineering becomes an activity that provides valuable experience in their life, and the activity of making hooked. The benefit for the climbers is a mean of exercising, as a recreation gaining pleasure, as a physical training, as a way to learn independent life, as the formation of character, as a way making new friends and a mean of socializing. As for the surrounding community, mountaineering provides the increasing for financial or income. Risks encountered in mountaineering are running out of provisions, exhausted, fell into a ravine, wounded, injured, being lost, being attacked by wild animals, having bad weather, and having mountain sickness.

SUGGESTION

Based on the conclusions and implications that have been outlined above, the suggestions of the author are as follows:

1) For the National Park Merbabu is to continue to pay attention to the phenomenon of mountaineering that occurs in the society by supporting, controlling, and facilitating community instigators of that in doing climbing also have to maintain and help preserve the environment and create the appropriate rules and policies so as not to damage the environment or nature.
2) For Local Government is to continue to support and to disseminate the natural beauty of Mount Merbabu as a lure both local and foreign community as a recreation or tourist destinations.
3) For the people who do the mountaineering should plan and prepare in advance all forms tools and equipment needed in activities of mountaineering, physical and mental condition in order to minimize the risks and dangers while climbing, as well as maintain, not damage, and help preserve the environment and nature in the ascent.

OFFERINGS

To:

1) Almighty Allah who has given everything to me.
2) My Parents, my father Mr. Machfudin and mother Mrs. Siti Aminah, that unceasingly gives the prayer, support either moral or material.
3) Prof. Dr. Sugiyanto and Prof. Dr. Agus Kristiyanto, M. Pd, as the lecturers who have provided guidance and direction to this research can be completed properly.

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Increase VO_2Max Badminton Athletes Use exercises Footwork with Method HIIT (High Intensity Interval Training)

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Abstract

Objectives: This study aims to to determine the effect of exercise *footwork* HIIT with a method to increase in *VO_2 max* in badminton athletes.
Methods: This study used an experimental approach to see the effect of footwork practice with HIIT (High-Intensity Interval Training) method of VO2Max. Population of this research are athletes badminton UNP which amounted to 38 people and technique of sampling by using purposive sampling that is eligible athlete son amounted 35 people. Data collection in this study used fitness test (bleep test) to measure Vo2Max.
Results: The results of this study indicate that there is influence of Footwork training with HIIT (High-Intensity Interval Training) method to increase Vo2max in badminton athletes
Conclusions: Footwork as one aspect of the techniques in badminton game if manipulated in such a way by using the principles of interval training, especially HIIT *(High-Intensity Interval* Training) can increase VO_2max in badminton athletes.

Keywords: Footwork, *HIIT* (High-Intensity *Interval* Training), *VO_2Max,*

INTRODUCTION

To be a good badminton athletes require various components supporting achievement that includes physical components, component engineering, component tactics and no less important is the mental component. The physical components as fundamental basis becomes important things to get attention in the components of achievement for badminton athletes. The match at the world level average is played within 30-60 minutes of aerobic signaled the need to endurance associated with heart and lung function. One indicator of the quality of one's life is to look at the capacity of maximum oxygen consumption or the more we know the term *Vo_2* max.

$V0_2$ Max is a dominant factor for a long able to perform activities such as in permanent badminton. Aerobic capacity is essentially a big picture motor abilities (motor power) of a person's aerobic process. Maximum level of oxygen uptake take *(Vo_2max)* is an important determinant of cardio respiratory fitness and aerobic performance (Sudhir Modala1, P. K, 2015)

The above description suggests that the dominant requirement in the game of badminton is the need to perform lengthy activity within a fixed or high intensity movements. This entails the need for capacity maximal oxygen consumption or *Vo_2max* highis needed (Leite, C. M. F., UGRINOWITSCH, Herbertm. F. S. P. C. and Benda, R. N, 2013).

As one of the basic techniques in the game of badminton increasing mastery of *footwork* becomes important things that must be mastered in order to be a good badminton player. *"Footwork* is movements of footsteps governing bodies to position their bodies in such a way so as to facilitate the movement hit *the shuttlecock* according to the position" (Subarjah, 2000)

Setting a good move and it will give benefits among others : (1) able to move quickly all point or the corner of the field in an effort to return the blow opponents, (2) got a corner highest batting because it allows us to move quickly before the ball drops, (3) more effective

and efficient use of energy, (4) more flexibility in the conduct of various types of punches quickly, robust, accurate and varied, (5) is able to make refund-return of a blow from a difficult position though. Instead of failure in regulating the movement of the legs will result in: (1) often late in repayment opponent's punches which resulted in the opening of the cracks or the target of the attack the next opponent, (2) Blow becomes primed so that it will fail to press or urge the opponent, (3) Power will be quickly depleted due to the helter-skelter to move to the corner of the field, (5) Quality blow will be reduced as well as in the variation, due to the return ball that has been dropped to make alternative repayment blow to limited, (6) Returns a blow from a difficult position often fail even if successful returns the ball usually half or easily controlled by your opponent (Donie. 2009)

Various methods of exercise developed for athletes to have the and master the techniques of *footwork* properly so that the movement of the player's body is getting better, faster and more harmonious in stepping pursue *shuttlecock,* stepping in off knocks and move in close all side of the field.

During this time many coaches see that *footwork* is a technical component in the game of badminton. As for the improvement of physical conditions such as the durability typically they use a common physical exercises in the form of activities run by various methods. To develop cardiovascular endurance exercises were developed to share methods which are run continuously *(continuous* running), *cross-country, fartlek (speed Play)* or by the method of *interval training.*

Method of interval training is one method that combines rationally between loading time at recess to the case when we look at the use of the muscles between the run and the same footwork as dominant use leg muscles. According Herodek et al there are lots of ways of doing *HIIT (High-Intensity Interval Training)* for holding the basic principle is: do the movements, alternating between high intensity and period breaks must or low intensity movement. Some basic principles are; (a) perform the exercises alternate between intervals of *hard effort* with a recovery interval of *hard effort* that, (b) sought ratio intervals of 1: 3 *(high effort: recovery)* in order to obtain optimal results, (c) the design of the exercise is made in a way that the training load increased progressively to achieve development that is expected, (d) because a recovery period of 3 times the hard effort period is expected to achieve adequate rest, (e) the pulse rate should be monitored is continuous to ensure the achievement of the target of maximum heart rate (MHR), (f) the period of heating and cooling is critical to the practice *HIIT* (Herodek, K. *et al.* , 2014)

In this study the authors are interested in combining forms of exercise *footwork* as one of the techniques in badminton game using the approach method *HIIT* (High-Intensity *interval Training) toward* increased capacity of oxygen consumption maximum *(Vo_2max)* in athletes badminton.

Based on the background of these problems are formulated formulation of the problem of how the influence of drills *footwork* with method *HIIT (High-Intensity Interval Training)* to increase *Vo_2max* in athletes badminton? In this study is expected to result in a finding how to practice technique, especially *footwork* in the game of badminton modified in such a way to approach a particular method is a method *HIIT (High-Intensity Interval Training)* may give effect to the improvement of the physical condition especially good aerobic endurance.

METHOD

Participants. The population in this study are all Nikken UNP badminton athletes who are members of the UNP Nikken badminton club numbering 38 people of which 35 athletes male and 3 female athlete. The sampling technique used in this study using *purposive* sampling student only son who actively participates in an exercise activity badminton totaling 30 people.

Measurement. Instrument development is based on the variables found in the bleep test instrument grid. Bleeb test or also called *multistage 20-meter test* is a test to run continuously during audible beeb that have been recorded. Purpose of this test is to measure the level of efficiency of functioning of the heart and lungs, which is shown through measurements of maximum oxygen uptake *(maximum oxygen uptake*).The magnitude of *Vo₂max* is calculated based on the level (level) and feedback*(shuttle)* which can be achieved by the person taking the test, and converted by norms table *VO2max* (Harsuki, 2003)

Procedure. The method used in this research is the Pre-Experiment. According to (Sugiyono, 2010) that the pre-experimental research results constitute the dependent variable is not solely influenced by independent variables ". This can occur in the absence of the control variables and the sample was not chosen randomly. The design of the design used in this study is *one group pretest posttest de sign.* In this case before treatment is given first the sample is given pre test (preliminary test) . Furthermore, the athletes are given the treatment in the form of drills *footwork* with method *HIIT* during 16 sessions where exercises carried out 3 times a week. Furthermore, at the end of treatment (exercise) samples are given *post-test* (final test). This design is used in accordance with the goals to be achieved is to determine the effect of drills *footwork* with method *HIIT* to increase the capacity of *Vo₂max* badminton athletes.

Statistic Analysis. description of data and testing of this hypothesis is processed using descriptive and inferential statistics with the formula t-test. Before the t test analysis, first tested the requirements analysis, the data normality test and t test can only be used to test the mean difference of samples taken from a normal population. After normality test, t- test analysis performed for the first and second hypothesis, the t formula samples relating (Suharsimi, Arikunto, 2006)

RESULT AND DISCUSSION

Results Research. From these data descriptor table seen an increase in mean average data from the athletes treated by *Footwork* using the method HIIT by 2.76. Based on testing using the normality test Liliefors obtained, for the pre-test velue L_0 at 0.1184 and the value of L_0 Post test of 0.0879 the L_{table} at table Liliefors Test Critical Value is based on a sample of 30 with a significance level α = 0, 05 in can L table = 0.1618 The test criteria is if L_o is smaller than L_{table} means L_o (0.1184) <L_{table} (1618) for the *pre-test,* and L_o (0.0879) <L_{table} (in 1618 for post-test), so it was concluded that sample data came from a normal distributed population. Furthermore, different test analysis results mean that states there are significant exercises *Footwork* with method *HIIT* to increase capacity *VO2max* significant(X1). This is based on the results of the analysis of the mean difference test, which gained $t_{calculate}$ = 6.874> t_{table} = 1,70 at significance level α = 0.05 can be concluded that there are significant exercises *Footwork* with method *HIIT* to increase the capacity of *Vo₂max* badminton athletes FIK UNP significantly.

Discussion. This study aims to look at the effect of drills *footwork* with HIIT method to increase the capacity of *Vo₂max* at Nikken UNP badminton athletes. From the overall analysis shows that an increase in *Vo₂max* after the athlete given exercise treatment *Vo₂max* method with *HIIT.*

This is in line with research conducted by Tabata and his friends were summarized in a journal titled *"Effects Of Moderate-Intensity Endurance And High-Intensity Interval Training On Anaerobic Capacity And Vo₂max"* where Tabata and his colleagues concluded that exercise *HIIT* (High-Intensity *interval Training)* can provide a positive influence on the increase in *Vo₂max* and to increase anaerobic capacity (TABATA, I. *et al.* 1996).

Another study Helgured and his friends were published in the journal entitled *Aerobic High-Intensity Intervals Improve Vo₂max More Than Moderate Training* shows that exercise HIIT was significantly more effective than the activity total at lactate threshold or HR Max 70% in fixing *Vo₂max.*Changes *Vo₂max*in accordance also with changes in stroke volume (SR), which

shows the close relationship of the two (Helgerud, J. *et al.* 2007).

Footwork with method *HIIT* implemented by combining the loading time with rest periods. Do loading time given for 60 seconds, 45 seconds, 30 seconds and 15 seconds. To determine the intensity of the exercise is to take the best capabilities of the implementation of the amount of *footwork* in time specified.

Tthe best capabilities of each *footwork* for 60 seconds, 45 seconds, 30 seconds and 15 seconds is the intensity of 100%. As for *HIIT* intensity used was 70% -90% of the best capabilities with a ratio between the time of loading (work) with a rest period (rest) is 1: 2 to 1: 4, the higher the intensity is given the greater the ratio between the time work and rest periods. It is by considering some of the benefits of interval training system that is (a). More rigorous in controlling its intensity (b). As a systematic approach day by day, enabling easy in observing the progress, (c). Faster fix potential energy than other methods of exercise conditions (Fox E.L, B. R. 1993).

From the results of research conducted by Jacob S. Thum and colleagues published in a journal called H*igh-Intensity Interval Training elicits Enjoyment Higher than Continuous Moderate Intensity Exercise* shows that Even *HIIT* more physically demanding activities that are more severe than the MICT *(Moderate Intensity continuous Exercise)* but more fun for more efficiency in the use of time as well as loading varied stimuli. Thus, in the study 92% prefer *HIIT* of the MICT (Bartlett, J. D. *et al.* 2011).

In the implementation of drills giving treatment *footwork* with method *HIIT* looks athletes more challenged and excited to do the exercises because they are challenged with a target which must be made in each loading and also they like the variety of the various forms of exercises *footwork* they do.

Interesting things related to the method of *HIIT* exercise turns *HIIT* is safer if done by loading rational. The study shows that the control of the intensity of exercise has an important role in preventing and controlling hypertension. The important thing is how to control the loading duration, intensity and recovery time (Ciolac, E. G. 2012).

As one of the techniques in the game of badminton purpose of the *footwork* is bringing the body in a good position when performing a punch and take a hit. Footwork Goodwill provide effectiveness and efficiency in the use of power in the game of badminton. Exercise *footwork* is considered important because it is the basis for determining the quality of a blow. Footwork Good allows the athlete to move more quickly and efficiently and be better prepared to receive or deliver a blow is more varied and quality.

Characteristics of badminton game is a game that is held in a long period of time duration over 30 minutes in which there is a long rally interspersed with interval time between the rally. The rally in the rally the player will move according to the direction of the ball by using a good stepping technique. Victory is determined not only by the high quality of the possessed, but the level of play that is balanced victory is often determined by the ability to play with a long time with high intensity. For that aerobic endurance is one pre-requisite be a good badminton player. While aerobic capacity is an indicator of *VO2max* as the ability to consume the oxygen maximum.

Giving exercises *footwork* with interval method in HIIT technically has the advantage that technically makes moving quickly trained athlete, tactical technique a good step. Physiological basis drills *footwork* with HIIT method to provide precise control V02max it can increase capacity as one of the determinants of the components of general endurance or aerobic endurance.

CONCLUSION AND RECOMMENDATIONS

Conclusions. Based on the overall results of a calculation which has been done in this study, it can be

deduced that that there are significant exercises Footwork with HIIT method to increase the capacity of Nikken UNP badminton athletes VO_2max significantly. It can be interpreted that the practice footwork by HIIT method can increase the capacity of VO_2max in athlete badminton
Recommendations. Successful increase in *VO_2max* with practice *footwork* by the method of interval is dependent upon controlling the duration of exercise, intensity and a good rest it should be important to watch out for the trainers to get the benefits and advantages of the method HIIT in an increase in *VO_2max.*

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THE EFFECT OF EXERCISE MODEL BASED ON INTERACTIVE MULTIMEDIA TO SEPAKTAKRAW SKILLS

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ABSTRACT

Objectives: The objective of this study is to analyze the influence of exercise model based on interactive multimedia to sepak takraw skills .
Methods: The target of this research is freshman or novice students at Tadulako University on FKIP Sport Education Study Program around 40 students. The research type used quantitative research with pre-experimental design. The research design used one group pretest - posttest design and data analysis used paired samples test. The data retrieval process by sepak takraw skills tests at pretest and posttest. Furthermore, the research data analyzed by using SPSS 21 series.
Results: The research result shows there are significant of exercise model based on interactive multimedia to sepak takraw skills enchantment. Based on analysis above, can conclude there are sepak takraw skills enchantments seen from t-test results. The value of significance obtained is 0.000 smaller than 0.05 so there is significant influence.
Conclusions: Based on research results and discussion that described in the previous chapter, it can be stated research conclusion that there is a significant effect of exercise model based on interactive multimedia to sepak takraw skills. This can be proved by the significance value of pretest and posttest is 0.000 smaller than α = 0.05. Thus, model exercise interactive multimedia can improve sepak takraw skills in Tadulako University students

Keywords: Exercise Model, Interactive Multimedia, Sepak takraw.

INTRODUCTION

Law No. 20, 2003 regarding National Education System, Article 1 point 1 states that education is a conscious and planned effort to create learning atmosphere and learning process so students actively developing their potential to have spiritual power, self-control, personality, intelligence , noble character, and skills that himself needed , society, nation and state. (Sanjaya, Wina, 2006) Criticizes education concept according to Law No. 20, 2003. First, education is a planned conscious effort, which means that the process of education in schools is not a carried out based on random and chances process, but the goal process so that everything done by teachers and students directed to the goal achievements.

Technology is like a part of human life. Science getting more advanced, making a lot of new technology discovery. Technology created to facilitate people activity. Further proper utilization adds the technology usability. In the world of education cannot separate from the touch of technological progress. In the history of educational development, information technology is part of media used to convey science message to masses, start from printing technology a few centuries ago, such as printed books, to telecommunication media such as, sounds recorded on cassettes, video, television, CD and learning through internet (e learning).

The advantages that can be obtain from using multimedia technology, because multimedia technology able to overcome learning difficulties. The goal of multimedia usage is to overcome the limitations of space, time, and distance during learning and exercise. Multimedia technology as

learning medium can be a part of the student learning process companion. In the research, researchers chose printed books and VCD interactive multimedia as learning mediums and exercise. The profit from Interactive multimedia VCD selection as learning media, understand each learner speed learning, be patient tutor because of the program, packaged in the form of Video Compact Disc (VCD) and books used by trainers / teachers / lecturers while exercise, teaching, and giving lectures. Used independently wherever by students / want use as source learning student, and able to provide an objective assessment because given an additional evaluation program in the quiz forms. Therefore, the discussion about the utilization of information technology as an effective and efficient learning multimedia becomes interesting especially related to the exercise skill model playing sepak takraw.

The sepak takraw game is one of the most popular sports in Central Sulawesi. In Central Sulawesi there are 3 branches of superior sport area covering pencak silat, rowing and sepak takraw. The sepak takraw game branch becomes one of the sports that funded by APBN and sepak takraw branch is one of sport which developed continuously through school student activity, UKM university, PPLP and PPLM. Sepak takraw game is one of the unique game.

Said to be unique because sepak takraw blended of three elements of game. According to (Kurniawan, F. 2012) "sepak takraw game is mixture sport type of football and volleyball, played on a double badminton court, and players should not touch the ball with their hands ". Viewed from football because sepak takraw game is not allow using hands but feet, shoulders, chest and head. Viewed from volleyball there is a technique of volleyball, despite using a foot to give smash feedback to friend and will eventually generate points if the opponent cannot return. Contains badminton game elements because the field is used the same size with badminton field in a double game, the calculation of points or numbers are also the same as badminton games.

The sepak takraw game according to (Winarno, M.E. 2012) is a physical activity that involves smooth and rough movements, using a certain level of skill during service, rocking, passing, smash, and block, which involves many open skills, and the ball speed is unpredictable. To improve the skills needed a systematic and structured exercise.

Exercise by (Lakshmikrishnan, R and Silvakumar, K, 2013) is a pedagogical, organized and systematic scientific process based on performance and performance preparedness with sport goals perfection and performance improvement in the context of sports competition. According (Nagarajan, S. Damodharan, C. Praven, A. 2013) describes exercise is a basic form of sportsmanship through systematic process, up to a long period base and implemented on scientific facts. While (Bompa T.O and G. Gregory Haff, 2009) state that exercise is the process of preparing athletes to achieve higher performance or levels (Bompa T.O and Carlo A. Buzzichelli, 2015) says that the entire training goal programs to achieve peak performance in the most important competition.

Furthermore (Ambarukmi, D.H., Pasumey, P., Sidik, D.Z., Irianto, J.P., Dewanti, R.A., Sunyoto., Sulistiyanto, D. and Harahap, Y, 2007) exercise is essentially a systematic process to improve the work of athletes in the form of: fitness, skills and energy capacity and using a scientific approach. (Sukadiyanto and Dangsina Muluk, 2011) in exercise principle is a process of change to a better direction, namely to improve: physical quality, functional ability of body equipment, and student psychic quality.

Based on opinion above, concluded that the exercise is a systematic process from time to time there is an increase exercise load and exercise quality so at the time the athlete is ready to face a competition. Then we need an exercise model innovation using science and technology. One that researchers offer is exercise model interactive multimedia.

METHOD

Strategy and Research Design

This research is a preliminary research (pre-experimental design) with research design used one group pretest - posttest design (Maksum, A, 2012). This design has no control group, and the subject not placed randomly. The advantages of this design is to do the pretest and posttest so it can

see differences outcomes due the treatment provided (Maksum, A, 2012). The research design can described as follows:

Table Research Design in Effectiveness Model Test

Subjek	*Pres-Test*	Tretment	*Post-Test*
R	O_1	P	O_2

The step taken in this test include; (1) establishing the study subject group. (2) carry out the pre-test (O_1). (3) exercise model. (4) implementing post-test (O_2). (5) searching average score of pre-test and post-test and compare between the two. (6) finding the difference between the two averages through the statistic method (t-test) to determine whether there is a significant influence from the use of the model.

Population and Sample Research

The population used as subjects in implementation is the male student around 40 students. Referring to the above research design, then the above population will be made as a sample member as a whole, in other words this research is population study.

Place and time research

This research took place, at GOR Siranindi Palu City, The study conducted for 8 weeks start from 17 January to 16 March 2017, with details, 8 weeks for treatment with 24 times meeting held 3 times a week to clarify detail data collection process and exercise programs in the research in table below.

Table Detail Data Collection Process Plan

No	Activity	Month and Date										
		January			February				March			
1.	Research preparation	11										
2.	First test	17										
3.	Treatment (Implementation Exercise)		20	27	3	10	17	24	3	10		
			22	29	5	12	19	26	5	12		
			24	31	7	14	21	28	7	14		
4.	Final test										16	
5.	Processing Data											

Research Instruments

sepak takraw test measurements used 7 test items are sepak sila test, sepak kura test, sepak badek test, heading test, bait test, service test and smash test.

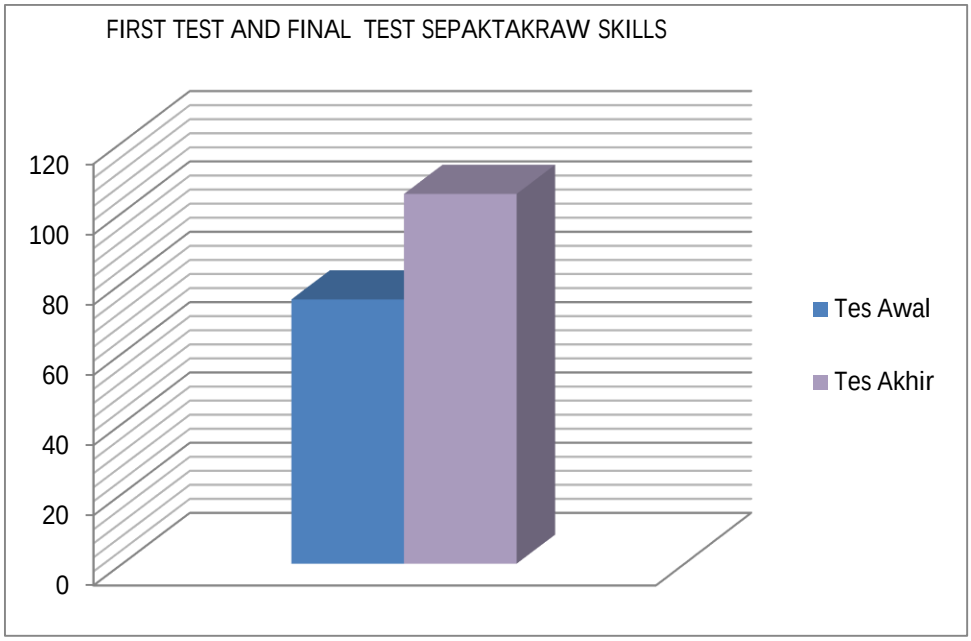
Data Analysis Technique

accordance with the hypothesis and the type of research used in this research, the statistical analysis used to determine analyze the influence of exercise model based on interactive multimedia to sepak takraw skills, t-test paired sample test, hypothesis rejection decision at $\alpha = 0.05$.

RESULTS AND DISCUSSION

Description data presented in the form sepak takraw skill data test before (pre-test) and after (posttest) test given treatment. This research conducted on male students around 40 students.

In this research will discussed research result includes data description, data analysis, prerequisite analysis testing, and hypothesis testing based on the results and interpretation of data using Microsoft Excel 2010 and SPSS 21.



Based on measurement results in the table above there is increase in average value between pretest and posttest on dependent variable. This is evident from posttest and pretest mean. Where it seen that mean value for posttest speed measurement results (105,275), it looks bigger than the result of pretest measurement (75,275). The results can be drawn a conclusion pretest and posttest treatment can improve sepak takraw skills.

Hypothesis testing

To answer the proposed hypothesis, the analysis test used in this research is mean difference test (mean difference test) by using t-test paired t-test. The value used in t test paired t-test is pretest and posttest value, and then the result of t-test paired t-test is as follows:

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Tes Akhir - Tes Awal	3.00000E1	4.29669	.67937	28.62585	31.37415	44.159	39	.000

Based on table above, the difference test result of average paired sample using t-test paired t-test as follows:

The result of t-test paired t-test on model interactive multimedia model treatment by looking at Sig value. (2-tailed) 0.000, can concluded that Ho is rejected and Ha accepted because of Sig value. 0,000 <value of α = 0,05. In other word, there is a significant influence from exercise model based on interactive multimedia to sepak takraw skills treatments.

Improvements that occurred between before exercises model based on interactive multimedia treatment and after exercises model based on interactive multimedia treatment were 30 points from pretest and posttest difference average values (75.275 - 105.275). These results indicate that exercise model based on interactive multimedia experiences greater improvement from pretest to posttest.

(Putranto, Toni Adhi, 2013) The results of research using T-test shows multimedia usage have significant effect to increase learning motivation. Research conducted by researchers tends to be stronger with analysis results with the increase in pretest and posttest.

(Al Furqon, Anggit, 2015) The results show average pretest 19.34, after treatment received an average 24. Dian Mukti Nourmaningrum, Chumdari, and Hartono, "The Influence of Multimedia Use". (Abrori, Saiful Slamet, and Ngadino. 2012) "The Influence of Multimedia Use and Image Media on Elementary Student Learning Results ", Journal of Teachers and Education, "1 (2012). Research Dynamics, Vol. 16, No. 1, July 2016 Vol 71 this shows enchantment obtained by researchers is greater than research conducted by Al Furqon.

Based on all the calculations performed by the researcher, it can see this research shows H0 rejected and H1 accepted. That is, there is a significant effect of exercise model based on interactive multimedia to sepak takraw skills.

CONCLUSION

Based on research results and discussion that described in the previous chapter, it can be stated research conclusion that there is a significant effect of exercise model based on interactive multimedia to sepak takraw skills. This can be proved by the significance value of pretest and posttest is 0.000 smaller than $\alpha = 0.05$. Thus, model exercise interactive multimedia can improve sepak takraw skills in Tadulako University students.

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SOCCER TRAINING MODEL IN YOUTH ATHLETE BASED ON THE LONG-TERM ATHLETE DEVELOPMENT (LTAD)

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Abstract

This study aims to develop and test the feasibility of a soccer training model for youth athlete based on the Long-Term Athlete Development (LTAD). The soccer training model is declared eligible by a coaching material expert, a soccer training expert and a soccer coach for youth athlete. The research and development that is carried out refers to Borg and Gall (1983) development procedure simplified only to the limit of expert validation test and product revision. Data retrieval is done with expert validation, i.e. expert coaching material, soccer training expert and soccer coach for youth athlete. Data analysis is done by converting quantitative data to qualitative data using Likert scale guidance. The results showed that the model of soccer training developed is feasible, based on the validation of expert materials of coaching seen from several aspects. Aspects of training content quality content with 72% eligibility level. Aspects of training content content with 94% eligibility level. Feasibility aspects of the training with 66% feasibility level. Aspects of sport coaching concept with 60% eligibility level. While the feasibility assessment of soccer training experts based on the basic concept aspects of training with 72% eligibility level. Aspects of development stage of the training with 82% eligibility level. Quality aspects of training materials with 68% eligibility. Assessment of soccer coach for youth athlete eligibility based on training aspect with level of 69% eligibility. Aspects of training design with 65% eligibility level. Material aspect with 69% eligibility level. Overall assessment of training eligibility is 68% with "Good" category.

Keywords: Soccer Training Model, Youth Athlete, LTAD

INTRODUCTION

Soccer is the most popular sport and attracts the attention of the world community today. The sheer amount of information about soccer presented by electronic media and print media is one of the most obvious indications of the claim that soccer is the most popular sport. The journey to become a professional and reliable soccerer is very long and tortuous, it takes intensive training to continue in accordance with the appropriate methods, systems and training model of soccer practice.

The current soccer training model is a major concern because the function of the training model is very important in the coaching process. According to Chondel (2013) the efforts undertaken by Germany by reforming the training model of early age coaching is manifested into a guidebook. The result is that Germany can successfully bring up new names like Mario Goetze (20), Lewis Holtby (20), Julian Draxler (19), Ilkay Gundogan (21), and others who are all under the age of 22. With the training model that must be applied when doing the training consciously or unconsciously such actions indicate the existence of uniform pattern of education and games from an early age.

During this time throughout Indonesia soccer coaching have not or do not apply the standard training model to be applied in the training in soccer respectively. Training has been dependent on the initiatives and experience of existing trainers. These trainers work hard on how to apply science or soccer experience to their foster children in their own way. The training has not been fully able to develop the talent of the players and sometimes there is something wrong in applying the practice method for the students.

Articles written by Sinaga (2012), playing exercises for ages 8-12 can improve the results of dribbling practice. While in the article written by Rinaldi (2012), Siregar (2013) and Zulhairil (2013), concluded that using variations of exercise can improve the results of passing and shooting practice because by giving variations of exercise will not easily arise saturated and bored because at the age the child is still very unstable, easy to feel bored and bored so that the application of appropriate methods and training materials is very big influence in the process of soccer coaching.

With the right soccer coaching training model is expected to improve the quality of training, directed and appropriate age, so as to deliver students to develop talent and reach its peak potential and achievement. Training or nurturing early childhood is much different than training senior players, training early childhood is much more difficult because it teaches the basic foundations of playing the right soccer, not only that a trainer should be able to pay attention to the child's development in terms of physical, psychological, growth and Motor ability. If the application of train there is a mistake it will result in damage both in terms of physical, pyromological and growth so that it can affect the future of the child.

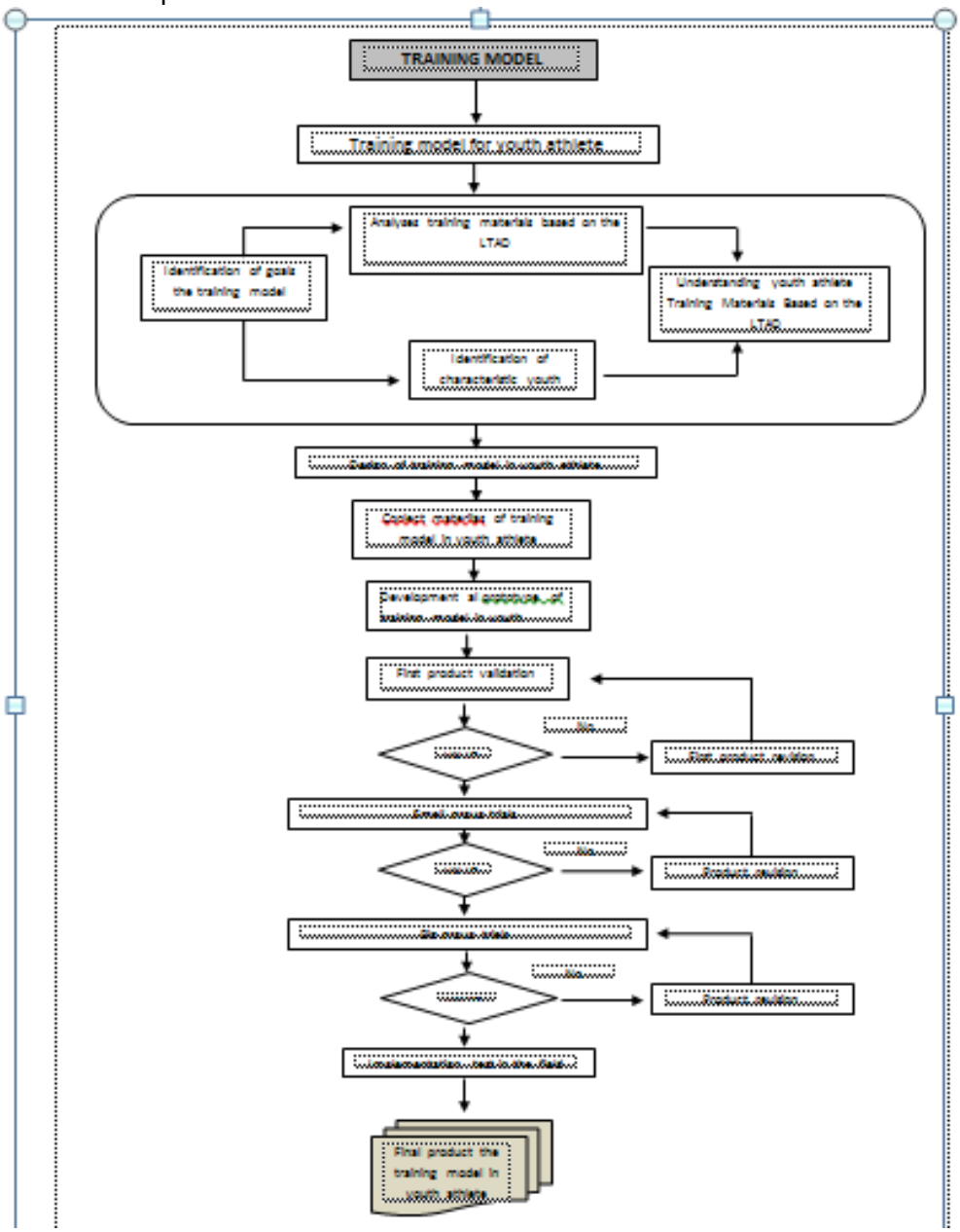
Therefore an early childhood trainer must master the theoretical and training methodology in which there are many sport performance achievement theories that support for practice-training activities. The theory of exercise or sportsmanship in the training process is anatomy, health, psychology, physiology, biomechanics, tests and measurements, stratics, history, sociology, nutrition, education, and motor learning, these are all supporting knowledge in the process of practicing according to (Bompa 2009), therefore a standardized reference is needed in order to be a guide for trainings and trainers, in order to achieve the desired goals and objectives in promoting national soccer, in addition to the importance of a plan and a standard reference is (1) Can determine clearly achieved direction, (2) Can achieve high efficiency and effectiveness, (3) Facilitate in identifying obstacles in reaching goal, (4) As a control tool whether the goal has been achieved or not.

In addition, the training plan is absolutely necessary in the training of sports education to develop a youth soccer, Seeing the above problems the authors have a limit "Planning is the specialty of the goals to be achieved, as well as the ways pursued to achieve these goals. This limitation implies (1) The planner involves the process of setting goals about the desired future state, (2) Selecting and determining the way to be taken from all possible alternatives, (3) Attempts to achieve that goal. Therefore, this should be the basis of the Indonesian sports scientists to design a sports training model to improve the sports system in Indonesia. Based on the above description, the researcher intends to conduct research on "Soccer training model in youth athlete based on the long term athlete development", this is the basis that this research will be useful for the progress of Indonesian soccer, because there has been no research on it, so the focus of this research is to develop a occer training model in youth athlete that adopts the training model of the United States with the title of US book Soccer Training model and supported by long-term athlete coaching theory of Long-Term Athlete Development by Istvan Balyi.

METHOD

In this study the authors use research and development (R & D) research methods or research and development methods. Research and Development is a research method used to produce a particular product, and test the effectiveness of the product, the resulting product can be diverse. According to Sugiyono (2011: 297), Research and Development research methods which hereinafter abbreviated to R & D are research methods used to produce specific products, and test the effectiveness of those products. Sukmadinata (2012: 164) said the developed product is not always in the form of software or software, such as computer program for data processing, classroom learning or educational model, learning, training, evaluation and management, but also in the form of hardware or hardware such as books, modules, learning media aids in the classroom.

In this study, the product that will be developed is a soccer training model design based on sports coaching education. According to Sujadi (2003) Research and Development or Research and Development (R & D) is a process or steps to develop a new product, or improve the existing product, which can be justified. As mentioned above, the research and development method examines the effectiveness of a new product and has gone through refinement steps. But due to limited research time, researchers limit the research only to developing existing products. Here researchers are developing a soccer training training model from the United States with the U.S. training model title. Soccer Training model composed by Dr. Javier Perez and Claudio Reyna, the training model is developed in accordance with the potential and cultural culture of the Indonesian nation.



RESULTS AND DISCUSSION

The product in this research and development is in the form of the soccer training model in youth athlete based on the Long Term Athlete Development (LTAD). The development of soccer training model based on LTAD can be used by trainers or educators in the process of coaching and training at a soccer training, through training and upgrading of trainers and educators to be able to apply drills and training materials in the formation and training of juvenile athletes which corresponds to the growth and development of learners, in order to get results according to the wishes and ideals of quality human development and the development of national sports.

The research and development carried out refers to Borg and Gall's simplified development procedure only at the limits of expert validation tests and product revisions. The first step, to collect information and observation. Information gathering is done by conducting preliminary study in the field to see the problems faced in soccer coaching and training, in soccer trainings in conducting coaching and training for adolescent athletes in accordance with the procedures in the world of modern sport coaching, reading the various literature that support in youth soccer coaching and studying the soccer training model to develop training programs tailored to the needs of learners according to the age group and the development of learners in the training.

Observation is done by looking at the problems experienced in the field by the coach both the coaching staff at the soccer training. The second step, which is to determine the training model materials and design that will be developed to support the process of coaching and training in soccer training model based on LTAD. Here is a picture of a major component of the soccer training model in youth athlete based on the LTAD.

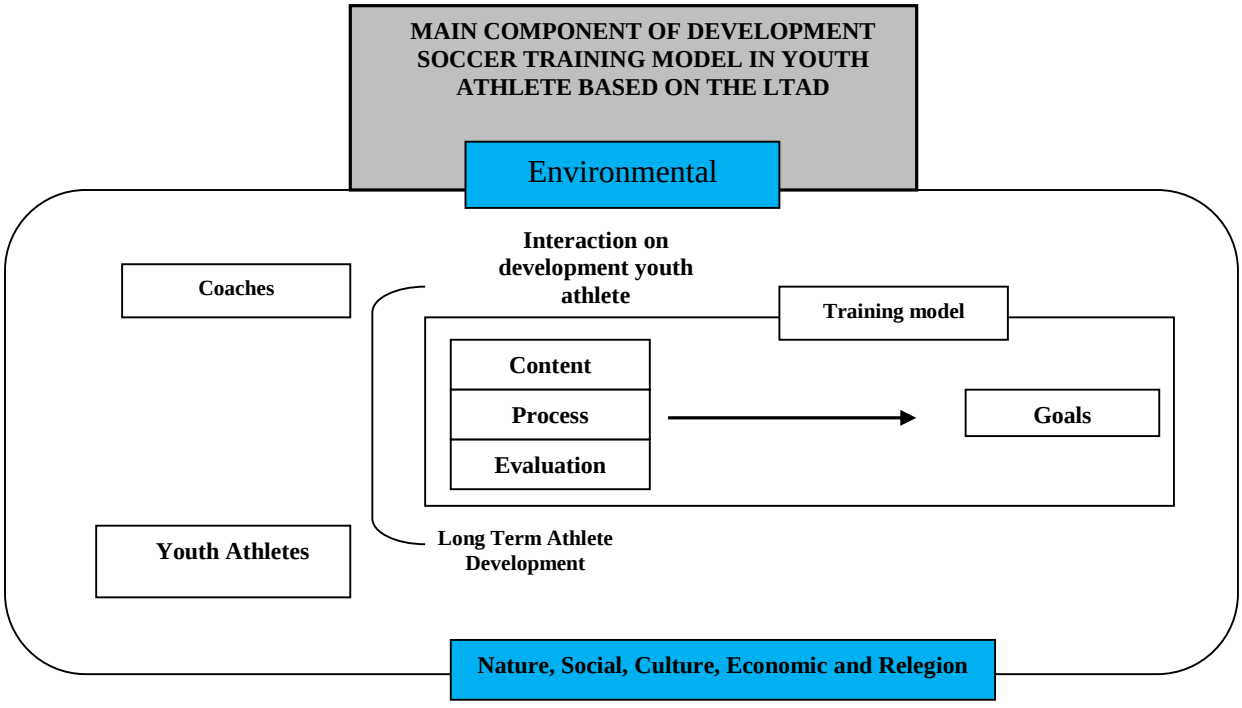


Chart 3. Planning flow of soccer training model in youth athlete based on the LTAD

CONCLUSION AND SUGGESTION

The results showed that the model of soccer training developed is feasible, based on the validation of expert materials of coaching seen from several aspects. Aspects of training content quality content with 72% eligibility level. Aspects of training content with 94% eligibility level. Feasibility aspects of the training with 66% feasibility level. Aspects of sport coaching concept with 60% eligibility level. While the feasibility assessment of soccer training experts based on the basic concept aspects of training with 72% eligibility level. Aspects of development stage of the training with 82% eligibility level. Quality aspects of training materials with 68% eligibility. Assessment of soccer coach for youth athlete eligibility based on training aspect with level of 69% eligibility. Aspects of training design with 65% eligibility level. Material aspect with 69% eligibility level. Overall assessment of training eligibility is 68% with "Good" category.

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LEARNING RESULTS IMPROVEMENT OF FOREARM PASSING RESULTS OF VOLLEY BALL GAME THROUGH DRILL METHODS ON STUDENTS XI.IPS.1 IN PUBLIC SENIOR HIGH SCHOOL I TELAGASARI KARAWANG

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Abstract

Objectives: This study is a classroom action research that is planned to improve the results of forearm passing in volleyball games on XI.IPS.I students, in SMA Negeri I Telagasari Karawang Regency.
Methods: This research is carried out using the method of repetition (Drill) through several cycles. This study was conducted in the academic year of 2013/2014 in the second semester to improve the value of education subjects in physical and sports education semester 1 who have the average score of 50% volley ball below the minimum mastery standard or worse compared with the acquisition of other grade values. The research instrument is the forearm passing attitude, is an instrument that has been validated by the expert and given to the students in the form of paired passing, the assessment is given in accordance with the results of observation. Then the final stage of movement that includes; the movement of both arms, the movement of both feet, the movement of both knee feet and views.
Results: In this action study, researchers used KEMMIS and TAGGART design consisting of 3 cycles. Through this research is expected result of student of class XI.IPS 1 which get value above or equal with minimum requirement criterion (70) more than 70%.
Conclusions: At the end of this study the researcher propose suggestions, to make improvements in value using the method of repetition (Drill) in a large ball game or in a game of volleyball; especially the forearm passing test.

Keywords: Method of repetition (Drill), Learning Outcomes, Forearm Passing Skill.

INTRODUCTION

Physical Education is very important, because the forms of physical activity or sports therein are games and activities which, if done incensively, either individually or in groups by members of the community including within the school community and done consciously and systematically, will result in improved physical movement skills, growth, intelligence, character formation, and achievement development optimally.

Because on that basis the author is interested to examine the forearm pass in volleyball games that have been owned by the students, especially students of class XI IPS 1 SMA Negeri 1 Telagasari Karawang regency with Action Research.

A. Research Focus

In volleyball games there are basic techniques of playing volleyball such as forearm pass, overhead pass, underhand serve, overhand serve, smash and block. Among the basic techniques the researcher will examine or limit only to the technique of performing forearm pass skills only.

Meanwhile, the subfocus of this research are:

1. To improve learning process offorearm passon volleyball game of class XI IPS 1 SMA Negeri 1 Telagasari
2. The effect of using drill method to improve learning process on volleyball game of class XI IPS 1 SMA Negeri 1 Telagasari

THEORETICAL STUDY

A. Concept of Action Research

Research is the knowledge and skills needed to overcome problems and face the surrounding environmental challenges in making a decision. As stated by Indrianto and Supomo that research is a reflection of the desire to know something in the form of facts or natural phenomena. The presence of early attention or observation of facts or phenomena is the beginning of research activities that raises a question or problem.

Action research method is a research developed jointly between the researcher and decision maker about variables that can be manipulated and can be immediately used to determine policy and development. Research and decision maker together determine the problem, make the design and implement the programs.

1. Kemmis and Taggart Model

Kemmis and Taggart divide the action research procedure into four stages of activity in one cycle: planning, action, observation and reflection. The model of action research is often referred to by action researchers.

The obstacles and success of implementing the action in the first cycle should be observed, evaluated and then reflected to design action on the second cycle. In general, the action in the second cycle is a corrective action of the action in the first cycle but does not rule out the action in the second cycle is to repeat the first action. Repetition of the action is intended to convince the researcher that the action on the first cycle has been or has not succeeded.

B. Concept of Action Model

1. Learning

According to psychological understanding, learning is a process of behavioral change as a result of interaction with the environment in fulfilling the needs of life.

Learning is a complex process for everyone and lasts a lifetime. One sign that a person has learned is by a change of behavior within himself.

2. Learning outcome

In the process of education, learning outcomes are all the skills and results achieved through teaching and learning process expressed by the numbers or values as measured by the test of learning outcomes. This means that through learning outcomes, students are allowed to know to what extent the ability he mastered to something he learned.

In the process of learning the results of learning acts are called learning achievements or learning outcomes.

Forearm pass in volleyball game

The game of volleyball is a sport played by two teams in a field separated by a net. There are different versions of the number of players, the type or size of the field, the winning numbers used for a particular purpose.

a. Teknik Forearm pass

1). Preparation phase

The player takes a normal attitude, meaning that the attitude of the body in such a way that makes it easier to move quickly to the desired, overall the body should be balanced so that the body can be moved in the desired direction in a short time. So players are standing on both legs, knees bend a little, the distance of both feet about shoulder width. The weight is concentrated on both legs, both arms are aligned parallel, both palms bend with fingers bent together with rilex, both hands stretched straight forward, eye view towards the ball.

2). Contact with ball phase

3). Final movement phase

Having the ball loose or thrown all over the body in a straight line means not to bend again. As a further movement of footsteps are backed forward, so that both legs are shoulder width apart. Thus the coordination is well maintained and the eye view towards the ball.

b. Muscles for forearm pass movement

1. Arm muscles

The activities of each muscle above consist of an outer or superficial layer and an inner layer (*profunda*)

2. Shoulder muscles

The shoulder muscles travel from the shoulder bracelet to the hemerus most of the horigonies to the scapula alone, hana M. Deltedeus, M. Supraspinatus, M. Infraspinatus, M. Teres minor, M. Teres major 5 and M. Subscapularis.

In the movement of these muscles is possible the existence of joints, on the shoulder in the form of a bullet joint. This joint is a lever, this lever is a rotating foot rod at a fulcrum.

c. Learning outcome of Forearm pass

Ability to perform a series of movements starting from the attitude of the preparation stage, the stage of contact with the ball and the final attitude / movement continued good and true. The correct way to do the forearm is to put your palms together with your thumb in parallel. Both elbows are turned inwards so that the flat and soft sides are facing upwards. The foundation that is formed from bringing the two hands together should be as flat as possible, so that the reflection of the ball to be perfect. The hands should be parallel to the thighs, hold your hands away from the body. Try to place the body behind the ball or face towards the ball coming, dim the power of the ball and point the ball towards the desired by using the body, through the movement of stretching the legs while touching the ball with little or without swinging the arm (push movement). The attitude of the foot is opened as wide as the shoulder and one of the legs is in front.

d. Drill Method

Thus the method of repetition is a method of repeating a learning process that has been studied, with the aim of obtaining learning outcomes that are more than what that has been achieved.

According to (Lutan, Rusli, 1989) in physical education to produce motion patterns into student movement skills then given the widest opportunity to repeat the pattern.

According to (Sagala, Syaiful, 2009) "Drill method is a method of practice, which is a good way of teaching to instill certain habits. Also as a means to obtain an agility, accuracy, opportunity and skill.

e. Relevant Research Results

Relevant research conducted by Fauzi Usman Ardhi Kusumawardana shows that the implementation of drill method can improve learning achievement, it is shown from: (1) Student activity from cycle I to cycle II has been improved, as evidenced by the average of student activity on cycle I; 21.81, the moderate category increased to 23.58, in the high cycle II category. The average increase of student activity from cycle I to cycle II is 1.77. (2) Student achievement from cycle I and cycle II have increased. In the first cycle the average score of student test is 64.64. In the second cycle the average score of the student test becomes 70.18. Implementation of drill method can improve student achievement of 5.54. And result of research done by Septi Susilowati with drill method, can be known from conclusion that there is progress of 0% ability on pre cycle activity, cycle I 21,4%, cycle II 57,14%, and cycle III 85,75%, average increase in value before given action (pre cycle) 2.14, in cycle I 4.86, cycle II 7.71 and cycle III 9.21.

METHOD

A. Research Objective

The purpose of Classroom Action Research is to know the effectiveness of the type of action in improving student learning outcomes.

The purpose of this research is to know the improvement of physical education learning outcomes through the method of repetition (drill) forearm pass in volleyball game on class XI IPS 1 SMA Negeri 1 Telagasari Karawang regency, so the grade reaches the value (70.0) or standard Minimum Criterion (KKM) more than 70%.

Minimum Completeness Criteria (KKM) is attached (Appendix C.1)

B. Place and Time of Research

1. Place of Research ;

At SMA Negeri 1 Telagasari,Karawang

2. Time of Research ;

The study was conducted for two months from February to April 2014 at every class of IX-1 sports class, on Wednesdays, at 07.00 to 08.30 or first and second study period, 2 cycles including a forearm pass skills test.

C. Research Methodology

The research method used is Action Research method, with Kemmis and Taggart design. Action research is one form of research, wherein in action research design, the researcher describes, interprets and explains a social situation at the same time by making changes or interventions for the purpose of improvement or participation. The implementation of the research involves colleagues as collaborators and classroom teachers as implementers of action.

Here are the designs of Kemmis and Taggart

D. Action Research Procedure

Classroom Action Research (PTK) is included in research methods whose procedures are divided into the following stages:

1. Planning Stage

   Develop a learning plan or scenario for each cycle

   Setting up learning aids

   Prepare research instruments (observation / volleyball skills observation format) for collaboration

   Prepare scoring guidelines

   Create a collaboration working schedule

   Prepare the grid material

2. Stage of Action / Implementation

   The implementation of this PTK formed cycles consisting of four parts, namely (1) planning, (2) acting, (3) observing, (4) reflecting

   The next cycle is planned based on the reflection from the previous cycle which is the modification treatment towards the achievement of better result. At this stage every teacher carries out learning activities that include the following steps:

   The action of each cycle refers to the principle of learning from the easy (simple) to the more difficult (complicated). And in action also always dinagi in 3 stages namely:

3. Observation Stage

   At the time of doing the action, the teacher assisted by the collaborator to make observations or observations during the implementation of the activity took place either from the side of the teacher or from the students, whether it is in accordance with what is expected or not.

4. Reflection Stage

   At the end of the cycle, teachers together with the collaboration discuss the data gained from the learning activities as well as field notes and observations. The discussion centered on understanding improving the outcome of the student's forearm pass exercise by going through the class act of repeating the forearm pass. Based on teacher discussion result revise learning scenario for replanning to cycle II, with hope in next cycle teacher can get better result.

E. Criteria for Successful Action Research

Indicator of research success is determined by:

1. Students are able to perform a forearm pass movement starting from the initial attitude, the position of the movement and the final attitude
2. Students are able to understand the correct concept of forearm pass movement
3. Students apply values during the learning process
4. There is a conducive interaction among students, students with teachers or students with researchers
5. Student learning atmosphere looks active

Research is said to succeed if:

1. Students are able to show improvement in learning movement forearm pass in accordance with the minimum passing score
2. Increased students' passion during learning
3. Increased attention in the learning process
4. Students are able to repeat in accordance with the forearm pass learning steps described
5. A fun learning environment for students
6. Students get the value above or equal to Minimum Graduation Criteria (KKM) 70.0 minimum of 70%

F. Source of Data

Subjects in this Classroom Action Research are the students of class XI IPS 1 SMA Negeri 1 Telagasari, on the grounds

The ability of the students in the forearm pass is lacking

Students who can do a forearm pass less than 50% of the total number of students in that class of which there are 46 students.

The researcher teaches the class, so he knows the problem

Adequate facilities and infrastructure for volleyball games

G. Data Collection Technique

The instrument used in this study is the observation guidance on the skills test of forearm pass (performance), by assessing the technique of forearm pass skills that is:

1. Preparatory stage

Relatively balanced body attitudes to move easily

Both feet stand parallel to the shoulders and both knees are bent slightly, one foot forward toward the front

The arms are parallel, the palms are tied together with the fingers bent together, the hands are extended towards the lower front

The view towards the ball

If this is done perfectly, then the value or maximum score is 6 (six)

2. Contact With Ball stage

Position the ball over both wrists and under the elbow

The ball is directed upwards

As the ball is moved forward, followed by straightening both legs, and both arms upward in a straight state do not bend

If this is done perfectly then the maximum score is 10 (ten)

3. Final movement stage

After the ball is thrown off the knee, the legs are not bent

As a further motion to maintain balance, the rear legs advance forward so that they are shoulder-width apart

The view towards the ball

If this is done perfectly the maximum score of 4 (four)

Assessment Score in Forearm pass

No	Aspects that are valued in the technique of Forearm pass Ball Volleyball	Maximum Score
1	Preparation phase inforearm pass technique	6
2	Contact with ball phase inforearm pass technique	10
3	Final movement phase inforearm pass technique	4
	Maximum Score	20

Annotation:

If at the preparatory stage a student gets a scoreof 4, the contact stage with the ball gets a score of 6

and the final movement stage earns a score of 3, then the score achieved by the student is 4 + 6 + 3 = 13 (score achieved)

$$\text{Total Score received} = \frac{}{} \quad 100 = \frac{13}{20} \quad 100 = 65.0$$

Student test observation sheet in performing Forearm pass Volleyball Game

Test tools and equipment

3.5 meter pole (2 pieces)
Rope 10 meters (2 pieces)
Volleyball
Stopwatch
Net volleyball game
Field forearm pass game volleyball

General guidance on test execution

Before the test begins, the testee is given a first explanation of the type of test to be performed and given a demonstration of how to do it
Testee is also given an explanation of the scoring system in this test
It is recommended that the testees wear sportswear
Testee is not allowed to experiment in advance
In this test a classical form is used

Testing

Number of testers collaborating 2 people, who are physical education teachers
The 1st person renderer threw the ball to the testee
1 person on duty to observe during testee preparation for forearm pass
1 person on duty to record the results achieved by the testee when in contact with the ball
1 person observes as the testee performs the final movement after contact with the ball

Grid of Physical Education Practice (Technique Forearm pass) Syllabus and Lesson Plans

H. Initial Observation Results

1). Preparatory stage

- At the moment the move received the ball seen some students are less balanced
- Upon receiving the ball or pass, the leg is less bent
- The distance of both legs of some students look not as wide as shoulders
- Some students upon receiving the ball of both arms are not straight or both elbows slightly bent
- Wrist of some students upon receiving the balloff so that both arms stretched
- Student's view on receiving the ball does not focus on the direction of the ball

2). Contact with ball stage

- Upon receiving the ball and passing the ball some students are still at the end
- At the time of receiving the ball some students there is no exclusive movement so the ball is not mentally upward and forward
- Partial spotting of students is not right between both wrists and elbows
- There are some students who at the moment receive the knee balls are still bent Some students at the time of receiving the ball view less concentrate on the direction of the ball.

3). Final movement phase

At the moment after pass or pass the ball there are some students are not straight or not relaxed
Partial spell of students still there are too above or not as high as the waist so that the result of the ball parabola
There are some students after passing legs do not return parallel

Action Types and Picture / Photo activities from Cycle 1 to Cycle 3

I. Instrument and Data Validation

In data validation research is done by taking the data observed by experts (teachers and trainers). To check the validity of research data conducted by researchers with collaborators and peers namely; Drs. Ade Abi Kusno, M.Pd.

Instrument validation result

J. Data Analysis Technique

Testing the hypothesis of action by means of quantitative analysis, ie with descriptive statistics such as frequency distribution, presentation and interpretation of data that is to find the results

Find the maximum value and minimum score of forearm pass skills test before giving the forearm pass for the first and second cycle

How many students get the highest score before repetition and after repetition of forearm pass in first and second cycle

How many students get the lowest score before repetition and after repetition of forearm pass in first and second cycle

Look for the mode (score that obtains the highest frequency) before the forearm pass is given for the first and second cycle

What is the average value obtained before the repetition is given and after the forearm pass is repeated in the first and second cycles

What is the increase between tests before repetition and after repetition of the forearm pass in the first and second cycles

RESULTS AND DISCUSSION

1. Pre-cycle Data Processing

Based on the research objectives that have been formulated, the use of methods of repetition (drill) on learning is an effort taken in improving the ability of forearm pass students. Through this research, we want to know how far the influence of the use of method of learning (drill) in improving the ability of forearm pass. The description of the ability of the student's forearm pass before and after being treated can be seen in descriptive statistics of pre-cycle scores, cycle 1 scores, cycle 2 scores and cycle 3 scores in table form (pre-cycle score, scoreof cycle 1, score of cycle 2 and score of cycle 3 in Appendix D.1, D.2, D.3, and Appendix D.4).

After the data processing of prasiklus score of students' passing forearm pass capability, descriptive statistics as shown in Table 4.1 and Graph 4.1 below. (Scoring and calculation can be seen in appendix D.5)

Student score list and frequency test forearm pass Volley Ball before given repetition forearm pass

Forearm Pass Score	Frequency	Lower Frequency	Percentage (%)	Top Frequency	Percentage (%)
70.0	2	46	100.00	2	4.35
65.0	2	44	95.65	4	8.70
60.0	11	42	91.30	15	32.61
55.0	14	31	67.39	29	63.04
50.0	13	18	39.13	42	91.30
45.0	4	5	10.87	46	100.00

From the above data it can be seen that the prasiklus result is still far from the determined KKM. This is understandable, because in doing the forearm pass students have not received repetition

training. By looking at the above description results from the acquisition of forearm pass test scores and improvements can be presented in graphical form below. By looking at the test results on the above prasiklus has not achieved significant value gains or not yet reached the KKM in accordance with the objectives of the study, then implemented the learning activities Cycle 1.

1. Data Processing of cycle 1

After processing the data score cycle 1 forearm pass students ability, the descriptive statistics as shown in Table 4.2 and Graph 4.2 follows.

Student Score List and Frequency of Forearm Test pass
Ball Volleyball Subjects Physical Education Cycle 1

Forearm passScore	Frequency	Lower frequency	Percentage (%)	Top frequency	Percentage (%)
70.0	7	46	100.00	7	15.22
65.0	8	39	84.78	15	32.61
60.0	18	31	67.39	33	71.74
55.0	9	13	28.26	42	91.30
50.0	4	4	8.70	46	100.00

From the data above shows that the value obtained by students in cycle 1 is better than the value obtained in Prasiklus, but the value in cycle 1 is still far the target of research (students who reach the new KKM 15.22%). Thus the learning and research is continued on cycle 2. By looking at the above description of the acquisition of forearm pass test scores and improvements can be presented in graphical form below.

3. Data Processing of cycle 2

After processing the data score cycle 2 forearm pass students ability, then obtained descriptive statistics as shown in Table 4.3 and Graph 4.3 below. (Penscorean and calculation can be seen in appendix D.7)

Student Score List and Frequency of Forearm Test pass
Volleyball Subjects Physical Education Cycle 2

Forearm passScore	Frequency	Lower frequency	Percentage (%)	Top frequency	Percentage (%)
80.0	4	46	100.00	4	8.70
75.0	2	42	91.30	6	13.04
70.0	8	40	86.96	14	30.43
65.0	15	32	69.57	29	63.04
60.0	11	17	36.96	40	86.96
55.0	4	6	13.04	44	95.65
50.0	2	2	4.35	46	100.00

From the above data it can be seen that the value obtained by students in cycle 2 is better than the value obtained in cycle 1, but the value in cycle 2 is still below the target of the research (students who have reached KKM as much as 30.43%). Thus, the learning and research is continued in cycle 3. By looking at the above description result from the acquisition of forearm pass test value and its improvement can be presented in graphical form below.

2. Data Processing of cycle 3

After processing the data score cycle 3 forearm pass students' ability, the descriptive statistics as shown in Table 4.4 and Graph 4.4 follows.

Student Score List and Frequency of Forearm Test pass
Volleyball Subjects Physical Education Cycle 3

Forearm passScore	Frequency	Lower frequency	Percentage (%)	Top frequency	Percentage (%)
85.0	2	46	100.00	2	4.35
80.0	6	44	95.65	8	17.39
75.0	13	38	82.61	21	45.65
70.0	14	25	54.35	35	76.09
65.0	10	11	23.91	45	97.83
60.0	1	1	2.17	46	100.00

From the above data it can be seen that the value obtained by students in cycle 3 is better than the value obtained in cycle 2, and the value in cycle 3 has reached the target of research (students who have reached KKM as much as 76.09%). In accordance with the criteria of successful research, the research has been successful in cycle 3 and certainly not continued in the next cycle.

A. Description of Improved Test Results of forearm pass on each cycle

1. Improved value from Pre cycle to Cycle 1

By looking at the test results of volcanic forearm pass volleyball in class XI IPS 1 with the drill method of pre-cycle and cycle 1

Improved Before Given Action (Pre cycle) And Cycle 1				
No	Number of improvement	Number of students (Frequency)	Percentage (%)	Remarks
1	0	14	30,43	
2	5	18	39,13	
3	10	10	21,74	
4	15	3	6,52	
5	20	1	2,17	
Average of Improvement		0,56		

With regard to the results of data analysis above we can conclude that the increase of the ability of forearm pass (score / value) mostly from pre cycle to cycle 1 is score 1 with percentage 39.13% is good enough, but students who do not experience improvement score is also quite a lot amounted to 30.43%.

2. Increase in Values from Cycle 1 to Cycle 2

By looking at the test results of the volley ball forearm skill in class XI IPS 1 with the drill method of cycle 1 and cycle 2

Improved After Given Action On Cycle 1 and Cycle 2				
No	Number of improvement	Number of students (Frequency)	Percentage (%)	Remarks
1	-10	1	2,17	
2	-5	6	13,04	
3	0	11	23,91	
4	5	10	21,74	
5	10	17	36,96	
6	15	1	2,17	
Average of improvement		0,43		

Considering the result of the data analysis above we can conclude that the increase of forearm pass ability (score / value) mostly from cycle 1 to cycle 2 is score 2 (score 1) with 36,96% percentage is good enough, but students who do not experience improvement even decline in value / score is also quite large as much as 39.20%. While the average value increase is 0.43 and the average of the scores is 0.87.

3. Increase in value from pre cycle to cycle 2

By looking at the test results of the volley ball forearm skill in class XI IPS 1 with the drill method of pre-cycle and cycle 2

Improved After Given Action On Prasiklus and Cycle 2				
No	Number of improvement	Number of students (Frequency)	Percentage (%)	Remarks
1	-10	1	2,17	
2	-5	1	2,17	
3	0	4	8,70	
4	5	11	23,91	
5	10	14	30,43	
6	15	6	13,04	
7	20	8	17,39	
8	25	1	2,17	
Average of improvement		0,99		

Considering the result of the above data analysis, we can conclude that the increase of forearm pass capability (score / value) mostly from pre-cycle to cycle 2 is score 2 (score 1) with 30,43% is good enough, but students who do not increase and even decrease value / score is still there although the percentage is relatively small that is as much as 4.34%. While the average value increase is 0.99 and the average of the scores is 1.98.

4. Increase the value from cycle 2 to cycle 3

By looking at the test results of volcanic forearm pass volleyball in class XI IPS 1 with the drill method of cycle 2 and cycle 3

The table of values increases after the action is given in cycle 2 and cycle 3				
No	Number of improvement	Number of students (Frequency)	Percentage (%)	Remarks
1	-10	0	0	
2	-5	0	0	
3	0	3	6,52	
4	5	22	47,83	
5	10	20	43,48	
6	15	0	0	
7	20	1	2,17	
8	25	0	0	
Average of improvement		0,72		

By considering the results of the data analysis above we can conclude that the increase of the ability of forearm pass (score / value) from cycle 2 to cycle 3 is score 1 (value 0,5) with percentage 47.83% is relatively good, and better are students who do not experience a relatively small increase of 6.52% and even no impairment score / score. While the average value increase is 0.72 and the average score increase is 1.43.

5. Increase the value from pre-cycle to cycle 3

By looking at the test results of volley ball forearm skill in class XI IPS 1 with drill method from pre-cycle and cycle 3

Table Improvement Before Given Action On Pre cycle And After Given Action In Cycle 3

No	Number of improvement	Number of students (Frequency)	Percentage (%)	Remarks
1	-10	0	0	
2	-5	0	0	
3	0	0	0	
4	5	2	4,35	
5	10	10	21,74	
6	15	14	30,43	
7	20	9	19,57	
8	25	10	21,74	
9	30	1	2,17	
Average of improvement		1,71		

From the above data calculation results obtained analysis of increased learning outcomes forearm pass before given repetition on prasiklus and after given repetition in cycle 3 is as follows:

Considering the results of the above data analysis, we can conclude that the increase of forearm pass ability (score / value) mostly from pre-cycle to cycle 3 is score 3 (value 1.5) with a very good percentage 30.43% and it turns out after it is given repetition of cycle 1, cycle 2, and cycle 3 then all students have increased the ability of forearm pass (score increase). While the average value increase is 1.71 and the average score increase is 3.41.

B. Interpretation of Research Data

1. Before repetition (pre-cycle)
   a. The maximum value before the given forearm pass loop is 70.0, while the lowest value is 45.0 then the range is 25.0
   b. The value 55.0 gets the highest frequency
   c. Students who score 55.0 down, 31 students (67.39%)
   d. Students who scored 60.0 and above were 15 students (32.61%)
   e. The average value before the given forearm pass loop is 11.0 (score average 55.0)
2. After repeated until cycle 3
   a. The maximum value in cycle 3 is 85.0, while the lowest value is 60.0, the range is 25.0
   b. Value 70.0 gets the highest frequency of 14
   c. Mode (score that get highest frequency = value 65.0)
   d. Students who score 70.0 and above are 43 students (93.47%)

By comparing the acquisition value / score on prasiklus with cycle 3 then the method of repetition (drill) proved to increase the ability of forearm pass on the game material Volly Ball is with an average increase of 17.1 without any value / scorenya fixed or decreased.

e. Discussion

To achieve better results requires an effective and efficient training method and research proves that through the method of repetition of the forearm pass exercise is an appropriate exercise because learners are given as much as possible to repeat and repeat the motion so as to obtain a permanent and automatic motion patterns such as has been described before.

Thus, the problems, hypotheses and objectives of this study have been answered based on the results of research obtained.

CONCLUSIONS AND SUGGESTION

A. Conclusions

From the results of the data description, the instrument test in the discussion of this writing, conducted after the first cycle test, the second cycle test and the third cycle of the method of repetition (Drill) forearm pass game volleyball, it can be concluded as follow:

1. The method of repetition (Drill) in a game of volleyball can improve the learning outcome of forearm pass skills
2. Step by step method of repetition (drill);
    a. Preparatory stage;
    b. Implementation stage.

B. Suggestion

Based on the results of Class Action Research, to the teachers of physical education / sports and readers of this scientific paper, there are several suggestions that:

1. To convince the results of this study, to readers of these scientific papers can be presumed to do research again. And the authors suggest with more samples and longer time.
2. To improve students' learning outcomes the authors give suggestions should never be discouraged, bored in finding, develop and try learning methods that are efficient and efficient for the purpose of learning can be achieved well.

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PHYSICAL EDUCATION AND SPORT IN SCHOOLS: APPLICATION SOCCER LIKE GAMES

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Abstract

Objectives: Soccer like games is a game resembles the game of football. Resembles that is how to play with doing the same motion as the movement soccer game, difference lies only in the game approaches and forms of learning, with rule and equipment that can be modified. The purpose of this research to : 1) To know the effect of soccer like games implementation against to cooperate the students in physical education, 2) To know how big the effect of soccer like games implementation against to cooperate the students in physical education.
Methods: The type of research used is quasi-experimental research with quantitative approach. The design of this research, using One Group Pretest - Posstest Design is selected instead of individuals, but groups or areas that are then called clusters.
Results: The result of this research obtained their significan impact on the soccer like games implementation of the cooperation the students in physical education. The result of the T test calculation showed that the value $t_{count} \geq t_{table}$ that is : $t_{count} = 3.171 > t_{table} = 2,208$ and great improvement 3,98%.
Conclusion: There is influence influence soccer like games which significant to student cooperation in learning of physical education, sport and health at student of class VII Junior High School 43 Surabaya. Evidenced by the results of the hypothesis test shows that the value of $t_{count} = 3.171 > t_{table} = 2.028$ with a significant level of 0.05. The effect of soccer like games on student cooperation in physical education, sports and health education at grade VII students of Junior High School 43 Surabaya based on analysis using average can be known equal to 3,98%.

Keywords: Physical Education, Soccer Like Games.

INTRODUCTION

Education is a long-term investment in living life wherever located. Education should also be done as early as possible to improve the quality of life. In general, the function of education is to develop the potential of learners to achieve a prosperous society. According to Amri (2010: 1) Education is "one of the basic needs in human life that think about how to live this life to sustain human life who carry the duty of Allah SWT to worship". Humans as creatures that have advantages in various sides in thinking, acting, and speaking. To cultivate his intellect is needed a pattern of education through a process of learning one of them through physical education. According to Pangrazi and Dauer (1995: 1) in Mikdar (2006: 4) it is generally stated that physical education is "part of the total educational program that contributes primarily, through movement experiences, to the total growth and development of all children". Another opinion about physical education Voltmer, at.al (1978: 91) is: Physical education is the process by which changes in the individual are brought about through movement experiences. Physical education aims not only at physical development but is concerned with the education of the whole person through physical activity. It would be erroneous to believe that only physical responses are involved in physical education activities. The whole organism interacts in any experience and this involves ,mental, emotional, and social, as well as physical reactions. Physical education is a process of change that occurs in individuals through the experience of motion that get from various activities.

In Physical Education there are some materials one of which is football. The game of football is a team sport game or team game played by 11 people, then a good, strong, tough squad is a team consisting of players capable of holding a compact game, meaning having good teamwork (Anwar,

2013: 59). Football includes a team game played by 11 players who have different playing skills and come together into a group. In a group must have one goal that produces an opportunity to achieve a goal. This is in accordance with the opinions expressed by Vilar, Luis, et al (2014: 108) "Successful performance in team sports like soccer is influenced by the ability of players to identify opportunities for actions from their spatial temporal relationships with other players (both teammates and opponents) and key task constraints (such as the location of the sidelines, goal and ball). To achieve a good teamwork requires players who can master the basic techniques and skills of playing soccer, so it can play the ball in all positions and situations quickly, precisely, and carefully means not wasting energy and time. This is in accordance with the opinions expressed by (Colak, 2015) "because working in teams and thereby engaging an environment and context closer to real life increases students critical thinking skills and supports their ability to put theory into practice (Brown, Sivabala, McKenzie, & Booth, 2001)". In learning students are expected to practice what is directed by the teacher, so the problems that arise can be minimized. There is no possibility that any learning gets difficulties in the learning process. In learning students are expected to practice what is directed by the teacher, so the problems that arise can be minimized. There is no possibility that any learning gets difficulties in the learning process. Furthermore Jensen (2007), said playing would give children a chance to learn motor skills, emotional, social and cognitive development in an environment that can support the learning process (Yusmawati, 2014)". Jensen (2007), said playing will give children the opportunity to learn motor skills, emotional, social and cognitive in an environment that can support process learning (Yusmawati, 2014). Therefore, teachers should have the ability to use learning models that are appropriate to the conditions in the school. The model can guarantee flexibility to enable a person who uses a particular model to make adjustments to the situation or condition better. Therefore, researchers are trying to find a suitable model for learners, from some learning models used in physical education such as soccer likes games.

In the process of learning physical education, students are expected to practice the direction given by the teacher, so the problems that arise during learning can be minimized. How to minimize the problem is the model of learning used by the teacher must be in accordance with class condition. One aspect of education that constantly developed through research is the learning process, in an attempt to generate models of appropriate learning (Yusmawati, 2014). The learning model can ensure flexibility so that it is possible to use the appropriate model with conditions, one can adapt to the situation or condition better. Therefore the researcher seeks to find an appropriate model for learners, from some learning models used in physical education sports and health, especially soccer material is soccer likes games. Soccer like games are games that resemble football games. Resembles the meaning of how to play and the motion it performs the same as in the soccer game, the difference lies only in the game approach as well as the forms of learning, and the rules and equipment that can be modified as wide as possible for the benefit of learners' involvement in learning activities [1]. Games are competitive by design, intent to test one's physical ability again another (Malathi, Shabeshan, Salleh, 2011)".

Learning activities with soocer likes games model can be modified, either playing top or ball used, field, how to get bangs, how to start the game, type of game, goal, number of players and neutral players who do not have a group in the game. Games are one of the important components in the physical education curriculum because 65 percent of time spent in physical education is allotted to games teaching and learning (Malathi, Shabeshan, Salleh, 2011)".

Soccer likes this game including the latest model in physical education education sport and health kususnya soccer material. The author is very enthusiastic with this latest model to apply to schools that have limited facilities and infrastructure that exist in school. In this model also need a form of teamwork to achieve a victory in one group. In addition to the cognitive and psychomotor aspects, affective aspects must also be contained in a lesson. In the affective aspect there is an assessment that one of them assess about the cooperation made by students with fellow friends regardless of the differences between them. According to Santosa (2012) cooperation is a form of social interaction where the objectives of one group members are closely related to the goals of the other group

members or the goals of the group members as a whole so that individual individuals can only reach the goal when other individuals also achieve the goal.

In learning soccer material there are shortcomings, including learning areas are still less mamadai and facilities owned are still not complete. Nevertheless the learning of soccer material should remain conveyed to the students in which also must contain the values of attitude in the assessment of the curriculum of 2013 one of cooperation. Cooperation conducted by grade VII students is still lacking because students tend to be passive and feel able to do themselves without the help of friends. Sometimes students prefer to do sports activities that are favored rather than the pursuit material taught by the teacher. Therefore, teachers are expected to be able to use the appropriate learning model and soccer material can be delivered well.

METHOD

Desain

The type of research used is quasi-experimental research with quantitative approach. The design of this research, using One Group Pretest - Posstest Design is selected instead of individuals, but groups or areas that are then called clusters.

Subject

The subject of this research is class VII C as many as 40 students consisting of 18 female students and 22 male students to be a research sample.

Instrument

The instrument used in this study is using a questionnaire cooperation with a scale likert score of 1 to 5.

RESULTS AND DISCUSSION

This study aims to determine the effect of soccer like games on student coorperation in learning physical education in students of class VII C State Junior High School 43 Surabaya. Data analysis was done by using t-test to find out the effect of soccer like games on the cooperation of students giving treatment for 4 times meeting with frequency 1 times a week during physical education and exercise education. Based on the analysis shows that the learning model has a significant effect on the students of class VII C Junior High School of Surabaya. Based on the research that has been done is known that soccer like games provide a more enjoyable experience of the game of football that is usually not only a play experience but also experience in working together to score a number with different game difficulties. It's just that students have to play often in order to form a solid team and can make good strategies in a group in scoring by numbers. In the treatment of soccer like games that have been done at State Junior High School 43 Surabaya there are four games that are transparent goal game, four-wicket game + one joker, cross-game ball, and a game of exciting ball. In the game there are different difficulties so that the students do a good strategy with the group to score numbers, soccer games like games can provide students to be more happy and creative in playing football that previously only use two wicket in the middle field corners and existing rules. The influence of soccer like games can be seen from the results of pre test and post test by using student cooperation questionnaire. from the pre test data obtained an average of 140.49 standard deviation of 8.796 with a variant of 77.368 and the minimum value of 124 and the maximum value of 158. While for the post test obtained an average value of 146.08 standard deviation of 10,608 with variants of 112.521 and a minimum value of 121 and a maximum value of 166.

To see whether there is a significant influence (a matter that states the truth level of the results of a study) between student co-operation in physical exercise education and health education treated with soccer like games is done T-Test Paired samples as a different test. The test criterion is if $t_{count} > t_{table}$ H0 refused and Ha accepted while t count $< t_{table}$ H0 accepted and Ha rejected. The result of hypothesis

testing shows that the value of t_{count} = 3.171> t_{table} = 2.028 and the significance value p of 0.003 <0.05 which means that tcount means greater than ttable. So it can be said that there is a significant influence which means the hypothesis proposed H0 rejected and Ha accepted.

Furthermore, the average difference between pre test and post test results for the average pre test result multiplied by 100%. From the calculation results obtained increased student cooperation in learning physical education sports and health of 3.98%. Test results can be concluded that there is influence soccer like games to student cooperation.

CONCLUSION AND SUGGESTION

Conclusion

From result of research can be concluded that: There is influence influence soccer like games which significant to student cooperation in learning of physical education, sport and health at student of class VII Junior High School 43 Surabaya. Evidenced by the results of the hypothesis test shows that the value of t_{count} = 3.171> t_{table} = 2.028 with a significant level of 0.05. The effect of soccer like games on student cooperation in physical education, sports and health education at grade VII students of Junior High School 43 Surabaya based on analysis using average can be known equal to 3,98%.

Suggestion

From the results of research and discussion that have been found previously, then some suggestions are as follows: 1). Implementation of soccer like games is used as a reference for teachers to teach physical education sports and health for efforts to improve the character of students, especially student cooperation.2). In order to achieve better learning outcomes in soccer learning soccer like games can be applied in learning physical education sports and health so that the students more insight about the game of football. The game can be adapted to the condition of the school and the state of the student so as to facilitate the students in to absorb the material delivered.3). For further research it is advisable to use a game that is more interesting and fun to apply in learning physical education sport and health.

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THE DIFFERENCES OF PHYSICAL FITNESS LEVELS BETWEEN POOR AND EXCESSIVE NUTRITIONAL STATUS

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Objectives: This study aims at finding differences of physical fitness level based on nutritional status, namely poor and excessive nutritional status.
Methods: It was a quantitative research with comparative approach. The sample was the male students of Faculty of Sport Science Universitas Negeri Padang in the aged of 20-23 which was divided into 2 groups. BMI (Body Mass Index) was measured before they were divided into group. After the BMI was measured, there were 20 samples were included into poor nutritional (underweight) status with BMI average status was 17.29 Kg/m^2 and 14 people were in excessive nutritional (overweight) status with BMI average status was 26.42 Kg/m^2. The data was analyzed by t independent sample test with different sample number. The nutritional status was measured through BMI (Body Mass Index) and Physical fitness was measured through 2400 meter test run.
Results: The result of this study is there is a significant difference of Physical fitness between poor nutritional (underweight) status group and excessive nutritional (overweight) status group. It can be seen from $t_{observed} = 2.35 > t_{table} = 1.69$ at the level $\alpha = 0.05$.
Conclusion: Physical fitness is influenced by the nutritional status. Someone with good nutrition will probably have good physical fitness to. In other words, a good physical fitness needs good nutritional status.

Keywords: Nutritional Status, and Physical Fitness.

INTRODUCTION

At this time, many people underestimate the function of exercise and physical activity. This is because many people do not know the importance of physical activities. The physical activity and exercise can improve the physical and even mental health of a person. It is in accordance with (Pelana, 2013) who says that sports have a goal to improve physical and mental health. Physical fitness is related to someone's physical condition to do something. For a student, if he has good physical condition he will be able to learn well as expected. If students are exhausted, it will influence student learning motivation so that students will not be able to learn optimally. So, it will indirectly make the results of learning better. The level of physical fitness is influenced by the type of work, health condition, gender, age, level of trained student, learning motivation and nutritional status (Gusril, 2004: 119). Many factors affect one's physical fitness level and one of the most important is nutritional status. Nutritional status is divided into 3; normal, less (thin) and over (fat). This nutritional factor is intimately associated with someone's physical fitness where a person who has good nutrition will also have a good physical fitness. However, nowadays the more or less nutritional status is also assumed to affect the physical fitness compared to normal nutritional status.

In terms of physiology, physical fitness is the ability of the body to make adjustments (adaptation) to the physical loading given to it (work) without experiencing significant fatigue (Moeloek in Apri Agus, 2012: 23). Furthermore, physical fitness is the quality of a person to perform activities optimally according to his work without causing health problems and excessive fatigue (Suharjana and Purwanto (2008)). So, physical fitness is a reflection of system functions ability in the body that can actualize an improvement in the quality of physical activity. The more physical activity and exercise

performed by a person, the better the physical fitness will be. Performing physical activity and exercise will increase the body's ability to consume oxygen maximally that will automatically affect the fitness of the body.

To form physical fitness, there are ten suggested exercise forms; namely cardiovascular, muscle endurance, muscle strength, flexibility, body composition, velocity, agility, balance, reaction speed and coordination. To achieve the degree of physical fitness, every student is expected to perform these physical activities well in accordance with the portion or procedure that has been established. Components of physical fitness include: 1) Muscle strength is the quality that might cause contraction a group of muscles to the maximum. Muscle endurance is an ability that enables a person to direct the strength of a group of muscles repeatedly (dynamically), whether below the maximum or to maintain contraction within a certain time; 2) Respiratory cardiovascular resistance can be interpreted as physical quality (cardiovascular system, pulmonary circulatory continuously a fairly severe physical work without feeling tired untimely; 3) Muscular power is the ability of the muscles to release the maximum power in the fastest time. Great muscle power is owned by people who have: (a) great strength, (b) high speed, (c) the ability to interact forces and speed; 4) Flexibility is the quality that might cause the maximum muscle stretching without causing injury to the joint where the muscle is located. Speed is the ability to move part or all of the body at a certain distance in the shortest possible time. In addition, speed is a number of movements per unit of time; 5) Agility is defined as a person's ability to change direction or position. In addition, there needs to be good coordination; 6) Coordination is the ability to unite or separate a complex work task. Most dexterity is used in sports that require coordination. Coordination requires agility, balance and speed; 7) Balance is the ability of a person to control neuromuscular organic tools 8) Accuracy is one's ability to control volunteer movements to achieve goals. (Gusril, 2004: 65)

Based on the components above, it does not mean that everyone should be able to develop all of them. Each person has strengths and weaknesses in obtaining components of physical fitness. However, internal and external factors such as nutrition always have an effect toward physical fitness. Physical fitness is also influenced by someone’s heredity, lifestyle, environmental conditions and habits. The immunity is also a very important factor since good physical fitness needs good immunity too. The element of physical fitness includes the ability of system and basic motion.

The function of physical fitness is to develop the ability of every human to enhance the work power. It can be divided into two parts, namely; (a) general functions, (b) specific function. The general function of physical fitness is to develop the strengths, abilities, creativity and endurance of every human being to enhance the work force in the development and the defense of the nation and state. The specific function for children and students is for growth and development and improving achievement (Gusril, 2004: 74). Physical fitness is very beneficial for the child to support physical work capacity and improve cardiovascular endurance, one of which is influenced by body composition. Currently, the prevalence of obesity is increasing significantly around the world along with the decreasing of physical activity (Utari, 2007). Thus, the function of physical fitness for students is to increase productivity as well as achievement in learning and practice. This is in accordance with Habibudin (2011) who explains that the increasing level of physical fitness contributes linearly to the level of academic ability.

Improving the fitness of the body can be done with aerobic exercise. Irawan (2007) explains that aerobic activity is an activity that depends on the availability of oxygen to assist the combustion process of energy sources. So that it will also depend on the optimal work of the body organs such as heart, lungs and blood vessels to be able to transport oxygen in order to the process of energy burning sources runs perfectly. Furthermore Annas (2014) explains that exercise is one factor that can affect one's physical fitness level. A regular exercise will increase cardiovascular endurance and reduce the fat in the body, which means that all organs are trained regularly to adapt the loading given in the lecture.

Aerobic exercises can be jogging, swimming, walking, and cycling. These exercises can be done continuously. They can also improve and maintain cardiorespiratory or aerobic fitness. This is in accordance with Irawan (2007) who explains that this activity is usually a low-moderate intensity exercise. The activities that can be done continuously for long periods of time are such as walking, cycling or jogging. Physical fitness is very closely related to nutritional status. This is because the nutritional status is closely related to the intake of calories. In accordance with Mirza Hapsari Titis Switch, Emy Huriyati (2007) who argued that, there is a positive and significant relationship between caloric intake, lifestyle, physical activity, and nutritional status of athlete stamina.

Nutritional intake also has a relationship to athletes' achievement. The intake of good nutrition is the main requirement to obtain the best body condition and to achieve maximum performance (Sabar Surbakti, 2010). So, if we want to maximally succeed then we must also consider the nutritional status. If the body lacks of nutrients, it can lead to organ function disorders. Besides, the physiological and biochemical systems in the body will ultimately result in disease. Nutrition is classified into six major groups; carbohydrates, proteins, fats, vitamins, minerals, and water. Carbohydrates, proteins and fats are called macro nutrients while vitamins and minerals are called micronutrients. Nutritional status is a condition of every individual that is influenced by food consumption as an indicator of his nutritional status. Children who have good nutritional status will have balanced and healthy growth and development. Thus, a healthy child will perform his duties everyday well.

Excessive nutritional status will also lead to excessive weight problems (overweight) (Wells in Toho, 2004: 131). As a result, students who have excessive weight will find difficulties related to his motor ability. It is because there is no balance between the body and the center of gravity. Besides, it also requires enormous energy. On the contrary, if the child's nutritional status is low, surely he will not move well and consequently has low motor skills. The measurement of nutritional status is calculated by weight distribution (BB) in kilograms with height (TB) in squared meters (BMI = BB / TB2). Nutritional status is categorized as thin when BMI <18.5, Normal when BMI 18.5-25.0 and obese if> BMI. Some cross-sectional data also indicate that there is a negative relationship between BMI and physical activity, indicating that obese people have less physical activity compared to lean people. However, it is difficult to determine whether people have less activity because of his obesity or less physical activity that causes a person suffering from obesity (Hadi, 2004).

Nutrients in the body involve carbohydrates, fats, proteins, vitamins, minerals and water. The balance between the energy intake and expenditure is a factor related to nutritional status (Miko et al, 2010). So to achieve a balance between energy intake and expenditure, there should be food provision considering the age, sex, type of activity, other conditions such as pain and others. Furthermore, Dawn (2008) explains that the formation of body fat with the ratio of muscle mass is regard to performance. This means that nutrition is very influential on the performance and appearance of a person, including for the fitness of body.

METHODS

This was a quantitative research using comparative method. The sample was male students of Faculty of Sport Science Universitas Negeri Padang in the aged between 20-23 years who were divided into 2 sample groups. Before they were divided, the body mass index (BMI) was measured firstly. After the BMI was measured, 20 samples were included in the nutritional status of underweight with a mean of BMI was 17.29 kg / m2, and 14 people in obese nutritional status with a mean of BMI was 26.42 kg / m2. The data was analyzed by t independent sample test with different sample number. The nutritional status data was gathered by measuring body mass index (BMI) and the physical fitness was measured by using 2400 meter test (Cooper Test) following these test norms:

No.	Interval Class	Classification
1.	< 9.45	Well-trained
2.	9.45-10.45	Very Good
3.	10.46-12.00	Good
4.	12.01-14.00	Fair
5.	14.01-16.00	Poor
6	> 16.01	Very Poor

Source: Arsil (2015)

The data was analyzed by using t-test to find out the differences of physical fitness between the sample groups who have low and high nutritional status.

RESULTS

A. Data Description

1. Poor Nutritional Status (Underweight)

Based on the research data, 20 samples categorized as poor nutritional (underweight) status had BMI average status as 17.29 Kg/$m^{2.}$. The highest physical fitness score was 9.24 (well-trained category) and the lowest was 14.01 (poor category). The mean score was 11.25 and was categorized as good. In addition, the standard deviation was 1.29. The distribution frequency of physical fitness of low nutritional status group is shown in the table below.

Table 1. Frequency Distribution of Physical Fitness Data for Normal Nutrition Status Groups

No.	Score Interval	Absolute Frequency	Relative Frequency (%)	Classification
1.	< 9.45	1	5.00	Well-trained
2.	9.45-10.45	4	20.00	Very Good
3.	10.46-12.00	8	40.00	Good
4.	12.01-14.00	6	30.00	Fair
5.	14.01-16.00	1	5.00	Poor
6	> 16.01	0	0.00	Very Poor
	Total	20	100	

Based on the calculations in the table above, it can be seen that: 1 person or (5%) was in well-trained category, 4 persons or (20%) were in excellent category, 8 persons or (40%) were in good category, 6 persons or (30%) were in fair category, and 1 person (5%) in the poor category. For more details, it can be seen in the histogram below:

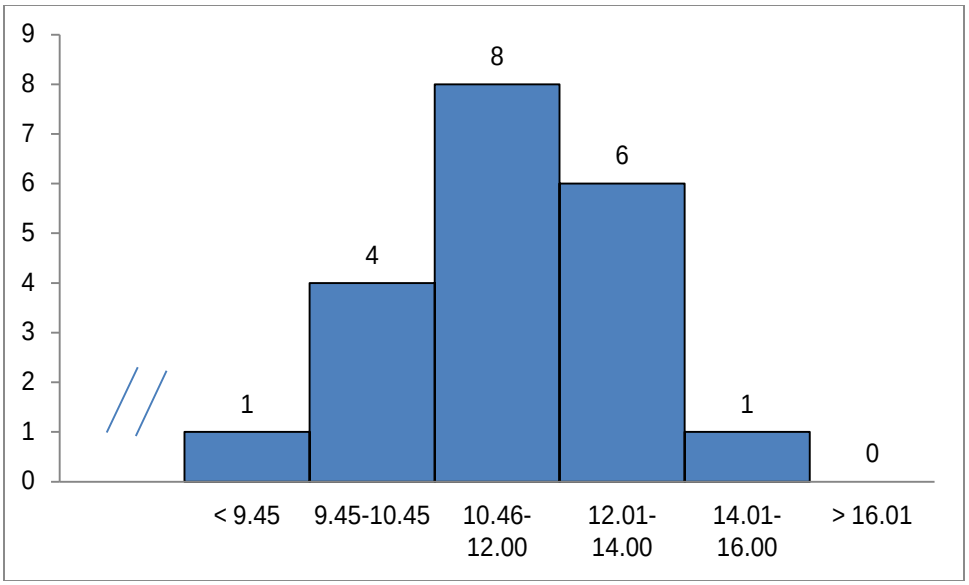

Figure 1: Histogram Frequency of Physical Fitness Data for Low (underweight) Nutritional Group

2. Excessive Nutritional Status Group (Overweight)

Based on the data, the group of excessive nutritional status (14 samples) obtained body mass index average (BMI) was 26,42 Kg / m2. The highestphysical fitness score was 10.53 and was in the good category and the lowest score was 18.36 and was in very poor category. The mean score was 12.51 and was categorized as fair. In addition, the standard deviation was 2.07. The distribution frequency of physical fitness of excessive nutritional status group is shown in the table below.

Table 2. Distribution Frequency of Physical Fitness Data for Group of Excessive Nutritional Status

No.	Score Interval	Absolute Frequency	Relative Frequency (%)	Classification
1.	< 9.45	0	0.00	Well-trained
2.	9.45-10.45	0	0.00	Very Good
3.	10.46-12.00	7	50.00	Good
4.	12.01-14.00	6	42.86	Fair
5.	14.01-16.00	1	7.14	Poor
6	> 16.01	0	0.00	Very Poor
	Total	14	100	

Based on the calculations in the table above, it can be seen that: 7 people or (50%) were in good category, 6 people or (42,86%) were in the fair category and 1 person or (7.14%) was in the very poor category . For more details, it can also be seen in the histogram below:

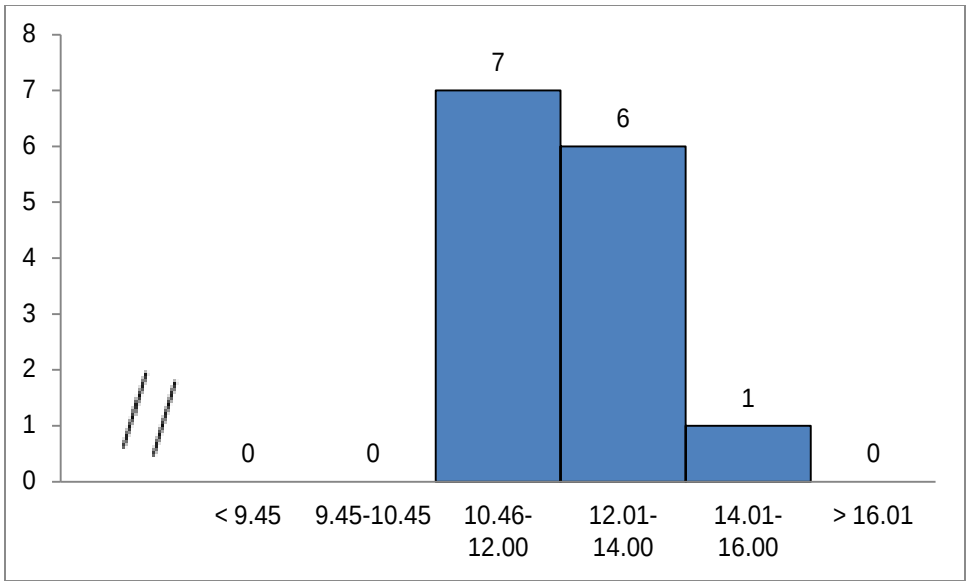

Figure 2: Histogram Frequency of Physical Fitness Data For Group of Excessive Nutrition Status

B. Hypothesis Testing

Here are the descriptions of the hypothesis testing:

Different Level of Physical Fitness between Underweight (Poor Nutritional Status) and Overweight (Excessive Nutritional Status)

The statistical test used was t-test to see the effect of the average count (mean) in the same group with a significant level of 0.05. The mean of physical fitness test for poor nutritional status group was 11.15 while the mean of physical fitness test for excessive nutritional status group was 12.51. The results of hypothesis testing are presented in the following table.

Table 3. Summary of Hypothesis Testing Results

Group	Mean	$T_{observed}$	t_{tabke}	Testing Result	Note
Poor Nutritional Status	11.15	2.35	1.69	Signifikan	H_0 ditolak dan Ha diterima
Excessive Nutritional Status	12.51				

Based on the table above, it can be seen that $t_{observed} = 2.35 > t_{table} = 1.69$. It means that the research hypothesis is acceptable. Thus it can be concluded that there is a significant difference of Physical Fitness between Poor Nutritional Status Group (underweight) and Excessive Nutritional Status Group (overweight). It can be seen that the physical fitness mean score of the poor group was better than the other one.

C. Discussion

Different Level of Physical Fitness between Underweight (Poor Nutritional Status) and Overweight (Excessive Nutritional Status)

Nutritional status is a condition of every individual that is influenced by food consumed as an indicator of his nutritional status. For adults, nutritional status is closely related to physical fitness. This is because the nutritional status is closely related to the intake of calories. There is a positive and significant relationship between caloric intake, lifestyle, physical activity, and nutritional status of athlete stamina. So, if we want to maximally succeed then we must also consider the

nutritional status. If the body lacks of nutrients, it can lead to organ function disorders. Besides, the physiological and biochemical systems in the body will ultimately result in disease. Nutrition is classified into six major groups; carbohydrates, proteins, fats, vitamins, minerals, and water. Carbohydrates, proteins and fats are called macro nutrients while vitamins and minerals are called micronutrients.

Physical fitness is something that is influenced by physical activity and exercise. The more sports activities and exercises a person performs the better the physical fitness level. This is due to physical activity and exercise will increase the body's ability to consume oxygen maximally. If the body has been able to increase the consumption of oxygen maximally, then it will automatically affect the level of physical fitness. Maintaining health and efforts to improve physical freshness is an important factor that should be considered. This is because the energy in doing these activities is closely related to absorbed nutrients. The balance between energy intake and energy expenditure is a factor associated with nutritional status. So, to achieve a balance between energy intake and energy expenditure, there should be food provision which consider the age, gender, other activities such as illness and other conditions. This means that nutrition is very influential on the performance and appearance of a person, including also for the fitness of body.

Sepriadi (2017: 77) further explains that the nutritional status has a significant contribution to the level of physical fitness as much as 7.54%. This means that the nutritional status will contribute quite large to improve physical fitness. So, the nutritional factors also need to be considered in an effort to improve physical fitness. However, there are also very important factors to note like motivation, exercise, lifestyle and more. Sepriadi further (2017: 77) also explained that the motivation factor has a role as much as 15.93% of physical fitness. Exercise factor is also very important because with regular practice it will increase physical vitality. This is because exercise will impact on the fitness if it is done regularly, continuously and sustainably.

Based on the research data, it was found that the poor nutritional sample group was better than the excessive nutritional sample group in terms of physical fitness. This is because the skinny students have lighter body than the fat ones so that it is easier for them to perform a physical fitness test. In addition, due to the fat students were heavier, it influenced their ability to move slower because of the load carried was bigger than the thin ones. So, the fat students will be tired fastly than the thin ones.

Based on the above explanation, it can be seen that nutrition has a contribution in physical fitness. With good nutrition, it will create a good physical vitality as well. Conversely, with poor or excessive nutrients will also affect the vitality. However, excessive nutrition status will likely experience more fatigue than the normal or the poor ones because of the body weight.

CONCLUSION

The result of this study is there is a significant difference of Physical Fitness between Poor Nutritional Status Group and Excessive Nutritional Status Group. It can be seen from $t_{Observed} = 2.35 > t_{table} = 1.69$ using the significance level $\alpha = 0.05$. Thus, physical fitness is influenced by the nutritional status because having good nutrition will allow someone to have good physical fitness. So that it is important to consider the nutritional status even more.

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THE STUDY OF KNOWLEDGE ABOUT FIRST AID (P3K) AND BASIC LIFE SUPPORT PRINCIPLES IN YOGYAKARTA COMMUNITY

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Abstract

Objectives: We quite often faced a condition where we are dealing with someone who had an accident or disruption in the physical conditions that are sudden and unexpected. The victim needs first aid should be done as early as possible or even basic life support should be given to reducing and eliminating the risk of injury, disability, or even death. Basic life support is part of first aid (known as P3K). This research aim is to know and predict social phenomena that occur in the community related their knowledge about first aid and basic life support.
Methods: This is a survey research conducted by quantitative methods; data collection techniques conducted by *survey method* with the research instrument in the form of a questionnaire which consist of 32 questions. Respondents are 235 members of the public, taken by *area probability sampling method*, with minimal age 17 years old, not the medical personnel. Who are then given a questionnaire to assess knowledge about first aid (P3K) and Basic Life Support principles. Respondents were from five existing city district in the Yogyakarta province (Yogyakarta city, Sleman, Bantul, Gunungkidul, and Kulonprogo), with their diversity in gender, age, occupation, and educational level. Data presented descriptively in the form of percentage.
Results: The results showed that the overall average scores obtained by respondents are 74.7 points, thus can be assumed that majority of respondents knowledge about first aid and basic life support quite good. Whereas when grouped by category: 51.49% of respondents included in good category, 44.68% included in the fair category, and the rest is just 3.83% of the respondents have a score that is included in the poor category.
Conclusions: In Brief, we present a social fact that majority of Yogyakarta society have well knowledge about first aid and basic life support.

Keywords: Knowledge, First aid, Basic life support.

Introduction

High or low numbers of mortality in a country is an indicator of health care services quality and public knowledge and awareness level to health. Although many health problems associated with chronic and degenerative diseases, we often encounter the occurrence of sudden health disorders of a person, it could be that it appears as a trigger factor, but sometimes occur due to accidents. Accidents can happen anywhere and at any time, in the workplace, the highway, even though inside the house that many people assume as the safetiest place. Statistics show the death victims caused by accidents is still high. Based on World Health Organization (WHO) data, the number of deaths due to accidents on 2014, Indonesia became the country with the highest number of deaths due to accidents in the world. "In fact, based on WHO data, Indonesia reached the fifth most casualties due to accident after China, India, Nigeria and Brazil" (M. Luthfi Andika, 2014).

Oftentimes we encounter a case of death due to mismanagement when providing first aid, first aid for someone who has physical disorders either due to certain diseases or accidents should be dealt with not only fast, but also appropriate. Unfortunately, not many ordinary people have knowledge about how to help people, and even some of them do not consider it is useful and important. So thus, when a person faces a patient with specific illness condition, they do not know what to do? It may just be silent, seek help, or even provide assistance with equipment and relief mechanisms that are not necessarily true. If that happens, then there will be more possibilities that patients will experience more traumatic conditions or even increase the risk of injury and death as the worst.

First aid (P3K) is an attempt to provide first aid to a person who has an accident, injury, or experiencing a disruption to physical health prior to the intensive care of a paramedic or other

competent health worker. Before giving help, it's good to firstly know the specific things related to the victim's self, it is very useful and helpful to determine the next steps of rescue.

Basic life support (BLS) is an action to provide basic life support as soon as possible and aims to restore the respiratory and / or circulatory function of a person with breathing problem or cardiac arrest. As we know that basic requirements for life, the well conditions of circulatory function and good breathing function. If both systems are interrupted, will be able to cause cardiac arrest and stop breathing that can lead to the death of a person.Based on the background that have been mentioned above, the focus of the problem that formulated in this research is: the level of society knowledge, especially in Yogyakarta about first aid (P3K) and basic life support.

The research purpose is to know the society knowledge level about basic first aid and basic life support principles. The results of this study provide benefits, including: Provide an overview of community knowledge related to First Aid and basic life support. And hopefully, it could be one of the basic considerations for the relevant institutions, as the basis for the preparation and implementation of public health training programs in Yogyakarta.

Methods

Research method is basically a scientific way to get data with a specific purpose and usefulness (Sugiyono, 2011: 2). This research type conducted as quantitative research using survey method. Survey method or completely known as *self-administered survey* is the primary data collection method by providing questions to individual respondents. So it can be concluded that the survey is a method to collect information from groups representing a population. Meanwhile Survey sampling means survey activity using sampling, means that not all units of population are observed one by one and analyzed, nevertheless partially which represented by the sample. The sampling process used is probability sampling method. People who became subjects in the research furtherly called respondents. The respondents of this study are the general population living in Yogyakarta. The research respondents consisted of 235 people from all of the city districts in Special Region of Yogyakarta Province (five districts). The method to collecting research data is by observation. For that purposes, specific instruments are needed, including: Respondents data form and first aid (P3K) and basic life support Questionnaire.

Data collection process performed based on the following stages of implementation: firstly, to determine the research respondents, then respondents were given an explanation of the purpose and the use of research. After that, respondents fill out the data form of identity provided. Lastly, respondents answered the questions in the questionnaire related first aid and basic life support principles. After research data obtained, and then performed processing and analysis of research data. Data obtained from this research are: Respondent identity and respondent characteristics data. Data on knowledge level of first aid principles and basic life support. The analytical technique used to process the data of the research is observational statistical analysis that presented quantitatively (percentage). The results of the scores obtained from the respondents' questionnaire, then analyzed and grouped into three categories, namely:

a. Good, if respondents get score 76% -100% of all questions
b. Fair, if respondent get score 56% -75% of all questions
c. Bad, if respondent get a score 40% -55% of all questions

(Arikunto, 2010)

Results

A study aimed to knowing knowledge level of First aid (P3K) Principles and basic life support. The researcher does not impose limits or special criteria except age limits assuming that accidents or unforeseen circumstances causing harm or injury can occur anytime and anywhere. Whereas, the minimum age restriction is intended to determine the ability to provide help, and the responsibilities that are already attached to a certain age limit. The research data was collected by five students as research assistant in the field, who had previously coordinated and given supervision related to the purpose and stages of the implementation process that must be done.

Respondents Characteristics

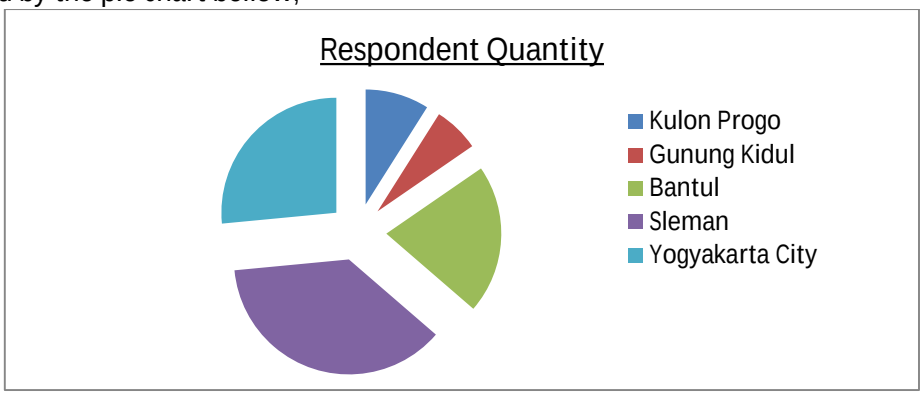
Research respondents are 235 people who live in Yogyakarta special regions province. The research data is taken incidentally by considering the diversity of residence, age, gender, occupation, and recent education in between August – September 2016. Based on sex differentiation, the respondents' wich totaly 235 people are consisted of 116 (49.36%) men and 119 (50.64%) women. The number between is not entirely precise, because when taking the data done randomly.

Distribution of respondents by residence, divide into five groups based on the existing District in the Special Region of Yogyakarta. Although not in the same amount, but expected to make the representation of each district. Distribution of respondents can be seen in the following table:

Table 1. Respondent place of origin distribution

Districts	Kulon Progo	Gunung Kidul	Bantul	Sleman	Kota Yogyakarta
Number of Respondents	21	15	49	87	62
Persentage	8.94	6.4	20.85	37	26.4

Based on the table of respondents' distribution, it is clearly seen that the majority respondents came from Sleman Regency (37%), while Gunung Kidul Regency experience the lowest (6.4%). Thus easily captivated by the pie chart bellow,

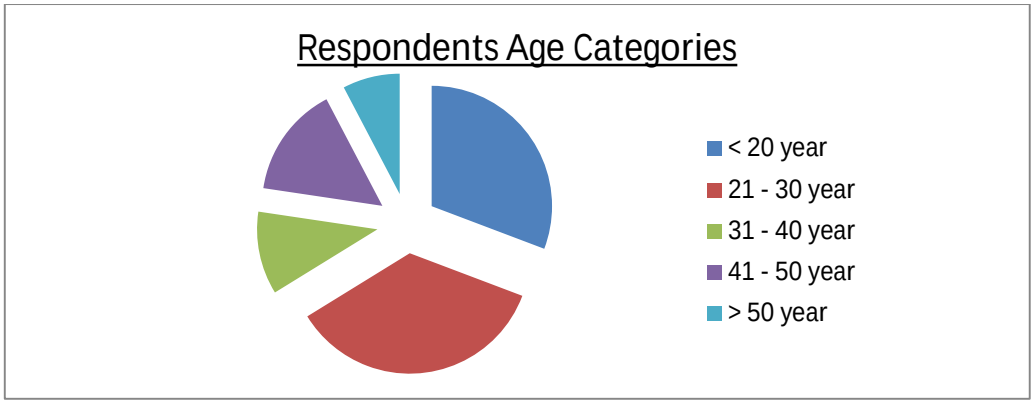


Distribution of respondents by age are grouped by five categories, the following table presents data on the age distribution of the respondents:

Table 2. Respondent age distribution

Age categories	<20 year	21-30 year	31-40 year	41-50 year	>50 year
Number of Respondent	72	83	26	35	18
Percentage (%)	30.64	35.32	11.10	14.9	7.66

It is shows that most respondents come from the age range category 21-30 years (35.32%), the lowest are respondents in the age group >50 years as much as 7.66%.

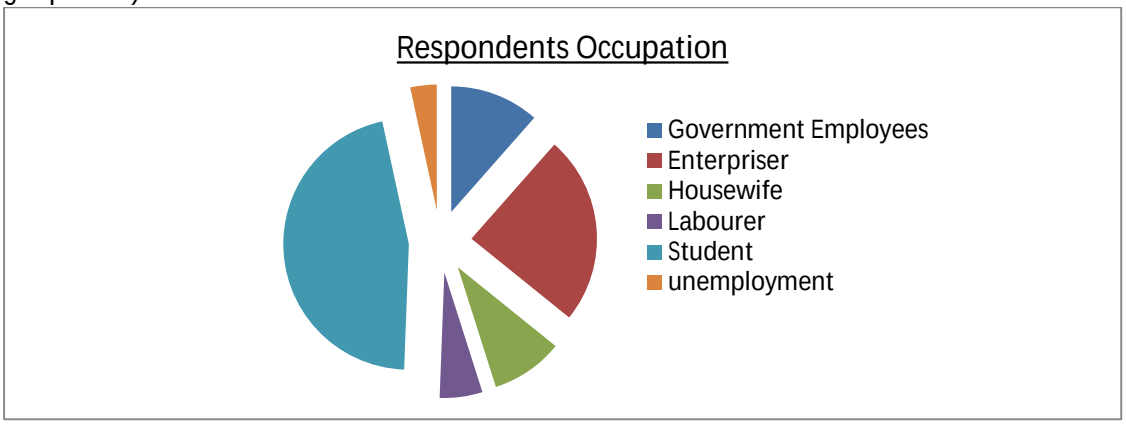


Respondents have different occupation, as illustrated in the table below:

Table 3. Respondent occupation distribution

Occupation	Government employees	Enterpriser	Housewife	Labourer	Student	unemployment
Number of Respondent	27	57	22	13	108	8
Percentage	11.5	24.3	9.3	5.5	46	3.4

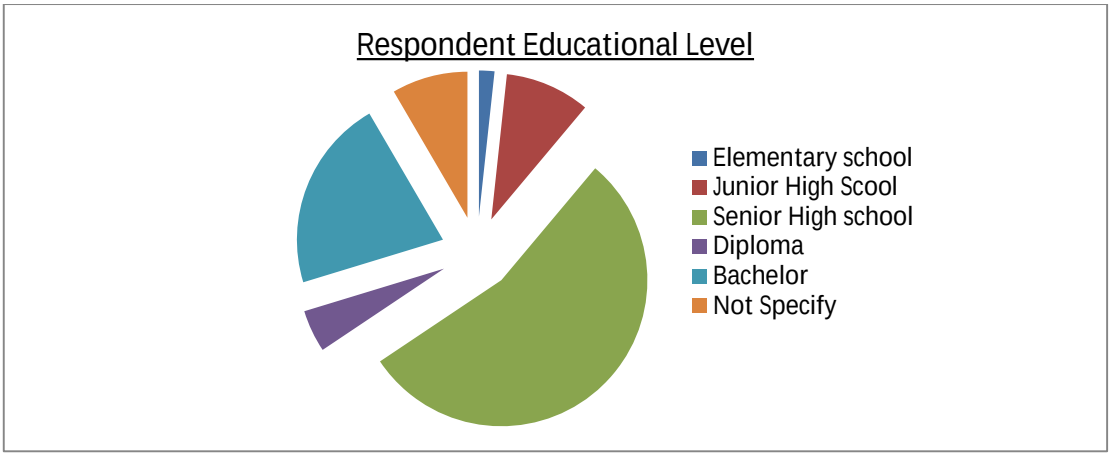
The table shows the diversity of respondents' proportion. Based on the data it appears that the highest percentage comes from the students that is equal to 46% (108 person) while only a small part of the respondents who come from the group that is not working/unemployment counted by 3.4% (eight person). As seen in the chart bellow:



Distribution of respondents based on recent education or the last education is also the researcher's point of view need to be known, because one factor that are very influential on the level of one's knowledge would be greatly influenced by educational level. It is summarized in the following table and pie chart:

Table 4. Respondent education levels distribution

Last Educational level	Elementary school	Junior high school	Senior high school	DIPLOMA	Bachelor	Not specify
Number of Respondent	4	22	128	11	50	20
Persentage (%)	1.71	9.4	54.5	4.68	21.3	8.41



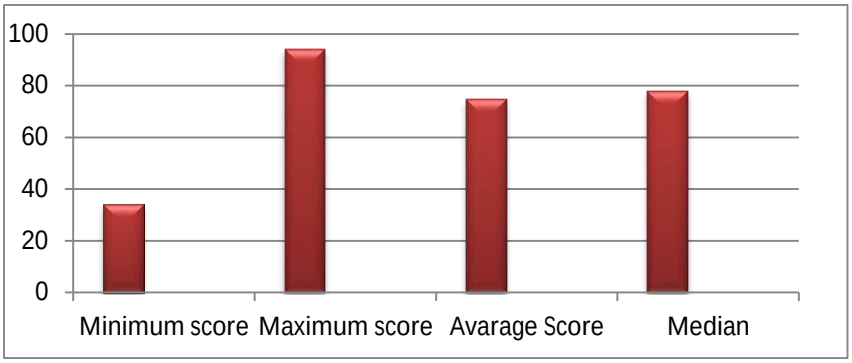
Level of Knowledge on First Aid and Basic Life Support Principles in Yogyakarta Community

The data research is discrete data which considered as nominal data, it is because each category has its own character and separated, or having no relation with other category. Based on the questionnaire given to the respondents with the total score 100 (if the answer is 100 percent true), obtained statistical data as follows:

Table 5. Respondent score

Minimum Score	Maximum score	Mean	Median	St.Deviasi
34	94	74.7	78	8.92

The table provides information about the lowest score obtained from all respondents is 34 points with a highest score is 94 points. The average value of the respondent's answer is 74.7 points, while the middle value is 78. The standard deviation of the questionnaire is 8.92. As clearly seen on the chart bellow:



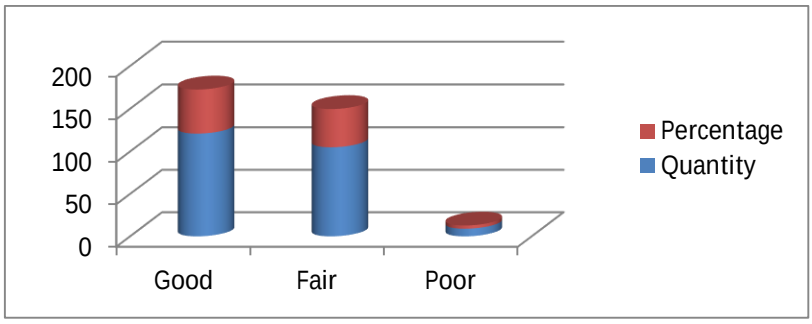
Based on scores obtained from the questionnaires given to the respondents, then grouped by three categories namely poor, fair, and good. The respondents obtained the following results:

Table 6. Score Categories

Categories	Amount	Percentage
Good category (76-100)	121	51.49 %
Fair category (56-75)	105	44.68 %
Poor Category (40-55)	9	3.83 %
Jumlah	235	100 %

Arikunto (2010)

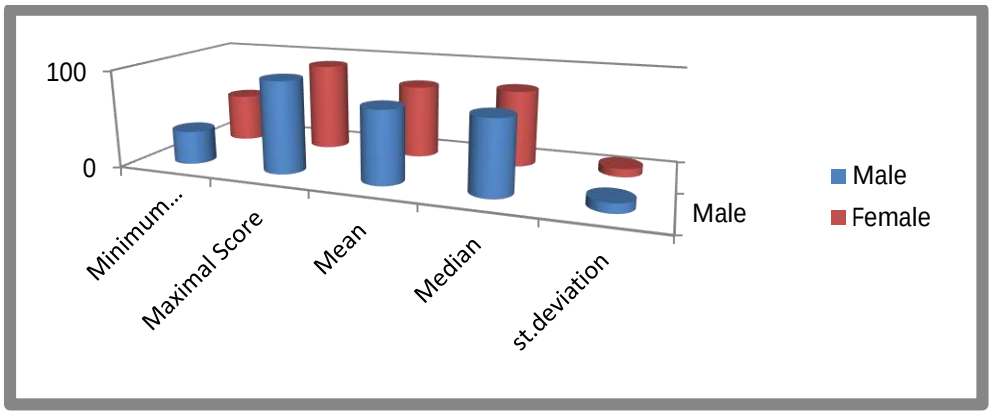
The table shows that most of the respondents have knowledge that included into good category, and only a few are included in the poor category. To make easier to identify the ratio comparison, it is depicted in the bar chart below.



Sometimes sosio-econimic either cultural background and gender differences affect the level of knowledge, attitude, and behavior. Based on the scores of respondents in the study of how knowledge of first aid and basic life support principles in the community shows the difference scores between men and women. However, the difference is not too prominent, which is seen from the difference in the average score is only 1.09 points. Acquisition of statistics based on respondent sex differentiation can be seen in the following tables and diagrams.

Table 7. Respondent score distribution

Gender	Total score	Minimal score	Maximal score	Mean	Median
Male	7930	34	94	74.11	75
Female	8723.5	50	91	75.2	78



From the diagram, can be seen the most interesting fact is that the male respondent experienced the highest score either the lowest. The maximal score achieved by female respondents is only three points lower compare to male respondent, nevertheless, the smallest score achieved by female respondent is higher sixteen point than male.

Discussion

Knowledge and attitude is one's response to Stimulus (Covert behavior), acts (behavior) someone in response to stimuly is an over behavior one's actions (practice) a person is not based on knowledge and attitude. Knowledge is the result that occurs after the senses through seeing, hearing, smelling and feeling. Knowledge or conguitive is a very important dominant for the formation of a person's actions (covert behavior). In another sense, knowledge is the various human phenomena to encounter and acquires through the observation and analysing. Knowledge arises when a person use the senses to recognize a thing that event has never been seen or felt before.

There are two main types of knowledge viewed from the subject of explicitity: (1) Implicit Knowledge, implicit knowledge is knowledge that is still embedded in the form of one's experience and contains non-tangible factors such as personal beliefs, perspectives, and principles. A person's silent knowledge is usually difficult to transfer to others either in writing or orally. The ability to

speaking, designing, or operating a complicated machine or tool that requires knowledge that is not always explicitly visible, nor is it so easy to transmit it explicitly to others. A person with implicit knowledge usually does not realize that actually has it and how it can benefit others. To get it, it takes learning and skill, but not necessarily in written forms. Implicit knowledge often contains habits and cultures that we do not even realize. (2) Explicit Knowledge, Explicit Knowledge is knowledge that has been documented or stored in the form of a media or the like. It has been articulated into formal language and can be relatively easily disseminated widely. Information stored in the encyclopedia (including Wikipedia) is a great example of explicit knowledge. Knowledge can also be provided audio-visual. The work of art and product design can also be viewed as a form of explicit knowledge which is the externalization of human skills, motives and knowledge.

Knowledge and attitude is one's response to stimuli and accepted by the human senses, also defined as a phenomenon encountered and obtained by human sense observation. Knowledge arises when a person uses the sense to recognize a thing or event that has never been seen or felt before. A person's knowledge is influenced by several factors, including: formal and non formal education, information from mass media, socio-cultural and economic, environmental, experience, and age. A person's knowledge of an object also contains two aspects: positive and negative aspects. These two aspects will ultimately determine a person's attitude toward a particular object. The more positive aspects of a known object, the more positive the attitude toward the object will grow.

Information that encountered in everyday life, derived from data and observations of the world around us and transmitted through communication. A person can increase knowledge even if he does not do it, because he observes the habits of others around. The economic status of a person will also determine the availability of a necessary facility for a particular activity, so that this socioeconomic status will affect one's knowledge. The environment affects the process of knowledge entrance into the individuals residing within the environment. This happens because the interaction of reciprocity that will be responded as knowledge by each individual. Age is very influential, increasingly aged will also develop the ability to catch and the mindset, so that knowledge gained better.

A person's level of knowledge will then lead to attitudes and behavior patterns, as expressed by H. Abu Ahmadi (1999: 171) which states that a person's attitude is not only shaped by internal factors, but also strongly influenced by external factors, which are the result of both, communication and social interaction. A person's motivation to have specific knowledge is also driven by need. Knowledge of health and safety is considered important, because one's primary need is to live healthy. Knowledge aims to supports and guided how to behave when there are families members become victims of accidents or health problems suddenly. Because bad things happen beyond prediction so we must not only have knowledge, but also be able to apply practically the skills we have.

Males have a higher risk of mortality from unintentional injury than females at all ages below 20 years, apart from the under 1-year olds in low and middle income countries, and for all injury types except fire-related deaths, also in low and middle income countries (WHO, 2008). It is very different from research data showing that the highest score is obtained by males, who should go hand in hand with the ability to eliminate the occurrence of injuries.

As mentioned by Lotte Newman (2009) there are many types of injuries including: Animal bites, Asthma attack, Bone, joint and muscle injuries, foreign bodies in the eye, Head injuries, Insect stings, and Burns. Those injuries are commonly happened in children as consequences of the abundance physical activity undertaken in an attempt to improve the skills and movement experience. The most commonly reported activities contributing to injuries were play, sport, and transport (Lina Gyllencreutz, Ewa R., and Britt IS, 2013). Narrowly in sport it self, The ICECI (International Classification of External Causes of Injury) define a ‘sports injury event’ as ‘any incident taking place while participating in sports and exercise-related activities and resulting in injury’ and define ‘sports and exercise’ as ‘physical activity with a described functional purpose, for example, competition, practicing for competition, improving physical health’ (WHO–ICECI, 2004)

Therefore, it is a must for people to mastering basic first aid skills. First aid (P3K) is an attempt to provide first help to a person who has an accident, injury, or is experiencing a disruption to physical health prior to the intensive care of a paramedic or other competent health worker. At the time before giving help it is better to firstly know the specific things related to the victim's self, which is very useful and helps to determine the next steps of rescue.

For instance, as soon as possible after an injury, such as a knee or ankle sprain, the very first to do is to relieve pain and swelling and promote healing and flexibility with RICE- Rest, Ice, Compression, and Elevation. (1) Rest. Rest and protect the injured or sore area. Immobility, or take a break from any activity that may be causing your pain or soreness. (2) Ice. Cold will reduce pain and swelling. Apply an ice or cold pack right away to prevent or minimize swelling. Apply the ice or cold pack for 10 to 20 minutes, 3 or more times a day. After 48 to 72 hours, if swelling is gone, apply heat to the area that hurts. Do not apply ice or heat directly to the skin. Place a towel over the cold or heat pack before applying it to the skin. (3) Compression. Compression, wrapping the injured or sore area with an elastic bandage (such as an Ace wrap), will help decrease swelling. Not to wrap it too tightly, because this can cause more swelling below the affected area. Loosen the bandage if it gets too tight. Signs that the bandage is too tight include numbness, tingling, increased pain, coolness, or swelling in the area below the bandage. Talk to doctor if need to use a wrap for longer than 48 to 72 hours; a more serious problem may be present. (4) Elevation. Elevate the injured or sore area on pillows while applying ice and anytime you are sitting or lying down. Try to keep the area at or above the level of your heart to help minimize swelling (NN, 2013).

Basic life support (BLS) is a handling measure to provide basic life support as soon as possible and aims to restore the respiratory and/or circulatory function of a person with cardiac arrest. Because of the basic requirements for life is the good function of blood circulation and respiratory system. The purpose of First Aid is generaly devided in to two, as the following: (1) Saving lives or preventing death: by doing observation and eliminating the conditions and circumstances that threaten the victim, carry out Cardiopulmonary Resuscitation (CPR) if necessary; Seek and deal with bleeding to prevent more severe disabilities (prevent worsening conditions). Conduct diagnosis to handling the victim with priority. Pay attention to hidden conditions or diseases. (2) Supporting healing process: Reduce pain and fearness. Prevent infection. Devise a medical help and victim transportation appropriately.

The purpose of providing basic life support is to maintain adequate ventilation and circulation until a means can be obtained to alter the cause of the physical disorder (Handley, 1997). In addition, basic life support also aims for effective emergency oxygenation of vital organs such as brain and heart. If both systems are interrupted will be able to cause cardiac arrest and stop breathing that can lead to someone's death. Based on data obtained from this study, it is known that the number of deaths due to accidents or mismanagement is not due to the ignorance of the community about the principles of first aid in accidents and basic life support theories. The assumption is built on the fact that the score of the questionnaire shows the level of community knowledge of it, is mostly in the good category reached by 121 respondents from a total of 235 respondents or 51.49%. Only 3.83% of respondents are included in the poor category (9 people).

The empirical data indicate a relatively controversial fact as based on previous observations and data, showing the number of deaths from accidents in the 6th (1990) and 9th (2013) ranks of the biggest cause of death in Indonesia (Reny. YA, 2014). Although the number is decreased, nevertheless it still is being a scourge in the community. It is important for government and related institutions, and all stakeholders to conduct a study related to these issues. From the discussion, researcher extending suggestions are: For the community in general, to capably utilize the knowledge that is owned practically, and to applied in everyday life. Because sometimes the knowledge is only limited to the level of theory alone, however, less implementations. For the competent academicians and experts, it is expected to continuously provide additional knowledge and train the community in general, and not only stop to the level of "knowing", but should provide guidance or assistance to the community related to implementation in the field. For relevant instututions as policy makers, in order to well

facilitate the needs of the community, including the ease to use public facilities and social facilities, and implement an effective and efficient administrative process.

Conclusions

Based on the result of the research, it can be concluded that the knowledge of first aid principles on accident (P3K) and basic life support (BLS) in Yogyakarta society generally included in good category.

Acknowledgment

Thanks to students as field workers and research expert collaborator team for much guidance to appropriate sources of information on injury, first aid and basic life support.

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THE INFLUENCE OF TEACHING STYLE AND MOTOR ABILITY ON THE BOTTOM PASSING LEARNING OUTCOMES IN THE VOLLEYBALL

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Abstract

Objectives: This research aims influence teaching style (self training, comando, and divergen) movement ability (high and low) to upon passing learning in volley ball.
Methods: The method is used eksperiment with factorial desain 2 x 3. The population in this research is 241 person with sample 120 person that choiced as random and clarificationed depend on movement student's ability.
Results: The resiult of this resarch show that 1. There is distinction between self training teaching style and the comando to the result of learning up passing all with the value t_{hitung} = 6,357 dan sig = 0,006; 2. There is distinction between self training teaching style and the divergen to the result of learning up passing all with the value t_{hitung} = 9,019 dan sig = 0,000; 3. There is distinction between self training teaching style and the divergen to the result of learning up passing all with the value t_{hitung} = 8,653 dan sig = 0,000 ; 4. There is interaction between (self training, comando, and divergen) and ability movement (high and low) the result of up passing all as with value F_0(AB) = 36,557 dengan p-value (sig) = 0,000; 5. There is distinction between self training teaching style and comando to the result up passing ability to students ability of movement high with value t_0 (A_1B_1- A_2B_1) = 6,126 and p-value (sig) = 0,000; 6. There is distinction between self training teaching style and divergen the result of up passing to the student's ability of movement high with value t_0 (A_1B_1- A_3B_1) = 9,633 and p-value (sig) = 0,000; 7. There is distinction between self training teaching style of comando and divergen the result of up passing to the student's ability of movement high with value t_0 (A_2B_1- A_3B_1) = 3,507 and p-value (sig) = 0,0005. 8. There is distinction between self training teaching style of comando and the result of up passing to the student's ability of movement low with value t_0 (A_1B_2- A_2B_2) = -5,752 and p-value (sig) = 0,000; 9. There is distinction between self training teaching style of divergen and the result of up passing to the student's ability of movement low with value t_0 (A_1B_2- A_3B_2) = 5,658 and p-value (sig) = 0,000; 10. There is distinction between self training teaching comando and divergen to the result of up passing to the student's ability of movement low with value t_0 (A_2B_2- A_3B_2) = 11,410 and p-value (sig) = 0,000.
Conclusion: The implemetation of teacing style in up passing learning to the students' ability in movement high gets the result the learning result. The good learning is self training teaching style than comando teaching style and divergen.

Keywords : Teaching Style, Movement Ability and Learning Result of Up Passing.

INTRODUCTION

Efforts to achieve good learning outcomes in learning physical education, then physical education teachers need to seek an effective and attractive teaching style. Therefore, the physical education teacher should try to optimize the student's influence in the process of physical education, that is presenting the forms of learning ability of motion is good and correct, in order to encourage students to understand, and able to do it.

The provision of physical education in elementary schools has been oriented to the teaching of sports branches that lead to the mastery of techniques. Essentially the essence of physical education is motion. In this sense there are two things that must be understood is to make the motion as an educational tool and make the movement as a tool for fostering and developing the potential of learners. Therefore, educational personnel are required to generate passion and motivation of children in the move. Because moving is not only a natural need for primary school learners, it also shapes, nurtures and develops children. Meanwhile, from other side of motion activity can improve intellectual ability of students.

The fact that found in the field, in junior high school (SMP) 3 One Roof, the process of teaching physical education is not very good, students feel bored in following the lesson, especially in the game of volleyball so that the completeness of learning outcomes passingatas the student is not maximized. When learning passingatas in volleyball there are still many students' mistakes in performing the movements required in the passing. For example in the attitude perenaan, there is still a mistake that is, students have not been able to maximally adjust the speed of the arrival of the ball with the movement of the hand arm when touching the ball. Then in the final attitude in passingatas, the student does not return to the initial position of passingatas. As a result less effective is learning process so that students difficulty are learning pemas, either in the form of ability, physical, or in the process of learning in school as a whole.

The role of teachers in the process of learning pemas a special volleyball in between is not independent of the students themselves, as well as the role of teachers in choosing the appropriate teaching style approach and effective so that students can understand and easily understand the learning materials presented in accordance with the expected goals . The ability of teachers to choose and present the teaching style material that is determined by the ability and experience in the process of learning volleyball. In relation to that, then in doing the process of volleyball is chosen approach of teaching style that is appropriately and easily applied to the students, so that various basic motion and movement coordination can be mastered properly and correct and speed of thinking in doing physical education education activity in school.

The teaching style is chosen and applied is as an effort to create conditions that enable students to learn effectively and efficiently so that the purpose of teaching can be achieved. In this regard, the primary responsibility of the teacher or coach is direct and to assist the student to streamline the learning process. Relation to the above, the style of teaching that can be used by teachers as an effort to improve the ability of students in passing up is a style of teaching self-train, command, and divergent.

METHOD

The method is used in this research is the experimental method with 2 x 3 factorial design. The treatment is done randomly to the experimental units inside each cell. The 2 x 3 factorial design factorial matrix is:

Table 1. Factorial Design 2 x 3.

Teaching Style (A) / Movement ability (B)	*Melatih Diri (SelfTeaching)* (A_1)	comand (A_2)	Divergen (A_3)
High (B_1)	$A_1 B_1$	A_2B_1	A_3B_1
Low (B_2)	A_1B_2	$A_2 B_2$	$A_3 B_2$

The target population in this study were all students of grade VIII of SMP Negeri 3 Satu Atap Labuhan Batu Utara, while the population reached to the students of grade VIII and numbered 236 men and women. The sampling technique in this research is using random sampling. the total of population of 236 people were taken 222 people randomly as samples in the study. The samples were then tested for motion capability with the aim to determine the level of motion capability of each sample. The test results are ranked 1-222.From the results of the test rankings are then taken 27% (60 people) from above as a group with high motility and 27% (60 people) from below as a group that has been low ability of motion, so the total number of samples to be given treatment that is as much as 120 people. Stages in data collection are (1) motion ability test, and (2) passing ability test with indicator (a) preparation stage (thebackswingphase) consisting of leg attitude, attitude, hand attitude, head attitude; (2) the stage of execution (thestrikingphase) consisting of the movement of the feet, the position of the hand and the perenaan ball, body movement and head, and hand movements; (3) the stage of movement (thefollow-throughphase) which consists of the

attitude of the feet, hand attitude, posture, and attitude of the head and back willing. the data in this study used two-lane analysis of Variance (ANOVA) with the design of treatmentby level 2 x 3 at significant level α = 0,05. Before performing the analysis of variant, as requirement to fulfill requirement of data analysis, firstly tested sample normality with Liliefors, while to find homogeneity level of population variance by using Barlett test. Furthermore, if there is interaction (result of Anova calculation) that is followed by Tukey test which aims to know the level of significance of F arithmetic with significance level α = 0,05.

RESULTS AND DISCUSSION

1. Data Description

Description of the learning result of passing on volleyball is described as follows :

Tabel 2. Descriptive statistics

Dependent Variable: the result of up Passing

Teaching Style		Cognitive Ability	Mean	Std. Deviation	N
	Self Training	High	39,80	4,287	20
		Low	29,90	3,523	20
		Total	34,85	6,335	40
	Comando	High	33,25	3,143	20
		Low	36,05	2,460	20
		Total	34,65	3,126	40
	Divergen	High	29,50	2,724	20
		Low	23,85	3,801	20
		Total	26,68	4,341	40
	Total	High	34,18	5,469	60
		Low	29,93	5,985	60
		Total	32,06	6,095	120

Source: Primary data processing result (2017)

Based on Table 2. above, it can be seen that the average learning outcomes of passing up in a volleyball game group of students taught by using a self-taught teaching style get a score of 34.85 more when compared with the command teaching style with average score 34,65 and divergent teaching style is 26,68. Based on the group of students who has high motion skills that has a meaning value of passing learning outcomes are taught 39.80 self-taught. teaching style is better than students taught with a command teaching style 33.25 and divergent teaching style 29.50. Similarly, on the contrary, the average upper passing learning outcomes that have low motion capability are taught by using divergent teaching style that is 23.85 is lower than the average of upper passing learning outcomes taught by using self-training teaching style 29.90, and the command teaching style 36,05.

2. Hypothesis testing

Hypothesis testing was done by t-test technique and Analysis of Variance (ANOVA) two lane then continued by doing Tuckey test. The process of data analysis is done by using softwareSPSS. Two-way ANOVA analysis was conducted with the aim to know the effect of each independent variable on the dependent variable and the interaction effect.

1. Test Results t-test (Paired Samples Test)

a. Testing of difference learning result of passing data on group A1 and A2

T-test (pairedsamplestest) test is done using SPSS. The testing process was performed on the passing learning outcomes of the group of students taught by using self-training teaching style (A1) and command teaching style (A2) with the test criteria that if the sig (2-tailed) ≥ 0.05, then H0 is

accepted and H1 rejected and if sig (2-tailed) <0,05, then H0 is rejected and H1 accepted. The results of tests performed on data groups A1 and A2, using t-test (pairedsamplestest) are presented in Table 5. below.

Tabel 5. Paired samples test

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	A1 - A2	0,200	8,033	1,270	-2,369	2,769	6,357	39	0,006

Based on the results of the analysis in Table 5. on the difference in learning outcomes of passing over the group of students taught by using self-taught teaching styles and commando style of learning known that the value of Sig. (2-tailed) = 0.006, then sig (2-tailed) <0.05 or 0.006 <0.05, thus the first hypothesis H0 is rejected and H1 is accepted. Then there is a significant difference between the teaching style of self-training (A1) and command (A2) to the overall passing learning outcomes.

b. Testing of difference data of learning result of passing over group A1 and A3

Data analysis of difference of learning result of passing on group A1 and A3 was done on passing learning result of group of students taught by using self-training teaching style (A1) and divergent teaching style (A3) with test criteria if sig value (2-tailed) ≥ 0 , 05, then H0 is accepted and H1 is rejected and if sig (2-tailed) <0,05, H0 is rejected and H1 is accepted. The results of tests performed on data groups A1 and A3, using t-test (pairedsamplestest) are presented in Table 6. below.

Tabel 6. *Paired Samples Test*

		PairedDifferences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. ErrorMean	95% Confidence Interval of theDifference Lower	Upper			
Pair 1	A1 – A3	8,175	5,733	0,906	6,342	10,008	9,019	39	0,000

Based on the results of the analysis in Table 6. on the differences in learning outcomes passing over the group of students taught by using self-taught teaching style and divergent teaching style is known that the value of Sig. (2-tailed) = 0,000, then sig (2-tailed) <0,05 or 0,000 <0,05, thus the second hypothesis H0 is rejected and H1 is accepted. So it can be concluded that there is a significant difference between the teaching style of self-training (A1) and divergent (A3) to the overall passing learning outcomes.

c. Testing of difference data of learning result of passing over group A2 and A3

Data analysis of difference of learning result of passing over group A2 and A3 was done on passing learning result of group of students taught by using command teaching style (A2) and divergent teaching style (A3) with test criteria if sig value (2-tailed) ≥ 0, 05, then H0 is accepted and H1 is rejected and if sig (2-tailed) <0,05, H0 is rejected and H1 is accepted. The results of tests performed on data groups A2 and A3, using t-test (pairedsamplestest) are presented in Table 7. Below

Tabel 7. Paired samples test

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. ErrorMean	95% Confidence Interval of theDifference Lower	Upper			
Pair 1	2 – A3	7,975	5,829	0,922	6,111	9,839	8,653	39	0,000

Based on the results of the analysis in Table 8. on the difference in learning outcomes of passing over the group of students taught by using the command teaching style and divergent teaching style it is known that the value of Sig. (2-tailed) = 0,000, then sig (2-tailed) <0,05 or 0,000 <0,05, thus the third hypothesis H0 is rejected and H1 is accepted. It can be concluded that there is a significant difference between the command teaching style (A2) and divergent (A3) to the overall passing learning outcomes.

2. Path Anova Test Results

Tabel 8. *Tests of between-subjects effects*

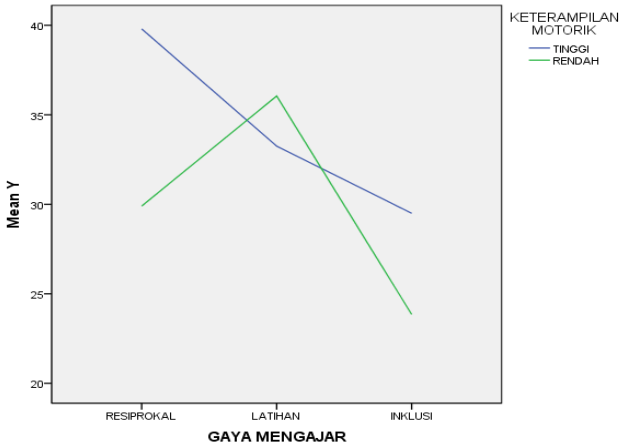
Dependent Variable: Result

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	3117,342[a]	5	623,468	54,537	0,000
Intercept	123328,408	1	123328,408	10787,983	0,000
A	1739,617	2	869,808	76,085	0,000
B	541,875	1	541,875	47,400	0,000
A * B	835,850	2	417,925	36,557	0,000
Error	1303,250	114	11,432		
Total	127749,000	120			
Corrected Total	4420,592	119			

ANOVA test results using SPSS then it can be argued that:

1. Main Effect
   a. In the F column of the 3rd row (three), it is seen that the value Fo (A) = 76.085 with p-value (sig) = 0,000. Thus p-value (sig) <0,05 or 0,000 <0,05. This means that overall there is a difference in upper passing learning outcomes between self-taught teaching styles, command teaching styles, and divergent teaching styles.
   b. In column F of row 4 (four), it is seen that the value Fo (B) = 47,400 with p-value (sig) = 0,000. Thus p-value (sig) <0,05 or 0,000 <0,05. This means that there is a difference between a high-ability student group and a low-mobility student group of upper passing learning outcomes.
2. Interaction Effect (Interaction Effect).

Based on Table 8. in column F of row 5 (five) it is known that the value Fo (AB) = 36.557 with p-value (sig) = 0,000. Thus p-value (sig) <0.05 or 0,000 <0.05, then the fourth hypothesis H0 is rejected and H1 is accepted. This means that there is a significant interaction effect between factor A (teaching style) and factor B (ability of motion) to upper passing learning result. It can be seen from the results of the analysis in Table 8. that the R-Squared = 0.705, thus the influence of teaching style, keeterampilangerak, and the interaction between teaching style and the ability of motion toward the result of passing up learning is 70,50%.



Based on ANOVA test result known that the influence of interaction between teaching style and motion ability is significant. Thus, it can be continued to test the average difference in each treatment group. The result of simple effect analysis test (simpleeffect) is presented in Table 9. Below.

Table 9. Contrast Test

		Contrast	Value of Contrast	Std. Error	t	df	Sig. (2-tailed)
learning outcomes	Assumeequalvariances	1	6,55	1,069	6,126	114	0,000
		2	10,30	1,069	9,633	114	0,000
		3	3,75	1,069	3,507	114	0,001
		4	-6,15	1,069	-5,752	114	0,000
		5	6,05	1,069	5,658	114	0,000
		6	12,20	1,069	11,410	114	0,000
		7	9,90	1,069	9,259	114	0,000
		8	-2,80	1,069	-2,619	114	0,010
		9	5,65	1,069	5,284	114	0,000

Based on the above table can be simple effects test results (simpleeffect) can be stated that:

1. The fifth hypothesis that states the learning outcomes of passing over a group of high-motion students and taught by using self-training teaching style (A1B1) is better than the students taught by command-teaching style (A2B1). This is evidenced by the value t0 (A1B1-A2B1) = 6,126, p-value = 0,000 / 2 = 0,0000 <0.05 then H0 is rejected and H1 is accepted. The rataskor result of learning passing over group A1B1 = 39,80 higher with group A2B1 = 33.25
2. The sixth hypothesis that states the learning outcomes of passing over high-motivated student groups and taught by using self-training teaching styles (A1B1) is better than those taught by diverging teaching styles (A3B1). This is evidenced by the value t0 (A1B1-A3B1) = 9,633, p-value = 0,000 / 2 = 0,000 <0.05 then H0 is rejected and H1 is accepted. The rataskor result of learning passing over group A1B1 = 39,80 higher with group A3B1 = 29,50.
3. The seventh hypothesis that states the learning outcomes of passing over a group of high-ability students and taught by using a command teaching style (A2B1) is better than the students taught with divergent teaching style (A3B1). This is evidenced by the value t0 (A2B1-A3B1) = 3.507, p-value = 0.001 / 2 = 0.0005 <0.05 then H0 is rejected and H1 is accepted. The rataskor result of learning passing over group A2B1 = 33,25 higher with group A3B1 = 29,50.
4. The eighth hypothesis that states the learning outcomes of passing over low-motion group of students and taught by using self-training teaching style (A1B2) is lower than the students taught

by command-taught style (A2B2). This is evidenced by the value of t0 (A1B2-A2B2) = -5.752, p-value = 0,000 / 2 = 0,000 <0.05 then H0 is rejected and H1 is accepted. The rataskor result of learning passing over group A1B2 = 29.90 lower than group A2B2 = 36,05.

5. The ninth hypothesis that states the learning outcomes of passing over low-motion group of students and taught by using self-training teaching style (A1B2) is better than the students taught by divergent teaching style (A3B2). This is evidenced by the value of t0 (A1B2-A3B2) = 5,658, p-value = 0,000 / 2 = 0,000 <0.05 then H0 is rejected and H1 is accepted. The rataskor result of learning passing over group A1B2 = 29,90 higher than group A3B2 = 23,85.
6. The tenth hypothesis that states the learning outcomes of passing over the low-motion group of students and taught by using the command teaching style (A2B2) is better than the students taught by divergent teaching style (A3B2). This is evidenced by the value of t0 (A2B2-A3B2) = 11.410, p-value = 0,000 / 2 = 0,000 <0.05 then H0 is rejected and H1 is accepted. The rataskor result of learning passing over group of students capable A2B2 = 36,05 higher than group A3B2 = 23,85.

CONCLUSION AND SUGGESTION

1. Based on the results of the above research, it can be concluded as follows. There is a difference between the teaching style of self-training and command to the overall passing learning outcomes with the tcount = 6.357 and sig = 0.006.
2. There is a difference between self-training and divergent teaching styles to the overall passing learning outcomes with thitung = 9,019 and sig = 0,000.
3. There is a difference between command and divergent teaching styles to the overall passing learning outcomes with tcount = 8.653 and sig = 0,000.
4. There is an interaction between the teaching style (self-training, command, and divergence) and the ability of motion (high and low) to the overall passing learning result with the value of Fo (AB) = 36.557 with p-value (sig) = 0,000.
5. There are differences in self-training and command-line teaching styles on passing top learning results in high-ability students with values with t0 (A1B1-A2B1) = 6,126 and p-value (sig) = 0,000.
6. There are differences in self-training and divergent teaching styles on upper passing learning outcomes in high-motility students with t0 (A1B1-A3B1) = 9,633 and p-value (sig) = 0,000.
7. There is a difference of command and divergent teaching style to the upper passing learning outcomes in high-motility students with the value of t0 (A2B1-A3B1) = 3.507 and p-value (sig) = 0.0005.
8. There are differences in self-training and command-line teaching styles on passing top learning outcomes in low-motion students with t0 (A1B2-A2B2) = -5,752 and p-value (sig) = 0,000.
9. There are differences in self-taught and divergent teaching styles on upper passing learning outcomes in low-motion students with t0 (A1B2-A3B2) = 5,658 and p-value (sig) = 0,000.
10. There are differences in command and divergent teaching styles to the upper passing learning outcomes of low-motion students with t0 (A2B2-A3B2) = 11.410 and p-value (sig) = 0,000.

EFFECTIVENESS OF SHOOTING TRAINING MODEL FEBI FUTSAL GAMES ON THE IMPROVEMENT OF SHOOTING RESULT ON FUTSAL SPORTS FOR BEGIN PLAYER

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Abstract

Objectives: This study aims to determine the effectiveness of the shooting practice model Febi Futsal games to increase shooting results on futsal sport for beginners.
Method: The research method used is quantitative descriptive research with experiment. The population of 110 players. The sample is 80 players divided into 2 groups (experiment and control), with purposive sampling technique include: (1) trainees are able to follow the exercise for 16 times, and (2) 10-12 years age range.
Instrument test using shooting test that has been modified with the result of validity 0,831 and reliability 0,865. Analyze technique using IBM SPSS for Windows 21 with normality test using kolmogorof smirnov with result of Asymp value. Sig (2-tailed) is greater than 0.05, meaning the distribution of data is normally distributed. While homogeneity test using Levene test with asymp result. sig (2-tailed) 5% or (p> 0.05), which means the data is homogeneous. The analysis test used in this research is the average difference test using t-test (Paired t-test).
Results: The result of the experimental group showed a significant difference between pre-test and post-test of febi futsal games shooting technique of 0.00 <0.05, while the control group sig score was 0.00 <0.05. This indicates that there is an increase in training results both experiment and control groups. The magnitude of the difference in average increase in shooting practice results between the experimental and control groups is 4.6> 1.33. that is, the increase of the experimental group is greater than the control group.
Conclusion: There is a significant difference between pre-test and post-test shooting practice on futsal, but the shooting model of futsal games for beginners is more effective than the control group who practice using conventional methods.

Keywords: effectiveness, shooting exercise febi futsal games, novice players

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INTRODUCTION

Futsal became one of the sports game that is quite popular and much in demand by various circles in the world. This is seen from the enthusiasm of playing futsal performed by anyone, ranging from children to adults, both male and female. The unlimited popularity of futsal games can help achieve the most educational, recreational, and achievement goals in the world.

Futsal is a kind of game that is not much different from football. The core of the game is to punt around here, seize the ball between players with the goal of entering the ball into the opponent's goal or defend his own goal so as not to concede the ball. The futsal player may use all the limbs to play, except the hands and arms. Only goalkeepers are allowed to play the ball with all limbs including the hands. A futsal team is declared the winner when successfully enter the ball (make a goal) more than the opposing team or fewer conceded the ball than the opposing team (Handoyo, 2012).

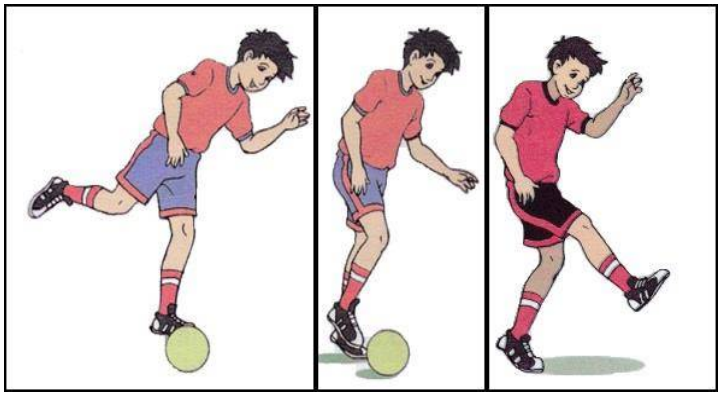
Sports futsal is competitive, has a goal in achieving the maximum achievement of each person who mengekinya. Sports futsal is one form of physical activity that must have a complex skill. Achieving futsal sporting achievements is a workable effort through coaching, technical skills, tactical understanding and strategy and through effective and accountable psychological approaches through scientific or academic understanding. Achieving high achievement requires effort and hard work, with measurable and ongoing planned practice with upgrades, as well as in accordance with the needs of futsal sports.

Futsal is a type of sport that has firm rules in terms of physical contact (Justinus Laksana and Ishak H. Pardodi, 2008). Sliding tackles, body charges, and other forms of violence such as football,

are not allowed in futsal. This is one of the reasons why futsal games are getting more and more popular.

Achievement of futsal sport is an accumulation of a physical quality, technical quality, understanding of tactics and strategy and psychological maturity that is deliberately prepared from an exercise process. Furthermore, to ensure Indonesian athletes have an opportunity to develop their potential by abandoning conventional ways that have been used in sports development achievements and opening new options and approaches (new methods). One approach that is done is through the development of shooting technique training model on futsal. Shooting technique is a basic technique that must be mastered by every player (John, 2008). This technique is a way to create goals. This is because all players have a chance to score and win games or games. Shooting using the back foot. How to do it: 1) Place the foot on the side of the ball with your toes straight up towards the goal instead of the kicking leg, 2) Use the back of the foot when kicking the ball, concentrating the view towards the ball right in the middle of the ball, 3) Lock or strengthen the heel so that when the touch with the ball will be stronger, And 4) Do follow-up movements after a kick.

Picture 1. Basic shooting technique



Based on observations on the clubs in Karawang regency, shooting practice on futsal has not used a clear exercise program and has various training models. This is because there are still many futsal coaches in Karawang regency who have no sport education background especially futsal. In addition, some trainers who know about futsal practice models do not really understand the sequence of difficulty levels, exercise doses and training loads. As a result, many sportsmen who experience boredom in training so that achievement in futsal achievement is not maximal. Therefore researchers do the development of shooting model febi futsal games for beginners. Based on the above background then in this study will find how much the effectiveness of shooting model febi futsal games on futsal sports game to increase shooting results in beginner players.

METHOD

This study uses a quantitative approach used to look for such effectiveness with pre-experimental research design in the form of the one group pretest-posttest design. In this research using quantitative approach, quantitative approach in research is characterized by hypothetical action and its use (Maksum: 2009) While in this study is experiment, experiment is a way to open a relationship between two or more variables and also to find the influence of a variable against other variables (Maksum: 2009). The design in this study used the design of one pretest-posttest group. The population of 110 players. The samples with 80 teams were divided into 2 groups (experiments and controls) with purposive sampling technique: (1) trainees were ready to practice for 16 meetings, and (2). The test instrument uses a modified firing test with the result of validity of 0.831 and reliability of 0.865. Technical analysis using IBM SPSS for Windows 21 with steps according to Sugiono (2008), Test Prerequisite analysis with normality test using Kolmogorove-Semirnov test, homogeneity test using levenes's test. Statistical test using t-test (Paired t-test).

RESULTS AND DISCUSSIONS

The description of the results of this study discusses the mean, standard deviations, variance, maximum and minimum values, and the average increase obtained from the shooting test results given to each group. The test results will be recorded and calculated based on the group and type of exercise provided. Here will be analyzed the results of the four groups are based on research data using IBM SPSS program for Windows 21 further description of research data can be described further in the form of tables as follows:

Table 1. Description of training results febi futsal games

	Shooting Score		
	Pre-Test	*Post-Test*	Different
Average	9,35	13,95	4,6
Standard deviation	1,545	0,714	1,257
Variants	2,387	0,51	1,579
Maximum	14	17	7
Minimum	6	11	1

Shooting measurement results before shooting practice of febi futsal games (pre-test) has an average of 9.35; standard deviation 1,545; with a variant of 2,387; maximum and minimum scores of 14 and 6 respectively.

Shooting measurements after shooting exercise febi futsal games have an average of 13.95; standard deviation 0.714; with a variant of 0.51; maximum and minimum scores of 17 and 11 respectively.

The shooting changes after being given shooting exercise febi futsal games (post-test) have an average change of 4.6; standard deviation 1,257; with variant 1,579; maximum and minimum scores of 7 and 1 respectively

Table 2. Description of conventional exercise results

	Shooting Score		
	Pre-Test	*Post-Test*	Diferent
Average	10,13	11,45	1,33
Standart Deviation	1,697	1,28	0,764
Variants	2,881	1,638	0,584
Maximum	15	16	3
Minimum	6	9	0

The results of conventional practice shooting (pre-test) measurements averaged 10.13; standard deviation 1,697; with variant 2,881; maximum and minimum scores of 15 and 6 respectively.

Conventional training shooting (post-test) measurement results have an average of 11.45; standard deviation 1.28; with a variant of 1.638; maximum and minimum scores of 16 and 9 respectively.

Shooting changes during conventional exercise (post-test) have an average change of 1.33; standard deviation 0.764; with a variant of 0.584; maximum and minimum scores of 3 and 0 respectively.

From the results of the above description can be seen that there are differences in test results from both groups. This can be seen from the difference in the average value of pre-test is lower than post-test. This means that the exercise bleeds in each group have an effect on the shooting enhancement of the player.

The magnitude of differences in the capability of futsal shooting techniques in each group can be described in the following histrogram form:

Figure 2. Differences in results of both group exercises

Terms of Hypothesis Testing

The things needed to test the hypothesis in the analysis of this study are as follows:

Table 3. Normality test results

One-Sample Kolmogorov-Smirnov Test				
	Shooting Training (Eksperimental group)		Training Konvesional (control group)	
N	Pretest	Postest	Pretest	Postest
	40	40	40	40
Kolmogorov-Smirnov Z	1.144	1.047	1.292	1.068
Asymp. Sig. (2-tailed)	0.146	0.223	0.071	0.205
a. *Test distribution is Normal.*				

Based on the results of the calculation above table interpreted as follows: 1) The value of Asymp. Sig (2-tailed) data pretest shooting group febi futsal games for 0.146> 0.05. In accordance with the test, it can be said that pretest shooting test data shooting group febi futsal games normally distributed, 2) The value of Asymp. Sig (2-tailed) posttest data group shooting exercise febi futsal games of 0.223> 0.05. In accordance with the test, it can be said that the shooting test data posttest group shooting exercise febi futsal games normally distributed, 3) The value of Asymp. Sig (2-tailed) pretest data control group of 0.071> 0.05. According to the test, it can be said that the pretest shooting data of the control group is normally distributed, and 4) The value of Asymp. Sig (2-tailed) control group posttest data is 0.205> 0.05. According to the test, it can be said that the posttest shooting data of the control group is normally distributed.

Based on the normality testing table both groups above show that the value of Asymp. Sig (2-tailed) of both groups is greater than 0.05. It can be said that the distribution of data from both groups of both pre-test and post-test data of the whole population is normally distributed. So it can be used to analyze the research results.

Homogeneity test is done to find out whether the dependent variable data has the same variant in each category of independent variable. To know the independent variable is homogeneous

or can not be known by Levene test. The basic analysis used in decision making using a significant level of 5% or (p> 0.05) then the data is homogeneous.

Based on homogeneity test results with computer aids using IBM SPSS 21.0 for Windows obtained the following results:

Table 4. Homogeneity test results

Test of Homogeneity of Variances			information
Dependen variabel: *Shooting Ability*			
Group	Levene Statistic	Sig.	
Shooting training febi futsal *games*	1.739	0.191	Homogen
Control	2.203	0.142	Homogen

From the homogeneity test table above the shooting practice group of febi futsal games, it can be seen that the levance statistic value is 1.739 and the Sig value. (p = 0.191) because the value of Sig. (p = 0.191> 0.05). As for the conventional group can be seen that the value of levance statistic of 2.203 and the value of Sig. (p = 2.203) because the value of Sig. (p = 2.203> 0.05). In accordance with the criteria of decision making, it can be said that the distribution of data from both groups have the same variant (homogeneous). Therefore, for the purposes of the test, the average difference between groups is taken from the Equal Variances Assumed value, since the data obtained is homogeneous.

Testing Effectiveness in this section will be proposed hypothesis testing based on the results tabulation data obtained from tests that have been given. Then the results tabulated data processed and analyzed statistically to test the hypothesis that has been proposed earlier.

Different Differential Test for Paired Samples to test effectiveness has been proposed, the analysis test used in this study is the mean difference test (mean difference test) by using t-test analysis (Paired t-test). The value used in the t-test (Paired t-test) is the pre-test or post-test value of each group, with the data presentation then the result of t-test (Paired t-test) is as follows:

Table 5. Different test results of different paired samples

Shooting		*Mean*	T	*Df*	*Sig (2-tailed)*
FFG	*Post-test*	-4.6	-23.14	39	0.00
	Pre-test				
Kontrol	*Post-test*	-1.32	-10.96	39	0.00
	Pre-test				

From table 5 it is known that the experimental (2-tailed) Sig.group value 0.00 <0.05 Thus, there is a significant difference between pre-test and post-test of futsal basic technique (shotting) practice of febi futsal games. While the sig value of the control group (2-tailed) 0.00 <0.05 Thus, there is a significant difference between the pre-test and the post-test of conventional exercise. Thus, variations of the shooting practice model of febi futsal games and conventional exercises altogether provide a significant improvement in basic engineering skills (shooting).

Different mean test differences simultaneously between groups to find out the difference in the effect of treatment on the increase of bound variables of shooting practice of febi futsal games before and after treatment between groups using Independent Samples Test statistic. From the calculation of IBM SPSS 21.0 for Windows obtained the following results:

Table 6. Independent Samples shooting results :

Shooting	*Df*	*Mean Difference*	*F*	*Sig.*
Equal variances assumed	78	3.275	4.701	0.03

From the table above note that the value of Sig. (2-tailed) 0.01 <0.05 Thus, there is a difference in the effect of the febi futsal games shooting practice model with the conventional model of shooting basic technique.

CONCLUSIONS AND SUGGESTION

Based on the research results, it can be concluded that there are differences in test results from both groups. This can be seen from the difference in the average value of pre-test is lower than post-test. This means that the exercise bleeds in each group have an effect on the shooting enhancement of the player. The magnitude of differences in the capability of futsal shooting techniques in each group is evidenced by the test results data of 4.6 for the experimental group and 1.3 for the control group. The trainers in preparing a training program for beginner players. The shooting model of febi futsal games for this player is effective in improving shooting quality. So this exercise model can be used as a reference in training beginner players.

ACKNOWLEDGMENT

Thank you to the Singaperbangsa University that has provided material and non material support that is very useful for the completion of this article. Thanks also to the extracurricular in elementary school who has provided facilities for conducting research.

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DIFFERENCES OF LEARNING ACHIEVEMENTS INTERGRADE AND GENERAL CLASS SPORT CLASS BASED ON LEVEL EDUCATION OF PARENTS IN CLASS VII SMP N 4 PURBALINGGA

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Abstract

Objectives: This research is motivated by student achievement not yet as expected. In the same subject matter, but the achievements are diverse, some are high and some are low. This study aims to determine whether there is a difference in learning achievement between general class students and sports class students in SMP 4 Purbalingga

Metods: This research is a comparative research, data collection using documentation method. Learning achievement was measured using the value of report cards, Parents education includes primary education (primary junior high), secondary education (high school / high school), graduate education (DI, DII, DIII, and S1, S2, S3)The subject of the study was to use the general class students which amounted to 48 children and sports class amounted to 36 anak.Teknik data analysis using ANOVA and T test Independent test sample T test on taraaf significance 5%

Results: The result of this research show that F value count (4,160)> from F table (3,20) from the result can be interpreted there is difference of learning achievement of SMP 4 Purnalingga general class based on education level of parent. From the result of hypothesis 2 test, it is found that F count (4.542)> F table (3,30) based on the result can be interpreted there is difference of sports class based on education level of parent. From T test results obtained t arithmetic (2.689)> t table (1,664) based on these results can be interpreted that there are differences in achievement between the general class and sports class Mean general class (74.39) while the mean of sports class (72.28)

Keywords: Learning achievement, parent education

Introduction

Along with the continuing development of education, especially the mindset of educators, from the mindset of the lay and rigid to the more modern, very influential to the progress of education in Indonesia. Education is a process to increase the dignity and dignity of a life. Efforts undertaken to improve quality human resources for example, in the field of curriculum: expected to have human resources that are productive, independent, advanced, and competitive to face the challenges of globalization. According to T. Bakti Anggoro (2009: 2) physical education is a part of education as a whole and has a positive contribution in helping the growth and development of physical and spiritual students, is expected to develop life skills (life skills) in the form of hidden potential can be optimally explored. Today many schools are beginning to put forward the ability, talent and skills to explore the latent potentials as described above. State Junior High School (SMP N) 4 Purbalingga is a privileged class that specializes in sports specialties and is the first junior high school in Purbalingga to pay particular attention to sports classes. In Class VII, there are 2 classes of general classes and special classes of sports where the subjects taught are the same as those taught by other schools

It is expected that with the same curriculum the achievements of these two classes can increase. However, due to sport activities or physical activities there is an addition outside the subjects penjasorkes conducted in the morning, then this class is called a special class of sports. The sport class aims to develop the potentials of students especially in sports. The benefits of establishing this sport class, can be used by children who have expertise in sports to develop skills such as football, volleyball, badminton, and other sports, without fear of missing other subjects in school. Sports activities conducted by a special class of exercise is held in the morning. The educational environment is one of the indicators of readiness of students in the views of their learning achievements. Learning

achievement is a reflection of the results of teaching and learning activities of students in school. Learning achievement can experience an optimal development if it meets the criteria that have been determined, but also can experience a decrease that can be seen in less learning achievement. Thus, in the face of good future competition in the world of education and in the world of work will require a vigorous and persistent effort for the competition.

The role of parents is needed by the child in taking and completing the education undertaken. Both formal and non formal education. In the field of sport is used to express the expression of life behavior in the field, in addition it can also penetrate social class boundaries, between those with high education to basic education can participate in the same activities. Sports seeds can be present from highly educated parents and educated parents as well as basic education.

According to Subandiah in Dahono (2001: 23), that the school referred to as a formal educational institution is an educational hierarchically arranged chronologically from elementary school to college. In learning is expected that the individual acquires a new behavioral change as a result of the individual's own knowledge in his interaction with the environment. Based on these backgrounds, the authors are interested in conducting research entitled "Differences in Student Learning Achievement between Class and Sports Class Based on Level of Parent Education in Class VII SMP N 4 Purbalingga".

METHOD

Understanding Learning

In learning there are steps that must be taken so that the desired results can be achieved. According Baharudin, et al (2007: 16), the learning process is a series of activities that occur in the nerve center of the learning individual, the learning process occurs abstractly, because it occurs mentally and can not be observed. Therefore, the learning process can only be observed if there are changes in behavior different from the previous one of the person. Changes in behavior can be in terms of affective knowledge, and psikomotoriknya.

Sardiman (2006: 20), learning is always a change of behavior or appearance with a series of activities, for example by reading observing, listening, imitating and so forth. Learning it would be better if subjects learn to experience it, so it is not verbalistic. According to M. Ngalim Purwanto (2007: 87), In the play also actually happened learning process. Learn to work together, solve problems quickly, and learn to respect others. Based on the above information it can be concluded that learning is a process of a person undertaking to make changes in knowledge, skills, new behavior as a whole whether observed or not observed, directly as a result of experience in interaction with the environment and trying to overcome if any problems that arise.

Factorsthatinfluencethelearningprocess.

According Muhibbin Shah (2006: 144) categorize the factors that affect the learning process inthreeparts:

1. Internal factors (factors from within students), namely the state or condition of the physical andstudent'srokhani
2. external factors (factors from outside students), ie environmental conditions around students
3. learning approach (approach to learning), namely the type of student learning efforts that include strategies and methods used by students to conduct activities to learn lesson materials.

In teaching and learning activities are always accompanied by various problems that can interfere. Therefore, in SMP N 4 Purbalingga established a special class of sports, which is expected to overcome various problems.

Such as material factors, environmental factors, instrumental factors, and individual factors the subject of maximum learning.In this study measured is the achievement of learning or learning outcomes for one semester.

The researcher will know whether there is a difference in learning achievement for a semester between general class and sport class by looking at the education level of his / her parents.

Understanding of learning achievement

According to Anton M. Moeliono, et al. in T. Bakti Anggoro, (2009: 15), learning achievement is the result that has been achieved in the form of mastery of knowledge or skills developed by the subjects, usually indicated by the value of the test or the value of the number given by the teacher. According to Suryabrata in Sugihartono, et al. (2007: 132-133) describes one of the evaluation function of the learning result is, Provide information about all business results that have been done by educational institutions. In this case the ability of student learning outcomes will be known. A description of the learning achievement is seen in student school reportbooks. The report book contains more or less the scores of the final test results received by the learner over a period of time. The higher the value of report cards the higher the learning achievement of the learners.

Factors Affecting Learning Achievement

The introduction of factors that affect learning achievement is very important in order to help students to achieve the best learning achievement. Need to be evaluated or tested to determine the level of student success so it can be seen whether the students are able to receive the lessons well or not. According to Abu Ahmadi, et al. (1991: 130-131) The internal factors are: Physical factors, Psychological factors Social Tractors. The factors that influence the achievement of learning according to Dalyono, (1997: 55-60) consists of internal factors (health, intelligence and talent, interest and motivation, and way of learning) and external factors (family environment, school environment, and community environment). Nana Syaodih Sukmadinata, (2005: 162-165) presents two factors that affect the effort and success of learning are: factors in the individual and outside factors of individual

General Class and Sport Class

Understanding of general class.

The general class is the proper grade in other junior high schools, using the school curriculum, so for the general class there is usually no additional subjects such as the majors. Understanding sports class. Sports classes are classes for students who have the ability in sports or special classes intended for athletes trained by the school. These sports class students are given special training by trainers brought in by the school. The purpose of this class is to improve the skills of students who have achievements in sports. In addition to this classroom sports activities also get academic lessons in learning activities as usual in class. In the curriculum there must also be extracurricular which must be followed.

Table 1. Curriculum Structure of KTSP SMP N 4 Purbalingga

No		Kelas dan Alokasi Waktu		
		VII	VIII	IX
	A Mata Pelajaran			
1	Religious Education	2	2	2
2	Citizenship Education	3	3	3
3	Indonesian Language	5	5	5
4	English	5	5	5
5	Mathematic	6	6	6
6	Natural Science	4	4	4
7	Sicial Science	2	2	2
8	Art Culture	2	2	2
9	PE Sport and Health	2	2	2
10	Information Technology	2	2	2
		2	2	2
	B Local Content	2	2	2
	Java Language	2	2	2
	PKK	2	2	2

The Nature of Parents Education

Parental education can not be interpreted in words per word but should be interpreted as a whole. When interpreted as a whole parents education can be interpreted as the amount of knowledge and knowledge possessed by the participant's parents where the knowledge is based on the high level of formal education ever received by parents (father and mother) as long as still a learner. Parental education can also be interpreted as the latest level of formal education that has been taken by parents, both primary and junior high school (SMP), and higher education (S1, S2, S3, D1, D2 D3).

RESEARCH METHODS

Research desing This research uses AB factorial design in which comparing or explaining the differences between combining factors A and B are: A1 B1 and A2 ¬¬ B1, A1 B2, and A2 B2, A1 B3 and A2 B3. Design research as follows:

	A1	A2
B1	A1 B1	A2 B1
B2	A1 B2	A2 B2
B3	A1 B3	A2 B3

Information :

A = Learning achievement
A1 = General class learning achievement
A2 = Learning achievement of sports class
B = Parental education level
B1 = Basic education
B2 = secondary education
B3 = Higher education

Variable Operational Definition

1. General Class Learning Achievement, Learning Achievement in general class in this research is the value of report cards of students of general class in grade VII of Junior High School N 4 Purbalingga after following teaching and learning for one semester of 2011/2012.
2. Classroom Learning Achievement
   General class learning achievement in this research is the value is the value of students reporting the class of sports mum in class VII SMP N 4 Purbalingga after following the teaching for one semester of 2011/2012.
3. Parent Education Level
   The level of parental education is the achievement of education that has been taken and measured based on the diploma obtained by the formal education path. Includes basic education, secondary

Population and Sample Research

The population in the study were all students of class VII SMP N 4 Purbalingga, according to Suharsimi Arikunto (1990: 162) is the population is "the whole object of research". The population of the seventh grade students of SMP N 4 Purbalingga amounted to 217 students, consisting of 36 sport class students and 181 general class students. Taken as a sample of sports class as many as 36 students general class as many as 48 students. Parents of elementary education 13 students, parents of middle education 30, parents of higher education 5 students. The table as follows

A. Data analysis techniques

Data analysis technique in this research use ANOVA test and t-test. Prior to testing in ANOVA analysis and t-test required prerequisite test first, to determine whether the data being analyzed meet the prerequisite or not. The prerequisite test is the normality test and homogeneity test.

RESEARCH RESULT AND DISCUSSION

Based on the results of research from 48 statistics obtained research for general class learning achievement data are as follows:

Table 2. Class Learning Achievement Statistics

Description	Low level	Mid level	Higher level
Sum Student	13	30	5
Minimum value	69.73	68.67	74
Maximum value	75.7	83.83	82.83
Mean	72.44	74.75	77.28
Median	72.5	74.29	76.83
Mode	69.73	69.67	74
Standard Deviation	1.66	3.64	3.37

1. Prestasi Belajar Kelas Olahraga

Berdasarkan hasil penelitian dari 36 diperoleh statistik penelitian untuk data prestasi belajar kelas olahraga yaitu sebagai berikut:

Tabel 8. Statistik Prestasi Belajar Kelas Olahraga

Discription	Basic level	Mid level	Higher level
Sum Student	14	20	2
Minimum value	66.9	67.9	77.8
Maximum value	75	83.3	78.6
Mean	72.73	72.08	78.2
Median	72.05	71.55	78.2
Mode	72	71.5	77.8
Standard deviasi	2.33	3.25	0.56

From the above results in the know based on the difference of mean (average learning achievement of basic level (71,73) <medium level (72,08) <high level (78,20) .The result is interpreted that student achievement that education of parent until college is better than those with basic and intermediate education Overall learning achievement of students of sports class obtained by average achievement of equal to 72,2.

A. Data Analysis

Data analysis in this research is used to answer prerequisite test and hypothesis test which have been proposed. The results of the prerequisite test and hypothesis test are described as follows:

Normality Test

Table 9. Normality Test Results

	Z	P	Sig 5%	Keterangan
General class	0.891	0.406	0.05	Normal
Sport class	1.022	0.247	0.05	Normal

Homogeneity Test

Table 10. Homogeneity Test Results

Test	Df	F tabel	F hit	p	Sig 5%	Keterangan
Achievment learning	1:82	4.05	1.136	0.290	0.05	Homogen

From the data table above is known data of learning achievement obtained p value (0.290)> 0.05 and F hit (1,136) <F table (4.05), Can be concluded that the above variance is homogeneous. Hypothesis testing consisted of Anova test and t test, the result of the two tests was as follows:

Anova Test (F Test)

Table 11. Hypothesis Test Results (Anova)

Education of parent	D f	F Hitung	F tabel	P
General class	2 : 45	4.160	320	0.015
Sport class	2 : 33	4.542	330	0.018

From result of hypothesis test (Anova) obtained value of F arithmetic (4,160)> F table (3,20) with significance 0,015 <0.05. From the result, it means that there is difference of student achievement class VII SMP N 4 Purbalingga general class based on education level of parent. Given by mean difference (average learning achievement of primary level (72,44) <middle level (74,75) <high level (77,28).

From result of hypothesis test (ANOVA) obtained F value count (4,542)> F table (3,30) with significance 0,018. From the result, it means that there is difference of student achievement class VII SMP N 4 Purbalingga sport class based on parent education level. Given by mean difference (average learning achievement of primary level (71,73) <medium level (72,08) <high level (78,20).

Test t The t test is performed to test the difference between general class learning achievement and sport class learning achievement. T test results can be seen in the table below:

Table 12. Test Results t

Learning achievement	Df	T tabel	T hitung	p
General class- sport class	82	1.664	2.896	0.005

From the test results obtained t count (2.869)> t table (1.664), the results can be seen there are differences in student achievement class VII SMP N 4 Purbalingga between classes common with sports class. Based on the difference of mean score (average) learning achievement of general class with sport known class general (74,39)> sport class (72,28).

Discussion

The success of achieving learning achievement will be determined by the interaction of various factors. The role of determinants is not always the same and fixed, the magnitude contribution of one factor will be determined by the presence of other factors and very situational that is not predictable due to the involvement of other factors are very varied. In addition, learning achievement is also influenced by several factors, namely internal factors and external factors. Internal factors include the physical state and psychology of students, the state of psychology includes talent, intelligence, interest, motivation, and personality variables. External factors include social aspects, learning conditions, facilities and infrastructure, subject matter, family, teachers and learning environment conditions.

From result of hypothesis test (Anova) for learning achievement of general class obtained value of F arithmetic (4,160)> F table (3,20) with significance 0,015. From the result, there is a difference of students' achievement in grade VII SMP N 4 Purbalingga of general class based on parent education level, with mean difference (average learning achievement of basic level (72,44) <middle level (74,75) <high level (77.28).

While the results of Anova test for sports class obtained F count (4.542)> F table (3.30) with significance 0,018. From the result, there is a difference of students' achievement in class VII of Junior High School N 4 Purbalingga of sports class based on parent education level, with average difference of learning achievement of basic level (71,73) <medium level (72,08) <high level (78 , 20).

The above results can be interpreted as students whose higher parental education mostly have better achievement than students whose master's education is at the primary and secondary level. Thus interpreted the level of education parents affect student achievement, parents who have high education level capable of providing guidance and good teaching in the learning process of children. In this case the parents of high education can help children in the learning process, it is because the higher the education of parents the higher learning knowledge. It motivates his son to imitate his parental

Nevertheless the factors that support the learning achievement is not fully influenced by one factor alone, but interrelated between factors one with the other, both based on internal factors and

external factors. T test results obtained t value (2.869)> t table (1.664), the results can be seen there are differences in student achievement class VII SMP N 4 Purbalingga between general classes with sports classes, with different mean values (average) achievement general class (74,39)> sports class (72,28). The result is the achievement of the general class students is higher than the sports class, it is because the general class students are more focused in the field of subject studies, while the sports class in addition to following the general pursuit there are also sports activities. So that more time and energy consumed

CONCLUSION

Based on the research results can be concluded Thar

1. There is a difference in student achievement of the general class of SMP N 4 Purbalingga based on parent education level.
2. There is a difference in learning achievement of sports class students SMP N 4 Purbalingga based on the level of parent education.
3. There is a difference in student achievement of general class between general class and sport class of SMP N 4 Purbalingga

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LEARNING MODELS OF PHYSICAL ACTIVITY BASED ON MOTOR PERCEPTION KINDERGARTEN STUDENT

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Abstract

Objectives: This study aims to produce Learning Model of Physical Activity Based on Motor Perception of Kindergarten Students. This model is expected to be used as a learning activity of physical activity in kindergarten. This learning model is packaged in a safe, interesting and fun.
Methods: Research and Development (R & D). The following explanation of the scheme of research and development steps according to Borg & Gall, (2009): (1). Needs Assessment, (2) Planning, (3) Format development, (4) Initial product validation, (5) Expert test or Validation, (5) Initial product revision, (6).Product trials, (7) Product revisions, (8) Field trials. (9) Revised final product (10) Dissemination and implementation. Small-scale trials were conducted on students of Mawar Putih Puluhan Argomulyo Sedayu Bantul Yogyakarta totaling 15 children, while large-scale trials were conducted on the kindergarten students 07 Samben Argomulyo Sedayu, Srontakan Kemusuk kindergarten students, all of which amounted to 30 child. The data collecting instruments used are: (1) interview, (2) the value scale, (3) observation of the learning model, (4) acceptance, and (5) the observation guidance on the experimental educator. Data analysis techniques used are quantitative descriptive analysis and qualitative analysis.
Result: The result of this research is a learning model of physical activity based on motor perception that is documented in CD and instruction manual of learning of kindergarten students. The learning model is divided into 6 headings: (1) walking on the balance beam, (2) walking around the limb picture while mentioning, (3) jumping in the semi-circle hola hop, (4) running, jumping and jumping (left - to the right, forward - backward) with a hop hola, (5) 5 creeping while dribbling with a chest in a tunnel made from hola-hop, (6) throwing a balloon past a pair of hola hops in pairs. All items in the post are packed in the form of a series of activities.
Conlusions: At the end of this study, it can be concluded that the learning model made is very interesting, in accordance with the characteristics of kindergarten students, and can be used as a method of teaching in the students 'physical activity learning kindergarten as well as very effective to develop the students' motor perception.

Keywords: Learning Models Physical Perception, Perceptual Motor.

INTRODUCTION

Kindergarten is one of the formal institutions that hold education for the early age, the characteristic of education in kindergarten is to provide stimulus in terms of education forfor the growth and development of kindergarten students both physically and mentally. The function of kindergarten is to nurture, grow, develop, all the potential that exist in the child optimally so as to form behavior and basic ability in accordance with the stage of development in order to have readiness to enter further education (Directorate of Early Childhood Education Development, 2011: 34). Every child has excessive energy to perform various physical activities. This energy requires channeling in order not to becomedisease-producing fatterms of physical activity that is able to channel the excess energy. Physical activity works well if the child is given the opportunity to practice his body skills (Farida, 2011). SurastutiNurdadi, (2015) stated that body movement is an active medium for developing motor perception ability (Republika, March 13, 2005).

A child who has developed a perceptual motor can control and control his whole body, develop his body processing skills, get used to healthy living, and be able to social activity or interact with others. As the expression Alzena quoted by Zoelandari, (2014) is a kinesthetic intelligent child capable of using and combining between mind and body simultaneously to achieve certain goals.

"(Zoelandari, 2014) The process of optimizing perceptual ability of this motor requires an environment that supports the child to move free and should be done outdoors (Endah, 2015) This activity is done by playing a fun and meaningful.

This situation is contrasted with the phenomenon that exists in early childhood today, namely the decrease in play activities that involve physical activity of children. When at home, children are crammed with treat electronic pernainan that tend to make children always only play the buttons instead of physical motion. According to the research of Play and Physical Quotient (PQ), (2014) conducted in several regions including Indonesia shows the result that Indonesian children occupy the lowest rank in physical ability and play because Indonesian children prefer to fill playing time by playing computer (Sriamin, Kompas Cyber) . Indrati, (2012) disclosed the same thing with the research that parents are too often issued a reprimand and a ban if the child is too often moved. It can be concluded that from these two statements it is clear that parents contribute greatly to the lack of gross (child) motor activity. Parents in Indonesia prefer to sit in the house, without much physics.

Meanwhile schools are beginning to lack the physical playground and tend to engage in classroom activities. This leads to reduced play activities that involve the physical child is also caused by the reduced playground land. Referring to MalcomBaldrige's research which states that one's success is determined by 45% Attitude, 10% Knowledge, 20% Practice, and 25% Skill, it is necessary to conduct activities involving active children to practice directly. What happens to the education of Indonesia today is the graduation is determined by the attendance, duties, and examinations. While knowledgewhich children get only 10% of 15 subjects and do not touch the basic material (attitude) only 4%. This knowledge is only obtained from memorizing textbooks as a quick way of children in answering test questions that are usually a double choice (Gaia Indonesia, 2008). This only involves the ability of the lowest human thinking (lower order thinking). While the higher order think ability such as the ability of learning process in the form of elements of attitude / morals, skills, knowledge, experience, responsibility, and accountability has not been touched (Gaia Indonesia, 2008).

The situation is exacerbated by the unconditioned learning activities in Kindergarten. Learning activities undertaken held in kindergartento be unplanned and purposeless. This worsens motor stimulation programs for children aged 3-6 years. So it is needed a cheap and easy program to be implemented in kindergarten with educator conditions that have a very diverse background. Learning model of motor perception activity is activity play which can be done with programmed and aimed.

Research Results Underlying Product Development.

Motor perceptual is one of the motions that need attention to the childhood of children and is an individual's ability to accept, interpret and react appropriately to the number of stimuli that come to him, not only from outside himself but also from within. According to Sage (1984: 17) quoted by HariAmirullahRachman (2011: 13) states that motor perception has an important role on intellectual, social and emotional development. Motor perceptuals encourage a person to explore his or her knowledge and environment, to then become a concept that is expressed to motion skills. According to HariAmirullahRachman (2011: 13-14) states that the perceptual motor generated from the process of motor learning can predict the academic ability of children in the future. Perceptual motor includes several elements that exist. Motor perceptual elements consist of various elements, including: body awareness, awareness of space, awareness of direction and awareness of tempo, (RusliLutan: 2001: 8). Efforts to develop students' perceptual motor skills are essential. The development of learning model of physical activity based on motor perception can be done through various game activities. The most appropriate model of physical activity learning for kindergarten students is in the form of play, due to the fact that at the time of the children's nursery school was a period of play. So the learning model of physical activity based on motor perception in the form of play needs to be developed as a form in an effort to develop the perceptual ability of motor students kindergarten.

Product Development

The initial product development of physical activity in the form of play to develop motor perceptuals for kindergarten students is structured on the operational definition. Dimensions or elements to be developed are as follows:

Table 1.Dimensions and Elements of Developed Physical Activity.

No	Dimension	Activity
1.	Body awareness	Ability to walk over the balance beam to the circle that berambar human body members while mentioning and what its function.
2.	Space awareness	The ability of children to jump activity on a limited tool and to find out how much space or place that the body uses when moving
3.	Awarenessof direction	The ability of children to jump and jump to the left (laterality), right, front and back. This is the body's understanding of place and direction, consisting of two components of understanding: 1) internal understanding to be able to move the body to the right and left side, and 2) external projection of laterality, this component is a that understanding gives the dimension of space
4.	Awareness of tempo	The ability of children to throw the ball with the accompaniment of music and children can align with the tempo of the music. Awareness of tempo allows the coordination of movement between the eyes and limbs to be efficient. Awareness-raising development deals with the learning process to align motion in an appropriate order.

METHOD

Expert Product Validation Test

Validation by experts who have expertise in the field of motor development and learning Motor and Physical Education and involves one teacher of Physical Education to provide input related to the model to be developed. Two people validate the model of the development of physical activity in the form of play to develop motor perceptual Prof HariAmirullah, and the mother of Sri Murtini ateacher of kindergarten. Thus, the content and substance of the items of physical activity that have been prepared can be said to have fulfilled the requirements as a valid model.

Product Revision before Trial

Learning model of physical activity based on motor perception of childhood, in test phase of expert validation there are some input and suggestion for revision or improvement of model. Some of the inputs, suggestions and suggestions that have been obtained from experts and kindergarten teachers are as follows:

1. Honey hops are used more scaled down.
2. Better creep time using plastic carpet mats.
3. Every activity in the post stays using music (preferably national anthem)
4. Mother teacher Kindergarten wants tools left in Kindergarten forchild activity.

Small Scale Trial

Small-scale trials were performed, after the model was tested for validation and followed by revisions from experts and kindergarten teachers. Small-scale trials were conducted in kindergarten students with a total of 15 students at PKK Mawar Putih Puluhan kindergarten, Argomulyo, Sedayu, Bantul, Yogyakarta. This small-scale trial is conducted to obtain information on whether the model can be used as a model of physical activity learning in Kindergarten.

Based on small-scale experiments conducted can be concluded that the model Learning model of physical activity based on motor perception in kindergarten can be tested on the real samples of students kindergarten 07 Samben, Argomulyo Sedayu, Bantul, Yogyakarta with total of 30 students.

Product Revision after Small Scale Trial

Revision of model of learning model of physical activity based on motor perception in kindergarten no input and suggestion from validator dab kindergarten teacher, that is using music in every activity and existence of instruction book. Field trials were conducted at Samben kindergarten students 07, ArgomulyoSedayu, Bantul, Yogyakarta with total of 30students

Results of Model Development

The results of the development of 6 physical activities in the form of games based on motor perception. The learning model of physical activity bossed motor perception for kindergarten students, as follows:

No	Name Activity:	:	Image Activity	F i
1	Minutes beam balance	:	: Students walk on a 2 m balance beam.	
2	Mention the limbs and their functions	:	Students after from the balance beam toward the hula hoop circle walking the picture of the limb while mentioning the intended image and for what function	
3	Jump while carrying the ball		Students jumped by carrying the ball on a semi-circular honey-string tool assembled in sequence	

4	Walking, running, jumping and jumping left, right, forward and backward in a honey-hop circle on the floor or on the ground	:	Students walking, running, jumping and jumping in the honey hop circle totaling 10
5	Crawling in the tunnel	:	Students creep in the tunnel while dribbling
6	Throw a ball in a circle	:	Students throw a ball in a hula hoop that is set up in pairs

RESULTS AND DISCUSSION

The various physical activities of the kindergarten students contain elements of basic fundamental motion: the basic motion that develops as a result of age. Fundamental basic motions include: (a) locomotor motion: motion made by moving from place to place like walking on a board, jumping over a pole, taking a stick, crawling, edging and climbing; (b) non locomotorie motion performed without having to move places such as throwing; (c) manipulative motion is by playing certain objects such as throwing.

Learning model of physical activity based on motor perception in accordance with the development of kindergarten students, created with easy movement, for students to want to do, difficult movement will make students lazy to do. Activity in learning of motor-based physical activity is walking on a board, mentioning limbs, jumping over a number of obstacles, running, jumping, jumping left to right, forward, backward, creeping, throwing balls are easy moves to do.This is in line with one of the principles of physical education that prioritizes successful experience. Successful experience will not be fulfilled when movement is too difficult to do.

Model of motor-based physical activity learning for kindergarten students is made in the form of circuit that is doing a series of activities in one unit of activity, such activities include: road element, jumping, running, throwing, crawling, and creeping as one series of motion performed sequentially. Circuit models are more interesting for learners to do and are very enthusiastic. This shows that the form of circuit has advantages such as easily presented, the learning of motor-based physical activity of perception of motor in the form of circuit is easy to do because all activities in post one to six is fundamental movement, movement is natural, and systematically clear.

Motivation model of motor-based physical activity for kindergarten students is an alternative as an effort to fulfill perceptual movement requirement for students. Models that have been arranged through several stages. Models that have been compiled are not perfect then some improvements and adjustments should be made so that the model has been arranged is more appropriate and useful for students kindergarten.

CONCLUSIONS AND SUGESSTION

Based on the results of research that has been described before, it can be concluded that has been compiled model of physical activity-based learning motor perception for students kindergarten. The learning model of physical activity, consisting of six physical activities representing elements in perceptual motor that include body awareness, awareness of direction, awareness of space, and awareness of tempo. The model is prepared by adjusting the growth and development stages of Kindergarten students. The activity is, as follows: walk the balance board, mention the name and function of the body, jump with obstacles, walk, run in hoops ho circle, creep in the tunnel, throw the ball in pairs through hola hop circle. Suggestions that can be delivered related to the purposes of product utilization are: for kindergarten teachers, can use this model in school, as an effort to develop students' perceptual motor.

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DESIGN OF MEASURABLE SPORTS CLUB IN ELEMENTARY SCHOOL IN BALI PROVINCE

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Abstract

Objectives: Improving sports performance is not an easy thing, but it takes coaching, nurturing sportsmen, and the development of science and technology of sports. These include the development of sports clubs in elementary school. Achievement sports are conducted through the process of coaching and developing sportsmanship in a planned, tiered, and sustainable process through the competition to gain achievement with the support of sports science and technology. This development research aims at (1) designing elementary school based clubs of measurable sports in Bali province, and (2) the establishment of elementary school based club of measurable sports in Bali province.
Methods: The coaching of achievement sports at an early age became the basis for the development and formation of elementary school based clubs of measurable sports. Branches of measurable sports conducted by coaching are athletics, swimming, and rock climbing. Measurable sports contribute high in multi event championships especially in medals. The development of measurable sports benefits the management, effective, and efficient in coaching.
Results: Applied products of the research were: (1) recommended analysis of the needs of youth and sports education offices on the design of elementary school based clubs of measurable sports, (2) the establishment of elementary school based clubs of measurable sports, and (3) technical guidance in the formation of elementary school based clubs of measurable sports in Bali province.
Conclusions: Research development can be used as a reference and guidance for the coach of elementary school based clubs of measurable sports, so as to be able to nurture students comprehensively, systematically, and sustainably. The resulting applied product is expected to overcome the obstacles and difficulties experienced by youth and sports education offices to manage elementary school based clubs of measurable sports in Bali province. The establishment of a measurable sports club in the province will have an impact on the development of sports achievements at a higher level.

Keywords: sports club design, measurable sport, elementary school

INTRODUCTION

Achievement sports become the benchmark of sport coaching success in Indonesia. Achievement sports are done by everybody who has the talent, ability, and potential to achieve achievement. Achievement sports are conducted through the process of coaching and developing sportsmanship in a planned, tiered, and sustainable through the competition to gain achievement with the support of science and technology of sports (Act No. 3 Year 2005 on the National Sport System).

The facts show that sport achievement in Indonesia is fluctuating, requiring the attention of the government, sports actors, and sports stakeholders. Various sports organizations in Indonesia recognize that the guidance of sports at the basic level as the building foundation of the sports achievement was in a weak conditions, so it has not been able to face the challenges ahead (Ria Lumintuarso, 2011: 8). Prior to 1997, sports achievement in Indonesia can be said to be good, in which put Indonesia on South East Asia (SEA) Games as the overall champion. But at the SEA Games above 2000, Indonesia's sports achievement has decreased, compared to the achievement of medals in other countries in Southeast Asia.

The decline in Indonesia's sports achievement in the SEA Games above 2000 is due to the fact that the sports coaching system has not fully established a long-term, consistent, systematic, and sustainable. It seems clear that the problem arises with the existence of various programs namely; *Garuda Emas* Program, *Indonesia Bangkit* Program, *Atlit Andalan* Program (PAL), and *Indonesia Emas* Program (Prima) *Pratama*, *Muda*, and *Utama*. These programs were compiled because of policies

undertaken by the government that have not yet fully have a comprehensive and sustainable sports coaching system. In addition, the lack of preparedness of junior athletes makes the decline in Indonesia's sports achievement, especially coaching at an early age. The Indonesian government has not been able to raise the optimal sports achievement. Even there is a tendency that sports achievement of Indonesian athletes decreased.

As proof that the coaching of sports in elementary school with a multi-event of students' sports weekend (PORJAR) in Bali province, has not been able to sustain the achievements of Indonesia. The following results of students' sports weekend in Bali province are shown in table 1.

Table 1. Results of PORJAR in Bali Povince

District/ City	Medals Gained								
	2014			2015			2016		
	Gold	Silver	Bronze	Gold	Silver	Bronze	Gold	Silver	Bronze
Denpasar	42	34	19	44	34	24	36	46	42
Badung	27	18	24	19	37	30	48	37	31
Buleleng	13	19	34	13	5	15	8	9	25
Gianyar	4	10	26	6	16	25	13	11	23
Bangli	8	4	17	5	6	18	9	7	10
Klungkung	4	14	21	3	6	20	6	11	21
Jembrana	15	12	6	23	9	10	9	8	11
Karangasem	6	4	11	8	13	17	6	11	21
Tabanan	2	7	14	6	3	16	4	4	24

Source: Report of PORJAR in Bali Province, 2014-2016

Based on the results of PORJAR in Bali province above shows that the sports coaching achievement is still dominated by big districts and cities, which are more advanced both from aspects of human resources, facilities, management and sports coaching patterns. Sport coaching has not been focused on the measurable sports systematically, comprehensive, and continuous. Sport coaching also has not been accommodated in sports club with the approach of scientific studies and application of science and technology to sports. Sport coaching in Indonesia is depicted in a conical building that begins with an increase in physical fitness and sports culture within the community as the main foundation, massing, sport coaching at an early age, then guiding, scouting, and coaching sport at student level. The next step concentrates on performing sports achievement intensively in the local area, systematic, tiered, sustained and intensive development of athletes at an early age at national level, until the highest level of elite athletes are obtained.

Regulation of the President of the Republic of Indonesia no. 22 Year 2010 implied that the target of developing national athlete candidates is potential athletes who are scientifically and factually have prospects to be developed to achieve international achievement through tiered and sustainable coaching, based on the principle of long-term athlete coaching. One strategy of sports coaching is to involve sports clubs as a forum for sports coaching. Sports club is the spearhead of sports coaching. This club is expected to produce talented athlete seeds. The statement is certainly not just a mere slogan, but we need to realize how the form and implementation in the field (Sri Sudono Sumarto, 2000).

In fact, the existence of the sports club currently is quite apprehensive. So the efforts of coaching sports clubs need to find a way out so that the potential of the club as a foundation of strong sports coaching can be realized. Some factors that need to be considered in a sports club is the guidance of talents, coaches, training methods, frequency of competition, welfare, facilities and infrastructure. This research, focused on developing measurable sport club designs at elementary schools in Bali province. The formulation of the research problem is how to develop a measurable sport club design on elementary school in Bali province, so the formulation of research problem can be described as follows; (1) how to analyze the needs of youth and sports education offices on

measurable sports clubs in primary schools in Bali province; (2) how to develop measurable sport club designs at elementary schools in Bali province; and (3) how to develop technical guidance of measurable sport club design at the elementary school in Bali province. The goal to be achieved in this research is to develop a measurable sport club design at elementary school in Bali province.

METHOD

The method used in this research was the model design development method, because this research is a kind of research conducted to construct or develop a measurable sport club design at elementary school in Bali province. This research was a development research to produce a measurable sport club design on elementary school in Bali province. The approach used in this research was a design testing. For product development, the procedures undertaken in this development study include (1) developing the product, and (2) testing the effectiveness of the product in achieving the objectives to be achieved (validation). The above procedure is a complete research process with product development and validation efforts to be widely used. Without validation of the results, the development can only be used on a limited circle.

In accordance with the above description, this research consists of two stages of research that were carried out with two approaches which are the design development approach and the action assessment approach, as follows: (1) the development of design or design with the aim to produce and test a design or design of sports club measured at the elementary school in Bali province, and (2) action research to find out the implementation of the design or design of the development of measurable sports club design in primary school in Bali province.

The type of research used is research and development by survey method. The product developed is the design of a sport club measured at an elementary school in the Bali province. The development of sport club designs measured at primary school using a procedural descriptive model.

RESULTS AND DISCUSSION

1. Results of Questionnaire on Head of Education, Youth, and Sports office on Measurable Sport Club Design in Elementary School

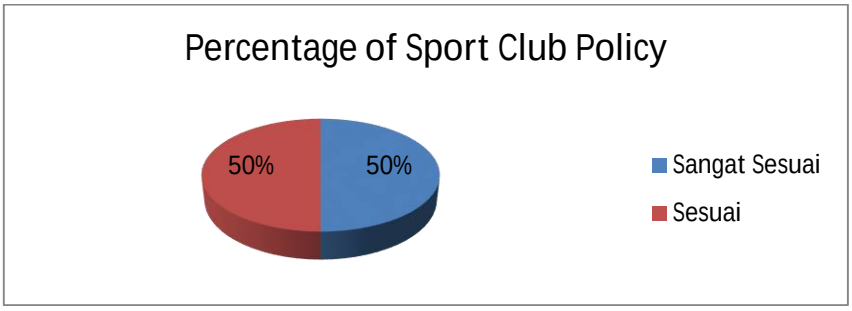

Fig.1 Percentage of sports club policy

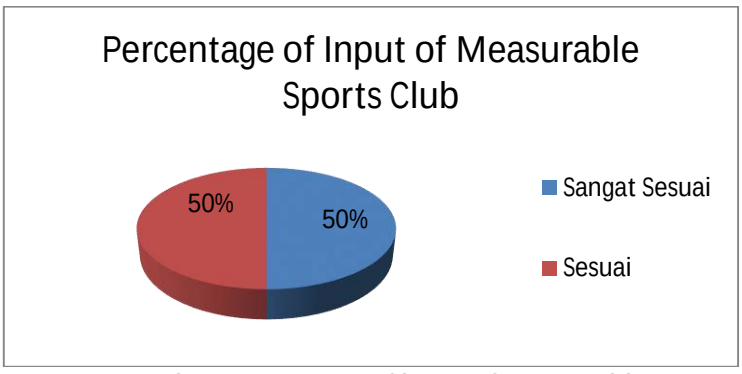

Fig.2 Percentage of input of measurable sports club in elementary school

Table 2. Results of Interview with the Head of Education, Youth, and Sports office

District/ City	Establishment of the club	Needs	Focus of the sport branch	Total of the club	Recruitment system	The club's Person in charge	Facilities	Fund source
Klungkung	Will be established	infrastructure, facilities, coach	Athletics, self-defense	13	Available	Head of Education, Youth, and Sport	scholarship	Cooperation
Jembrana	Have been established	infrastructure, facilities, coach	Athletics, football, volley ball	3	Not yet available	Head of Education, Youth, and Sport	Have not got any	Private District government
Tabanan	Will be established	infrastructure, facilities	Football	1	Available	Physical education teacher	Did not got any	Private
Karangasem	Will be established	infrastructure, facilities	Athletics	7	Agree	Head of Education, Youth, and Sport	Have not got any	District government
Bangli	Will be established	infrastructure, facilities	Athletics, judo, karate, silat, and sepak takraw	-	Agree	Head of Education, Youth, and Sport		
Buleleng	Will be established	infrastructure, facilities	swimming, athletics, pencak silat, gymnastics, sepak takraw and rock climbing	Not available, because budget have not been realized	Obligation	Person in charge: Headmaster Manager: physical education teacher	Planning: Training regimen, sports uniform, transport fee	District government and CSR

Based on the results of interviews with the head of sports in Education Youth and Sports office in districts/city in the Bali province showed that the concept of measurable sports clubs on the elementary school has not been done with the assessment and scientific approach. Proven that: (1) the measurable sports club at the new elementary school will just be established, (2) the need for measurable sport clubs in elementary school, especially the fulfillment of sports facilities and infrastructure, (3) the name of the measurable sport club on the existing elementary school varies greatly according to the policy of Head of Education, Youth and Sport office (4) The sports branch handled by each district / city focuses on athletic sports, but does not yet have a sports club, (5) the

number of measurable sports clubs on the elementary schools were variable, (6) the potential student recruitment system were have not been established (7) training facilities and equipment have not been fulfilled, and (8) funding sources in the guidance of measurable sports clubs at primary schools in district /city in Bali province were according to their respective regions.

DISCUSSION AND SUGGESTION

Steps in the monitoring of talented athletes (James Tangkudung, 2006) are (1) observations of students' attitudes in sports, either at school or outside school or in other places, (2) observation of student characteristics (4) selection, screening, or general or special selection by means of instruments to measure the branches of the sport concerned; and (5) conducting selection based on anthropometric characteristics, capability and physical development. Based on this, the role of the school is very important as one of the athletes coaching medium.

The realization and existence of students in Bali is basically to increase sport achievement efficiently and effectively through the process of formally and centrally organized sports coaching or national education and training. Sport achievement is a combination of athlete effort and hard work of trainer, so that both those responsible for the implementation of training program to produce high achievement (Djoko Pekik Irianto, 2009).

Sport achievement is the result of long-term, gradual, tiered, and systematically coaching process of talented athletes. Development and guiding of sports at golden age athletes need comprehensive management. The establishment of an elementary school sports club that needs to be done is related to the sports club's policies, goals, objectives and needs. The main purpose of establishing measurable sports clubs at elementary school is to produce superior athlete seeds and increase sport performance optimally.

The embodiment and the existence of measurable sports coaching in elementary school in the Bali province is basically to improve sports performance efficiently and effectively through a process of formally and centrally organized training or education and training. Sports achievement is a combination of athlete effort and hard work of the coach or trainer, so that both those responsible for the implementation of training program to produce high achievement (Djoko Pekik Irianto, 2009: 7). The sports development of student achievement in Bali province is influenced by the staging system of training, supported by various facilities, and the target of sport achievement at regional, national, and international level.

Measurable sports clubs of elementary schools were set up with attention on; (1) the condition of the school, the availability of infrastructure and facilities, students, trainers or coaches, teachers, principals, and school committees, (2) organizing teachers and trainers who have high idealism, dedication and commitment in performing their duties; (4) school management is using Integrated Quality Management (MMT) or Total Quality Management (TQM), (5) commitment of all parties start from the central, regional, school committee, principal and staff, parents or guardians, community, and students, and (6) optimizing the role of the school committee. Measurable sports clubs in elementary school can be measured in various aspects including; student recruitment system, curriculum modification, professional trainer, teacher, learning and sport infrastructure, learning media, supporting facilities, nutrient intake, management, health condition, training system implementation and sport achievement.

Athletic sports coaching at the measured elementary school sports club in Bali province refers to the pattern of local and national scale sports coaching, including the involvement of a sports coach. The training system of students' sport achievement in the tiered and sustainable Bali provinces needs to be supported by professional sport stakeholders and the utilization of sport science and technology.

The results of the evaluation and analysis of the world champion shows that athletes who are able to produce an intensive achievement are; (3) possesses the psychological and moral characteristics required by sport, (4) suitable for the sport he does, and (5) has experienced practice and compete for years (Husdarta, 2010). Development of golden age athletes should be able to meet the balance between academic aspects and sports skills. The coaching system considers three

aspects of a system, namely: (1) student admission system, (2) academic development process and sports skills, and (3) evaluation process (Setiono, 2006). To improve the performance, it must be improved how the recruitment system of elementary school students by attracting talented athlete candidates who have potential, sport and academic achievement.

The sports coaching system begins with collecting process of talented sport student. This collecting system can be called "potential athlete hunting". The student's skill standard is the most important part of the coaching process. In addition, another important part is the process of measuring students' physical abilities. Coach of measurable sport clubs at elementary school should be at least a bachelor's degree in sport coaching education, physical education or sports science. Thus the trainer or coach understands the factors of the stages of student development so as to have no difficulty in approaching the students and able to make training plan, make the training program and carry out the training well and programmed in accordance with the plans that have been made with science and technology approach.

According to Harsono (1988), there are three things that can support the success of the coach or trainer; 1) educational background, 2) experience in sports, and 3) motivation. Obviously the position of the coach could not be ruled out in the development of sports achievements, so the need for professional trainers with a supportive scientific capacity and experience in the field of sports as well as the motivation as a coach is needed.

Trainers or coaches have many roles and responsibilities that directly or indirectly affect the performance and development of athletes guided. In addition to preparing athletes to compete, the coach must also be able to evaluate the athlete and himself. Referring to the development of the sports world today, only the trainers who master the sport science and technology that can bring the athlete achieve the expected achievement. Sports science is not stand-alone, but related to other disciplines. Undoubtedly, knowledge of the fundamentals of coaching supported with sports technology will greatly strengthen the roles and responsibilities of the coach.

A professional coach is created with authority, educational qualifications, and competence, so that the head coach is assisted by the physical coach assistant, technical trainer assistant, strategy coach assistant, and mental coach assistant. To improve coaching requires a pattern of coach improvement. Qualifications and abilities should be improved. Some of the minimal skills that the trainer must master are; appreciation of professional ethics, the understanding and application of sports science, the mastery of skills in a sport, the mastery of teaching and learning or training strategies, social skills include the ability to socialize, communicate, lead, make humor, influence others, and mastery of training programs.

CONCLUSION AND SUGGESTION

The conclusions obtained are (1) recommendations for the analysis of the needs of Education, Youth, and Sports offices on the measurable sports clubs design of elementary school, (2) the establishment of elementary school-measurable sports clubs, and (3) technical guidance in the formation of elementary school sports clubs in Bali province. Research development can be used as a reference and guidance for elementary school-measurable sport coaches, so as to be able to nurture students comprehensively, systematically, and sustainably. The applied products are expected to overcome the obstacles and difficulties experienced by youth and sports education offices to handle elementary school-measurable sports clubs in Bali province. The establishment of a measurable sports club in the province will have an impact on the development of sport achievements at a higher level.

Suggestions to be given are: (1) The need to design a model of measurable sports development at the regency / municipality elementary school in Bali province based on the analysis of the needs of sports clubs, (2) The system of measurable sports training on elementary school needs special handling so that the education and exercise of the students can be done optimally, and (3) It takes a form of training or sport club measured at elementary school in developing the potential and talent of sport in a comprehensive, sustainable, scalable, and systematic.

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ANALYSIS OF PHYSICAL CONDITION OF SOCCER ATHLETE'S PORDA OF BEKASI CITY

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Abstract

Objectives: The aims of this research were: identify, analyze, and classify physical condition of soccer athletes PORDA of Bekasi City, and evaluate the results of physical training that has been given by the soccer coach.
Method: The research method used descriptive with test and measurement. The research population is all soccer athletes in Bekasi City with totaling 30 athletes. The total sample are 21 athletes with incidental sampling technique, that is the athletes who come during test execution. The instrument used to obtain the data in this study are tests and measurements made by KONI team of Bekasi City. The physical fitness test is given consists of 11 kinds of standard tests. The result of normality test of each data using liliefors test with result Significant < 0.05 (0.190), which means normal distributed data.
Results: Based on the test results, most of: (1) the flexibility can be interpreted the good category by 47.62%., (2) the muscular endurance abdominal can be interpreted the good category by 47.62%, (3) muscular endurance of arm can be interpreted the good category by 47.62%, (4) muscular endurance of back can be interpreted the excellent category by 80.95%, (5) leg power when leaping forward can be interpreted the poor category by 100%, (6) leg power jumped up can be interpreted the good category by 57.14%, (7) arm power can be interpreted the fair category by 57.14%, (8) agility can be interpreted the excellent category by 33.34%, (9) speed can be interpreted the good category by 76.19%, (10) leg muscle strength can be interpreted the poor category by 95.24%, and (11) VO_2max (maximum oxygen uptake) can be interpreted the fair category by 66.67%. Furthermore, the physical condition of soccer athletes PORDA of Bekasi City can be interpreted that the excellent and poor categories increased by 0%, very good categories increased by 4.76%, good categories increased by 90.48%, and fair catogories increased by 4.67%.
Conclusion: The research conducted physical condition of soccer athletes PORDA of Bekasi City the average good categories. The testing results provide direct comparisons between the athlete, and provide feedback on the effectiveness of physical training program used. Coach is able to change in the physical training program to improve the quality of the program. These program evolving improvement help to solidity and strengthen physical athletes.

Keywords: physical condition, soccer, athletes.

INTRODUCTION

Soccer is a people's game. Soccer is an amazing, exciting team sport. A full game of soccer (also called football) has eleven players per side, but games with fewer players are played, too. It is inexpensive, and can be played year round, indoors and out, by any number of players, boys and girls, from young children to senior citizens. Size and strength does not influence the enjoyment of the game. Soccer promote fitness, both aerobic and anaerobic, as well as agility and development of the entire body.

Soccer is the simplest of sport in principle-in the final analysis, one team has to score more goals than the other (Murray & Dunmore, 2013: 1). The game of soccer is a game or that uses a large ball with standard rules. The aim is to kick or head the soccer ball into the other team's net to score a goal and the team that scores the most goals wins the game (Gifford, 2010: 6).

To be a quality player it requires mastery of basic techniques, tactics, physical, and mental good because the end of the exercise is to achieve maximum performance. According Gordon (2009: 89) the aim of training is to allow the athlete the best chance of achieving their performance goal or target. For this to become a reality, the athlete must develop on all levels, but principally there needs to be a profound physiological and physical development in order for this to occur.

One of the events that become routine competition in West Java is the Pekan Olahraga Daerah (PORDA) held every four years. PORDA is a youth competition among districts/cities in a

province. Based on observations, during the past two PORDA executions (PORDA XI in Bandung regency 2010 and PORDA XII in Bekasi Regency 2014), PORDA athletes always failed to pass prequalification due to a number of obstacles, one of them being physical. Physical training is the cornerstone of all the training factors. Succes in training and competition is not determined solely by an athlete's genetic potential (Bompa, 2015: 3). Physical training is one of the most, and in some cases the most, important ingredient in training to achieve high performance (Bompa, 1999: 54). The purpose of physical conditioning is the improvement and development of human body characteristics. The goal of this system of improvement is to reach a higher level of physical efficacy (Igor, 2017: 118).

Therefore, physical condition training needs to get serious attention, carefully planned and systematized so that the level of physical fitness and functional ability of the body tools better and support athletes to do the exercises without feeling excessive fatigue. The goals and objectives of the training are to improve the basic physical qualities in general and to develop and enhance specific physical potentials (Apta Mylsidayu & Febi Kurniawan, 2014: 49). Physical maturity is usually determined by an athlete's ability to perform a range of strength, fitness, flexibility, and motor coordination tests favorably (Collins, 2008:16). For coach to know the physical development of a soccer athletes, tests and measurements are used as the initial guideline for designing a physical training program.

Clarified by Williams (2013: 25) the physical demands of a soccer match can also be evaluated using physiological measurements. So, to see the improvement of physical condition in athletes, it is necessary to test and measure. Performance in physical fitness tests is a way of assessing athletic performance and establish the profile of sports talents, as well as identifying whether the athlete is ready to compete, subsidize the training programs from short to long run, identifying the weaknesses of the athletes, among other functions (Anza, Denis, & Silva, 2013: 62).

Performance analysis is part of the general planning process in coaching and follows a strategic and systematic plan impelemented at two levels: (1) evaluation of the athelete's physical and technical condition, (2) assesment of performance while competing (jump distance/height and throw distance). The information derived from these two levels of analysis allows us to monitor the athlete's evoluation in the season and to indentify the effect of coaching on the improvement of his/her performance (McGarry, O'Donoghue, & Sampaio, 2013: 467).

Therefore, the aims of this research were: identify, analyze, and classify physical condition of soccer athletes PORDA of Bekasi City, and evaluate the results of physical training that has been given by the soccer coach.

METHOD

The research method used is descriptive with test and measurement. Descriptive method is designed fot the investigator to gather information about present existing conditions (Sevilla, et.al., 2007: 94). This method is aimed at casting light on current issues or problems through a process of data collection that enables them to describe the situation more completely (Fox and Bayat, 2007: 8).

The research population is all soccer athletes in Bekasi City with totaling 30 athletes. The total sample are 21 athletes with incidental sampling technique, that is the athletes who come during test execution.

The research instrument is a tool that is selected and used in the gathering of data for these activities to be systematic and easy (Suharsimi Arikunto, 2007: 101). The instrument used to obtain the data in this study are tests and measurements made by KONI team of Bekasi City. Furthermore, the physical fitness test is given consists of 11 kinds of standard tests, include: (1) flexion of trunk test, (2) standing board jump test, (3) two hand medicine ball test, (4) vertical jump test, (5) shuttle run test, (6) sprint 50 metre test, (7) leg dynamometre test, (8) sit ups test, (9) push ups test, (10) back lifts test, (11) bleep test. The results of the assessment of each test of physical condition of soccer athletes can be seen in table 1 below.

Table 1. The results of the assessment of each test of physical condition of soccer athletes

Scores	Category	Name of test										
		Flexion of trunk test	Standing board jump test	Two hand medicine ball test	Vertical jump test	Shuttle run test	Sprint 50 metre test	Leg dynamometre test	Sit ups test	Push ups test	Back lifts test	Bleep test
1	Poor	1-5	≤220	2.63-3.67	38-45	17.2-17.7	8.0-9.0	77-145	10-29	4-11	10-20	≤36
2	Fair	6-11	221-230	3.68-4.52	46-52	16.7-17.1	6.9-7.9	146-214	30-49	12-19	21-31	37-47
3	Good	12-17	231-240	4.53-5.37	53-61	16.1-16.6	5.8-6.8	215-282	50-69	20-28	32-42	48-57
4	Very Good	18-23	241-250	5.38-6.22	62-69	15.6-16.0	4.7-5.7	283-350	70-89	29-37	43-53	58-74
5	Excellent	≥24	≥250	≥6.23	≥70	≤15.5	≤4.6	≤352	≥90	≥38	≥54	≥75

(Source: KONI Bekasi, 2016)

Furthermore, for overall value determines the level of physical condition of athletes conducted by: (1) Add up the conversion value score for each component of the physical condition, (2) These results are then denoted in category status physical condition of soccer athletes such as in table 2 below:

Table 2. Norma Physical tests athletes PORDA of Bekasi City

Range of scores	Category
4.1 - 5.0	Excellent
3.1 - 4.0	Very good
2.1 - 3.0	Good
1.1 - 2.0	Fair
0-0 - 1.0	Poor

(Source: KONI Bekasi, 2016)

Data analysis technique performed consisted of test for normality, and a description of the data by percentage. Calculation of data normality in this study using liliefors test. Furthermore, to search the results of data processing results of physical condition of soccer atletes PORDA of Bekasi City, the author uses the technique of calculating data with the formula:

$$= \frac{\sum {}^{1}}{\sum} \ 100\%$$

Information:

P = The number or amount of percentage sought

$\sum X_1$ = Number of scores based on alternative answers

$\sum X$ = Total score

RESULTS AND DISCUSSION

Description of the data in this study include the normality test, average value and standard deviation, and frequency distribution of each variable, the following data is complete:

Table 3. Normality test results

No	Name of test	Normality test results
1	Flexion of trunk test	0.078
2	Standing board jump test	0.089
3	Two hand medicine ball test	0.098
4	Vertical jump test	0.099
5	Shuttle run test	0.074
6	Sprint 50 metre test	0.063

No	Name of test	Normality test results
7	Leg dynamometre test	0.088
8	Sit ups test	0.084
9	Push ups test	0.083
10	Back lifts test	0.086
11	Bleep test	0.076

The normality test using liliefors test, the test criteria as follows: (1) Significant < 0.05, then the normal data distribution, and (2) significant > 0.05, then the data is not normally distributed. Based on the above table, The result of normality test of each data using liliefors test with result Significant < 0.05 (0.190), which means normal distributed data.

Table 4. The average value and standard deviation of physical condition soccer atletes PORDA of Bekasi City

No	Name of test	Average	Std. Deviation
1	Flexion of trunk test	15.36	4.27
2	Standing board jump test	183.33	54.34
3	Two hand medicine ball test	4.58	0.49
4	Vertical jump test	53.52	5.20
5	Shuttle run test	15.90	0.79
6	Sprint 50 metre test	6.62	0.56
7	Leg dynamometre test	105.90	29.13
8	Sit ups test	59.90	29.13
9	Push ups test	23.00	8.14
10	Back lifts test	78.43	24.92
11	Bleep test	38.53	7.58

Table 5. Frequency distribution of flexibility

Score	Quantity	Percent (%)	Category
5	1	4.76	Excellent
4	5	23.81	Very good
3	10	47.62	Good
2	5	23.81	Fair
1	0	0	Poor
Jumlah	21	100	

Flexibility of soccer athletes to be know with flexion of trunk test. Most of the flexibility of soccer athletes can be interpreted the good category by 47.62%. Flexibility refers to the range of movement in a joint or series of joints, and length in muscles that cross the joints to induce a bending movement or motion.

The body shape of a soccer athlete is needed when performing basic soccer techniques because without a good body shape will make the movement becomes stiff and not flexible. So, flexibility training is very important. Because, the general purposes of flexibility training include: (1) correct muscle imbalances, (2) increase joiun range of motion, (3) decrease muscle hypertonicity, (4) relieve joint stress, (5) improve the extensibility of the musculotendinous junction, and (6) maintain the normal functional length of all muscles (Clark, Lucett, & Kirkendall, 2010: 121).

Table 6. Frequency distribution of muscular endurance

Score	Sit ups test		Push ups test		Back lifts test		Category
	Quantity	Percent (%)	Quantity	Percent (%)	Quantity	Percent (%)	
5	2	9.52	0	0	17	80.95	Excellent
4	3	14.29	6	28.57	4	19.05	Very good
3	10	47.62	10	47.62	0	0	Good
2	6	28.57	4	19.05	0	0	Fair
1	0	0	1	4.76	0	0	Poor
Jumlah	21	100	21	100	21	100	

Muscular endurance of soccer athletes to be know with sit ups test to muscular endurance abdominal, push ups test to muscular endurance of arm, and back lifts test to muscular endurance of back. Most of the muscular endurance abdominal of soccer athletes can be interpreted the good category by 47.62%, muscular endurance of arm can be interpreted the good category by 47.62%, and muscular endurance of back can be interpreted the excellent category by 80.95%.

Muscular endurance refers to the ability of a muscle or group of muscle to repetedly move against a submaximal resistance (Hoffman, 2006: 41). Muscular endurance is the ability of a muscle or muscle group to exert force to overcome a resistance many times. Often the resistance is the body itself. The ability to perform upper-body exercise many times is separate from the ability to perform lower-body or abdominal exercises many times. Muscular endurance, on the other hand, refers to the muscle's ability to exert a submaximal force repeatedly over time. In the game of soccer, stomach muscle endurance is required for athletes not to experience abdominal cramps and as supporters when athletes perform basic techniques, arm muscle endurance is required as a requirement for arm power exercises, as well as endurance of back muscles required by football athletes to perform heading and supporting basic engineering movements.

Table 7. Frequency distribution of power

Score	Standing board jump test		Vertical jump test		two hand medicine ball test		Category
	Quantity	Percent (%)	Quantity	Percent (%)	Quantity	Percent (%)	
5	0	0	0	0	0	0	Excellent
4	0	0	1	4.76	1	4.76	Very good
3	0	0	12	57.14	7	33.34	Good
2	0	0	7	33.34	12	57.14	Fair
1	21	100	1	4.76	1	4.76	Poor
Jumlah	21	100	21	100	21	100	

Leg power of soccer athletes to be know with standing board jump test and vertical jump test. Most of leg power when leaping forward of soccer athlete can be interpreted the poor category by 100%, most ofleg power jumped up of soccer athlete can be interpreted the good category by 57.14%, While arm power of soccer athlete to be know with two hand medicine ball test. Most of arm power of soccer athlete can be interpreted the fair category by 57.14%,

An athlete can be exceptionally strong but lack significant explosive power if they are unable to apply their strength rapidly. Soccer is one of sport activities involve far faster movements. Power development is a key component of soccer performance. Think about the many times on the field that you are called on to be reactive and explosive in your effort-driving a crossing pass, vertical jump into a header ath the goal, or exploding to meet the ball at its highest point as the keeper (Gatz, 2009: 87). In addition, arm power is required when throwing in, leg power when leaping forward, kicking, and long passing, and leg power jumped up when heading.

Table 8. Frequency distribution of agility

Score	Quantity	Percent (%)	Category
5	7	33.34	Excellent
4	6	28.57	Very good
3	5	23.81	Good
2	2	9.52	Fair
1	1	4.76	Poor
Jumlah	21	100	

Agility of soccer athletes to be know with shuttle run test. Most of agility of soccer athlete can be interpreted the excellent category by 33.34%. Agility can be defined by the abilities and skills

necessary to make explosive changes in direction and speed (Brown & Ferrigno, 2015: 83). Soccer athlete agility is needed at the time of dribbling, performing deceitful movements to deceive/trick your opponent.

Table 9. Frequency distribution of speed

Score	Quantity	Percent (%)	Category
5	0	0	Excellent
4	0	0	Very good
3	16	76.19	Good
2	4	19.05	Fair
1	1	4.76	Poor
Jumlah	21	100	

Speed of soccer athletes to be know with sprint 50 metre test. Most of speed of soccer athlete can be interpreted the good category by 76.19%, One of the most important attributes of athleticism is speed. It can differentiate good players from great players, and it's one of the most sought-after abilities on the playing field—regardless of the sport *(http://www.stack.com/a/speed-training).* So, the speed that is required athlete soccer when playing in the field either by using the ball or without the ball.

Table 10. Frequency distribution of leg muscle strength

Score	Quantity	Percent (%)	Category
5	0	0	Excellent
4	0	0	Very good
3	0	0	Good
2	1	4.76	Fair
1	20	95.24	Poor
Jumlah	21	100	

Leg muscle strength of soccer athletes to be know with leg dynamometre test. Most of leg muscle strength of soccer athlete can be interpreted the poor category by 95.24%. Leg muscle strength is required by soccer athletes to defens, support other basic techniques, and requirements for power exercises. Furthermore, strength training is an important part of an overall fitness program because can make develop strong bones, manage weight, enhance quality of life, and sharpen thinking skills.

Table 11. Frequency distribution of VO_2max

Score	Quantity	Percent (%)	Category
5	0	0	Excellent
4	0	0	Very good
3	2	9.52	Good
2	14	66.67	Fair
1	5	23.81	Poor
Jumlah	21	100	

The bleep test is a multi-stage fitness test. Most of VO_2max (maximum oxygen uptake) of soccer athlete can be interpreted the fair category by 66.67%. It is a maximal test which means it will take you to your fitness limit. The bleep test is a series of stages that have different tasks sometimes used by sports coaches and trainers to estimate an athlete's VO_2max (maximum oxygen uptake). And then, presented the results of physical condition of soccer athletes PORDA of Bekasi City as a whole. Training VO_2max is so close to 100% anaerobic (Fee, 2007: 162). Optimizing cardiovascular

function is of fundamental importance to all soccer athletes because soccer sport use anaerobic laktik energy system because at the time of offensive or defensive to use the time between 10-120 seconds.

Table 12. Physical condition of soccer atletes PORDA of Bekasi City

Score	Quantity	Percent (%)	Category
4.1 - 5.0	0	0	Excellent
3.1 - 4.0	1	4.76	Very Good
2.1 - 3.0	19	90.48	Good
1.1 - 2.0	1	4.67	Fair
0-0 - 1.0	0	0	Poor
Total	21	100	

From the table above can be expressed as the following matters: the physical condition of soccer athletes PORDA of Bekasi City can be interpreted that the excellent and poor categories increased by 0%, very good categories increased by 4.76%, good categories increased by 90.48%, and fair catogories increased by 4.67%. Excellent physical condition can be overcome in technical techniques and tactics. Standards indicate an increase in physical potential, so athletes believe in themselves (Bompa, 1999: 54).

CONCLUSION AND SUGGESTION

Based on the results of research and data analysis, the research conducted physical condition of soccer athletes PORDA of Bekasi City the average good categories. The testing results provide direct comparisons between the athlete, and provide feedback on the effectiveness of physical training program used. Coach is able to change in the physical training program to improve the quality of the program. These program evolving improvement help to solidity and strengthen physical athletes.

ACKNOWLEDGEMENT

Special big thanks to lecturer and college student Islamic University “45” of Bekasi for assistance in obtaining data, and KONI of Bekasi City for the trust to conduct research on the physical condition of soccer athletes PORDA of Bekasi City.

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HEALTH AND HEALTHY LIFESTYLE ENHANCEMENT THROUGH SPORT AND PHYSICAL EDUCATION CREATIVE APPROACH

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Abstract

The purpose of physical and sport as a forum is improving health and creating healthy for learners and for their future. Creative approaches in physical education and sport provid an opportunity for learners to express their creativity in the physical activities by providing experiences and habits for healthy life. Health enhancement, healthy life, and physical education and sport are done gradually and adapted by the four principles of physical education and sport namely, safety, exercise impact, healthy benefits, and increasing activity. The contribution of physical and sport education in effort to improve health and health lifestyle cannot be done directly. In order words, it should be done step by step and appropriate with 4 principle of physical and sport, that are safety, impact of exercise, benefit of health, and improvement activity. The fourth principle should be done with three stages that mutual sustaining. Therefore, the process of improving of health and healthy lifestyle of learner can effectively through creative approaches that are adapted to the 4 principles of physical and sport education as well as done step by step.

Keyword : physical education, healthy, creative approach

INTRODUCTION

Education is the right and duty of every human to develop their potential. Plato was a well-known education philosophy said that everyone is different in character, interests, and abilities. Thereby, the goal of educations to discover the natural abilities of each individual and train it until that human will become good citizens in a harmonious society and carry out the duties in efficient as a member of class (Smith, 1986).

The building of a nation can also be achieved with education and health. Through education, a nation can develop the human resource potential and can utilize of the natural resources belonging to nation. In addition, Health also influence in progress of nation which at present health is characteristic of an asvanced nation because health has a great influence on quality human resources (Wahyuni, 2013). Relizing it, the world of education is putting physical and sport education as vital part of national education.

According to Harris said that increase of health and lifestyle between children and adolescent is often declared as the purpose of physical educational program in school (Haris in Lavin, 2008). It seems clear the Harris statement about the purpose of physical education that has long believed to improve health and create habit of healthy lifestyle on learners. The improvement of health of students in physical and sport education is done through physical activity by moving the body of learners in order to system in body can work optimally.

The purpose of physical and sport education certainly will not run smoothly without any role of teacher as a facilitor which is person who directly interact with learners. Therefore, the role of teacher is very important to improve the health and create healthy lifestyle the learners. The effort of the teacher of physical and sport education is believed to able to make the students a have a healthy lifestyle with physical activity to improve health.

In fact that happened, as reported of Sin (2003) on the result of his study in Subang Jaya on elementary school that the learners have more time to minor physical activities (83-85%), it is different away with medium physical activity that done by learners (11-13%) and heavy physical activity of the learners (3-5%) (Retnaningsih dan Oktariza, 2011). The statement indicates that the time widely used by elementary school is lightweight activity such as walking or clear up the bed. It

this case to occur due to the strong development of the technology is misused by children, such as the use of gadgets that make children become addicted, the children are often treated to cool spectacle on television that caused children less activity and just sit passively in front of television.

Haris analyze, possible that subjects of physical and sport education is still dominated by narrow curriculum, for example in game activity have limitations for students free movement of her body and teaching style of teacher that make the learner just stay in wait and follow the direction of teacher of physical and sport education (Harris, 2008). This is justified by Juliantite (2009) that said the phenomenon of learning process in physical education in elementary school still have tendency of cubing the freedom of learner, the learning process is still dominated by teacher. Thus, the learner cannot get opportunities to express their selves.

Deficiency of children in physical activity will certainly cause the learners experience decreased quality of health. Revitalization of physical and sport education is considered necessary to restore the concept of physical and sports education as subjects that focus to the learners to learn about the value of health and active lifestyles, as well as help learners to find out the physical activity that fits their interest and potential learners. This focus requires the clarification of basic knowledge and creative approach towards pedagogical which help learners appreciate, adopt, and promote health and active lifestyle.

CREATIVE APPROACH

Creativity will create innovations that are used to help teacher and learner to learn. Creativity of the teacher and learners will bring the lesson to be more effective and efficient. Awareness of the importance of creativity in education make the United State put into creativity in national education curricula.

In 1999, *The National Advisory Committee in Creative and Cultural Education* (NACCCE) suggest the framework for future developments, that is "*All Our Future: Creativity, Cultural, and Education*". NACCCE propose the framework to give the opportunities for young people to express ideas, values, and their feelings.it is the key to teacher to help learners comprehend the process of creative ideas production. Thus, there are link with emotional intelligence that identified as the ability to comprehend, express their feeling and intuition.

Creativity is also developed by *Qualification and Curriculum Authority* (QCA) dan *Department for Education and Emplyment* (DfEE) who introduced "*Creative Thinking Skills*" or commonly refer to the ability of the creative thinking. The ability of the creative thinking is a key in the developed of the national curricula in United States. This program is focused on the development of creative of learners through creative learning also with creative teachers. The key here is a creative teacher will create a fun environment to develop the creativity of learners. The learner freedomly explore the ideas and creative thinking.

In 2004, QCA promotes creativity an important part in education of national curriculum in the United States, by publishing "*Creativity: Find it, Promote it*". This matter introduces the characters of creative thinking and behaving, that is:

1. To Ask and challenge the rules and assumption,
2. Create the relationship that helpless copyright and linking anything unusual,
3. Consider the possibility that would happen, imagine, and see thing through a *mind's eye*,
4. Try new approaches and alternative, as well as remain open to other options,
5. Reflex the ideas critically, act and produce something (Lavin, 2008).

Indonesia is a big country has a strong ideology in create quality education. Indonesia also builds creativity as basis of the achievement of the purpose of national education. Teacher creativity is indispensable in those situations. The teacher should be able to bring up the brilliant ideas that make the learner actively and enthusiastically as well being able to give a strong *feedback*.

ACTIVE TEACHING AND LEARNING

Dewey (1933) criticized the traditional process of learning as a process of learning passively receiving knowledge that given by teachers, and the knowledge is assumed as the figure of

information and the ability have gotten with certain standart. Learning passively is not effective to develop science learners. The information obtained by learners should be developed with learners actively to get information that support knowledge will get. Thus, active learning is important to improve the learners. According to Dewey (1933), active learning knowledge is the personal experience of organized and built through the process of learning, but is not from teachers. While, teaching is an attempt to create an environmet so that students can acquire knowledge through involvement active learning activity.

Active teaching and learning, according to Harris (in Lavin, 2008) can be divided into three interrelated that is teaching creatively, teaching for creative and learning creatively. The third themes is representing for good teaching.

Teaching creatively is assumes as the use of imaginative approach to make learning to be more interesting, fun and effective. Learning creatively means learning to think in new way and connect the learning with knowledge owned before. Harris gave the model of each theme in teaching with creative approaches to improve the health and create of healthy lifestyle for the learner, namely:

Tabel 1. Teaching creatively to improve the health and active lifestyle

Teacher	Example
An inspiration	An enthusiastic teacher of physical and sport education which clearly love the lesson and to be model of good character because it shows healthy lifestyle (for example, eat nutritions foods, walk/bike ride to go work). The teacher motivates and encourages the learners and able to make physical and sport education is fun and satisfying all learners to each student's ability.
Knowing the subject	The teacher of physical and sport education appreciates that improve an active lifestyle healthier by involving the entire learners that active is good for them. The a teacher who appreciates that the learners must understand the reason and must trust with the experience in lesson of physical and sport education is fun in which they learn 'why, how, what and where' about physical activity.
Make linkages	The teacher appreciates that improve health and active lifestyle is more effective if done in a whole of activity in school. Teacher helps student make the connection between physical and sport education with the other sciences, such as knowledge of the personal, social and health education, technology, nutrition (e.g. about healthy body closely management and energy balance).
Stimulate	The teacher encourages the childrens to think about issues such as improve prosperity and quality of life as well as contribution of physical activity that can be done at all stage of life. The teacher make a connection with the material on the internet for example, make an interactive site with the students. The website 'healthy school' which helps the students thinks about health in holistic way.
Give support	The teacher empower learners by encouraging good attitudes to physical and sport education and give reward as soon as appreciate the positive achievement of learners. Teacher who understand that many learners passively in managing their own time caused they consider their selves is

	not a type of sportsman or not suitable on physical and sport education.
Manage of time	The teacher should take advantage of physical and sport education is available that a broad range activity to help them enable proposes of key such as encourage of health activity throughout life.
Learn about style of teaching	The teacher is prepares to experiment with different style to achieve the desires effect. The teacher special when it is in a challenge position, inspiring and motivating the learners and will work hard to find effective ways doing experiments.

Tabel 2. Teaching for creativity in order to improve health and the achievement of healthy life

Teaching for creativity	Example
Planning	The teacher plan the learners to learn the difference between intensity activities 'medium' and weight', thinking and design examples of each physical activity.
Catechizing	The teacher use the hierarchy of questions to access learn ate different levels, for example: - Describe how learners do physical activity? - Explain to the teacher what happens to your body? - How can you improve your heart rate more power full? - Can you explain why this happens? - What is the other activities causing this to happen?
Type of knowing	The teacher use questions to help learners understand their thoughts. For example: fast food can make children to be obese and not fit. How in you opinion! What causes you think like that! What the reason of event did you? What can you do?
Working group	The teacher encourage to work closely with other learners to find the solution to the problem. For example: task group to design and perform the cicuit workout that will strengthen major muscle group in you body (arms, legs, abdomen, hips).
Study of metaphor	The teacher actively engage students in their own lesson, for example:' the task of choosing three of the six activities (jogging, skipping, bench stepping, galloping, fast walk, long jump) and explain the effect of the activities of the body learners (e.e. heart rate, respiratory rate, temperature, apparently, energy balance, muscle)

Tabel 3. Learning creatively to improve health and healthy lifestyle

Learning creatively	Example
Process and product	Teacher actively engage the students in the learning process and emphasizes that learning is journey that has many purposes, for example, improvement the level of activity the students it is important than to make them fit, more emphasis to the students can caused they are not active or passive.
Environment	The teacher engage students in learning through practice, e.g. show me (rather than explain to me about)

	exercise/activities that make the body become healthier.
Cross-curricular	The teacher establish relantionship between fileds of lesson for example, involves the learners in across-curricular project that authentic for researching and designing a new game areas in elementary school that involves fields for facilitate and encourage physical activity.
Imagination	The teacher want to try different ways to teach and do so, for example, allows students choose from a range activities (e.g., aerobic, step, circuit, aqua-fit, taichi) and decide how they liked the progress that can accessed in these activities (for example, a record of activities, fitness test, the ability to do good techniques, understand the key principles, a combination of these methods).
Caring for/Develop	The teacher freed the children to their imagination through extraordinary ideas, such as answering questions using only actions, Design an active game with just using ballons and strings.
Enabling conditions	The teacher ensures the students have a freedom to try out ideas and do the process of "*trial and error*";

COMPREHENSIVE SCHOOL APPROACH TO IMPROVE HEALTH AND HEALTHY LIFESTYLE

The school as an institution of education provider should seek improving health learners and create an environment that makes the learners get used to have healthy lifestyle. Trough a comprehensive school approach, school must create a suitable environment that can encourage physical activity in each student in the school. Thus, each school will try to realize the achievement of healthy school status (*Healthy School*). Harris (dalam Lavin, 2008) requires school to fill the criteria of physical activity to improve health and healthy lifestyle, include:

1. Have a policy on physical activity school extensively that developed through broad consultation, implemented, monitored and evaluated its impact;
2. To give consultation to students about the opportunity of physical activity that given at the school, identifying barriers to participation and trying to eliminate the obstruction;
3. To give the opportunity to all students participate in a wide of extracurricular activities that improve physical activity;
4. Encourage the students, parents, and staff to do and manage for school in a safe condition, use of school travel plan; and
5. Allow the parents/ career to get involved in a plan and deliver the opportunities of physical activity and help to understand the benefits of physical activity to themselves and their childrens.

The improvement health and healthy lifestyle at school is not done just by the students, but also all the member of school. Even the environment around school should create the atmosphere of healthy life. The school helped with commite school work together to create a healthy environment with the around village of school and also the parents of the students. The society around school greatly affect to improve health and healthy lifestyle the students, cause usually any society around school that sale food in outside school hour. The cooperation between school and society can be set that food sold must be nutriment or health.

The recommendation is considered benefit to develop and growth of students. The messages has convey of physical activity one hour a day show an accumulation of physical activity of 60 minutes per day, which can be organized in to some times. For example, two time 30 minutes, four time 15 minutes. Physical activity is done include activities that are done in physical and sport education, sport club, and active recreation like walk or bike. The teacher of physical and sport

education is use full to give knowledge about daily life, include walk and bike activity to go to school and the teacher can give the recommendation about it. The activity will be a routine or habits that contribute significantly to the improvement of health and healthy lifestyle.

THE PHYSICAL AND SPORT EDUCATION AS AN EFFECTIVE MEDIA TO IMPROVE HEALTH AND HELATHY LIFESTYLE

The teacher of physical and sport education should be creative to teach and create learning process that inspires students to enthusiastically to improve health and healthy lifestyle. The teacher of physical and sport education must make the students enthusiastically in physical activity that has impact on growth and development of the body and the health as well as lifestyle of the students. Harris recommends physical activity for students, such as:

1. Easy to understand
2. Accuracy of age (i.e., different from the recommendation for adults);
3. Flexible (i.e., involves the accumulation of time and a whole rang of different physical activities);
4. Differentation (for active and not active); and
5. Comprehensive (involves a range of components, such as aerobic capacity, muscular strength/flexibility).

The recommendation have done with creative ways for clarify health society about physical activities, have a realistic target and can be reached by students, and support students to achieve the target as well as motivate for exceed the target. Teacher is a major factor to create quality teaching. Thus, teacher must have quality material about health and healthy lifestyle. The quality of teaching of physical and sport education will multiple diverse together with quantity of teaching and science of the teacher about health and health lifestyle.

The curriculum of physical and sport education provide discretion to teacher of physical education to include subjects related with health education. It is intended to clarify the range of coverage and progress of the learners in the result of study that placed in four categories, that is safety, exercise, health benefits, and health improvement (Harris in Lavin, 2008). To deliver of information must step by step, start from firs start from first stage until third stage, Harris (in Lavin 2008) explained:

Tabel 4. Learn the safety to improve health and healthy lifestyle

Stage	The learners can:
First Stage	a. Identify and apply the rules and practices of safety (for example, change the clothes during physical and sport education lessons, tie the hair back for long-hair; don't wear jewelry, sit and standing with good posture, wear the shoes when skipping with rope). b. Explain the activity begins with a warming up and stop with cooling down
Second Stage	a. Describe the need for safety rules and practices (for example, adopt good posture at all times, change clothes and wash clothes after a activity, wear shoes for some activities, follow the rules, avoid the burning sunlight on hot weather, use of a comfortable room (clean). b. Identify the purpose of warming up and cooling down, and describe part of

	warming up and cooling down.
Third Stage	a. Show understanding of safety practice (for example, tie the long hair at the back, don't use jewelry to avoid injury, adopt good posture when sitting, standing and moving, practice with good techniques, clean or take a bath after a draining activity, use of equipment and facilities with a permit, wear enough protective, for example the gloves for goalkeeper and footrest for specific activities, face the certain weather conditions, such as use a sun block to avoid fires in the hot weather and drink to prevent dehydration b. Pay attention to infrastructure and take care of back by lifting, carrying, placing and using equipment in responsibly with good technique. c. Explain the specific exercise and practices (for example, standing toe touches, straight leg crunches, movement throws) and can make a safe alternative (for example ' sit and reach ', stretches while sitting, rolling over while the foot bent. d. Explain the value of preparation and recovery activities and explain the consequences and explain the objectives, plan and perform their respective components of warming up and cooling down (for example, practice mobility, activities of the all body, static stretches) for general activities (for example, games) and for specific activities (for example, volleyball, high jump) e. Perform the good technique, cardiovascular activities that exactly match with improvement and exercise of strength and flexibility for each major muscle group.

Tabel 5. Learn the effect of exercise to improve health and healthy lifestyle

Stage	The learners can:
First stage	a. identify, describe, and feel the effects of practice, such as: 1) Breathe (for example, breathe faster and more deeply). 2) Heart rate (for example, heart pumps faster). 3) Temperature (for example, feels more heat) 4) Appearance (for example, looks

	cooler). 5) Feel (for example, feel better, more energetic, tired). 6) Outside of the body (for example, muscle arms/legs can work). b. Know the body eat and drink to release the energy during exercise.
Second stage	a. Explain and feel the short term effects of exercise: 1) Depth of breath is increased to give more oxygen to the working muscles. 2) Heart rate is increased to pump more oxygen to the muscles working. 3) Temperature increases because work muscle producing energy as heat and skin can be damp, stiff and sweat because the heat generated by the muscle be transformed to the surface of the body (skin) thus, the body temperature controlled. 4) Face can be red because blood vessels widen and closer to the surface of the skin. 5) Feel and inner atmosphere can different (for example, feeling happy and familiar with friends). b. Explain the body needs a certain energy each day in the form of food and drink to function properly (for example, normal growth, development and daily life) that weak body increase if more food and drink having taken more than required (for example, to breathe, grow, move, eat, sleep, practices).
Third Stage	a. Explain and monitor the short-term effects of a range of exercises on: 1) Cardiovascular system (for example, changes in the breath and heart rate, temperature, appearance, feeling, the pace of recovery) 2) Musculoskeletal System (for example, improvement strength and endurance and muscular flexibility, improved posture and muscle tone, improvement functional capacity and performance sports). b. Explain that proper training can improve fitness and performance as well as the different types of activities that affect specific aspects of fitness (for example,

	run affects cardiovascular fitness). c. Explain the difference between the activities of the whole body (such as walking, jogging, biking, dancing, swimming) that help reduce body fat and customize exercises (for example, rolling straight and rotate) that improve muscle tone.

Tabel 6. Learn the health benefit to improve health and healthy lifestyle

Stage	The learners can:
Tahap pertama	Explain that the routine practice fix health with: 1) Encourage people to feel comfortable (such as, happy, glad, it contains). 2) help the part of body (such as, bones and muscles) to grow, thrive and work well.
Second Stage	a. Explained the exercise can strengthens of bones and muscles (including the heart) and help keep the joints pliable. b. Explain the exercise can help people find tasty and can be happy and sociable (for example involves the sharing of experience and cooperation with others). c. Explain the exercise routine daily activities allows can be done more easily. d. Explain the active can helps maintain healthy body weights.
Third Stage	a. Describe the range of benefits of long-term exercise on physical health: 1) Reduction of chronic disease risk) (for example, heart disease). 2) Reduction of the risk of bone pain (osteoporosis). 3) Reduction of the risk of some condition healthy (for example, obesity, spinal pain). 4) Improve management of some health conditions (for example, asthma, diabetes, arthritis). b. Explain the exercise can improve the mental health and social and psychological well-being (for example, enjoyed with friends; improve confidence and self-tribute, decrease anxiety and stress) and balance right between work, entertainment and exercise improve good health. c. Explain the increase the level of activities and eat that balanced can help maintain a

	healthy body weight (energy balance equations) but the body requires a daily energy intake to function properly, and limiting diet and more exercise can damage a person's health. d. Explain how each field activities (athletics, dance, games, fitness, swimming) may be contributing to the physical health and to social and psychological (for example, may improve stamina, helps weight management, strengthens bones).

Tabel 7. Learn Improvement activities to improve of health and healthy lifestyle

Stage	The learners can:
First Stage	a. Identify when, where, and how they can be active at school (in and outside the lessons). b. Use the opportunity to be active in play time.
Second Stage	a. Monitor the level of activity (such as, during a weekdays and weekend days). b. Identify when, where and how they can be active in school and outside the school. c. Make the decision about activities in which they enjoy and describe someone has different feelings about the type and total of exercise that they choose to implement. d. Use the opportunity can be active for 30 to 60 minutes a day (with a period of remnant when needed), include the lessons, play time and activities of club.
Third Stage	a. Access the information about the range of opportunities activities at school, at home and in the society and find out how to incorporate exercise into their lifestyle (for example, walking or cycling to school or meet friends, help around home/garden). b. Reflect the power and preferences of the activity and find out how to get involved in activities. c. Participated at least twice a week in activities that help improve muscle strength and flexibility as well as bone health (for example, aerobic dancing, skipping, game, body conditioning, resistance exercise). d. Monitor and evaluate the level of personal activities for a period of time (for example with keeping the record

	activities during 4 to 6 weeks and reflect on the experience).

The submission of information about health and healthy lifestyle not only delivery information, such as the dissemination of the benefits of physical activity can affect behavior and lifestyle changes, healthy learners. Learners should be given the motivation so that active and always supported to actively participate in the improvement of health and a healthy lifestyle. How that can be done by providing experience and enjoyment when learners engage in physical activity can improve health and create a healthy lifestyle.

CONCLUSION

The physical and sport education is believed to be subject which able to educate learner to active in physical activity and improve health, as well as create healthy lifestyle for learners. The important of needed health and healthy lifestyle for learners make a teacher of physical and sport education should be creative in planning, implementing, and also evaluating the subject. The characteristic in order to the teacher should be more creative in create situation and condition learning process of physical and sport education must have three themes creativity in education, namely teaching creative, teaching for creative, and creative learning. The three theme will make teacher easy to create a harmonious atmosphere in learning of physical and sport education which focus to improve health and healthy lifestyle.

The contribution of physical and sport education in effort to improve health and health lifestyle cannot be done directly. In order words, it should be done step by step and appropriate with 4 principle of physical and sport, that are safety, impact of exercise, benefit of health, and improvement activity. The fourth principle should be done with three stages that mutual sustaining. Therefore, the process of improving of health and healthy lifestyle of learner can effectively through creative approaches that are adapted to the 4 principles of physical and sport education as well as done step by step.

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THE EFFECTS OF PHYSICAL EXERCISE THROUGH GAME-MODEL AND CIRCUIT-MODEL EXERCISES APPROACH ON THE MAXIMUM AEROBIC CAPACITY

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Abstract

Objective: This study was intended to analyze the effect of physical exercise through game-model and circuit model exercises approach on the maximum aerobic capacity.
Method: This type of research is quasi-experiments, with treatment in the form of a game model exercise and circuit model exercise. Pre-test of Maximum Aerobic Capacity using the MSFT (Bleep test) instrument was given before treatment. The treatment was given 16 times with details of 3 times per week. Target population is Faculty of Sports Science students of Universitas Negeri Padang, while the affordable population is 30 students of Sports Education Program academic year of 2013/2014. The sample was selected by using purposive sampling. The data were analyzed by using descriptive and inferential statistics, using t test at significance level α 0.05.
Results: The game model exercise gives a significant effect on the increase of Maximum Aerobic Capacity of students of Faculty of Sports Science, Universitas Negeri Padang, (ρ = 0,000 <α 0,05). The circuit model exercise gives significant effect on the increase of Maximum Aerobic Capacity of students of Faculty of Sports Science, Universitas Negeri Padang, (ρ = 0,000 <α 0,05.) There is a significant difference of effect between the game model exercise and the circuit model exercise to the increase of Maximum Aerobic Capacity students of Faculty of Sports Science, Universitas Negeri Padang, (ρ = 0.001 <α 0.05).
Conclusion: Both game model exercise and circuit model exercise have a positive effect on the increase of maximum aerobic capacity. However, the data analysis shows that the circuit model exercise is more effective than game model exercises in increasing maximum aerobic capacity.

Keywords: game model exercises, circuit model exercise, maximum aerobic capacity

INTRODUCTION

Creating athletes full of achievements, requires careful planning, as well as tiered coaching. In the Indonesian Constitution number 3 year 2005, about National Sport System, in Chapter V article 33 paragraph 2 mentioned that; "Sports achievement is a sport that nurtures and develops sportsmanship in a planned, tiered and sustainable manner through training and competition to achieve achievement with the support of science and technology athletics (UU RI No. 3 tahun 2005., 2006). Based on the quotation it can be concluded that; to create athletes with achievements the need to perform a planned coaching with the support of science and technology is essential, so that the training process can be maximized in accordance with the organs function physiologically. Without involving science and technology in the exercise process, the ability of athletes can not be increased optimally.

One of the coaching programs is through exercises, because the exercise can help athletes improve skills and achievements, especially on four aspects such as; techniques, physical conditions, tactics and strategies, as well as mental ". If one of these aspects is weak, it will affect other aspects, so that athletes can not perform optimally in every game (Harsono, 1996). One important aspect that an athlete must possess, is the aspect of physical condition which is a fundamental aspect to support another aspects. Elements of physical conditions; strength, speed, endurance, agility, explosive power, balance and coordination. Any elements of physical condition an athlete should possess, it depends on the sport he follows, because each sport has its own characteristics (Bompa, Haff., G.G., 2009).

On sports such as ; medium to long distance run, swimming to 100 meters and up, martial arts, endurance is the main physical components an athlete must have, especially aerobics endurance, because it is needed to be able to perform activities in a relatively long time. Aerobics endurance is the ability of the body to perform activities in a long time without experiencing significant fatigue by using aerobic energy supply.

An aerobic endurance or often called cardio-respiratory endurance is a quality of how the body as a whole supports physical activity and can inhibit the cause of fatigue " (Matt Fitzgerald. 2005). While Robert Hoccey says that; " cadiovascular endurance can be defined as the ability to perform continuous work in performing the tasks of a group of muscles at a relatively long time (Robert Hockey, 1981). The level of this aerobic endurance will be affected by the level of VO2 max or known as the maximum aerobic capacity. The level of maximum aerobic capacity is affected by organic components such as; lungs, heart, blood vessels, and blood quality (hemoglobin) and skeletal muscles that will consume oxygen for aerobic energy metabolism processes, resulting in energy for cellular work, including muscle cells (Umar, 2014)

A high maximum aerobic capacity (VO2 max), not only required by athletes when they are exercising or competing, but also needed when they are doing recovery. The defeats often experienced by an athlete in a match, one of which is due to their low aerobic capacity, this can be seen in every game such as a martial arts (Umar, 2014). Usually, athletes appear prime and violent at the beginning of the round, but in the next round, their tendency decreases, it is evident that they are not supported by maximum aerobic capacity (VO2max), so the recovery process (recovery) is not running perfectly.

Based on the observations done on students of Faculty of Sports Science in Universitas Negeri Padang, there are still many students who have a low aerobic capacity. This is reflected in each of the following practice classes, as well as doing exercises, many students experienced fatigue faster. The low level of maximum aerobic capacity of students in Faculty of Sports Science Universitas Negeri Padang, who are being prepared as a coach who will be on duty field in accordance with his profession as a trainer. In addition, the students of Faculty of Sports Science Universitas Negeri Padang are mostly athletes who are still actively participating in various sports events, either sporting the Provincial Sports Week (Porvrop), National Championships (National Championship), National Sports Week (PON), as well as regional championships such as SEA Games, caused by many factors, one of which is the material of the training program provided by the trainer,

Formulation of the problem

The formulation of the problem is;

1. Can the model of exercise play increase maximum aerobic capacity?
2. Will the circuit training model increase maximum aerobic capacity?
3. Is there any difference in effect between the model of exercise play and the circuit training model on maximal aerobic capacity improvement?

Research purposes;

The purpose of this study is to analyze;

1. Influence of play practice model to maximal aerobic capacity,
2. Effect of circuit training model on maximal aerobic capacity,
3. Differences in influence between the model of playing exercises with the model of the exercise of the circuit to the maximum aerobic capacity.

Benefits of research

The research benefits are as follows;

1. Trainer, as a guide in making physical exercise program,
2. Student / Athlete, as knowledge in performing the right physical exercise,
3. Researchers, increasing the insight of Science and Technology in supporting the profession as educators and trainers.

METHOD

This type of research is quasi experiment (quasi experiment). Quasi experiment is a type of experimental research in which the researcher can not fully control all variables that may affect the dependent variable (Donald Ary, et al., 2004). The research was conducted in the laboratory of the Faculty of Sport Science, Universitas Negeri Padang. The data collection process is done in 2 (two) main stages. The first stage of data collection on the maximum aerobic capacity. The second stage is giving the treatment of exercise model and circuit training model as much as 16 times of practice, (3 times per week).

The design of this research is; the two groups pre test and post test design. Population in this research, is student of Faculty of Sport Science Universitas Negeri Padang as target population (target population). While the affordable population (affordable population) is a student Faculty of Sport Science Negeri Padang Sport Education program class of 2013/2014 registered in the semester of July - December 2013/2014. While the sample used in this study are 30 students with a purposive sampling technique.

The research instrument for measuring the maximum aerobic capacity is Bleep test (MSFT). Data analysis using t test with significance level $\alpha = 0,05$.

RESULTS AND DISCUSSION

Results

A. Data Description

1. Initial Data Aerobic Capacity Maximum Group of Play Training Methods

Based on the results of descriptive data analysis of 15 people group exercise training method, obtained the highest score 47.1, lowest score 30.6, average score 37.7, span 16.5. For more details can be seen in the following table:

Table 1. Initial Data Aerobic Capacity Maximum Group of Play Training Methods

No	Interval class	(Fa)	(Fr)
1	30.6-33.4	4	27
2	33.5-35.7	2	13
3	35.8-38.5	2	13
4	38.6-41.2	4	27
5	41.3-47.5	3	20
	Total	15	100%

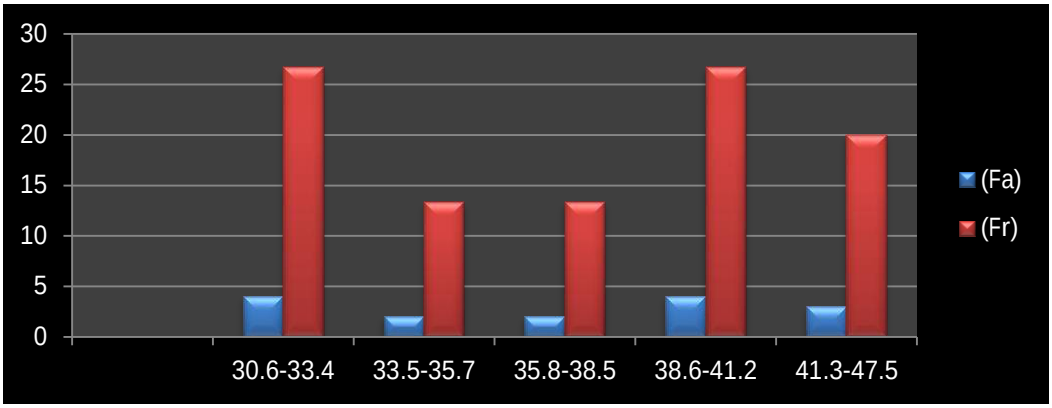


Fig. 1. Histogram frequency score Maximum Aerobic Capacity group of Play Training Methods

2. Initial Data Aerobic Capacity Maximum Group of Circuit Training Methods

Based on the results of descriptive data analysis of 15 people group of exercise training methods, obtained the highest score 46.8, lowest score 30.6, average score 37.7, rantangan 16.2 and standard deviation 5.03. For more details can be seen in the following table:

Table 2. Initial Data Aerobic Capacity Maximum Group of Circuit Training Methods

No	Interval Class	(Fa)	(Fr)
1	30.6-33.4	3	20
2	33.5-35.7	4	27
3	35.8-39.5	2	13
4	39.6-41.2	3	20
5	41.3-46.8	3	20
	Total	15	100%

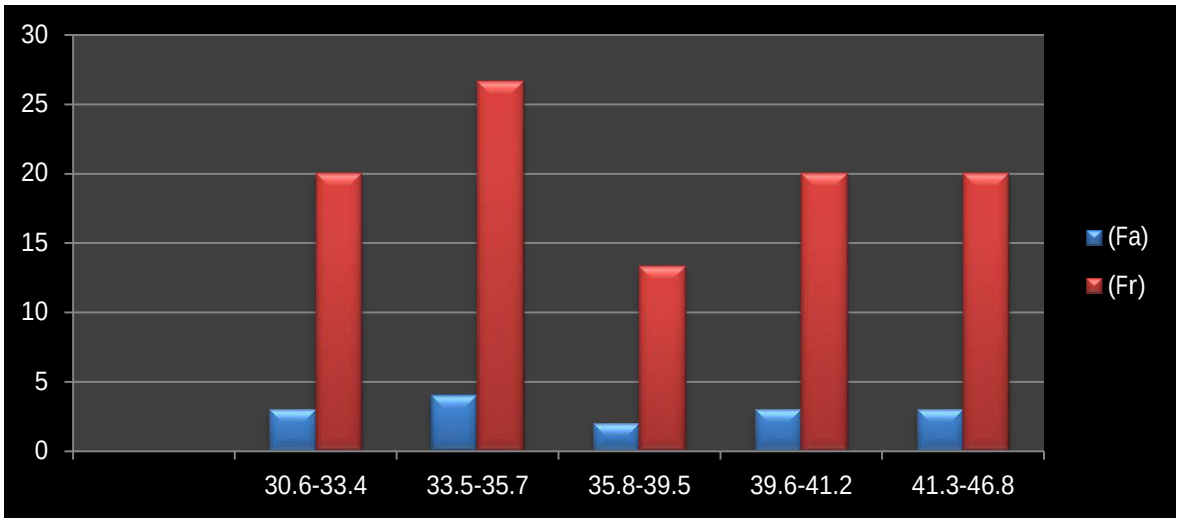


Fig. 2. Histogram frequency score Maximum Aerobic Capacity group of Play Training Methods

1. Final Data Aerobic Capacity Maximum Group of Play Training Methods

Based on the results of descriptive data analysis of 15 people group of exercise training methods, obtained the highest score 48.4, the lowest score 32.5, the average score of 38.8, rantangan 15.9 and standard deviation 4.67. For more details can be seen in the following table:

Table 3. Final data aerobic capacity maximum group of play training methods

No	Interval Class	(Fa)	(Fr)
1	32.9-35.6	4	27
2	35.7-38.4	2	13
3	38.5-40.3	3	20
4	40.4-42.7	3	20
5	42.8-48.5	3	20
	Total	15	100%

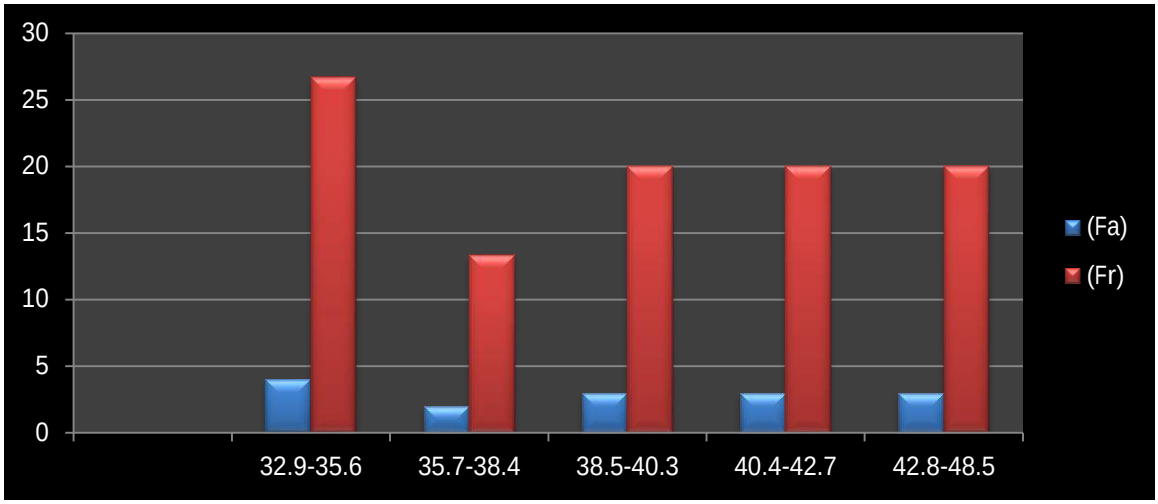


Fig. 3. Histogram frequency score Maximum Aerobic Capacity group of Play Training Methods

2. Final Data Aerobic Capacity Maximum Group of Circuit Training Methods

Based on the results of descriptive data analysis of 15 people group exercise circuit method, obtained the highest score 49.0, the lowest score 34.3, the average score 40.6, rantangan 14.7 and standard deviation 4.56. For more details can be seen in the following table:

Table 4. Final data aerobic capacity maximum group circuit exercise method

No	Interval Class	(Fa)	(Fr)
1	34.3-35.8	3	20
2	35.9-37.6	1	7
3	37.7-40.4	3	20
4	40.5-42.7	3	20
5	42.8-50.00	5	33
	Total	15	100%

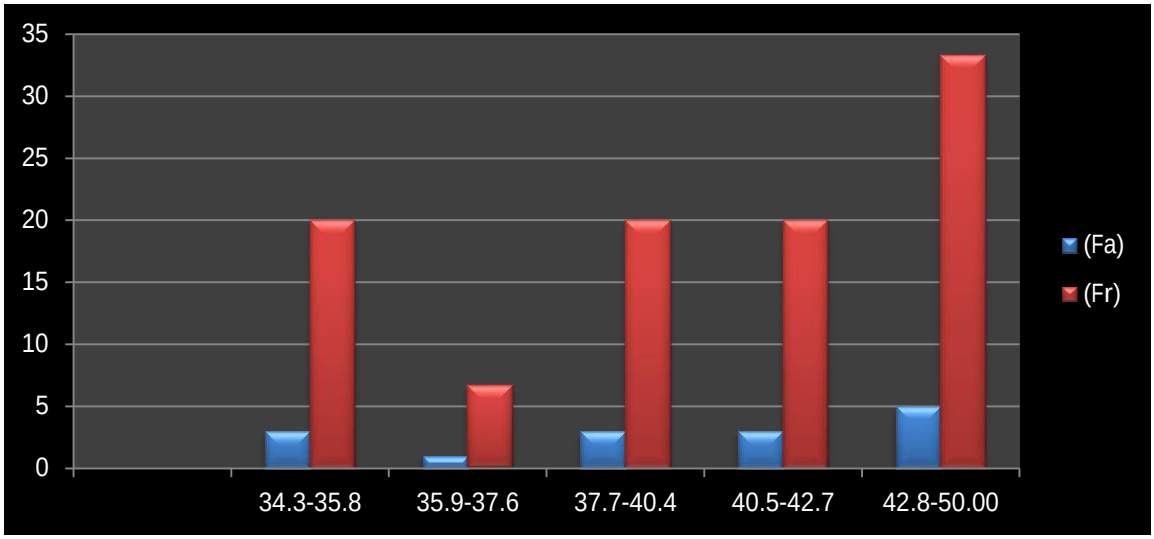


Fig. 4. Histogram frequency score maximum aerobic capacity group of play training methods

B. Hypothesis Testing

1. First Hypothesis

The hypothesis proposed in this study is "There is an influence of the exercise model of play on the maximum capacity aerobic. Based on result of data analysis turns out ρ = 0,000 <α = 0,05. Thus it can be concluded that there is influence of the method of playing exercises on aerobic aerobic athlete's capacity. For more details can be seen in the following table;

Table 5. Test Result T Test Data Pretest and Posttest Play Group

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Posttest Pretest	1.1933	.5147	.1329	.9083	1.4784	8.979	14	.000

Thus the hypothesis proposed in this study that says there is influence of the method of playing exercises on aerobic aerobic capacity of athletes is acceptable.

2. Second Hypothesis

The hypothesis proposed in this study is "There is influence of Circuit training model to the maximum aerobic capacity. Based on result of data analysis turns out ρ = 0,000 <α 0,05. Thus it can be concluded that there is influence of circuit training method on aerobic aerobic capacity of athlete. For more details can be seen in the following table;

Table 6. Test result analysis of data pretest and posttest of circuit group

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Posttest Pretest	2.9000	.7521	.1942	2.4835	3.3165	14.933	14	.000

Thus the hypothesis proposed in this study that says there is influence of the method of circuit training on aerobic aerobic capacity of athlete is acceptable.

3. Third Hypothesis

The hypothesis proposed in this study is "There is a difference in the effect between the model of playing practice and the circuit training model on the aerobic capacity of the mask. Based on result of data analysis turns out ρ = 0,001 <α 0,05. Thus it can be concluded that there is a difference of influence between the method of playing exercises and the method of circuit training on aerobic aerobic athlete's capacity. For more details can be seen in the following table;

Table 7. Result of T test analysis posttest data between play group and circuit group

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Posttest Sirkuit Posttest Bermain	1.6571	1.3971	.3734	.8505	2.4638	4.438	13	.001

Thus the hypothesis proposed in this study that says there is a difference in the effect between the method of play practice and the method of circuit training on aerobic aerobic capacity of athlete is acceptable, and if seen from the difference of mean score, then the circuit training model is more effective to increase maximum aerobic capacity.

Discussion

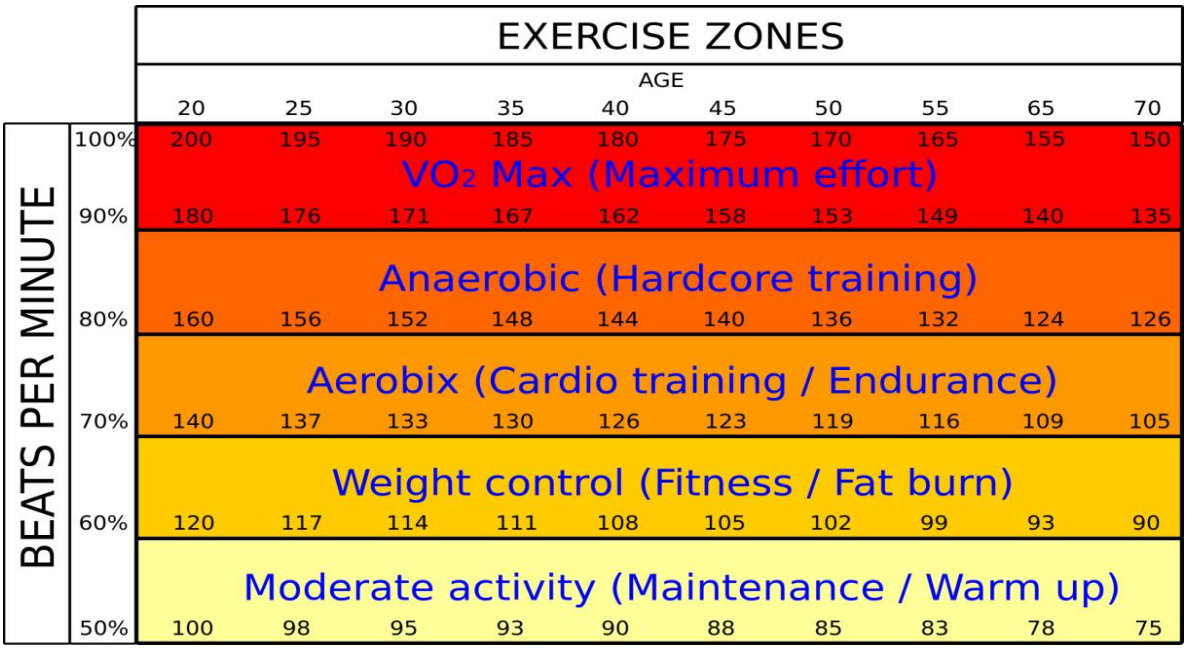
1. Influence of Model of Playing Exercise to Maximum Aerobic Capacity

The result of data analysis done in this research turns out ρ = 0,000 <α 0,05. That is, the model of playing practice can increase the maximum aerobic capacity significantly. Increased maximum aerobic capacity as a result of the exercise, possibly caused by several factors as follows; First, the intensity of exercise averages 70% -80% of the maximum pulse rate. The intensity has already entered the training zone to increase maximum aerobic capacity (VO2 max). This is as it is said by; Matt Fitzgerald that; Research suggests that vigorous-intensity exercise (60-84% oxygen

consumption reserve (V˙O2R)) results in greater increases in aerobic capacity than moderate-intensity exercise (40-59% V˙O2R). [6].

Research shows that a strong / high intensity exercise (60-84% of reserve oxygen consumption (V˙O2R)) results in greater increases in aerobic capacity than moderate exercise intensity (40-59% V˙O2R). This is reinforced by Lanty O'Connor, (2009) that the effects of exercise exercise to increase maximum aerobic capacity (VO2 max) can already occur at 70% exercise intensity. For more details can be seen in table 4.

Tabel 8. Zona intensitas latihan untuk meningkatkan VO2 Max, [4].



Based on the quote and table 4, it can be concluded that the increased aerobic capacity is maximal as the effect of the training method of play. First, because the intensity of the exercise through pulse measurements achieved in each training session averaged 70% -80% of the maximum pulse. Secondly, the samples in the exercise of this play method are full of vigor, excitement and high motivation. Because this method of play has considerable motion variations that will involve most of the muscles of the body, so the cardiovascular system is maximized, without experiencing significant fatigue from each sample.

2. Effect of Circuit Exercise Model on Maximum Aerobic Capacity

The result of data analysis done in this research turns out ρ = 0,000 <α 0,05. That is, the circuit training model can increase the maximum aerobic capacity significantly. Increased maximum aerobic capacity as a result of the exercise, possibly caused by several factors as follows; First, As with the method of exercise, the intensity of the exercise achieved during the exercise is 70% -80% of the maximum pulse rate. The intensity has already entered the training zone to increase maximum aerobic capacity (VO2 max). Second, circuit training will train most of the muscles of the body, because each station (station) contains different or varied forms of exercise. Third, the exercise circuit model in the implementation of each post is more focused on certain muscles, so the effect of exercise on the muscles involved in each form of exercise can be more leverage.

3. Differences in influence between the model of exercise play and the circuit training model of the aerobic capacity of the masses

Based on the results of data analysis performed in this study was ρ = 0.001 <α 0.05. That is, there is a difference of influence between the model of exercise play with circuit training model to increase the maximum aerobic capacity. These differences indicate that the model of the cyclical exercise is more effective than the exercise-training model to increase maximum aerobic capacity. This is based on the average score of the circuit training model 40.6 is greater than the average score of the exercise-training model is 38.8. The difference in the effect of this exercise may be due to several factors as follows;

First, the circuit training model focuses more on certain muscles only according to the shape of the movements performed in each post, so that the exercise effect is also more focused. Second, the training program such as intensity, repetition, set, duration and well controlled recovery, so that the effects of exercise can be more leverage.

CONCLUSION

Based on some of the things described above, it can be concluded that;

1. The model of playing exercises can increase the maximum aerobic capacity, as evidenced by the results of t-test = 0,000 <α 0.05.
2. Circuit training model can increase maximum aerobic capacity, this is proved by the result of t test = 0,000 <α 0,05.
3. There is a difference between the exercise model and the circuit training model for maximal aerobic capacity improvement, as evidenced by the result of t-test = 0.001 <α 0.05.

SUGGESTION

1. To increase maximum aerobic capacity of athlete, can be used both kinds of model of this exercise,
2. To get maximum aerobic capacity increase as expected, it is better to use more varied training methods.

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DIFFERENCES INFLUENCE OF INTERVAL DRILL EXERCISE BETWEEN ACTIVE AND PASSIVE ON SKILLS OF ATHLETE AT THE AGE OF CHILDREN

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Abstract

Objectives: The purpose of this research are to know: (1) Differences between passive and active break interval on the athlete skills of the son of children ages of *Putra Utama* Badminton Association *Sukoharjo*, (2) Which is better influence between drill practice with passive break interval and active on the athlete's skill athlete son of the children's *Putra Utama* Badminton Association Sukoharjo.
Methods: The type of research used is experimental research. The population in this study is the players of the age of the children of *Putra Utama* Badminton Association *Sukoharjo* aged 11 - 13 years, amounting to 16 athletes, sampling technique used is the total sampling. Data collection techniques used are test methods. Data analysis technique used in this research is reliability test, normality test, homogeneity test and t-test.
Results: Based on the results of the study can be summarized as follows: (1) There is a significant difference of influence between the active and passive interval drill interval training methods on the athlete's hit skills at the age of the children of *Putra Utama* Badminton Association *Sukoharjo*. This is evidenced from the results of the final test of each group that is, t count 3.049 greater than ttable 2.145 with 5% significance level. (2) The active interval drill interval training method has a better effect than the passive interval drill interval training method on the athlete skill of the child's age athlete of *Putra Utama* Badminton Associaton *Sukoharjo*.
Conclutions: Based on the percentage of skill improvement in badminton, it showed that group 1 (group treated with active interval drill interval training method) was 1.829%> group 2 (group receiving treatment of passive rest interval drill interval) was 1.142%.

Keywords: Learning Method, Massed Practice, Distributed Practice, Drill Interval Training, Hit Skill

INTRODUCTION

Badminton game is an individual game which is done one on one, or two against two. This game is easy because the bat is light, the ball is easy to hit, it does not require a large field, can even be played indoors or outdoors, and can be played by anyone. Therefore, badminton games can grow rapidly. And become one of the world's most famous sports and competed internationally, nationally, regionally, and in a smaller sphere. Similarly, that happens in Indonesia, this sport is favored by all levels of urban and rural communities. This sport attracts the interest of various age groups, because this sport is perfect for all men, women, old, young, even children.

Achievement of achievement in badminton coaching many factors that influence, among others, physical and psychological condition of athletes, coaches, training facilities and skills hit. Especially hiting skills are the most important element as the initial provision for an athlete to excel, it must be accompanied by a good exercise program.

When a badminton club is available the coach factors, facilities, and physical condition of the athlete is good then the provision of a good training program as a means of shaping stroke skills is emphasized in the technical exercises that are mostly applied when the exercise. The training methods that are often used, among others, use the method of play, drill, and the pattern of hites are carried out continuously, continuously, repeatedly, systematically and systemically.

By paying attention to the related coaching system in badminton coaching, among others: (1) Biological physical aspect, that is things related to potency or ability of athlete to develop physical component and organ function. (2) Technical aspects, which concern skills and special abilities that are closely related to athlete's talents. (3) Aspects of tactics and strategies, the correct use of tactics and strategies enable athletes to utilize their physical and psychological capacities to the fullest. (4)

Aspects of physical work test, after practice with a certain period, then tested whether the exercise has been done in accordance with the goals and objectives to be achieved.

Besides all age is one of the factors that must be considered in the process of guidance and training badminton age brings influence in psychological potential and also bring the influence of physical potential, so it can affect one's skills. In addition, the achievement of maximum sports performance requires a long training process. Coaching and training conducted since early age has a long time span, so have a great opportunity to achieve maximum performance.

Coaching clubs are usually populated by young athletes who are still very young. As in the NT. The main son consisted mostly of talented athletes, among others, are children aged athletes aged between 11-13 years old, namely the victim who is separated from beginner A and not yet entered the category of adolescents so as to have physical and psychological characters that are still unstable and regarded achievement less satisfactory. Therefore, it is necessary to have proper treatment in an effort to form elements of hit skill with the aim to improve his achievement. So in handling the students required a very careful treatment. If it is not appropriate it will hinder the progress of the next child's achievement. Therefore, the trainer needs to apply methods appropriate to the growth and development of the child.

But the coach in “Putra Utama” badminton club lacks applying drill exercises in his coaching program as it is considered to be taking too long and putting more emphasis on playing and hit patterns that are considered more needed in the real game. It may be because the trainer is less to follow the development of the latest coaching system either in theory or practice knowledge.

Exercise methods used in drill exercises include interval training methods. Interval training method is a form of exercise interspersed by periods of rest. Rest periods are of two types: active rest and passive rest. In active rest, students are required to always move by doing small exercises or by performing movements to prepare the muscles to get ready to go back to the actual practice. While in a passive break the students are asked not to do any movement. Students are silent only with the feet and hands of the athletes as serileks as possible.Thus grows the desire to solve the problem by creating an exercise program that combines exercise

Hit Skills

According to Tony Grice (2002: 25-100) in badminton there are various types of hites that are often used, the types of hit are:

a) Service hit

A good service in badminton will give a good chance for the opponent to score. To get a legal service contact with the ball should be done below the waist and the racket handle should be heading down. The entire head of the racket should be visible under each part of the racket handle before hitting the ball. There are three types of services that are usually done by badminton players are service, long, short service and service responsibility.

b) Overhead Hit: Forehand and Backhand

Overhead hit: Forehand and Backhand

Overhead hit (done overhead) are the most important tactical hit in badminton games. This hit can be done with forehand and backhand to keep your opponent moving continuously. "The forehand hit is done with a throwing motion completely from the back half of the field" (Tony Grice, 2002: 40).

The backhand is performed with a fully dominant hand stretching upwards from the backhand corner of the field and is the opposite of a forehand hit. Stretching that at the elbow and a strong lower hand rotation is a source of energy from overhead hit. The movement of the lower hand lay on the backhand. The anatomy of the lower hand can only move in these two ways. The flexing of the wrists or the wrist tugs only slightly, or not at all. The perfect technique will make the wrist naturally straight with a racket that continues to follow the direction of returning the ball. This hit can be used for a defensive hit or an attacking hit. To divert your opponent away from or near net, or to the side. A good overhead hit from the back of the field should be done to make all the hites look the same. "Thus the opponent can not determine what pukklan is doing and where the ball is going" (Tony Grice, 2002: 41).

c) Hit clear: Height and Length

Authors clear biasanaya done with high and long. Point to getting time to return to the center of the field. This hit is a strategy used especially for single players. A defensive, defensive hit is a high return that is almost the same as a lob in tennis. Clear can be done with an overhand or underhand, either from the forehand or backhand side to force the opponent to move back toward the back side of the field. This hit is also a combination of a dropshot to keep the opponent away and keep the opponent defending all four corners of the pitch.

d) Hit drop: Low and Slow

The dropshot hit is a low and slow hit, just above the net so the ball drops directly to the floor. The ball is struck in front of the body with a longer distance than a clear overhead hit, and the surface of the racket is tilted to steer further down. The run of the ball is more like blocked or withheld than hit. The most important feature of a good drop overhead hit is the hoax movement. If movement can deceive the opponent the hit may not be returned at all. The most detrimental feature of "drop hit is the ball is slow so it gives a lot of time to the opponent." (Tony Grice, 2002: 74).

e) Smash hit

The smash hit is a quick hit, directed down strongly and sharply to return the short ball being struck up. Smash hit can only be done from overhead positions. The ball is struck hard but must be tempo and balance before trying to speed up the smash speed. The most important feature of a good overhead smash hit besides speed is the angle of the racket that leads down. The ball is struck in front of the body farther than a clear hit or drop. The surface of the racket is directed to aim the ball further down. "If the smash is done sharp enough, the hit may not be returned" (Tony Grice, 2002: 85).

f) Drive hit: Flat and Side.

Drive is a flat hit that directs the ball with a horizontal trajectory across the net. Either a forehand drive or a backhand steers the ball at a sufficient height to clear the ball with a flat or slightly decreased path. The gerkan hit almost along with the hitting movement from the side and is usually done from the side of the field. Drive hit provide an opportunity to train footwork because this hit is usually done at the height between the shoulder and knee to the left or right of the field. Thus "this hit emphasizes the attainment of the ball by dragging or slipping the foot in a hitting position" (Tony Grice, 2002: 97).

Learning

Learning is a systematic process repeatedly or steadily by always providing improved learning materials. With systematic learning through repetition it will cause the nervous system mechanism to improve. This is in accordance with the principle of increasing learning load that the mastery of the skills movement occurs gradually in the improvement. Starting from not being able to become, and then become skilled. Thus the arrangement of learning materials practiced starts from easy to more difficult, or from simple to more complex. The real results of this learning are automatic movements that do not necessarily require concentration of nerve centers, so that automatic movement that occurs will reduce additional movement which means energy saving.

Achievement is a person's ability, skill, and attitude in accomplishing a thing. A child is called achievement if the child is able to master the knowledge and skills provided by teachers in the school through the learning process. In order to achieve maximum learning achievement, then in the process of learning that takes place between teachers and students must run smoothly and influenced by several elements.

Successful mastery of the skills movement is supported by several important factors including the appropriate learning method. Athlete / student's interest to learn a skill is also caused by the method of learning. Joyce, Weil and Calhoun (2008: 8-12) suggests the method of learning can be interpreted as a way or pattern used to organize the learning process. Meanwhile, according to Dick and Carey (1990: 1) learning method is an approach in managing systematically or achieve goals as expected.

Learning methods can take the form of the application of ways of learning so that the learning process can take place well and the goal can be achieved. In this study, the learning method of motion became the focus of research. As a trainer or teacher, the method of learning in learning a movement skill is very important. This is because athletes who are trained have different

characteristics. With the selection of appropriate learning methods, then the goal of mastering the skills movement will be achieved.

Massed Practice is a learning method whose implementation is not interspersed between hours of practice until the specified time limit. Continuous exercise without breaks will have an effect on total lung capacity and heart volume. This occurs as a result of the considerable arousal given to the aerobic system in the body. Jusunul Hairy (1989: 203) states that "Continuous exercise can enhance aerobic capacity, because the form of exercise provides a heavy burden to the aerobic system, so it can be used to improve aerobic freshness". Another opinion was expressed by Yusuf Hadisasmita & Aip Syarifuddin (1996: 142), "Continuous methods can improve overall endurance and increase resistance to fatigue".

The method of distributed practice is a form of exercise interspersed between breaks during training time. The period of exercise is an important factor and should be taken into account in the exercise. The rest time between exercises is for recovery or recovery. The use of adequate rest periods is not a waste of time, but is an important part of the recovery process.

Exercise

In an effort to improve the achievements associated with humans and physical activities, required supporting sciences, such as exercise physiology, sports biomechanics, sports education, sports psychology, sociology and sports health. While the exercise theory deals with matters related to exercise, among others, objectives, types of exercises, training content, training methods, exercise planning, practice principles, form of arrangement, and evaluation and match theories.

Understanding of the exercise was very complex. According to Sudjarwo (1995: 13) "exercise is a process of setting scientific rules of sport, the application of education and principles. The process in question is the existence of systematics and planning, increased readiness for formation, and the ability of athletes' performance.

According to Sudjarwo (1995: 13) the main purpose of the exercise is the maximum achievement in addition to health and physical fitness for athletes. In accordance with the objectives then the sequence of exercise emphasis is as follows:

1) Formation of physical condition (Psycal Build Up)

The elements to be formed and developed include strength, speed, endurance, agility, conformity, precision, balance and coordination.

2) Technical formation (Technical Build Up)

The formation of techniques should start from the basic technique to the high technique which ultimately must lead to the movement's automation.

3) The establishment of tactics (Tactical Build Up)

The formation of tactics includes both defense and assault, including organizing strategies, systems, patterns and types.

4) The formation of mental maturity (Mental Build Up)

Mental formation in competing with psychological element according to the sport that followed.

5) Formation of champion maturity

With physical provisions, techniques, mental-backed tactics compete will be a mature harmony between the action and the mental process of the match. Train by way of various matches with all variations.

So what is meant by exercise is a systematic process that is done repeatedly steadily by always giving increased training load.

METHOD

The contains design of research is experimental research. The population in this study is the players of the age of the children of *Putra Utama* Badminton Association *Sukoharjo* aged 11 - 13 years, amounting to 16 athletes, sampling technique used is the total sampling. Data collection techniques used are test methods. Data analysis technique used in this research is reliability test, normality test, homogeneity test and t-test.

RESULT

Summary of Normality Test Data Analysis Results

Treatment Group	N	M	SD	$L_{calculate}$	L_{table}	Conclusion
K_1	8	50,625	7,729	0,1915	0,285	Normal Distribution
K_2	8	36,500	9,826	0,1627	0,285	Normal Distribution

From the results of normality tests performed by Lilliefors method on group 1 (K1) obtained Lhitung value = 0.1915. Where the result is smaller than the number of rejection limit at 5% significance level is 0.285. Thus it can be concluded that K1 data including normal distribution. From the results of normality performed on Group 2 (K2) obtained the value of Lhitung = 0.1627. Where the result is smaller than the number of rejection limit at 5% significance level is 0.285. It can be concluded that K2 data also includes normal distribution.

Summary of Data Homogeneity Test Results

Kelompok	N	SD^2	$F_{calculate}$	$F_{table\ 5\%}$
K_1	8	60,55357143	1,835	3,79
K_2	8	111,1428571		

From the homogeneity test results obtained obtained value Fcount = 1.835. While with db = (N1-1) opponent (N2-1) = 7 against 7, and 5% significance level Ftable = 3.79 while the number Fcount = 1.835. It turns out the value of Fhitung = is smaller than Ftable. Since Fcount <ftable then the null hypothesis is accepted. Thus it can be concluded that K1 and K2 have homogeneous variance. Thus if there is a difference between K1 and K2, the difference is really because of the difference in the average value obtained.

Summary of Test Results Difference between Final K1 and K2

Group	N	*Mean*	$t_{calculate}$	$t_{table\ 5\%}$
K_1	8	50,63	3,049	2,145
K_2	8	36,50		

From t test that can be obtained t value equal to 3,049, which turns out that value is bigger than ttable value 5% that is 2,145. Thus the null hypothesis is rejected, which means that after treatment there is a significant difference between the final test results on K1 and K2.

To find out which groups had a better percentage improvement, there was a difference of percentage difference in each group. The difference value of skill improvement of badminton in percent on K1 and K2 is as follows:

Summary of Results Calculation of Difference Values Improvement of badminton hit skills in Percent K1 and K2.

Group	N	*Mean Pretest*	*Mean Posttest*	M_d	Percentage of Improvement
K_1	8	186,500	237,125	3,412	1,829%
K_2	8	170,000	206,500	1,941	1,142%

Through the above results in greater depth means we can take something that is that drill exercises with interval break better and more active role in the mastery of skills hit speed badminton athletes age category of children. And through this research can also be developed further, namely through the development of models of practice drill well at the level of the age category of the same or lower

so that we know more about the effectiveness of training methods drills in the mastery of shot making skills in badminton either from an early age, children as well as on the level above.

CONCLUSION

Based on the results of research and data analysis results that have been done, can be obtained conclusion as follows:

1. There is a significant difference of influence between active interval drill training and passive break interval drill on badminton skill of atlet age of children on Putra Utama Sukoharjo Badminton Assosiation, (t count = 3.049> t table = 2,145).
2. Active drill interval training drill has better influence than passive break intervals drill training against badminton skill at children age of Putra Utama Sukoharjo Male Badminton . Improved skill of group 1 badminton (group treated with training) active interval rest drill) = 1.829%> group 2 (group treated by passive interval drill interval training method) = 1.142%

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EXERCISE FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS

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Abstract

The prevalence of childhood obesity is increasing, both in children who are developing typically and in children with developmental disabilities such as autism spectrum disorders (ASDs). Autism spectrum disorders (ASDs) are a group of multisystem neurodevelopmental disorders characterized by impairments in social interactions and communication skills and the presence of repetitive and stereotypical behaviors and interests. Prevalence data speaks that children with ASDs are more likely to be overweight or obese than their peers who are developing typically. Impairments specific to ASDs and their environmental factors could lead to an imbalance between the intake and expenditure of energy, leading to obesity. Obesity is a highly prevalent comorbidity in children with ASDs and might lead to significant health consequences. Nevertheless, current interventions for individuals with ASDs do not appear to address issues related to obesity risk and prevention. This paper aims to find out the proper exercise for ASDs. The scope of exploration considers the evidence on exercise interventions to improve physical fitness, address obesity, and reduce autism-specific impairments in children with ASDs. Limited evidence is currently available for exercise interventions in individuals with ASDs. Therefore, literature on other pediatric developmental disabilities and children who are developing typically was reviewed to provide recommendations for clinicians to promote physical fitness, and to reduce obesity in children with ASDs. There is a clear need for further systematic research to develop holistic multisystem and multifactorial obesity interventions that accommodate the social communication, motor, and behavioral impairments of children with ASDs.

Keywords: autism spectrum disorders, ASD, autism, obesity, exercise

INTRODUCTION

Autism spectrum disorders (ASDs) are a group of multisystem neurodevelopmental disorders characterized by impairments in social interactions and communication skills and the presence of repetitive and stereotypical behaviors and interests (Swedo SE, et al., 2013). Children with ASDs have impairments in social communication domains such as reduced eye contact, problems with social reciprocity, and verbal and nonverbal communication delays. Stereotypical behaviors and interests in children with ASDs may include adherence to inflexible routines and motor stereotypies such as hand flapping or body rocking. In addition to these core diagnostic impairments, children with ASDs may have a range of impairments in cognitive behavioral and perceptuomotor domains. Cognitive and behavioral impairments may include attention problems, intellectual delays, anxiety, depression, aggression, temper tantrums, and self-injurious behaviors. In terms of sensory impairments, children with autism may have difficulties in modulating tactile, auditory, visual, and vestibular inputs, with hyperresponsiveness or hyporesponsiveness to sensory stimuli. Children with ASDs may also have pervasive gross motor impairments such as poor visuomotor and bilateral coordination, as well as postural impairments in static and dynamic balance. In addition, many children with ASDs have systemic comorbidities such as gastrointestinal disorders and food sensitivities. Overall, ASDs are complex multisystem disorders characterized by a myriad of impairments in several domains (Lai M, et al., 2014).

Obesity is a highly prevalent comorbidity in children with ASDs and might lead to significant health consequences (Blumberg SJ, et al., 2013). Nevertheless, current interventions for individuals with autism do not appear to address issues related to obesity risk and prevention. In light of the growing prevalence of ASDs in recent years, this review highlights the important issues related to physical inactivity and obesity in individuals with ASDs and encourages clinicians to develop and

implement effective exercise interventions for this population. The specific aims of this article are: to provide estimates on the prevalence of obesity in children and adolescents with ASDs; to discuss the evidence on exercise and physical activity interventions that address overweight and obesity, physical fitness, and autism-related impairments; and to provide recommendations for intervention for individuals with ASDs domains (Lai M, et al., 2014).

PREVALENCE OF OBESITY IN INDIVIDUALS WITH ASDs

Obesity is caused by a positive energy balance in the body due to increased energy intake or decreased energy expenditure, or both. The most common indicator to classify obesity in children is the body mass index (BMI), which is defined as the ratio of the weight (in kilograms) to the square of the height (in meters squared). Children with BMI at the 95th percentile or higher are classified as obese, and children with BMI at the 85th percentile or higher are considered overweight. There is growing evidence that obesity is a major concern not just in children who are typically developing but also in children with developmental disabilities such as ASDs, attention deficit hyperactivity disorder (ADHD), and Down syndrome (Blumberg SJ, et al., 2013).

Children with ASDs are at least as likely to be overweight or obese as their peers who are developing typically. The prevalence of obesity in children with ASDs is 30.4% compared with 23.6% in age-matched children without ASDs (Curtin C, et al., 2010). Among children with chronic disabilities, the prevalence of obesity is greater in children with ASDs than in children with other developmental disabilities, including ADHD and learning disability (Chen, et al., 2009). The multisystem physical, psychosocial, and systemic impairments in this population may contribute to their higher obesity prevalence. Obesity is associated with long-term physical and psychosocial consequences, including diabetes, stroke, osteoarthritis, increased cardiovascular risk, stigma, and depression. Overall, obesity is a significant comorbidity in individuals with ASDs, and it serves as a call for clinicians such as physical therapists, occupational therapists, and physical educators to address issues related to overweight and obesity in their clients with ASDs (Chen, et al., 2009)

EXERCISE AND PHYSICAL ACTIVITY INTERVENTIONS FOR INDIVIDUALS WITH ASDs

Despite the growing evidence for obesity in individuals with ASDs, there is surprisingly little research assessing the efficacy of physical activity interventions for the treatment of obesity and promotion of physical fitness. A recent systematic review of exercise interventions for individuals with ASDs revealed that only 5 of the 18 studies assessed improvements in physical fitness, whereas the remaining studies focused on improvements in behavioral and cognitive skills. In this section, we review the existing literature on physical activity interventions aimed at enhancing physical fitness and reducing obesity and overweight as well as impairments related to autism in the behavioral, cognitive, and motor domains (Lang R, et al., 2010).

PHYSICAL ACTIVITY INTERVENTIONS TO ADDRESS OBESITY AND ENHANCE PHYSICAL FITNESS IN INDIVIDUALS WITH ASDs

Existing reviews on the positive effects of exercise interventions in individuals with ASDs have suggested that regular exercise has beneficial effects in alleviating social, behavioral, cognitive, and motor impairments of autism. However, these reviews did not provide any definitive conclusions or recommendations regarding the effects of exercise on cardiovascular and musculoskeletal fitness or obesity outcomes (Sowa M, Meulenbroek R, 2012)

Our review of the literature revealed a total of 10 studies that targeted physical fitness or obesity in children and adolescents with ASDs. Overall, these studies suggest that exercise promotes cardiovascular and musculoskeletal fitness but has limited effects on overweight or obesity status. Moreover, only 2 studies exclusively targeted weight reduction in children and adolescents with ASDs. Pitetti and colleagues implemented a graded treadmill training protocol for 9 months in adolescents with developmental disabilities, including autism, and found a significant increase in calorie expenditure and a decrease in BMI in the group of children who received treadmill training compared with the children in the control group. Similarly, Hinckson and colleagues implemented a

comprehensive 10-week, family-centered weight management program including components of physical activity and nutritional and psychological counseling for individuals with disabilities and their families. Although they did not find any significant improvements in body composition, parents reported positive changes in lifestyle habits of their children post intervention. The majority of the studies promoting exercise did not particularly focus on obesity outcomes, and most studies did not include both nutritional and exercise components in the intervention program (Sowa M, Meulenbroek R, 2012)

Although the volume of literature on physical activity interventions for improving physical fitness in individuals with ASDs appears significant, the evidence is weakened by several shortcomings such as a lack of control groups or between-subjects designs, an emphasis on single subject or within-subject designs, relatively small sample sizes (ie, 1–23 individuals with ASDs), and a dearth of long-term outcomes (ie, follow-up assessments present in only 2 of the 10 studies). The studies showed considerable variability in terms of intervention characteristics using the FITT (*F*requency, *I*ntensity, *T*ime, and *T*ype) model. Most studies provided exercise training 2 or 3 times a week with durations varying from 20 minutes to 1 hour. In terms of exercise type, both aerobic training and resistance training have been provided. Modalities used for aerobic training include treadmill, cycling, aquatic exercises, and exergaming (Anderson-Hanley C, et al., 2011). Studies typically implemented aerobic exercise at moderate to vigorous intensities. Programs that focused on resistance training mainly targeted upper limb and lower limb muscles using free weights, body weight, and machines. Overall, conclusions drawn from empirical evidence on efficacy of physical activity interventions to improve fitness and obesity status in individuals with ASDs, although promising, are currently limited due to the lack of rigorous study designs (Sowa M, Meulenbroek R, 2012)

PHYSICAL ACTIVITY INTERVENTIONS FOR TREATING AUTISM-RELATED IMPAIRMENTS IN INDIVIDUALS WITH ASDs

Children with ASDs have received a variety of exercise interventions to reduce autism-specific impairments such as problem behaviors, stereotypical behaviors, and inattention, as well as to improve academic performance, social responding, peer relations, and perceptuomotor skills. Several exercise modalities, including swimming, jogging, cycling, weight training, walking, and horseback riding, have been used. A meta-analysis of 16 studies suggested that, on average, exercise interventions led to a 37% improvement in overall symptomatology of autism, specifically, behavioral and academic improvements. In terms of behavioral skills of children with ASDs, vigorous intensity exercises such as jogging, roller-skating (Casey AF, et al., 2015), hydrotherapy exercises (Pan C-Y, 2011), and exergames have been used to reduce the frequency of stereotypical behaviors, aggressive or self-injurious behaviors, and hyperactivity. In terms of academic performance, physical exercise preceding increase in academic responding and on-task behaviors while reducing disruptive behaviors in class in children with ASDs. Moreover, the amount of time spent in physical activity positively correlated with engagement in class. In terms of addressing social skills, aquatic (Pan C-Y, 2011), and equine (Wuang Y., 2010) therapies have been used to reduce antisocial and aggressive behavior and improve social responding and peer relations in children with autism. Lastly, recreational pool exercises and horseback riding have been used to facilitate gross motor coordination and balance in children with autism. Overall, there is considerable evidence from several studies that exercise interventions are effective in improving motor, social, and behavioral skills of individuals with ASDs. Classroom lessons led to an increase in academic responding and on-task behaviors while reducing disruptive behaviors in class in children with ASDs (Sowa M, 2012).

CLINICAL IMPLICATIONS FOR ASSESSMENT AND TREATMENT OF INDIVIDUALS WITH ASDs

Obesity in individuals with ASDs results from a variety of contributing factors at the individual and environmental levels. In the following sections, we provide recommendations for assessment and treatment of clients with ASDs for practicing clinicians. As discussed above, our critical review of

the current literature on exercise in individuals with ASDs suggests that there is a lack of high quality evidence supporting the use of exercise interventions for improving physical fitness and reducing overweight and obesity. Hence, we will largely draw upon literature from children who are developing typically and children with other pediatric developmental disabilities to provide recommendations for individuals with ASDs. We acknowledge that obesity is a complex problem and holistic interventions that address both sides of the energy balance equation at the personal and environmental level are necessary. The literature suggests that multifactorial programs promoting physical activity, nutritious diet, lifestyle education or modification, and parental or caregiver education are more effective in addressing obesity related issues in children with developmental disabilities than programs that concentrate on a single component such as diet or exercise. Therefore, an effective treatment plan must involve a collaborative effort among the family, special educators and caregivers, physical therapists/occupational therapists/physical educators, and nutrition experts to ensure long-term improvements. However, as physical therapists and exercise physiologists, our recommendations for assessment and treatment in this section are aimed at the physical activity side of the energy balance equation (Sowa M, Meulenbroek R, 2012).

Recommendations for Treatment

Current interventions for children with autism mainly target their core social communication and academic impairments. Such interventions include ABA, Teaching and Education of Autistic and Related Communication Handicapped Children (TEACHH), and Picture Exchange Communication System (PECS). These approaches primarily involve sedentary, tabletop activities in which children with ASDs practice social communication skills in highly structured and confined environments. Therefore, the onus is on clinicians to promote interventions based on movement and physical activity to not only address autism specific impairments but also reduce obesity and enhance fitness. Although motor and physical activity deficits are not central to the disorder, it is likely that addressing the motor deficiencies and reduced physical activity levels may indirectly affect the core social communication impairments of individuals with ASDs by providing greater opportunities for socialization with peers, better attentional focus, and improved motor performance. Therefore, we recommend that motor and physical activity–related goals be included within the plan of care for individuals with ASDs, given the multisystem and systemic effects of exercise interventions.

There is strong evidence emerging from literature on children who are developing typically and individuals with developmental disabilities such as Down syndrome and cerebral palsy regarding the efficacy of aerobic and resistance training programs in improving physical fitness and achieving weight reduction. For example, a meta-analysis of 17 randomized controlled trials that implemented nonsurgical interventions for addressing obesity in children and adolescents between 2 and 18 years of age who were developing typically showed that physical activity interventions with durations ranging between 6 weeks and 24 months had a moderate-sized treatment effect (effect size= -0.52) on measures of adiposity, including percent body fat and fat-free mass. Similarly, a recent meta-analysis of 14 studies assessing the efficacy of exercise programs in individuals with intellectual disability indicated an overall positive effect of exercise on physiological measures of cardiorespiratory and musculoskeletal fitness, including volume of oxygen consumption (VO_2), pulmonary ventilation (V_E), and muscle force production.

A review of studies adhering to exercise guidelines recommended by the American College of Sports Medicine (ACSM) for improving cardiovascular fitness in individuals with Down syndrome showed that exercise programs were effective in increasing peak VO_2, peak V_E, maximum workload achieved, and time to exhaustion in this population. Given the lack of ACSM guidelines for exercise prescription in individuals with ASDs, our exercise recommendations for this population are largely based on studies in children who were developing typically and those with other developmental disabilities. We recommend an exercise program combining components of aerobic, resistance, flexibility, and neuromuscular training for maximum gains in fitness and body composition.

The majority of the evidence for exercise interventions in individuals with developmental disabilities including ASDs discussed above stems from studies conducted at the individual level.

However, large scale obesity treatment and prevention programs at the community and school levels have been implemented in children who are typically developing and to some extent in individuals with special needs.

Children spend a large portion of their day in school; hence, schoolbased programs may be valuable in developing healthy lifestyle practices in children. A Cochrane review provided definitive evidence for the beneficial effects of schoolbased programs on duration of physical activity, television viewing, maximum VO_2, and blood cholesterol levels of participants between 6 and 18 years of age. School-based interventions typically include components of health education, teacher training, changes to school curriculum or schedule to increase physical activity, provision of nutritious food, and parent education or counseling. The Activity Bursts in the Classroom (ABC) and Motivate, Adapt, and Play (MAP) programs in the United States as well as the modified Mind, Exercise, Nutrition. Do It! (MEND) program in New Zealand are examples of such programs. For example, the ABC program is a school-based intervention encouraging physical activity in children who are developing typically using multiple 10-minute activity breaks within the regular daily curriculum. These breaks were utilized to promote physical activities that could vary in complexity from basic breaks between classes to whole body movements for fitness to imaginary and learning-based play to facilitate the learning of art, music, math, and science concepts, thereby leading to improvements in physical fitness and academic performance. Community-based programs such as the "Best Buddies" program also have been implemented to improve fitness in children with disabilities. This is an inclusive physical education program that pairs a child with special needs with a peer who is developing typically.

Overall, there are only a handful of comprehensive programs for children with special needs, and hardly any for those with autism. Therefore, we recommend the implementation of multifactorial and multisystem community or school-level interventions to address physical fitness and obesity/overweight concerns in children with developmental disabilities (Hayakawa K, Kobayashi)

Table 1. Physical Activity Program for Children and Adolescents with Autism Spectrum Disorders (ASDs)

Component of Exercise	Initial Prescription	Progression
Aerobic exercise programs for children and adolescents with ASDs		
Frequency	3 d/wk	5 d/wk, preferably all days of the week
Intensity	Moderate physical activity	Vigorous physical activity
Time	20-30 min/d accumulated over short bouts	45-60 min/d accumulated over bouts
Type	Jogging, walk/run interval training, cycling, swimming, treadmill training, exergames (eg. Wii, Dance Dance Revolution [Nintendo of America Corp, Redmond, Washington], cyber cycling)	
Resistance exercise program for children and adolescents with ASDs		
Frequency	1 d/wk	2 d/wk
Intensity	10-15 RM	After 6 mos, progress to 8-10 RM Do not go below 6 RM in children
Time	1 set of 6-15 reps	2-3 sets of 8-12 reps, provide 2-3 min of break between sets, gradually reduce breaks between sets
Type	In children less than age 10 y, calisthenics and activities such as jumping, climbing, throwing In children above age 10 y, a strengthening program for muscles of upper and lower extremities and trunk using free weight, elastics bands, and body weight resistance. Machine such as leg press, leg row, shoulder press, chest press with light resistance, can be used with caution and supervision.	
Flexibility and neuromuscular training program for children and adolescents with ASDs		
Frequency	1-2 times per week	
Time	1 h	
Type	Muscle stretching exercises for major arm and leg muscle, therapeutic horseback riding, aquatic exercise, yoga, tai-chi	

Exercise guidelines based on literature in children and adolescents with ASDs, other pediatric developmental disabilities, and recommendations of the US Department of Health and Human Services for children who are developing typically (US Department of Health and Human Services and US Department of Agriculture, 2005) RM = repetition maximum, reps = repetitions.

SPESIFIC RECOMMENDATIONS FOR CLINICIANS WORKING WITH INDIVIDUALS WITH ASDs

Working with individuals with ASDs is challenging; therefore, in this section we provide specific recommendations for clinicians working directly with children with ASDs. The following discussion provides general guidelines; however, it is important to tailor the exercise program to the individual needs of each client to maintain interest and long-term adherence to a physically active lifestyle.

Our recommendations are based on principles taken from contemporary treatment approaches for individuals with ASDs, such as ABA, TEACHH, and PECS. These principles inform 2 important aspects of an exercise intervention: the structure of the exercise environment and the nature of the clinician's interaction, including instructions, feedback, and reinforcement. The structure of the environment should be consistent, well demarcated, and limited in space depending on program needs and must encourage attentional focus and engagement. Children with ASDs will need graded prompting or feedback in the form of brief initial verbal instructions, associated visual cues using demonstrations or picture schedules, and hand-overhand feedback when appropriate. Given the presence of motor impairments in more than 50% of children with ASDs, they may need adaptive modifications to exercise equipment such as hand rails or harnesses for a treadmill or stabilizers or rollers for a bicycle. Moreover, the choice of exercise modality will depend on the motor and social impairments of the child. For example, for children with balance impairments, supported stationary cycling might be more appropriate than jogging due to lower demands on the postural system. Children with motor incoordination will benefit from sports activities enhancing upper-limb or whole body coordination in comfortable, noncompetitive, and nonintimidating environments. Furthermore, children with ASDs who are low functioning may require individual-level programs, whereas group-based programs may be more appropriate for children with a high level of functioning. Overall, we recommend that clinicians consider the individual needs of their clients and make appropriate modifications to the environment, exercise equipment, and the nature of their interactions to ensure their clients' success within the exercise program (MacDonald M, et al., 2012).

CONCLUSION AND SUGGESTION

Current research is restricted to documenting the prevalence of obesity and determining the PA levels and food patterns of individuals with ASDs. Few studies have examined the links between obesity and autism-specific impairments or developed effective obesity interventions in individuals with ASDs. There is a greater focus on using aerobic exercise to enhance PA and reduce the autism-specific impairments of individuals with ASDs, with little evidence for the effects of resistance or neuromuscular training. There is also limited literature on holistic, multifactorial interventions involving a team effort to address obesity issues. Moreover, current literature on exercise interventions for ASDs is limited due to small heterogeneous samples, lack of control groups, presence of confounding factors, and lack of long-term follow up. Therefore, in the future, clinical researchers should use rigorous research designs to investigate the unique contributions of autism specific impairments to obesity and develop multifactorial and multilevel obesity interventions for individuals with ASDs. We acknowledge that conducting high-quality, large-scale randomized controlled trials for systematically addressing issues of overweight and obesity and improving physical fitness in individuals with ASDs is a daunting task, but given the various health concerns associated with obesity, there is an urgent need for clinical researchers to bring issues related to physical fitness to the forefront in this population.

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THE EFFECT OF KICKING SPEED, STRENGTH AND LEG MUSCLE EXPLOSIVE POWER ON THE ABILITY OF DOLLYO CHAGI OF TAEKWONDO DOJANG ATHLETE

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Objectives: The purpose of this study is to see the effect of kicking speed, the strength and explosive power of leg muscle toward the ability of Dollyo Chagi kick on taekwondo dojang athletes of West Sumatera Regional Police.
Methods: The method was quantitative oneusing Path Analysis. The population in this research was all Dojang athletes of Regional Police West Sumatera as many as 20 people. The kicking was tested by using sandsack/ target, the kicking speed was tested by using Nurul-Shark instrument, the leg muscle strength was tested by using Leg Dynamometer and its explosive power was tested by using Standing Board Jump instrument
Results: Based on the analysis, the kicking speed obtained sig = 0.043, the leg muscle strength obtained sig = 0.029, and leg muscle explosive power obtained sig = 0.093 which were smaller than probability value α = 0.05. Hence, the path analysis coefficient was significant. The speed of kick through the explosive power of leg muscle affects the dollyo chagi kick ability as much as38.44%. The leg muscle strength through its explosive power affects as much as 12.18%. Thus, the effect of kicking speed, leg muscle strength and its explosive power towards Dollyo Chagi Kick ability was 55,06%.
Conclusion: 1)the kicking speed has direct and significant effect on Dollyo Chagi kick ability, 2) leg muscle strength has direct and significant influence to the Dollyo Chagi kick ability, 3) leg muscle explosive power has direct and significant effect on Dollyo Chagi kick ability of Dojang athletes, 4) There is an indirect effect of kicking speed on the ability of Dollyo Chagi kick through explosive power of leg muscle, 5) There is indirect influence of leg muscle strength to ability of Dollyo Chagi kick through the explosive power of leg muscle 6) There is significant influence between kicking speed, leg muscle strength and its explosive power which simultaneously effect the ability of Dollyo Chagi kick of Dojang athlete West Sumatra Regional Police.

Keywords: kicking speed, strength and explosive power of leg muscle, dollyo chagi kick

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INTRODUCTION

Development and training of sport is part of the improvement of human quality which is directed in the improvement of physical and spiritual health of all Indonesian. In addition, it can also cultivate the character, personality, discipline, sportsmanship, and ability of critical thinking and the development of sports skills. The efforts to improve the quality of Indonesian society in order to have adequate health and fitness make physical education important. This can be accomplished through sport activities that ultimately obtain physical and spiritual health, as a nursery through educational institutions. In accordance with the above explanation, exercise is not only aimed at maintaining and improving physical health, but also can be used as a place of appreciation for those who obtained achievement at regional, national, and international levels. Sport is not only to train the physical course but also to cultivate morals and discipline. It is proved by the timeliness of exercise and sportsmanship in matches and practices.

To achieve the goal of the sport, it would be sustainable with the support and cooperation of various parties. This requires serious and tiered coaching. In accordance with *Undang-Undang* No. 3 *Tahun* 2005 on National Sport System CHAPTER II Article 21 section 4: "development and training of sports are implemented through long life education and community that are based on the development of sports for all people".

Tae Kwon Do is one of the many sport achievements in the world enjoyedby almost people in the world including Indonesia as well as the Western Sumatera. One of the goals of Tae Kwon Do training in West Sumatera Province is the junior category or 15-17 year old students (lee. 2009). The number of West Sumatra provincial championship events targeting the learners to give impact to

schools to include activities Tae Kwon Do as an extracurricular school. In addition, achievement trainings in the Tae Kwon Do sports can be achieved through coaching in Dojang which are spread throughout the West Sumatra province. One of the Dojang who is still active in conducting the guidance is Dojang of West Sumatera Regional Police.

Based on the observation and interviews done with the Dojang trainer of West Sumatra Regional Police, Ir. Budi Ilyas, on April 16th, 2017, he explained that Dojang athletes ability to perform Dollyo Chagi kick are still below the average. So that, at the time they compete in the match, they often lose speed and power compare to the athletes from other provinces. It can be seen from their kicks which were often deviated from the target or their kick ability is easily read by the opponent resulting in points or numbers for the opponent.

The kick is an attack whose value is higher than the punch attack. Physical ability state (strength, agility, endurance, explosive muscle endurance, speed and explosive power of the leg muscles) can affect the ability of Dollyo Chagi kicks. One of the factors that can affect kick dollyo chagi is power. Strength is the ability of a muscle to generate stretching against a resistance or a component of a physical condition that concerns an athlete's ability when using his muscles to accept the load in a given work time. Another physical condition that affects kick dollyo chagi is speed. Speed is the ability of the body to direct all systems in the fight load, distance, and time that produce mechanical work. In doing a Dollyo Chagi kick the Dojang athletes of West Sumatra Regional Police are often avoided and deflected by opponents, it signifies the speed in doing the kick is still less fast. Speed factor is allegedly influential on the ability of Dollyo Chagi kick of Dojang athletes of West Sumatera Regional Police.

Kick is a technique of attack that often appears and more likely to create points in a Tae Kwon Do match both in using dollyo chagi kick and other kick techniques.This kick is the most kick used by Tae Kwon Do athletes when competing. Ease of movement, power generated, and the ability of this kick is the reason why this kick is often used. Suryadi (2002: 34) mentions "the power of this kick is generated from the knee which is strongly supported by waist round as energy channel from the body". The waist rotation determines how much kick power is generated. When doing the Dollyo Chagi kick technique, the level of freedom movement will be very large and the kick will be easier to do so the opponent is difficult to anticipate an attack of this technique if the joints of the limbs, especially the hip joints can be fully utilized.

The Dollyo Chagi kick technique generates enormous power when it is done with the correct kicking technique. When doing Dollyo Chagi kick, the position of the knee that will kick has a pedestal that can be utilized to produce a kick. This kicking technique requires a high degree of hip joint flexibility due to rotation of the waist determining how much kicking power is performed. When Tae Kwon Do's athlete can do a Dollyo Chagi kick with a full waist round, then the strength and speed of kick Dollyo Chagi will be difficult to avoid by the opponent. According Suryadi (2002: 33): "Coordination of all gestures, especially with the waist, will produce maximum power". In addition, the spontaneous and the explosive kick-motion techniques in Dollyo Chagi's kick will be difficult to be anticipated by the opponent.

METHOD

This research used quantitative method by using Path Analysis approach, which uses structural equation to see the dimensional causality of the effects of Speed (X1), Muscle Limb Strength (X2), and Leg Muscle Explosive Power (X3) towards Dollyo Chagi Kicking Capability (Y). This study was conducted to see whether there is the direct a indirect effect of causal variables to the result variable through the use of Path Analysis method. The sample in this study is all athletes taekwondo dojang Polda West Sumatra, amounting to 20 peoples. The instruments used are (1) kicks dollyo chagi test, (2) Nurul Shark test test for kick speed test, (3) leg dynamometer test to measure leg muscle strength, (4) test of standing broad jump to explosive Power of Leg Muscle.

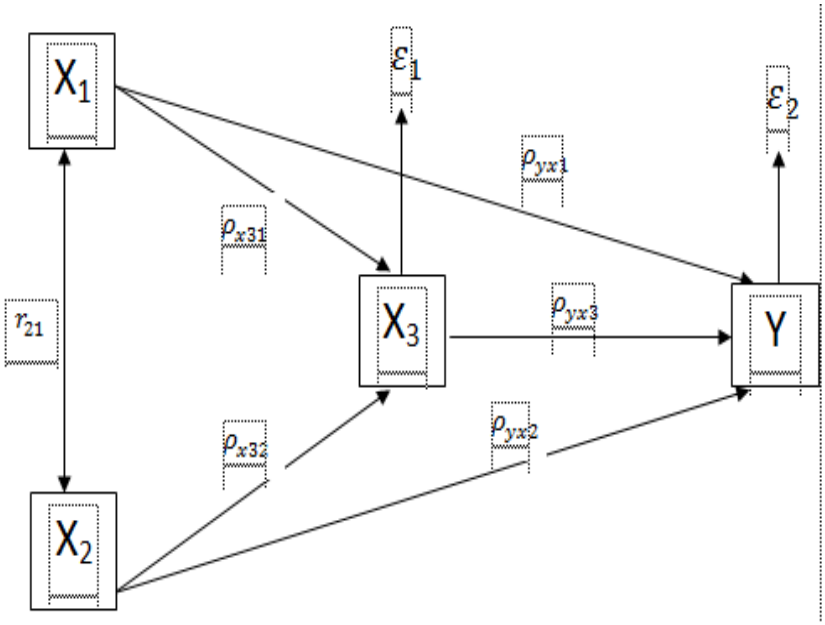


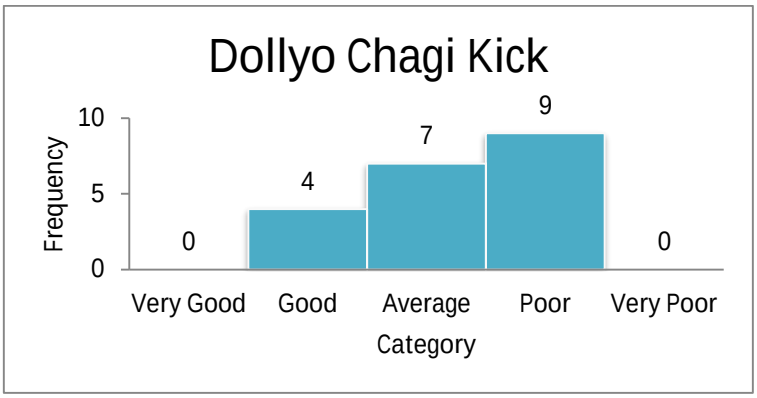
Figure 1. Research Design
(Engkos and Riduan, 2012: 129)

Information :
X1: Kicking Speed
X2: Leg Muscle Strength
X3: Leg Muscle Explosive Power
Y: Dollyo Chagi Athletes Kicking Capability

RESULT

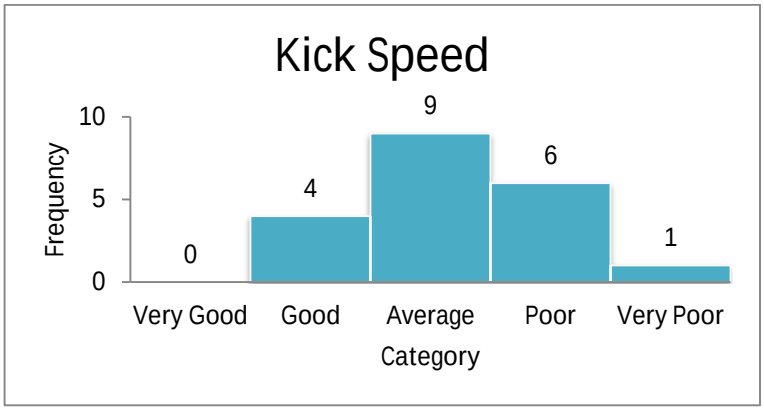
Based on the measurements in each research variables, the average ability of kicking speed = 0.48, average leg muscle strength = 170.30, average explosive power of the leg muscle = 225.70 and average ability dollyo chagi Kick = 21.10. following data measurement results of each variables:

1. Dollyo chagi kick



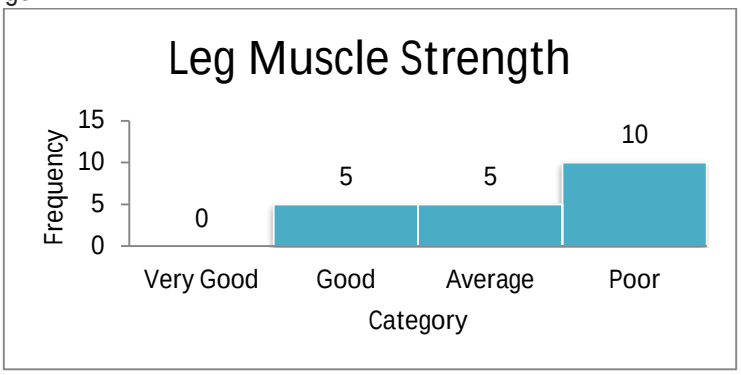
Graph 1. Diagram of dollyo chagi kick

2. Kick Speed



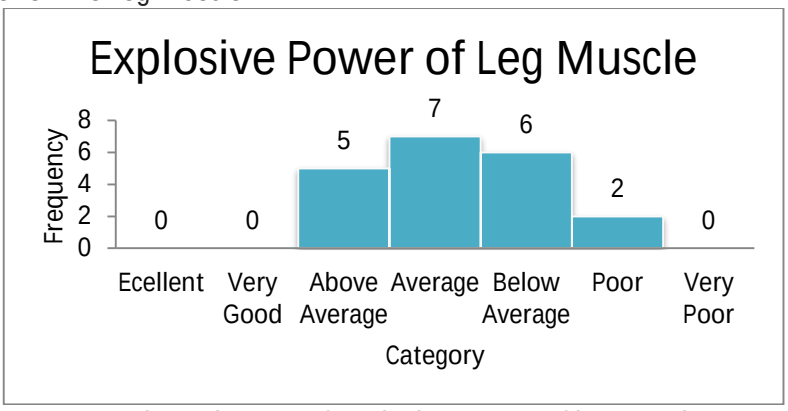
Graph 2. Diagram of kick speed

3. Leg muscle strength



Graph 3. Diagram of leg muscle strength

4. Explosive power of The Leg Muscle



Graph 4. Diagram of explosive power of leg muscle

1. Research Results Shows that There is Direct Effect of Kicking Speed Towards Dolly Chagi Capability of Dojang Athlete of West Sumatra Regional Police

Based on the calculation of path analysis, it was found that there is a direct effect of kicking speed as the dominant element of physical ability and has a significant relationship and influence on the ability of athletes to perform the Dollyo Chagi kick. If it is seen from the relationship, KickingSpeed and Dollyo Chagi kick had strong relationship that is equal to 0,542 or 29,38%.

2. Results Research Shows There is Direct Influence of Leg Muscle Strength Against the Dollyo Chagi Kick Ability Dojang Athlete of West Sumatra Regional Police

From the results of research,it was found that there is direct influence of leg muscle strength (X1) and the ability of Dollyo Chagi kick (Y). It can be seen in Table Coffesient which shows the effect

of ρYX2 = 0.298. Based on the calculation done by using proram SPSS.17, it was obtained the sig value = 0,029 which is smaller than probability value α = 0,05, value 0,029 <0,05. Hence, in this case Ho is rejected and Ha is accepted which means that coefficient of path analysis is significant. So Leg Muscle Power is directly affected.

3. Research Results Shows Direct Influence ofLeg Muscle Explosive Power Ability TowardsDolly Chagi Capability of Dojang Athlete of West Sumatra Regional Police

From result of the research,it was found that there is direct influence of Leg Muscle Explosive Power (X3) to the Accuracy of Kick To Wicket (shooting) (Y). This is seen in Table Coffesient which shows the effect of ρYX3 = 0.173. Based on the results of calculations using SPSS.17 program, it was obtained the sig value = 0.093 which is smaller than probability value α = 0.05, value 0.093 <0.05. Then in this case Ha is accepted and Hois rejected which means the pathway analysis coefficient is significant. So, the muscle limb power directly affects the ability of Dollyo Chagi kick done by athletes Dojang Athlete West Sumatra Regional Police.

4. Research Results Indicate There is Indirect Influence of KickingSpeed TowardsDolly Chagi Capability Through Leg Muscle Explosive Power of Dojang Athlete of West Sumatra Regional Police.

In the results of path analysis calculations, it was found that the direct effect of Kicking Speed on Dollyo Chagi Kicking Capability was 0,542 or 29,38%, while the effect of Kicking Speed through Leg Muscle Explosive Power of Dollyo Chagi Kick was 0,173 or 2, 99%. This means that if these two variables are integrated, the effect is significant. It can be interpreted that KickingSpeed through Leg Muscle Explosive Power gives greater influence on the ability of Dollyo Chagi kick on Dojang athletes of West Sumatra Regional Police.

5. Research Results Indicate There Is Indirect Influence Between Leg Muscle Strength Against Dollyo Chagi Kicking Ability Through Leg Muscle Explosive Power of Dojang Athlete of West Sumatra Regional Police.

Based on the previous findings, the direct influence of Leg Muscle Strength on the ability of Dollyo Chagi kick obtained was 0.172 or 2.99%, while the influence of Leg Muscle Strength through Leg Muscle Explosive Power to Dollyo Chagi Kicking Capability was 0.298 or 8.88%. This means that the effect is quite significant. These findings show a direct influence between the explosive muscle limb power variables on the Dollyo Chagi Kick Capability is much more increased if it is integrated with the Leg Muscle Explosive Power variable. This can be interpreted that Leg Muscle Power through Explosive Muscle Limbs give a greater influence on the ability to Dollyo Chagi kick on Dojang athletes of West Sumatra Regional Police.

6. Research Results Shows There is Simultaneous Effect of Kicking Speed, Leg Muscle Strength and Its Explosive Ability Against Dollyo Chagi Kicking Ability of Dojang Athlete of West Sumatra Regional Police.

The effect of these three exogenous variables; the kicking velocity (X1), leg muscle strength (X2), and explosive muscle limb power (X3) on the ability of kick Dollyo Chagi shows score 0,742 or 55,06%. The findings of this study have statistically shown that Dollyo Chagi Kicking Capability is supported by three variables, while the rest equal to 44.94% caused by other factors. Other factors may be such as elasticity, Speed, Flexibility, Durability of Leg Kicker Muscle Speed and so on. It can be interpreted that in particular the ability of the three exogenous variables owned by Dojang athletes of West Sumatra Regional Police can still be increased again, so that the result effect in kicking will be more optimal and the actualization of Dollyo Chagi kick capability is better in accordance with expectations.

DISCUSION

Many factors that can affect the ability of kick dollyo chagi include: Speed. Speed comes from word“fast”. According to Ihsan (2017), speed means the movement in a short time that can travel long distances. Speed is one of the basic components of physical condition that has a considerable role in achieving sports achievement for an athlete. The results showed that the kicking speed was the dominant element of physical ability and had significant relation and influence to the athlete's ability to perform the Dollyo Chagi Kicking Capability (Tirtawirya, 2015).

The next factor is strength, according to Harsono (1988: 135) "one element of physical condition that needs to be trained first in the element of the physical condition is strength. It is because strength has an important role in protecting the athlete from injury and helps the stability of the joints. In relation to kicking accuracy, leg muscle strength is needed by taekwondo athletes, because when the muscle is exhausted, the muscle work will not be maximal and the kick done is not right on target because it does not have good kick power.

The next factor that affects the dollyo chagi kick is explosive power. It is an important biomotor component in the sport's activities because explosive powerdetermines how hard people can hit, how hard people can kick, how fast people can run, and how far people can do repercussions and so on (wheeleer. 2011). Dollyo Chagi's kick in Tae Kwon Do's sport greatly prioritizes the muscle limb power of an athlete, especially when doing explosive strong kicks. If an athlete's limb muscle explosive power is low during a kick then the kick will be easily deflected and very beneficial for the opponent and not directly on target.

Based on the previous findings, the direct effect of Kicking Speed to Dollyo Chagi Kicking Capability was 0.542 or 29.38%, while the effect of Kicking Speed through of Dollyo Chagi Capability was 0.173 or 2.99%. This means that if these two variables are integrated, the effect is somehow significant. It can be interpreted that Kicking Speed through Explosive Muscle Limb gives greater influence on the ability of Dollyo Chagi kick on Dojang athletes of West Sumatra Regional Police. From the results of the research that has been done on the variables of Limb Muscle Power, Leg Muscle Explosive Power and Dollyo Chagi Kicking Ability of Dojang Athlete of West Sumatera Regional Police, it was found that there is indirect influence of Muscle Limb Strength (X2) to Dollyo Chagi (Y) Kicking Capability through Power Explosion (X3) as much as 0.173 so that Ho is rejected and Ha is accepted. It means there is indirect influence of Limb Muscle Strength on the ability of kick Dollyo Chagi through Muscle Limb Explosive Power on Dojang athletes of West Sumatra Regional Police. It can be said that with the findings of this study, the theoretical review, conceptual framework and hypothesis proposed in Chapter II can beempirically and truthfully accepted. The rationale laid out in the conceptual framework can be tested in real terms. Based on these findings, it can be interpreted that athletes who have a good muscular explosive power will affect the ability of his Dollyo Chagi kick when it is combined with the Muscle Limb Explosive Power. As the result,the kicking is better and maximum in accordance with the theories and reviews that have been presented. Muscle Limb Strength is a variable that has a very strong and mutually supportive relationship with Leg Muscle Explosive Power to Dollyo Chagi Kick, but the result effect is different between Limb Muscle Strength and Leg Muscle Explosive Power. Based on the findings of this study, the maximum results will be obtained if the muscle strength of the legs is combined with the explosive muscle limb.

The next factor affecting dollyo chagi kick is speed. Speed is an essential physical component. Limb muscle strength is the ability of muscles or a group of muscles to overcome a burden or resistance in running exercise activities. Explosive power is an important biomotor component in sports activities because explosive power determines how hard people can hit, how hard people can kick, how fast people can run, and how far people can do repercussions and so on . If all three components of the physical condition are owned by an athlete in relation to Dollyo Chagi's Kick Capability, it will result a good kick accuracy. As explained by Suharno (1981: 36), the determinants of accuracy are as follows: "1) high coordination of good accuracy, 2) the size of the target, 3) the sharpness of the senses, 4) the proximity of the target distance, 5) the mastery of the technique , 6) fast movement, 7) feeling of athlete and accuracy, and 8) strengthand weakness of a movement ".

From the results of research that has been done on variable Kicking Speed, Limb Muscle Strength, Leg Muscle Explosive Power and Dollyo Chagi Kicking Capability at Dojang athletesof West Sumatra Regional Police, it was found that there is simultaneous influence between The Kicking Speed(X1), Muscle Length (X2) and Muscle Explosive (X3) on Dollyo Chagi (Y) Kicking Capability (R_{square} = 0,742 or 55,06%). In other words, Ho is rejected and Ha is accepted, in which there is simultaneous influence between Kicking Speed, Leg Muscle Strength and its Explosive power towards Dollyo Chagi Kick ability at Dojang athletes of West Sumatra Regional Police.

According to Nusufi (2015) "This explosive power is required in some acyclic movements, for example in Pencak Silat athletes, high kicks or long kicks. Explosive power is the ability of the athlete to overcome resistance with a high contraction speed.It is a combination of maximum speed and maximum strength ". Based on the previous hypothesis, the direct influence between each of these research variables Kicking Speed, Leg Muscle Strength,Leg Muscle Explosive power of Dollyo Chagi Kick at Dojang athletes of West Sumatra Regional Police, onlyLeg Muscle Explosive power which has smaller influence to the Dollyo Chagi Kicking Capability in Tae Kwondo.

The effect of these three exogenous variables; the kicking velocity (X1), leg muscle strength (X2), and explosive muscle limb (X3) on the ability of kick Dollyo Chagi was 0,742 or 55,06%. The findings of this study have statistically shown that Dollyo Chagi Kicking Capability is supported by three variables in this study, while the rest equal to 44.94% is caused by other factors. Other factors may be such as elasticity, Speed, Flexibility, Durability of Leg Kicker Muscle Speed and so on. It can be interpreted that in particular the ability of the three exogenous variables owned by Dojang athletes of West SumateraRegional Police can be increased again, so that the result effect in kicking will be more optimal and the actualization of Dollyo Chagi kick capability is better in accordance with expectations.

CONCLUSION

Based on the results of hypothesis testing and discussion, the following are conclusions obtained:

1. There is direct and significant influence of kicking speed against the ability to perform Dollyo Chagi kick at Dojang athletes of West Sumatra Regional Police.
2. There is significant and direct influence of leg muscle strength on the ability the ability to perform Dollyo Chagi kick at Dojang athletes of West Sumatra Regional Police.
3. There is direct and significant influence of Leg Muscle ExplosivePower to perform Dollyo Chagi kick at Dojang athletes of West Sumatra Regional Police.
4. There is an indirect effect of kicking speed on the ability of Dollyo Chagi kick through leg muscle explosive power at Dojang athletes of West Sumatra Regional Police.
5. There is an indirect effect of leg muscle strength on the ability of Dollyo Chagi kick through the explosive muscle limbs at Dojang athletes of West Sumatra Regional Police.
6. There is a significant influence between kicking speed, leg muscle strength, and leg muscle explosive power simultaneously to the ability of Dollyo Chagi kicks performed by Dojang athletes of West Sumatra Regional Police.

SUGGESTION

In an effort to improve the quality of Dollyo Chagi kick performed by Dojang athletes of West Sumatra Regional Police, there are some suggestions as the following:

1. It is expected that the trainer to innovate the training method by improving the exercises of kicking speed, leg muscle strength and leg muscle explosive power directly and indirectly to influence the ability to perform perfect Dollyo Chagi kick.
2. To the athlete to be more focused in the training of speed kicks, leg muscle strength and leg muscle explosive power directly or indirectly to influence the ability to perform perfect Dollyo Chagi kick.

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CORRELATION BETWEEN PROTEIN INTAKE WITH MUSCLE STRENGTH OF ATHLETES

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Abstract

Objectives: The purpose of this study was to examine relationship protein intake with muscle strength of athletes.
Methods: The research was conducted by cross sectional design between September to October 2016. The number of sample in this research was 20 male table tennis athletes (age 20 ± 3.4 y.o. , weight 56.7 ± 12 kg, height 162.4 cm ± 8.9 cm). The instruments for measurement of muscle strength used handgrip dynamometer used. The consumption data was obtained by questionnaire of food recall 1 x 24 hours. Correlation between protein intake with muscle strength were analyzed using pearson correlation test.
Results: The result of the research showed that average of energy intake of athletes were 2.134 ± 231 kcal, the average of protein intake was 77.6 ± 21.1 g, the average intake of carbohydrate was 370.9 ± 49.5 g, and theaverage intake of fat was 47.2 ± 12.1 g per day. In addition,the energy intake was up to 76.5% of the demand of energy in a day, the protein intake was 73.7% and the fat intake was 51,8% from that of needed by an athlete. The results showed that the maximum score of muscle strength data was 65 kg and minimum score of muscle strength data was 24 kg. The average score of muscle strength data was 46.0 ± 13.3 kg.
Conclusions: Most of the muscle strength data of table tennis athletes was very good. There was no significant correlation between energy consumption and protein intake with muscle strength of athletes ($p > 0.05$).

Keywords: Muscle strength, protein intake, athlete

INTRODUCTION

The Indonesian sports team has not yet achieved its maximal achievement. There are many sports teams that have not gained a good reputation in regional, national, even international event. Constitutionally, the Indonesian government has regulated the National Sporting System Constitution. According to Sporting Constitution, one of the sports offshoots managed by the government is the merit sport. Table tennis is one of those merit sports. However, the achievement of tennis table team is relatively declining.

According to data from Tribun Sport, in the 26th SEA Games Indonesia only won 3 bronzes, and it showed that Indonesian team performance declines compared to Indonesian performance in the 25th SEA Games in Laos. In the 25th SEA Games in Laos, Indonesian table tennis team won a silver medal. In the 2015 SEA Games in Singapore, Indonesia also only won a bronze medal [1]. The tendency of declining table tennis achievement is also seen in local and national level. There are several factors which influence the optimal performance in sport. Factors contribute to sport performance such as (1) physic development, (2) technique development, (3) mental development, and (4) the maturity of athletes in achieving their goals [2]. Moreover, the biological aspects contribute to the sport performance are: (1) potential or the basic physical ability including strength, velocity, muscle force, heart muscle working power, lungs, flexibility, pertinence, and healthy exercise; (2) body organ functions including heart working power, breathing system organ, and the sense working power; (3) body structure and shape including height, size, width, and shape of the body; (4) nutrition including adequate amount of foods, food quality fulfills the necessity, and the availability of food variety. The optimal sport performance needs a good physical quality. One of good physical quality criteria is a good arm tendon. A good physical condition requires a balance nutrition intake. A nutritious food will provide good substances the body

needs. Conversely, consuming bad quality of foods will provide the inadequate amount of substances our body needs and the body might lose those necessary substances to function well (Almatsier 2004).

The sport athletes training center has not yet maintained a good dietary for the athletes. Moreover, the training center based in the province or regency. The dietary of athletes often has not been arranged in accordance to a good dietary for the respected sport offshoots. Athlete dietary has not been arranged based on the age and sport category of the athletes. This condition is worsened by the athletes' bad dietary behaviors. Some different sport offshoots which are prepared to participate in various competitions are often given the same quality dietary. Moreover, the dietary for table tennis athletes in regency level; it is worse than those in the province and national level. Tennis table athletes in Pariaman city are no exception in this bad dietary. The training center over there still employs a conventional dietary without considering the age and the category of sport an athlete belongs to. The dietary of athlete only considers whether the foods will satisfy them or not, instead of considering its impact to the quality of athletes' performance. Even on some occasions, the dietary is left to the athletes themselves to choose any foods they want. This research is intended to figure out the quality of nutrient intake for athletes in Pariaman city.

METHODS

The type of this research is descriptive research (Notoatmodjo, 2005). This research design benefits the researcher in term of its simplicity, low-research cost, and not time-consuming or the result can be obtained in the relatively short period of time. This research was taken place at Pariaman city. Data of the research was collected from September to October 2016. Population in this research was all table tennis athletes in Pariaman city. The number of samples was 20 people.

Primary data were the data directly obtained from the respondent such as name, gender, age, weight, height, and dietary. Meanwhile, the secondary data were the population data obtained from the table tennis administrator in Pariaman city. The Instrument employed in this research was the questionnaire to collect the data about respondent identity and the recall of athletes' dietary.

The research was started by filling out the questionnaire about the athletes' identity. After that, the athletes were required to measure their height and weight. The weight was measured without using footwear and the measurement was calibrated. The height was measured without using headscarf nor footwear. The athletes' nutrition, additionally, was measured by comparing the data of athlete's weight and height with the BMI standard in accordance to age and gender (Kemenkes RI, 2011; WHO 2006). To find out the energy and nutrition intake quantitatively and qualitatively. The instruments for measurement of muscle strength used handgrip dynamometer used.

RESULTS AND DISCUSSION

Seventy percent of athletes are men and thirty percent others are women. The research showed that the average energy intake was 2.134 + 231 calorie, the average protein intake was 77.6 + 21.1 gram, the average carbohydrate intake was 370.9 + 49.5 gram per day and the average fat intake was 47.2 + 12.1 gram per day. Furthermore, the amount of average iron intake was 21.0 + 10.5 mg per day, while the average vitamin C intake was 85.0 + 42.6 mg per day. Quantitatively, the energy intake has just reached 76,5% from the total amount of energy needed for one day, carbohydrate intake was 96.3%, the protein intake was 73.7% , the fat intake was 51.8% from that of the requirement by an athlete for one day. The iron intake has reached 139.8% from that of needed by an athlete, but vitamin C intake was still 42.5% of the amount needed by an athlete. Quantitatively, this research showed that the nutrition intake has not yet fulfilled the demand of an athlete for one day. The distribution of respondent's data based on the quality of nutrient and energy intake is tabulated in table 1.

Table 1. Distribution of respondents based on the quality of nutrient intake

Quality of Nutrient Intake	Energy		Carbohydrate		Fat		Protein		Fe		Vitamin C	
	n	%	n	%	n	%	n	%	n	%	n	%
< 100%	19	95	14	75	20	100	19	95	5	25	20	100
≥ 100%	1	5	6	25	0	0	1	5	15	75	0	0
Total	20	100	20	100	20	100	20	100	20	100	20	100

Based on table 1, it is figured out that 95% of athlete's nutrient intake is still below 100% of daily energy intake needed, which shows that the average of daily energy intake has not fulfilled the athlete's needs to do exercise or carry out other physical activities. Energy acts as the catalyst for any physical activities including practicing table tennis that one carry out. The energy intake which has not been fulfilled will be replenished by the deposited energy contained in the muscle glycogen or fat deposit in adipose tissue. The lack of energy consumed will cause the body to have a negative balance, thus it reduces the body weight and damages the tissues our body (Almatsier, 2004). The damages of tissue may reduce the muscle power, thus it lowers the athletes' performance.

Carbohydrate is one of the substances which provide energy for the muscle. The amount of carbohydrate needed by an athlete depends on the intensity, duration, and the type of exercise. The demand of carbohydrate intake for table tennis athlete is 50-60% of the energy intake for one day. The research shows that 25.0% of athletes have consumed enough carbohydrate (>100.0%), however, 75.0% others still consume below 100.0% amount of carbohydrate. Carbohydrates intake below 100.0% of the demand will decrease the number of carbohydrates stored in the muscle and liver. There are still many athletes who consume foods contained carbohydrate below the amount it is needed probably because of less various menu and foods containing carbohydrate consumed by those athletes. Another impact of consuming less carbohydrate is the decreasing deposit of glycogen in muscles and glucose in the blood.

Proteins are important components of the human diet and play an essential role as structural and functional components of living systems. Food proteins provide amino acids (AA) which serve as building blocks of all vital organs, muscles (including heart muscles), hormones and biological fluids such as blood. As the human body is incapable of maintaining reserves of protein, a constant supply of good quality protein is needed to maintain growth and other physiological functions. Insufficient intake of protein, especially during periods of growth and development can affect all organs in the body including the brain, heart, immune system, and other vital organs. Protein quality of foods is, therefore, an important criterion for the provision of adequate nutrition and maintenance of good health (Hardinsyah et al, 1989).

The research showed that generally (95.0%) the quantity of protein intake is still below 100.0%, only 5.0% athletes take enough amount of protein. A study by Jeukendrup and Gleeson (2004) showed a linear relationship between energy intake and protein intake. Tour de France cyclist consumed 12.0% of their daily energy intake (6500 kcal) in the form of protein, and intake easily met the suggested increased requirements (2.5 g/kg b.w. /day). These results suggest that provided the energy intake matches energy expenditure on a daily basis, endurance athletes do not need to supplement their diets with protein. Qualitatively, the essential amino acid consumed has already fulfilled the deal amount (≥100), except tryptophan. There are 5.0% athletes who still consume tryptophan below the ideal amount (<100%, table 2). Tryptophan should be replenished by consuming foods containing a high amount of tryptophan. During exercise with intensity under 70.0% VO_{2max}, there is only a slight change of amino acid in the muscles. This fact portrays that there is no increasing demand for amino acid for athletes who conduct exercise under 70.0% VO2max (Boye et al, 2012).

Iron is a functional component of oxygen transport and energy production in humans and therefore is a critically important micronutrient for sport and exercise performance. Athletes, particularly female athletes participating in endurance sport, are at increased risk of compromised iron status due to heightened iron losses through menstruation and exercise-induced mechanisms associated with endurance activity (Jeukendrup et al, 2004). Mostly the athletes' iron intake has fulfilled their daily need (75.0%). Nevertheless, there still some athletes (25.0%) whose iron intake is still below its ideal number. Iron is the substance needed for forming hemoglobin. Hemoglobin's function is very crucial for carrying oxygen to all tissues. A relative low iron intake in blood might be getting lower during the exercise. The iron substance lost may occur though sweat. Iron lost through sweat may reach up to 0.3 mg iron/L. If an athlete exercises for four days, he might lose 4.0 L solution from his body and 1.2 mg iron (Boye et al, 2012).

The amount of iron consumed will also decrease the consumption of vitamin C is also decreased. The research showed that the athletes' full-vitamin-C intake (100.0%) is still below the athlete's necessity. Vitamin C is the chemical substance which absorbs the iron. Besides, vitamin C deficiency will lead to the damage of tissues in the body because of free radical. The results of research showed that the highest muscle strength was 65 kg and the lowest muscle strength data was 24 kg. The average muscle strength of a table tennis athlete's was 46.0 $\pm$ 13.3 kg. The results of research also showed that most of the muscle strength of table tennis athletes was very good (50.0%) and the category was less once (45.5%).

The results of research that showed no significant correlation between nutrient intake (protein, fat, carbohydrate, calcium and phosphor and energy) with muscle strength ($p > 0.05$). Every sport activity requires enough energy for sports activities to be normal without experiencing significant fatigue. According to the Kemenkes RI (2014) energy needs of athlete games including table tennis should come from carbohydrates by 50-60%, 30-35% comes from fat and 12-15% comes from protein. The result of statistical test of this research data shows that there was no significant relationship between energy consumption with athlete muscle strength ($p > 0.05$). An athlete energy requirement a greater than a non-athlete person because of the high activity athletes increases energy expenditure for metabolism, heat and hormone synthesis.

Energy source in the body shaped Adenosine Triphosphate (ATP), ATP is produced from the metabolism of nutrients in the form of carbohydrates, fats, and protein taken from food consumed. When the ATP for activity is sufficient, the excess ATP is stored in the liver and muscle in the form of glycogen, the glycogen in the muscle will be quickly mobilized during muscle contraction (Braun, 2008). Energy requirements for athletes with moderate exercise intensity (2-3 hours / day exercise duration 5-6 times per week) require 50-80 kcal / kg / day (Kreider et al, 2010). In this study the average energy intake of the subject is relatively less when compared with the number of nutritional adequacy for athletes (energy intake) subject 2.134 + 231 kcal, while the nutritional adequacy rate 2.834 kcal. The energy intake below the sufficiency required will have an effect on the availability of energy for muscle contraction which in turn is related to muscle strength.

The results also showed no relationship between protein intake with muscle strength. But there is a tendency to increase protein intake and muscle strength increases. Food intake, especially protein, is highly influential in muscle mass through changes in protein synthesis, with increased protein intake leading to a positive increase in protein balance leading to increased protein synthesis (Tarnopolsky MA, 1992). Increased protein synthesis slowly results in muscle hypertrophy that ultimately affects muscle strength (Rasmussen, 2000). Increased protein intake should be balanced with adequate energy intake, energy intake will have an impact on the increase in muscle mass. If the energy intake is less then the protein will be broken down as an energy source. When the duration of exercise increases, the protein contributes to maintaining the stability of blood glucose through the process of gluconeogenesis in the liver (ADA, 2000). Athletes with moderate intensity exercise (exercise duration 2-3 hours per day and

exercise frequency 5-6 times per week), need to consume foods consisting of 55-65% carbohydrates (5-8 g / kg / day) in order to keeping the liver and muscle glycogen deposits (Kreider et al, 2010).

The results of data analysis also showed no significant relationship between fat intake with muscle strength (p value> 0.05). Fat is the main source of energy for long-duration sports with low to moderate intensity. According to the Kemenkes RI (2014). Fat requirement ranges from 20 - 45% of total calorie requirement. When consuming less than 20% less fat than the total caloric needs will not give an advantage on physical performance. Similarly, if consuming more fat 45% of total caloric needs then it will be dangerous for athlete health. Although it does not directly play a role in improving performance, certain amounts of fats are still needed by the body for organ function and hormone formation. Fat needs of athletes is recommended 20-45% of total calories required. The need for this fat should be sufficient to form fatty tissue. Excess fat intake causes fat buildup in the adipose tissue that eventually leads to obesity. There has not been a significant relationship between fat intake and muscle strength of table tennis athletes is likely due to lack of energy intake causing fat intake used to provide energy for the entire body metabolism. According to ADA (2000) the recommendation for the adequacy of saturated fatty acids is 10% of energy adequacy, PUFA fatty acid is 10% and MUFA fatty acid is 10%. Athletes should ensure that fat intake is not too low.

CONCLUSIONS AND SUGGESTION

Conclusion

On average, the energy intake has just reached 76.5% from the requirement of nutrient for one day, the protein intake was 73.7%, and fat intake only fulfills 51.8% from that of needed by an athlete. The average iron intake has reached up 139.8%, but the vitamin C intake is still poor, only 42.5% from that of it is requirement. There are 95.0% athletes who consumed protein under the amount needed for daily physical activities, and carbohydrate consumed is still below 75.0%. All athletes (100.0%) still consume vitamin C below the standard it is needed by an athlete. In addition, 95.0% of athletes still consume fat below the amount is required for one day. This research proves that the nutrient demanded by the athlete is still incompatible with athletes' daily activities. There were no significant correlation between nutrient intake (protein, fat, carbohydrate, calcium and phosphor and energy) with muscle strength ($p > 0.05$).

Suggestion

Recommend to athlete to improve food consumption containing nutrition for mainly protein. Suggestion to the sports organizers to improve the quality of athlete menu according to health standards.

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DEVELOPMENT OF MONITORING BOOKS FOR SWIMMING

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Abstract

Objectives: The aim of the study is creating a monitoring book product for the swimmer. That is used asa monitoring media of the progress of students achievement while training swimming in the swimmingclub. The subjec of this study is a swimming choach in the sleman area.
Methods: The method of this study is Research and Development which uses six ways in the developing research. Previously, the developing of the monitoring book for swimmingclub need to be identification, developing, validation by amaterial and media expert, then it was experimented in the small group consisting of five coaches and the big group consisting of fiveteen coaches, and the final product The data analysisis by percentage quantitative.
Results: The result of the research and development totally explains about the monitoring book media thathas the main topic consisting of the material of phsycal monitor, technique, and also the softskill of the swimmer. The feasibility mmaterial is 80%, while the rate of the media is 81%.
Conclusion: The monitoring book for the swimming is properly to be used in monitoring the development and growth of the swimmer.

Keywords: Development, Monitoring Book, Swimming.

INTRODUCTION

In each kind of sport, both sports for competition and not, has stages of training in the process of coaching that starts from basic skills or basic techniques to advanced techniques. Apart from skill, early-age sports coaching should also be done continuously from an early age.

Sports for young children is not the same as sports for teenagers or adults. The exercise material is more emphasized on how gestures can support the development and growth of the child. One of the sports that can be given for early childhood phase is swimming in which psychologically and technically different course for early childhood compared to adolescent or adult. Different training models are required, at a much earlier multilateral age so that the training programs provided can benefit children's growth and development both physically and psychologically. Focus exercises for early childhood need to monitor the development and growth of learners during practice. In such monitoring, the need for a medium that can effectively assist the trainer in storing information on child growth is necessary. Therefore, it is necessary to hold observations and interviews to find out whether there is a medium that can assist the trainer in monitoring the development and growth of early childhood in swimming practice.

Based on field observation, and student monitoring in micro, PPL and internships, it can be seen that there is no media that can help trainers in monitoring the development of children as well as a medium between the trainer with the child's parents to convey information about the child's growth during exercise since, in reality, many parents are unaware of the child's growth and development during the rehearsals, they are only motivated by the outcome of their child's championship. For early age sports, certainly not the type of sports achievements that highlighted, but rather to how the gestures can support the development and growth of children.

This research and development is intended to design the media to facilitate the trainer in monitoring the development and growth of early childhood as well as a media approach to trainers with parents of children. Media developed in the form of two-dimensional media in the form of

books. The monitoring book is developed with the concept that trainers can easily monitor child development and growth during the training process. Thus the monitoring book is expected to be used as an alternative media in monitoring the development and growth of children.

METHOD

This type of research is research and development (R n D). Research and Development is a product-oriented type of research. In this research, the development is done to produce a product in the form of Monitoring Book which is expected to become a media of information concerning the growth and development of students so that can it can be well monitored.

Media monitoring book in this development is a simple media presented with the material content of the book ranging from the presences, discipline, understanding and benefits swimming, monitoring mastery of swimming techniques, monitoring of child bio motor and child psychological monitoring. This book is designed so that children, parents and trainers can easily see the child's ability development easily and effectively. The results of this development product will be a book with an interesting design and equipped with pictures that support the contents of the book. The use of monitoring book media is quite easy, children, parents and trainers can use it. It is expected that this media can be said to be feasible and effective in its use in the training process.

Procedure of development of this research through several steps, such as: (1) Potential and Problem, that is book media that can effectively provide information at the same time to monitor child development have never been research, (2) Developing of Initial Product by paying attention to goal analysis of the monitoring book, (3) Design Validation and Revision by swimming experts and media experts intended to get input and approval from expert in swimming sports in which the Validation done by experts such as, (4) Test try a small group with 5 trainers who do swimming training in FIK UNY swimming pool and the test results are then revised again, (5) Field trials with 10 trainers and 5 athlete parents from the swimming pools in Sleman, (6) Final Results in the form of products that have received experts' approval.

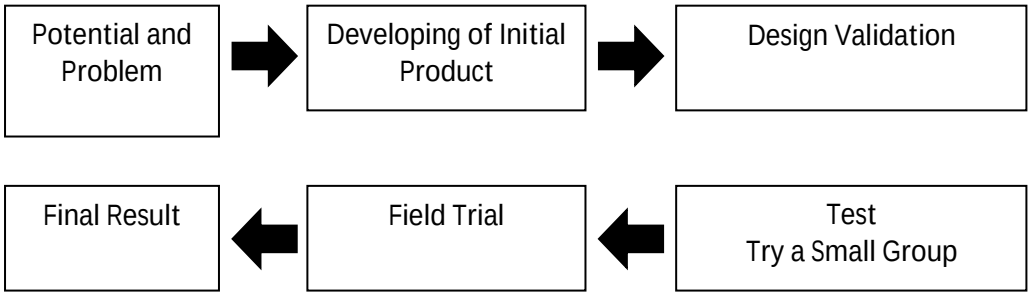

Fig. 1. Development procedure of research

Instruments for collecting data in this development study is to use a questionnaire. Questionnaire is a data collection technique that is done by giving a set of questions or written statement to the respondent to answer (Sugiyono, 2011: 142). The data collection in this development study uses open questionnaires and closed questionnaires, which on the next page is accompanied by a suggestion column. Questionnaires are given to media experts, material experts, and parents of learners. Questionnaire aims to obtain data about the level of media feasibility in the form of numbers as a basis in revising the product.

In order to obtain good results then the validity of the instrument added by using a questionnaire, where the material experts and media experts just fill in accordance with the questions provided. Validation of instruments for material experts and media experts is conducted through consultation and requesting assessment to experts who have expertise on the material to be tested and media criteria. After consultation with the expert because the language is still unclear and less specific so it must be fixed until the item can be considered as valid and can be used. Expert

validation results on the material side obtained 74% feasibility rate and on the media side obtained the feasibility level of 84.5%.

In this research, the formula used to find the reliability of the measuring tool on the development of Monitoring Book for early age pool is with Alpha Cronbach. Reliability is considered satisfactory when the coefficient is 0.754 for small group trials and 0.532 for field trials, but sometimes a coefficient that is not as high as it can still be used together with other scales in a measurement device. After tested the reliability using SPSS 16.0 Version obtained Alpha Cronbach coefficient. In small group experiment obtained coefficient 0,689 and field trial obtained coefficient equal to 0,487. The purpose of the test validity and reliability is for the absolute requirement in research to obtain data from the instrument that has been tested and able to measure the data to be measured.

After the data collected, then the data were clarified into two groups of data, namely qualitative data and quantitative data (Suharsimi Arikunto, 1996: 244). Qualitative data was obtained through expert validation activities and pilot activities in the form of inputs, responses and criticisms and suggestions. Quantitative data in the form of assessment, collected through questionnaires or product trial questionnaires, at the time of trial activities, analyzed by descriptive quantitative analysis. Percentages intended to know the status of something that was presented remain a percentage. After reaching the percentage and then interpreted with sentences that were qualitative. The questionnaire used in this study was a questionnaire assessment or response with a form of "HIGHLY AGREE", "AGREE", "DISAGREE" and "HIGHLY DISAGREE" answers. Based on the number of opinions or answers, then researchers present each

$$P = \frac{\text{Jumlah skor yang diperoleh}}{\text{Jumlah skor maksimal}} \times 100\%$$

Keterangan:

P = Persentase

Having obtained a percentage of that formula, the eligibility of the pool Monitoring Book in this development study was classified into the following four feasibility categories:

RESULTS AND DISCUSSION

Research of “Monitoring Book for Pool Sport” is done with preliminary research in advance through observation as well as interviews some swimming coaches in the pool FIK UNY.

Tabel 1. Feasibility percentage category

No	Skor persentase (%)	Category
1	0% - 25%	not feasible
2	26% - 50%	less feasible
3	51% -75%	quite decent
4	76% -100%	Worthy

RESULT AND DISCUSSION

Parents get very enthusiastic about knowing their child's progress in training, while the trainer needs physical evidence that can be used as a monitoring tool for his or her child's training which can be a medium of information to the child's parent trainer in terms of their child's development during the training process.After doing the initial research and then proceed with making a book monitoring pool and validated by experts in their field, namely a media expert and swimming material experts. This expert review generates the following revisions:

Tabel 2. Result of expert validation

No.	Aspects assessed	score obtained		maximum score	Percentage (%)		Category
		Ahli 1	Ahli 2		Ahli 1	Ahli 2	
1.	Design Feasibility	25	36	40	62,5	87,5	Worthy
2	Feasibility material content	28	35	40	70	90	Worthy

a. Product Validation Data by Media Experts

The media expert as the validator in this research is Dr. Budi Astuti, M.Si who has expertise in media field.The drawing on the exercise is given a description of how to do and how to calculate. Monitor the ability of swimming strokes, and drawing exercises and test forms.

Tabel 3. Data research results books monitoring materials for sports swimming by expert medial

No.	Rated aspect	Scores gained	Maximum Score	Persentase (%)	Category
1.	Design Feasibility	25	40	62,5	quite decent
Total score		25	40	62,5	quite decent

b. Product Validation Data by Expert Material

Expert material as the validator in this study is Sarmanto, S. Pd who has expertise in swimming pool coaching. In stroke exercises, more emphasis on the right to make movements in sports pool. The language written on the image must be present to clarify and inform.

Tabel 4. Data Research Results Books Monitoring Materials For Sports Swimming By Expert Material.

No.	Rated aspect	Scores gained	Maximum Score	Persentase (%)	Category
1.	Feasibility material content	28	40	70	quite decent
Skor Total		28	40	70	quite decent

The stages of the contents of the monitoring book revised twice, after making improvements to the second product, the monitoring book for the swimming sport is declared eligible and allowed to continue the testing phase at Yuso and Dolpin swimming clubs. Feasibility in terms of media is seen from several elements: (1) Physical Aspects (book size, Book thickness, Material paper used), (2) Aspect Design, content form (Image size on content, Arrangement of image on content, , The arrangement of the image on the cover), the writing (the size of the writing on the cover, the arrangement of the writing on the cover, the size of the writing on the content, the writing on the content), and Color (the color of the Book cover, the color of the writing on the cover, the color of the writing on the content), (3) Aspects of Use (Attracting Attention, Helping Monitor Child Development Progress)

Two product revisions were made based on suggestions given by material experts and media experts, as well as on the basis of assessment of the child's parenting during the trial. First Phase Revision

1) Product Revisions Based on Expert's Suggestions Materials, improvements made are on the

following matters: (a) In swimming stroke exercises more emphasis on effective and efficient in doing the movement. (b) An explanation of the image must be present to clarify and inform.

2) Product Revisions Based on the advice of the media expert, the improvements made are as follows: (a) The drawing on the stroke exercise is given a description of how to perform and how to calculate; (b) On stroke monitoring the exercise drawing style and stroke tests are more customized.

Revise the results of second stage validation

1) In the second stage of validation the percentage obtained increased from 62.5% to 87.5% of the maximum score. Thus it can be stated that according to the material expert, in the second validation stage of the media "Monitoring Book for Swimming" which developed from the feasibility aspects of the content of the materialget the appropriate category.

Table 5. Data from the assessment of monitoring material for swimming pool sport by second stage material experts.

No.	Rated aspect	Scores gained	Maximum Score	Persentase (%)	Category
1.	Feasibility material content	35	40	87,5	Worthy
Skor Total		35	40	87,5	Worthy

2) In the second stage of validation percentage obtained increased from 70% to 90% of the maximum score. Thus it can be stated that according to the media expert, in the validation stage of the two media "Book Monitoring for Swimming" which developed from the feasibility aspect of the media content get the category worthy

Tabel 6. Data from the assessment of monitoring material for swimming pool sport by second stage media experts.

No.	Rated aspect	Scores gained	Maximum Score	Persentase (%)	Category
1.	Design Feasibility	36	40	90	Worthy
Skor Total		36	40	90	Worthy

Small Group Trials

A small group trial was conducted on 5 parents of learners at Selobora pool FIK UNY. Small group trials were conducted in 1 session with 20 minutes of time. Conditions during small group trials as a whole can be elaborated as follows: (a) The condition of the explanation of the monitoring book, the parents of the training child is enthusiastic and interested in the content of the monitoring book. (b) Conditions when filling the questionnaire of the child's parent train to pay attention to the explanation on the procedure of filling the questionnaire to be more thorough. With full concentration of parents when filling out the questionnaires, they can understand the questions asked in the questionnaire.

Tabel 7. Result of small group trial questionnaire

No.	Rated aspect	Scores gained	Maximum Score	Persentase (%)	Category
1.	Material	170	200	85	Worthy of implementation
2	Design	176	200	88	Worthy of implementation
Skor Total		346	400	86,5	Worthy of implementation

The result of the questionnaire of the trainers' parents concerning the book media of "Monitoring Book for swimming" shows that for 85% of the material aspect criteria are categorized as feasible and for the description of the book descriptions of 86.5% are categorized as feasible. Total assessment of media feasibility test book “Monitoring Book for Pool Sport” according to the respondents parent child training of 86.5% is categorized as feasible which can be interpreted that the media is worth to be tested to the next stage.

Field Trial

Field trials are conducted to 10 coach and 5athlete parents during the Mayor swimming competition. Trial is done in 1 session with 20 minutes of time. Conditions during the overall field trials may be outlined below: (a) The condition of the monitoring book explanation, the parents of the trainee are interested and there is a content in the monitoring book. (b) Conditions when filling out the questionnaires, parents pay attention to the explanation of the questionnaire procedure, they can properly understand the questions asked.

The result of the questionnaire of the trainers' parents concerning the book media of "Monitoring Book for Swimming" shows that for the material aspect assessment of 80% which is categorized as feasible and for the descriptions of book descriptions of 81% are categorized as feasible. Total assessment of media feasibility test book "Monitoring Book for Swimming" according to the respondents parents training children as much as 80.5% is categorized as feasible which can be interpreted that the media is worth to be tested to the next stage.

Tabel 7. Results field questionnaire

No.	Rated aspect	Scores gained	Maximum Score	Persentase (%)	Category
1.	Material	480	600	80	Worthy of implementation
2.	Design	486	600	81	Worthy of implementation
Skor Total		966	1200	80,5	Worthy of implementation

Data analysis

Based on the data obtained in this study, data analysis is done carefully and researched with the analysis of data obtained this resulted in several things as follows: (1) After the revision and small group testing, it is decided to revise the book because the material of stroke observation (2) Based on small group and field trials showing there are still deficiencies, a revision of the deficiencies to be corrected for the final product of the book (3) Based on small group and field test trials showing the results of the test in category is eligible.

Discussion

Some of the things that need to be addressed in expert / material and media testing and small group and large group trials are as follows:

1) Testing to a material expert. The result of the questionnaire to the material expert shows that the level of relevance into the content material used increased from the first stage of the validation to the second stage from 62.5% to 87.5% of the maximum score which means that material in this book media is suitable to be used in monitoring the development of swimming exercise.
2) Testing to media experts. The result of questionnaire to media expert shows the level of relevance to the media used increased from the first stage to the second stage from 70% to 90% of the maximum score. Means that material in this book media is suitable to be used in monitoring the development of swimming exercise.
3) Testing to the child's parents.Small group trials, Results of parent questionnaires on media "Monitoring Book for Swimming" indicate that for the assessment of material aspects of 85% are categorized as feasible and for the description of the book descriptions of 86, 5% are categorized as feasible. Total assessment of media feasibility test Monitoring Book for Pool Sport according to the respondents' parents of training children is 86.5% is categorized as feasible which means that the media is feasible to be tested to the next stage with larger sample.

Field trials, children's parenting questionnaires survey on the media "Monitoring Book for Swimming" indicate that for the judgment about the material aspect of 80% which is categorized as feasible and for the description of the book descriptions of 81% are categorized as feasible. Total assessment of media feasibility test Monitoring Book for Pool Sport according to the respondents parents of training children is 80.5% is categorized as feasible which can be interpreted that the media is feasible to be tested to the next stage with larger sample.

From the above discussion can be submitted that the media book "Monitoring Book for Swimming" worthy used to monitor the results of swimming exercises in children training. As for the results of the discussion of the parents of children in training is they more easily and carefully monitor the progress of his child in swimming exercises. While according to the trainer, it will help monitor regularly about the achievement of child training and more easily provide information and discussion to parents of children train about the development of children in the process of swimming exercises.

CONCLUSION AND SUGGESTION

The developed Media "Monitoring Book for Swimming" is suitable for monitoring the progress of the pool exercises. Overall media "Monitoring Book for Swimming" gained a feasibility level from the material aspect of 80% and for the description of the book descriptions of 81%..

Suggestions that can be given to trainers can use the book as one of the media that can assist in monitoring the development of child in training for parents can use the book to check the progress of their child in the process of swimming exercises and as a means of discussion with the trainer related to the results of training of the children.

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THE DIFFERENCE IN THE EFFECTS OF BIRTH TYPES ON THE MOTOR SKILLS OF CHILDREN AT AN EARLY AGE

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Abstract

Objectives: This study aims to determine differences in the effect of birth on motor skills of early childhood. Many beliefs in the community that the type of birth and even birth day have an effect on the ability of intelligence and motor, in this research will be revealed the truth of the community's belief about motor skills.
Methods: The method of this research is survey with observational approach, population in this research are children of early age in Pakem sub district, while sampling technique with purposive sampling, amount of each type of birth counted 19 child. A data collecting device with a parent's checklist for the type of birth and motor skills test in the form of a 25-meter sprint, long jump without prefix, throwing the ball with one hand, arranging the coca-cola bottle into a 5, 4, 3, 2, 1 home model , walks over the beam 2 meters back and forth and reflects the ball on the floor and then captures it. Data analyst using one-way variance analysis with 5% significance level.
Results: The results showed that there was a significant difference between normal birth types using a pacemaker or a caesarean. For a child born with a caesar the average motor score is better when compared with the type of normal birth or by using a pacemaker, while the normal birth better average motor ability than birth by using a pacemaker.
Conclusion: The conclusion of this study was that there was a difference in the effect of the type of birth on motor ability in early childhood P <0.05 and based on the mean difference of children born by cesarean delivery at the highest motor ability, then the birth of normal and new birth using pacemaker.

Keywords: Influence of Kind of Birth to Motor ability

INTRODUCTION

In general there are several types of births that are normal birth, birth with equipment, breech birth and caesarean birth. Many believe that the type of birth and even the day of birth affect the nature and characteristics and motor skills in children. The philosophers hold that in the event of early crying a traumatic birth is interpreted as an expression of infuriated anger that is removed from the warm and safe cervical cavity. This view is in line with the view of psychologist William James who states that birth is a traumatic event that causes a shock to the child. Furthermore it is said in Otto Rank theory that birth is a traumatic event so it can cause anxiety that interfere throughout life.

Man is born with various kinds and birth is not the beginning of life, but birth is an interruption in the pattern of development, no two humans have the same prenatal environment or birth experience it can be estimated that the effect of birth is very influential in the period of development. Accordingly, in this study will reveal how the influence of kind or type of birth to motor skills coarse and fine motor in early childhood.

At the age of the first five years of life is often referred to as the golden period of motor development is often often ignored and received less attention from careers, counselors and even parents. This is caused by not understanding about the basic role of physical motor building, like the foundation of a house building will be made floor one, two, three and so on, this of course requires the specification of each foundation as well as about the physical motor. The pattern of motion that has been formed and wrong will be relatively settled and very difficult to change, the wrong motion base pattern will not be efficient in doing the next movement so that will spend much energy even more

concerning again is the ability of sports achievement is always lower. The wrong basic motion pattern can cause low self-confidence and ultimately affect behavior.

Kindergarten education is organized in an effort to help lay the groundwork for development in all aspects before entering school. Preschool age is the age of sensitivity to receive a stimulus that is crucial for the development of children in the future. Implementation of lessons at school is no exception in kindergarten will not be separated from the curriculum reference, curriculum is like a dough to make something that has been planned. Curriculum in kindergarten one of the goals is to make the growth and development of motor physical child. Errors in basic laying will result in a wrong pattern and have difficulty in corrections and take a relatively long time to fix it.

Children who get a preschool education will be better and will be better prepared to enter basic education, this is due to: a) The occurrence of a sense integration between the nervous system and muscles with the environment, awareness of the difference of opinion has grown and appreciate others, the ability to work together and the ability to communicate is good. b) able to perform simple analysis and make consideration which further make decision on problem faced. c) Improved ability to obtain information and ability to communicate either with oral, written or motion.

Child development has a comprehensive nature and interconnected relationships between components. In general, development can be grouped into four domains of biological, cognitive, affective and psychosocial. Biological development includes changes in the structure and function of the body, the structure concerning the physical condition that will be formed in posture this is due to the existence of hormonal changes and the impact of this change is the occurrence of changes in physiological function.

Problem Identification

Based on the description in the background of the above issues can be identified the problems that arise:

1. Not yet known differences in the influence of the type of birth on the ability of fine motor skills and fine motor in early childhood.
2. Not yet known which is better motor skills than the various types of birth ?
3. Not yet known the difference of the same type of birth but different gender to the ability of his motor skills.

Problem Formulation

1. Are there differences in the effect of birth on motor skills in early childhood?
2. Which is better than the various types of births?

METHOD

Type and Design Research

The method of this research is survey with observational approachand based on data analysis with quantitative analysis. Quantitative in the effort to know the success of development of basic motion pattern in preschool age children and differences between factors that affect motor ability and motor differences based on sex while qualitative in an effort to know the factors that influence in relation to the formation of basic motor ability of child.

This research includes observational research with targeted research targets in the following schemes:

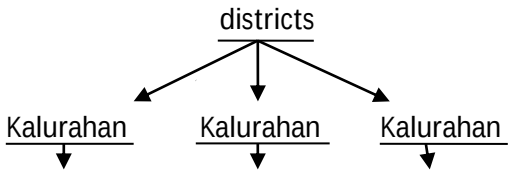

Fig. 1. Reseach target schemes

Research approach.

Approach of this research completion by observasinal study and taking of data with questionnaire and test, questionnaire to take data of child birth type while test is used to capture motor ability data both motor coarse and fine motor,

Research location.

The research was conducted in PakemHarjobinangun sub-district, Sleman Regency, Yogyakarta

Definition of Operational Variable.

1. Motor development is a gross motor movement and fine motor movement both locomotor (movement of place movement), nocturnal motion (movement does not move) and manipulative (hand and foot eye coordination movement).
2. Early childhood is a child of either sex male or female between 5 years old until age 6 years and registered as student in kindergarten.

Research instrument

To get the data in this study by using research instruments in the form:

1). Questionnaire to explore the type of birth given and filled by the child's parents

2). Motor ability:

a. Gross motor:

1). run 25 meters

2. long jump without prefix.

3. Throw the ball with one hand.

b. Fine motor:

1. Prepare the bottle of coca cola into a model house 5, 4, 3, 2, 1.

2. Walk on the beam 2 meters back and forth.

3. Reflect the ball on the floor and be caught.

Data analysis techniques.

Data analysis technique used in this research by using different test of one-way variance analysis with 5% significance level.

RESULT AND DISSCUSION

Pakem is a District in Sleman District of Yogyakarta Special Region, Pakem Sub-district is located in the north of Sleman District with the location of the Capital District is located at 77.66708 LS and 110.42011 BT with an area of 4,384.04 Ha and the address of the office in JalanCangkringan No. 3. Pakem Sub district inhabited by 8,926 households with a population of 32561 people with details of 15847 men and 16,714 women with population densities of 1,551 people / km2 and most of the inhabitants were farmers. Pakem District in the west is bordered by TuriSubdistrict, north of Mount Merapi, east of CangkringanSubdistrict and to the south border with NgaglikSubdistrict. Pakem sub-district consists of five villages namely Candibinangun Village, Hargobinangun, Harjobinangun, Pakembinangun and Purwobinangun and has an early childhood education unit (school) as many as 62 schools both private and public.

After analyzing the data of each type of birth in this case only use three types of birth that is caesar, normal and using a booster tool, each of which amounted to 19 children. Motor skills in this case

by using 6 kinds of 25 meter quick test, jump without prefix, throw one hand ball, arranging objects, walking on the beam of the catwalk and throwing catch, after the pen T score obtained the following results:

Table 1. Motor ability

Type of Birth	N	Mean	Std. Deviation
Operasi_Caesar	19	58.3373	3.15912
Normal	19	49.6718	3.04417
Pacemaker	19	42.0412	2.60649

Based on the difference in mean turns for children born by Caesar way higher motor ability than two types of normal birth or using pacemaker because it has mean 58.3373. While for the type of normal birth is higher motor skills when compared with the type of birth using a 49.6718 and a new pacemaker type using a pacemaker 42.0401.

After the data collected and in doing pen T score then held different test by using analysis of variance with one path in get result as in table 2 below:

Table 2. Anava results

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2526.576	2	1263.288	145.535	.000
Within Groups	468.735	54	8.680		
Total	2995.311	56			

Discussion

Motor skills are the ability of a person to display motion either in the form of coarse motion or complex motion (Crowley 2014: 70), while according to Harlock (2007: 150) motor development means the development of physical motion control through controlled nerve center and muscle activity. The development of each child has a unique characteristic and each individual can develop according to their individual conditions, but in general the development of the child will follow the same pattern of development even though the speed in passing each stage is not the same. General pattern of motor development in a person is divided into 2 (Two) main components namely pre pregnancy and skills. Pre-skill is divided into 3 (three) parts: reflective motion, sense integration and motion pattern formation, while skill development includes refinement of motion, appearance and setback.

Specific motor movements in preschool children are divided into 2 (two) major parts of motor isgross and fine motor. groos motor has a relatively slight movement of movement movement, while fine motor has been directed to the coordination of motion and emerging beauty, flexibility of motion. Motor skills are the ability to perform physical motion which in this case is measured by motor tests of both gross motor and fine motor. Skill development takes a long time to achieve good skill, besides that the physiological changes of body basically follow change according to age, maturity of nervous system will increase with age. A person can movewith good coordination due to the integration of sensory sense and motor abilities that are all controlled by the nervous system.

A normal pattern of development is parallel to the development of the nervous system and muscles, so that motor development is determined by the maturity of the nervous system and muscles in integrating the functions of the body system. The maturation of the nervous system and muscles greatly determines the speed in conveying information from sensory receptors, this kind of information will then be integrated at all levels of the nervous system and will then cause the right reaction in

accordance with the stimulus from simple movement to very complex movements. Increased normal childhood will always be followed by increased sensitivity of the nerves, then kind of excitatory on the nerve will be delivered to the brain to determine the right reaction to the stimuli. Motor skills are divided into two major parts of gross motoric and fine motor. Groos motor has the nature of the movement is broken, the movement coordination is still ugly and less efficient, while the fine motor according Johnston &Halocha (2010: 54) states that fine motor skills are those manipulative skills that involve small movements and parts of the body, such as picking up, feeding themselves, threading, drawing, cutting and dressing. Fine motor skill develop slightly later than gross motor skills need patience and practice to develop. Cameron et al., (Keifer, 2015: 3) states that fine motor skills refer to the pencil. Children use fine motor skills in school with tasks such as cutting and pasting, using manipulatives in mathematics, or clapping them hands to learn syllables. Meanwhile, according to Payne & Isaacs (2012: 11) that fine movements are primarily governed by the small muscles or muscle groups. Many movements of the finger and hand moves of fingers, hand, and forearm are critical to the production of finger and hand movement According to the theory of the dynamic system of Esther Thelen that in the development of motor skills must perceive the thing that motivates it to react and exploit its perception to expand its motion. The study of motor is not separated from the performance and body movement General pattern of motor development in a person is divided into 2 (Two) main components of pre pregnancy and skills. Pre-skill is divided into 3 (three) parts: reflective motion, sense integration and motion pattern formation, while skill development includes refinement of motion, appearance and setback. Motor movement in preschool children is divided into 2 (two) major parts of motor is rough and fine motor. Gross motor has movement properties controlled by large muscles, while fine motor has directed to the coordination of motion and emerging beauty of motion, movement is controlled by small muscles Johnston & Halocha (2010: 54) fine motor skills are those manipulative skill that involve small movements and parts of the body, such as picking un, feeding themselves, threading, drawing, cutting and dressing. Fine motor skills develop slighty later than gross motor skills need ptience and practice to develop. Cameron et al. (Keifer, 2015: 3) states that fine motor skills refer to the small muscles in the hands and fingers that are responsible for tasks such as picking objects up and grasping a pencil. Children according to Payne & Isaacs (2012: 11) state that fine movements are primarily governed by the small muscle groups. Many movements performed with the hands are considered fine movements for the production of fingers and hand movements According to Madrona (2014: 10) states that the aim of motor development is to achieve the self-control of the body of the body so that we are able to exploit all its possibility of action. This development is shown through motor function, which is the basis for the development of them. Gessel and Ames (Slamet Suyanto 2005: 51) that motor development in children generally follows eight general patterns: 1) continuous from simple movements to complex, 2) having the same sequence pattern, 3) cell and nerve maturity, 4) from coarse motor movement to fine motor movement, 5) from reflex motion to coordinated motion, 6) development from head to tail, 7) is distal Proximo 8) is coordinated when the horizon is crosslateral, whereas according to Grineski (Brewer, 2007: 285) states that A developmental appropriate program of physical education is based on there principles 1) motor skills development in sequential and age related, 2) Children Progress through similar sequences of motor development: and 3) the rates at which the child progress of motor development varies. Motor skills are strongly influenced by the element of strength (strength), anticipation (precision) and accuracy (timing). Motor skills in children of the same age, same sex does not necessarily have the same ability. According to Hurlock (1978: 162) that motor skills in children are very useful as a tool for social adaptation and acceptance to gain independence and recognition within the group.

The development of the child's motor begins from the motion reflex that is after birth and will turn into a conscious movement. The motion of reflex after birth is necessary to sustain life and the increasing age of this reflex motion will decrease. Changes This function is due to the role of the nerves getting bigger with the increasing function of the brain that impacted the development of other

functions which one of them is the development of motor skills especially given the stimulation by playing, by playing will also affect the improvement of children's creativity(Clausen, 2012: 54). The human brain consists of billions of neurons, in newborns the neurons are not yet connected to each other and will be connected after being given stimuli, observing a particular object, comparing and solving simple starting problems. Heri Rahyubi (2014: 207) states that motion behavior can be divided into the first three parts of motion theory that studies the nerve function that influences motion, the second learns the motion that learns about the skills to gain motion perfection, and third is the development of motion which is a change in motion behavior .

CONCLUSION AND SUGGESTION

Conclusion

The conclusion of this study are: 1)There is a difference in the effect of the type of birth on motor ability in early childhood P <0.05; 2) Based on the mean difference of children born by Caesar, motor skills are higher than two types of normal or using a pacemaker. As for the type of normal birth is higher motor skills when compared with the type of birth by using a pacemaker.

Suggestion

1. need further research with more samples
2. need to differentiate motor ability of child based on gender

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THE EFFECT OF SUPPLEMENT SOYBEAN MILK AND WHEY PROTEIN IN LOAD EXERCISESTOWARD THE INCREASING HYPERTROPHY OF THIGH MUSCLES

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Abstract

Objectives: The The aims of this study were to determine the effect of load exercises with supplement soybean milk and whey protein to increase the hypertrophy of thigh muscle and determine which method is better in increasing hypertrophy of muscle.
Methods: This research is a quasi experimental research. The population is an active member in Fitness Center One Gym Kota Padang 24 people. The sample was selected through 12 proportional random sampling technique. The instrument in this study is the measurement of the band to measure the circumference and skin folds to see the thickness of the thigh layer. Then calculated using the formula MTC - (3.14 x TSF) where the MTC is the circumference of the thigh and TSF is the thickness of the thigh thickness. Data analysis technique used to prove hypothesis is t test at significance level α = 0,05
Results: 1) There was significant effect of soybean milk with weight training on thigh muscle hypertrophy with sig = 0.00 <α = 0,05 with mean of 409,52 2) there was significant effect of Whay protein with weight training on muscle hypertrophy with sig = 0.028 <α = 0.05 with an average of 423.10. 3) There was no significant difference between soybean milk and Whay protein with weight training on thigh muscle hypertrophy Sig = 0.707> α = 0.05.
Conclusion: The provision of soy milk and Whay protein significantly influenced by weight training, but there was no significant difference between the two forms of supplementation on hipertropy of the thigh muscle

Keywords: Soybean Milk, Whey Protein, Load exercise, Thigh Hypertrophy

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INTRODUCTION

Sport is an useful task of daily human activities to upgrade the healthiness of physical and spiritual. The progress of sports has given the significant contribution to the development of public health. Further, sport also contribute great improvement to the nation's ability to sustainable execute the establishment system .

One of those ways is the communities' participation to keep health and fitness in order to gain the ideal body shape. Then, by doing sport, the sportsmen can be more attractive that help to increase the confidence and exhibit their social status in daily activities. Sport is the safest way to achieve those goals. Based on Undang-Undang Republik Indonesia no. 3 of 2005 about National Sport System Article 4 states that: "National sports aim to maintain and improve health and fitness, achievements, human quality, inculcate moral values and noble character, sportivity, discipline, cultivate and foster the unity of the nation, strengthen the national resilience, and raising the dignity and honor of the nation ".

Sport is a series of sequences and organized movement which consciously do by the people to upgrade their functional abilities. It depends on their goal of doing sports. Based on Undang-Undang and the definition of sport, it can be concluded that sports can also enhance the moral and moral values to improve the quality of human being in daily life and even in doing sport activities.

By doing sport, it can produce the fitness of body and gain an ideal body shape. It is best to do the exercises. One of popular exercises to get the ideal body shape is load exercise. To achieve the maximal result of the exercise, the sports man have to understand the principles of the exercise itself.

The conducted execise based on the principles of exercise is expected to provide the maximum results, so the goal of the program can be achieved.

Load exercises can be done at fitness centers. Many people have been joined the fitness club to practice the load exercises. Giriwijoyo & Sidik (2013: 209) states that load exercises will cause the muscle enlargement due to: (1) enlargement of muscle fibers (muscle hypertrophy), (2) increase in capillaries in muscle, (3) increase the connective tissue inside the muscle. Muscle hypertrophy is the increasing of contractile elements (actin and myosin) in the muscle, which causes the increasing of muscle tone, thickening of sarcolemma, and increasing connective tissue between muscle fibers that lead the increasing strength of passive muscle and enlarge the muscle.

In doing sports activities, there are several large muscles in the human body that need to be trained for supporting the performance, they are the muscles in the arm, the chest, muscles in the stomach, and muscles in the thighs. These muscles have a very important role in the body to resist, to beat, to lift, to walk and etc. One of the most important muscles in the body is located in the thighs. Thigh muscles are a large group of muscles and are one of the most powerful muscles in the body. These muscles are the largest part of the quadriceps muscles and help to maintain the stability of the knee joints. Muscle thighs are most important in functional activities which involving lower limbs.

To achieve optimal muscle function for increasing the hypertrophy of muscle, healthy nutritional support is required. Nutrition is one of factors that play a role in improving achievement for athletes. Toruan (2008: 145) explains that "Without load exercises then there is no stimulus to grow bigger, therefore to enlarge the muscle mass the load exercises must be done, PLUS with enough nutrition". These nutrients can be obtained from carbohydrates, fats, and proteins. The provision of protein is not just practice time.

In increasing the hypertrophy of muscle, those three sources of nutrients are needed, but the role of protein is the nutrients as the basis of muscle formation. Burnley et.al (2010) states that the protein has considerable potential to reduce muscle damage and pain.

Tipton & Wolf also denote that exercise has a profound effect on muscle growth, which can occur only if the synthesis of muscle protein exceeds the breakdown of muscle protein. Therefore, consuming protein is important for the increasing the hypertrophy of muscle. The load exercises practitioners believe that to achieve the perfect physical need an organized exercise and consume the supplements in order to increase muscle mass.

According to the sources of protein, the protein is divided into two kinds, they are animal protein and vegetable protein. The animal protein comes from meat, eggs and milk, while vegetable protein comes from grains, soybeans and wheat.

One of the vegetable protein is soybean milk. Toruan (2008:33) states that Toruan (2008: 55) denotes that soybean is a protein source of vegetable protein which is good to consume on the equal amount of gram with chicken. The soybean contains higher protein than chicken meat. Meanwhile, whey protein, the animal protein, is milk that has been through factory process which also contain high protein. Hence, the higher protein or which one is the better protein source in increasing hypertrophy and strength of muscle between these two supplements is unknowned. Because in load exercises is not only about proper exercise program but also good nutritional intake such as soybean protein of vegetable protein and whey protein of animal protein. Thus, both types are indispensable for hypertrophy of muscle.

Based on the researcher's observation and interview result with members at fitness center in Padang City, particularly in One Gym fitness, there are many factors that inhibit the increasing the hypertrophy of muscle, such as genetic, unmatch the exercises method, lack of facilities at fitness place, and the lack of understanding by the fitness members about nutritional factors. They were confused which the best nutrition for muscle improvement is.

Because of many intake of nutrients, the type of vegetable protein such as soybean milk, tofu, fermented soybean cake, spinach vegetables contain high protein. Then, the type of animal

protein such as eggs, pure cow milk and whey protein (factory processed beef) are also contain the high protein.

Then, most of the fitness members also do not pay attention to good diet and rest, and they tend to stay up late. Furthermore, members were also lack of understanding of the proper exercise methods and exercise principles in increasing strength and hypertrophy of muscle. In addition, members of fitness rarely train their lower limbs muscles like the muscles in the thighs. It was proved by the survey of each day during load exercises. They tend to only train and focus on the upper muscles of body. So, there is a gap between upper muscles and lower muscles of body which can affect the appearance.

Therefore, most of the members did not gain the maximal results, especially the hyperthrophy of thigh muscles. In this study, the researcher wanted to know which is the best nutrition between soybean milk and whey protein in increasing the hyperthrophy of thigh muscle.

Based on the identification of the problems, there are many factors that affect the increasing hypertrophy of thigh muscle. By concerning how wide the problem become, the limit of time, funds, energy and references and etc, then in this research, the researcher limited the problem to the additional effect of soybean milk and whey protein in load exercises to increase hyperthrophy of thigh muscle. According to Umar (2014: 77), the hypertrophy of muscle is the increasing size of the diameter or diameter of muscle fibers. Further, Giriwijoyo & Dikdik (2013: 209) state that hypertrophy of muscle is produced by: (a). Increasing the contractile elements (actin and myosin) in the muscle, which also increase the muscle-active strength. (b). The thickening and strenght of sarcolemma and the increasing amount of connective tissue between the muscle cells (muscle fibers),which leads to increase muscle-passive strength. (c). Increasing the amount of capillaries in the muscle, which causes the muscles become easier to maintain their homeostatic conditions, specifically on the trained muscles for endurance.

Several factors that influence the increasing hypertrophy of muscle are biological factors such as age and nutrients of food can affect the hypertrophy of muscle. Wiarto (2013: 51) mentions that the muscle is a connective tissue with the main function to consciously or unconsciously contract and serve the motion of the body. In addition, Pearce (2009: 19) mentions that muscle is a network that has a specific function. It is to contract and it consists of cylindrical fibers that have similar characteristics with other tissue cells.

It is safe to conclude that the muscle is an active propulsion, which do contraction as result of stimulation of heat, cold, and other touches or mechanically terms (massage and pull), thermis (cold and heat), kemis (salt, acid and base), and electrical. Fox & Kirby (1987: 101) denotes that there are three types of muscle contraction. They are isotonic, isometric, and isokinetic where each of them has an effect to the muscles in various ways.

According to Wiarto (2013: 58), based on the muscles location of the body (a) the muscles of the head, (b) the muscles of the neck, (c) the abdominal muscles, (d) the chest muscles, (e) arm muscles, and (f) leg muscles. The muscles of the arms and legs also consist of two parts, namely the upper arm muscle and the lower arm muscles and the lower limbs and upper limbs muscles.

Moore & Dalley mention that the muscles of the upper limbs consisted of quadriceps femoris muscle which four muscles are located at the front of the upper limbs consists of the vastuslateralis muscle, rectus femoris, vastusmedialis and vastusintermedius. Then there is also a sartorius muscle extending across the front of the thigh, and on the back there are hamstrings muscles consisting of biceps femoris and semitendinosus. These muscles have a very important role in doing activities such as walking-jumping, climbing stairs to climbing-running and many other activities.

Moreover, the effect of nutrients are also very important to increase muscle mass, one of those is soybean milk. Soybean milk or manufactured soybean essence is known that soybean is a highest protein source of vegetable protein as Toruan (2008: 55) denotes that soybean is aprotein source of vegetable protein which is good to consume on the equal amount of gram with chicken. The soybean contains higher protein than chicken meat. Another high-protein nutrient derived from animal protein is whey protein.

Whey protein is similar with other proteins. In order to be absorbed well by the body, it is necessary to know the quality of protein. The quality of the protein depends on its ease of digestion, amino acid composition and reference protein. Whey protein is known as the best source of protein among other protein sources due to the completeness of its amino acid contained. Protein after absorption (in the form of amino acids) will undergo metabolism. Briefly, Suhardjo (1999: 125) explains that the protein is absorbed through the intestinal wall → Portal Veins → the liver to the blood circulation → the entire tissue of body. These amino acids are primarily required for the formation of new tissue / replacing worn (worn out). Some of the amino acids will be broken down and release some parts of amino acids and fuse with amino acids then produce the amino acid pool. Amino acid pool is located in the cell and blood circulation. When amino acids-amino acids are needed, they can be taken from the amino acid pool to form the protein of body. Khairuddin (2016: 44) explains that on transaminase muscle (result of glycolysis) or known as alanine. Alanine is transported by blood to the liver, wherein alanine is converted again into pyruvate by transaminase. At the liver, the process gluconeogeneration can use pyruvate to synthesize glucose, which can enter the blood andbe used by the muscles. It is called the glucose alanine cycle. Therefore, protein is very important to increase hypertrophy of thigh muscle.

In addition, another way to increase hypertrophy of muscle is load exercises. According to Sumosardjuno (1996: 84),load exercises is a training of stabilizing condition involves repetitive movements with submaximal loads. One method of load training is the pyramid method. Stoppani (2006: 91) defines that pyramid method is one of the strength training system that is stimulate the increasing of strength. Further, Stoppani (2006: 91) describes that pyramid method is the best way of exercising to stimulate groups of muscles to grow. Chandler & Brown, (2008: 195-206) states that the methods of strength and hypertrophy exercises of thigh muscle is (a). Back Squat, the muscles used are gluteus maximus, quadriceps, and hamstring. (b) Leg Extension, muscle used is quadriceps. (c) Leg Curl, muscles used is hamstring.

The purpose of this study was to determine: 1) the effect of soy milk feeding with weight training on thigh muscle hypertrophy 2). Effect of whay protein with weight training on thigh muscles 3) differences in effect of soy milk and whay protein with weight training on hipertropy of thigh muscle

Based on the reviews of theoretical above, it can be concluded that many factors and load exercises that can increase the hypertrophy of thigh muscle, plus soybean milk and whey protein supplements in load exercises. Based on the problem, the theory, the conceptual framework in which the hypothesis is proposed is as follows:

1. There is signifcant effect of soybean milk in load exercises to increase hypertrophyof thigh muscle.
2. There is significant effect of whey protein in load exercises to increase hypertrophyof thigh muscle.
3. The effect of whey protein is better than soy milk in load exercises to increase hypertrophyof thigh muscle.

METHOD

The method used in this study is quasi experimental research (quasi experiment). Iskandar (2008: 64) states that experimental research is a study that requires researchers to manipulate and control one or more independent variables and observe the dependent variable, to see the differences according to the manipulation of the independent variables or see a causal relationship of two or more variables by giving more treatments to the experimental group.

The design of this study is Two Group Pretest-Posttest Design or treated differently two groups with similar characteristics (Sugiyono, 2006: 74). It means that one group was trained by load exercises method plus soybean milk supplement (100g) and another group was trained by load exercises method plus whey protein supplement (100g) starting with pretest and giving treatment for 16 meetings then doretest (postest). Population in One Gym Padang were 50 active. More than

one month for 12 people and less than one month for 38 people. The samples were selected by purposive sampling technique (Iskandar, 2008: 74). It means that the technique of sampling which based on certain characteristics that have been considered. The characteristics are newly registered members who pass than one month as member. It is because the members have been understanding the exercises have not changed too much on the strength and hypertrophy of thigh muscles. Last, they have willingness to participate in the study with certain period of time.

According to Arikunto (2006: 112), most researchers assume that large samples or the greater represents of population will result better finding. This assumption is not always be right. It depends on the characteristics of subjects as represents in the population. It is closely related to the homogeneity of the subject in the population. ".

Based on the explanation above, the researcher set the number of samples in this study were 12 members of One Gym Padang who gendered men aged between 17-30 years. The 12 samples were divided into two groups: 6 samples were given soybean milk and 6 more were given high protein milk by using ordinally matching pairing. It is done to decrease wider distinction of average between these two groups.

Each group of soybean milk and whey protein consumed 100 grams in a day, which is drunk after doing load exercises because Novita (2014: 47) states that the consumption of liquid protein and carbohydrate supplements immediately after exercise proves can provide more effective glycogen restoration.

The instruments to measure the circumference of the thigh muscles is by using the measuring tape (meter) and skin fold thickness, the measurement is conducted by measuring the circumference of the muscles on the thigh and measuring the thickness of the fat on the thigh. The thigh muscle was counted by following formula: MTMC = MTC - (3.14 x TSF). Data analysis techniques used are normality test, homogeneity test and t test.

RESULTS AND DISCUSSION

Based on calculations that have been done by using t-test.

Table 1. Summary of hypothesis testing results 1

Soybean Milk	*Mean*	Std	Sig (2 tailed)	α
Pre-test	398,46	21,98	0,000***	0,05
Posttet	409,52	21,01		

The first hypothesis (Ho) is rejected and Ha accepted. It can be drawn where sig = 0,000< α = 0,05 So, it is safe to conclude that soybean milk supplement has a significant effect in increasing the hypertrophy of thigh muscle.

Table 2. Summary of hypothesis testing results 2

Whay Protein	*Mean*	Std	Sig (2 tailed)	α
Pre-test	398,63	20,65	0,028**	0,05
Posttet	423,10	14,60		

Signifikan **

The second hypothesis (Ho) is rejected and Ha accepted. It can be seen where sig= 0,028> α = 0,05. So, it can be concluded that load exercises with slow motion gave a significant effect in increasing the hyperthrophy of thigh muscle.

Table 3. Summary of hypothesis testing results 3

Treatment	*Mean*	Std	Sig (2 tailed)	α
Post-test Soybean Milk	409,52	21,98	0,707*	0,05
Posttet Whay Protein	423,10	14,06		

Non Signifikan *

The third hypothesis is Ha rejected and Ho accepted. It has been proved where sig= 0,707> α= 0,05 It can be concluded that hypothesis proposed there is no significant difference between giving soy milk and whay protein to thigh muscle hypertrophy Furthermore, if seen the average increase in exercise for 16 times weight training plus whey protein gives better effect in improving thigh muscle hypertrophy than milk soy.

Umar (2014: 77) denotes that hypertrophy of muscle is the increasing of size of the diameter or diameter of muscle fibers. Further, it is not only supplements which able to increase the hypertrophy of muscle but alsoload exercises. According to Sumosardjuno (1996: 84) load exercise is a training method of stabilizing conditions that involve repetitive movements with submaximal loads.

CONCLUSION AND SUGGESTION

Conclusion

1. There was significant effect of soybean milk with weight training on thigh muscle hypertrophy member fitness one gym city of Padang
2. There was significant effect of Whay protein with weight training on muscle hypertrophy member fitness one gym city of Padang
3. There was no significant difference between soybean milk and Whay protein with weight training on thigh muscle hypertrophy member fitness one gym city of Padang

Suggestion

1. The instructors at the Fitness Center are suggested to provide good nutrition such as soybean milk and whey protein to increase the hypetrophy of muscle.
2. Fitness members not only focus on exercises program but also on nutritional intake which contain high protein such as soybean milk and whey protein in order to increase the hypertrophy of muscle would be rapidly achieved.
3. For the further researcher, it suggested to continue this study with the same protein contained between soybean milk and whey protein in load exercises for increasing the hypertrophy of muscle.

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PHYSICAL ACTIVITY OF CHILDREN IN DIENG PLATEAU BANJARNEGARA REGENCY (Phenomenological Studies from the Viewpoint of Sports Values)

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Abstract

Objectives: Children need physical activity in the growth period. Childhood is the period of play and most of them spend with role play. The game activity could be a game between friends or individual. As children's parents, they have role as bodyguard and supervisor in childhood period to determine the right game form for their child. This research aims for: 1) Knowing the parents role and society toward the ongoing physical activity of children in Dieng Plateau region, 2) Knowing physical daily activities of children in Dieng Plateau region, 3) Knowing the game form of physical activity of children in Dieng Plateau region, 4) Knowing the traditional game form of physical activity of children in Dieng Plateau region, 5) Knowing the values inside game activity of children in Dieng Plateau region.
Methods: This research is held on rural region of Dieng plateau, Banjarnegara Regency, Central Java Province. This is qualitative research using phenomenology approach. The techniques of data collection are observation, interview, and documentation.
Results: The research result showed that the parents and society role which are vegetable farmers affecting in parenting. The busyness and education level of parents decrease their supervision for the children. Some of child there go to play and the other help their parents in the field after school. The major activities of child are playing. Playing is the unconsciousness attempt and adaptation form toward the climate. Several popular traditional activities are *petak umpet, bentengan, jamuran,* and *lompat karet gelang* which often played by the ladies there. The difficult access of technology keeps the traditional game still alive in Dieng. Traditional game is an entertainment game. From philosophy perspective, sportsmanship is growing by a game; there is always open opportunity in an attempt, teamwork, set the rule, and willing to accept defeat. Related to the culture and religion, those game are very valuable such as *Petak Umpet*. *Petak Umpet* described that the entire human will be seeing the Almighty. *Lompat Karet Gelang* described that life goes through the lowest until the top level to reach the happiness from the Almighty. By the traditional game, it can create atmosphere of joy, harmony, training of skills and creativity, recognition of cultural values, and have a positive role in the physical development of children.
Conclusions: Traditional games must be preserved as the times progress, because children and teenagers tend to spend their time in front of the gadget, phone, computer game or television in this era. Furthermore, physical activity is very important toward child growth.

Keywords: Physical Activity, Children, Play, Traditional Game.

INTRODUCTION

Human is social being. It refers to nature that human cannot live alone. They live in a society and create interaction each others to make better life. Human is bound of problem. Human needs bravery and firmness to face the problem and to respond the decision. This case is related to the someone's character. The character can be made by sport and the physical activity can be built since the childhood.

The physical activity is necessary for child in growth's period even can make injury and tiredness. But this period should be crossed to develop child-self optimally. The active child is a child which is healthy, happy, and unlimited energy. Therefore, the parents has significant role to build up child adventurous spirit and let them be an independent individual to grow optimally. In this case, the parents has role as a bodyguard and supervisor to develop child's potential through reality.

Children have very close relation with play. There are varieties typical of game. Game activities could be played between friends or individual. In the home activities, a child will play with the technology progress and also with their friends. As parents, they must control safety aspect in a game (M. Furqon Hidayatullah, 2013).

The difference of past and present child is on the technology. The benefit of the technology is opening the access to insight and creativity. However, there is effect from the technology progress, such as children and teenagers tend to spend their time in front of the gadget, handphone, computer game or television. These effects make them lazy to move. Furthermore, physical activity is very important toward child growth. In addition, physical activity can make body healthy and can also train children to socialize with the surrounding community, knowing how to tolerate, helping each other, appreciating and so forth.

Just as in the Dieng Plateau area which consists of rural areas in Banjarnegara Regency, has a variety of panoramic beauty that is still natural. In addition, many attractions come from nature such as plateau and crater and also people who are still living natural. In the view, the plateau looks clean, beautiful, and fresh around. The area is not affecting too much by world global, because of culture tradition still holding on society. Although global technology put in there, the Dieng society still lives in traditional. The fact proven that the child still plays with others after school to get relax and to wait for the parents from the field.

METHODS

This research is held on rural region of Dieng plateau, Banjarnegara Regency, Central Java Province. This is qualitative research using phenomenology approach. This research aims to study and to explore physical activity phenomena of children in Dieng Plateau, the game's activity and the forms, and also the parents and society role in rural region of Dieng Plateau toward children activity. Technique of collecting data using triangulation method, that is observation, interview, and documentation. The data analysis goes through four stages, namely data collection, data reduction, data presentation, and drawing conclusion stage.

RESULT AND DISCUSSION

Results

1) The parents and society role toward children physical activities in the area of Dieng Plateau, which is majority live hood as farmers affect the childcare.

2) The majority of daily children physical activity after school in the area of Dieng Plateau is playing. On the other side, there are children who help their parents in the field. Playing is an unconscious effort and a form of adjustment of climate that is often done by the children.

3) Children have playing character. Often children activity has a risk, such as injured and tiredness. But this period should be crossed to develop child-self optimally. The active child is a child which is healthy, happy, and unlimited energy. The active child is a child which is healthy, happy, and unlimited energy. , the parents has role as a bodyguard and supervisor to develop child's potential through reality. As parents, they must control safety aspect in a game.

4) Physical activity the form of playing which the children in the area of Dieng Plateau do is traditional game. This game is a cheap entertainment and easy to do while waiting for the parents back from the field. This game can be played by all.

Discussion

1) The shape forms of children traditional games in the area of Dieng Plateau include hide and seek, *bentengan, jamuran* and *lompat karet* mostly for the girls. The limitation access toward technology development makes the traditional games keep in maintenance by the children. Traditional games are frequent entertainment.

2) The values of the children playing activities in the area of Dieng Plateau include; children playing activities learned to train their sportsmanship, to learn that there is opportunity for people who attempted, cooperate, obey the rules and accept the defeat. If it correlated with the culture and the religion that game is valuable, for example is hide and seek that learns every human will be gone by the God. *Lompat Karet Gelang* also teaches that life through some difficulties before reach the happiness by the God. Physical activity of traditional game always presents joy, harmony, train the skills and creativity, introduction of culture value and it has positive role for the child growth. Beside it has benefit for healthy through the game, spur the growth, train the physical, train the mental, character development, train to be independent, find new friends and good means of socializing with the environment (Adriana, 2013).

CONCLUSION AND SUGGESTION

Traditional games must be preserved as the times progress, because children and teenagers tend to spend their time in front of the gadget, phone, computer game or television in this era. Furthermore, physical activity is very important toward child growth. In addition, physical activity can make body healthy and also train children to socialize with the surrounding community, knowing how to tolerate, helping each other, appreciating teamwork, mental and physical training, character building, learning to live independent, finding a new friend, and as good socialization media around.

Based on conclusion and implication which has explained above, the suggestion as follows:

1. For children need to do physical activity which can make healthy, such as play for a child. But please, choose the right and useful game. Although playing is good time, don't forget the time to study or help the parents.
2. For parents need to pay attention physical activity phenomena which is doing by the children. Please give attention while playing, motivation, instruction, and advice to the children and help to choose the right and useful games.
3. For society around need to keep and to preserve traditional games which directs to physical activity of children in order not to be extinction in times progress.

ACKNOWLEDGMENT

To:

1) The Almighty Allah SWT who has granted me on everything.
2) Prof. Dr. Sugiyanto, Prof. Dr. M. Furqon Hidayatullah, M.Pd, as a supervisor who has provided guidance and instruction until this thesis can be completed properly.
3) Both parents, my father Tumin and Mother Rubinahayati and who endlessly offer prayers, moral or material support.
4) Yattin Sulastina and my friends who always give their prayers and support.

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PICTURE MEDIA DEVELOPMENT FOR PENCAK SILAT LEARNING IN HIGH SCHOOLS

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Abstract

Objectives: Teachers' role to assist students for comprehending material is very important. In order to help them understanding the material, teachers could use picture as a learning media of *pencak silat* to improve learning process of Physical Education in High school.
Methods: This study was categorized into research and development. The development of the media is conducted through several steps; introduction, product planning, develop preliminary form of product, product validation (by subject-matter and media experts), main product revision, limited trial, revision, field trial, revision, final product, and dissemination. The subjects were students of SMAN 3 Yogyakarta. The data were collected using a questionnaire and observation. The data were in the form of the result of the evaluation on the quality of the product, recommendation for the product improvement and other qualitative data. The quantitative data were analyzed using descriptive statistics. The form of the data is assessment result about the quality of the product and suggestion to improve it.
Results: Results of the research were three picture medias about *pencak silat* techniques such as *tendangan depan* (front kick), *tendangan sabit* (sickle kick), *tendangan T* ("T" kick). The results has been validated and tested for learning process of Physical Education in High school.
Conclusions: The conclusions of the result are the assessment of the product by the experts. First and second material experts assess the product's quality as "very good". First and second media experts assess the product's quality as "good". The small and big groups of product trial assess the products as "good". Thus, the product is feasible to be used in learning process of Physical Education in High school.

Keywords: development, picture media, learning, *pencak silat*.

INTRODUCTION

Various factors affect the implementation of *pencak silat* physical education learning material on schools, such as teachers, student, material, media, facilities, and learning systems. Wasis D. Dwiyoga (2016:11) stated that teacher is not the only learning source. Learning resources are designed to improve and develop learning process to me more effective, efficient, and interesting. In addition Schrum, L (2013:18) explained that most important teacher's role in partnership pedagogy is being a true learning planner who create experience. Teacher should design learning systems which compatible with relevant curriculum and compose learning material and learning media that stimulate students. Thus, the learning environment would be favorable, interesting, challenging, and meaningful.

Curriculum is an important guidelines for learning implementation in schools (Ega Trisna Rahayu, 2013:28). K*urikulum Tingkat Satuan Pendidikan* (KTSP) on High school contains a competence standard that demonstrates various sport skills on diverse simple forms and values. In addition, one of which the competences, called *Kompetensi Dasar* (KD), displays a skill from martial art and values for instance teamwork, honesty, respect, passion, and confidence. It is a must for teachers to teach all materials listed on curriculum including martial art of *pencak silat.* All materials on the curriculum are designed in particular ways in order to provide various learning experience for students as provisions for their life.

The term of *pencak silat* is a compound word. Though some people interpret *pencak silat* differently, the main meaning of *pencak silat* is martial art originated and developed from Indonesia (Gending Raspuzi, 2016:3). *Pencak silat* is a martial art system that is a legacy from ancestors and cultures of Indonesia. It needs to be preserved, constructed, and developed (Erwin Setyo Kriswanto, 2015:13). PB IPSI on Mulyana (2013:86) argued that *pencak silat* is the outcome of human culture

from Indonesia to defend and preserve their existence (independence), and integrity toward surrounding environment to create life balance and to improve faith and god-fearing for Almighty God. Based on those notion it can be concluded that *pencak silat* is a martial art developed in Indonesia and a legacy from ancestors that contains aspects of sport, martial art, art, and spiritual mental as a unity.

Professional teachers must teach all material planned on curriculum. They can teach only if they already mastered all the material and be able to teach using proper teaching methods, so that students can easily understand the material. If there are any problems in the learning process, whether it is teacher's ability or certain issue, teachers should be able to find proper solution to overcome the problems with the intention that the aimed competence could be achieved.

Based on field survey results, the implementation of martial art *pencak silat* is not fully carried out on all schools. The interview results with Highs school physical education teachers on Yogyakarta municipality indicate that the main factor why teacher cannot master all the material is their hesitation. To solve this issue, they need an instrument to help them teach which is a learning media.

Up until this time, physical education teachers have a difficulty to find learning media especially material about martial arts *pencak silat.* Currently, learning media about *pencak silat* is very rare. Thus, it should be designed and developed by physical education experts. However, some of them doubt their own ability and knowledge thus it is hard for them to create learning media.

The real even happened inside classroom during learning process is communication taking place between student and teacher or among students. However, noises may happen that disturb the communication process so that the main message is not delivered. Here, media's role is to ensure that the message can be delivered (Robinson Situmorang on Dewi Salma, 2013: 18). The learning medias that they need are picture media where it can be easily created. This media contain clear image and complete explanation. The size of it can be easily adjusted. It should be a good instrument to help teachers explain learning material and help students to comprehend the material and as clear instructions during practice. Just like what Suyadi (2015: 180) said that innovative strategic learning must provided options for students to be free and creative. Thus, teachers should offer their best service to give students freedom of thinking.

Based on those problems, it is a must to develop education technology to find proper solutions. This research is conducted to create a product which is a picture media as physical education learning material of *pencak silat* on High school. The media should be feasible to be used as learning material.

Problem formulation of the research is uncovering the development process of proper *pencak silat* learning media product in form on picture media for High school students. The research's purpose to create products in form of picture media which is appropriate for High school students. Theoretically, the research would contribute to the development of learning resources to improve knowledge. Practically, the research would contribute for students, institution, physical education teachers and society. The variable of operational definition is creation of learning media by giving messages through symbols as verbal communication and texts consist of basic movement element of *pencak silat.* Thus, it can be used for physical education and health learning process on High school.

METHOD

Development Procedure

In order to obtain good quality product of learning media, planning and development process must be conducted carefully through proper procedure. The research type is Research and Development which *means* that the final result is a product. Educational research and development (R & D) is a process used to develop and validate educational products. The steps of this process are usually referred to as the R & D cycle , which consists of studying research findings pertinent to the product to be developed, developing the product based on the finding, field testing it in the setting where it will be used eventually, and revising it to correct the deficiencies found in the field testing stage. In indicate that product meets its behaviorally defined objectives (Borg & Gall, 1983:772). Gay (Wasis:1990) argues that research and development is an effort to develop a product such as

learning material, media, and learning strategy to be used in school. In other hand the result of R & D is practical and implementation and not to test a theory. Based on the explanation, it can be concluded that research and development is a process for developing or validating an effective product for educational purpose.

This research and development has ten steps according to Borg and Gall (1983: 775). Those steps are:

1. Research and information collecting
2. Planning
3. Develop preliminary form of product
4. Preliminary field testing
5. Main product revision
6. Main field testing
7. Operational product revision
8. Operational field testing
9. Final product revision
10. Dissemination and implementation

Conceptually, the approach of research and development consist of ten steps. However in general, it can be simplified into four main steps;

1. Introduction
2. Product development
3. Product validation
4. Trial test

Data Analysis Technique

The data from the research are quantitative and qualitative data. Those data is needed to provide general description about the product quality. Instrument of the research is questioner to take *respondents'* response about the product. The quantitative data taken from respondent about the multimedia quality then is analyzed using Likert scale statistically and descriptively. Assessment of the multimedia quality is based on conversion value calculation result using five different scales (Sukardjo, 2005:53).

Table 1. Assessment criteria

Value	Criteria	Score	
		Formula	Calculation
A	Very good	$X \quad \overline{Xi} \quad 1{,}8Sb_i$	$X > 4{,}21$
B	Good	$\overline{Xi} \quad 0{,}6Sb_i < X \quad \overline{Xi} \quad 1{,}8Sb_i$	$3{,}40 < X \leq 4{,}21$
C	Average	$\overline{Xi} \quad 0{,}6Sb_i < X \quad \overline{Xi} \quad 0{,}6Sb_i$	$2{,}60 < X \leq 3{,}40$
D	Bad	$\overline{Xi} \quad 1{,}8Sb_i < X \quad \overline{Xi} \quad 0{,}6Sb_i$	$1{,}79 < X \leq 2{,}60$
E	Very bad	$X \quad \overline{Xi} \quad 1{,}8Sb_i$	$X \leq 1{,}79$

Condition:

Ideal score average ($\overline{Xi}$) : $\frac{1}{2}$ (maximal ideal score + minimal ideal score)

Ideal raw deviation score (Sb_i) : $\frac{1}{6}$ (maximal ideal score – minimal ideal score)

X Ideal : empiric score

RESULTS AND DISCUSSION

Validation Revision Product by *Pencak Silat* Expert

Both experts of *pencak silat* has given comment and suggestion for product improvement. Those comment and suggestion are:

1. Smoothing image quality
2. Increasing text size of picture description/make it more visible
3. The term of left and right foot should be changed as front and rear foot.

Validation Revision Product by Media Expert

Both experts of media has given comment and suggestion for product improvement. Those comment and suggestion are:

1. Arranging every movement image on single frame.
2. Pictures should be arranged horizontally.
3. Media can be stored inside frame and laminated to make it more durable.
4. Color tone should be more interesting.

The experts point out several flaws from the initial design such as the text that is too small, the picture that explain basic movement is not relate each other, and there is no frame to divide every movement. Picture below is comparison between original design and revised design.

Tendangan T	Tendangan Sabit	Tendangan Lurus
		

Fig. 1. Initial Design of Picture Media

Suggestions from the experts are implemented to the original design. Then, the media is improved based on those suggestion. Some of the improvements are increasing font size, changing color tone, smoothen images, and adding border and box for every movement.

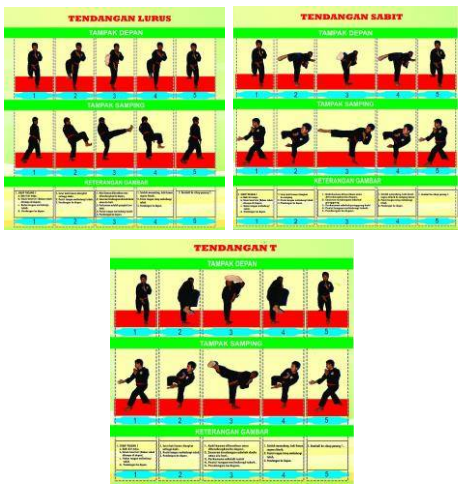

Fig. 2. Revised design of picture media

Result Data Analysis of Material Expert Validation

a. Result Data Analysis of *Pencak SIlat* Material Expert Validation

Based on validation result by *pencak silat* material expert, it can be used as data to be analyzed and as a reference for revision. The data has two aspects, which are product quality and product improvement suggestion. Result of basic component aspect assessment indicates that 70.6% data is "Very good", 29.4% data is "Good", and 0% data is "Average. Detailed assessment result can be seen on table below.

Table 2. Assessment Frequency Distribution of Basic Component Aspect Validation Result by Material Expert I

Kriteria	Fekuensi	%
Sangat baik	12	70.6
Baik	5	29.4
Cukup Baik	0	0.0
Kurang baik	0	0.0
Sangat Kurang Baik	0	0.0
jumlah	17	100

Fig. 3. Basic movement *pencak silat* graphic media quality based on validation result material expert I

b. Validation Result Data Analysis of Martial Expert II

Based on validation result by second *pencak silat* material expert, it can be used as data to be analyzed and as a reference for revision. The data has two aspects, which are product quality and product improvement suggestion. Result of basic component aspect assessment indicates that 75.5% data is "Very good" and 23.5% data is "Good". Detailed assessment result can be seen on table below.

Table 3. Assessment frequency distribution of basic component aspect validation result by material expert ii

Kriteria	Fekuensi	%
Sangat baik	13	76.5
Baik	4	23.5
Cukup Baik	0	0.0
Kurang baik	0	0.0
Sangat Kurang Baik	0	0.0
jumlah	17	100

Fig. 4. Basic movement *pencak silat* graphic media quality based on validation result material expert ii

c. Validation Result Data Analysis of Media Expert I

Based on validation result by first media expert, it can be used as data to be analyzed and as a reference for revision. The data has two aspects, which are product quality and product improvement suggestion. Result of basic component aspect assessment indicates that 26.1% data is "Very good", 69.6% data is "Good", and 4.3% data is "Average". Detailed assessment result can be seen on table below.

Table 4. Assessment Frequency Distribution of Basic Component Aspect Validation Result by Media Expert I

Kriteria	Fekuensi	%
Sangat baik	6	26.1
Baik	16	69.6
Cukup Baik	1	4.3
Kurang baik	0	0.0
Sangat Kurang Baik	0	0.0
jumlah	23	100

Fig. 5. Validation result of media's quality by media expert ii

d. Validation Result Data Analysis of Media Expert II

Based on validation result by first media expert, it can be used as data to be analyzed and as a reference for revision. The data has two aspects, which are product quality and product improvement suggestion. Result of basic component aspect assessment indicates that 21.7% data is "Very good", 56.5% data is "Good", and 21.7% data is "Average". Detailed assessment result can be seen on table below.

Table 5. Assessment frequency distribution of
basic component aspect validation result by media expert ii

Kriteria	Fekuensi	%
Sangat baik	5	21.7
Baik	13	56.5
Cukup Baik	5	21.7
Kurang baik	0	0.0
Sangat Kurang Baik	0	0.0
jumlah	23	100

Fig. 6. Validation result of media's quality by media expert ii

Data Analysis of Small Group Trial Test

Data from small group test is about the graphic quality of picture media. From this data, researcher knows the graphic quality of the media. The data is taken from small group of student n SMAN 3 Yogyakarta. The result indicates that the quality of the media is "Good" with average scone 3.96. Detailed result is shown on table below.

Table 6. Small group trial test media assessment

No	Nama	Aspek Yang dinilai															Jumlah
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	M. Daffa	4	3	5	3	4	5	4	4	4	5	3	4	5	5	5	63
2	Intan	4	5	3	4	3	4	5	5	4	5	4	4	5	4	5	64
3	Naufal	4	4	3	4	5	3	2	5	5	3	4	4	4	5	5	60
4	Annisa	4	5	4	4	4	4	5	4	3	3	4	4	5	4	4	61
5	Wahyu	4	5	4	3	3	3	4	4	4	4	3	3	3	4	4	55
6	Fernanda	3	4	3	4	3	3	5	4	4	4	4	4	3	4	5	57
7	Damasari	3	4	3	4	4	4	4	4	5	4	4	4	3	5	5	60
8	Reyhan	3	4	4	3	5	5	4	3	4	4	4	4	5	4	3	59
9	Ivan	4	4	4	3	3	4	3	4	4	4	4	4	4	4	5	58
10	Irza	4	5	4	3	4	4	4	4	4	4	5	4	3	3	5	60
11	Akbarian	3	5	4	5	3	4	3	4	5	5	4	5	5	4	4	63
Jumlah		40	48	41	40	41	43	43	45	46	45	43	44	45	46	50	660
Rata2		4	4	4	4	4	4	4	4.1	4.2	4	4	4	4	4	5	3.96
Kriteria Aspek		B	SB	B	B	B	B	B	B	B	B	B	B	B	B	SB	B

Data Analysis of Small Group Trial Test

Data from large group test is about the graphic quality of picture media. From this data, researcher knows the graphic quality of the media. The data is taken from large group of student on SMAN 3 Yogyakarta. The result indicates that the quality of the media is “Good” with average score 3.82. Detailed result is shown on table below.

Table 7. Large group trial test media assessment

No	Nama	Aspek Yang dinilai															Jumlah
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	Khansa	2	2	4	4	4	5	5	5	5	5	4	3	4	3	4	59
2	Priskila	3	4	3	3	3	3	3	4	3	3	4	3	5	3	5	52
3	F.Livia	3	4	3	4	4	3	3	4	4	2	5	3	5	5	3	55
4	Nayanggita	3	3	4	5	5	4	5	4	3	5	4	4	3	4	5	61
5	Angela	3	4	4	3	3	4	5	3	2	4	5	4	3	4	4	55
6	Ilham	4	4	3	4	4	5	4	4	4	4	4	4	4	5	5	62
7	Afanda	3	3	3	4	5	4	4	4	4	3	3	4	5	4	4	57
8	Dinda	3	4	3	4	3	5	5	2	3	3	4	4	4	5	4	56
9	Roselina	2	4	3	2	5	5	4	4	5	4	3	5	3	4	3	56
10	Cindy	2	3	3	3	3	4	5	4	4	4	3	3	4	4	5	54
11	Indah	4	3	3	4	4	4	4	3	3	4	5	4	5	3	5	58
12	Balkhis	3	5	4	3	5	3	3	5	3	4	3	4	3	5	4	57
13	Fatya	3	4	4	5	3	3	3	4	5	3	3	4	5	3	5	57
14	Chrisna	3	3	5	4	4	3	4	3	5	4	3	3	4	3	3	54
15	Herdi	3	3	2	3	2	4	3	3	5	4	4	4	5	4	4	53
16	Nurul	4	3	4	5	4	3	3	3	4	5	2	3	5	4	5	57
17	Aliffiya	3	3	3	5	4	5	4	4	5	4	4	4	3	5	4	60
18	Nurul	2	5	3	5	3	4	3	3	5	4	2	3	5	5	3	55
19	Latifa	4	3	4	4	3	4	5	3	5	5	3	3	4	4	4	58
20	Ames	5	3	4	5	4	3	5	3	5	4	5	3	5	3	5	62
21	Windan	5	5	3	3	4	4	5	5	4	3	3	3	4	3	4	58
22	Lusia	4	4	4	4	4	3	3	3	5	5	4	3	5	4	4	59
23	Ayumna	3	3	4	3	4	3	3	3	4	5	3	4	5	4	5	56
24	Fahira	5	3	5	4	4	4	5	5	5	4	3	4	4	3	5	63
25	Halida	4	4	5	4	3	4	3	4	5	4	4	5	3	5	4	61
26	brigita	3	4	3	4	3	3	3	3	5	4	4	3	4	2	4	52
27	Theodora	5	3	4	4	3	3	4	4	4	3	5	3	4	4	5	58
28	Noer	3	5	3	3	4	3	3	3	4	3	5	3	4	4	4	54
29	Sinar	4	3	4	3	5	3	5	5	4	4	3	3	5	5	5	61
30	Athallah	4	4	4	3	4	4	4	4	5	4	4	4	5	4	3	60
31	Assya	4	5	5	3	4	3	3	3	4	3	5	3	5	3	5	58
Jumlah		106	113	113	117	117	115	121	114	131	120	116	110	132	121	132	1778
Rata-rata		3.4	3.6	3.6	3.8	3.8	3.7	3.9	3.7	4.2	3.9	3.7	3.5	4.3	3.9	4.3	3.82
Kriteria Aspek		B	B	B	B	B	B	B	B	SB	B	B	B	SB	B	SB	B

CONCLUSION AND SUGGESTION

Picture media can be implemented for to improve *pencak silat* learning process in high School. It helps student to understand the material easily and teacher to clearly teach it.

For further research, researchers has several suggestion. First, the picture media could be used to cover all various movement in *pencak silat.* In this research, only three kinds of basic movement that can be implemented to media because of limited researcher's ability and resources. Since there are various movements in *pencak silat*, they can be though through picture media. As for the design, it is very possible to improve the graphic's quality. In addition, further research may take other form of media such as audio visual to be used for *pencak silat* learning media implementation.

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THE EFFECT OF IMAGERY ON BEGINNER TENNIS PLAYERS' FOREHAND DRIVE SKILL

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Abstract

Objectives: The objective of this study is evaluating the effect of imagery on beginner tennis players' forehand drive skill

Methods: In this study, 32 beginner tennis players, whose ages ranged from 20 to 22 yr, recruited as purposive random sampling, were divided into two groups. Sixteen beginner tennis player were in the experimental group and sixteen beginner tennis player were in the control group. The experinmental group received both imagery and technical practice and the control group performed technical practice only without received imagery. Both groups performed forehand drive test (hewitt tennis test), pre- and post-intervention. Changes in performance (pre- vs. post-intervention) of each group were analyzed using paired t-test and independent t test.

Results: The forehand drive skill (p=0.002) of the eksperimental group increased significantly. The control group showed increases in the forehand drive skill (p=0.026). independent t-test analysis showed a significant (p= 0,021) different mean between experimental group and control group. The result of data analysis indicated that the experimental group had increasing the forehand drive skill higher than control group.

Conclusions: imagery can improve forehand drive skill. Imagery can be implemented as alternative training to improve tennis skill performance

Keywords : imagery, beginner tennis players, forehand

INTRODUCTION

Tennis is one of the most popular sports worldwide. Many people across the globe are becoming tennis fans, not exception in Indonesia. Tennis growing rapidly in indonesia. The fact showed that all universities in Indonesia who have a sports faculty make tennis as one of the course. The goal of tennis courses is that students can play tennis well. To be able to play tennis have to master the basics of tennis technique (Khaled, Amin, & Samir, 2015: 78). There are five basics tennis stroke technique. The five basic tennis shots technique are: serve, groundstroke (forehand and backhand), volley (foredand and backhand), slice and smash.

One of the important basic shot in tennis is forehand. Forehand groundstroke in the tennis is the most common use in the field and also most player strongest shot because it utilitises the dominat hand of the tennis players. Brown (2007: 31) also said that at least half of all shot in tennis game was forehand, therefore forehand stroke is very important. Forehand drive is often used as weapons because the stroke is harder tan other strokes. The key to a good forehand groundstroke is perform the stroke with the correct technique. When learning a new stroke or trying to refine a new technique on a particular stroke, it is important to focus on body mechanics and the feel of the movement (Renstrom, 2002).

There are four aspects that are very important in helping and supporting students in an effort to improve skills and achievements as much as possible (Harsono: 1988). To achieve good tennis performance it is necessary to consider the following four aspects: 1) physical exercise, 2) technical training, 3) tactical exercises and 4) mental exercises. The practice method applied is a factor that affects the player's ability to do forehand drive. The success of a coaches or lecturer in improving the skills of motion exercises is influenced by the method of training exercised. Appropriateness in applying the exercise methods applied in the exercise will affect the achievement of the child during the training process.

However, in general the current training methods still often result in less effective exercise. Based on observations of the tendency of trainers or teachers only focus on physical exercise or technical training and rule out psychological exercise. One of the best methods for improving motion skills is an exercise that directly studies the activity / activity of motion skills with repeated practice. With repetitive practice one will get an automatic pattern of motion skills techniques learns.

Tennis performance not only requires correctly performed skill-related motor patterns but also goal direction skills. For instance, tennis players need to see the ball flying to a place in their own court and hit the ball toward a targeted place in their opponents' court. Goal-directed ability is the capability of the nervous system to target localization, define the initial state of the motor apparatus, and form a hand trajectory to generate a movement (Desmurget, PeLisson, Rossetti, & Prablanc, 1998). In accordance with the statement of restrom (2002) that when learning a new stroke, it is important to focus on body mechanics and the feel of the movement. It is mean that physical exercise or technical training is required and is also accompanied by psychological exercises to train cognitive skills in order to master optimal stroke skills. Ekeocha (2015: 1) also asserts that psychologycal training methods are very important to enhance sports performance.

There are various methods of psychological exercise. Imagery, in the context of sport, may be considered as the neural generation or regeneration of parts of a brain representation/neural network involving primarily top-down sensorial, perceptual and affective characteristics, that are primarily under the conscious control of the imager and which may occur in the absence of perceptual afference functionally equivalent to the actual sporting experience (Holmes & Calmels, 2008: 433). Butt et al (2016: 3681) said that imagery is one of the essential part of sport psychology. Through systematic proceder all players have the power to increase their imagination abilities. Imagery is one of the training methods that can be used to improve the mastery of tennis playing skills. Imagery is mental technique which helps mind and body to produce desired reaction (Lang et al, 1980; Williams, 1994). The imagery is based on the memory that humans are capable of imitating the motor actions of others. It is the utilization of all senses to recreate or produce associate degree expertise within the mind.

According to Weinberg & Gould (2007: 296) imagery is a form of simulation. Purnama (2013: 40) states that the exercise of imagery is an exercise in the athlete's mind, which the athlete makes movements that are truly through the imagination and after being subsequently implemented. Rushall (2008: 57) Imagery exercise (mental imagery) is a form of mental exercise in the form of self-image and movement in the mind. The conclusión, imagery is a form cognitive exercise by imagine movements. To better understand about the imagery, can be seen from the characteristics. There are five characteristics of the imagery process: modality, perspective, angle, agency and deliberation (Callow, N & Roberts, 2010).

Table 1. Caracteristics of the imagery process

Characteristic	Definition	Components
Modality	The sensory modality (or modalities) involved.	Auditory Gustatory Kinesthetic Olfactory Tactile Visual
Perspective	The visual perspective adopted.	1PP (internal visual imagery) 3PP (external visual imagery)
Angle	The viewing angle when imaging in 3PP.	Above Front Behind Side on (from right or left)*
Agency	The author or agent of the behavior being imaged.	Self Other
Deliberation	The degree to which imagery is consciously and purposefully employed.	Spontaneous or triggered Deliberate mental practice

Several theories have been proposed to explain the benefit of imagery in sport. The main objectives of imagery are used in sports by Murphy (2005: 138), among which are: (1) learning new skills; (2) retraining skills over time; (3) rituals before appearing; (4) developing strategies and plans; 5) reduce the anxiety of the game, (6) increase the psychological, (7) set the tension, (8) increase the confidence, (9) increase motivation, (10) increase concentration, (11) rehabilitation from injury, and (12) team. This is also reinforced by Tenenbaum and Eklund (2007: 296) which states the benefits of imagery among them, namely for the development and improvement of mental skills, the introduction of the game to athletes, as well as mental warming.

There are four types of imagery: visual, kinesthetic, auditory and olfactory (Weinberg & Gould, 2007: 300). Visual and kinesthetic imagery is important in imagery. There are several methods in doing imagery among others is to install photos, pictures or posters idol tennis player; view videos and with script guides. This research will examine the script imagery. Each exercise method has a specific purpose in the preparation. According to Williams (2013: 114) the function of the imagery script is a specific function of cognitive (improving skills), general cognitive function (improving strategy and game plans), specific motivational functions, and general functions of motivation. In addition, imagery script can also facilitate the improvement of imagery process. From the technical implementation of the imagery script exercise described above, it can be seen that in its implementation requires a high degree of imagination, perception and coordination. The superiority of imagery script exercises is appropriately applied to trainers who have good perception and coordination skills; and can develop the imagination and the mind of the trainer.

According to Shearer et.al (2009: 3) imagery script is a traditional approach to imagery practice with a written script as a training guide. Before imagining a movement, a beginner must be given understanding and explanation or description of the movement to be imagined. According to Williams (2013: 110) imagery script is an imagery exercise that uses guidance experience in the form

of script. From some understanding of the above imagery script can be concluded that the script imagery is a form of imagery exercises that use the script as an implementation guide. There are several things to consider in compiling the imagery script. According to Williams (2013: 110) there are four things to consider in developing a script for imagery exercises: (1) who will use the script, (2) when and where the script is used, (3) why the script is used, 4) what would be imagined. The time taken to read and understand the script (script) is 2-3 minutes. Then proceed with imagining for 7 minutes. The purpose of the study was to examine the effect of imagery training on learning forehand groundstoke in tennis.

METHOD

Participants

Thirty two participant were recruited from the 3rd grade of the physical and health education program who take tennis course at Sport Science Faculty of Yogyakarta State University. Participant were non tennis athelete (age range 20 t0 22 years) with absolutely no experience palying tennis, begginer adult tennis player. Participant in this study were divided into 16 students for the experimental group and 16 student for the control group.

Research Design

The present study was a quasi experimental research design with pretest posttest plan and experimental-control treatments. The duration was approximately six weeks. The experinmental group received both imagery and technical practice and the control group performed technical practice only without received imagery. The frequency of the sessions was four times a week.

Measurement and Instrument

Before the experiment, participants completed forehand groundstroke test. The performance accuracy of the groups on forehand strokes was measured at pre- and posttest using Hewitt tennis test.

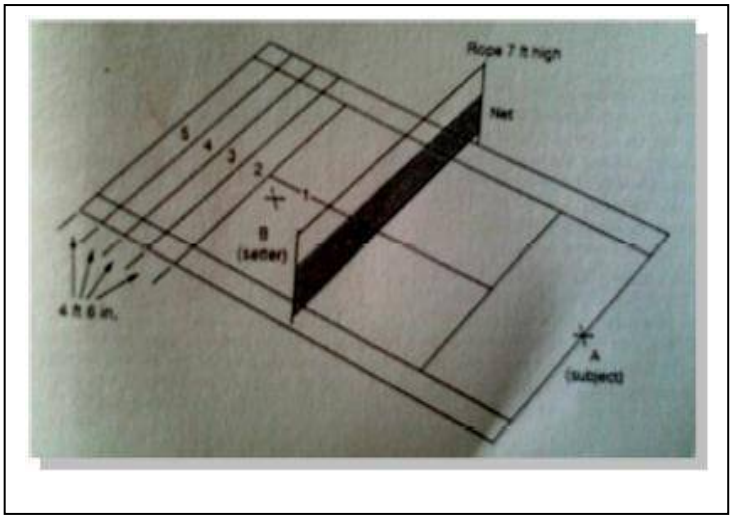

Fig. 1. Forehand Placement test (Hewitt Test)

Procedure

Participant in this study were divided into 16 students for the experimental group and 16 student for the control group.

Week 1- Pretest sesión: Participants performed 10 trials of Forehand groundstroke in hewitt forehand tennis test.

Week 2-5- imagery and physical/ technical training: The esperimental group have physical/ tecnical training and imagery training. The time taken to read and understand the script (script) is 2-3 minutes. Then proceed with imagining for 7 minutes, while control group only have physical/ tecnical training.

Statistical Analysis

Data are presented as Mean ± Standard Deviations. Changes in performance (pre- vs. post-intervention) of each group were analyzed using paired t-test and independent t test.

RESULT AND DISCUSSION

Result

Table 2 show the mean score pretest and posttest of forehand drive for the experimental group and control group. Data analysis result showed that there is significant effectiveness video imagery and script imagery on forehand skill.

Table2. Result of paired t tes for experimental group and control group

Group	*p*
Experimental	0,002
Control	0,026

Based on table 1, the data result showed a statistically significant effectiveness script imagery (p= 0,002) to improve forehand drive skill, and significant effectiveness also showed non script imagery group, only receive technical practice (p=0,026). That means both group significant effectiveness improve forehand drive skill.

In addition, statistically significant difference was found between experimental group and control group *P* value= 0,021 for the forehand drive skill. Data analysis result of difference between experimental and control group on table 3.

Table 3. Result of independent t test

Group	*p*
Experimental	0,021
Control	

Discussion

The purpose of this study was to compare the groups of student (1) physical practice with imagery (Experimental group) and (2) physical practice only (control group). Based on data analysis result there is a significant difference in influence between experimental group and control group. The final results show that the members of experimental group, improved their forehand skill and significant difference between pretest and posttest. Control group did not imagery practice but they improved forehand skill because they also got physical training (technical practice). the experimental group had increasing the forehand drive skill higher than control group.

The improvement in the technique of the tennis forehand produced by the combination of physical training and physcology training with script imagery clearly supports the use of script (auditory) in learning motor slulls for physical activity and sport, and, specifically, in the use of modeling which requires the participants to illustrate behaviors so that observers can improve their learning.

Imagery training methods has the advantage, the form script of exercise precisión forehand groundstroke presented similiar to the real conditions. Also in the imagery training methods is an integral part of overall psychological skills. When students imagine the perfect moment in forehand groundstroke. This activities it actually send nerve impulses from the brain to the muscles involved in the forehand groundstroke movement. When student imagine success in sequence the actual learning process take place and students has scratched it the exact picture of body movement should happen, so it can reach optimal achievement. Several reseach result showed that there is significant effect of imagery training on sport performance (ardehjani et al, 2013; Buck et al 2016; Nelson et al, 2008).

Imagery training in this study was series activities of imagining and bringing up back the movement of forehand stroke. repeating continuosly imagining forehand stroke within mind with relaxed state can making student more focused in doing activities and can build mindset (Sugiana, 2013). The function of the imagery script is a specific function of cognitive (improving skills), general cognitive function (improving strategy and game plans), specific motivational functions, and general functions of motivation (Williams, 2013: 114). In addition, imagery script can also facilitate the improvement of imagery process. From the technical implementation of the imagery script exercise described above, it can be seen that in its implementation requires a high degree of imagination, perception and coordination.

CONCLUSION AND SUGGESTION

The use of imagery with script-modeling appears to be an effective intervention to enhance tennis stroke skill. The application of mental skills, such as imagery, in the strength and conditioning field is growing but remains under-utilized at present. Mental skills are an important aspect of athletic development and, like physical skills, should be practiced often and with purpose. One benefit to imagery is that, once learned, it can be practiced anywhere at any time. Script supplemented imagery may be particularly useful for athletes who have difficulty in generating, maintaining, and controlling mental images. Finally, imagery training should be consideredas a part of tennis training programs with a goal to improve tennis performance.

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THE EFFECT OF HONEY SUPPLEMENTATION BEFORE PHYSICAL ACTIVITY TOWARDS THE PLASMA MALONDIALDEHYDE LEVEL IN MALE WISTAR RATS (*RATTUS NORVEGICUS*)

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Abstract

Objectives : An exercise has positive and negative impacts. The benefits of exercise are improving the fitness and health of a body, improving performance, and preventing several diseases. One of the negative effects of exercise is the formation of oxidant compounds. The oxidant compounds can trigger oxidative stress, a condition caused by the imbalance between the production of free radicals and the antioxidants. Malondialdehyde (MDA) is one of the biological markers of oxidative stress in organism. Oxidative stress can be prevented by giving exogenous antioxidants. Honey is a rich source of antioxidants. The objective of this study aims to determine the effect of honey supplementation before physical activity towards reduction levels on plasma malondialdehyde (MDA) in male rats.
Methods :The study was an experimental laboratory with the posttest only control group design and which was conducted in 7 days. The samples of this study were using 20 male white strain Wistar rats *(Rattus norvegicus)*. The rats were divided into 2 groups randomly and each group consists of 10 rats. The two groups are: K_0 = control group (mean of weight 170,89±12,12, physical activity 148,44±11,28 and MDA plasma 12.02±1,85), K_1 = supplemented honey 5 g / kg body weight (mean of weight 170,89±12,12, physical activity 154,22±11,60 and MDA plasma 7,75±1,61). Swimming 70% of maximum capacity was used as physical activity with the additional weights of 6% from rat body weight. Honey supplementation given once daily for 7 days by oral feeding via sonde. The data were analyzed using statistical program SPSS 16.
Results:The results showed that the mean levels of plasma MDA in group K_0 was 12.02±1.85 nmol/ml and 7.75±1.61 nmol/ml in group K_1. Independent sample t-test showed a significant difference p = 0.000 (p <0.05). Reduction levels of plasma MDA was 35.52%.
Conclusions: Independent sample t test showed a significant differences among the groups (p<0.05). Supplemented honey with 5 g / kg gave the significant decrease in MDA levels. The results can be used as a basic knowledge for further research to determine its use in human being.

Keywords : honey, physical activity, plasma MDA, wistar rats.

INTRODUCTION

Healthy is a lifestyle, by exercises we can keep our body health. Regular and measurable exercise can improve the various components of physical fitness, improve performance for athletes and reduce the risk of disease. Exercise can improve health and maintain pulmonary heart fitness (Hottenrott et al., 2012). Exercise also has a negative effect, causing an imbalance between reactive oxygen species (ROS) and antioxidants that lead to fatigue (Alessio, 2000). Exercise increases the formation of oxidant compounds followed by the occurrence of oxidative stress (Harjanto, 2003). Oxidative stress occurs due

to an imbalance between oxidant production and antioxidants (Leeuwenburgh & Heinecke, 2001). Aerobic exercise can increase oxygen consumption 10-20 times in the body and 100-200 times in skeletal muscle (Revan & Erol, 2011). Increased oxygen consumption during exercise adds to ROS formation and triggers oxidative stress.

The degree of oxidative stress can be determined by measuring the levels of malondialdehyde (MDA) plasma. The body has an endogenous antioxidant defense system and exogenous antioxidants to counteract free radicals. Antioxidants are substances capable of delaying, preventing or eliminating free radicals (Erejuwa et al., 2012). Honey has benefits including antibacterial, anti-inflammatory and antioxidant (Natalia et al., 2014). The antioxidant content of honey include: vitamin E, vitamin C, vitamin A, phenolic acid, flavonoids, zinc and selenium minerals. The honey supplementation is expected to prevent fatigue and maintain subsequent performance.

The honey supplementation is expected to increase levels of antioxidants and reduce levels of free radicals in the body. The effect of honey supplementation on MDA levels as a marker of increased free radical production in mice treated with physical activity was not known certainty. Based on that idea the honey supplementation before physical activity towards the level of malondialdehid plasma still need to be investigated further.

METHOD

This study was a true experimental design using posttest control group design (Notoatmojo, 2012). This research was conducted in Faculty of Veterinary Medicine of Airlangga University, place of maintenance and treatment of animal try. The study was conducted in June 2015. The population in this study was male rats (Rattus norvegicus). The sample was 10 rats of each group with body weight 150-200 gram, 3-4 months old with healthy physical condition. The sample was divided into two treatment groups. The sample used fulfilled the criteria of healthy physical inclusion characterized by clear eyes, shiny fur, active movement agile, good / not soft feces, weight did not down from 10% during acclimatization. Samples will be excluded from research if ill. Sampling and group division was done by simple random alocation (Asami, 2013).

The dependent variable in this research is plasma MDA level, while the independent variable is honey. Honey kelengkeng perhutani given in this research, obtained from the office honey perhutani, road Ahmad Yani no. 276 Bandung, given at a dose 5 g / kg body weight, was administered once daily for 7 days (Hardianty, 2011) via sonde. Acclimatization was done for one week with the same conditions in order to adapt to the new environment. The experimental group of animals was: K0 = control group, K1 = honey treatment group dose 5 g / kg body weight. Maximum ability measurement was done by swimming mice by adding weight of 6% of body weight. The maximum swimming capacity was calculated if the rats were drowned and release large air bubbles. Moderate exercise was being done after 1 hour of placebo and honey (Schramm et al., 2003), rats were rejuvenated into a water bath for 70% of the maximum mouse swimming time with 6% weight.

The collection of blood specimens originated from the heart of mice, where anesthesia was previously performed using ketamine HCl doses of 20-40 mg / kg body weight in intra kardia. After the eyes fade and the body did not move, then the skin of the chest abdomen skinned with a scalpel and after seeing his heart then with a 5 ml syringe of blood taken from the heart as much as 3 ml (Kusumawati, 2004). Blood specimens in all groups were left in the syringe then given identity in accordance with the order of specimens in the group and immediately taken to the Biochemistry Laboratory of the Faculty of Medicine, University of Airlangga to measure the levels of malondialdehyde (MDA). Research data was tabulated and analyzed using Statistical Product And Service Solution for

Windows XP (SPSS) program which includes statistical analysis as follows: descriptive analysis, normality test and independent samples t test.

RESULT AND DISCUSSION

This study used 20 white rats (Rattus norvegicus) Wistar strains, males, healthy, adults 2-3 months old, 150-200 gram weight. The sample was divided into 2 (two) groups: K0 = control group, K1 = group of honey dose 5 g / kg body weight. The data were analyzed based on the minimum number of samples that was 9 rats of each group, because there was one dead rat (K1) on the 7th day. Moderate exercise may increase plasma MDA levels. The honey supplementation as an antioxidant is expected to reduce plasma MDA levels. Descriptive analysis was used to calculate mean value and standard deviation of weight variable before treatment, physical activity (70%) and plasma MDA level. The result of descriptive analysis between groups can be seen in table 1.

Table 1. Descriptive Analysis Results

Variable	group	
	mean K_0 (n=9)	mean K_1 (n=9)
Body weight (gram)	170,89±12,12	170,89±12,12
exercise 70% (second)	148,44±11,28	154,22±11,60
MDA plasma level	12.02±1,85	7,75±1,61

The normality test results show all p values> 0.05, so the data is normally distributed. Data can be seen in table 2 below:

Table 2. The Normality Test in the Group

variable	n	sig
Body weight	18	0.519
Exercise 70%	18	0,948
MDA level	18	0.905

Testing homogeneity with Levene test showed value p = 0,273 (p> 0,05). So it can be concluded that plasma MDA levels have a homogeneous variant. Post hoc test result showed p value (significance) between group p <0,05, so there was significant difference between group. Results of post hoc test analysis can be seen in table 3.

Table 3. Independent samples t-test on plasma MDA levels

Variable	Sig.
MDA	0.000

The data above shows that elevated plasma MDA levels occur after the treatment of physical activity. This is due to heavy activity that exceed the limit of fatigue can lead to the formation of free radicals, as proposed by Arsana (2014) that the exercise with the intensity of 70% of maximum activity leads to the production of high free radicals. Exercise to exceed the limit of fatigue increases oxygen consumption in the body 10-20 times or more and in muscle fibers that contract the use of oxygen can be increased 100-200 times above normal needs (Sauza, 2005). Increased oxygen consumption triggers the release of free radicals that is superoxide radicals (Cooper, 2001).

In this study all groups of Wistar rats were given moderate intensity activity (70%). According to Bompa (1994), the intensity of 70% of maximal ability is classified into intermediate to medium intensity. Exercise with the intensity of 70% of maximum activity leads to the production of high free radicals (Arsana, 2014). Castro et al. (2009) states that the effectiveness of the antioxidant system in offsetting the free radical production reaches saturation conditions in physical activity with an intensity of 70% of the maximum heart rate. Oztasan et al. (2004) mentioned that the high Thiobarbituric Acid Reactive Substance (TBARS) level was caused by shorter training duration.

During physical activity, ROS is formed as a by-product of the phosphorylated oxidation reaction to form energy (ATP) in the electron transport chain in the mitochondria. The phosphorylated oxidation process requires O_2 to bind to hydrogen to form water, but not all of the consumed O_2 (about 4% -5%) turns into ROS (Marciniak et al., 2009). Physical activity increases the body's metabolism. Increased body temperature can trigger the formation of oxidant compounds. An elevating 1°C will increase 12% of body metabolic activity (Guyton, 1996). Physical activity increases the secretion of adrenal hormones that can increase the formation of oxidant compounds. Treatment group in this study was given honey with dose 5 g / kg body weight for 7 days. Determination time of 7 days based on research that has been done by Hardianty (2011). Giving honey as an antioxidant can lower levels of MDA (Yao et al., 2011). Another study conducted by Fajrilah (2013) showed a decrease in plasma MDA levels along with the addition of doses of honey.

The supplementation of honey in the treatment group is due to: 1) Honey is a rich source of antioxidants (Erejuwa et al., 2012) that work synergistically (Aljadi, 2004), 2) Honey contains various antioxidant components, including: polyphenols, vitamin E, vitamin C , enzymes (catalase, peroxidase and glucose oxidase), phenolic, carotenoid (vitamin A) (Gheldof, 2002), 3) Other results suggest that honey components, especially flavonoids and phenolic acids, have been shown to contribute significantly to antioxidant capacity (Moussa, 2012), 4) Honey contains mineral selenium (glutathione peroxidase enzyme component) and zinc (one of the co-factors of SOD) that acts as an antioxidant (Bogdanov et al., 2008), 5) The main nutritional component in honey is carbohydrates with elements of glucose and fructose monosaccharides (National Honey Board, 2015) and 6) Honey provides a good source of energy for athletes (Williams, 2007).

Various antioxidant content in honey plays a role in inhibiting the formation of free radicals. Vitamin E acts as a hydrogen donor that can convert peroxyl radicals into less reactive tocopherol radicals that are unable to attack fatty acids (Stampfer et al., 1993). Vitamin C becomes the first defense against ROS that can counteract the hydroxyl radical and act as a hydrogen donor for a radical change of tocopherol into alpha tocopherol. Vitamin A can clean the oxygen singlet and also react with the peroxyl radical compounds (Deddy, 2013). Flavonoids have the ability to donate hydrogen atoms, churning metal ions, cleaning hydroxyl radicals, superoxide anion radicals and peroxy lipids (Saikat and Raja, 2011). Selenium is a micro mineral that has strong antioxidant power and is a component of the enzyme glutathione peroxidase (Deddy, 2013). Zinc is one of the co-factors of SOD. SOD activity can run when zinc minerals are available in sufficient quantities (Pande and Gayatri, 2010).

Glucose and fructose are the main nutritional components in honey. High carbohydrate content in honey has provided clinical evidence that honey can act as an energy supplier to exercise (Mayhew, 2007). Short-duration exercise leads to the use of large amounts of glucose and muscle glycogen. The main mechanism of increased use of glucose from the blood (glucose uptake) into the muscles during exercise is through GLUT 4 translocation (Garrett, 2000).

Physical activity of 50-60% intensity of VO_2 max or more increases the use of muscle glycogen. The process of gluconeogenesis is not fast enough to replace lost glycogen, so more blood glucose is used. Blood glucose is known to inhibit adrenaline secretion (Pedersen, 2000) that can trigger the formation of oxidant compounds. The use of glucose in honey as a source of energy, inhibits adrenaline secretion in the process of gluconeogenesis. Gluconeogenesis is the process of glucose formation from sources other than carbohydrates, for example in the liver and muscles. Honey contains various components that are known to play the role of antioxidants, so that honey is used as a natural source to ward off free radicals (Wilczyńska, 2010). Exercise is known to increase the formation of oxidant compounds followed by the occurrence of oxidative stress events (Harjanto, 2003). Exercise can cause an imbalance between reactive oxygen species (ROS) and antioxidants that lead to fatigue (Alessio, 2000). The honey supplementation before physical activity can reduce plasma MDA levels, so that cell damage due to physical activity can be prevented. If muscle damage can be inhibited then this will provide benefits in improving performance and can perform subsequent performance after exercise. This is in accordance with the results of research that can be seen in the diagram below:

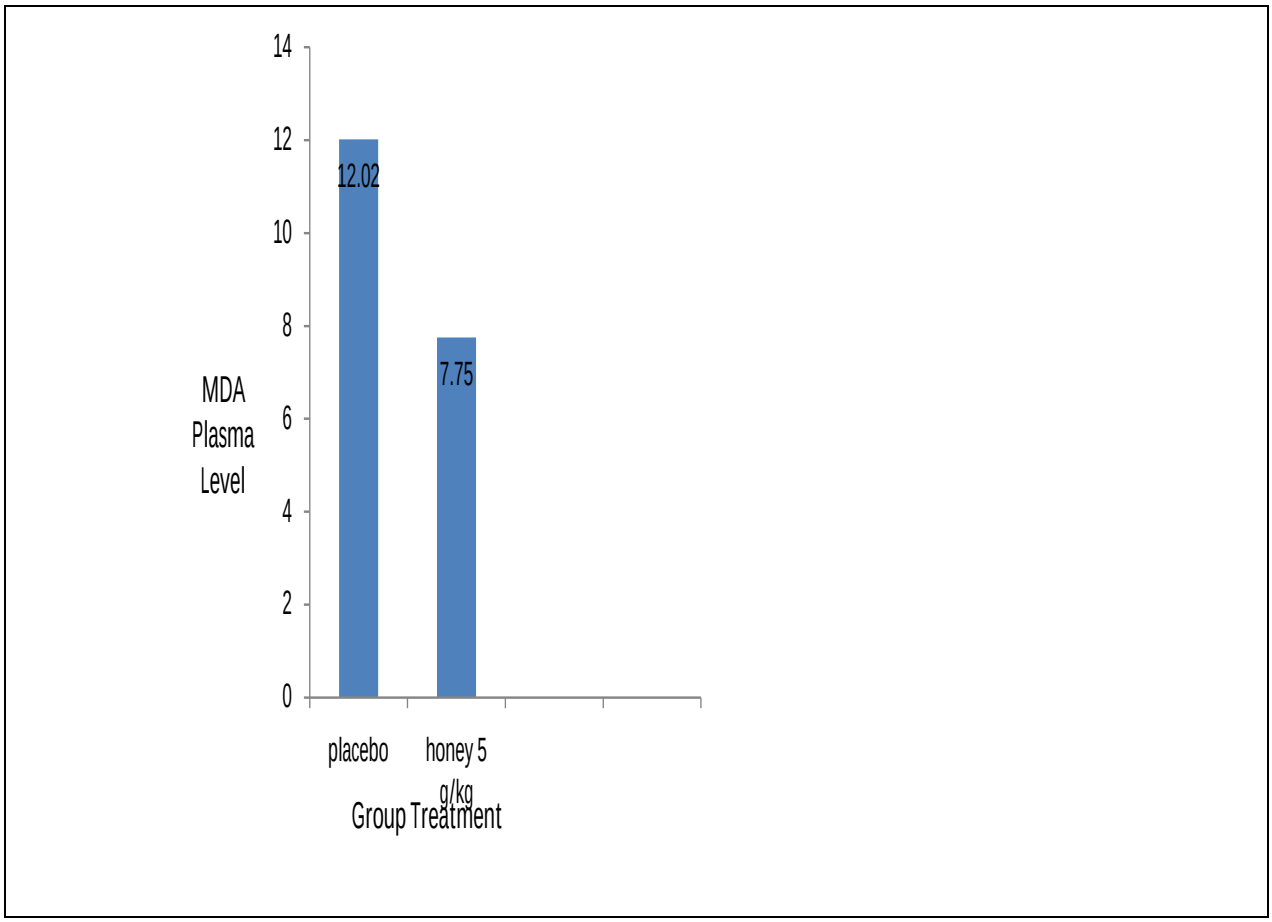

Figure 1. MDA Plasma Bar Chart

CONCLUSION AND SUGGESTION

The honey supplementation before physical activity can significantly decrease plasma MDA levels of male wistar rat (Rattus norvegicus). This suggests that honey does have a high antioxidant potential in an effort to prevent oxidative stress as one cause of fatigue due to physical activity,

ACKNOWLEDGMENT

The authors would like to thank all lecturers especially Dr. Gadis Meinar Sari, dr., M.Kes., AIFO and Prof. Dr.Nancy Margarita Rehatta, dr., Sp.An., KIC., KNA, master students and staff of Department of Physiology, Faculty of Medicine, Airlangga University who contributed to this study.

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THE LEARNING RESULT OF FOOTBALL BASIC TECHNIQUE SKILL

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Abstract

Objectives: Based on the preliminary observation, it was found that the students' learning result of the football basic technique skill at Faculty of Sport Sciences Universitas Negeri Padang was still low. It was assumed that the teaching method used by lecturers was still less effective and also less attention to the level of students' motor skills. This study was aimed at determining the effect of the whole method and the portion method on the learning outcomes of football basic technique skills..

Methods: It was a quasi experimental research. The population of this study was the students of Physical Education, Health and Recreation of Sport Education Department Faculty of Sport Sciences, Universitas Negeri Padang, who took the Basic Football course in semester of January to June 2016 as many as 223 people. The sampling technique used in this research was simple random sampling. This technique was chosen based on the considerations of researchers, so the number of samples in this study was 44 people. The instrument used in this study was a test of football basic technique skills. The quality was taken from the average value of 3 judges and the quantity was taken by using batteray verducci test. Meanwhile, physical fittnes test was used to measure the motor skills. The data was analyzed using two-way analysis of variance (ANOVA) and Tuckey test.

Results: The first research hypothesis mentions the average score of teaching method of group A1 = 52.08 higher than the average score of teaching methods group A2 = 47.92 (Qh = 3.68> Qt = 2.95). The second research hypothesis states that Fcount = 39.44> Ftable = 4.06. The third research hypothesis stated that the mean score of teaching method of group A1B1 = 59.81 was significantly higher than the mean score of teaching method of group A2B1 = 45,64 (Qh = 8.86> Qt = 3.79). The fourth hypothesis of research indicates that the mean score of the method of teaching the sample method of the whole method group A1B2 = 44.34 is lower than the mean score of the method of teaching group method of part A2B2 = 50.21 (Qh = 3.67 <Qt = 3.79).

Conclusions: The results of the data analysis show that: (1) Students' overall learning outcomes of football basic technique skill taught by whole method was better than the group of students taught through the portion method; (2) There is an interaction between teaching method and motor ability toward the learning result of students' football basic technique skill; (3) the learning results of students group with high motor skills taught through the whole method were better than those who taught by the portion method; (4) the learning results of students group with low motor skills taught through the overall method were lower than those who taught by the section method.

Keywords: Learning Outcomes, Whole Method, Part Method, Basic Football Technique

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INTRODUCTION

Football is one of the sports skills that is very popular within community, regardless of age from children to adults and even the elders love football. Football sport is played on a flat and rectangular shape field. Nugraha (2012: 27) states that the normal size of a football pitch is 100 meters x 64 meters (110 yards x 70 yards). The larger size is about 110 meters x 75 meters (120 yards x 80 yards). On both sides of the field wide, there are two goalposts in the middle. The goalpost consists of two vertical posts in which at its top end is connected to a horizontal straight rod with a length of 7.32 meters and a height of 2.44 meters. Two lines are drawn perpendicular from the goal. The distance between the corners of the field with the goalpost is about 5.5 meters. The ends of the both lines are connected by a straight line which is parallel to the goal line and this area is called the goal area. Two lines are perpendicular to the goal line between the goalpost and the field angle at 16.5 meters from

the goalpost. This area is called a penalty kick area. Penalty point kick is measured from the midpoint of the goal line with a distance of 11 meters. Further, Nugraha (2012: 10) states the main purpose of the football game is to make goals as much as possible.

As a football player, to make goals as much as possible to the opposing goal is not easy. For that, it is required a complete bodybuilding activities, starting from the preparation followed by the implementation and follow up. Preparation, as well as in dribbling, is an upright posture, ball close to the foot, and head upright to see the field well. In the practice, the attention only focuses on the ball, then kick the ball with instep or outstep surface completely and thrust the ball forward with several feet. Furthermore, follow-Through moves closer to the ball and push the ball forward as long as it is possible. Thus, the indicators of these basic football technical skills movements are the preparation phase, the implementation phase and the follow-through as stated by Luxbacher (2012: 12), they are: 1) preparation (initial phase); 2) implementation (main phase) and; 3) follow-through (final phase).

For the students of the Faculty of Sport Science at Universitas Negeri Padang, it was found that the results of students' basic football learning were still low. This can be seen from the score of football learning results, especially on the learning outcomes of football basic technique skills which was below the ideal value. Many students' score were below the average (C +) and there were many students got C and C-in the basic football skills, while there was no student got A. From the facts above, it is assumed that the cause of the low learning outcomes of football basic technique skills was the teaching methods used by lecturers which had not been in accordance with the needs of movement characteristics that exist in football. Nevertheless, the teaching materials had not been adjusted to the development of students' physical characteristics. To overcome the low learning outcomes of students' basic student soccer skills, it is necessary to find the method to teach football basic technique skills in accordance with the growth and development of students' motor skills.

Learning is done by human from birth, in childhood, adulthood, and until the end of his life. Learning according to the supposition of a person is a process that occurs in the human brain. The nerves and brain cells collect all seen by the eye, heard by the ear, and others, and then they are composed by the brain. Learning can be done formally in educational institutions or nonformally. As stated by Sobur (2003: 235) that learning essentially is "A process of psychology or personal events that occur within each individual. Learning process itself when running well will produce results later, in which we call learning outcomes ". Furthermore Hamalik (2013: 30) reveals evidence that a person has learned if there is the change in behavior of the person, for example from not knowing to know, and from not understand to understand ".

Furthermore, related to motor skills, Sugiyanto (1993: 45) suggests that motor skills are the ability to function the organ systems in the body's activities. Thus, motor skills are a person's ability to learn a new skill. How long someone mastering a new skill is closely related to his motor skills. Someone's success in learning a sports skill indicates that the person has good learning skills. To be able to determine the success of a person in learning sports, is by harnessing the potential of self that support the success of individuals in learning sports skills, in this case is the football basic technique skills. Komaini (2017) Movement is a nature of life and it is changed by time which could be observed from the human's birth to adulthood. From the free, gross, and random movements changed into meaningful, soft, well-organized movements. There are so many types of movement that needed to be learned and trained based on one's need, development, and the social norm.

Kogert (2007: 131) states the basic technical skills of football sport is a process of movement and it is proved in practice as best as possible to complete the task with certainty in the sport. The skills of playing football includes the basic techniques, in this case it is divided into several elements as well as biomechanics of the elements of football skills. Biomechanics is studying the forms and movements based on principles of mechanics and analyzing those motions for understanding. The elements of football skills as by stated Mielky (2007: 19) namely: 1) Passing, it is the art of moving the ball momentum from one player to another player; 2) Stop the ball (Trapping), stop the ball by holding and control the ball can be done when the ball is low, the ball is flat on the ground, or when the ball is floating in the air by using all part of body except the hand; 3) Dribbling, it is a basic skill in

football because all players must be able to control the ball while moving, standing, or preparing for an oper and or a shot; 4) Kicking the ball (Shooting), it is kicking the ball into the goal. Therefore, the lecturers who teach football are encouraged every time to load technical materials about ball kicking and to remind that the main goal of the game is to make goals against the opponent as much as possible. This means kicking practice should be a core program at every meeting.

Thus, one of the methods of teaching football basic technique skills is the consistency of the growth and development of students' motor skills is the overall method and part method. Syahara (2011: 156) stated that the whole learning is defined as action or learning of motion skills as a whole, while section learning is defined as action or learning of motion skills in the form of parts of motion. The use of the whole method to improve the learning outcomes of football basic technique skills is a complex set of engineering movements. So in the whole method, the students are required to have high motor skills. On the contrary, the use of portion method to improve the learning outcomes of football basic technique skills is learning the technique in stages or in part.

Relevant research is needed to support the theoretical studies stated above: 1) Soekardi's research (2008) under the title, "The Influence of Teaching Methods, Group Co-operation and Coordination Capabilities of Dribel Skill and Shooting Basketball of Secondary School Male Students". In this study, it was stated that there was a difference between the mixed teaching method and the whole mixed teaching method. It turned out that the whole mixed teaching method was better than the part mixed teaching method (Fh 8,979 and Ft 4.08); 2) Semarayasa and I Ketut research (2010) under the title "The Influence of Learning Method and Motor Educability Level to the Mastery of Basic Technique Skill of Playing Takraw". The result of the research stated that according to the average score of Sepak Takraw basic skills between groups of students who follow the whole practice method ($\overline{Y}_{A1B1}$ = 44.30) was greater than the average score of those treated by the Section practice method ($\overline{Y}_{A2B1}$ = 39,00).

METHOD

The aim of this research is to know the effect of different treatment in basic football lecture taught by using whole method and section method by considering motor ability possessed by students, that is high and low motor ability. Specifically, this study has the objectives of: 1) Knowing the overall difference in learning outcomes of football basic techniques skills between groups of students taught through the whole method with groups of students who were taught by part method; 2) To know the interaction between teaching method and motor ability toward learning result of students' football basic technique skill; 3) Knowing the difference in learning outcomes of football basic technique skills of high motor skills students group taught through the whole method with those who taught through the part method; and 4) Knowing the difference in learning outcomes of football basic technique skills of low motor skills students group who taught through the whole method with who taught through the section method.

The method used in this research was experiment one with design of ANOVA by level 2x2. The population in this study was the students of Physical Education, Health and Recreation of Sport Education Department ,Faculty of Sport Sciences Universitas Negeri Padang who took the basic football course at January-June 2016 as many as 223 students. The sampling technique used in this research was simple random sampling by choosing 80 students from the affordable population. For the purposes of analyzing the research data, the students selected from affordable populations were performed motor skills tests. After performing the motor skills test, it was known finally the students motor ability both high and low one. To determine the group, it was taken based on the percentage students of Verduci (1980: 176) ie 27% group of students who have high motor skills, and 27% group of students who have low motor ability level. Then it is proceeded with the calculation of 27% x 80 = 21.60 rounded up to 22 people. So the sample in this study was 22 people with high motor skills and 22 people with low motor skills.

The indicators of students' learning outcomes of basic football techniques are measured through quality and quantity tests. In terms of quality, it was judged by 3 judges. Each judge assesses:

1) 14 points of short pass and control judgment with 6 initial phase items, 6 items of main phase and 2 items of final phase; 2) 12 point dribbling assessment consisting of 5 items of initial phase, 4 items of main phase and 3 items of the final phase; 3) 17 grains of long passing accuracy of 18.20 meters consisting of 8 items of initial phase, 6 items of main phase and 3 items of final phase; 4) 9 ball fielling-jugling rating items consisting of 5 items of initial phase, 2 items of main phase and 2 items of final phase. From the observation,the judges assessed each item within range of 5 to 1 in which score 5 (excellent category), score 4 (good category), score 3 (medium category), score 2 (poor category) and, score 1 (very poor category). The scoring scale for learning result of football basic technique skills was taken in qualitatively from the average score of 3 judges' judgments.

Furthermore, the quantitative learning outcome of football was tested by using batteray test of Verducci (1980: 335). The indicators are football dribbling test, aerial pass for accuracy, ball control test and passing control tests of AFC 2015. The scale assessments for football basic technique skills was quantitatively taken based on the average score of 4 tests indicators conducted by students which were initially scored in T-Score.

RESULTS AND DISCUSSION

Result

Based on further test results using Tuckey test, it can be said that: The first research hypothesis stating that the learning outcomes of football basic technique skills of the students group taught through the overall method (A1) is better than the group of students taught through the section method (A2) was accepted. The average score of teaching method of group A1 = 52,08 is higher than average score of teaching method of group A2 = 47.92 (Qh = 3.68> Qt = 2.95).

The second research hypothesis stating that there is an interaction between teaching methods and motor skills on the learning outcomes of football basic technique skills is accepted. This is indicated by the result of sum calculation of interaction squares (column x row) in which the mean indicates that Fcount = 39.44> Ftabel = 4.06. Based on the data from the results of the study, it was obtained that the average score of learning outcomes of football basic technique skills of students who have high motor skills taught through whole method was 59.81 and the average score of of student groups with low motor skills was 44.34. Whereas the average score of learning outcomes of football basic technique skills of students with high motor skills taught by part method was 45.64 and the group of students with low motor skills was 50.21.

A third research hypothesis which states that the learning outcomes of football basic technique skills of students with high motor skills taught by whole method (A1B1) is better than the group of students taught by the part method (A2B1) is accepted. The mean score of teaching method of group A1B1 = 59.81 was significantly higher than mean score of teaching method of group A2B1 = 45,64 (Qh = 8.86> Qt = 3.79).

The fourth research hypothesis stating that the learning outcomes of football basic technique skills of students with low motor skills taught through the whole method (A1B2) is lower than the group of students taught by part method (A2B2) is accepted. The sample mean score of whole method group (A1B2) = 44.34 is lower than the mean score of part method (A2B2) = 50.21 (Qh = 3.67 <Qt = 3.79).

Discussion

Through descriptive analysis, it was obtained that the average score of football basic technique skills of students taught by the whole method is different from the score generated by the group of students taught by the section/part method, respectively 52.08 and 47.92. This fact is supported by the results of an inferential analysis stating that there is a significant difference between the football basic technique skills on the group of students taught by the whole method and those who were taught by the section method. If it seen based on the average score generated by both methods of teaching, it can be said that the whole method produces higher skill of football basic techniques than those who taught by part method. Thus, in overall the whole method is more effective than the part method to improve the football basic technique skills, especially the subject of the study.

The standard deviations generated by the whole method and part method of were 9.76 and 5.14. From this results, it appears that the whole method yields a larger standard deviation than the part method. This means that the students' football basic technique skills score generated by the whole method have smaller value variations and are more centered on values that are relatively larger than the variations in value generated by part methods. For it is said that the scores generated by the whole method are more stable than the skill score of football basic technique skills produced by part method.

The result related to hypothesis testing of interaction, it proves that there is interaction between teaching method and motor ability in its effect to learning result of students' football basic technique skill, or in other words that proposed hypothesis is tested its empirical truth. It shows that to improve the learning outcomes of football basic technique skills not only by using teaching methods, but it is also determined by the motor skills possessed by students. Although the lecturers have applied good teaching methods, but without the support of good motor skills, students will find it difficult to absorb or accept teaching materials given by lecturers. So, the students will find it hard to adjust to new conditions and are lazy to perform their duties. Thus, it is needed to select effective teaching methods within the support of good motor skills.

The group of high-skilled motor students who were taught by the whole method obtained a higher score than the group of students who were taught by section method. This happens in learning activities where the students have good capability and ability to adjust to the things that are new in learning. As for the low-skilled student group taught through the section method, they obtained the average score of learning achievement of football basic technique skills which is higher than those taught by the whole method. In other words, in the category of low motor skills, the teaching using part method is better than teaching using the whole method. This is due to the group of part methods, the students feel comfortable and follow the learning without any burdens that will interfere when the teaching material is given by the lecturer.

Based on the discussion above, it can be concluded that there is an interaction between teaching methods and motor skills on the learning outcomes of football basic skills. The interaction between teaching methods and students' motor skills as described above can be illustrated by comparing the average score of learning outcomes of students groups having high motor skills and students group having low motor skills who were treated differently on the following picture.

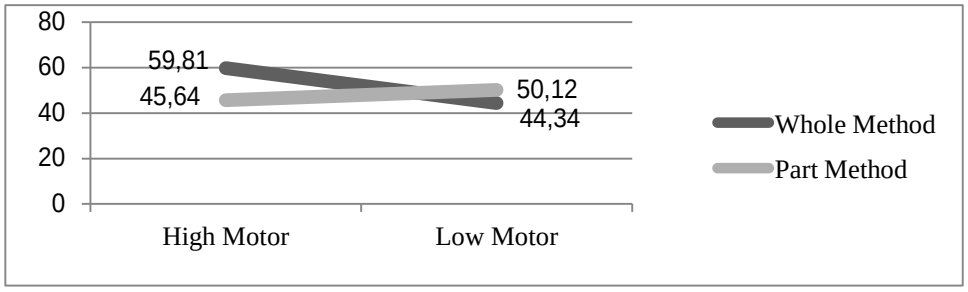

Fig. 1. Interaction between teaching methods and motor capabilities to the learning outcomes of students' basic football technique skills of FIK UNP

Based on the picture above, it can be seen that the difference of learning result of football basic technique skill is significant between the teaching method given to the group of students who have high motor ability and the group of students who have low motor ability. In the group of students who have high motor skills, the descriptive statistic approach shows the average difference of the students' football basic learning achievement result between the group of students taught by the whole method with the group of students taught by the section method. The average score of the overall method score is 59.81 and the section method was 45.64. Of the two scores, the difference is quite large, so that it can be descriptively said that both are different. The results of the hypothesis test reinforce the difference, ie there is a significant difference in learning outcomes of football basic technique skills of the students group taught by the whole method and the group of students who

were taught by the section method. With these facts, it can be said that the whole method is better than the section method to improve the learning outcomes of the football basic technique skills of students who have high motor skills.

Different things are shown in the group of students who have low motor skills where the skill of football basic technique of students group taught by the part method is higher than those who taught by the whole method. The average score of section method was 50.21 and the whole method was 44.34. The difference between these two average scores can be proved by the results of inferential testing, so the data shows a difference. These results show that the whole method is lower than the part method for low motor skills students.

From all the analyses that have been described either by descriptive analysis or by inferential analysis, it is reasonable to say that the whole method is more effective in improving the football basic skills compared to the use of part methods. In the application of using this whole method, it is necessary to note the characteristics of students based on their motor skills, because this method gives more effective results in groups of students who have high motor skills. This is proved by the significant differences in students' football basic skills produced between groups of students having high motor skills and groups of students having low motor skills.

CONCLUSION AND SUGGESTION

As the result of the research, it can be stated that: 1) Overall learning result of football basic technique of Faculty of Sport Science Students at Universitas Negeri Padang (FIK UNP) between those taught by the whole method is better than student group taught by part method; 2) There is an interaction between the teaching method and the motor skills toward the learning outcomes of football basic technique skills of Faculty of Sport Sciences students at Universitas Negeri Padang (FIK UNP); 3) In groups of students who have high motor skills taught by the overall method, the results are better than the group of students who were taught by part method; 4) In groups of students with low motor skills taught by the whole method, the results are lower than in the group of students taught by the section method. Thus, the teaching methods should be adjusted to the student's motor skills. Because the students' motor skills are very helpful to the success of students and lecturers in carrying out the learning process.

The implication of research findings is that in the overall method, the results of the learning process obtained by students will achieve learning objectives, not only the achievement of motor goals, but also the football course can contribute to their skills such as observing, clarifying, measuring, predicting and students can self-evaluate the moves performed. Students are given the opportunity to actively engage in the movement and gain experience of movement and if they find difficulties, they can get the way out.

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BREAKING THE CHAIN OF "KLITIH" THROUGH CHARACTER EDUCATION IN PHYSICAL EDUCATION

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Abstract

The purpose of the state in the Preamble of the 1945 Constitution, among others, to educate life of the nation, pursued through the field of education. In the field of education pursued various policies, among others, starting in 2017 strengthening character education, efforts to welfare teachers who have not been maximized and reduce the number of cases of violence by children aged Junior High School, Senior High School, Vocational School is still happening. Indonesia has the largest productive age in Southeast Asia, if this gold generation does not get a good education, it will be a problem in the future. Given human resources is the foundation of the nation, skills and education of 21st century character needs to be encouraged to the gold quality generation of 2045. Education responsibilities are in the hands of the government, the parents of students and the community but there are still many problems encountered students in junior high and senior high school level, such as drugs, student brawl, violence in school, motorcycle gang, smoking at school, pregnant out of wedlock always occurs in high school even junior high school students, drop out school and cases "klitih" causing material losses and student life. Must be stopped and found the solution. Juvenile delinquency that leads to crime must be overcome by maximizing character education in schools and enhancement of supervision to learners in participating in various curriculum and extracurricular activities in schools, parents of students and the wider community and law enforcement officers especially if they have committed criminal acts, such as carry sharp weapons. Especially to do the persecution and even murder. In order for the next generation to be more qualified strengthening character education in physical education becomes very important and urgent.

Keywords: "Klitih", physical education, character education

INTRODUCTION

The preamble of the 1945 Constitution stipulates that the goal of Indonesian state are to protect the entire nation and the entire Indonesian blood sphere, to promote the common prosperity, to improve the life of nation, and to implement the world order based on independence, eternal peace and social justice (UUD, 1945) Being intellectual life of the nation, pursued through the field of education. The government has pursued various policies, among others, starting in 2017 through character education, teacher welfare efforts including honorary teachers who have not maximized the results and so forth (UU RI No. 20 Tahun 2003,)

Education responsibilities are in the hands of the government, parents of student and the community but there are still many problems encountered students in junior and senior high school level, such as drugs, student brawl, violence in school, gang motorcycle, smoking at school, pregnant out of wedlock always occurs in high school student even junior high school students, drop out school (Kartono, Kartini, 2008) and cases "Nglitih" causing material losses and student life. The problems of injustice faced by the state, intolerance, radicalism and so forth will be mitigated with justice and education policies that can improve the quality of life for the wider community.

(Marsigit, 2013) Indonesia has the largest productive age in Southeast Asia. If the golden generation does not get a character education that will surely have new problems such as increased juvenile delinquency and other crimes that will arise. Given the human resources is the main foundation of the nation, the skills and character need to be given to the gold generation 2045. Strengthening the character education is to build and equip learners face the condition of moral degradation, ethics, and noble character. This happens because it is encouraged by the good intention of preparing the children of Indonesian character. Strengthening character education does

not have to be in the classroom outside the classroom can be implemented, only the teacher must know the world of students according to student development.

Development value of Ki Hajar Dewantara's character education philosophy embodied in five major values: religious, national, independent, mutual cooperation and integrity taught from Monday to Friday while Saturday and Sunday will be character building activities with parents and society for school which carries out 5 school days and for school which carries out 6 days school will be strengthening character education on sunday. Therefore juvenile delinquency will be reduced (Kementerian Pendidikan Nasional, 2010).

CHARACTER EDUCATION IN PHYSICAL EDUCATION

The fate of a nation is determined by the success of a nation to educating on young generation. Character of the nation associated with a strong spirit capital, mutual cooperation, high spirit of togetherness, helpful, humble, do not impose the will, fair, love each other, courteous and willing to accept the reality has been embraced the Indonesian nation since long times ago. Indonesia in education still left behind from neighboring countries.

Australia, Singapore and Malaysia neighboring countries that are able to offer advanced universities in the world because of his solid education. In Australia many world-class universities such as ANU (Australian National University) in Canberra, Monash University at Melbourne, Finders University in Adelaide, University of New South Wales (UNSW) in Brisbane, Wollongong and Tasmania University in Hobart. Singapore is much smaller than Jakarta is able to offer 2 world-class universities namely National University of Singapore (NUS), and Nanyang Technology University (NTU). Malaysia a developing country that had once been an Indonesian student but whose education advanced rapidly, in the 80's, Malaysia brought Indonesian teachers to teach in that country mostly math teachers. Now University of Science Malaysia ranked 582 above Gajah Mada University (598), Putra Malaysia University (611), University of Technology Malaysia (630) beating Bandung Institute of Technology (636).

Human intact according to Ki Hajar Dewantoro is an indication able to balance the intelligence with a personality based on a religious life. Indonesia is still far from good criteria. The proof is still a lot of figures that corruption, drugs, physical violence, human rights violations and so forth. Character education is a system that teach character values to the citizens of the school that includes components of knowledge, awareness or ability, and actions to implement the values held by a nation. A person of good character or superior character is a person who tries to do good things to the God, himself, his neighbor, his environment, his nation and his country and the world in general by optimizing his potential (knowledge) and accompanied by his awareness, emotions and motivation or his feelings.

The importance of character education given early on is evidenced by the results of research at Harvard University US. (Akbar, Ali Ibrahim, 2000) turns out that one's success is not determined solely by knowledge and technical skills (hard skills), but rather by the ability to manage themselves and others (soft skills). It turns out that technical skills and knowledge (hard skills) only determine 20% only and 80% is determined by (soft skill). This shows character education is very important to note. And 50% variability of adult intelligence has occurred when the child was 4 years old, then after 8 years 30% increase and 20% occurred at the end of the second decade or about 15 to 20 years. In the case of children at school only about 7 hours or 30% and 70% are at home and the environment. Thus the character of the child is determined by the family and the environment. Strengthening character education of the nation and juvenile delinquency is closely, because with a good character that has animated students formed from family, school environment and school will reduce student misbehavior.

Every human being in his development will experience various phases and every phase there are characteristics, as well as adolescents have characteristics such as wanting to get recognition from the environment, acting often less priority ratio or reason but more emotion, strongly physic so often do distorted, often prioritize and listen to the voice of friends of parents and teachers (Sudarsono, 2012). Juvenile delinquency since time immemorial always happens, but the

end of 2016 is beyond the boundaries of humanity that must be resolved well by all citizens, especially in Yogyakarta. There is a gang of motorcycles, student fights, drug abuse, drinking parties, brawl between schools and the last known action "Nglithih".

The physical education teacher is in a very central and influential position, so he must instill philosophical values through exercise because it has a direct impact on participatory sports experience. (Hansen, 2008) asserted that the moral realm is more emphasized on learning the emotions and experiences of learners related to attitudes, character, interests, concerns, awareness, and values so that students can show effective behavior. (Graham, Holt, Parker, 2001) state that, physical education activities provide a wide variety of opportunities to teach youngsters important lessons about cooperation, winning and losing, and team work.

SOLUTION FOR "KLITIH"

The word "nglithih" is derived from the word "klithih" which is a fragment of two Javanese words "klithah" "klithih" which means running back and forth rather confused. Understanding "klithih" then developed has a criminal connotation, not just juvenile delinquency. In reality now the action "klithih" is a group of teenagers who roam the city or district by riding a motorcycle and do criminals to other motorists. They go around the city or district by motorcycle is not confused but there are crime targets. They commit criminal acts, both persecution and even kill. The victims are also mostly teenagers.

The term "klithih" or "nglithih" is a term not new anymore, has existed since ancient times that can be interpreted in this case as an activity around the city using a vehicle made by teenagers. Usually done by teenagers who still sit in Middle School. This action tends to be done not separated from the action of vandalism and provoke public unrest, the many cases of deviant behavior "klithih" cannot be separated from the communal behavior of adolescents who call themselves gangs. The presence of the gang is the inevitability of adolescents who psychologically want recognition of its existence and realized in the form of one of them in the form of "klithih". For them is a form of friendship characterized by value and self-bonding.

This action tends to be done not separated from the action of vandalism and provoke public unrest, the number of cases of deviant behavior. "Klithih" cannot be separated from the communal behavior of adolescents who call themselves gangs. The presence of the gang is the inevitability of adolescents who psychologically want recognition of its existence and manifested in the physical form of one of them in "klithih" form. For them is a form of friendship (friendship) characterized by value and self-bonding still a student of high school/vocational school.

Some examples of prominent 'Klithih' cases in 2016 and 2017 (Kedaulatan Rakyat, 2017):

Anuraga Elang (16) citizens of Sewon became victims of the bombardment at Mayjen Panjaitan streets Mantrijeron Yogyakarta. The victim died the next day due to severe head wounds

Two students of Galih Nurwansyah (16) of Mantrijeron and Rafi (16) of Kasihan, Bantul, were hacked by unknown people in Nagan Lor Kraton. The victim wound the ears and tore his head. Bobkri 2 high school security guard, Amin Saefudin (42) wounded on his shoulder because it was swept at the sword while blocking attacks from other school.

BMI (17) Umbulharjo citizen was killed persecuted Iqbal Dinaka Rofki (16).

Adnan Havid Prasetyo (20) of Trihanggo Gamping Sleman residents were killed as they crossed the West of Ringroad not far from his home.

Bagas Tri Usada (16) students, stabbed with sharp weapons in West Ringroad Trihanggo area, Gamping, Sleman.

Anom juna Pradana (17), a godean citizen, Sleman was stabbed in front of the door on his way home from school.

Buru Sergap Polsek Banguntapan team secures a dozen students of a private Senior High School early in the morning carrying sharp weapons of gear, knife, machetes, and sticks, they did "Nglithih" that will make trouble.

FA (22), a resident of Depok Sleman, mistreated a number of motorists for no apparent reason.

Yoga Agung Rahman Al Atiq (15) and Alif Febri Wijaya (20) were victims of bait in Kotagede Yogyakarta by 4 people boarded two motorcycles

a number of 50 perpetrators with 3 cars and 30 motorbikes attacked 3 students who were hanging out at the street vendor Mataram People's Army road at 0.30 AM all the victims were still sitting in junior high and beaten by gears.

Ilham Bayu Fajar (17) died, he's PIRI junior high school students, being stabbed at 1.00 PM in front of Perum. Timoho Regency Umbulharjo. Less than 2 days Police arrested 7 of 9 perpetrators "klithih" which all children students of junior high school and one people still high school student, most of them are Broken Home.

Yarin Fahtoni (19) of Kayunan Donoharjo Ngaglik, Sleman. Had been shot using air softgun in the hamlet of Mudal, Sariharjo, Ngaglik, Sleman at 02.45 PM.

Chairman of the society care about education in Bantul said a series of violent and crime events involving high school students to be a real indicator of exemplary crisis, is now very difficult to find an exemplary figure. This fact is what the learners make the troublemakers to just looking for attention. The school teaches goodness, honesty, non-violence, respect for others, helping others, being polite to everyone and so on but in family and society is not necessarily supportive. Besides teaching character education has not been successful with the maximum. The attack of a group of students who caused the loss of life proves the character of the students is not good, and needs to be addressed if not how the next generation of Indonesian nation, then the lesson of religion, history, civic education, language must be increased seriousness and all subjects should support character education. While other subject teachers must insert the character's educational material.

The impact of globalization and the development of information technology there must be positive and negative. Teenagers who are not able to digest the impact of progress it will choose the form of impingement, among others, called "Klithih" which gives pride for a moment. Central, Regional, Police and Parents and community and school organizations must act immediately to avoid further casualties. If not immediately addressed it is not impossible to become a bigger social problem. Given the perpetrators "klithih" in general the high school and high school students are equally impossible to be left in handling problems "klithih" even be a focus of attention.

According to (Zuchdi, darmiyati, 2011) there are three findings three facts: Firstly they do not know the religion and never interact with the scriptures. Both offenders are disoriented or have no clear purpose in life. The three dislocations or the wrong place to place themselves, the street. Being from the side of the parents, the economy is quite well, the children so messy, the house is just a place to stay there is no positive and warm communication between family members, parents are too busy looking for money, the wealth can make broken home for their children, they lulled wealth has eaten his own child. Until the term poverty occurs in rich families. They forget wealth just as a tool or a means, but it has become a goal. Children run away from home because they feel cramped and lonely amidst. The affection of a parent remains irreplaceable to the child, parental concern is the most essential and essential instinct for the child.

All stakeholders must be aware of the impact of technological advances and information for the community and new high school / vocational students seeking identity and want recognition of their existence, they have not realized that psychologically new to age looking for self-identity, so if you mistakenly choose friends and groups will harm yourself and others (Yusuf Syamsu, 2011). Department of Education, Youth and Sports in sleman district commented still rampant juvenile delinquency that his party is ready to take action if the mischief is there in its territory or under its authority. Delinquency done by learners basically every school has its own rules for the students it. If there is a school environment, the school will certainly take action but if the incident is outside the school is the law enforcement authority or the police who will act. Especially if you've brought a sharp weapon.

Department of Education, Youth and Sports also already have a mentoring program of students with teachers. It is also in the context of character education for learners, the character of student will be known interests, talents and achievements of students, in addition to providing counseling to learners (Pancastuti, Sri Renani. 2008). This is in accordance with Law number 14 of 2005 on teachers and lecturers, which among others mention the main task of teachers is to educate, teach, guide, direct, train, assess, and evaluate the students. In the program the education pattern is grind, good parenting. It's just that if it is a violation to lead to crime and endanger the lives of others will be submitted to law enforcers or the police. According to the Sleman Regent the juvenile delinquency was much triggered by drinking. Mischievousness in out-of-bounds streets, including the 'klithah-klithih' everywhere, must be dealt with firmly. Furthermore, the Regent confirmed that a number of crimes of students who are still rife happened some time ago that it cannot be separated by the participation of alumni. Many alumni invite new students to join the gang and do negative deeds.

Many alumni are still hanging around the school and influencing their newly arrived class siblings, new learners often feel proud to associate with alumni and follow in their footsteps, including in the behavior of “klithih” and so on. According to Regent Sleman Sri Purnomo there are three things involved in the formation of the behavior of teenagers, student parent, the environment, and school. For that we need to break the link between alumni and new students. Teachers must actively try to break the negative chain with employees and the entire extended family. In addition to actively give examples of acting and behave well and be an example for learners, as well as participate in the success of the character education program, and noble character.

According to police chief in Sleman AKBP Burhan Rudy Satria, a number of crimes committed by students who are rampant it cannot be separated with the role of alumni, alumni often giving a mindset to junior certain schools are enemies of the school and many alumni who invite his junior in school to do negative class, some younger siblings that are proud to follow in the footsteps of his older brothers or senior. So breaking the learner's links with the alumni is the right thing to do and is one of the effective steps to overcome the student's crime. The irresponsible involvement of alumni is justified by the teacher, which means that alumni who used to take part in the gang, which in the school's notes used to go to school often involved in deviant acts.

Effort to erode behavior “klithih”:

1. Student parent

   Student parent are very decisive in the education of children, especially character education because from childhood to marriage many communicate with their families, they will imitate the habits that occur in the family environment, he learned from the habits of people around him including the attitude and behavior of his family (Sofyan, herminarto. 2014). Most of the broken home family, where the child loses love so the child will look for an idol outside his family. If you mistakenly choose the idol that is very dangerous.
2. Society, will contribute to determine the character of a child and the intelligence of children, from the community environment that children learn about attitudes and behaviors to be imitated by a child (Sofyan, herminarto. 2014). If the community environment is not conducive it will be harmful to a child's development.
3. School, determine the level of intelligence and behavior of a child. A good school will produce good children as well, while a school consisting of poor children generally also gives birth to a child who is not good about his intelligence and behavior either. If there is something different it is just a case.
4. The state, will determine future generations. Religious countries, for example, will be the children who graduate from the school are mostly also religious, secular state graduates generally also secular, as well as graduates of world-class schools or universities will also have a world-class view of the world. So the state must take good care of it.
   a. This institution strongly determines the attitude and behavior of its citizens, if the police are corrupt and cannot be an example then the citizens will only obey the rules if there is law

enforcement tool. If the police, prosecutors work well and can be a role model of citizens then the citizens will obey with high awareness. Law enforcers must act who is wrongly punished according to the rules, according to law enforcement law Hamengkubuwono X is the most effective way to break the chain of adolescent Criminal behavior.

b. The executive, legislative and judicative institutions that carry out their duties with devotion, if they work seriously and serve their country and people and obey the teachings of their religion, then surely the people will respect sincerely and help sincerely. Here the formal and non-formal leaders are very important in the formation of the quality of their citizens.

c. Preparing local regulation about “klithih”

d. Improve parental control

e. Firm action perpetrators “klithih”

f. Held a curfew

g. Increase police synergy and related elements

h. improving patrolling environment neighborhood association/ citizen association

i. School supervision is improved

The young generation will imitate and imitate their leaders and parents in navigating the life of Indonesia's beloved country. At school the older siblings will be imitated attitude and behavior by the brothers and sisters of his class then should be modeled by his younger siblings [6]. Most of the perpetrators claimed that their brothers were not under the age of the law would be prosecuted, so they dared to bribe others. In the case of the police will act decisively although still under age still be processed law because of the threat of punishment more than seven years. The police have proven that if they carry sharp weapons and the perpetrators are still being processed by law. Thus expected his younger class will be more advanced and better than the previous generation. In this case the Police will act firmly against “Klithih” even though the status of the student and will not tolerate the perpetrators because it is a crime that disturbs the people, they will be imprisoned.

CONCLUSIONS

The term Klithih or Nglithih is a term not new anymore, has existed since ancient times can be interpreted in this case as an activity around the city using a vehicle made by teenagers. Usually performed by teenagers who are still sitting in middle school. This action tends to be done not separated from the action of vandalism and provoke public unrest. Every human being in his development will experience various phases and every phase there are characteristics, as well as adolescents have characteristics such as wanting to get recognition from the environment, acting often less prioritize ratio or reason but more feelings, strongly physic so often do distorted, often give priority to the voice of friends of parents and teachers.

Students who have character is good on personality, behavior, nature, character, and character in accordance with the teachings of God and according to the guidelines of life of the nation and country. For the nation of Indonesia must have personality and based on national principle of Pancasila and the 1945 Constitution. Character refers to a series of attitudes, behaviors, motivations, and skills. The character comes from the Greek word "to mark" or marks and focuses on how to apply the virtue in the form of action or behavior, so that dishonest, cruel, greedy, and other ugly behaviors are said to be ugly characters. Conversely people who behave in accordance with moral rules called good and noble character. Strengthening character education in 2017 becomes very important and urgent for students considering the development of quality human resources is the foundation of the nation in the global competition 2015 MEA or Southeast Asia free market and gold generation in 2045.

“Klithih” in Yogyakarta has been criminalized so that serious handling of schools, parents of students, the wider community, and law enforcement officers, as it has disturbed the community and disrupted the process of teaching and learning in schools and has fallen many victims who were injured died in vain. The phenomenon of “klithih” still occur because the education process is not optimal therefore need to improve the performance of teachers in supporting moral education,

noble character as well as character, religion, civic education and need improvement of teacher performance counseling and counseling.

Education responsibilities are in the hands of the government, the parents of students and the community but there are still many problems encountered students in junior high and senior high school level, such as drugs, student brawl, violence in school, gang motorcycle, smoking at school, pregnant out of wedlock always occurs in high school even junior high school students equal, drop out school and case "Nglitih" causing material losses and student life. The problems of injustice faced by the state, intolerance, radicalism and so on will be mitigated by justice.

Police and other law enforcers to act decisively against the behavior “klithih” and other juvenile delinquency. Although still a teenager should be dealt with firmly if endanger the lives of others, such as carrying swords and other sharp weapons. If it is done well and seriously the violations and crimes committed by the younger generation will decrease, the violence will decrease, the student's brawl will decrease, the less will decrease. Education is getting better, prosperous just society is getting closer.

Schools intensify character education, noble character and noble character and provide exemplary example for the students, as well as the community must jointly support and give examples of the practice of character education, noble character and noble morals so that children follow the behavior attitude of the community environment (Sofyan, herminarto. 2014). In the family all family members are expected to also be exemplary examples of noble and noble behavior, so that children will follow and imitate the behavior of their family. No less important government, formal and informal leaders will certainly emulate the attitude and behavior every day.

The case of “klithih” should receive special attention from all components of the citizen because it concerns the future of the country, the nation, the region and the good name of the country, and the area and people known to the friendly, courteous and peaceful nation. The Special Region of Yogyakarta is polluted with teenage delinquency and “klithih” cases affecting the economy, politics, socio-culture and security, amidst the Indonesian people struggling in the global competition of the ASEAN Economic Community. Foreign, national and local tourists will counting to go trips to Yogyakarta if it is not safe. Similarly, foreign and domestic investors also think twice if they will invest in less secure areas, and so forth. Until the impact is detrimental to the citizens of Yogyakarta in particular and citizens of Indonesia in general.

All of stakeholder include government need together to improve good attitude and behavior for children in the future. So the children know which one is true and implement of understanding the wrong thing, the children will imitate the attitude of the actions of previous generations. Character education can be done through exemplary examples and habits in the daily life of parents, teachers, formal and non-formal leaders such as the President, Governor, headman and community leaders.

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PHYSICAL EDUCATION LEARNING THROUGH TRADITIONAL GAMES TO IMPROVE COOPERATION AND RESPONSIBILITY AT ELEMENTARY SCHOOL

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Abstract

Education has an important role in the life of the nation, including the teaching of physical education. Teachers have a responsibility in the success of education by adjusting learners' development level in order to maximize the development of all aspects including cognitive, affective, and psychomotor. Subjects of physical education is not only aimed at developing physical potential, but also shaping social attitudes such as sportsmanship, responsibility, cooperation, honesty, courage, self-control, work hard, and mutual respect. These social attitudes can be integrated through the motion activity in the form of a game. One of them can be built through traditional games. Traditional game is needed to be developed for the sake of the nation's cultural resistance, because it should be realized that the culture is a great value for the Indonesian nation. Traditional games must be protected, nurtured, guided, empowered then it can be inherited so it would not being lost by the times or taken by any other country. Thus, through traditional games which conducted on a regular basis, scalable, well-planned may have a positive impact, for example, the body becomes fitter. Moreover, the interaction in traditional games establishes cooperation and responsibility.

Keywords: learning of physical education, traditional games, cooperation, responsibility

INTRODUCTION

A superior nation can be seen from the quality of education in the country. Education is one way to improve the quality of human resources in developing the social order in a country. Successful education can be achieved through learning process in school. Learning is the process of transferring knowledge, shaping culture, values of life and maximizing the potential of learners. Learning is not only teachers teach concepts but provides meaningful processes to learners. Learning is an attempt to guide students into the learning process so that they can achieve the learning goals as they expected.

National education has some functions in developing the ability, forming the character and civilization of dignified nation in order to educate the nation's life, it aims to the development of potential learners to be a human being who believes and cautious to God Almighty, noble, healthy, knowledgeable, capable, creative, independent and become a democratic and responsible citizen (Law No. 20 of 2003 on National Education System). From functions and objectives mentioned above, there are two important things to be realized by educational institutions that is developing ability and building the character.

Education is one of the important things to prepare students in facing their future. A meaningful learning process is crucial to the realization of quality education. This is in line with educational objectives (Law No. 20 of 2003) which is to create an atmosphere of learning and learning process so that learners can actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character and needed skills, society, nation and state, then all kinds of education in Indonesia should be directed to the realization of that goal. The purpose of national education becomes the basis of cultural education and character in order to produce the character of human resources, smart and independent. Tadkiroatun Musfiroh (2008: 29) states that education character in Indonesia is based on 9 pillars of basic character. The nine pillars of the basic character are: 1) Love of God and the universe; 2) Responsibility, discipline and independence; 3) Honesty; 4) Respect and courtesy; 5) Affection, and cooperation; 6) Confident, creative, hard work and never give up; 7) Justice and leadership; 8) Good and humble; 9) Tolerance, care, love and peace.

The cultural and character issues of the nation are now become concern of the society. The highlight is about various aspects of life, which is stated in the various writing in printed media, interviews, dialogue and electronic media. In addition to the mass media, community leaders, experts and educational observers, social observers pay attention on the issue of the degradation of culture and national character in various seminar forums, both at the local, national, and international levels. The problems that arise in society are corruption, violence, sexual crimes, vandalism, fights and so on. The issue becomes a hot topic of discussion in the mass media, seminars and on various occasions. Various alternative solutions are proposed such as rules, legislation, the increasing of implementation efforts and stronger application of laws.

Another alternative in reducing the problem of the degradation of culture and character of the nation is education (Sujarno., Galba, S., Larasati, A. T., et al, 2013: 9). As a preventive alternative, education is expected to develop the quality of the nation's youth in various aspects that can minimize and reduce the causes of the various problems in the culture and character of the nation. It is realized that the outcome of education will have its' indirectly impact, but it has strong impact in the community.

The process of developing the values on which the character is based requires a continuation process, which is done through the subjects in the curriculum. In principle, the development of character education is not a separate subject but it is integrated into the subject matter, self-development, and school culture. Therefore teachers and schools need to integrate the values in cultural education and national character into the Education Unit Level Curriculum (KTSP), syllabus and Learning Program Design (RPP).

Character formation is carried out continuously involving aspects of knowledge, feeling, and acting (Tadkiroatun Musfiroh, 2008: 30), but what happens today is the pattern of education still oriented to the development of cognitive aspects and less attention to the development of affective and psychomotor aspects. In addition, an education system that focuses on cognitive aspects is abstract, and it is followed by a passive, rigid and less enjoyable learning process.

Education has an important role in the life of nation and state, including learning physical education in schools. Teachers have responsibility in the successful of education by adjusting the developmental level of learners, maximizing all aspects of development from cognitive, affective, and psychomotor aspects. The regulation of the Minister of National Education of the Republic of Indonesia number 22 year 2006 page 294, on Graduate Competency Standards (SKL) for elementary and secondary education units states that: Physical education is an integral part of education as a whole to develop aspects of physical fitness, motion skills, critical thinking skills, social skills, reasoning, emotional stability, moral action, healthy lifestyle aspects and the introduction of a clean environment through physical activity which systematically arranged in order to achieve the goals of national education.

The physical education learning develop in society is still oriented to the psychomotor field. Students simply follow or imitate what teachers say. The learning approach is still focused on the technique, so the teacher seems monotonous and the students look less creative and innovative. Physical education subjects exist in schools are not only aimed at developing physical potential but also forming social attitudes such as sportsmanship, responsibility, cooperation, honesty, courage, self-control, hard work, mutual respect and others. These can be integrated through motion activities in the form of games. One of them is through the traditional game.

Traditional games are activities that are done from the habits of people in an area. Traditional games that exist in Indonesia are very diverse, for example: *gobag sodor, bentengan*, jump rope, *kasti* and many more types of traditional games. In the past, the traditional game is very popular with children, the game of the past teaches the importance of a process and contain good values which also train the children in socializing including the formation of children's character (Sujarno., Galba, S., Larasati, AT, et al , 2013: 4). It is expected that the subjects of physical education through traditional games can increase the value of cooperation and responsibility of elementary school students.

Primary School is the second formal education after kindergarten, so the formation of students' character is crucial and it will be the basic foundation for students. Because the childhood is a stage in which children are able to learn to imitate well from their exposure of their environment or their neighborhood (school / home). So one of the character education is given in school through the teacher. Because the task of teachers not only to teach and transfer knowledge, but also to educate students having good behavior and good morals.

Based on interviews with poultry teachers in the Teacher Working Group (KKG) gathering forum in Depok, Sleman sub-district, there are still some undergraduate teachers who do not concern with values and character elements. In the process of learning outcome assessment, teachers are still less consider to the affective aspects, one of them is the value of cooperation, responsibility and students' behavior.

In the field of physical education learning through the game, there are some students who have not been able to cooperate with their friends, when they join the game, some students show less enthusiasm and scolded a friend of their group when he is not able to perform the game or his ability is lower than the other friends. When the learning process takes place there are also some students who have less responsibility, for example, students are less serious in carrying out the task given either when he become guard team or active teams and they do not pay attention to the instruction given by teachers. Furthermore, there are some students who do not admit their mistakes if they violate the rules during the game, so it causes dispute between friends or groups.

Physical education subjects are considered if students have good grades enough to have good knowledge and motor skills, so the assessment is only focused on cognitive and psychomotor aspects. The result of the physical education learning appraisal is same as the other subjects, for example: cognitive, affective and psychomotor assessment. What makes physical education different is learning through physical activity, such as practicing basic motion into the game, basic physical fitness exercises, agility exercises, rhythmic movements (gymnastics and physical fitness gymnastics) and a healthy living culture.

The game is one of the materials contained in the curriculum at the Elementary School level. One of them is the traditional game. Traditional games contain values which has some functions, not only as entertainment but also means of socialization, including the formation of the character (Sujarno., Galba, S., Larasati, A. T., et al, 2013: 5). Although the character has existed in every children (innate from birth), it will still changes because of influenced by the environment, experience and education. The process of changing that occurs is caused by the traditional game. Budhisantoso (Sujarno., Galba, S., Larasati, AT, et al, 2013: 3) reveals that through traditional games students can socialize, learn social norms in life, recognize cultural values and can learn a lot about interrelationships which can be useful to determine his way of life and his personality.

THEORITICAL CONCEPTS

The quality of good learning will result in good quality students from the learning achievement aspect as well as from the social development aspect of the student's personality. The achievement of good learning quality is the result from the good performance quality of educational components such as principals, teachers, students and parents able to perform their functions and roles optimally. Yuli Fajar (2011: 62) states that in order for having good learning quality, it is necessary to pay attention on the students so they have physically and spiritually healthy to learn without obstacles, have interest in learning activities as high humanity value, conscious learning as preparation to cope life challenges.

Learning and learning process is an interrelated concept. Learning is a process of behavior change due to interaction with the environment. The process of behavior change is a conscious effort based on experience when someone interact with the environment. The pattern of behavior that occurs can be seen or observed by reaction and attitude of mental and physical. The changing behavior as a result of the learning process contains a broad understanding, including knowledge, understanding, attitude and so forth.

Siedentop (Pritchard & McCollum, 2008: 18) states that "the sport education model has been described as a curriculum and instruction model designed to provide authentic, educational rich sports experiences for girls and boys in the context of school physical education". The sport education model is a teaching curriculum model developed for the physical education program where students learn not only how to exercise, but also learn to coordinate and organize sports activities. Students also learn to take their personal responsibility and skills as group members effectively.

The physical and sports education guidelines contained in the curriculum are crucial reference for the teachers in the learning process, teachers must understand and master the guidelines so the process and learning objectives can be achieved well (Tore, D. P. A. & Raiola G, 2012: 471). Khomsin (2001: 52) argues that physical education in schools has an important role for the development of physical and psychomotor aspects and also for the development of cognitive and affective aspects. Through physical education is expected to stimulate the growth and development of children needed in daily activities both to learn to know the environment and learning to recognize itself as a social creature in an attempt to cope and adjust the changes that occur in the environment. Physical education is essentially education that utilizes physical activity in order to achieve the desired learning objectives. According to the theory of physical education Kirk, D. & Macphail, A. (2002: 4) reveals that:

> *Physical eduction is challenging and demanding subject to study (Kirk, D. & Macphail, A. (2002: 4).*
>
> *Bob, B., Acquaviva, J., & Grube. (2004: 39-40) created his instructional and curricular model sport education he created a different way of teaching physical education while will adhering to the traditional team-sport curriculum model. Before his idea, most teacher introduced and completed each unit within a two- to three- week time frame. However, Siedentop recomemdes that each "unit" be two to there times that length to allow students to more thorounghly experience each sport.*
>
> *The Sport Education (SE) model was designed to provide positive motivational sport experiences for all students in physical education by simulating key contextual features of authentic sport (Tristan L.W., Martin H., & Smith, T. D. 2010: 444).*

The guidance of physical and sports education in the curriculum is a reference for teachers in the learning process, teachers must understand and master the Guidelines, so the process and learning objectives can be achieved well (ISSN, 2012: 471). Based on some definition mentioned above, physical education is a learning process that aims to improve physical fitness develop motor skills, knowledge and active life behavior and sportive attitude through physical activity. Physical education learning is a complex activity so that appropriate thinking is needed for the implementation process. Learning physical education can be defined as education through physical activities; one of them is to improve student cooperation and responsibility.

TRADITIONAL GAME

Traditional games are a form of game or sporting activity that evolved from a certain community habit. In subsequent developments, the traditional game is often used as a type of game that has original regionalism characteristics and it is adapted to local cultural traditions. The activities are done regularly or occasionally to seek entertainment and fill the spare time after being detached from routine activities such as working for a living and school. In the application of traditional games can incorporate elements of folk games and child games into it. The traditional game is a vehicle to play for society through the activity of motion. Dinata., Suherman., & Allatief A (2006: 1) stated that the traditional game is a cultural heritage of the Indonesian ancestors. The traditional game requirements are both traditional and games both in having traditions that have evolved over

generations, as well as in terms of something related to the cultural traditions of a nation more broadly. The technical requirements that exist in the traditional game are body strength, body flexibility, motion velocity and reaction ability.

Traditional games need to be developed for the sake of national culture, because it must be realized that culture is a noble value for the Indonesian nation. Traditional games must be protected, nurtured, guided, empowered which is then inherited so as not to be easily lost by the development of times or taken by other countries. Thus through the traditional game that is regularly done, measurable, well-planned can have a positive impact such as the body becomes fitter, additionally through interaction in traditional games can develop cooperation and responsibility.

THE VALUE OF COOPERATION AND RESPONSIBILITY

Bryan and Byrne in Novarida, et al., (2009: 3) states that cooperation is part of social life which involves a group or several people to find a particular purpose. While the Directorate General of Mandikdasmen (2010: 22) reveals that cooperation is doing activities with others to achieve common goals, such as helping friends who need help without discrimination, being polite and friendly to all friends, expressing ideas in groups, doing jobs without compulsion from others, perform tasks according to the position in the group, respect the opinions of others and do not show selfish attitude. Based on the explanation mentioned above, it can be concluded that cooperation is the attitude and behavior of a person which reflects the presence of consciousness and willingness to come together to help each other and give each other without any hopes to get reward. Cooperation is an activity or effort undertaken by several people to achieve common goals.

Responsibility is an attitude and behavior of a person to carry out the duties and obligations that should be done on himself, society and environment (natural, social). Zuchdi, et al (2012: 27) states that responsibility is the attitude and behavior of a person to carry out his duties and obligations as he should have done to himself, society, or God Almighty. Dare to face the consequences of the choice in life, develop a balance between rights and duties, develop a positive living together, dare to bear all the consequences of the deeds that has been done. Various forms of responsibility include self-responsibility, responsibility to family, responsibility to society, and responsibility for religion. According to the Directorate General of Mandikdasmen (2010: 24) responsibility is carry out the task in earnest and dare to bear the consequences of his attitude, words and behavior. In this article, the context of responsibilities is the responsibilities as students, class members and school residents. The indicators of student responsibility can be seen in the way they follow learning, they do their duties and how they obey the teachers' instruction. In addition, students should be able to adapt and comply with the rules in their school.

DISCUSSION

It cannot be denied that character education needs to be applied within educational institutions. Through character education students are expected to be able to independently improve and use their knowledge, study and personalize the values of character and noble character so that it can embodied in everyday behavior (Mulyasa, H.E, 2013: 9). We need to re-consider how educational institutions can contribute to the culture improvement. The purpose of national education according to Law Number 20 Year 2003 Chapter II Section 3 is national education has function to develop the ability and build the character and civilization of a dignified nation, it aims to the development of learners' potential so they become devoted human beings and pious to God Almighty, noble, healthy, knowledgeable, creative, independent, and become democratic citizens and responsible.

The law indicates that our education should have strong positive character, it means that the practice of education is not merely oriented to the cognitive aspect but is integrated in the three dimensions of the taxonomy of education; cognitive (intellectual aspect: knowledge, understanding, thinking skills) , affective (aspects of feelings and emotions: interests, attitudes, appreciations, modes of adjustment), and psychomotor (aspects of motor skills), and based on positive characters with various indicators.

The goals of character education in schools according to Kusuma, et al., (2011: 9) are as follows:

1. Strengthen and develop the values of life that are considered as important and necessary so that the personality of the students unique as the values developed.
2. Correcting students' behavior which inconsistent with the values developed in the school.
3. Establish harmonious connections with family and society in playing the role of character education responsibly

From the understanding mentioned above, the character education in schools have the main purpose which is to develop and strengthen the values of life, as well as correct and assess the attitudes and behaviors of students who become the responsibility among the teachers, society and parents. They should synergize to develop the character of students so they will have good dignity. It can be built through the traditional game in physical education. With the game, children are expected to be more motivated so that the learning objectives can be achieved.

Games and children are two different things but it cannot be separated one another. It can be said that almost all the time children cannot be separated from the game. For children, playing is a fun activities, it is just for fun not because they will gain a reward or praise from playing a game. It is possible that the child will think more creatively, can connect one event with another event that he has experienced and make him more able to express his thoughts and feelings through the games (Sujarno., Galba, S., Larasati, AT, et al, 2013: 1). The example of the games that can be selected by the children is the traditional game.

Traditional games which are also the culture of the Indonesian nation to be one that can foster positive character in children. The following will be described about the benefits of traditional games in children as a comparison with digital games. Cahyono (Haerani, 2013: 91-92) presents a number of characters possessed by traditional games that can form a positive character in children as follows:

1. Traditional games tend to use provided tools or facilities in our environment without having to buy it, so the need for imagination and creativity is high. Many game tools are made from plants, soil, tiles, stones, or sands. In example a toy car made from *Bali* orange peel, stilts made from bamboo, *ecrak* game using stone, phone-use using tin can and nylon thread and so forth.
2. Traditional children's games involve many players. It is not surprisingly if we see almost in every game there will be so many members. This game prioritizing the factors of shared pleasure. Additionally it is also has more intent on deepening interaction skills between players (interpersonal potential). Like hide and seek, *congklak, and gobag sodor*.
3. Traditional games has noble values and certain moral messages such as sharing values, honesty, responsibility, sincere attitude (if the player is defeated in a game), encouragement to get achievement, and obedience to the rules. All of these values will be obtained if the player really enjoy and understand the essence of the game. Misbach (Haerani (2013: 92) shows that traditional games can stimulate various aspects of child development that may include the following aspects:

1. Motor aspect by training durability, flexibility, motor sensory, rough motor, and soft motor.
2. Cognitive aspects by developing imagination, creativity, problem solving, strategy, anticipatory ability, and contextual understanding.
3. Emotion aspect by being an emotional cathartic media can sharpen empathy and self-control.
4. Aspects of language in the form of understanding the value concepts.
5. The social aspect by conditioning the children in order to establish relationships, build cooperation, train social maturity with their peers and lay the foundation for training socialization skills by practicing the role with mature and society in general.
6. The spiritual aspect, traditional game can bring children to realize connectedness with something great (transcendental).

7. Ecological aspect by facilitating children to be able to understand the utilization of natural elements around wisely.
8. Values/ morals aspect by facilitating children to be able to comprehend the moral values passed down from previous generations to the next generation.

The subject of physical education in elementary school is a lesson through physical activity which is generally applied in the form of game, with the aim of attracting the students so that motivated to learn. Sujarno., Galba, S., Larasati, AT, et al (2013: 163) . Playing is a very important activity for children, as well as the need for nutritious food and health for their body growth. Through games, it is possible that the children will think more, connect one event with another event that he has experienced and make him more able to express thoughts and feelings. The teacher's challenge in such a condition is how a teacher should have creativity in the learning process, by choosing suitable methods and learning models based on the student's need. The method that teachers can use is through traditional games. In addition to introducing culture in the form of traditional games, this game can also form a character such as the value of cooperation and responsibility.

The age of elementary school students is a concrete operational stage. Piaget (Desmita, 2013: 47) argues that at this stage the children are able to think logically about concrete events and classify objects into different forms. Brek, E.L (2007: 325) states "children in the concrete operational stage can reason logically about concrete, tangible information". This statement implies that elementary school students are at a concrete operational stage, where the main characteristic is that students have been able to provide logical reasons for concrete and tangible information. Saifullah (Suharjo, 2006: 36) states that, elementary school students as "social beings who have a cooperative nature and they can work together". Elementary school students have the characteristics of psychological growth (Suharjo, 2006: 37-38) as follows:

a. Physical and motor growth is growing rapidly.
b. Social life is enriched in addition to the ability of cooperation as well in terms of competing and peer group life
c. Not only having a desire but they also being more aware of themselves, certain feelings, and also growing a certain interest.
d. The level of thinking ability is still at a perceptive level.
e. In association, collaboration and joint activities do not distinguish the type, it based on the same attention and experience.
f. Have the ability to understand causality.
g. The dependency towards adults and the need of adult protection is getting less.

CONCLUSION

Learning physical education can be defined as education through physical activity, one of them to improve student cooperation and responsibility. Character education in schools have the main goal is to develop and strengthen the values of life, as well as correcting and assessing attitudes and behaviors of students. One of the ways to achieve this goal can be done through the traditional game in physical education. Through the game, children are expected to be more motivated so that learning objectives can be achieved. The use of traditional games in elementary schools is necessary to introduce cultural heritage in the form of traditional games. Traditional games also have advantages in building the character such as the value of cooperation and responsibility of students.

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MODEL DEVELOPMENT BASIC DRIBLING FOOTBALL-BASED TRAINING TECHNIQUES FOR BEGINNING ATHLETES AGED 8-12 YEARS

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Abstract

Objective: Football is an honorable sport that can bring togetherness through cooperation and cohesiveness in playing and delivering great and good values as well as influential to achieve a noble Buddhist victory to be a good man, empathetic and responsible to anyone. football is growing rapidly from sabang to meraoke which boils down to small clubs in the form of soccer school in the process of training program of basic soccer technique become important role to become an important part which is played football one of the basic dribbling technique which aim to develop product in the form of basic technique training model football.

Methods: this sample research is tested by the Semarang undip football school as a small group test, and the holy Djarum football school as a large group test as well as the effectiveness test with which it has been done in January to March 2017. modified ball dribbling instruments for beginners athletes and validated by experts or soccer experts with the result that after conducting penenlitian preliminary then validated by experts who started from 36 variations dribling exercise model fall 11 into 25 variations dribbling exercise model for athletes beginners aged 8-12 years, and done Based on the table at as that the average value of dribbling test results for athletes aged 8-12 years old before being given dribbling exercise is 14,8470 and after being given treatment is 14,6210.

Results: The test results show an increase in dribbling results so that the basic dribbling technique of athletes increases.

Conclusion: the development of the basic dribbling-based modeling techniques of playing football for novice athletes can be accepted according to the character of players aged 8-12.

Keywords: Model development, Basic Dribbling, Football, Training technique, Beginner athlete

INTRODUCTION

Football is a means of communication to get to know each other well it's beginner age, early age, teen age, junior age and senior age that directly confronted consisting of players positioned goalkeeper, back, center and front accompanied by coach outside the field and led directly by the referee when the game begins, football is equally important as a sport that can bring together religious, intercultural, inter-tribal and intergovernmental diversity as football itself is born and developed through semi-competitive matches and competitions held by fifa, and the football federation at each country each, football always bring a happy atmosphere, cheerful and make a beautiful story in every journey either for any age until now the football never tired and gave birth to a player's ability to be able to progress and develop, in football played players require ability which is underlined by basic techniques, physical, mental and tactics, but that needs to be underlined, especially the basic soccer techniques where the overall technique is very influential to achieve a victory, the ability of this technique one of which is the dribbling of the ball that must be done by every player during training and match , dribling is actually a technical movement that is very easy to be done by players or or athletes in general, but that happens a saddle because players or athletes dare not dribling the ball when the opponent is still far, players do dribling when always dealing with

the opponent so that the ball in looted by the opponent , dribling can also be said that is difficult because at the time of dribling do not see the condition between the bottom and fore and the ball he mastered can be separated independently, with conditions like this then the basic soccer techniques, especially dribling needs to be reproduced and given by the trainer every train n gradually, and programmed, good football players are at any age still run dribling training soccer dribling field but in fact rarely delivered by the coaches on the grounds of the lack of ability of trainers in developing dribling ball, here for beginner children who are newly aged 8-12 years actually his world is playing then it is suitable to be administered and trained by coach directly with the material of the basic technique of football dribling which suits the characteristics of athletes beginners who are in growing and developing, play is a form of direct that the child can accept and perform so that the experience respect directly to be happy, joyful and psychologically patterned.

Exercise is an exercise technique to improve proficiency movement techniques needed to be able to do that in doing sports athletes. In doing exercise bompa technique advised not to use models of elite athletes techniques, because they may be physiological techniques do not qualify beomekanik, then here it is advisable to use a model that can be received by an athlete that is the appropriate model and physiological biomecanic athletes. while Tangkudung describes the identification of the type of skills needed in training techniques.

Some of the above opinion drawn a to the conclusion that in a sport a player or athlete should be able to master the technique is good and right in order to change the position in accordance with condition of truth, to be in charge of terknik good and right then the athlete should practice techniques in such a way with adjust their potential both physiologically and biomechanically.

Technical training has a different classification of basic techniques, intermediate and high technique techniques, here is the explanation:

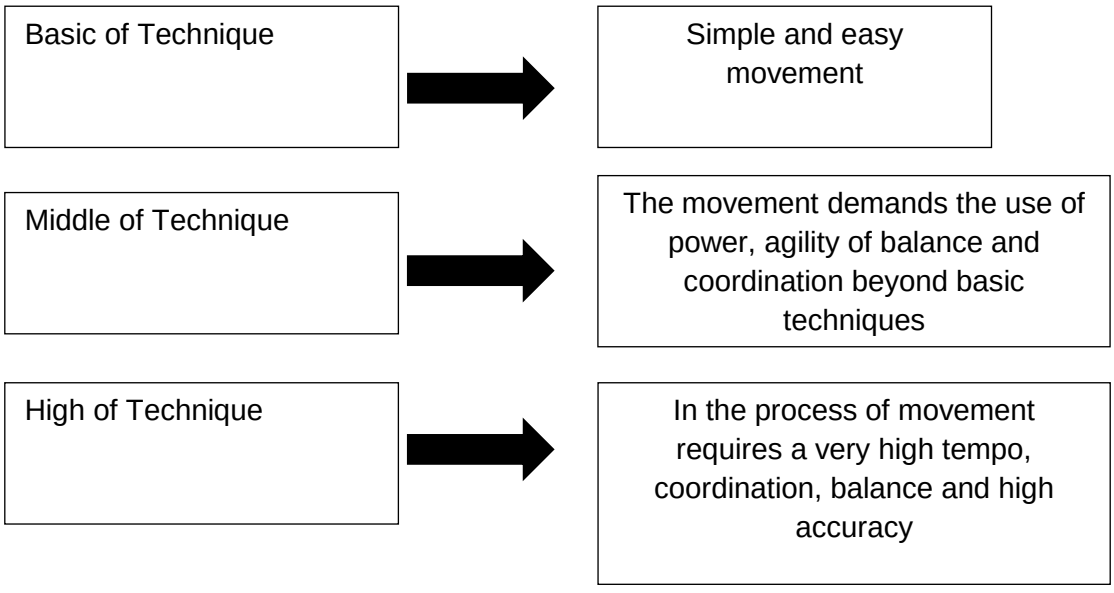

Fig. 1. Kinds of classification in technique

Based on the classification of the above technical exercises, it is understood that in doing every technical exercise must go through several stages from the easy to the high level, referring from the theory then in this research will be done in such a way that in the basic training of tennis field will use stages as above.

Technique Exercise Process While technical training can be sure the ultimate goal lies in the results of the motion of automation, in the exercise for the movement of automation, the need for some processes that must be passed, according to Rusdianti & SetyoBudiwanto technical training must go through several processes that can be seen on the chart on the next sheet :

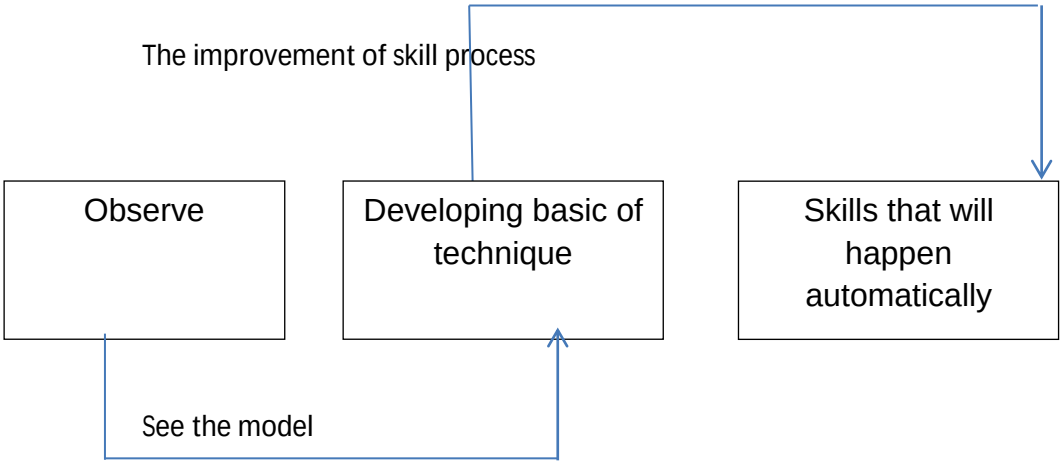

Fig. 2. Stage of technical exercise

Some basic techniques that need to be owned soccer player is feeding, kicking, stop or control *(stoping),* a long pass, movement and space, protecting the ball, turned, *volley,* lead *(dribbling),* heading, rob *(tacling),* throws into *(throw in), tackling, shooting* and keep the goal *(goal keeping).* In Below are described some kicking techniques, stop, meng g procession, heading and *shooting* to play football.

According to Indonesian dictionary, dribbling means to bring run the ball with the feet. At the time of dribbling, Use the foot inside or outside to push the ball to scrolling continuously on over the ground. Dribble is only done at the right time and is advantageous only, that is free from the opponent.

Stand facing the direction of movement of the ball with foresight. Both arms relaxed somewhat stretched. Leaping time is done with open the ankle out, so the ball is touched with the foot of the passage in. Push the ball to the front, body weight on the legs are not herds.

Fig. 3. *Dribble Ball*
Source: Danny Mielke (2007: 5)

Play is an activity that is favored by all circles of children, adults, young people, men and women all love to play. Playing means learning to adapt to the environment, using the surrounding things and doing with the people around them. Playing at the core is an activity that is used as entertainment Entertainment is needed by people to eliminate the feeling of fatigue, fatigue, anger or bored due to activities conducted daily. James Sully in his Essy on Laugher (in Tedjasaputra) book laughs is a sign of play and laughter activities in social activities conducted with a group of friends

In the opinion of the Danziger Buhler and Roger and Sawyers, found that present any play is activity - initiate a pleasure ; while Freud believes that although playing is not the same as working but the child considers playing as something serious.

While Docket and Fleer found a need for children to play, because it is through playing the child will acquire the knowledge to develop her abilities. Playing is an activity unique and very different toother activities such as study and work is always done in order to achieve a final result.

METHOD

A description of the procedures and research development steps has been widely developed. The development research procedure basically consists of two main objectives, namely developing a product, and manguji product effectiveness in achieving goals. The first objective is called the developer function while the second goal is called as validity. Thus, the concept of more development research can be interpreted as a development effort as well as accompanied by efforts of validity.

Conceptually, the research and development approach includes 10 general steps, as described by Borg & Gall as follows:

Conceptually, the approach to research and development includes 10 general steps, as outlined Borg & Gall as follows: 1)Research and information collecting, 2) Planning, 3) Develop preminary from of product, 4) Preliminary field testing, 5) Main product revision, 6) Main field testing, 7). Operational product revision, 8) Operational field testing, 9) Final product revision, and 10) Dissemination and Implementation

Or it can be described in terms of stages of development schemes as shown below:

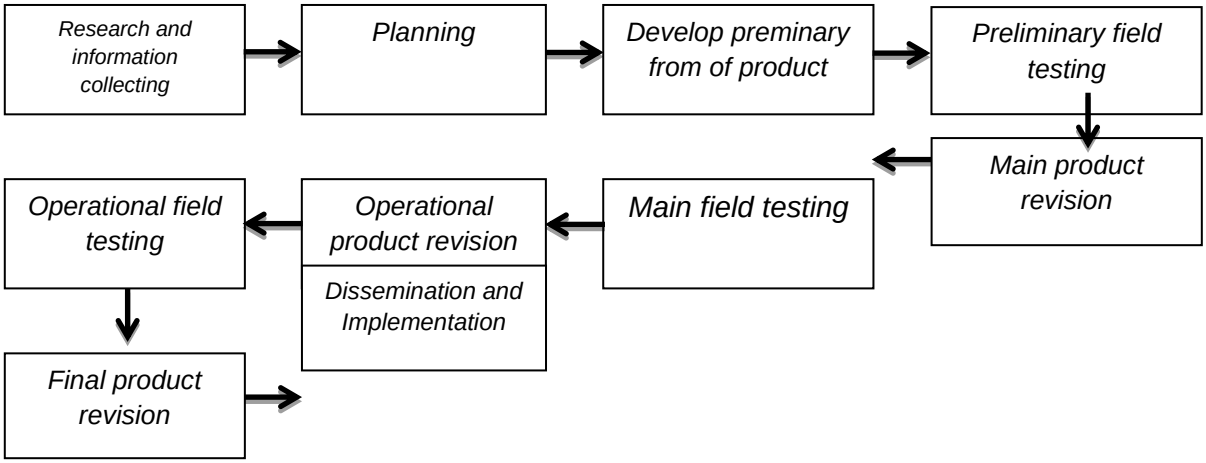

Fig.4. Instructional Design R and D
Source: Walter R. Borg and Meredith D. Gall (1983)

The population in this study is the semarang football school semarang as a small group test and the soccer school of Djarum kudus as the big group test and also the effectiveness test.

The sample of this study amounted to 20 athlete athletes who are between 8-12 years old at undip football school as a small group test and 51 athlete athletes whose age is between 8-12 years old at the holy Djarum football school as a large group test as well as the effectiveness test amounted to 20 athletes.

The time of the research was conducted in January until March 2017 in the field of semarangundip football and soccer field Djarum kudus.

RESULTS AND DISCUSSION

The results of this study is the result of the stages that have been done by the researchers follow the stages in accordance with the desired procedure in which the researchers conducted preliminary results by spreading the questionnaire by the coaches who served in football schools such as the following:

1. Results of Needs Analysis Importance of Exercise Model For Beginning Athletes

In table 4.1 will be presented data analysis needs analysis of basic soccer training model for athletes at the age of 8-12 years old in the football school in the form of questionnaires containing 51 questions to 20 football coaches in 3 districts and 1 city in Central Java during the football school coach. As Table 4.1 below:

Table 1. Preliminary research outcomes to trainers

No	SSB Name	Age	Score Value	Classification
1.	SSB KELET	12	84	Enough
2.	LPSB BINA INTI BANDUNG RESO	12	96	Enough
3.	SSB PUTRA HAIR	12	92	Enough
4.	LPSB PUTRA KURYA	12	94	Enough
5.	SSB PERSEKAR	12	92	Enough
6.	SSB PUTRA LAKSANA	12	94	Enough
7.	SSB BINA PUTRA	12	100	Enough
8.	SSB BINA PUTRA WSB	12	95	Enough
9.	SSB GARUDA GREEN	12	100	Enough
10.	SSB BINA PUTRA WONOSOBO	12	82	Less
11.	SSB BINA PUTRA	12	99	Enough
12.	SSB PERSIGALA GOLD SAFE	12	93	Enough
13.	LSSB DJARUM	12	95	Enough
14.	SSB PARKID PUTRA	12	99	Enough
15.	SSB PESIANGGA GAULON	12	102	Enough
16	SSB UNDIP SEMARANG	12	88	Enough
17.	SSB TUGU MUDA SEMARANG	12	55	Less than once
18.	SSB LIGHT NATIONS SEMARANG	12	91	Enough
19.	SSB PERSADA SEMARANG	12	105	Enough
20.	SSB PANGUDHI LUHUR SEMARANG	12	91	Enough

From the results of the analysis as a preliminary study conducted by researchers on 20 to 24 July 2016 in 3 districts of Kudus, Jepara, Wonosobo and 1 Semarang City located in Central Java that of 20 football school coaches show the following results:

a. Criteria 18 trainers who train in soccer schools fall into enough categories
b. Criterion 1 coach who trains in a soccer school into the category less
c. Criterion 1 coach who trains at a soccer school is categorized less once

This means that from 20 coaches who train in some football schools in 3 districts and 1 city in Central Java is in need of a new innovation and product, which is desirable as material to be delivered to train athletes who practice that is the development of the basic technique of football based play for the novice athlete.

stage model planning

Planning models phase by researchers before the small-scale test researchers conducted several stages in setting up a model in which there is material - material to play to be presented to atlet beginners aged 8- 12 years who trained at a football school in the process of setting it up 1) investigator background of a need that has been done through the research needs, 2) the results of the analysis of the developed play has stages for the perfect stage, 3) researchers think and take a decision forms of exercise that leads to the principle of play:

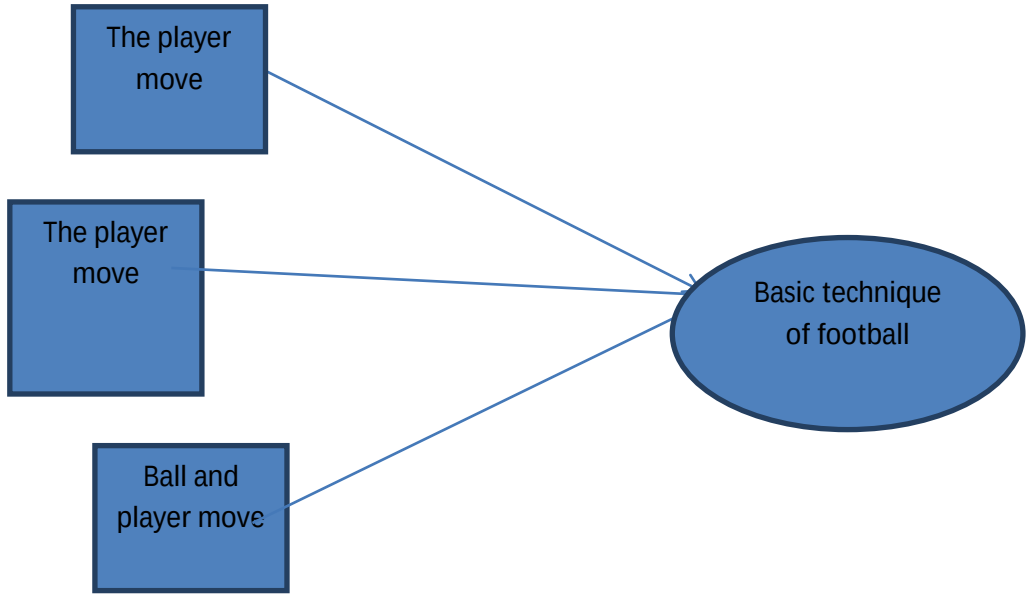

Fig. 5. Design of model development

From expert validation test which started from 36 variation of dribbling basic technique model mostly decidated and not in accordance with the characteristics of the beginner athlete who tried 8-12 year that is living 25 variations of the basic dribbling football technique model, with the reason that the variation of many developed model similarity is almost similar when variations are done, the variations that are used are still quite difficult, and the need for technical maturity.

test effectiveness

Descriptive Statistics Test *Dribbling*

Tabel 2. Results Paired Samples Statistics Pre Test and Post Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE_TEST	14,8470	20	1,41619	,31667
	POST_TEST	14,6210	20	,95307	,21311

Based on the above table that the average value of the test results *dribbling* for novice athletes aged 8-12 years were given exercises before *dribbling* is 14.8470 and after given treatment is 14,6210. The test results showed improved results *dribbling* so the basic techniques *of athletes* increases.

Table 3. Results Paired Samples Correlation Pre Test and Post Test

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PRE_TEST & POST_TEST	20	,921	,000

Based on the results *ouput* table above that the correlation coefficient manipulative movement before and after practice models *dribbling* with 0:00 p-value of <0.05 so the conclusion is no significant relationship.

Tabel 4. Results Paired Samples Correlation Pre Test and Post Test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PRE_TEST - POST_TEST	,22600	,65473	,14640	-,08043	,53243	1,544	19	,139

In the significance test of difference using SPSS obtained Mean = 0.22600 shows the difference of pre test and post test, t-hit = 1.544 df = 19 and p-value = 0.00 <0.05 which means there is a significant difference between before and after existence treatment models *dribbling* drills.

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THE MODEL OF GAMES TO DEVELOP FUNDAMENTAL MOVEMENT OF KINDERGARTEN STUDENTS

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Abstract

Objectives: The study aimed for developing a game model to optimize the achievement of the fundamental movement of kindergarten students. The results of the research were expected to be a credible and standardized reference for teachers in teaching.
Methods: The research was conducted using research and development method which was divided into two stages, namely pre-development stage and development stage. The pre-development stage consisted of literature review, relevant research and preliminary studies. The development stage consisted of drafting, expert validation, limited-scale trials, large-scale trials, and operational trials. Expert validation involved two experts using focus group discussion (FGD) techniques.The limited scale and extensive test were conducted to see the aspects of substantive content, and the implementation of the model has been qualitatively suitable for the use in the kindergarten. There were 10 children as research subjects were tested on a limited-scale test and there were 24 children on a large-scale test. In operational test using experimental method, there were 47 childrens. The Instruments used in data collection process at the pre-development stage were interview guides and field notes while in the development stage the researcher used questionnaires and Fundamental Motor Pattern Assessment Instrument to measure the level of motion skills of the children. The data analysis techniques used were qualitative and quantitative analysis (statistics).
Results: Result studied of the development of the game model consisted of ten game models, namely: (1) the flying bird game, (2) the ball estafet game, (3) The ball kicking game, (4) the balloon tapping game, (5) the seeking and jumping game, (6) the arranging letter game, (7) the sticking picture game, (8) the composing names game, (9) the frog counting game, and (10) the numbers adventure games. Based on the content validator's assessment, the content of materials was 86 points (82%) which was in very good category, the language structure was 49 points (81%) which was in very good category, and the writing format was 34 points (75%) which was in good category. Overall assessment of the experts obtained a value of 169 points (80%) included in the category of "very well". The results of a trials showed the substantive aspects were classified as good in 14.6 points, aspect of implementation was quite good in 49.9 points whereas the seceond trials showed the substantive aspect was quite good in 14.6 points and the implementation aspect was good in 49.3 points. Based on the results first and second trials, it stated that the game model in developing the fundamental movement skills of kindergarten students were declared eligible for the use. Final expreriment results showed that the developed game model could improve the children's fundamental motion skills which were shown by the differences between the mean value of pre-test which was scored as 65 and post-test which was scored as 76.
Conlusions: Based on the research results, it can be concluded that game model was developed can be implemented and can be developing fundamental motion skills of kindergarten students.

Keywords: Game model, fundamental movement, kindergarten students

INTRODUCTION

Education for children is a very basic thing because children experienced the formation of the overall development or known as the golden age. This is because the child has a rapid development both in the growth of limbs and maturity of the central nerves (Santrock, 2011). The development that occurs in children will certainly affect the improvement of intelligence, motoric skills, language development, and social-emotional aspect in the future.

The children have very high learning ability that is seen from the high level of curiosity of the children. The children will try to find out something interesting according to their perception. The children are also more creative in expressing themselves as seen from the ability to describe

something around, telling more about something that is experienced, and starting doing challenging activities.

The components of the children's development in concern is the development of motion because in childhood times, there is an increase in the development of motion activity in total (Jackson, DM et.al., 2003) and the activity of motion is generally formed in childhood aged 2-5 years (Taylor, et.al., 2013). The development of motion that occurs in children is a form of improvement in the ability to move, to coordinate the eyes and hands, to construct language and emotional social that makes children more active, have a broad curiosity and are more emotional. Through motion activity, children learn to interact with playmates, parents, and other adults. The children also have an egocentric nature, but the presence of motion activity allows the child to learn to work cooperatively and responsibly, to compete in a healthy manner, and to develop leadership skills. The increased social interaction extends the children's ability to be sensitive to the needs and feelings of others so as to reduce the self-centered nature of the children.

The development of motion that occurs in children is a fundamental development phase of motions (Gallahue & Ozmun, 2006). The ability of fundamental motion develops due to maturity, demands, and the environment (Gallahue & Ozmun, 2006). Kindergarten students experience rapid motor development. This is due to an increase in the ability to coordinate the eyes and hands. Kindergarten students move more actively, causing bones and muscles to become stronger, and the ability of the lungs to become larger. The result is that the children can respond to the stimulus in the form of motion controls that vary to improve the ability to move.

Maturity in the fundamental phase of motion is characterized by the efficiency in motion mechanics, better coordination and the ability to control the motion. Kindergarten students have already the ability to perform simple and challenging activities. Fundamental components of motion include (1) the movement of stabilization is any movement that requires balance of the body such as standing on one leg, pushing and swinging, (2) locomotoric motion is a movement that involves changes of body position such as running, walking, crawling, and jumping, and (3) Manipulative motion is a movement that is used to control objects such as throwing, hitting, and catching.

The fundamental development of motion in children will mature at the age of 5 to 6 (Williams, 2004) so that the development of fundamental motion skills must be developed early on or the child is in the kindergarten. The failure and delay in achieving fundamental movement skills can have long-term negative effects on children because it can limit children from joining in activities, group games, and sports during school and until the child becomes an adult. It also affects cognitive, mental, and social development (Goodway, Robinson, & Crowe, 2010).

The importance of the development of fundamental movement towards the development of children as a whole should have received full attention from all parties, especially stakeholders from government and private offer education programs for early childhood. The existence of a motion game program helps the child to develop the development of fundamental motion, active lifestyle, cognitive development, and social emotional. However, the problems that occur about the program motion is; (a) no planning (b) no clear goals and objectives (c) insufficient time for motion skills training, (d) limitations of model and example and (e) unsuitable equipments (Robinson & Goodway, 2009).

Based on the description, the researcher intends to create a series of activities that can stimulate the children to be more active in motion activities that can help optimize the development of fundamental motion. In developing a game model for kindergarten students, the attention should be paid to several principles, namely (1) all games that are made must be arranged in a simple way so as to facilitate the kindergarten students to perform and learn the game; (2) all games that are arranged must be able to improve and (3) in directing the understanding of the game and making decisions during the game between the students and the teacher must achieve and develop the aims of the game; (4) If the teacher teaches games for all children, the teacher must relate to the principle of learning (Buttler & Griffin, 2010).

The forms of game activity to be performed are based on locomotoric motion such as running and jumping, manipulative motions such as throwing and capturing, and stabilization

movements such as standing on one foot performed individually and in groups. This activity is packaged in the form of a game in which the learning style of children is learning while playing and playing while learning. The goal of this study is early childhood aged 4-6 years focused on kindergarten students. This activity is conducted in stages to get significant results. The series of studies is also equipped with some supporting tools that are interesting for children.

The study aims at develop a game model to optimize the achievement of fundamental childhood movement of kindergarten students that is documented in the form of textbooks. The textbook contains the processes and procedures for the implementation of models and methods of organizing the game. This research is expected to provide benefits on the development of early childhood education especially in children's movement skills. The results of the study can be a reliable reference materials for further researchers, even referrals for teachers, and parents to choose the appropriate pattern of motion and appropriate activities to develop children's basic motion skills.

METHOD

Development style

The research is an activity of developing the game model, this type of research includes in research and development (research and development) or abbreviated as R & D. In the selected R & D research model, it is the research and development model developed by Borg & Gall (2007). In the research and development of products produced or validated in the form of text books and video learning about the process and procedures of implementation of learning models or methods of organizing learning. In this study, the product was produced in the form of a teaching model for kindergarten students by performing physical activities contained in textbooks.

Development procedures

The stages in R & D research are modified (simplified) according to the research objectives. Stages of research and development used were 1) pre-development stage, 2) development stage, and 3) stages of dissemination. In the pre-development phase, stages from identifying issues were related to the motion learning program for children, conducting literature reviews, searching relevant research studies and field studies. The results of the pre-development analysis was used as the basis for development.

In the development stage, drafting of the model was made of game model design and implementation of game model consisting of concept, game, and form of game activity, game play-step, and assessment. The draft of game model was a book. After the draft has been prepared, expert validation and model testing was limited, broad, and operational.

Expert validation involved two physical education experts using the technique of FGD. The FGD techniques are conducted by conducting discussions with experts to assess and to be input. Through FGD technique, it was sought the point of commonality and was summarized in determining the right model.

The trials were conducted in three stages: limited trials, extensive trials, and operational field testing. The purpose of the trial was limited and broad to know the level of implementation of the developed model. The limited and extensive trials emphasized the content aspect (content and implementation substance) not outcomes in order to obtain information about the tools that have been compiled qualitatively which has been good, applicable, and in accordance with the curriculum for kindergarten. The limited trial involved 10 children while the extensive trial involved 24 children and was performed as many as one trial at each stage of the trial for each test phase.

The operational trials are carried out by implementing the model developed in the real game. Teachers were given guidebooks and given an explanation of the game model developed to be implemented in the real game. The model implementation process was observed to determine the level of usefulness and suitability of models that include aspects of activities and assessment. The operational trials involve 47 children of kindergarten. The method used in the operational test was an experimental method by doing multiple experiments until the children can play the game well.

The indicator of success of the developed model was measured from the increase of the pre-test value to the post-test value.

Data collection instrument

Pre-development instruments

Instruments at the pre-emplacement stage were field notes and interview guidelines. Field notes were used to find out the implementation and obstacles of children's learning activities of kindergarten and the level of activity of children in learning. The interview guide was a list of questions in which the questions were evolved according to the needs at the time of the interview.

Instrument Development Phase

The instruments used were questionnaires and observation sheets. Questionnaire instrument was intended for experts to obtain assessment/validation from experts related to the preparation of the draft model developed by the content of the materials, language and format of writing. Questionnaires for participant teachers were aimed at obtaining data on the feasibility level of the draft model developed under actual conditions. The scale used in the questionnaire assessment was the Likerts scale. Instrument observation sheet was used to measure the level of motion skills of children using Fundamental Motor Pattern Assessment Instrument.

Data analysis technique

Data analysis techniques included data analysis from pre-development stage and model development stage. The data obtained on pre-development was analysed using qualitative descriptive analysis techniques. Qualitative descriptive analysis was used on field notes and interviews. Descriptive analysis technique aimed to explain the characteristics of each variable and to present objectively to the data obtained. At the development stage of the data obtained was analysed using several approaches that were (1) In the validation phase of the draft model, the data obtained was described in the form of data presentation and analysed qualitatively, (2) In the limited trials, the test results was analysed using Qualitative approaches, (3) In the large trial, experimental results were analysed using descriptive analysis approach and quantitative analysis (statistics).

RESULTS AND DISCUSSION

Based on research and development steps, the findings which were found in the pre-development stage and development stage are as follows:

Pre-development stage

In the pre-development stage, it was done by identifying problems related to learning process in kindergarten by conducting literature review, conducting study on relevant research and field study.

The results of the literature review relating to the characteristics of the kindergarten students were the children who are at the early childhood stage of development. At this time, the children always moves more active, have big curiosity and are more emotional. Children in kindergarten also have a very high learning ability. Learning ability was seen from the high level of curiosity of the children that will try to find out something interesting according to the students' perceptions.

The results of literature studies related to kindergarten students' development included behavioural development and basic capability development. In the development of children's behaviour, it was given habituation in applying good behaviour in everyday life. Behavioural development includes the development of religious and moral values, emotional social development, and independence. The development of basic skills is a learning activity that is prepared to improve the ability and creativity of children that includes physical and motoric development, cognitive abilities, language and emotional social ability. The existence of kindergarten is expected to help develop various potentials such as the development of religious values, moral, cognitive, social emotional, physical and motor in children.

Studies of literature was relating to physical activity for children of kindergartens. Kindergarten children experience rapid motoric development. This is due to an increase in the ability to coordinate the eyes and hands. Kid's kindergarten moves more actively, causing bones and muscles to become stronger, the ability of the lungs to become larger. The students of kindergarten already have the ability to perform simple and challenging activities.

In general, the development of children is an increase in the ability of children in thinking (cognitive ability) of the previous phase of sensorimotoric thinking skills. The children already have the ability to think preoperatively whivh is the ability to use symbolic thinking that is accompanied by the growing understanding of space, causality, identity, groupings and numbers. The children have been also able to show the ability in language development by knowing many new vocabulary. However, their thought is still egocentric and not biased logical thinking (Sigelman & Rider, 2012).

Literature studies related to the development of motion in children's kindergarten is saying that the children are experiencing rapid rough motoric development. This is due to an increase in the ability to coordinate the eyes and hands (Santrock, 2011). The more active the child moves, causing the bones and muscles to become stronger, the ability of the lungs becomes larger. Children already have the ability to perform simple and challenging activities.

Fundamental motion is the stage where the children explore and try the ability of motion that is in the body. This is as described by Gallahue & Ozmun (2006). Further models of motion activity can be given to children of kindergartens in the form of play activities, sports games, and recreation and through physical education or training (WHO, 2010).

The result of observation and interview showed that there were still some teachers who taught the competence of unmatched competence which has the diploma degree, not the undergraduate of early childhood education, the learning model that is given is still less variedlike singing, doing the tasks according to child workbook, resting, doing the activity of singing and doing the task until the class is over, and still give less attention from the teacher to the development of the fundamental movement of children.

Development stage

Based on the characteristics of the kindergarten learning generated in the literature review study, relevant research and preliminary studies carried out the development of the game model to develop fundamental children movement skills of kindergarten. The development was done by identifying the game model that would be developed that was game activity for children kindergarten aimed to develop basic motion skills/basic motion of kindergarten students that was combined between the activity of motion and playing. The fundamental motion in this case included the movement of stabilization, locomotors, and manipulative. The movement of stabilization is any movement that requires balance of the body include winding, swinging, and balance, Locomotors motion is a movement that involves changes of body position include walking, running, stepping, and jumping. Manipulative motion is a movement that uses to control objects including throwing, catching, and hitting. The game in this model is a game with a simple rule (Low Organization Game).

Next, the set up of the organization of the game and the fundamental activities of children's movement was starting from the level of easy to difficult. This aimed to avoid children to experience boredom, saturation and in this case, children indirectly were given a game that has increasing difficulty. The game design to develop the fundamental motion skills of kindergarten children produced 10 game models are: (1) flying bird game, (2) the ball estafet game, (3) the soccer game, (4) the balloon tapping game, (5) seeking and jumping game, (6) picture stitching game, (8) forming the names game, (9) the frog counting game, and (10) the number adventure game. The entire game activity was arranged in the form of textbooks.

Expert Validation

Table 1. Result of assessment of draft model

No.	Rated Aspect	Value	Percentage	Category
1	Material	86	82%	very good
2	Language	49	81%	very good
3	Writing format	34	75%	good
4	Total	169	80%	very good

Based on the assessment of the experts, it obtained the material content aspect was 86 points (82%) included in the category of very well, the language was 49 points (81%) included in the

category of very good, and the writing format was 34 points (75%) included in good category. Overall assessment of the experts obtained a value of 169 points (80%) included in the category of very well. This showed the level of validity of the game activity that was arranged in the form of learning materials belonged to a good category so that the game model to develop children's kindergarten skills was feasible to be tested.

Results of limited-scale trial

Table 2 Data on teacher assessment results on models on a limited-scale trial

Aspect of Assessment	Rated Games										Average
	1	2	3	4	5	6	7	8	9	10	
Content Substance	15	15	15	14	14	15	14	14	15	15	14.6
Implementation	49	51	51	46	51	51	51	51	49	49	49.9

Based on the assessment of the teacher on the implementation of a limited-scale trial, it showed: (1) the playing bird game obtained the value of the substantive content was 15 points (75%) which was in good category and the implementation aspect was 49 points (70%) which was good enough, (2) the estafet ball game obtained the value of content aspect as 15 points (75%) which was good and implementation aspect was 51 points (73%) which was good, (3) the ball kicking game obtained the value of content aspect as 15 points (75%) which was good and implementation aspect was 51 (73%) which was good, (4) the balloon tapping game obtained the value content as 14 points (75%) which was good and implementation aspect was 46 points (67%) which was good enough, (5) the seeking and jumping game obtained the value of content aspect as 14 points which was good (70%) and implementation aspect was 51 points (73%) which was good, (6) arranging the letters game obtained 15 points in the aspect of content which was good and the implementation aspect was 51 points (73%) which was good, (7) picture sticking game obtained the content aspect of 14 points which was good (70%) and implementation aspect was 51 (73%) which was good, (8) forming the names game obtained the value of content aspects of good category which was 14 points (70%) and the implementation aspect was 51 points (73%) which was good, (9) frog counting game obtained the value of content aspect in 15 points (75%) which was good and implementation aspect was 49 (70%) which was good enough, and (10) number adventure game obtained the value of content aspect of 15 points (75%) which was good and the implementation aspect was 49 points (70%) which was good enough. So, the overall game activity covered in the game model to develop the basic motion skills of kindergarten students was categorized substantively as good and in good practice so that it could be tested on a wider scale

Results of large-scale trial

Table 3 Data on teacher assessment results on models on large scale trials

Aspect of Assessment	Rated Games										Average
	1	2	3	4	5	6	7	8	9	10	
Content Substance	15	15	14	14	15	15	14	14	15	15	14.6
Implementation	49	51	51	46	51	51	51	51	49	49	49.9

Based on the assessment of the teacher on the implementation of a limited-scale trial showed: (1) the playing bird game obtained the value of the content as 15 points (75%) which was in good category and the implementation aspect was 49 points (70%) which was in good enough category, (2) ball estafet game obtained 15 points (75%) in the content aspect which was in good category and the implementation aspect was 51 points (73%) which was good, (3) kicking the ball game obtained the value of substantive content of 14 points (75%) which was good and the implementation aspect was 46 points (67%) which was good enough, (4) balloon tapping game obtained the value of content aspect of 14 points (75%) which was good and the implementation aspect was 46 points (67%) which was good enough, (5) seeing and jumping game obtained the value of content aspect of 14 points (70%) which was good and the implementation aspect was 51 (73%) which was good, (6) arranging the letters game obtained the value of content aspect of 15 points (75%) which was good and the

implementation aspect was 51 (73%) which was good (7) picture sticking game obtained the value of content aspect as 14 points (70%) which was good and the implementation aspect was 46 (67%) which was good enough, (8) forming the names game obtained value of content aspect as 14 points (70%) which was good and the implementation aspect was 51 points (73%) which was good, (9) frog counting game obtained value of content aspect as 15 points (75%) which was good and the implementation aspect was 51 (73%) which was good, and (10) number adventure game obtained the value of content aspect as 15 points (75%) which was good and the implementation aspect was 51 (73%) which was good. So, the overall game activity covered in the game model to develop the basic motion skills of kindergarten students was categorized substantively as good and in good implementation and operational test.

Operational Trial

Table 4. Recapitulation Of Pre Test And Posttest

	Pretest	Posttest
Number of Sample	47	47
Total Score	3076	3582
Mean	65	76

Based on the results of the recaptulation of the results of fundamental skill tests, the kindergarten students showed an increase in the average achieved by the whole children from the pretest value of 65 points to the posttest score of 76 points.

Discussion

Fundamental motion is the phase of motion experienced by the kindergarten students in which the fundamental phase of motion leads to influence movement skills, task factors, and environmental factors. Fundamental components of motion include (1) Stabilization movement is any movement that requires balance of the body, (2) Locomotoric motion is a movement that involves change of body position, and (3) Manipulative motion is a movement that uses to control objects.

The development of a game model to develop fundamental motion skills based on the fundamental development of motion in children which reach stable condition at 5 to 6 years old (Williams, 2004) so that, the development of fundamental motion skills should be developed early on or when the children is in the kindergarten. The failure and delay in achieving fundamental movement skills can have long-term negative effects on children because it can limit children from joining in activities, group games, and sports during school and until the child becomes an adult. It also affects cognitive, mental, and social development (Goodway, Robinson, & Crowe, 2010). Teachers are also less concerned about the fundamental development of children's motion.

Based on the results of the research, fundamental movement skills of kindergarten students can be improved through game activities used to stimulate the children to develop fundamental movement skills while performing the game activities. This is done because it can be seen from the learning style of children in the form of play so that the fundamental development of children's motion is carried out by using the game approach. In addition, through the activities of children's games, the children will learn to move and learn about his body (Uray Gustian, 2015).

CONCLUSION AND SUGESSTION

The development of game models to develop fundamental movement skills of kindergartens students was done by identifying the game model to be developed. The fundamental motion in this case included the movement of stabilization, locomotor, and manipulative. The movement of stabilization is any movement that requires balance of the body include winding, swinging, and balance. Locomotor motion is a movement that involves changes of body position include walking, running, stepping, and jumping. Manipulative motion is a movement that uses to control objects including throwing, capturing, and hitting. The game in question in this model was a game with a simple rule (Low organisation game).

The result of developing the game model to develop the fundamental motion skills of the kindergarten students produced 10 game models which are: (1) playing bird game, (2) the ball estafet game, (3) kicking the ball game, (4) the balloon tapping game, (5) seeking and jumping game, (6) arranging the names game, (7) picture sticking game, (8) forming the names game, (9) frog counting game, and (10) number adventuring game. The entire game activity was arranged in the form of textbooks.

Based on the assessment of the experts (validators), it was obtained the value of aspects of the material content was in the category of very good, in the category of very good in the language, and in good category in the writing format. The overall assessment of the experts included in the category was in very good category. Trial and limited results showed the game model to develop fundamental movement skills was well categorized and feasible to use. In the operational trials, it showed an increase in the average increase in the results achieved by the total of children from the pretest value of 65 points to the posttest score of 76 points.

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DEVELOPMENT OF MEDIA-BASED TRAINING 3GS (TRIPLE GAME SET); MONOPOLY, SNAKES LADDERS AND FENCING PUZZLE FOR CHARACTER EDUCATION EFFORTS IN BEGINNER ATHLETES

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Abstract

Objectives: The objective of this study is in order to introduce one media training so that athletes do not experience boredom as well as an additional reference to the activities athlete can channel his pleasure with the positive activities, which is monitored and controlled so that athletes can also hobby with positive activities, other than that the product was Checked for feasibility with stakeholders and will be revised in accordance with inputs from the stakeholders. For more spesific reason is Firstly; implementation/supply Development of Media-Based Training 3GS (Triple Game Set); monopoly, snakes and ladders and puzzle fencing, In Effort Character Education In Beginner Athletes, and the secondly; that it can be a reference for the whole community fencing in Indonesia as an alternative model of training for athletes, especially the level of cadet beginners and cadets in fencing.
Methods: In this study, The method of research is research and development when in this study as should as to produce a particular product, and Check the feasibilities of these products. The Products produced in the form of Media-Based Training 3GS (Triple Game Set); monopoly, snakes ladders and fencing puzzle In Character Education Efforts In Beginner Athletes. In this study, collecting the information and suggestion by the forum group discussion and forum group interview with the expert, stake holder, coach and fencing athlete.
Results: The results of this research is a prototype of Media-Based Training 3GS (Triple Game Set); monopoly, snakes and ladders and fencing puzzle, In Character Education Efforts In Beginner Athletes. The Feasibility of media product of leisure training during training process and as media in fencing character education through Media Training Based on 3GS (Triple Game Set); monopoly, snake ladder and fencing puzzle In Character Education Efforts In Beginner Athletes viewed from the aspect of media material, media design aspect and over all especially for media aspect got raise of average percentage on 88% and also as well as from material aspect got raise of percentage on 92%. For overall included in the category of "Very Eligible" which means that 3GS media is suitable to be used in introducing and as a training media for spare time during the training process as well as a training media in fencing for character education.
Conclusion: The product as like prototype of Media Training Based on 3GS (Triple Game Set); monopoly, snake ladder and fencing puzzle, Snake Ladder and Fencing Puzzle In Character Education Efforts In Beginner Athletes viewed in the category of "Very Eligible "which means that media is suitable to be used in introducing and as a training media for spare time during the training process as well as a media in fencing character education.

Keywords: Development, Model, Media Training, Fencing, Character education.

INTRODUCTION

Nowadays sport development is running very fast and sport is also one of the supporting tools of achievement for the progress of the nation, thus raising the good name of the nation, therefore the government takes importance to socialize the sport and to cultivate the society, so that it will develop into a national movement. All of this is clearly aimed to be able to grow a strong Indonesian human, healthy physical and spiritual. Sports is also very popular with all circles of society in Indonesia from still children, adolescents, adults to old. Sport as have to done anywhere and anytime. Children and adolescents get physical education in School, the government today expand the development of sports to the general public, as evidenced by the existence of facilities for the holding of various championships and matches within the community. This is in accordance with the law of the Republic of Indonesia No. 3 of 2005 on the national sports system in the fostering and development of sports chapter VII chapter 21

verses 1, 2, 3, and 4 which reads: (1) The Government and the regional government shall be obliged to undertake the guidance and development of the sport in accordance with their respective authorities and responsibilities, (2) Development as referred to in paragraph 1 shall include sports, manpower, organizing, methods, infrastructure and facilities, as well as sporting awards. (3) Development of sports is done through the stage of the introduction of sports, monitoring, scouting, as well as the development of talent and improvement of achievement, (4) Development of sports are conducted through family lines, educational channels, and community channels that are based on the development of sports for all life-long people. (UU RI, 2007: 13).

Based on the above quotation especially in the third paragraph, at the introduction stage of the sport the community is very familiar with popular sport. Popular sport is a sport that is always in demand by all societies, such as basketball, football, badminton, volleyball, etc., while less popular sport is very rare people who know it do not even know the sport, like fencing. Fencing is a sport of martial arts that combines the art of dexterity to play and protects itself with the sword in which strategy plays an important role in the sport that adopts this medieval battle. Fencing is not a sport for everyone but anyone can do fencing. According Faidilllah Kurniawan (2012: 1) Fencing is one of the old sports that has not been so popular among the people, how not, in addition to this sport taste from Europe and from one of the special sport of the kingdom in ancient times. Sports fencing is recognized in progress is still a little slow reality of obsevation done was not much demand proven by at least learners or athletes who follow the sports fencing, players or fencing athletes can know the usual fencing of relatives, friends who are invited to practice fencing, neighbors of homes, and schools that have extracurricular fencing but only a few just because of lack of human resources especially trainers who know about fencing sports. Less about the fencing and less interest of the child, and the boring pattern of fencing practice resulted in the lack of seriousness in the practice of fencing so that the child will stop practicing in the middle of the training level. Based on researcher observation in Purworejo district Yogyakarta province result as the fencing trainer or teacher complained how to introduce fencing sports (Bagus Herdianto and Faidillah Kurniawan: 2015).

In the other side, Perdana Tyas Astuti and Faidillah Kurniawan (2013) was found of research result shows as the athlete have not much ability of the fencing equipment and facilities for training were there equipment and facilities was the fencing organization as wel as completely. Depart from some of these problems, lack of creativity and development of the teacher or coach as needed then learners or the athlete will be bored in learning about sports fencing. In fact many different methods of introduction can be used to attract interest and motivation such as the creation of training media through the training of 3GS (Triple Game Set); monopoly, ladder snakes and fencing puzzles. Training media is media containing and carrying element or information to recipient that is child or player.

With this training media can facilitate learners or athletes in understanding a thing and create an element of attraction for learners or these athlete has knowing, understanding and playing togeteher for maintence their spirit to push the internal motivation for have a kindness and the best athlete for performance and also for the good character. Use of training media with gameGS (Triple Game Set); monopoly, snake ladder and fencing puzzle can also arouse the desire and motivation of learners and could be have the athlete in training process introduction and play. In addition, with training media can help learners or athlete to develop the understanding, facilitate interpretation, and get more complete information, especially about fencing sports. Media created by researchers is a visual-based media (image or imagery) that aims to introduce fencing sports. This can also foster the interest of students or athletes and can provide the relationship between training content with the real world. Creativity required by learners or athletes in playing 3GS (Triple Game Set) training; monopoly, ladder snakes and fencing puzzles.

In this study, researchers made training through training 3GS (Triple Game Set); monopoly, snake ladder and fencing puzzle because based on observations made by researchers which the athlete along with fencing athletes in Yogyakarta and around is still a lot of learners or athletes especially for the category of beginner athletes who do not know correctly what it is fencing sports and based on observations made by researchers on toys stores that sell 3GS training (Triple Game Set); monopoly, snake ladder and fencing puzzle not many 3GS (Triple Game Set); monopoly, snake ladder and sports fencing-themed puzzle, there is not even a theme of fencing.

Researchers would like to create a new training method to attract the athlete interests and motivations or the beginner athletes through training media through 3GS (Triple Game Set) training; monopoly, ladder snakes and fencing puzzles. So with the research development of training media through training 3GS (Triple Game Set); monopoly, ladder snakes and fencing puzzles in introducing fencing to learner or the beginner athletes are expected to attract the interest and motivation of learners or athletes in the process of getting to know and learn about fencing and it can also inspire the teacher or coach to always provide new training methods as there are still many ideas for the development of children in the process of introduction. This research can help in the process of introduction and there are examples with the pictures or figures that attract children so as to make learners or athletes more motivated to know, learn and practice about fencing.

METHODS

Research and development method is a research method used to produce a particular product, and Check the effectiveness of the product (Sugiyono, 2011: 297). The resulting products are 3GS Based Training (Triple Game Set); monopoly, ladder snakes and fencing puzzles, In Character Education Efforts for beginner athletes. The usual development research called research-based development is an ongoing study in practical problem solving in the world of research, primarily researching education and training.

RESULTS AND DISCUSSION

The products produced in the development research include the training media for teachers (extracurricular) fencing and fencing coaches, training materials for students fencing. The product model under development in this research is developing "3GS Based Training Media (Triple Game Set); monopoly, snake ladder and fencing puzzle, Snake Ladder and Fencing Puzzle In Character Education Efforts At The Beginner Athletes ".

The steps that are carried out in this phase I research are: (a) field study and introduction through observation to stake holders, (c) Focus Group Discussion (FGD) and Focus Group Interview (FGI) with the experts, (d) Analysis inputs, (e) preparation of 3GS Based Training Media (Triple Game Set); monopoly, snake ladder and fencing puzzle, In an effort to plant Character Education at Athletes Cadet Athletes and Cadets in Yogyakarta Special Region, (f) Product feasibility Checking (prototype), (g) product finalization (Prototype).

The values of character education that become the researcher's reference in this research are the cultivation of character education from Hellison in Weinberg, Roberts S; Gould, Daniel (2007) created a sports program aimed at helping children grow their sense of responsibility as follows:

1) Irresponsibility

At this level groups of unmotivated and disruptive children. The job of sports teachers in this case is to control their behavior or even eliminate it so as not to disturb the others.

2) Self control.

Students at this level are often not participating in learning activities, but they can control their behavior so that students at this level need not be punished out of the classroom. What sports teachers need to do is help them get involved in the activity or teach them to appreciate the feelings of others and tell them that their attitudes and behaviors disturb the learning process at school.

3) Involvement.

Many forms can be regarded as an engagement in sports lessons and what sports teachers have to do is encourage students to be more responsible for their own development and understanding of success.

4) Self direction.

This level groups students who can work effectively and independently within the scope of personal development with understandable needs or aspirations. The job of the sports teacher is to make it possible to have the skills needed to work in a stand-up and set realistic goals.

5) Caring (Helping).

At this level, the only concern for others is the respect for the fundamental rights of the students. At this level, students are not just focused on their own orientation and have been motivated by their prosocial orientation. The job of the sports teacher in this case is to provide sufficient opportunities for students to work together, provide assistance, show attention, and help others.

The product of model developed in the research of Media Training Based on 3GS (Triple Game Set); monopoly, snake ladder and fencing puzzle, Snake Ladder and Fencing Puzzle In Character Education Efforts for The Beginner Athletes are as follows below.

Fig. 1. Training media in the form of fencing monopoly

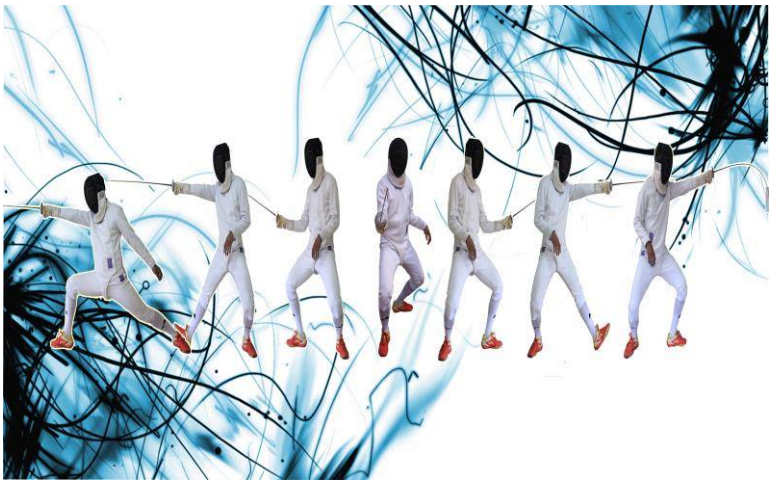

Fig. 2. Training media in the form of fencing puzzle

Fig. 3. Training media in the form of fencing snake ladder

Discussion

Theory Description

Coaching Media

According to Gerlach and Ely (1971) in Arzhar Arsyad (1997: 3) said that the media when understood in broad outline is human, material or events that create conditions that enable students to acquire knowledge, skills or attitude. According to the Association for Education and Communication Technology (AECT), 1977 in Azhar Arsyad (2002: 3) defines the word media as any form and channel used to convey messages or information. Based on the above notions it can be concluded that the media is anything that can be used to channel the message from the sender to the receiver so that the process of learning or training can run well. Training Media will not exist if there is no learning resource center, according to Oemar Hamalik (1989: 195) center of learning resources is essentially an instution with in the educational institution that serves to provide and serve various media for the learning process. According to Oemar Hamalik (1989 : 195), there are 5 main functions that are generally charged to the Center of Learning Resources, namely:

1. Development of curriculum
2. Development of educational technology
3. Educational technology services
4. Production of hard barber or educational media
5. Development of education media administration.

In making media things that must be considered is the purpose of training, media effectiveness, the ability of learners, the availability of facilities and infrastructure, media quality, cost, flexibility, and ability to use and allocation of time available. Use of Training Media will greatly assist the smoothness, achievement of training objectives. Media Training is one component that can not be ignored in developing a quality teaching system. According to Nana Sudjana and Ahmad Rifai (1992: 2) in Azhar Arsyad (1997: 24) there are several benefits of Training Media can enhance the learning process of students, among others:

a. Teaching will attract more students so that it can foster motivation to learn
b. The training materials will be more obvious to eat so that they can be better understood by the students and enable the students to master and achieve the teaching objectives
c. Teaching methods are more varied, not merely verbal communication through the words by the teacher, so that students do not get bored and the teacher does not run out of energy, if the teacher teaches for every lesson
d. Students do more training activities, because not only listen to the teacher's description, but also other activities such as observing, demonstrating, and others.

Based on the benefits of Media Training above can be concluded that interesting media learning can grow children's intelligence far above normal children. In accordance with the opinion of Sisca Rohmadona (2009: 196) which states that the correct training method and interesting for children, can increase the child's intelligence far above the intelligence of normal children. According to Arif S Sodiman (1986: 28) that the characteristics or characteristics of a media differ according to the purpose or purpose of grouping, namely:

1. Graphics Media Graphics media including visual media. Graphic media serves to deliver messages from source to message recipient. The channel used involves the sense of sight. Includes: drawings/photos, sketches, diagrams, charts/graphs, cartoons, posters, maps and globes, flannel/flannel board, and bulletin boards.
2. Audio Media Unlike the graphics media, audio media is related to the sense of hearing. Includes: radio, tape recorder, and language laboratory 3. Silent Projection Media The silent projection medium (still proyected medium) has similarities with graphic media in the sense of presenting visual stimuli. The obvious difference between them is that if the graphic media can directly interact with the corresponding media message on the projection media the message should be projected with the projector to be visible to the target; firstly. There are times when this type of media with audio recordings, but some are only visual only. Training requires a different sensory mix to absorb the material or information submitted. According to Dale (in Azhar Arsyad (2002: 9) estimates that the acquisition of learning results through the sense of view is around 75%, through the sense of hearing about 13%, and through other senses about 12% .The media to be used in this development research in the form of Media Training monopoly shaped picture.

The Nature of Fencing

Fencing is a sport that can be done by both men and women. In this case Gaugler (1999: 33) explains, "fencing is a sport in which both sexes can participate on equal footing because success depends on skill rather than physical strength". The success in fencing does not lie in physical strength alone, but the skill level of the culprit who is supported by adequate physical ability. According Sucipto and Ramlan (1997: 1-2), in the fencing sports there are 3 types of weapons namely; 1) floret/foil, 2) Degen/epee, 3) sable/saber, each of which has different game and regulatory characteristics between one and the other.

The Nature of Monopoly

Monopoly is one of the most famous board games in the world. The objective of this game is to master all the plots on the board through purchasing, leasing and exchange of property in a simplified economic system. Every player throws dice in turns to move the bottom, and if one players landed in a plot that is not owned by another player, the player can buy the plot according to the price stated. If the plot has been purchased by another player, the player must pay the player the amount of rent already set.

The Concept of Practice while Playing

The element of interest and excitement is very important to be raised in the process of introduction of fencing exercise, especially for elementary school students, the introduction of fencing sports with 3GPS game method to make learners or athlete in following the training process more encouraged. Disclosed by Sukintaka (1992: 1) that the pleasure of the learners is the main capital to create a conducive situation to carry out education or movement learning process. Concept Practice while playing with Media Training is time to do in the training and training process for all sports, especially fencing. Besides being able to spur children more enthusiasm in learning can also facilitate the teacher or trainer in the training process. The purpose of the concept Practice while playing is to spur the motivation of learners to be more active in the introduction process of sports fencing.

The Nature of Character Education and its Achievements through the Training Process

Character is defined as an action that occurs without any more thought because it is embedded in the mind, and can be called by habit. The most important ingredient in character building is the mind, because it contains all the programs that are formed from the experience of his life and is the pioneer of everything. This program then establishes a belief system that can ultimately shape its thinking patterns that can influence its behavior. The embedded program is in accordance with the principles of universal truth, so its behavior goes along with the laws of nature and the result of that behavior brings peace and happiness (Agus Sarengat: 2010). Exercise activity is as a small picture of a person faced with a replica of real life, therefore exercise activity is very potential to carry out moral education, if managed and implemented as well as possible. In support of the pattern of exercise should pay attention to several things related to physical orientation that has a very wide coverage. These include the role of sports teacher and trainer in moral development and make moral development a mindset rather than a finite activity, but must also take into account the role of the victories and the ways in which to learn and teach moral behaviors understood more than just playing in the field and recognizing imperfect traits in character development.

Hellison in Weinberg, Roberts S; Gould, Daniel (2007) created a sports program aimed at helping children cultivate their sense of responsibility as follows:

1) Level 0- Irresponsibility. At this level groups of unmotivated and disruptive children. The job of sports teachers in this case is to control their behavior or even eliminate it so as not to disturb the others
2) Level 1 - Self control. Students at this level are often not participating in learning activities, but they can control their behavior so that students at this level need not be punished out of the classroom. What sports teachers need to do is help them to engage in activities or teach them to appreciate the feelings of others and tell them that their attitudes and behaviors disturb the learning process in school.
3) Level 2 - Involvement. Many forms can be regarded as an engagement in sports lessons and what sports teachers should do is encourage students to be more responsible for their own development and understanding of success.
4) Level 3 - Self direction. This level groups students who can work effectively and independently within the scope of personal development with understandable needs or aspirations. The job of the sports teacher is to make it possible to have the skills needed to work in a stand-up and set realistic goals.
5) Level 4 - Caring (Helping). At this level, the only concern for others is the respect for the fundamental rights of the students. At this level, students are not just focused on their own orientation and have been motivated by their prosocial orientation. The job of a sports teacher in this case is to provide sufficient opportunities for students to work together, provide assistance, show attention, and help others.

Data Analysis

Instrument (questionnaire) used in this study is a questionnaire assessment or response with the form answer "VERY NOT WORTHY", "NOT WORTHY", "WORTHY" and "VERY WORTH". Based on the number of opinions or answers, then researchers menyentasekan each answer using the formula:

$$P = \frac{\text{Jumlah skor yang diperoleh}}{\text{Jumlah skor maksimal}} \text{ X } 100\%$$

Information:

P = Percentage

Having obtained a percentage with the formula, then the feasibility of learning media through the game of fencing monopoly in research development is classified into four categories of feasibility as follows:

Table 1. Percentage category of eligibility

No	Score in percentage (%)	Feasibility category
1	0% - 25%	Very Not worth it
2	26% - 50%	Not feasible
3	51% - 75%	Feasible
4	76% - 100%	Very Decent

Feasibility Check from Media Expert

The data shows from the feasibility of the monopoly game design aspect gets 88% percentage, the design aspect of the game raise 88% percentage, the design aspect of the game box raise 88% percentage, so that the average percentage obtained from the assessment by the media expert is 88%. Based on table 1 on the category of eligibility categories with four categories, the assessment of media experts received the category "Very Eligible".

Feasibility Check from the Material Expert

The judging results from the feasibility of the material aspect by percentage material experts obtained from the assessment of 92%. Based on table 1 on the category of eligibility categories with four categories, the expert material judgment gets the category "Very Eligible".

CONCLUSION AND SUGGESTION

Based on the above discussion, it can be concluded from this research that:

1) Product of 3GS Based Training Media (Triple Game Set); monopoly, snake ladder and fencing puzzle, Snake Ladder and Fencing Puzzle In Character Education Efforts The Beginner Athletes in introducing and as a medium of leisure training during the training process as well as a media in the fostering character education of sports fencing for athletes cadets of beginners, cadets, juniors have been developed in accordance with the training media development procedures which include: (a) field and preliminary study through observation to stakeholders, (c) Focus Group Discussion (FGD) and Focus Group Interview (FGI) with experts , (d) Analysis of inputs, (e) preparation of the 3GS Based Training Media (Triple Game Set); monopoly, snake ladder and fencing puzzle, In an effort to plant Character Education at Athletes Cadet Athletes and Cadets in Yogyakarta Special Region, (f) Product feasibility Checking (prototype), (g) product finalization (Prototype).
2) Feasibility of media product of leisure training during training process and as media in fencing character education through Media Training Based on 3GS (Triple Game Set); monopoly, snake ladder and fencing puzzle, Snake Ladder and Fencing Puzzle In Character Education Efforts In Beginner Athletes viewed from the aspect of media material, media design aspect, as well as from material aspect, overall included in the category of "Very Eligible "which means that media is suitable to be used in introducing and as a training media for spare time during the training process as well as a media in fencing character education.

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STUDENTS'S PERCEPTION TOWARDS INTEGRATED LEARNING METHOD USING VIRTUAL MICROSCOPE IN HISTOLOGY COURSE

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Abstract

Objectives: This study was aimed at determining the perception of students of Sport Science on integrated learning method with virtual microscope in Histology course.
Methods: This research is a descriptive research with 33 students who took the subject of Histology. The instrument used was a questionnaire about students's perceptions of integrated learning methods with virtual microscopes. It covers some aspects namely methods, materials, and virtual microscopy. The data were analyzed descriptively.
Results: The finding shows that in general, the perception of students of Sport Science on the learning method applied very well (85%), about 15% have good perception, and no students have poor perception. When viewed from integrated learning method aspect, 3% of students have poor perception, 12% have good perception, and 85% have very good perception. While from the aspect of using virtual microscope 9.1% have poor perception, 42.4% have good perception, and 48,5% have very good perception. Perceptions of material aspects Histology, 72.7% have very good perception and 27.3% have good perception. In terms of the level of understanding of the material, as many as 57.6% of students stated that histology material is easy to understand and 42.4% have difficulty in understanding Histology material. Student perception towards integrated learning method using virtual microscope in histology course is very good.
Conclusions: In Conclusion, the method of integrated learning is considered effective in studying histology and the use of simple virtual slides is very helpful understanding of histology tissue structure.

Keywords: histology learning, perception, virtual microscope.

Introduction

Histology is a discipline that studies the structure of cells, tissues, and organs microscopically. In studying Histology, microscope is required as a tool to study the structure of the tissue. However, microscope quality is often a problem in understanding tissue structure. Unlike studying anatomy, in studying Histology, students often lose a macroscopic perspective while studying much smaller structures with a microscope (Ambardini, 2009). On the other hand, the development of information technology provides a limited solution of microscopes quality, namely by making a virtual microscope that provides powerful magnification so as to facilitate learning process (Anyanmu et al. 2012). There are a few problems with light microscope, such as: issues with procurement and costly maintenance of microscopes and stained tissues mounted on glass slides, not all sectioned tissues demonstrate all of the structures that should be identified during laboratory study, and finally due to the pressure to reduce curriculum density and time spent in laboratories (Weaker, & Herbert, 2009).

In Faculty of Sport Science, Histology learning method was divided into theory and practice separately. This method has weaknesses, for example the students do not fully master the Histology because the theory learned a few days before their labs class. It happened because of a gap between a theory and a practical class was quite long or a practical class was done before they learn the theory. On the other hand, labs are needed to verify and strengthen theoretical knowledge.

As part of basic science, Histology is expected to bridge the student's knowledge between basic and applied sciences in the next semesters, such as therapeutic, manipulative, and pathophysiological therapy courses. The ability to understand the structure of cells and tissues is able to support the students' understanding while studying pathological situations such as injury. With

their knowledge, students are able to interpret the symptoms and make the diagnosis. Integrating Histology learning between practicum-theory-practicum using a virtual microscope in Sports Science students needs to be done with the aim at improving the efficiency of learning. Histology Learning is based on the mastery of theory and practicum. By applying simultaneous integration of theory and practicum, students are guided to verify theories using practicum and carry out practicum using their theoretical knowledge (Lu et al., 2016; Heidger et al., 2002).

Histology Learning is based on theoretical mastery and is supported by practicum to identify the tissue. In histology learning, students are expected to be able to recognize the microscopic characteristics of four basic human tissues, namely epithelial, connective, muscle, and nervous tissues and also organ systems. Consequently, it is very important to pay attention to the tissue described. It requires concentration, an essential skill in the learning process. An introduction to specific features and tissue classification criteria is also taught, which is an observational skill. In addition, learning also links between structure and function (Ambardini, 2009). This can bridge the students' understanding with other subjects, such as Anatomy, Biochemistry, and Physiology, a synthetic and deductive skill.

Nowadays, the development of technology and information provides an alternative solution supporting the development of practice competence, which is digital picture of microscopic structure, known as virtual microscope. There are several advantages to a virtual microscope when compared to a light microscope. With the development of internet network, an easy access virtual microscope is provided, which is not limited by place and time. Access can be done anytime, anywhere as long as there is internet network. This is supported by the development of mobile devices, such as smart phones or tablets. Therefore, practicum learning should not only be done in the laboratory, but also in class setting (Hortsch, 2013).

One of the main advantages is the saving cost: the optical microscopes and glass slides are expensive and require maintenance and reparations (Dee, 2009). The virtual microscope only needs a computer or tablet with a web browser (Rehatschek & Hye, 2011). Also, the single-use microscope laboratory can be converted into a multiuse computer laboratory (Dee, 2009). Other advantages cited are that the virtual microscope is easy to learn, and students and professors adapt very quickly to the use of the virtual microscope (Kumar et al., 2004). Respect to the higher resolution, the slides provides excellent image quality (Kumar et al., 2004) in part thanks to the improvement of the streaming (Afework et al., 1998) Virtual slides are always focused and with an adequate level of light adjustment (Harris et al., 2001). Also the exploration of the sample is much better in the virtual microscope: virtual slides enhance the ability of the students to grasp and explore morphological features better than optical microscope (Dee et al., 2003). They are able to magnify, scroll and take pictures of images of their samples for use them for their notes or presentations (Goldberg & Dintzis, 2007).

Another advantage of virtual microscope compared to a light microscope is that a number of users can study the same specimen at the same time. In addition to being more efficient, these advantages can be utilized in the context of learning in the form of collaborative learning, since it allows discussion of specimens studied at the same time (Mione Valcke & Cornelissen, 2013). The virtual microscopy system is an effective solution as to the limitations of traditional microscopes. It enables the implementation of collaborative learning. Students are able to use virtual microscopes on a regular basis and develop their knowledge and problem solving skills (Tian et. al., 2014). This study was aimed at determining students' perceptions of the application of integrated learning method using virtual microscope in Histology course on students of Sport Science

METHODS

Questionnaire-based survey research was applied in this study. The population was 33 students who taking histology class in Sport Science Study Program, State University of Yogyakarta. The questionnaire contained students' perceptions of applied histology learning, which consists of three parts, namely (1) the perception of integrated learning learning method, which relates between theory and practicum simultaneously, (2) histology material learned, and (3) the use of

simple virtual microscope in the form of digital slide. The task was in the form of Yes/ No question. The data were analyzed descriptively.

RESULTS AND DISCUSSION

Student responses towards histology teaching methods that have been applied are shown in Table 1.

Table 1. Students' perceptions of Histology learning

Students' Perceptions	Frequency	Percentage (%)
Poor	0	0
Good	5	15
Very good	28	85

In general, the perception of students of Sport Science on the learning method applied were very well (85%), while about 15% have good perception, and no students have poor perception.

Student perceptions of the integrated learning method in histology are shown in Table 2.

Table 2. Student perception towards integrated learning method

Students' Perceptions	Frequency	Percentage (%)
Poor	1	3
Good	4	12
Very good	28	85

Most students (97%) stated that the integrated learning method, which combines theory and practicum simultaneously was fun. Only 3% said it was not fun. The integrated learning method made it easier to study histology material. This method was also considered to increase the motivation to learn histology in 82% of students. This method was considered effective for studying histology in the majority of students (91%).

Student perceptions of histology material are shown in Table 3.

Table 3. Student perception towards Histology material

Students' Perceptions	Frequency	Percentage (%)
Poor	0	0
Good	9	27.3
Very good	24	72.7

About 72.7% of students had very good perception about histology material, 27.3% had good perception, and nobody had poor perception. Associated with histology material difficulty level, 42% expressed difficulties and 58% said no difficulty. The most easily understood type of tissue material was the epithelial tissue and the most difficult was the neural tissue. Most students stated that the histology material studied is important and 85% of students stated that histology material is beneficial to them. As many as 72% of students knew the relevance of histology with other courses, while 27% of students did not know the linkage. Quiz granting at the end of the material was important for 94% of the subject, only 6% stated that the quiz was not important.

Student perceptions towards the use of virtual microscopy are shown in Figure 1.

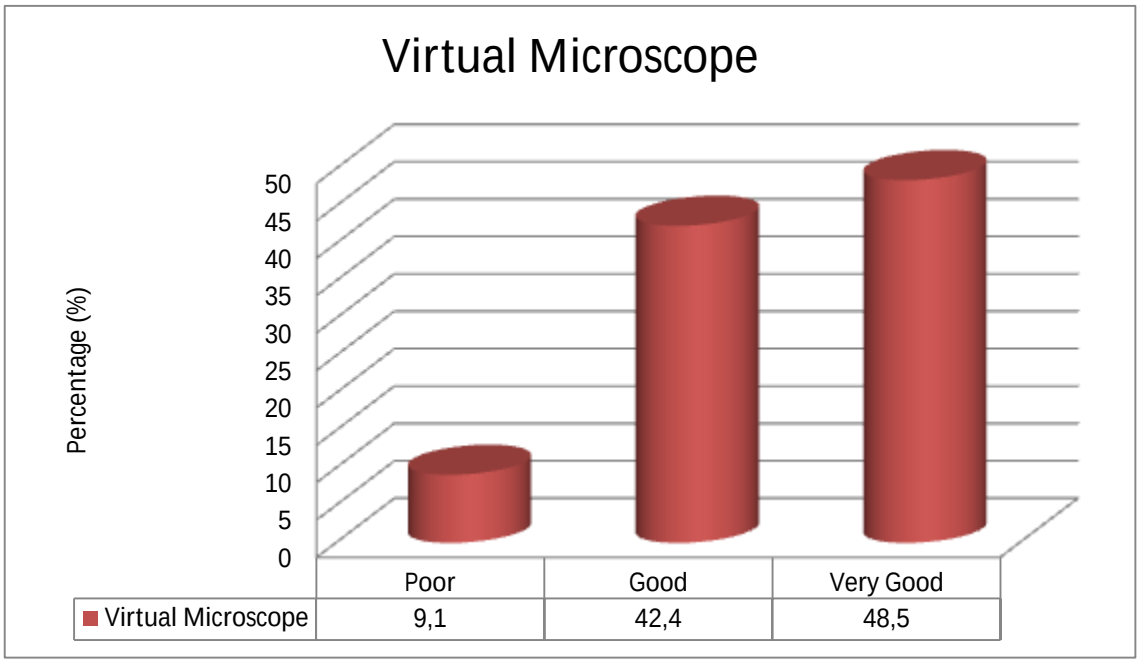

Figure 1. Perceptions of students towards the use of virtual microscope

From the aspect of virtual microscope usage, 9.1% had poor perception, 42.4% had good perception, and 48.5% had very good perception. Slide quality used among others related to magnification and resolution. About 61% of students felt that the slide enlargement was good and 39% said it was not good. Associated with resolution, 48% of students stated that the resolution was not good and 52% stated that the resolution of the slides used was good. The various magnifications used in the virtual microscope were felt by 82% of students. It was helpful in understanding the structure of the studied tissue. In addition, 82% of college students stated that the use of virtual microscopes made it easier to study small tissue structures. As many as 76% of students felt that the use of Virtual Microscopes allowed them to study the structure of the tissue independently. While 24% felt that virtual microscopes did not make them independent in studying tissue structure.

Histology is a branch of Anatomy. Histology is often called microanatomy because the structure of cells, tissues, and organs is studied by observing using a microscope. In the study of conventional histology, the study of cell and tissue structures is a slide glass seen under a microscope in the laboratory. Histologic preparations are preparations with very thin and flat slices, made from tissues or organs, on top of glass through a series of manufacturing and staining processes. In the tissue or organ, cell, fiber, channel has various orientations and is a three-dimensional structure that has a depth or thickness. However, in histologic preparations, thin slices do not have depth. The difficulty faced by sports science students is to understand the two-dimensional picture of the three-dimensional structure. In addition, the quality of the microscope is very important in studying histology. The availability of good quality microscopes is an obstacle to studying existing preparations.

On the other hand, today's virtual microscopy technology is growing rapidly. Virtual microscopy is used as a new tool for displaying histology slides in the learning process in various places. Virtual microscopes have advantages over conventional methods. Ease of access, ease of use, and can be used in a long time without losing the quality of staining (Anand & Pushpa, 2016). Virtual microscopes are accessible in web browsers, simulating conventional microscopes. This technology can overcome the limitations of students in interpreting histology preparations. At high magnification, it will make easier for students to study the cell structure and network. For large

classroom learning, the use of virtual slides can also overcome the variability of histology preparations as well as facilitate the maintenance and prevent the breaking of glass slides (Kumar, 2004).

The virtual microscope used in this study is a simple virtual microscope that is displayed through the LCD in the classroom. Student perception towards virtual microscope use were 90.9% in range good until very good and only 9.1% have poor perception. This finding is in line with Anand & Puspha (2016), which found that 62% of students had perceptions in the range of good to excellent relating to the use of virtual slides. Students with poor perceptions may have difficulty in understanding the microscopic structures and possibly with resolution issues and virtual slide enlargements used. Resolution and zoom issues can be solved by using better resolution and magnification. Anyanmu, et al. (2012) study shows a high choice of histology learning with virtual slide (67%), although most students also want a combination of conventional methods and virtual microscopy. While research conducted by Becerra et al. (2015) resulted that the combination of optical microscope and digital system provides better performance when compared with the use of digital systems only. The use of microscope improves students' perceptions when compared to using only digital systems (Becerra, 2015). The replacement of the optical microscope by the virtual microscope in the courses of histology not only implies an improvement in costs, also results in a better understanding of the samples by the students, helps them to have a more functional, detailed and defined vision of the tissues (Alegre-Martinez et al., 2016).

The integrated learning method in this research integrates between theory and practice. Theory and practice were given simultaneously. The advantage of this method is shorthen the distance between theory and practice so that the mastery of the material improved. Most of the students stated that the method of integrated learning in Histology was fun and easy for studying Histology material. The method of integrated learning is also able to increase student motivation in studying Histology. In addition, this method is considered appropriate and effective for studying Histology.

CONCLUSIONS AND SUGGESTION

Students' perception of integrated learning method with virtual microscope in histology course is very good. The method of integrated learning is considered effective in studying histology and the use of simple virtual slides is very helpful in understanding of the histology tissue structure.

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THE DEVELOPMENT OF TOPURAK (TOTOK-PUKUL-GERAK) MANIPULATION MODEL FOR KNEE JOINT REPOSITION

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Abstract

Objectives: This study aims to develop the manipulation model of "Topurak" (Totok, Pukul, Gerak) for the repositioning of knee joints. In 2016 Topurak manipulation model has been developed for upper body, and the most effective results occurred on shoulder and neck reposition, with the effectiveness value of 96.7% and 82.3%, respectively. The duration of manipulation for each joint were approximately 4 minutes (average 3'49''). Topurak manipulation model was developed for the repositioning of the knee joints in 2017, due to high prevalent injuries at those joints in the community.
Methods: Research and Development Methods were used in this study with the initial stages: Development of Draft Model Manipulation Topurak generated from literature review, especially about pressure manipulation (emphasis on trigger point), beating, and motion of joint repositioning, integrated with the results of field studies. The draft model has been developed consisting of 12 stimulation points on the limb with supine position, and 6 points in the facial position, followed by beatings using hand grip on the entire surface of the leg and followed by 15 movements. The draft model was then validated by expert manipulative therapy and exercise therapy through Focus Group Discussion (FGD). The input from the experts becomes the revision material, which will then be tested on a small group (8 people) to see the feasibility of the Model. Feasibility will be seen from the ease, duration, safety, comfort, and effectiveness in healing both subjectively and objectively.
Results: After the revision taking into account the results of small group testing, the Draft model only consisted of 7 movements that were most instrumental for repositioning especially for ligaments and tendons in the knee, while for accupoint and tapotement were appropriately targeted so that there was no change. Furthermore, a large group trial (20 people), which is also used to determine the effectiveness of the model in curing knee injury. Range of Motion (ROM) knee joint data, level of pain scale and scale of function taken before and after manipulation, to determine the effectiveness level of manipulation. Different test from mean of pre test and post test and its significance is used to show the level of effectiveness of Topurak manipulation. Different test results in the large group showed an increase in ROM by 42%, and the functional scale by 36%, and a decrease in the pain scale by 58%, and all of which were significant (<0.05%).
Conclusions: The final product was defined as Topurak manipulation model for knee joint repositioning consisting of 18 points of stimulation, tapotement throughout the lower limb surface, and 7 repositioning movements, with a duration of 8 min.

Keywords: manipulation therapy, knee joint reposition

INTRODUCTION

Knee jointis the largest and most complex synovial joint in the human body. Many movements and activities are supported by the knee joint (Roberts, 2011). The knee supports half the weight, which makes it at high risk for injuries and trauma during activity and exercise. Injuries that occur in soft tissues in the knee, will followed by bleeding and exudate exit to the tissue, so the cause of swelling. Blood flowed more into the bed to support healing, but it will add to the swelling, and the red appearance. Metabolism in the knee will increase, causing heat (warm) at the site of injury. The occurrence of the swelling causes pressure on the tissues and will feel pain and stiffness. The pain will also be added by the substance of pain (illness) released by the injured tissue. These four mechanisms will lead to reduced knee function (Markis, 2011).

The human skeleton consists of bone and joint. The joints are consist of ligaments and muscle tendons which attached to the bones. There are connective tissue that form a joint capsules.

Excessive and / or repetitive movements, or long-standing static positions, can trigger dispositions in ligaments, tendons, and even joints. All of that can happen both at work and exercise. Musculoskeletal disorders (bone and muscle) is often complained by employees and athletes. Disturbances in the knee joint are more often complained of because the task of sustaining body weight (Lumongga,2004). At the bottom of the knee there is the tibia, which meets with the femur to form the tibiofemoral joint. The tibiofemoral joint has a thick cushion that forms a hinge joint, and together with joint capsules and some ligaments will hold the knee joints. The muscles of the lower limbs are the strongest muscles in the human body. Four large muscles in the front of the femur are called quadriceps femoris muscles. Hamstring muscles in the back of the femur consist ofsemitendinosus muscle, semimembranosus, and biceps femoris muscle, which attach to the pelvis and upper thigh bone to end in the posterior tibia.

Tendons connecting muscles to bones. They consist of a connective tissue that that allows high resistance to direct tensile loads when the muscles contract. Based on the composition of collagen, the tendon has a power about two times larger than the muscles attached to it. Joints capsule is a membrane that wraps the joints, and serves to hold the bone in place. The inner layer of the capsule consists of a synovial membrane, which secretes synovial fluid as a lubricant in the articular capsule of the synovial joint. There are medial and lateral Meniscuses that have a smooth surface to coat joint movement, and muffle the beat (Anderson, 2009). The triangular patella lies between the two femoral condylus to form a patellofemoral joint. The ligament is a rope that connects the bone with the bone in a joint, and is composed of connective tissue that forms a solid bundle of collagen fibers. Ligaments contain more elastin than tendons, making it more elastic. The knee joint has four major ligaments connecting the tibia and the femur. Four ligaments work together as a team, each helping each other according to its function. Two ligaments are outside the joint capsule vertically, called the Medial Collateral Ligament (MCL) attached to the femur and tibia, while the Lateral Collateral Ligament (LCL) attaches to the femur and the fibula head. Both ligaments serve as a support for knee joint stability (Roberts, 2011). The other two major knee ligaments are the Anterior Cruciate Ligament (ACL) and Posterior Cruciate Ligament (PCL) which play an important role in stabilizing the knee. Anterior Cruciate Ligament (ACL) extends from the anterior fossa surface of the intercondyloid tibia toward the superoposterior surface of the lateral condyles of the femur.

Injury to the knee occurs due to movements with an over-repeated submaximal load, or lack of rest time that allows recovery and adaptation of the body. Injuries can involve muscles, tendons, bones, bursa, and neurovascular structures. Overuse injuries often occur in young athletes who are still growing, and causing apophyseal injuries (DiFiori, 2014). More knee injuries are experienced by women because women have larger pelvis, and more adduction, resulting in internal rotation of the pelvis and abduction of the knee (McDaniel, 2010). In addition, Smith H.C (2012) identifies estrogen and progesterone receptors in ACL, and establishes the hypothesis that female sex hormones have an effect on the metabolism, composition, and biomechanical properties of ACLs. The aging process will lead to decreased muscle strength around the joints, decreased joint flexibility, cartilage calcification and decreased chondrocyte function. This situation will cause knee injury in the elderly (Maharani, 2007). Obesity causes abnormal joint load and changes in the composition, structure and properties of articular cartilage. Obesity will specifically reduce muscle mass and strength, as well as increase systemic mechanical stress and inflammation over time. Many adipose tissues of the knee joint are suppressed, and cause an inflammation in joint tissues (Vincent, 2012).

Knee Jumper is a knee injury due to repetitive knee activity, excessive, or eccentric position, which mainly occurs when walking and sports jump, such as volleyball and basketball. Subluxation of the patella, patellofemoral stress syndrome, and other conditions may also overload the patellar tendon that aggravates the patellar tendinitis condition. Extrinsic factors that can cause these conditions include exercise frequency, playing length, playground surface, exercise type, stretching, heating, and the type of shoe worn. Some of the intrinsic factors that may have a role in contributing to this condition include lower extremity malalignment, foot length difference, muscle imbalance, muscle length, and muscle strength. Osteoarthritis is a type of arthritis due to articular degeneration of cartilage in joints. Individuals with osteoarthritis will feel pain in the knee joint with

limited movement. Osteoarthritis has a multifactorial etiology, which occurs due to the interaction between systemic and local factors. Many factors cause osteosrthritis, such as ongoing stresses during physical activity, joint trauma, overuse, and aging (Markis, 2011). Many teenagers have osteoarthritis because of the multifactorial (Heidari, 2011). Chondromalacia patellae (CMP) is a gradual degenerative change that occurs in cartilage under the kneecap and on the surface of the femoral bone. This degeneration is caused by acute trauma, and recurrent microtrauma in the patella. Patella is supported by four muscles in the quadriceps. If muscle strength is not balanced in every direction, make the patella be pulled to the edge of the groove, rather than centering, causing irritation known as CMP. Bursitis is an inflammation of the synovial bursa which can be caused by excessive stress or tension in the bursa.

Returning a person to a safe state to participate in an exercise program is divided into four stages: inflammatory control, restore range of motion (ROM), restore muscle strength, power, and endurance, and return to sport or work activities. Some conditions such as edema, hemorrhage, muscle spasm, atrophy, or infection, can inhibit the healing process and delay the achievement of short-term treatment goals. Periodic measurements for ROM components, muscle strength, muscle endurance, joint flexibility, and cardiovascular fitness will determine the progress of therapy. The main objective of rehabilitation is to restore the condition of injured patients to activity in a pain-free and fully functional condition. According to Roberts (2011), the modalities that used properly, can reduce pain, inhibit swelling, reduce seizures, when used properly can minimize recovery time. This is very important to understand when applying physical modalities. If the modality is used improperly, it will aggravate the condition, so it needs to be considered indications and contra indications on the therapeutic modalities.

Massage has been used in the treatment of illness and injury for thousands of years by health practitioners. Chinese writings from the book of Kong Fu in 2500 BC illustrate the use of massage modalities for various medical purposes, such as musculoskeletal injuries, cancer, stress, relaxation, and pregnancy (Brumitt, 2008). By manipulation of the joint, a massage therapist can facilitate reduction of inflammation and increase range of motion. The range of motion will also be enhanced by regular, active, passive exercises. Massage is primarily intended to place the joints in anatomical positions. The massage therapy is followed by an exercise therapy that aims to return the injured patient to a pain-free and fully functional activity. To achieve this, attention should be focus on modulating pain and restoring wide range of joint motion (ROM), kinematics, flexibility, muscle strength, endurance, coordination, and control. Furthermore, cardiovascular endurance and strength in injured limbs should be maintained (Clover, 2007).

Tapotement is a light blow technique or rhythmic percussion aimed to triggering skin reflexes, causing vasodilation, and improving the sensitivity response of muscle contraction. Manipulation of tapotement can relaxing the muscles and reduce swelling, which will accelerate the healing. There were several tapotemant techniques, but the most common and easy to use is "clapping" with a hollow-shaped palm done on a large muscle area, "hacking" with the ulnar hand axis, "beating" with loose fingers. The repositioning movement involves the direction of movement that can be performed by the knee joint, are flexion, extension and slight endo or eksorotation. Due to high incidence in knee inury, this research aims to develop a Topurak Manipulation Model for the repositioning of knee joints.

METHODS

Research and development design were conduct in this study, and which done with the following stages:1) Developing Topurak Manipulative Model Draft.The development is done by reviewing the literature about the various theories, concepts, and models of Totok therapy (Accupressure, Accupoint, Trigger Point) which have been developed and applied in various Therapeutic Centers, and the theories, concepts, and models of Tapotement (beating) and Motion Therapy that have been developed and applied in society. The three models (accupressure, beating, and motion therapy)are

then mixed into a model of fast, safe, convenient and effective therapeutic manipulation, especially focused on the repositioning of the knee joint, although there is no denying involvement of the hip and ankle joint; 2)Expert Validation and Revision:Draft model that has been developed in the previous stage, then validated by the expert of Manipulative Therapy and expert of Exercise Therapy. Validation is done by Focus Group Discussion (FGD) which includes aspects of manipulation type, manipulation volume, and duration of manipulation both in terms of ease, security, convenience, and effectiveness of manipulation. Furthermore, FGD results with experts are used to refine Topurak manipulation model;3)Model Feasibility Test and Revision:The revised results from Stage 2 were then tested on a small sample with 8 cases of knee injuries which be examined in the Lab / Therapeutic Sports Clinic and UNY Health Services Unit. The feasibility of the Topurak manipulation model is seen from its ease of doing, the duration of treatment, safety, patient comfort, and effectiveness of injury healing by subjective and objective assessment with a focus on inflammatory markers and joint functional improvement for daily activities; 4)Model Effectiveness Test and Revision: In this test will be carried out on 20 cases of knee joint sprain. The data taken are the Range of Motion (ROM) of the knee joint, both flexion and extension, swelling, warm palpation, and redness of the knee through observation. In addition, it is also assessed the level of subjective pain felt by the patient, using pain scale, and functional level of the knee using functional scale. All data were taken before treatment (pre test) and after treatment (post test). Different test from mean of pre test and post test and its significance is used to show the level of effectiveness of Topurak manipulation model as a treatment.

RESULT AND DISCUSSION

The first draft model that has been developed from the field studies and literature reviews, consisting of 12 stimulation points on the leg with supine position, and 6 points in the facial position, followed by beatings using hand grip on the entire surface of the leg and continued by 15 reposition movements. Experts validationthrough Focus Group Discussion with manipulative therapy experts and exercise therapy experts generate the revision of stimulation points location and a series of 10 reposition movement as a second draft.There are 5 movements that are considered redundant with the other reposition movements,so it suggested choose one of two movements that is easier and more proper.The second draft will have been tested on a small group (8 people) to see the feasibility of the Model.

Feasibility criteria will be seen from the ease, duration, safety, comfort, and effectiveness in healing both subjectively and objectively. After the revision taking into account on the results of small group testing, the draft model only consisted of 7 movements series that were most proper for repositioning the knee, especially for ligaments and tendons be arround the knee, while for accupoint and beating were appropriately targeted so that there was no change about the location of accupoint. Furthermore, a large group trial (20 people), used to determine the effectiveness of the model in curing knee injury. The data of knee joint range of motion (ROM), level of pain scale and scale of function taken before and after manipulation, to determine the effectiveness level of manipulation. Different test from mean of pre test and post test and its significance is used to show the level of effectiveness of Topurak manipulation. Different test results in the large group trial showed an increase in the ROM by 42%, and the functional scale by 36%, and a decrease in the pain scale by 58%.All of which were significant (<0.05%), so the final product was defined as Topurak manipulation model for knee joint repositioning consisting of 18 points of stimulation, beating throughout the leg surface, and 7 repositioning movements.The duration of entire manipulation is 8 minutes.

As a used principle, the process of joint repositioning consists of muscle relaxation, the loosening of tendo, and connective tissue around the joint, and then followed by a reposition movement to restore the joint in its anatomis position. Actually knee shifting does not always occur in the joints, but can also occur only on the tendons and ligaments, so the movement according to ROM, can make the joint return itself easily.

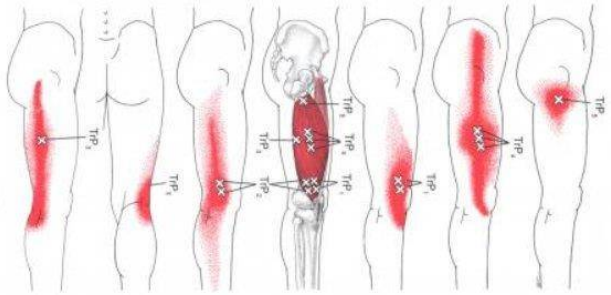
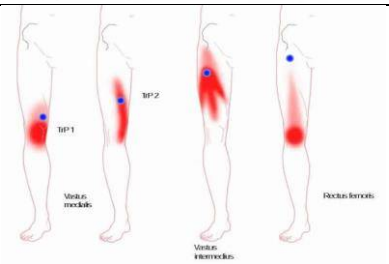
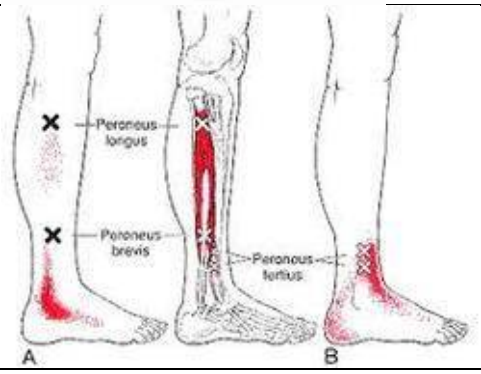
The results studies of Ambardini and Kushartanti (2016) about Topurak Manipulation Model for repositioning the neck and shoulder concluded that the press on "trigger point" (totok) would accelerate muscle relaxation. Tapotement (beating) will increase the relaxation, thus reducing the pain at the time of movement. The self-directed movement performed by the patient itself will be able to safely reposition the joints. Trigger point is a hypersensitive nodule that mainly occurs in contracting muscles (Lucas, 2007). Pain that occurs is often referred to as myofascial pain because it comes from myofascial trigger point (muscle and fascia surrounding). Pain will ocuured when the trigger point is pressed or touched (Anderson, 2009). According to Dommerholt, Jan (2006: 205) trigger point is described as a hyperirritable place in skeletal muscle associated with hypersensitive nodules when palpation in a tight muscle. The emergence of myofascial trigger points can be triggered by severe trauma, overuse, overloading, or psychological stress (Schmidt, 2014). The trigger points can occur along the muscle path. Trigger points are described as prominent or occasionally concave, local, and hyperirritable points, which are usually located in the origo and insertion of skeletal muscle.

Pressing the "trigger point" (totok) or stimulation point will accelerate muscle relaxation. Tapotement (beating) will enhance muscle relaxation, thereby reducing pain during do the reposition movement. The self-directed movement performed by the patient, will be able to safely reposition the joints, due to adapt the stiffness and the perceived pain. The advantages of this model are:Fast, because rapid muscle relaxation will be obtained by accupressure and beating;Safe: due to guaranteed by the involvement of the patient in repositioning motion with the guidance of the therapist, so the motion is not excessive because it is limited and controlled by the pain and stiffness felt by the patient, and not less because of the guidance of the therapist; Convenient: Comfortable feeling is achieved because all processes are adjusted to the patient's pain level and tolerance; Effective: The effectiveness of results is guaranteed by processes that are in accordance with scientific principles and previous empirical findings, and are carried out quickly, safely, and comfortably.Finally,the Topurak Manipulative Model which isl consist of Totok-Pukul-Gerak, can applied to repositioning the knee joint quickly, safely, comfortably, and effectively.
The applied pressure and beating can be seen in the following table

Table 1. Topurak Movement For Knee Reposition.

Number	Description
1	With supine sleeping position, bend your knees up to the limit of pain, and move your knees toward the chest. Press both limbs by hand in the bending position, and keep for 3 counts.
2	Align the lower limb upwards and pressing the kneecap, form a 90 degree angle with the body, and return to the bent knee position.
3	Straighten one leg flat, and the other legs crosswise in the knees bent. Press the knees, while chest stay up. Do it for the other side, before returning to the supine position with both knees bent and the two legs close together.
4	Bent the limb left and right to form the butterfly wings, and swing both legs up and down the knees, before returning to knees bent position and the two legs far apart.
5	Alternately, rest the limbs inwards repeatedly for 4 times and end with straightening the limbs flat.
6	Move your legs up and down, rotate right and left, and rotate in the same direction or counterclockwise. Do the same thing, but with the position of the leg lifted up to form a 90 degrees angle with the body.
7	Bend back the knee and do the kick alternately in the air, four times for each limb before being returned to the bend position of the knee.

Table 2. Topurak Pressure and Beating For Relaxing The Limb Muscle

Number	Location	Description
1		Press 6 points on the side of the upper limb, from the pelvis up to the top of the knee and continue with the beating across the side surface of the leg
2		Press 4 points on the front surface of the upper limb and 4 points on the inner surface of the upper limb, and then continue with the beating on the fornt and inner surface of the upper limb.
3		Press 4 points on the side surface of the lower limb, and continue with the beating on the entire lower limb.

CONCLUSION AND SUGGESTION

It was concluded that Topurak manipulation model for knee joint repositioning consisting of 18 points of stimulation pressure, beating throughout the lower limb surface, and 7 repositioning movements, with a 8 min of duration.In the basically, pressure and beating will be delivered on the entire surface of lower limbs, because the knee injury will affect the entire muscle on the above and below the knee.

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THE EFFECTIVENESS OF TRAINING GUIDED IMAGERY IN LOWERING ANXIETY ON ATHLETES

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Abstract

Objectives: This research aims to understand the effectiveness of our training guided imagery in lowering anxiety on athletes PPLP of West Sumatera .This research involving 2 variables, namely anxiety and guided imagery. Anxiety is an emotional state unpleasant characterized the existence of a feeling of fear, nervous and tense, as well as a sense of doubt or not dare to matters concrete and things are not clear. Guided imagery is a technique that uses imagination and visualization to help reduce stress and foster relaxation .This research involving 40 athletes PPLP of West Sumatera .
Methods: The research is using the quantitative approach with type of research experiments. A design research experiments used is pre-test post-test control group design by using 2 groups that are control groups and experiment groups. Instrument gatherer the data used was scale anxiety sports (SKO) developed [1], this scale consisting of 22 items questions developed based on four dimensions anxiety sports the motor dimensions, affective dimensions, somatic dimensions and cognitive dimension. The analysis data used was data analysis non parametric by using the Mann-Whitney technique. Great influence treatment seen by counting effect size. The calculation of the Mann-Whitney gets the result 0.00 with significance. The results of the calculation of effect size of 0.75.
Results: The whole result of the calculation is indicated that there are significant differences between the experimentation and the control group in a reduction of anxiety.
Conclusions: It means guided imagery effective to lower anxiety athletes PPLP of West Sumatera, with an influence in the large.

Keywords: Guided Imagery, Anxiety, Athletes,

INTRODUCTION

For Indonesian, sports play the role of good multi function as a media to increase in Indonesian human resources, as a struggle in the before and after independence, and as forming the nation character , capable of being the identity and capable of being raised states and dignity Indonesian equal to the other. Realized that accomplishments optimal sport is a system that involves the input, processes and the output. Input is course of athletes, especially for young athletes or potential athletes. All also must agreed to produced a good achievement; they did not be done instantly but needed process to achieve. The productive ages to get potential athletes are in the elementary school and junior high school age.

Associated with the development of sports education, one of the efforts by the government is to build coaching student sports centre known as a central PPLP (training and exercise sport for students). PPLP as a forum to gather athletes with high interest in sports with high potential/talent to develop by using various benchmarks, and the athletes who are acceptable also be the members of PPLP. PPLP are the combination between sports education and sports achievement. Athletes who become members and training in PPLP is an athlete who have interest, talent/potential has been selected or selected closely and potentially large be elite athletes in each sport fields.

In West Sumatera, PPLP as a nursery and training for potential athletes, have a big contribution for sport, especially for athletes who had a good performed at the national level and the potential athletes of West Sumatera. Even in the event of PON XVIII at 2012 most of the alumnus of PPLP has become the backbone of sport team from west Sumatera.

The ability of an athlete to win medals whether it was the gold, silver and bronze medals that influenced by several factors. Those factors include physical, technique, tactics and psychological

factors. In general, physical factors that among other cardiovascular endurance, durability strength, muscular strength, flexibility, speed, agility and power and others. Techniques factor is the basic ability of the athlete on the field of sports, while tactics factors on an athlete is the ability of interpretive or resources of an athlete. The third factors above can be developed by means of regular practice and structured (Sukirno, 1990).

The next factor is psychological factors that have the same important of all three factors above. The psychological aspects that must be considered include stress with pressure or burden received by athletes; anxiety to face the matches, fear of defeat, nervous when will fight. One of the psychological aspects that come to the athlete is a feel of anxiety. The anxiety problem caused by external factors, the problems that come from outside of the athletes themselves, for example the opponents, referee, the audience, and environment. The internal factor that comes to the athletes is the problems derived from an athlete itself, for example emotional problems, motivation, intelligence, anxiety, excessive stress. All of the problems above will impact to the athlete.

Anxiety is fear of unpleasant accompanied by heightened tensions of physiological. Anxiety will be compounded if someone feel cannot stand for doubt of self ability. Singer (Gunarsa, 1996) define anxiety is a reaction from fear against of a situation. Anxiety is a feeling of worry about fear or the perception of something threatening. Relating to sport, anxiety often comes to the athletes when they will face a game. Cox (2002) revealed that anxiety to face the game that is as a condition of the negative emotions increasing in line with how some of the athletes interpreted and assess the situation of the game.

Gunarsa (1996) explained that the perception or response of the athlete in assessing the situation and conditions to face the game, before the match or approaching the matches will be had different repercussions. When an athlete considers a situations and condition of the game as a threatened condition they will feel stress and anxiety. Amir in 2004 explained that anxiety will occurred to the athlete when they face the game because there are so many things that they thought if they lost the game. Anxiety also came out due to think the things undesired is going to happen, bad performance, looking at great the opponent and lost the game (Satiadarma, 2000).

Anxiety that appears would disrupt the athletes in a match, so we needed special handling (intervention) by a psychologist to reduce the anxiety of the athletes, by decrease the anxiety of course would bring a positive impact on an athlete. One intervention that can be done in order to decrease anxiety is by doing relaxation. Relaxation is one technique in therapy developed by Jacobson and Wolpe to reduce tension and anxiety. There are some kinds of techniques of relaxation; one of them is Guided Imagery. Guided imagery behavior is intervention to overcome anxiety, stress and pain (Yung et al, 2001). Guided imagery is a relaxation method to imagine a beautiful place and events.

METHODS

The Participant

A population that involved as a source of data in this research was an athlete, especially an athlete of PPLP Sumbar. Population as a whole of an object research and which can be the objects in research is human, animals, herbs, air, symptoms value, the attitude life, and many more that have in common characteristic. Sampling is a process systematic to selected subject which will be part of research. The sample of the technique in this research using simple random sampling, where all the members of the population has the same opportunity to become the subject of study. This research involves about 40 athletes of PPLP West Sumatera.

The Measurement

Anxiety on athlete of PPLP Sumbar is measured using scale anxiety sports (SKO) developed by Amir in 2012. This scale consist of 22 items questions developed based on four dimensions anxiety of sports; the motor dimensions, affective dimensions, somatic dimensions and cognitive dimension. SKO have a high reliability with score 0,856 it means a measuring instrument it has high reliability.

The Procedure

This research is research used a quantitative approach with experiment research type. The type of the experiment research chosen because researchers want to know the manipulation of behavior individual observed. The Designs of the experiment will be used are pre-test, post-test, and control group design which use 2 groups as a group of experimentation and the control group. The intervention that will be giving called guided imagery. This research carried out in three stages with 3 meeting for the provision of intervention and a meeting for evaluation. Before the intervention, the researchers will identify the subject of study and doing interview with the PPLP. After obtaining the subject of study, researchers divide the group into 2 as a group of experimentation and the control group. The next step is given the tool of measuring anxiety to look at the anxiety level of the subject. After a series of the identification process done, the step was taken then is to initiate intervention.

The Statistical Analysis

The analysis data technique used was Mann-Whitney. Mann-Whitney used if we only doing experiment by using 2 groups and with different participants in each group. In addition, will be conducted the calculation of effect size in order to know the influence level of treatment.

RESULT AND DISCUSSION

Result

Based on the calculations that have done, the researchers got the significance (sig.) of 0.00 it means less than 0.05 (sig < 0,05). It will show that there are significant differences in the anxiety between the experiment and the control group. Furthermore, it means that guided imagery effective to lower anxiety in athletes PPLP of West Sumatera. Based on calculations by effect size, it get 0,75 value. Based on the categories designed by Cohen (1992, in Field & Hole, 2008), the value of treatment that given to this research in the treatment group had great influence. It means that guided imagery had a huge impact to lower anxiety in athletes PPLP of West Sumatera .

Discussion

This research aims to understand the effectiveness of our training guided imagery in lowering anxiety on athletes PPLP of West Sumatera. Based on the results of the data analysis from the calculation of effect size, a whole analysis shows that the decrease result in anxiety to athletes PPLP of West Sumatera after participating the training session of guided imagery. The size of the influence or the effects of treatment given, included in a moderate degree of treatment that has an effect to a group of large experiment based on the categories made by Cohen (Field, 2005).

This research is in line with research conducted by Aprianto with theme the effectiveness of techniques by guided relaxation imagination and deep breath to decrease the anxiety in patients pre-surgery that concludes there are differences between the effectiveness of techniques by guided relaxation imagination and deep breath to decrease the anxiety patients pre-surgery at RSUD Ra Kartini Jepara. Between the effectiveness of techniques by guided relaxation imagination and deep breath, the most effective technique is guided relaxation imagination because in this therapy obtained the larger difference compared with the deep breath technique.

Townsend (1977) said a lot of benefit we can get by using guided imagery; one of them is reduce anxiety. Research conducted by Sarsito (2015) said that the effect of imagery guided on the anxiety. The research takes a sample in patients of hemodialisa at the hospital of PKU Muhammadiyah Surakarta. Similar research conducted by Hidayati (2010) for client insomnia age 20-15 years stated that some declining anxiety at women in Ketawanggede Malang.

Relaini (2015) did a research on the sufferers of cervical cancer. In the research, researchers want to know the level of anxiety before and after therapy treatment given to the sufferers. Therapy treatment given in the form of guided imagery. Anxiety levels on the subject of this research before given treatment are at medium category. After having the treatment, 57 percent of the subject of this research not experiencing anxiety and were provided by experienced anxiety at a low level with score 43%.

Other research was also carried out by Ni Nengah in 2013 who take a sample from a pregnant women. Research take location in the work area of Puskesmas Meninting Kecamatan Batu Layar at Lombok Barat Regency of Nusa Tenggara Barat Province, this provides intervention of exercise relaxation guided imagery and music. The results of the study states that is the exercise relaxation guided imagery in the intervention, where there was a decrease in the score of anxiety compared to the control group.

The decline in a score of anxiety also experienced by the athletes PPLP of West Sumatera who get intervention of training guided imagery. Guided imagery relaxation is intervention behavior to overcome anxiety, stress and pain (Yung et al , 2001). Guided imagery is a method of relaxation to imagine a place and the chain associated with a sense of relaxation. Imaginary that allows clients enter a state or experience relaxation (Kaplan & Sadock. 2010). Guided imagery stressed that client to imagine about something that can make them feels comfortable and soothing. The use of guided imagery not can focus on many things in one time hence clients should be imagined one imagination that very strong and exciting (Brannon & Feist, 2000). Guided imagery is techniques that uses imagination and visualizes helping reduce the stress and foster relaxation.

In line with the paragraph before, on this research the subject of study were required to collect a comfortable sitting position, set the breath, wondering where can make they are more comfortable and those they care about. When they were done, most of the subject of study imagine are at their house and in the rooms. Some others imagine other places like a beach. The people that they are thinking about are parents, friends, and their own family. They had been obliged to free their imaginations. With imagine a convenient place and call the loved ones is expected to push the subject of research achieved a state of relaxes and make them more relaxes.

Techniques of relaxation guided imagery will form in a that they will receive as recitative by various the senses, then in imagine that something is beautiful, feelings are feel calm. Tension and the uncomfortable feelings are brought, so cause of a body to relax and comfortable (Smeltzer & Bare, 2001). Relaxation response is more dominant on the nervous system parasympathetic, in order to reduce nerve of the tense. Parasympathetic nervous serves control function heart rate to make the body relax. According to Simon (in Hidayati, 2007) in technique guided imagination, cortex visual of the brain that process imagination have strong ties with the nervous system autonomous, that controls movement involuntary of them: pulse, breathing and response physical to stress and help secretes the hormone of endorphin (substance this could cause its analgesic effects comparable to inflicted morphine in doses 10-50 mg/kg BB) there are the process of relaxation and anxiety decline.

The results of the study and data obtained at the athletes PPLP of West Sumatera above, according to the theory Smeltzer & Bare, in 2001 that the anxiety of someone are caused by circumstances of physical, age, the environment and situation. While the ability of an athlete in building medal whether it is gold medals, silver and bronze influenced by several factors. Among other things these factors are physical factor, technique factors, tactics factors and psychological factors. In general, physical factors include endurance cardiovascular, endurance power, strength, flexibility, speed, agility and power.

The technique factor is around the basics of owned by an athlete on the certain sports, while the tactics on the athletes is the ability of everyone to interpretive or power. Psychological factors of athletes were a crucial. Aspects of Psychological must be considered, includes stress with pressure or burden received by athletes, anxiety, the fear of defeat, nervous when will fight and other forth. One of the most frequent psychological appear and disturbing the athlete to face the match is a feeling of anxiety.

The anxiety problems experienced by the athletes as a problem caused by external factors, the problems that come from outside of themselves, for examples the presence of an opponent, the referee, the audience, and the environment. The problems which arise out of the internal factor, the problems that originated from inside of themselves, for examples emotion, motivation, intelligence, high anxiety, and excessive stress. All of those problems will have an influence to achievement of the athletes.

The feeling of anxiety is a feeling of fear unpleasant accompanied by heightened tensions of physiological. Anxiety will compounded if someone feel cannot stand to face their ability and feeling doubt about the ability of themselves (Davison & Kring, 2006). Anxiety is feeling worry about fear or the perception about what is threatening. Cox (2002)revealed that anxiety is the condition of distress experienced by the athletes, that is as a condition from the negative emotions increasing in line with how does one athletes interpretation and assess the situation of the match.

The anxiety feelings that came at improper time would affect to the athletes in a match, so we needed intervention from the professional or a psychologist to reduce the anxiety, by decrease the anxiety feeling of the athlete would have some positive effect to the athlete. One intervention that can be done in order to lower anxiety is relaxation. Relaxation is one technique in behavior therapy developed by Jacobson and Wolpe to reduce tension and anxiety. There are some kinds of techniques of relaxation; one of them is guided imagery.

From the research that has been done, we can see that the anxiety feeling of the athletes PPLP of West Sumatera having decreased by given guided imagery exercise. In other words it can said that guided imagery is effective when given to the athletes.

CONCLUSION AND SUGGESTION

Based on the whole results that have been implemented in this research, it can be drawn the conclusion that the anxiety will be decreased on the athletes PPLP of West Sumatera after giving training guided imagery. It means that the training guided imagery effective in lowering anxiety on the athletes PPLP of West Sumatera. The suggestions from this research : (1) Need to equip coaches with the knowledge and skills in conducting guide imagery in a effort to optimum performance improvement.(2) needs to reseach the development of guide imagery in the world of sports coaching for relaxation purposes in the implementation of techninique, tacticts and strategies in an effort to improve the achiement.

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EFFECT OF FRESH COW MILK AND PASTEURIZATION MILK TOWARD GLUCOSE IN SOCCER PLAYERS ACCOMPANIED BY PHYSICAL ACTIVITY.

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Abstract

Objectives: Adolescent atheletes have high risk toward dietary intake depleted because of energy needed increase. Adequate dietary intake becomes a big problem that faced by adolescents since their lifestyle tend to ignore dietary. A lot of adolescent athletes consume energy drinks and sports drinks but they do not notice that it will give negative effects to their health. Therefore, consuming milk is more recomended. Adolescent athletes usually do physical activities that will undergo physiological responses in the body. Hence their bodies need to be supported by additional intake, in order to maintain the energy. A combination of physical activities and dietary intake will affect the metabolic system. Therefore, this research was conducted to find out the effect of cow milk toward blood glucose that is consumed followed by physical activities.
Methods: The selection of research subjects began with pre-test questionnaire. 24 soccer athletes aged 18-21 years old selected for this research. These athletes were randomly divided into three groups (fresh cow milk, pasteurization milk and mineral water) who consumed the milk in three weeks respectively. This research employs Pretest-Posttest Randomized-Groups Design, by doing pre-test (before beverages consumption) and post-test (after the beverages consumption in three weeks respectively). The pre-test and post-test were done through 2,4 km Cooper test. Before (p1) and after (p2) conducting 2,4 km Cooper test, the blood sampling was taken to measure the value of blood glucose.
Results: This research found out that the blood glucose in fresh cow milk group (106.25 ± 12.88) decreased more than in pasteurization milk group (107.25 ± 13.85) after 2.4 km Cooper test (p2). Before 2.4 km Cooper test (p1), the condition of blood glucose was lower than after 2.4 km Cooper test (p2). If compared with pre-test results (both before and after 2.4 km Cooper test), the result of blood glucose during post-test on fresh cow milk and pasteurization milk group increased. The result of this research is in accordance with previous research which states the consumption of dairy products will reduce the risk of diabetes in man (Moslehi, *et al*., 2015), especially when it is followed by physical activities.
Conclusions: Cow milk potentially decrease blood glucose after doing physical actitivies. Pasteurization milk gives better effect than fresh cow milk in blood glucose. Hence, a daily consumption of pasteurization milk before physical activities is recommended in optimizing athletes performance. Despite of that pasteurization milk will gives opportunities to decrease risk of diabetes accompanied with physical activity. Therefore, the combination cow milk intakes and routine physical activities can help decreasing the risk of diabetes

Keywords: *Fresh cow milk, pasteurization milk, blood glucose.*

INTRODUCTION

Adolescent athletes have high risk toward dietary intake depleted because of energy needed increase. Adequate dietary intake becomes problem that must be faced by adolescent caused by tend to ignore dietary intake consumption. Consumption of sport bar and beverage for recovery recommend to consume, but any doubt was appeared against the result of previous research. Therefore, consuming milk is more recomended (Ryan-Krause, 1998).

Various type of cow milk for human consumption are fresh cow milk, pasteurization milk, and Ultra High Temperature (UHT) milk. UHT milk with various taste was known usefullness. Especially for chocolate taste was already investigated for metabolism benefit to speed up energy storage (Karp et al, 2006,Pritchet &Pritchett, 2013, Roy, 2008) and accelerate muscle recovery (Gilson et al., 2010).

Fresh cow milk is a good source of proteins, fats, amino acids, vitamins and minerals. Health benefits of milk consumption were written in another previous research (Haug et al, 2007), and also carbohydrate content in milk (Moslehi et al., 2015, Roy, 2008). The differences between fresh cow milk and pasteurization milk is on making process. Pasteurization process is a heat process for milk which determined in time and temperature to kill organism and slow down the expired for cow milk (LeJeune Rajala-Schultz, 2008). Heat process for pasteurization milk using 161^{o} F (72^{o} C) during 15 second, to stop activities or kill organism rapidly inside milk (Brock, 2013).

When doing physical activities, metabolism have to support physiological effort during training. One kind of metabolism system that used in training is aerobic metabolic system. Characteristics of aerobic training is moderate-low intensity in long time. Metabolic system will works if supported by sufficient energy source withoutfeels fatigue.In addition, we know how high the training intensity from lactate, also we can know about change of blood glucose caused by training load that already done. A kind of beverages can trigger heart works more significance than usual toward blood glucose (Charlie, 2011). This is happen when heart works coincide with physical activities, that will cause glucose restore depleted as energy source.

The aim of this research is to investigate the effect of cow milk intakes as additional energy source toward metabolism, before and after doing physical activities. In this case, kind of cow milk are fresh cow milk and pasteurization milk, and will be seen the influence toward blood glucose.

METHODS

Research Subject

24 soccer athletes in university selected using purposive sampling method [6] andrandomly divided into three groups (fresh cow milk, pasteurization milk adn mineral water). All of research subjects are 18-20 years old of age and have expericence in regional soccer competition for more than three years, with no allergy history for cow milk consumption. Criteria exclusion for research subject are more than 21 years old, in ill or injured condition and have allergy toward milk.

Politeknik Kesehatan Kemenkes Bandung through Komisi Etik Penelitian Kesehatan (KEPK) doing research procedure review to confirm this research. All of research subjects approve and sign inform consent before research began.

Protocol Before Test

Each subjets are recommend to consume dietary intake as usual during two days before test but not to consume alcohol, tea or coffee at the night before test. Dietary intake remains in two days before tes coincide with volume and intensity decrease will resulting adequate muscle glycogen restore (MacDougall et al, 1977). Before doing the test, subjects must doing fasting for 7 hours. Approaching 2 hours before the test, research subjects drink 500 ml of mineral water so that body condition is homeostatis (Syafriani, 2014).

Test Protocol

When the test began or data collection was conducted, test protocol become a procedure that must conducted for each subjects at pre-test (before beverages consumption for three weeks) and post-test (after beverages consumption for three weeks). There is a protocol (Charlie, 2011; Fallowfield & Williams, 1997; James, et al.,2013; Karp et al., 2006; Rumbold et al.,2015; Sun et al., 2015, Syafriani., 2014) below to make this research on time;

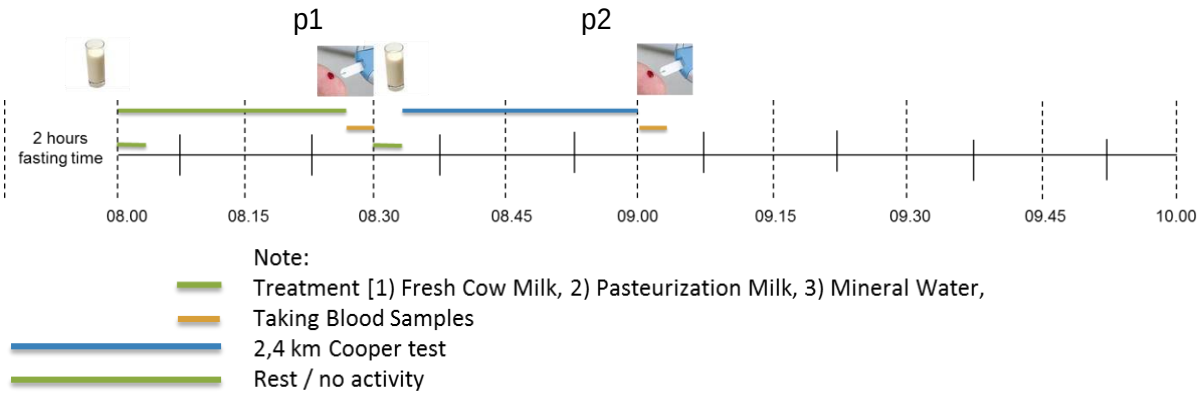

Figure 1. Test Protocol

Beverages distribution (fresh cow milk, pasteurization milk and mineral water) doing twice, 30 minutes before 2,4 km Cooper test and immediately before 2,4 km Cooper test. Beverages serve 150 ml for each drinks.

Utilization of 30 minutes as spare time in this research based on significance different in trial of glucose and mix glucose with protein that seen inside of glucose fluid approximately 30 until 60 minutes aftes beverages consumption (Karp et al., 2006; Roberts et al., 2013). In the other hand, human blood cell alive in 120 days (Kiswari , 2014) make this research was unchange blood condition, in pre-test and post-test as well.So blood samples will collect in the 30th minutes.

Data collection (through blood samples) doing twice when before 2,4 km Cooper test (p1) and immediately after 2,4 km Cooper test (p2).

Blood Analysis

Assesment for blood glucose using Easy Touch GCHb and Strip Glukosa Easy Touch Glucose Strips, doing twice (before 2,4 km Cooper test (p1) and after 2,4 km Cooper test (p2)) in pre-test (before beverages consumption during three weeks) and post-test (after beverages consumption during three weeks).Taking blood samples for glucose done by laboran appropriate with taking blood procedure proposed by WHO (WHO, 2010).

Statisctical Analysis

Result will display in averages ± SD. Wilcoxon signed rank test used to know about changes happen each group. Mann-Whitney testused to know about changes happen cross-groups. All statistical analysis using PASW Statistics 18 app, with significance level is 0,05.

RESULT AND DISCUSSION

Comparison of Fresh Cow Milk and Pasteurization Milk Content

Fresh cow milk and pasteurization milk in this research comes from KPSBU Lembang. Cow milk collected in milk tank originated by cattleman around Lembang. Component inside two kind of cow milk present below;

Table 1. Comparison between Fresh Cow Milk and Pasteurization Milk (150 ml)

Components	Precentage obtained in cow milk (150 ml)	
	Fresh cow milk	Pasteurization milk
Fats (%)	4,58	6,02
Protein (%)	5,06	4,32
Carbohydrate (%)	5,48	15,26
Lactate Acid (%)	0,57	0,33
Iron (ppm)	0,28	2,1
Calories (Kal)	83,29	132,43

Fresh cow milk and pasteurization milk content obtained from Balai Laboratorium Kesehatan Bandung in January 2017. If seen from the table above, protein component in fresh cow milk is more higher than pasteurization milk, as well as lactate acid content. Overall, pasteuization milk components (except protein and lactate acid content) is more higher than fresh cow milk.

Comparison Blood Glucose between Groups

When the result of blood glucose in each groups are known, then researcher try to investigate about beverages effect toward blood glucose between groups, how significance effect that gived by each groups are known. From this chart below, we can see comparison between groups when pre-test (before beverages consumption) and post-test (after beverages consumption during three weeks).

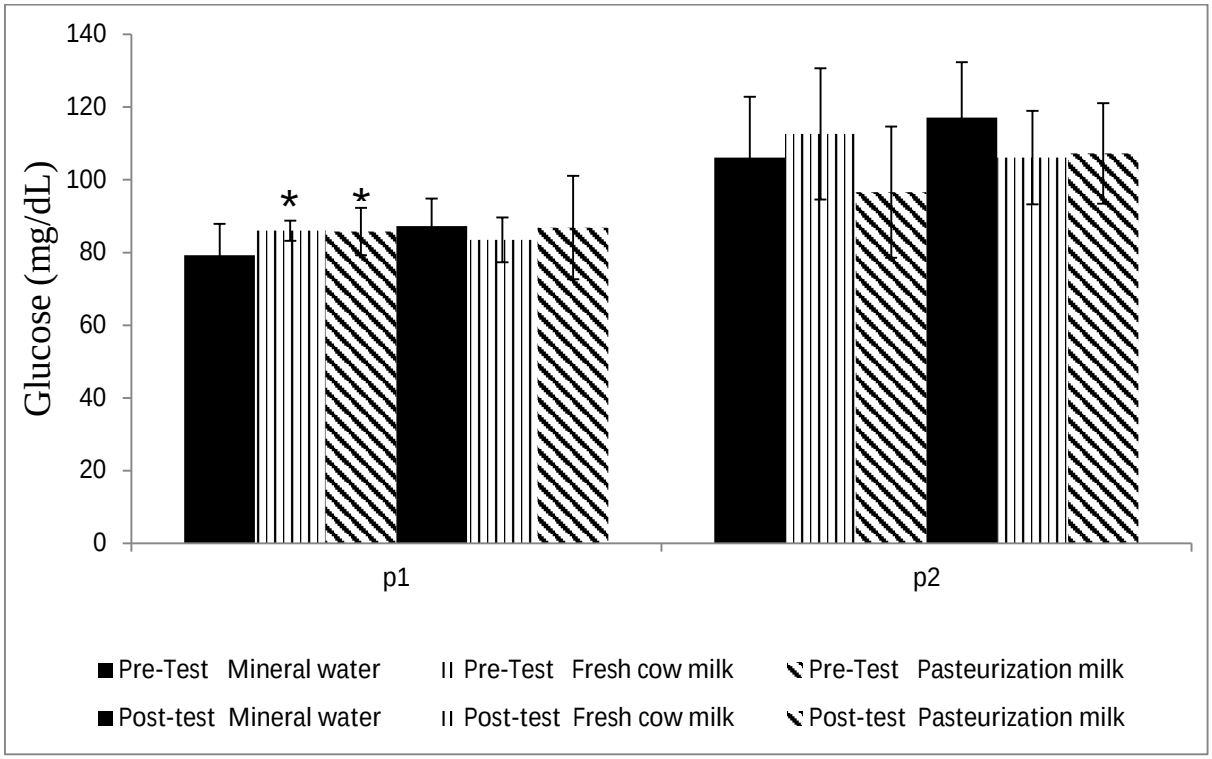

Figure 2. Comparison Blood Glucose between Groups (Pre-Test and Post-Test)

Ket:
p1: Blood samples before 2,4 kmCooper Test
p2: Blood samples after 2,4 kmCooper Test

Table 2. Comparison Blood Glucose between Groups

	Groups	Glucose (mg/dL)	
		p1	p2
Pre-test	Mineral water	79,25 ± 8,66	106,12 ± 16,71
	Fresh cow milk	86,00 ± 2,78 *	112,61 ± 18,05
	Pasteurization milk	85,75 ± 6,52 *	96,62 ± 18,03
Post-test	Mineral water	87,25 ± 7,60	117,13 ± 15,23
	Fresh cow milk	83,50 ± 6,16	106,125 ± 12,88
	Pasteurization milk	86,88 ± 14,22	107,25 ± 13,85

* Significance different compare with mineral water group ($p < 0,05$)

This research found out that the blood glucose in fresh cow milk group (106.25 ± 12.88) decreased more than in pasteurization milk group (107.25 ± 13.85) after 2.4 km Cooper test (p2). Before 2.4 km Cooper test (p1), the condition of blood glucose was lower than after 2.4 km Cooper test (p2). If compared with pre-test results (both before and after 2.4 km Cooper test), the result of blood glucose during post-test on fresh cow milk and pasteurization milk group increased.

Adolescent atheletes have high risk toward dietary intake depleted because of energy needed increase. Adequate dietary intake becomes a big problem that faced by adolescents since their lifestyle tend to ignore dietary (Ryan-Krause, 1998). A lot of adolescent athletes consume sport bar, energy drinks and sports drinks but they do not notice that it will give negative effects to their health. In June 2011, American Academy of Pediatrics (AAP)reported the result of investigation from marketing division, ingredients and negative effect arise from sport drinks and energy drinks. They conclude that a few sport drinks consumption appropriate with young athletes to participate in submaximal physical with hot and humid weather. However for most young athletes, sport drinks not needed and can give negative contribution into their health, likes increase body weight and teeth decay. Then AAP conclude there is no benefits from sport drinks for young athletes because will give excessive stimulation toward nerve system. Energy drinks consumption in adolescents athletes will cause strain, heart disease with uncertainty heart rate, even death (Committee on Nutrition and the Council on Sports Medicine and Fitness, 2011; Rath, 2012; Reissig, 2009; Seifert, 2011]. Therefore, consuming milk is more recomended (Ryan-Krause, 1998).

When compared result of this research between beverage groups that will be seen how could fresh cow milk and pasteurization milk, also mineral water as control variable give more effect toward blood glucose.

In blood glucose, there is no significance different ($p > 0,05$) on fresh cow milk and pasteurization milk toward mineral water. Combination between carbohydrate and protein can reduce response toward blood glucose and improve insulin response in healthy people (Roberts, S et al., 2013). Before 2.4 km Cooper test (p1), the condition of blood glucose was lower than after 2.4 km Cooper test (p2). The same loads of test makes this research found out that the blood glucose in fresh cow milk group (106.25 ± 12.88) more decrease than in pasteurization milk group (107.25 ± 13.85) after 2.4 km Cooper test (p2). This result affected by carbohydrate content in pasteurization milk (15,26%) is more higher than in fresh cow milk (5,48%). This fact lead to condition of glucose after doing 2,4 km Cooper test in pasteurization milk is greater than fresh cow milk. Consequently, glucose restore in pasteurization milk allows athletes to perform further physical activity if necessary. If compared with pre-test results (both before and after 2.4 km Cooper test), the result of blood glucose during post-test on fresh cow milk and pasteurization milk group increased. The result of this research is in accordance with previous research which states the consumption of dairy products will

reduce the risk of diabetes in man (Moslehi, Nazanin et al., 2015), especially when it is followed by physical activities, such has been done in this research.

Glycogen depleted happen caused by submaximal physical activities (Charlie, 2011). As previous research explained that combination between carbohydrate and protein can reduce response toward blood glucose and improve insulin response in healthy people (Roberts, S et al., 2013). Insulin response increase can lead to glucose absorption into cell so blood glucose will decrease. Previous research doing comparison between cow milk, soy milk, food suplement and powerade sport drink describe how beverages consumption immediately after physical activities will affect to decrease blood glucose during first one hour then will experineces peak increase when 4 hours after physical activity (Desbrow, et al., 2014).

CONCLUCIONS AND SUGGESTION

Cow milk potentially decrease blood glucose after doing physical actitivies. Pasteurization milk gives better effect than fresh cow milk in blood glucose. Hence, a daily consumption of pasteurization milk before physical activities is recommended in optimizing athletes performance. Despite of that pasteurization milk will gives opportunities to decrease risk of diabetes accompanied with physical activity. Therefore, the combination cow milk intakes and routine physical activities can help decreasing the risk of diabetes.

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THE CONTRIBUTION OF LEG MUSCLE STRENGTH AND DYNAMIC BALANCE TOWARDS THE ABILITY OF DOLLYO CHAGI KICK

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Abstract

Objectives: The purpose of this study was to find out the contribution of leg muscle strength and dynamic balance toward the ability of Dollyo Chagi kick of Tae Kwon Do male athletes at Barcelona Tae Kwon Do Training Center (BTTC) Rokan Hulu Riau.
Methods: Subject of the study were 60 Tae Kwon Do male athletes who have 1 year experiences in both training and competitions. Leg muscle strength was measured with leg dynamometer and dynamic balance, was measured with Bass test. Data were analyzed by Simple and Multiple Correlation and Regression.
Results: The results showed that all of data obtained elicited significant ($p < 0.05$): (1) there is significant contribution of the leg muscle strength towards the ability of Dollyo Chagi of male Tae Kwon Do athletes, which is contributes of 40.96%. (2) There is significant contribution of dynamic balance towards the ability of Dollyo Chagi of Tae Kwon Do male athletes, which contributes 40.6% (3) there is significant contribution of the Leg muscle strength and Dynamic Balance all together towards the Ability of Dollyo Chagi of Tae Kwon Do male athletes at BTTC District Rokan Hulu Riau, which contributes 59,29%.
Conclusions: This study states that the Leg Muscle Strength and Dynamic Balance contributes toward Dollyo Chagi kick ability of male Tae Kwon Do athletes in BTTC Rokan Hulu Riau, it's mean that Leg Muscles strength and Dynamic Balance can be used in increasing the ability of Dollyo Chagi kick of Tae Kwon Do male Athlete. It is expected that the trainers have understanding and insight in training especially in Tae Kwon Do martial arts activities in BTTC at District Rokan Hulu Riau and to establish training parameters as required to develop leg muscle strength and dynamic balance in Tae Kwon Do

Key words *:* leg muscle strength, dynamic balance, dollyo chagi kick.

INTRODUCTION

Sports activities have become life necessities of the community in Indonesia, whether for the purpose of high sport achievement or just to fill the leisure time such as games, gymnastics, soccer, volleyball and also martial sports and so forth. Tae Kwon Do is one of the martial arts as a popular sport among many people[1]. Tae Kwon Do is a Korean martial art that is also a national sport of Korea and characterized by its emphasis on head-height kicks, jumping and spinning kicks, and fast kicking techniques. This is one of the world's most popular martial arts competed in the Olympics. Tae Kwon Do has grown in society and does not look at the social status, sex, age who participate in the Tae Kwon Do martial arts as evidenced by the increasing number of Tae Kwon do training centers not only to socialized this sport as one of the activities to fill leisure time, also for high performance in sports coaching.

Each training program must have clear objectives and be processed systematically, thus, in addition to skill training, a high performance sports should not ignore physical condition training program. Tae Kwon Do's training program includes fostering the following aspects: the physical condition, technique, tactics and athletic psychology.

Tae Kwon Do is dominated by foot or hand attacks, so if the technique is supported by physical ability it will be a decisive factor in winning a fight. where the principal of the Tae Kwon Do concept is the combination of strength, ability and speed (Suryadi, 2009). Therefore, both technique and physical ability must be equaly in order to succeed in training or in competition, especially in applying the technique of foot attack or kick. The reason is, this technique is one of the most dominant attack techniques in competition and this attack has a higher value than a hand blow attack.

Kick is one of the attacks that can knock out your opponent quickly. There are several kicking techniques in Tae Kwon Do such as Dollyo Chagi (kick spin / play), Yeop Chagi (side kick), Dwi chagi (kick back), Naeryo Chagi (kick drift) and others. One of the most common techniques used in training or in competition is dollyo chagi and this technique is relatively easy to apply, and able to generate in resulting power kicks.

In order to reach the quality as Tae Kwon Doin, the athletes have to have a good quality parameters in physically and technically. There is a transactions and an interaction between physical, technique, and tactics. Thus, however the athlete's technical ability is great, but if not supported by physical qualities, a Tae Kwon Doin will quickly exhausted and at the same time will impair the technical coordination.

Based on observations, approximately 25% of Tae Kwon Do male Athletes in the District of Rokan Hulu Riau is still not able to do Dollyo Chagi kick correctly and quickly. If this kick can not be mastered properly, then he will lose the chance to get a point in every match. Therefore, this kick must be completely mastered of both feet by paying attention to several things such as concentration in view of the target, speed, strength, power, distance, timing, static or dynamic balance while and/or after a kick.

Many factors influences the weakness as mentioned before.Tae Kwon Do dominated by foot or hand attack, if the technique is supported by a good physical ability it will be a decisive factor in winning a battle. Therefore there must be equality between the ability of the technique and physical ability, especially in applying the technique of foot attack or kick. Dollyo Chagi it self is the most versatile and frequently used scoring technique in Olympic Tae Kwon Do Matches and is an attack that has a higher value than a hand blow attack..

According to the previous observations, the failure of dollyo chagi are much depend on the leg muscle strength and the weakness will impair the stability of body position especially during movement[3] and other physical components such as dynamic balance. There are two components that cause dollyo chagi technique can not be done perfectly.

Strength is one of the most dominant elements of physical condition in human life related to human motion and activity. Without strength it is unlikely that it will be able to sustain life well and reasonably. Muscle Leg Strength is the maximum force of contraction produced by a group of muscles. Dynamic balance (dynamic balance) on the other hand, is a person's ability to move from one point to another or from one space to another while still maintaining his balance, such as jumping loops in ice skating, forwarding salto or backwards in artistic gymnastics, leaping moves on a jump table, or while doing a salto kick on football, rollerblading, or kicking moments and so on

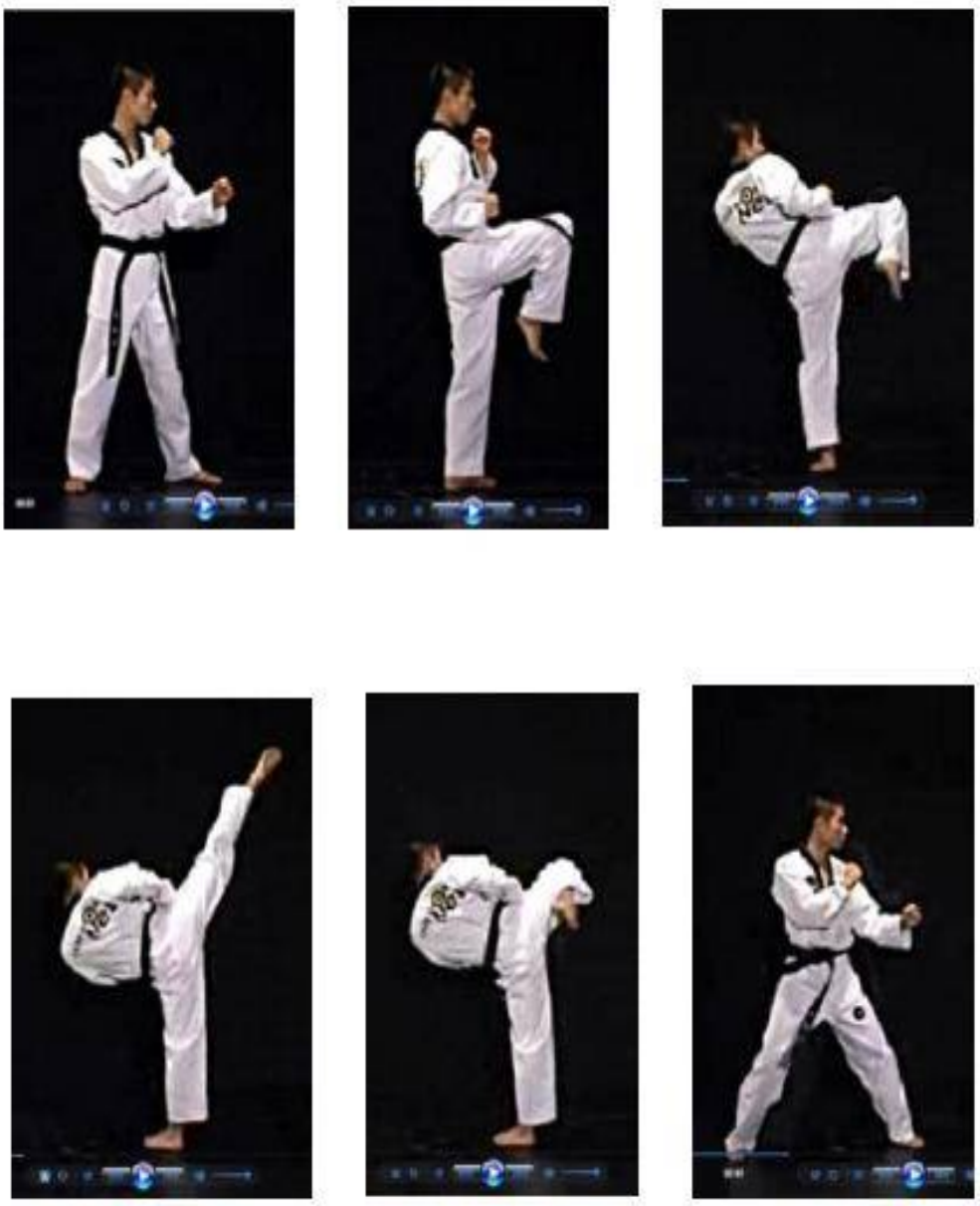

Figure. 1. Phases of dollyo chagi

METHODS

Out of 120 Tae Kwon Do athletes, sixty Tae Kwon Do athletes took part in this study. The research included measurements of leg muscle strength, dynamic balance, and dollyo chagi kick. Leg muscle strength was assessed with leg dynamometer and dynamic balance was assessed with Modified Bass Test. Dollyo chagi kick was assessed according to Depdiknas (2004) as main criteria for the ability. As an indicator of success in tests performed, the athletes do dollyo chagi kick and the score gained is the number of repetitions in 20 seconds.

Statistical Analysis

Simple and multiple Correlation was applied in oder to find out the correlation between X_1 to Y, X_2 to Y, and $X_{1.2}$ all together to Y. simple and multiple Regression was applied in order to know the degree of contribution of X_1 to Y , X_2 to Y, and $X_{1.2}$ all together to Y on the level of α .05.

RESULTS AND DISCUSSION

At first, based on the product moment and regression analysis, it revealed that there is significance contribution of leg muscle strength toward the ability of dollyo chagi kick which contributes 40.96%. as shown on the following table

Tabel 1. Summary of correlation coefficient and contribution of leg muscle strength toward dollyo chagi kick of male athletes

Correlation coefficient rx_1y	Index of Determination (r^2)	T_{count}	t_{table}	Conclusion
0.64	0.254	6.34	1.67	Significance

Second, there is a significant contribution of dynamic balance toward the ability of dollyo chagi which contributes 46.26% as shown on the table below

Tabel 2. Summary of correlation coefficient and contribution of leg muscle strength toward dollyo chagi kick of male athletes

Correlation coefficient rx_2y	Index of Determination (r^2)	T_{count}	t_{table}	Conclusion
0.65	0.25	6.51	1.67	Significance

Third, there is a significant contribution of leg muscle strength and dynamic balance all together toward the ability of dollyo chagi which contributes 46.26% as shown on the table next page

Tabel 3. Summary of correlation coefficient and contribution of leg muscle strength and dynamic balance all together toward dollyo chagi kick of male athletes

Correlation coefficient $rx_{1.2}y$	Index of Determination (r^2)	T_{count}	t_{table}	Conclusion
0.77	0.245	9.19	3.16	Significance

Discussion

Contribution of leg musce strength toward *Dollyo Chagi* kick on Tae Kwon Do male athletes at BTTC Kabupaten Rokan Hulu

Leg muscle Strength basically one of the important factors in the training process which will ultimately affect the ability of Dollyo Chagi kick at Tae Kwon Do male athletes. Muscle strength of the lower limb is particulary important because it is essential for kicking, jumping, and maintaining postural stability (Fong, 2011) referred to in this study is more specific, namely Muscle Limb Strength. Based on the experience and research data on the muscle strength of limbs, it was found that most of the leg muscle strength of Tae Kwon Do male athletes were classified as moderate.

There is a significant contribution of Leg Muscular Strength to Dollyo Chagi Kicking, should be considered that leg muscle strength should include in every the training program to foster and improve the Dollyo Chagi Kick on Tae Kwon Do male athletes, the reason is because this kind of technique is easy and most aplly in nature especially in the match.

The contribution of dynamic balance toward *Dollyo Chagi* kick at Tae Kwon Do male athletes at BTTC Kabupaten Rokan Hulu

Besides Dynamic balance there is another kind of balance namely static balance. The dynamic balance is an important factor in improving physical condition that should be mastered by every athletes, especially when it done while very dynamic motion. Kicking dollyo chagi is done in a state of motion and relies to keep stable in one leg, and therefore dynamic balance is a necessity that must be mastered by Tae Kwon Doin. Taek Kwon Do forms further challenge dynamic balance by incorporating directional changes of 90^o, 180^o, and 270^o in conjuction with blocks, strikes, and kick (Ronita, 2007). Based on the result, the dynamic balance contributes 46.26% toward *Dollyo Chagi* (0.05α). its mean that dynamic balance should be considerd to be included in every training program.

Contribution of leg muscle strength and dynamic balance toward *Dollyo Chagi* kick Tae Kwon Do male athletes at BTTC Kabupaten Rokan Hulu

Basically to improve all of the techniques in Tae Kwon Do, all of the biomotor ability should be improve according to the need of each athletes including leg muscle strength and dynamic balance. As state of the result that leg muscle strength and dynamic balance all together have contribute significantly toward *Dollyo Chagi* , which is contributes 59.29%, its mean that more than a half the two factors contribute toward dollyo chaghi kick of Tae Kwon Do male athletes at BTTC Kabupaten Rokan Hulu Riau and 40.70% determined by other factors.

CONCLUSION AND SUGGESTION

According to the result of this research, its concluded that: Leg muscle strength and Dynamic balance contributes significantly toward *Dollyo Chagi* of Tae Kwon Do male athletes at BTTC Kabupaten Rokan Hulu. In order to foster and improve the Dollyo Chagi Kick Tae Kwon Do male athletes. It is recommended that both of the above variables should be trained maximally, because it can be guaranteed to make a significant contribution to the success of an athlete during training or in Compettitions.

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LAY UP SHOOT SKILL OF FIK UNP STUDENTS (EXPERIMENTAL STUDY OF TEACHING METHOD AND LEARNING MOTIVATION TOWARD LAY UP SHOOT SKILL OF FIK UNP STUDENTS)

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Abstract

Objectives: The purpose of this research was to determine the outcome differences of learning method and learning motivation toward Lay Up Shoot basketball skills students at FIK UNP in Padang. Specifically, it was to determine (1) differences in learning outcomes in performing Lay Up Shoot Basketball skills of students who were treated cooperative methods and method of inquiry, (2) the interaction between teaching methods and learning motivation towards learning outcomes Lay Up Shoot basketball skills, (3) differences in students' learning outcomes Lay Up Shoot basketball of skills students who have high motivation to learn between cooperative learning method with learning method of inquiry, (4) differences in students' learning outcomes Lay Up Shoot basket ball skills who have low learning motivation treated by cooperative learning method and inquiry learning methods.

Methods: This research was conducted by using experimental study with designs by level 2x2. The population of this research was male student's as much as 72 students at FIK UNP Padang in the second semester (January-June) of the academic year 2015/2016. 40 studemts were taken as the sample thorugh random sampling. The instrument of research was in the form of a test to measure Lay Up Shoot basketball skills and students' tests level of motivation. Data analysis technique was done by testing that requirements analysis as a prerequisite for the use of statistical analysis techniques and followed by hypothesis testing. Data were analyzed using Anova Design level by 2x2 at the level of a = 0.05, followed by Turkey's test.

Results: of the tukey test results, the first hypothesis shows that Qcount = 6.35> Qtable (α = 0.05 / 40) = 2.86. The second research hypothesis states that Q_{count} = 13.95 > $Q_{table\ (\alpha = 0.01/20)}$ = 4.02. The third research hypothesis stated Q_{count} = 4.97 > $Q_{table\ (\alpha = 0.01/20)}$ = 4.02. The fourth hypothesis of research Based on the ANAVA testing outcome, it can be seen that F_{count} = 21.31>$F_{table\ (\alpha = 0.01)}$ = 6.96. it means that H_0 is rejected and H_1 is accepted. In other words, there is significant interaction between leaning method and learning motivation.

Conclusions: It was proved that the learning outcomes of Lay Up Shoot basketball skills of students in both treatment provides a significant difference. Through further testing, it proved that the outcome of learning Lay Up Shoot basket ball skills treated cooperative learning is higher than those who did not.

Keywords : lay up shoot, learning motivation

INTRODUCTION

Basketball is one of popular game of all ages in the world. It is a game which is playful, competitive, educative, entertaining and healthful. Personal skills such as shooting, luring, dribbling, rebound and teamwork to attack or defense are the requirements in order to perform this game successfully (Jon, 2007: 13). It means that the movements needed in this game are the combinations of several supporting motions. This game is really suitable to watch because it can be performed indoor and it needs only a small field to play.

Lay up shoot is a shoot to put the ball to the basket through integrating several motions to perform complex movements. It is a shoot which is performed near by the basket as if the ball is put into the basket preceded by two steps before (Ahmadi, 2007: 19). Based on this opinion, it can be concluded that lay up shoot is done systematically through dribbling the ball, jumping closely to the opponent basket and putting the hand as close as possible to the basket and finally putting the ball to the opponent's basket adjusted with the way how to hold the ball, players' sight, balance, elbow adjustment, and the foot step.

Learning Motivation

Based on Good and Brophy in Fardi (1997:13), they propose motivation as a construct to state the beginning, direction, intensity and the attendance of behavior. As the controoler of someone behavior, Marten in Fardi (1997:14) says that motivations comes from two sources; intrinsic and extrinsic motivation. Intrinsic motivation is natural force comes from oneself to do something not to gain appreciation but to gain self satisfaction. Extrinsic motivation is external force to cause someone to do something. The external forces are usually caused by the desire to gain something beneficial (Fardi, 2007:15). Setyobroto (2002:28) says that the athlete's motivations are to 1) show the skill and achievement, 2) show the strengths, 3) attain success, 4) beat someone, 5) show group's pride, 6) look for sensation, 7) attain career, 8) gain materials, and 9) to attain popularity. Based on the opinion above, it can be concluded that to perform such a perfect lay up shoot skill, an athlete should have high motivation which will influence his earnestness to learn, to prepare physical condition and to perform a good and optimal technique of lay up shoot skill.

Cooperative Learning Method

Cooperative learning method is a method which requires the students to communicate well in a group (Nurhadi, 2004: 65). The learning is begun when the group is formed. Then the teacher and students choose certain topic to discuss in the group (Agus, 2009:93). According to Slavin, cooperative learning is a set of instructional method that requires student work in small, mixed-ability learning groups. It means that cooperative learning is a set of instructional method in which the students needs to work in small group with mix-ability group member (Slavin, 2010: 173). Cooperative learning method surely can promote the students through small group consisting of 4-5 heterogenic members. The learning process is begun by stating the learning purpose, explaining the materials, group work, quiz, and group rewards. Cooperative learning method increases students' willing to contribute positively to the group and promotes students' motivation to follow the learning process which will influence the learning outcome consequently (Trianto, 2009:58). Based on the discussion above, it can be concluded that cooperative learning method is a method which requires the students to learn in heterogenic group to promote their academic skill.

Inquiry Method

Inquiry method is a method which focuses on the students. The task designed in this method is to give option and deliverance to the student to work as they wish within control. According to Lutan (2001: 61), this method offers freedom for to students to work and move freely. The lecturer's task is to prepare the learning material and general instructions. The students' task is to respond suitably. Based on the explanation above, inquiry method is a learning method to promote students' scientific thought. Consequently, the students will learn independently, improve their creativity to solve problem. The students are the subject of learning process and the lecturer is only the facilitator. This research focuses on the promoting the lay up shoot skill of FIK UNP student.

Relevant Studies

The findings of Cucut Hidayat shows the influence of learning style and learning motivation toward basic movement badminton od SDN Cieunteung students, Tasikmalaya, West Java. It informs entirely that inquiry method gives significant influence rather than order/command method towards male students' skill, especially for those whose high motoric skill (Cucut Hidayat, 2008: 185-186).

METHOD

The steps are:

1. Research preparation including the permission, try out of lay up shoot and learning motivation instrument, sampling, and treatment.
2. Research implementation including presenting the treatment to the groups.
3. Data collecting of lay up shoot tes after having 16 meetings.

The treatment was given during the exercise. every meeting was held in 2 hours. The place of research was in the GOR PPSP basketball field at FIK UNP. Every group was given treatment twice a week for 8 weeks (16 meetings). The research is aim at knowing 1) the learning outcome differences of students' lay up shoot skill between those who were treated by cooperative method and inquiry method, 2) the interaction between learning method and learning motivation toward learning outcome of lay up shoot skill, 3) the learning outcome differences of high motivation students who were treated by cooperative and inquiry method, 4) the learning outcome of low motivation students who were treated by cooperative and inquiry method.

The research method used was experimental study using 2x2 design (by level). It was chosen because there were treatment given to independent variable that is learning method and leaning motivation to know each influences toward students' lay up shoot skill of FIK UNP (dependent variable). The target population was all students of sport education study program who enrolled basketball course in FIK UNP at January-June, 2015/2016 academic year. The population was homogeny since it has similar sillaby, teacher/lecturer, course material, facility and curriculum. Thus, the population was about 72 students, The sampling was taken based on verducci that is based on learning motivation test to determine the group. For those whose outcome was more than 27% were categorized high motivations students and the rest (less than 27%) were categorized low motivation students (Verducci, 1980: 176-177).

To fulfill the experimental study requirements, every group was involved and wa given treatment. They were 20 high motivation students and 20 low motivations students. Then, every group was divided into two groups through random sampling. Thus, there were 4 groups consisting of 10 members/students. The hypothesis was tested by ANAVA testing by level 2x2 design (α=0,05). If the outcome is significant and was interacted to n (sample), the test will be continued by using Tukey test to show better interaction.

RESULTS AND DISCUSSION

The learning outcome differences in performing lay up shoot skill between those who were treated by cooperative method and inquiry method

Based on the ANAVA testing outcome, it can be seen that $F_{count} = 4.81 > F_{table\ (\alpha = 0.05/40)} = 4.08$. it means that H_0 is rejected and H_1 is accepted. In other words, there is significant difference in the learning outcome of students' lay up shoot skill between those who were treated by cooperative method and inquiry method. The learning outcome of students who were treated by cooperative method is higher than those who were treated by inquiry method. Then, Tukey test was conducted to know the differences of the treatment given. The outcome shows that $Q_{count} = 6.35 > Q_{table\ (\alpha = 0.05/40)} = 2.86$. it means that there is significant difference in the learning outcome of students' lay up shoot skill between those who were treated by cooperative method and inquiry method. The learning outcome of students who were treated by cooperative method is higher than those who were treated by inquiry method.

The learning outcome differences of high motivation students in performing lay up shoot skill between those who were treated by cooperative method and inquiry method

Based on Tukey test, $Q_{count} = 13.95 > Q_{table\ (\alpha = 0.01/20)} = 4.02$. it means that H_0 is rejected and H_1 is accepted. Hence, there is significant difference. The learning outcome of students who were treated by cooperative method is higher than those who were treated by inquiry method.

The learning outcome differences of low motivation students in performing lay up shoot skill between those who were treated by cooperative method and inquiry method

Based on Tukey test, Qcount = 4.97 > Qtable (α = 0.01/20) = 4.02. it means that H0 is rejected and H1 is accepted. Hence, there is significant difference. The learning outcome of students who were treated by cooperative method is lower than those who were treated by inquiry method.

The influence and interaction between the treatment given (learning method) and learning motivation toward students' learning outcome in performing lay up shoot skill

Based on the ANAVA testing outcome, it can be seen that $F_{count} = 21.31 > F_{table\ (\alpha = 0.01)} = 6.96$. it means that H_0 is rejected and H_1 is accepted. In other words, there is significant interaction between leaning method and learning motivation.

Based on hypothesis testing, it can be seen that there is significant difference in students' learning outcome in performing lay up shoot skill. The further testing also shows that the learning outcome of those who were treated by cooperative method is higher than those who were treated by inquiry method. Learning motivation is also p;ay significant role to the learning outcome. It shows that high motivation students perform higher and better learning outcome than low motivation students.

The learning outcome differences in performing lay up shoot skill between those who were treated by cooperative method and inquiry method

The first hypothesis testing outcome shows that the students whore treated by cooperative method have higher learning outcome than those who were treated by inquiry method. In other words, cooperative method is more effective than inquiry method. The outcome above is along with the research finding of Sutaman (2014) that cooperative method can increase students' responsibility to contribute positively to their group and can promote their enthusiasm to follow the learning process in which can effect to their learning outcome later. It goes along with Trianto (2009: 58) who says that cooperative method can promote cooperative habit, better relationship and students academic aspects. The same opinion stated by Roberts (2010:173) who says that cooperative learning can increase students' lay up shoot skill as well as their self-esteem and relationship between group member.

The learning outcome differences of high motivation students in performing lay up shoot skill between those who were treated by cooperative method and inquiry method

The outcome shows that there is significant difference of high motivation students' learning outcome who were treated by cooperative learning. The learning outcome was higher than those who were treated by inquiry method. The similar outcome was also found by Nurhadi (2004) who states that cooperative learning method is a method which requires the students to have good ability both in communication and in lay up shoot skill in a group. Then, Suprijono (2009) also states that cooperative learning is begun by dividing the students into groups. After that, the lecturer and the students choose the topic related to the lay up shoot skill. It goes along with Robert (2010: 14) who says that cooperative learning demands the students to work within small group consisting of more or less 4 members in practicing basketball lay up shoot skill.

The learning outcome differences of low motivation students in performing lay up shoot skill between those who were treated by cooperative method and inquiry method

The hypothesis testing shows that there is significant difference of low motivation students' learning outcome who were treated by cooperative learning and those who treated by inquiry method. The learning outcome was lower than those who were treated by inquiry method. On the other hand, ... (2000) explains that cooperative learning can promote students' motivation to prefer practicing lay up shoot skill more. It is because cooperative learning create such a delightful atmosphere which makes the students eager to learn more and more about lay up shoot skill.

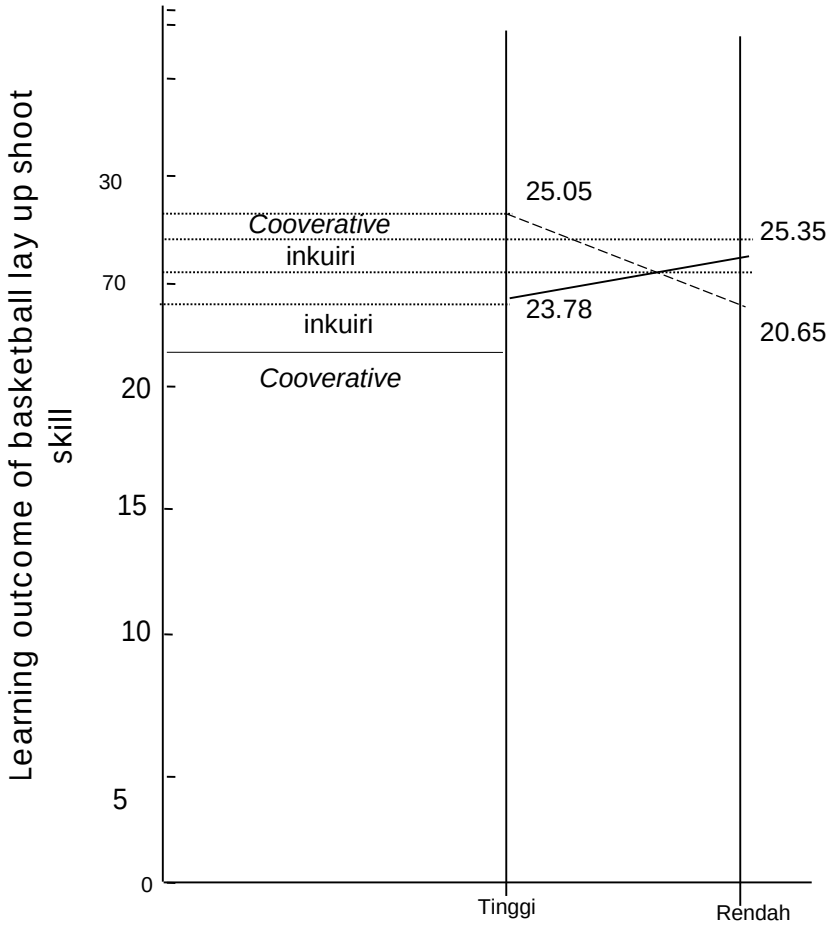

Figure 1. Interaction Between Learning Method and Learning Motivation

Note:

———— = learning motivation

– – – – – – – = Learning approach

The hypothesis testing shows that there is interaction between learning model and students' learning motivation and its influence toward learning outcome of lay up shoot skill. The high motivation students who were treated by cooperative learning method performed better and higher learning outcome than those who treated by inquiry method.

Table 1. Description Data and Research Findings

METODE / MOTIVASI	PEMBELAJARAN KOOPERATIF (A_1)		PEMBELAJARAN INKUIRI (A_2)	
Tinggi (B_1)	n_1	10	n_2	10
	$\sum X_1$	250,50	$\sum X_2$	206,50
	$\sum X_1^2$	6299,82	$\sum X_2^2$	4323,31
	$\bar{X}_1$	25,05	$\bar{X}_2$	20,65
	SD	1,65	SD	2,56
	MAX	27,17	MAX	24,33
	MIN	21,67	MIN	17,67
Rendah (B_2)	n_3	10	n_4	10
	$\sum X_3$	237,83	$\sum X_4$	253,50
	$\sum X_3^2$	5699,58	$\sum X_4^2$	6449,86
	$\bar{X}_3$	23,78	$\bar{X}_4$	25,35
	SD	2,19	SD	1,62
	MAX	26,83	MAX	27,33
	MIN	21,00	MIN	22,50
$\sum k$	nk_1	20	nk_2	20
	$\sum Xk_1$	488,34	$\sum Xk_2$	491,33
	$\sum Xk_1^2$	11.999,40	$\sum Xk_2^2$	10.773,17
	Xk_1	24,42	Xk_2	23,00
	SD	2,00	SD	3,19
	MAX	27,17	MAX	27,33
	MIN	21,00	MIN	17,67

CONCLUSION AND SUGGESTION

Based on the findings above, cooperative learning method influences students' lay up shoot skill. Hence, there should endeavor to increase students' lay up shoot skill in basketball through learning model such as: first, the students work independently by collecting information from several sources about lay up shoot skill and by learning from other students. Second, the students can express their idea verbally and discuss it to other students. Third, the learning method can promote students to respect each other and to realize their own limitation and accept the differences among group member. Fourth, the learning model improves students' responsibility during learning process. Fifth, this learning model is effective to improve students' skill as well as their social interaction and their positive interpersonal relationship. Sixth, it can promote students' ability to analyze their own idea and comprehension and to give feedback. The students encourage to solve the problem without feeling afraid because it is the responsibility of the group. Seventh, the interaction in cooperative method stimulates the students to think and to be more motivated which will be beneficial for their long-term education.

Based on research findings, the learning motivation influences significantly toward students' lay up shoot skill in basketball. The implication of this finding is the better the learning motivation, the better the skill. Thus, learning motivation should be improved. Based on research findings, inquiry learning method influence significantly toward lay up shoot skill in basketball of FIK UNP

students. The implication of this finding is the better the inquiry method, the better the lay up shoot skill. Hence, the students' lay up shoot skill can be improved through using inquiry learning method.

First, the learning of this strategy is meaningful because it stresses on the improvement of students' cognitive, affective and psychometric aspects. This method accentuates the students to learn based on their learning habit. Second, it leads the students to be more active and to find their own problem solving in order to increase their self-confidence and curiousness about lay up shoot skill in basketball. Third, inquiry learning method is considered suitable with the development of modern learning psychology which assumes that learning is the changing of behavior due to the experience. The lecturer is only the facilitator in this learning method.

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THE EFFECT OF PRACTICE AND GAME LEARNING APPROACH ON THE CHEST PASS LEARNING ACHIEVEMENT ON EXTRACURRICULAR BASKET BALL PLAYING

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Abstract

Objectives: The objectives of research were (1) to find out whether or not there was a difference of practice and game learning approaches effects on the chest pass ability in basket ball playing in the male extracurricular students of SMA Santo Yosef in the school year of 2012/2013, and (2) to find out which one having better effect, practice or game learning approach on the chest pass ability in basket ball playing in the male extracurricular students of SMA Santo Yosef in the school year of 2012/2013.
Methods: The learning approach used to achieve the objective above was an experiment one with pretest-posttest design corresponding to research design. The treatment was administered 3 times a week for 6 weeks or 1.5 months was conducted gradually according to the predetermined practice program. The data was collected using test and measurement tests, and chest pass learning achievement.
Results: Based on the result of data analysis, it could be concluded that: (1) there was a significant difference of effect between practice and game learning approaches on the chest pass ability in basket ball playing in the male extracurricular students of SMA Santo Yosef in the school year of 2012/2013, with calculation result of 4.883. Meanwhile the threshold of hypothesis rejection was zero (null), thus the null hypothesis was not supported meaning that there was a difference of effect between practice and game learning approach groups, and (2) The game learning approach was more effective than the practice one; the result of chest pass improvement calculation on game learning approach indicated that there was an increase by 9.585%. Meanwhile, the calculation of chest pass learning achievement in practice group showed an increase of 8.010%.
Conclusion: (1) there was a significant difference of effect between practice and game learning approaches, (2) The game learning approach was more effective than the practice one;

Keywords : Learning Achievement, Practive, Game Learning, *Chest Pass*, Basket Ball

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INTRODUCTION

Basketball is one of the big ball game sports that is summarized in the subject matter of physical education. Agus Margono (2010: 15) explains that, "basic technique in basketball is the motion skills performed on basketball activities related to the activity of playing ball or activity will play the ball". In order for students skilled to play basketball, then the most fundamental thing is mastering the basic techniques of basketball. As for the various basic techniques of basketball games such as basic dribbling motion, basic moves pass and receive the ball, and move the base enter the ball.

In an effort to improve the mastery of basic techniques of playing basketball an educator must be able to apply effective and efficient ways of teaching in order to obtain optimal ability. The many forms of basic learning techniques of playing basketball require teachers to carefully select learning that can improve students' basketball playing skills. There are two kinds of approaches that can be selected from the learning approaches in improving the basic skills of learners, such as the approach to learning exercises and learning approach to play. Learning with an approach to exercise is a physical education education that emphasizes the technical skills, is a way of learning the technique of a sport that is done repeatedly until there is an effective and efficient motion automation. Learning with an exercise approach focuses on the technical elements separately. Learning with this exercise approach has a goal to improve the mastery of a sport technique, so that students are expected to have the technical skills to support his appearance in a match or play.

Based on the way of learning with practice learning approach shows that the mastery of technique is the main element that must be mastered by students. But on the other hand this learning approach is less able to meet the desires of the students movement. Because at the age of the children to adolescence freedom of movement is needed in order to feel or experience the atmosphere of the race or the actual game of the technique learned. Besides, students are also less happy with the explanation of teachers who are too long. But students are more happy and happy if in learning sports skills passion moves channeled in the form of the game, although the technical ability is not adequate.

For that a physical education educator should also be able to provide learning with a play approach. Because by playing can stimulate the ability to think and understanding of the concept of movement of the learned sports. Through the game learners will be more excited. In following the task of teaching, and learning motivation increases. With a good learning motivation, it is expected that the techniques learned can be mastered properly as expected. In this study focused on the ability of chest pass in basketball game on students extracurricular participants of SMA Santo Yosef. Passing and receiving the ball is the basis of one of the basic techniques of basketball games. Passing the ball or in terms of rules in a game of basketball is passing. In principle, in basketball games have a purpose to connect players with each other to gain significant cooperation for the effort to attack the opponent's defense. Based on the direction of the ball or the type of passing in the rules of the game of basketball, divided into (3) ie, chest pass, over head and, bounce pass. Passing is part of the thinking of a player in the game. If you know the type of passing that will be done in certain situations, you can make a change of pattern to be done.

Through the approach of learning to practice students are taught techniques to perform a good and true chest pass, while the approach to play learning is a method of drills that draft in the form of a game. In addition, through the game requires students to solve the constraints faced when performing a chest pass through learning to practice and play students are expected to understand the technique of chest pass in a true basketball game and able to perform a chest pass well and correctly in a basketball game . The high school bachelor's extracurricular son's son is a man used in research to prove which learning approaches better influence the learning approach to practice and play on improving the chest pass in a basketball game.

METHODS

Approach to learning with the exercise is a model of learning that is done in a systematic, continuous, where the load and intensity of exercise increasingly day. Which ultimately provides a thorough stimulation of the body and aims to improve physical and mental abilities together. Based on the understanding of the implementation of learning chest pass by using the exercise approach, can be identified advantages and disadvantages. As for the advantages and disadvantages of the following exercise approach, learners can understand, master, demonstrate, and practice the correct chest pass technique. As well as for educators can correct errors doing the technique from the beginning, so as to minimize technical errors. But any surplus must have its shortcomings too, the lack of learning exercise is the incidence of boredom, because it must repeat the same movement and wait for the turn to do the teaching task. The learner's desire to play less fulfilled because the learning is done coherently and the learners do not understand the relevance of the chest pass technique that is learned about the real game situation.

Similarly, the learning approach to play also has advantages and disadvantages. The learning approach to play is a simple and fun teaching model. Play activities are well-liked learners. It is proven to channel the feelings that buried within the students because by playing in addition to relaxing the mind can also provide a learning experience that is very valuable for students if the play is organized and has a purpose. The advantages of learning to play is the emergence of a sense of fun, motivate learners in learning to increase. Because by playing can stimulate the ability to think, solve problems, and make the right decision according to the situation that occurred in the game.

And also improve the ability of learners to assess themselves and the ability during the teaching process whether it is good what has not.

In the learning approach also playpun have weakness, the weakness arises because learners do not understand the concept of movement technique of chest pass is good and correct, so it will often happened errors teker.Pendidik will have difficulty in controlling errors chest pass technique done by learners.

Based on the characteristics of the advantages and disadvantages of the approach to practice and play will certainly cause different effects. Different treatments will cause different responses to the perpetrator. It is thus assumed that, learning and training approaches have different effects on learning outcomes in playing basketball.

The learning approach to practice and play each has different characteristics. The elements developed from the two learning approaches are different and each is useful in the learning outcomes of chest passes in playing basketball.

RESULT AND DISCUSSION

Based on the result of data analysis, it could be concluded that: (1) there was a significant difference of effect between practice and game learning approaches on the chest pass ability in basket ball playing in the male extracurricular students of SMA Santo Yosef in the school year of 2012/2013, with calculation result of 4.883. Meanwhile the threshold of hypothesis rejection was zero (null), thus the null hypothesis was not supported meaning that there was a difference of effect between practice and game learning approach groups, and (2) The game learning approach was more effective than the practice one; the result of chest pass improvement calculation on game learning approach indicated that there was an increase by 9.585%. Meanwhile, the calculation of chest pass learning achievement in practice group showed an increase of 8.010%.

CONCLUSION AND SUGGESTION

Conclusion

Based on the results of research and data analysis has been done, can be obtained conclusion as follows:

1. There is a significant difference of influence between the learning approach to practice and the approach of learning play to the learning outcomes of chest pass on the students of extracurricular son of SMA Yosef Surakarta.
2. The results of the exercise using the learning approach to practice chest pass have a better effect than the approach of learning to play on the ability of chest pass students extracurricular son of SMA Yosef Surakarta.
3. Improvement of chest pass results are group 1 (Practice): 9.585% and group 2 (Play): 8.010%.

Implications

Based on the results of the research and the results of data analysis has been done, it is obtained, the implication that in giving the approach of learning chest pass, that students extracurricular basketball SMA santo yosef Surakarta 2012/2013 can do chest pass well and correctly with the decreasing error rate in the game Basketball in doing chest pass technique. The teacher or coach must choose the learning that is in accordance with the physical demands, situation and condition of the student. The form of increased exercise should be adapted to the organism's working system in the human body. In this research it turns out the practice of chest pass with approach to learning practice more appropriate with the situation and condition of students. This can be a rationale for the trainers, especially the sport in the field of basketball about the right learning

to improve the ability and support the results of the ability of chest pass especially for students extracurricular basketball.

Suggestions

In relation to the conclusions that have been taken and the implications, then to the teachers and builders of sports, especially in SMA yosef Surakarta suggested as follows:

1. In improving the chest pass ability the trainer / teacher should understand the various forms of the learning approach that can be used.
2. To improve the results of the chest pass ability the lecturer or coach should choose a learning approach to practice.

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THE INFLUENCE OF CIRCUIT TRAINING METHOD ON THE ENHANCEMENT OF PHYSICAL FITNESS OF SPORTS EDUCATION DEPARTMENT STUDENTS

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Abstract

Objectives: The purpose of this research is to see the effect of circuit training method to increase physical fitness of FIK UNP students.
Methods: It was a quasi-experiment given to students of Faculty of Sport Science (FIK) UNP who follow the lecture of Physical Condition Formation. The sample in this study was 18 people, consisting of 4 females and 14 males students chosen by purposive sampling technique. The treatments were given 16 times. The instrument used in this research was Indonesia Physical Fitness Level Tests (TKJI) in the aged of 16-19 years. The elements of physical conditions that were measured in this instrument were the speed, the strength of arm muscles, the strength and endurance of abdominal muscles and the endurance and explosive power of leg muscle.
Result: Based on the measurement of pre test, the average physical fitness level of FIK UNP students was 16.22 within average category (the highest score was 20 and lowest one was 10). While based on the measurement of the post test, it was obtained that the average score was 17.56 within good category (the highest score was 22 and the lowest one was 14) and based hypothesis testing using t-test (comparative) statistical formula, it was obtained the $t_{observe}$ = 3.69 while t_{table} at α = 0.05 and degrees of freedom (df) = n-1 was 1.74. Thus, $t_{observe}$ 3.69> t_{table} 1.74.
Conclusions: Based on statistical tests and discussions that have been done, It can be concluded that the method of training circuits has a significant influence on the enhancement of physical fitness of FIK UNP students.

Keywords: circuit training method, physical fitness level, sports education department students

INTRODUCTION

Education as a lifelong process of human development, one of them is Sports Education. In Act No. 3 of 2005 on National Sport System article 1, paragraph 11 stated that "sports education is a sport that is carried out as part of a regular and continuous education process to acquire knowledge, personality, skills, health and physical fitness".

Faculty of Sport Science is one of the Faculty at Universitas Negeri Padang that organizes specific education in the field of Sports Education, Sports Training, and Health and Recreation. Most of the lectures at the Faculty of Sport Science are practices in the field. In addition, the students also have training activities outside such as Football, Basketball, Volleyball, Handball, Cricket, Hockey, Pencak Silat, Karate and many other activities followed by students according to their respective hobbies and sports. Therefore it is essential for the students of FIK UNP Sports Education Department to have a good physical fitness so that students can follow all lectures and activities optimally.

Based on the experience and observations of writers in the field as the lecturer of Physical Condition Formation course, it was often seen that the students were quickly exhausted, especially in following the lecture practice. This will certainly bad for the students because besides following the lecture, the students were also busyto other activities related to the physical fitness. Therefore, the authors think it is very necessary for the students of the Department of Sport Education FIK UNP to improve the physical fitness for all activities in order to run smoothly. Hence,the authors are interested in conducting research to provide solutions to the problems faced by some students of the Department of Sport Education FIK UNP.

Definition of Exercise

Exercise is a process of consciously enhancing the athlete to achieve a maximum accomplishment with physical, technical, tactical and mental loads that are regular, focused, gradual and repetitive in time (Suharno 1993: 5). According to Bompa (1994: 2) "the exercise is a systematic, progressive repetition process with the ultimate goal of improving sports performance". Furthermore, Harsono (1988: 90) states that "the exercise is a systematic practice that is repeatedly done,within the more days the amount of training burden is increasing". In essence, exercise is an activity performed with a specific purpose that is repeatedly done.

Circuit Training Method

Circuit training methods are one type of an exercise program which is different from others programs and practice principles such as the principle of increased practice, overburdening, specificity, and the individual. In addition, this training is a simple exercise method that can be used to improve especially physical elements of muscle. This is in line with the opinion of Lejla (2016: 29)who states circuit training is created for the purpose of research and was designed to be simple to improve stamina and muscle endurance.

PBSI (2007: 45) states that the circuit method is "a series of several different types of exercises in which a person varies between one exercise with another in one interval". This is one form of efficient exercise because one can do more exercise in a shorter time. This is in accordance with Jill's opinion (2017: 2) "circuit-style programs have gained popularity due to the practicality and efficiency". According to Perman (2013: 51) "training circuit training is one method that can be given to improve general physical condition where in training circuit training the main target in the element of physical condition is strength, pulmonary heart resistance, velocity, and speed".

According to Sodikoen (1991: 62) says "the form of circuit training is arranged in a circle sequentially around the arena (field), starting from stage I, II, III and so on ." In an exercise, the athlete's circuit shall be through post after heading and shall not exceed the next heading. Furthermore, Sodikoen (1991: 65) re-explains that "one circuit has been considered completed if the athlete has completed the exercise in each post according to the target time set". According Edwarsyah (2017) circuit training method "is an exercise that combines many forms of exercise. These forms of circuit training are usually a combination of all elements of physical condition such as agility, endurance, strength, speed and other elements".

From the statements above, it can be said that circuit training is an exercise that combines many forms of exercise into posts consisting of a combination of all elements of physical conditions such as speed, endurance, strength, explosive muscle limbs, and physical condition so that training is more effective and efficient.

Definition of Physical fitness

According to Sutarman in Arsil (2009: 9) "physical fitness is an aspect, that is the physical aspect of total fitness which gives a person the ability to live a productive life and can adapt to each physical load (physical stress) worthly". Then the center of physical and recreational fitness of Depdikbud (1996: 1) states that physical fitness is the ability of one's body to perform daily work tasks without causing significant fatigue.

On the other hand, Sullivan in Gusril (2004: 25) states physical fitness is "ability to perform normal daily activities with a passionate and full of alertness, without experiencing significant fatigue and still have energy reserves to enjoy leisure activities as well as emergency events which came suddenly ". From opinions above, it can be said that physical fitness is a state of the body to be able to perform daily activities without experiencing significant fatigue.

Components of Physical fitness

The center for physical and recreational fitness of Depdikbud (1996: 1) states that physical fitness consists of several components, namely: "(1) Cardiovascular endurance, (2) Muscle endurance, (3) Muscle strength, (4) Flexibility, (5) Body composition, , (6) Speed of movement, (7) Agility, (8) Balance, (9) reaction time, (10) coordination ".

According to Gusril (2004: 65),the component of physical fitness consists of two parts: (A) health related fitness, consisting of cardiac endurance (cardiorespiratory), muscle strength, muscle

endurance, flexibility, body composition; (b) skill related fitness consists of: speed, strength, balance, agility, coordination, and reaction speed ".

Components of Physical Healthyness consist of:

1. Strength

Strength is "the ability of a group of muscles to generate power during contractions. Muscle strength must be possessed by the child. If the child does not have muscle strength, he can not perform physical play activities such as walking, running, jumping, throwing, climbing, hanging and pushing. " (Gusril, 2008: 16). Strength is the ability of the muscles in holding or receiving the burden to carry out the work performed. The power can be shown with the ability of a person in the movement of pushing, lifting and pulling an object.

2. Endurance.

Endurance "is defined as survival time a person can do at the length of time to the intensity of work or away from fatigue. Durability consists of two parts: general endurance and local muscle endurance. Common endurance is related to the ability of the cardiovascular system, whereas local muscular endurance is related to the ability of local muscles.

So endurance is a very influential thing in life, because it deals with the cardiovascular system that is in a person and endurance muscles that support each other.

3. Ability (flexibility)

The effectiveness of one's adjustment in various physical activities is largely determined by body shape. "Good formation, or wide range of motion, is a physiological and mechanical problem. In swimming, for example, efficient movements for various skills require high levels of elasticity ". (Ateng, 1992: 67). The formation is very supportive in the implementation of learning penjasorkes school.

Components of physical fitness in terms of performance consist of:

1. Coordination

Coordination is "the ability to integrate different movements into a single pattern of movement". (Ateng, 19992: 67). There are various requirements for each activity. Coordination exists in basketball skills such as dribbling, catching balls, and shooting. Individuals who are fit in these skills can perform not only every phase of the overall skills but are also able to change from one skill pattern to another in a very effective way.

2. Balance

Balance is the ability to master the motion of the body tool. (Ateng, 1992: 68). For instance, the upright arm fulcrum is an example of balance. There are lots of skills that require a high balance such as skates, gymnastics floor. The balance prevents a person from falling when the current pattern is being distracted.

3. Speed

According to Ihsan (2017) "speed means a movement in a short time that can travel far enough" and speed is the ability of individuals to perform the same movement over and over again in the shortest time. (Ateng, 1992: 67) Speed is the number of movements perunit time, for example in sprint is the number of repetitive movements of the legs perunit time. Muscle power and speed are closely related. The success of running fast can not be achieved without muscle strength to move the legs quickly.

4. Accuracy

Accuracy is the ability to master movement against a particular object. (Ateng, 1992: 68). Objects can be distance or can also be direct contact with body parts. Like on the right throw on a baseball, the second is catching something.

5. Agility

Agility is the ability to change the body position. (Ateng, 1992: 67). Examples of agility can be seen as in football, basketball or hurdle. Agility also includes a reversing element that is an essential element in various sports skills. Speed is another element in the success of the performance of

agility. Individuals are capable to change one position to another with high coordination and speed as the agility component.

6. Explosive Power

Ordinary muscle power is also called explosive power. Explosive power is the ability of a muscle or a group of muscles to overcome the load resistance at high speed in a complete movement. Explosive power is usually used for jumping, at the start on short running, to start swimming, throwing, kicking and all movements in sports which are done suddenly with maximum strength accompanied by high speed (Neldi, 2008: 112). Based on the description above, it can be concluded that the main components related to physical fitness are: the ability of a person in performing daily tasks, increasing the work force, especially heart function, blood circulation, lung, and muscle, without experiencing significant fatigue, power recovery, still have energy reserves, and generally help improve one's quality of life.

Physical fitness is also said to be aspects of physical ability that support one's success in performing various activities in his life. The activities can be in the form of daily work and for the immediate needs or activities performed during leisure time. A person's daily work or duties may vary. For the students of FIK UNP Sports Education Department, physical fitness is useful for supporting all student activities everyday starting from lectures, certain sports activities to student activities. The higher a person's physical fitness, the more likely it is to complete a job and the greater the chance to enjoy life. The quality of physical fitness is closely related to the quality of life. Physical fitness will vary from person to person and depends on several things: occupation, health condition, gender, age, level of the trained person and nutritional status.

METHODS

Types of Research

In accordance with the type of research that is quasi experiment research, it used training circuit method as the independent variable and physical fitness as the dependent variable. The design of research implementation is shown in Figure 1.

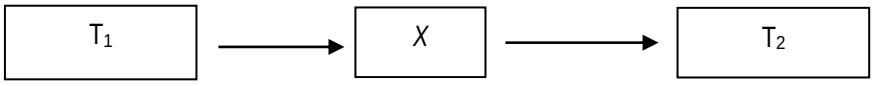

Figure 1. Research Design

Where:

T_1 : Initial data
X : Circuit Training Training
T_2 : Final Data

Population and Sample

According Sugiyono (2008: 117) population is a "generalization of the specific region consisting of objects/subjects that have certain qualities and characteristics set by the researchers to be studied and then is drawn conclusions. The population in this research was the students of Department of Sport Education FIK UNP which amounted to ± 6000 people. The sampling technique was purposive sampling technique in which only the students of Sport Education Department who follow the lecture of physical condition formation. So, the sample in this study was as many as 18 people consisting of 14 male students and 4 female students.

RESULTS AND DISCUSSION

1. Pre Test Data

From the results of measurements taken on the sample, it was obtained that the highest score was 21, the lowest score was 10, and average (mean) was 16.22, the median value was 16, and the standard deviation was 2.84. The details of the distribution of pre-test data can be seen in Table 1.

Table 1. Frequency Distribution of Pre Test Data
Circuit Training Method

No	Score Interval	Frequency		Physical Fitness Classification
		Fa	Fr (%)	
1	22 – 25	0	0	Very Good
2	18 – 21	6	33.33	Good
3	14 – 17	9	50	Average
4	10 – 13	3	16.67	Poor
5	5 – 9	0	0	Very Poor
Total		18	100	

2. Post Test Data

From the results of measurements taken on the sample, it was obtained that the highest score was 22, the lowest score was 14, and the average count (mean) was 17.50, the median was 17.5, and the standard deviation was 2.12. The details of the post test data distribution can be seen in Table 2.

Table 2. Frequency Distribution of Post Test Data
Circuit Training Method

No	Score Interval	Frequency		Physical Fitness Classification
		Fa	Fr (%)	
1	22 – 25	1	5.56	Very Good
2	18 – 21	8	44.44	Good
3	14 – 17	9	50	Average
4	10 – 13	0	0	Poor
5	5 – 9	0	0	Very Poor
Total		18	100	

Hypothesis testing

The hypothesis in this research is there is significant influence of circuit training method to increase physical fitness of Department of Sport Education students at FIK UNP. The hypothesis was tested by using t-test at a significant level of α 0.05%.

From the data analysis obtained, the t_{count} (3.69)> t_{table} (1.74). Thus Ho is rejected, and Ha is accepted. It means that that there is a significant influence of training circuits method to increase the physical fitness of the students of Sports Education Department FIK UNP accepted empirically.

Based on data analysis that has been done, the result of research indicates that Circuit Training Method can improve physical fitness of FIK UNP Education Sport Program students. As has been pointed out in previous theory studies, circuit training methods are an exercise method consisting of several posts where the material at each post varies. It is because the circuit training method is related to the stimulus method given with different stimulus variations so that it tends to be more effective to improve the ability of the physical condition especially the endurance. This is in accordance with the opinion of Lejla (2016: 29). "Circuit training created for the purpose of this research is designed to be simple, and also to improve stamina and muscle endurance".

in this study a given circuit training consists of 6 stages, which train the muscles as follows: in stage (I) arm muscle strength, stage (II)abdominal muscle strength, stage (III)waist muscle, stage (IV)flexibiliy, stage (V)speed, and stage (VI)coordination. The exercise was given 16 times. Circuit training programs provided is ranging from low exercise intensity to high intensity. This is done because the sample in this study is the students of the Department of Sport Education Faculty of Sport Science Universitas Negeri Padang where not all samples have athlete background. Hence, the training starts from the low intensity to the high intensity. According to Tadeusz (2017: 33), "Training was based on assumptions of circuit training with high intensity, which was supposed to enable the influence on different components of physical fitness. According to Tadeusz's opinion, the training circuit is given up to the high intensity in order to have an impact on the various components of physical fitness such as speed, strength, explosive power and the state of the field.

Based on the results of the research it can be seen that the method of training circuits is an exercise method that can be used to improve physical fitness, this is because the circuit training method has several advantages. According to Harsono in Yendrizal (1997: 26) (b) Each athlete can practice according to their respective abilities, (c) Each athlete may observe and see their respective progress, (d) the exercise is easily monitored, (e) The relatively short time frame can accommodate many people who are practicing at once ".

CONCLUSION AND SUGGESTION

Based on the findings of research and discussion of research results, it can be concluded that training circuit method gives significant influence to the improvement of Physical Fitness of the Sport Education Department students, Faculty of Sport Sciences (FIK),Universitas Negeri Padang.

Based on the above conclusions, there are some suggestions as follow:

1. The students need to follow the training process given well so that the exercise can provide the maximum effect.
2. The general public needs use the circuit training method in an effort to improve physical fitness because the training circuit method is suitable for both athletes and non athletes.

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EFFECT OF PHYSICAL ACTIVITY ON OXIDATIVE STRESS: A REVIEW OF IMPACT AND IMPLICATION AFTER TRAINING

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Abstract

This paper discusses the scientific evidence that has been collected regarding the influence of physical activity on oxidative stress. One of the body's responses to exercise or physical activity is increased levels of free radicals. Physical activity can increase the formation of free radicals in the body thereby increasing oxidative stress. Oxidative stress is a condition that occurs because of an imbalance between the production of free radicals with antioxidant defense systems in the body. MDA (Malondialdehyde) is one of the indicators used to determine oxidative stress in humans. MDA is the result of lipid peroxidation in the body due to free radicals. Increased conditions of oxidative stress have implications for muscle damage and if it lasts in the long run will lead to various diseases such as hypertension, atherosclerosis, diabetes, heart failure, stroke, and other chronic diseases. It is recommended that the understanding of this should be understood by all sports actors, both trainers, builders, and athletes themselves that will be useful to reduce the negative impact of physical activity so that positive impact or sports achievement will increase.

To reduce the negative impact of oxidative stress it is necessary to minimize one of them by taking antioxidants after physical activity. Consuming antioxidants in this form of vitamin C proven to reduce the occurrence of oxidative stress. Vitamin C easily scavenges free radicals and thus can prevent oxidative damage to important biological macromolecules. Vitamin C supplementation can suppress lipid peroxidation during exercise so as to reduce oxidative stress.

Keywords : physical activity, oxidative stress, MDA, Vitamin C.

INTRODUCTION

Physical activity is any body movement produced by skeletal muscles that require energy expenditure. Physical activity can be a variety of activities, ranging from daily activities to sports activities that aim to get the achievement. Physical activity is divided into three levels ie light, moderate, and heavy physical activity (Meiriyani Deliana Novitasary et al, 2013: 1043). Mild physical activity is anything related to moving the body. Medium physical activity is the movement of the body that causes a considerable amount of energy expenditure, in other words a move that causes the breath a little faster than normal. While heavy physical activity is the movement of the body that causes considerable energy expenditure (burning calories) so that the breath is much faster than usual (WHO, 2010: 25).

Physical activity can increase body oxygen consumption 10 to 15 times higher than rest time (Ni Made Dwi Sandhiutami et al, 2010: 18). Increased use of oxygen mainly by contracting muscles causes an increase in electron leakage from mitochondria to become reactive oxygen compounds (SOR). Generally 2-5% of the oxygen used in metabolic processes in the body will become superoxide ions so that when heavy physical activity increases the production of free radicals (I Made Jawi et al, 2008: 66). One of the body's responses to exercise or physical activity is increased levels of free radicals. According to Susiana Candrawati (2013: 456) physical activity can increase the formation of free radicals in the body thus increasing oxidative stress.

Oxidative stress is a condition that occurs because of an imbalance between the production of free radicals with antioxidant defense systems in the body. Free radicals are defined as a molecule or molecular section containing one or more unpaired electrons in the farthest orbit of the atom or molecule and can be self-existent (Halliwell, 1991). From the description above can be concluded that physical activity can affect physiological condition of cellular level that is with increasing of

oxidative stress. The type, intensity and duration of physical activity will also affect the oxidative stress caused. Once it is known that physical activity will increase oxidative stress, then the next step is how to overcome these negative effects. Taking into account the negative effects of physical activity or exercise is expected to increase its positive impact. Provision of vitamin C after physical activity or exercise will help reduce the occurrence of oxidative stress (Sureda Antoni, et al, 2008).

Formation of Free Radicals Due to Physical Activity

According to Clarkson (1995: 131-41) exercise or physical activity can increase the formation of free radicals through:

1). Increased oxygen reduction in the respiratory chains in the mitochondria.

The need for energy in the muscles of excessive contraction will increase, meaning that the inclusion of electrons into the respiratory chains of the mitochondria also increases. The two to four percent reduction in oxygen in the mitochondria is not 100 percent perfect, resulting in the formation of reactive oxygen (ROS) compounds such as superoxide (O2 *), hydrogen peroxide (H2O2), peroxyl radicals (OOH-), hydroxyl radicals (OH-). The main source of oxygen reduction in the mitochondria occurs within the inner membrane (inner membrane) layer of the mitochondria during oxidative phosphorylation. Briefly the emergence of electron leaks that form free radicals in oxidative phosphorylation is described as follows: In oxidative phosphorylation of synthesis of ATP is associated with oxygen reduction or cell respiration which is essentially a process of NADH reoxidation by oxygen. ATP synthesis in oxidative phosphorylation uses a proton gradient energy source found in two solutions separated by the inner membrane of the mitochondria. As the ions flow from a high grade solution to a low grade solution this energy and energy is used for the synthesis of ATP from ADP. High ion levels are maintained with ion pumps that drain protons from low grade solutions to high grade solutions. The proton stream requires the energy gained from redox solving ATP.

The energy generated in the redox process is used for the transfer of H + ions from the intra-mitochondrial fluid through the inner membrane out of the mitochondria. Over time the concentration of H + ions beyond mitochondria becomes higher than the concentration of H + ions in the mitochondria, the gradient of concentration resulting in H + ions flowing from outside the mitochondria into the mitochondria. During this flow, energy will be generated by ATP synthesis. In mitochondria, every mole of ATP is required to transfer 2 moles of H +.

2) Increased yield of epinephrine metabolism and other catecholamines.

During exercise there is an increase in sympathetic nerve activity, resulting in increased metabolism of epinephrine and other catecholamines with O_2 to form free radicals. In the long-term exercise of catecholamines in the plasma increases, resulting in stimulation of the adrenergic beta receptor, there is increased oxidative metabolism, especially in skeletal muscle and heart muscle. This metabolism to form energy from lipids, increases lipolysis through the beta-oxidation pathway. This beta-oxidation pathway generates free radicals. In addition, autocurridation of epinephrine into adrenochrome will form superoxide (O2 *) (Simpson, Luchessi 1997: 1206).

3) Increased activity of macrophages and leukocytes after muscle damage.

Hours after muscle damage due to mechanical trauma, leukocytes of neutrophils will be attracted to the damaged areas. The number of leukocytes of neutrophils is increasing with the release of toxins and free radicals. Netrofil will not survive in this area for more than a day, but it is continued by monocytes that are attracted to the damaged muscle area to form macrophages. This macrophage will also release free radicals (Clarkson, P.M. 1995: 138). Netrophil plays an important role as the body's defense against invasion of bacteria or viruses. In the event of inflammation or muscle damage due to stretching or ischemia of contraction muscle time, the first body defense response is neutrophils attracted to the injury region by chemotactic factors released by damaged cells. Netrophil then releases two kinds of substances ie lysozyme and superoxide free radicals (O2 *). The lysozyme in charge of clearing debris cells and damaged proteins, superoxide (O *) serves to mempagositosis bacteria or viruses. Neutrophil movement towards injury other than useful overcome inflamasi also resulted in secondary formation of superoxide free radicals (O2 *).

(Meydani, M; Evans, W.J. 1993: 187). Superoxide (O2 *) is formed by the enzyme mieloperoksidase and NADPH oxidase. Once free radicals are formed, it will lead to the formation of new free radicals by chain reactions. (Pincemail, J. et al., 1990: 432).

4) Increased activity of xanthine oxidase. (XO)

Xanthine oxidase is the main source of free radical formation during ischemia and cardiac reperfusion. During ischemia or when cardiac muscle contraction energy is met from the breakdown of ATP to ADP + AMP + energy for myocardial contraction. When oxygen depletion or ischemia AMP (Adenosine Mono Pospat) is converted into hypoxanthine - xanthine uric acid by xanthine oxidase through the oxygen reduction chain that results in superoxide (O2 *). The longer the ischemia, the more hipoxantin, the more superoxide radicals (O2 *) are formed.

Hypoxanthin and uric acid in plasma can be increased by 10 x after high intensity exercise. (Hellsten, et al. 1993: 197). Xantin oxidase is released by the muscle endothelial cells that are contracting. Similarly in severe exercise there will be increased activity of xanthine oxidase enzyme and increased lipid peroxidation in skeletal muscle cells, heart muscle and liver. (Norman, B. et al, 1987: 503). At the time of reperfusion or oxygen is sufficient, xanthin dehydrogenase is oxidized to xanthine oxidase and increased mitochondrial activity will increase the occurrence of free radicals. Here it appears that xanthin dehydrogenase plays a major role in the occurrence of free radicals during exercise. During the adequacy of oxygen or during an aerobic atmosphere, ATP is formed in the mitochondria through oxidative phosphorylation that produces free radicals and hypoxanthine-xanthine is converted to uric acid through xanthine dehydrogenase. When an atmosphere of oxygen deprivation (ischemia) increased xanthinoxidase enzyme activity that increases the formation of oxygen free radicals (Kim, J.D, et al., 1996: 123).

5) Increased activity of NADPH oxidase and Citochrome p. 450

When sufficient oxygen is available, NADPH oxidase catalyzes the transfer of one electron from NADPH to O2, resulting in superoxide (O2 *) and O2 * subsequently by dismutase to H2O2. The end result of this chain reaction is the dissolution of the unsaturated fatty acids (Poly Unsaturated Fatty Acid, PUFA) chains into various toxic (toxic) compounds to cells such as: Aldehydes such as malondialdehyde (MDA), 9-hydroxynonenal (HNE) .Serta various hydrocarbons such as ethane (C2H6) and pentane (C5H11) (Wijaya, A. 1996: 83).

All this results in severe cell membrane damage and endangers cell life. Based on this then the MDA is widely used as a marker of cell damage due to free radical attack on lipidperoksidasi. MDA is a highly reactive compound which is the end product of lipid peroxidation, and is usually used as a biological biomarker of lipid peroxidation to assess oxidative stress (De Zwart LL et al, 1998). The widely used method for this MDA examination is based on 36 reactions; one MDA molecule with two TBA molecules (thiobarbituric acid) will form TBARS (thiobarbituric acid reactive substance) (Wijaya, A.1996: 98).

The need for energy in muscles that is excessive contraction will increase, which means that oxygen uptake into the tissue also increases and the inclusion of electrons into the respiratory chains of the mitochondria also increases. This increase in VO2 will result in increased free radical formation. A balanced state will occur between the production of free radicals with antioxidant defenses. This balance can be lost by excessive free radical production after excessive or irregular exercise or due to deficiency in antioxidant defense mechanisms. Due to the imbalance between free radicals and antioxidants this will arise oxidative stress that can damage the cell membrane, DNA, or protein.

How to Overcome Oxidative Stress Due to Physical Activity

In general, antioxidants are divided into 2 groups: enzymatic antioxidants / primary antioxidants / antioxidants prevention and non-enzymatic antioxidants / antioxidants secondary / antioxidant chain reaction breaker. Enzymatic antioxidants consist of superoxide dismutase (SOD), glutathione peroxidase (GPx), and catalase which can give hydrogen atoms rapidly to radical compounds, then the antioxidant radicals formed soon turn into more stable compounds. These antioxidants work by preventing the formation of new free radical compounds, or converting free radicals that have

formed into less reactive molecules. Non-enzymatic antioxidants are also called chain reaction antioxidants consisting of vitamin C, vitamin E, and beta carotene. These antioxidants work by chopping off a chain-oxidation reaction from free radicals or by capturing them. As a result, free radicals will not react with cellular components. These enzymatic antioxidants and non-enzymatic antioxidants work together to combat the activity of oxidant compounds in the body.

Increased oxidants in the body that exceed the body's ability to neutralize it, can cause tissue damage. In this condition, oxidants can attack various components of the body with all the consequences. For example, an oxidant attack on unsaturated fatty acids is an important component of cell membrane constituents. Such an attack can lead to a chain reaction known as lipid peroxidation. The process results in the breakdown of fatty acids into various cell-toxic compounds, such as malondialdehyde (MDA) and non-hydroxy. The resulting MDA is then released into the blood, so that MDA levels in the blood (serum) can be an indirect sign of increased ROS (Hairrudin and Dina Helianti, 2009: 207- 208). This fact shows that heavy physical activity can cause harmful side effects to health, through increased oxidants, if the body's antioxidant defense system is not able to neutralize it, will lead to a condition called oxidative stress. Oxidative stress is believed to be an important factor in the emergence of various diseases, in these conditions require additional antioxidants from the outside (Suryohudoyo 2005).

Antioxidants in a biological sense are compounds capable of counteracting or reducing the negative effects of oxidants in the body (Winarsi, 2007). Antioxidants work by donating an electron to an oxidant compound so that the activity of the oxidant compound can be inhibited. The balance of oxidants and antioxidants is very important because it is related to the functioning of the body's immune system. These conditions are primarily to maintain the integrity and functioning of lipid membranes, cell proteins and nucleic acids and to control signal transduction and gene expression in immune cells (Meydani et al., 1995). Oxidation reactions occur at all times in the body and trigger the formation of highly active free radicals that can damage cell structure and function. However, the reactivity of these free radicals can be inhibited by antioxidant systems that complement the immune system (Halliwell and Guteridge, 1991).

Severe physical activity or unusual training will cause muscle injury, muscle protein release and muscle pain. The mechanism of delay in muscle damage after severe physical training is not fully understood, but it is thought to be delayed injury due to an inflammatory reaction induced by phagocytic infiltration caused by excessive mechanical stress, increased intracellular calcium ion concentrations, and oxidative stress. There have been reports on whether antioxidants can decrease muscle damage due to significant increases in oxidative products in training muscles and in blood after training which is also proportional to other parameters of delayed muscle damage (Wataru et al., 2006). In general during exercise there will be an increase in lipid peroxidation and is regularly followed by the formation of antioxidants of the body. Exercise will obviously improve the body's antioxidant defense system (antioxidant defense system). Knowledge of the influence of antioxidant supplementation on exercise is still limited. Vitamin E supplementation affects the decline of MDA plasma and pentane during exercise. Selenium supplementation will also reduce MDA formation. Supplementation of combination of vitamin C and glutathione decreased plasma MDA and pentane at rest. Oxidation causes damage to muscle fibers, so exercise will trigger muscle pain after exercise. Supplementation of vitamin C can reduce muscle pain (Clarkson, P.M. 1995: 143).

Vitamin C As Antioxidant

Having known the negative impact of physical activity that can increase the free radical levels resulting in oxidative stress, then the thing we need to do after doing physical activity is to reduce the negative impact. One effort that can be done to reduce the negative impact is to consume vitamin C after physical activity or exercise. Vitamin C is a white crystalline organic acid that feels sour and odorless. In the liquid state of vitamin C is easily damaged by oxidation by oxygen from the air, but more stable when in a state of dry crystals (Achmad Djaeni Sediaoetama, 2012: 131). Vitamin C is present in two forms in nature, namely L-ascorbic acid (reduced form) and L-dehydro ascorbic acid (oxidized form). Oxidation back and forth L-ascorbic acid into L-dehydro ascorbic acid occurs

when in contact with copper, heat, or alkali. Both forms of vitamin C are biologically active but the reduced form is the most active (Sunita Almatsier, 2009: 186).

The function of vitamin C in the body is related to its nature as an antioxidant. Although the exact mechanism is not known, it appears that vitamin C plays a part in many metabolic processes that take place in body tissues (Achmad Djaeni Sediaoetama, 2012,131). Vitamin C contains antioxidants that can capture free radicals and also contribute to the formation of intracellular collagen, wound healing and body resistance against infection and stress, the conversion of folic acid into an active form of folinic acid, the formation of steroid hormones, from cholesterol (Roni Prisyanto et al, 2014 : 292). As an antioxidant, vitamin C works by donating electrons, that is, by transferring one electron to a metal compound. Vitamin C can also contribute electrons into intracellular and extracellular biochemical reactions and capable of destroying reactive oxygen compounds in cells (Roni Prisyanto et al, 2014: 290)

Vitamin C as a catcher of free radicals directly reacts with superoxide anions, hedroxyl radicals, singlet oxygen, and lipid peroxide. As the ascorbic acid reductor will donate one electron to form a non-reactive semidehidroaskorbat and subsequently undergo disproportionation reactions forming an unstable dehydroascorbet. Dehidroaskorbat will be degraded to form oxalic acid and threonic acid (Roni Prisyanto et al, 2014: 293).

Free radical reactions with antioxidants in the body produce radical antioxidant compounds, for example the tocopheryl radicals formed from oxidation of tocopherol. The radicals are stable enough to be reduced by vitamin C or GSH enzymes to form quinol so that it will not oxidize the unsaturated fatty acids present around them. Similarly oxidized forms of vitamin C are ascorbous free radicals and dehydroascorbat can be reconstituted into ascorbate by GSH or by enzymes dehydroascorbat reductase (Nunung Kurniasih et al, 2015: 170). Thus the consumption of vitamin C after physical activity is believed to reduce negative impact due to physical activity that is the emergence of oxidative stress.

CONCLUSION

Physical activity or sports in addition to a positive impact for the body there is also the negative impact that is the emergence of oxidative stress. Oxidative stress is a condition that occurs because of an imbalance between the production of free radicals with antioxidant defense systems in the body. One way to reduce the negative impact is by providing antioxidants from outside the body. Vitamin C is one of the antioxidants that are believed to reduce oxidative stress.

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SPORT DEVELOPMENT INDEX IN SEVERAL CITIES/REGENCIES IN JAVA ISLAND : A REVIEW OF BENEFITS AND OUTCOME

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Abstract

This paper will discuss scientific evidences that have been collected about sport development at some regencies/cities in java island. The research evidence will be explained in four domains of Sport Development Index : 1. Availability of sport outdoor area in a region. 2. Availability of human resource capacity which support sport progress . 3. Community participation in doing sport. 4. Body vitality level of people. The review show only some regencies/cities are in middle degree but in other regencies/cities still in low degree. It's suggest that Sport Development index is not only performed in java area only because it has very good function to understand how far the success of sport development at that regency/city by observe the number of outdoor area, number of human resource capacity, number of community participation, and number of body vitality. When four domains in Sport Development Index were applied maximally, it will raise the people health and vitality comprehensively. When sport developing index getting better, it will also make minimal standart of physical exercise be better. The goverment have to pay attention to three aspects, problem analysis, policy implementation, and evaluation when they want to take or make policy about physical exercise. The result in applying policy that based on four domains Sport Development Index can increase quality and community life standard be better. The improvement is not only limited in economic sector only, but also including all aspects of life.

Keyword : Sport Development Index, Open space, Human Resorce, Sport Paticipation, physical fitness.

INTRODUCTION

Development is "an effort of growth and change that is planned and done consciously by a nation, state, and government toward modernity in the framework of nation building". Basically in a developing country that takes off from a low-level state to a high level of modernization, where the variables in development can experience a change towards the better. It is therefore necessary initiative, active and critical for every citizen to be able to act in the right direction and by being able to make sources in government decision-making in development (siagian, 2005:9). Understanding of development can also be interpreted as a process of transformation. Transformation is meant through three development themes. The first theme is coordination, which implies the need for a planning activity. The second theme is the creation of a more legitimate alternative. The third theme achieves the most human aspirations, which means that development must be oriented towards problem solving and fostering the moral and ethical values of the people. (Isran Noor, 2013: 26).

National development can also be interpreted as a deliberate economic, social and cultural transformation through policies and strategies towards the desired direction. Transformation in the economic structure, for example, can be seen through the rapid increase or growth of production in the industrial and service sectors, thus contributing to greater national income. In contrast, the contribution of the agricultural sector will become smaller and inversely proportional to the growth of industrialization and economic modernization. Thus, the development process takes place in all

aspects of community, economic, social, cultural and political life, taking place at the macro level on a national and micro level. usually involving a community or group. The important meaning of development is the progress / improvement (progress), growth and diversification. (Deddy T. Tikson 2005: 132)

Sport has a crucial role to play in the efforts of the United Nations to improve the lives of people around the world. Sport builds bridges between individuals and across communities, providing a fertile ground for sowing the seeds of development and peace. (Wilfried Lemke, Special Adviser to the Secretary-General on Sport for Development and Peace, 2000). WHO defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure – including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits. Building sports means building a society that puts forward objective, competitive, and sportsmanship. The presumption that exercise as an activity to gain a crop as a symbol of glory and success has to be addressed. 1) Sport represnts a number of theoritical positions within the field of developmen, 2) Sport can be part of the process for development in a diverse range of different circumstance and contexts, 3) The evidence to support the claim that sport can produce social change is at best limited and that we need to be clear about the limitations of sport as well as the possibilities, 4) The evidence to support the claim that sport can produce social change is at best limited and that we need to be clear about the limitations of sport as well as the possibilities, 5) Sport has only recently figure within the goals of modernization/neo-liberal development thinking, 6) Sport reproduces and helps to sustain the gap in resources between different parts of the world, 7) Sport has some capacity to act both as a conduit for traditional development but also as an agent of change in its own right (Grant Jarvie, 2011).

Sports development is essentially an effort to develop and develop sports which is an important part of efforts to improve the quality of human resources primarily intended for the formation of character and personality including the nature of discipline, sportsmanship and a high work ethic with the main objective of improving the quality of human resources that have quality health. Based on the quality of health will be achieved increase in sports achievements that can generate national pride and bring the name of the nation's fragrance Indonesia. The development of sport is essentially a process that makes humans have much access to physical or physical activity. sports development enables or empowers everyone to have the opportunity to grow and develop both physically, mentally, and socially in a plenary manner (Mutohir and Maksum 2007: 2). The sports development benchmark used by policy makers, in the past always refers to the results or achievements of the sport. The achievement is then reinforced by the acquisition of the symbols of victory in the form of mendali. Thus the thinking framework of decision-makers is only on the victory and achievement should be as much as possible. The orientation of sports development is to build sports education, build sports achievements and build recreational sports. The three spheres of sport are conducted through the development and development of sport in a planned, systematic, tiered, and sustainable, starting from the culture with the introduction of motion at an early age, pemasalan by making sports as a lifestyle, nursery with talent search and empowerment of sports centers, as well as an increase in achievements with the national sport coaching so that the mainstay sportsman can achieve the peak of achievement. (Agus Kristiyanto, 2012: 3).

the focus of sports development is the cultivation and improvement of sports achievement which if associated with the building of sports means strengthening the foundation of the sports building that is sports culture and strengthening the pattern of sports breeding achievement to create as many resources as talented candidates from various regions in Indonesia in accordance with the physical character and culture local, and environmental conditions that support the formation of superior sports potentials in the region. (Renstra Kemenpora, 2010) When the success of sports development only refers to the acquisition of sports, the development of sports will not arrive at the true nature of sports. The essence of the sports development process is not on the

things that are symbolic, but the asspeks associated with the overall and continuous effort on all the potential and in realizing the direction of development of national sports.

Increased sports development through the Sport development index

according to agus kristiyanto to measure sports success is by 1) open space or public space for sports, 2) human resources, 3) community participation, and 4) people's physical fitness. Thus the increase of four SDI sspects after the research becomes a benefit for the community.

1. open space as an indicator of sports development success
   The open space for sport depends heavily on the number of populations present in an area. This means that the more the population, the more widely and open space that must be provided. Open space figures are measured based on the ratio of existing open spaces to populations aged 7 and above. Unesco recommends the ideal static space is 2m² / person. Sport does not just require static space, but dynamic space. So it can be analogized that the dynamic open space requirement required for static space 3.5m² / person. The more open space for sports that is easily accessible to the public will encourage more physical activity and make sport a lifestyle.

2. Human resources as an indicator of sports development success
   The dynamics of sports activities will be largely determined by the human resources (HR) that drive the wheel of activity. Development of human resources (HR) has undergone significant changes in line with different basic assumptions. Formerly human resources (HR) is considered as a workforce set for production efficiency, so its function as an instrument. While the current human resources (HR) is placed as working capital so that the ability, knowledge and involvement in any policy-making more emphasis. Increased sports manpower is related to the availability of sports coaches, sports instructors, sports referees and sports teachers. With the increase in sports man power, the increase in sports achievement has increased due to the lack of trainers and sports referees, increased recreational sports due to the adequacy of sports instructors, and increased sports education due to the adequacy of sports teachers.

3. Community participation as an indicator of sports development success
   Participation is the involvement, participation, participation of the community in order to conduct activities that are active to obtain a goal. According to Mubyarto in Abu (2008: 27) "participation is an act of taking part in the activity". Meanwhile, community participation is the involvement of the community in a development process in which the community is involved from the stage of programming, planning and development, policy formulation, and decision making. Given the increased availability of open space and human resources, sports eat community participation either directly as a sports participant or indirectly as a sponsor organizer of sports activities. In particular, the participation of the public in sports is in the direct involvement of actively as a sports actor. The sport is in the form of formal sports and non formal sports such as traditional sports.

4. Physical fitness as an indicator of sports development success
   Physical fitness is a person's ability to perform activities without experiencing excessive fatigue. That is, still have a backup power and always eager to do other activities. Therefore the various programs are designed for the achievement of optimal physical fitness. According to Mutohir and Maksum (2011: 11) "there are three main things that must be considered in order to be able to have a good level of physical fitness. The first is a regular exercise, a nutritious and adequate meal, and the last one is adequate rest ".

Development of sports in several districts / cities on the island of Java

The results of the sports development index study are very useful for the dynamics of regional development, because in addition to feedback into the index obtained can be comparable with other areas based on the results of research from eighteen cities / regencies survey results on

sports development index comparison are: two cities / districts are categorized medium or medium or by 11.1%. 2) sports development index of some other cities / regencies have low category, that is sixteen cities / regencies or sebesr 88,9%.

The comparative result of sports development index are: 1) the highest open space index is south jakarta city with index 0,850, while lowest is middle java demak district with index 0,059. 2) the highest index for the dimensions of human sport resources is the city of attack with an index of 0.405, while the lowest is the city of magelang with an index of 0.007. 3) for the highest participation index is porbolinggo district with an index of 0.644, while the lowest is jepara district with an index of 0.039. 4) the highest index for the physical fitness dimension is the poor city of 0.732, while the lowest is the bandung city with an index of 0.270.

Advantages and Strength

1. This research discusses a problem that have been chronic problem in our nation, because since the past until now there are many people opine that achievement or medals as reference of the success of sport development
2. Researcher explain very detail about problem topics related with goal of this research
3. Instruments that used in this research have standardized and used in many countries
4. The result of this research is very useful for dynamicization effort of region development, because besides as a correction for region, acquired index can be used as comparative with other region

Disadvantages and Weakness

1. Described problem is not specificallyexplainingabout benefit of doing sport for people and also for the region but tend focus on Sport Development Index as barometer of sport development, whereas Sport Development Index have a goal to increase attention of government to create people that delight in doing. For suggestion, researcher should explain benefit of sport with economic prosperity, and etc.
2. Not mentioned whether outdoor room index uses measure tools outdoor room or uses data from government because it will be more valid if measured by tools. For suggestion, data will be more valid if it collected with tools outdoors room then acquired data that have been collected from past because maybe the outdoor room have been changed
3. Not explained what the indicator to determining advance, middle, or low province/regency/city/sub district. For Suggestion, it will facilitate the reader or other researcher to know everyused indicatorto determine how a region can be grouped in advance, middle, and low region.

CONCLUSION

the purpose of sports development is to create a more active community in sports activities, by increasing the dimensions of open space for exercise, the dimensions of sports human resources, the dimensions of community participation in exercise, and the community's fitness dimension. With the good achievement of the four dimensions of sports development index then a city / county can be said successful or successful in building sports. Although on the island of Java has a lot of potential athletes achievement, but based on the results of the study sports development index there is no single city / district that has an index as expected. On average, the dimensions of the sport's human resources have the lowest index compared to other sports development index dimensions in all the surveyed areas.

Benefit of research of Sport Development Index is:

1. Giving Information for Government about sport development index, so that it can help them to create policy more effective.

2. Changing mindset a lot of people that the key of success in sport development is not absolutely rated by achievements or medals, but with factors that determine the success sport development, include: (1) outdoor room, (2) human resource, (3) people participation, (4) physical fitness.

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The Effect of Manipulation Training Complex to Maximum Strength

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Abstract

Objectives: This study aims to reveal: (1) The Effect of Pyramid Complex Training (PCT)to Maximum Strength, (2) The Effect of Square Complex Training(SCT)to Maximum Strength, and (3)Differences Effect of Pyramid Complex Training (PCT) andSquare Complex Training (SCT) to Maximum Strength.

Methods: Method of this research is quasi experimental withtwo group pretest posttest desaign. Population of this research is the new students of Study Programsports coaching education in 2013 which amounted 21 non-athletes.Based on score ranking pretest (strength) subjects were divided into 2 groups, namely the PCT group as many as 11 people and SCT as many as 10 people. The PCT group was given a combination treatment of 8 RM, 6 RM, 4 RM and plyometric loads with a pyramid system (6 contacts lateral single leg jump, 8 contacts side jump, 10 contacts box's jump, 12 contacts twist front jump dan 14 contacts twist tuck jump). SCT group was given a combination of weight training of 8 RM, 6 RM, 4 RM and plyometric with square system (10 contacts single leg jump, 10 contacts side jump, 10 contacts front box's jump, 10 contacts hardle front jump dan 10 contacts tuck jump). The training was conducted on three weekly training sessions for 7 weeks. All groups were given pre-test and posy-tests. Pre-test was performed 40-48 before the treatment trial, andfinal test carried out 48 after treatment. Maximum power test using 1 RM.Data analysis technique result of research with t-test.

Results: The results showed that: (1) there is a significant effect of manipulation on Pyramid Complex Training (PCT) to maximum strength, with a significance grade of 0.000 <0.05 and percentage increase of 39.97%, (2) there is a significant effect of manipulation onSquare Complex Training (SCT)) to maximum strength, with a significance grade of 0.000 <0.05 and a percentage increase of 39.14%, (3) there is no significant difference betweenPyramid Complex Training (PCT) andSquare Complex Training (SCT) to maximum strength, with a significance grade of 0,948>0,05.

Conclusions: Manipulation of Complex Training exercises (Pyramid Complex Training (PCT) and the Square Complex Training (SCT)) can improve or enhance the power of the maximum. Based on the average value of the exercise showed that the Square Complex Training (SCT) better than the exercise Pyramid Complex Training (PCT) against the maximum strength.

Keywords: complex training, pyramid complex training (PCT), square complex training (SCT), maximum stregth.

INTRODUCTION

Peak performance orpeak achievement in sports is the estuary of the late in the process of sports coaching. High achievement is a result of actualization from various elements such as physical condition, technical ability, mastery of tactics and mental maturity.Physical conditions holds an important role, considering the physical condition is an absolute requirement and a major achievement. Every athlete needs prime physical condition, especially for a sport that demands heavy long term performance. Many advantages gained from prime physical conditions are easy to master complex skills, reduce the risk of injury, maintain physical performance, accelerate post-exercise recovery and increase self-confidence.It is necesarry to exercise the program from the coach, it means the training program must be planned, measurable, sustainable.Sports training in biological systems and network are conditioned by applying an increasingly heavy physical demands based on the development of the athlete's physical condition (Bompa&Buzzichelli, 2015, p. 19).

Sports training in biological systems and network are conditioned by applying an increasingly heavy physical demands based on the development of the athlete's physical condition. To achieve that goal required appropriate training approach. Training in the terminology customarily referred to as training methods. According to the Oxford Dictionary method is one of the forms of procedure to

achieve or approach something, especially a systematic one. Singh (2012, p. 26) States practice is the basic process of preparation for higher performance process designed to develop motoric skills and psychological ability improves a person's ability.Further, Sukadiyanto and Muluk (2011, p.9-10) stated that the main objective of physical exercise is to improve the quality of physical fitness (energy fitness) and muscle fitness (muscular fitness).According to Bompa (1993, p.1) exercise is a systematic, progressive repetition process, with the ultimate goal of improving sports achievement. So the training method is the procedure of systematic repetition process to gained mastering skill or achieve the maximal functional qualities of the body.With the propper training method, the body will experience adaptation in the form of enhancement of functional ability of the body so that it is able to do heavy performance within a relatively long.

Functional adaptation of muscles has been well documented by previous researchers, as well as muscle quality development strategies / methods have been published through various reports with different types of sports activities. The effect of exercise depends on the intensity and volume of the exercise.Failure to gained minimum threshold values may result in a lack of exercise effect, while too much weight can lead to overtraining and adversely affect the athlete's physical condition. Osteras and Hoff (2005, p.377) suggest that exercise adaptation varies greatly depending on many factors such as initial physical condition status and exercise intensity. In this case the less trained athlete is relatively easier increases/positive adaptation when it gets the treatment practice (Brown and Chandler, 2008), instead of trained athletes needed venture out can be obtained for less-trained athletes as effect by modifying the intensity, frequency, volume, and density of recovery exercises.

Any physical activity, especially exercise is always faced with the possibility of injury so that will affect the disruption of physical activity, psychic, and achievement. One of the most commonly injured limbs is the ankle joint. The foot is bearing the weight of the entire body, is under tremendous pressure. In many sports, legs absorb the shifts and loading of style is very large, sometimes reaching more than 5 times the weight. Studies have shown that female athletes injured 2-3 times more often than male athletes to sustain Anterior Cruciate Ligaments (ACLs), especially in football and basketball program (Yap, et al, 2000) and more on the population of athletes sports around 80,000 to 250,000 annually.Anterior Cruciate Ligaments (ACL) is one of the major ligaments in the knee capsule that serves to maintain the stability of the knee and connects the back of the femur to the front of the tibia. ACL injuries usually occur when an athlete twists the knee beyond the normal range of rotating, cutting, jumping, or running motion. These injuries tend to increase when the explosive movements involved are increasingly difficult. Top level competition requires an increase of neuromuscular conditioning because athletes must move the vertical, lateral, linear, more precise, explosive and reactive. ACL is a ligament in the joint that maintains the stability of the knee joint. An ACL injury often occurs in high-impact sports, such as football, futsal, tennis, badminton, basketball and martial sports. In normal function, the ACL can handle a large force with little or no problems. However, if the knee received great strength and muscle cannot help mufle pressure, ACL will take over all load, and allow the occurrence of rips.

Common sports-related injuries are ankle sprains, about 10% to 25% (Schaefer, and Sandrey, 2012, p.313), 40% (Yaggie and McGregor, 2002) of all sports injuries, most injuries occur at the end of an activity when tired participants (Yaggie and Mc Gregor, 2002). Lin et. al (2010, p.22) says a study that examines ankle injury is 24 out of 70 studies with 22% of sports injuries an ankle injury with a ratio of sprains and fractures ratio is 8:1. It is possible that most of these injuries result from joint instability due to musculature fatigue. The relevance of fatigue to joint stability is evidenced by the relationship between postural control and isokinetic endurance of the knee muscle group (Yaggie and McGregor, 2002). Physiologically defined fatigue an inability to continue training on a particular intensity. In all of sports and exercise, the incidence of fatigue will vary depending on a person's fitness level, the intensity of the exercise, and the environmental conditions (e.g. heat, humidity and altitude).

To reduce the level of physical condition of component fatigue, then the physical conditions need to be improved. One of the physical conditions required in the sport is power. Sukadiyanto and

Muluk (2011, p. 90) stated that strength should be improved as the underlying foundation in other components of the biomotor.Strengths are divided into several types: general strength, special strength, maximum strength, endurance strength, speed strength, absolute strength, relative strength, and reserve strength. Maximum strength is the ability of a muscle or group of muscles to fight or lifting weights in a single lift or work. Frohlich, et. al (2014, p.29) points out that at the time of moving factors that affect muscle strength is the deviation of the elastic energy, aktu, strain, and nervous factors. Maximum power measured by muscle ability in coping with the burden of a time force (one repetition maximum = 1 RM).

Most athletes maintain and improve physical conditions simply by taking part in the sport they choose, not yet accompanied by exercises involving motion analysis that they. While on the top level competition requires a core requirement of maximum strength of muscle, muscle limbs, stability, balance, dexterity of lateral, vertical leap, and reaction time. This quality can be improved through a combination of training load and pliometrik.Weight training according to Dreger (2006) in (Suharjana, (2013, p.79) is a systematic exercise that uses the burden as a tool to increase muscle strength to achieve the goal of improving the athlete's physical condition, preventing injury or for health purposes. While exercise pliometrik is deceleration quickly of the masses immediately followed by acceleration of the mass in the opposite direction.

Strength training is very necessary to develop the other components of the biomotor. Bompa & Buzzichelli, (2015, p.19) says that to Success in strength training depends on knowing the types of strength and how to develop them, as well as the types of contraction and which are best for a given sport. Complex training, one of the most advanced forms of sports training, integrates strength training, plyometrics, and sports specific movement (Manikandan S, 2015, p.2499). Complex training is an exercise method that aims to improve the athlete's physical condition by doing high intensity strength training followed (transfer) to pliometric exercise.There are similarities in the Biomechanics of muscle and joint involvement between weight training with pliometrik. Example exercises squat 3-6 RM followed exercise knee tuck jump 8-12 reps bench press workout 2-5 and ROM. clap push up exercises followed 8 reps (Mackenzie, 2000). The theory of complex training is that the stimulus for the plyometric movements will be higher when a resistance movement is performed prior because of the heightened motor neuron excitability brought on by the weight lifted (May, C.A., Cipriani, D., lorenz, K.A, 2010, p.32). The two factors of muscle force production that should be considered when implementing complex training are the speed of the muscle stretch and the amount of force developed by the stretched muscle. Traditional resistance training components of complex training will improve force production, and plyometric components of complex training will increase the speed of the stretch and the force produced (Miller, J., Koh, Y., Park, C.G, 2014, p.203). Therefore, resistance training combined with plyometric movements will result in greater power production.

Modification of complex training by varying the repetition pyramid load training decreased from 8 repetition maximum (8 RM), (6 RM) and (4 RM) with intensity have not been done research acending. Most researchers use high intensity external resistance (RM 1-3) with constant method. As well as the pliometrik, is still a little bit of research to compare between exercise pliometrik pyramid (jumping into the lateral, forward, to the side and twist), various obstacles height (20-50 cm), number of contacts tiered increases (6-12) and training pliometrik square (jumping towards the same high hurdles with the same and the same number of contacts).In addition, most of the complex training studies are applied to trained athlete groups.

Modified forms of explosive exercises such as jump up and down, side-jump, knee tuck jump, single leg jump, lateral jump and box jump either by jumping normal or twist will be the main study in this research.Single-leg training has many benefits and attention to the prevention of injury, rehabilitation, and sports performance enhancement programs. According to Boone and Cook, (2006), the sports movement skills in a field dominated by the gait cycle take off from one foot and landing on one foot the other precisely to enchanced performance athletes.

Complex training studies on the sample of poorly trained athletes have not been widely practiced. In this case, the student majoring in sports coaching Faculty of Sport Science (FIK)

Yogyakarta is mostly not an athlete so it is possible to be the subject of research.Further the main focus of this research is to reveal: (1) The Effect of Pyramid Complex Training (PCT) to Maximum Strength, (2) The Effect of Square Complex Training(SCT) to Maximum Strength, and (3) Differences Effect of Pyramid Complex Training (PCT) and Square Complex Training (SCT) to Maximum Strength

METHODS

Types of research

This research includes a quasi experiment. The research design used was "Two Groups Pretest-Posttest Design", that is, the design of the research there is a pretest and posttest treatment given before after being given the treatment, thus can be known to be more accurate, because it can compare with held before being given treatment (Sugiyono, 2007, p. 64).

Research Variable

This research has two variables, that is independent variable and dependent variable. The independent variables in this research are Pyramid Complex Training (PCT) and Square Complex Training (SCT), while the dependent variable is Maximum Strength.

Research Subject

Subjects in this study were students of third semester (three) Department of Sport Coaching Education, Faculty of Sport, Yogyakarta State University academic year 2012 aged 19 to 20 years and not athletes, consisting of 80 men . Simple random sampling method how to draw, this is assumed homogeneous population.Furthermore 21 people were subjected to a maximum strength test (1 RM). After it was ranked and divided into two groups. A total of 11 people as a group exercise Pyramid Complex Training (PCT), 10 people as a group exercise Square Complex Training (SCT).

Instruments used to measured: 1) Examination of the physical readiness, 2) measurements of the TB and VB and 3) measurement maximum strength.

1. Examination of the physical readiness
   a. Measurements of heart rate (DJ) break, 05.00 done before the subject of doing physical activity. DJ measurement done in a sitting position, using the heart rate monitor Pollar FT1™ dan FT2™
   b. Measurement of blood pressure, using the tensimeter Rister brand weight measurements.
2. The measurement of the height of the subject without the use of footwear, the subject stands upright, and the view is straight forward. Height measurement using a microtois brand Design type 26 SM Indonesia-made, with a unit of measurement, accuracy up to 0.1 Cm.
3. Weight measurement using the health meter brand Smic types RGZ-PRC-made with 120 units of measurement accuracy up to 0.1 Kg.
4. Measurement strength with 1 RM (Pretest).
5. The PCT group was given a combination treatment of 8 RM, 6 RM, 4 RM and plyometric loads with a pyramid system (6 contacts lateral single leg jump, 8 contacts side jump, 10 contacts box's jump, 12 contacts twist front jump dan 14 contacts twist tuck jump). SCT group was given a combination of weight training of 8 RM, 6 RM, 4 RM and plyometric with square system (10 contacts single leg jump, 10 contacts side jump, 10 contacts front box's jump, 10 contacts hardle front jump dan 10 contacts tuck jump). The training was conducted on three weekly training sessions for 7 weeks.
6. Measurement strength with 1 RM (Posttest)

Data Analysis Technique

Before stepping into the t-test, there is a requirement that must be fulfilled by the researcher is the data analyzed must be normal distribution, therefore it is necessary to test normality and homogeneity test (Arikunto, 2006, p.299).

RESULTS AND DISCUSSION

Data in this study is the strength of pretest and posstest maximum power capability. Pretest and posttest data capability maximum strength group Pyramid Complex Training (PCT) as follows:

Table 1.Pretest and PosttestPyramid Complex Training (PCT)

Subject	Pretest	Posttest	Difference
1	112.5	151.3	34.44
2	65	91.25	40.38
3	95	138.8	46.05
4	75	105	40
5	78.75	106.3	34.92
6	101.3	135	33.33
7	93.75	133.8	42.66
8	75	107.5	43.33
9	78.75	113.8	44.44
10	75	102.5	36.66
11	88.75	128.8	45.07
Mean	85.3455	119.46	40.1197
SD	14.10453	18.8751	4.61008
Minimum	65.00	91.25	33.33
Maksimum	112.50	151.30	46.05

Pretest and posttest data maximum strength ability of Square Complex Training (SCT) group as follows:

Table2.Pretest and Posttest Square Complex Group Training (SCT)

Subject	Pretest	Posttest	Difference
1	101.3	133.8	32.099
2	66.25	86.25	30.189
3	81.25	135	66.154
4	71.25	101.3	42.105
5	90	116.3	29.167
6	103.8	136.3	31.325
7	87.5	126.3	44.286
8	67.5	97.5	44.444
9	115	152.5	32.609
10	78.75	115	46.032
Mean	86.2600	120.02	39.8410
SD	16.4469	20.5771	11.39509
Minimum	66.25	86.25	29.17
Maksimum	115.00	152.50	66.15

Precondition Test Results

Normality test

The results of summary normality test presented in table 3 as follows:

Table 3. Normality Test Results

Group	p	Sig.	Information
PCT			
Pretest	0,631	0,05	Normal
Posttest	0,815	0,05	Normal
SCT			
Pretest	0,999	0,05	Normal
Posttest	0,980	0,05	Normal

From the results of table 3 above can be seen that all data has a grade of p (Sig.)> 0.05, then the normal distributed variable.

Homogeneity Test

The results of homogeneity test of this study can be seen in table 4 as follows:

Table 4. Homogeneity Test Results

Group	Sig.	Information
PCT		
Pretest-Posttest	.660	Homogen
SCT		
Pretest-Posttest	.938	Homogen

From table 4 above it can be that all data has p grade (Sig.)> 0.05, so the data is homogeneous.

Hypothesis Test Results

Research on hypothesis testing is done based on the results of data analysis and interpretation of t-test analysis. The sequence of hypothesis test results is adjusted with the hypothesis, as follows:

Hypothesis of effect PCT training methods on maximal strength

The first hypothesis reads “There is a significant effect of Pyramid Complex Training (PCT) manipulation on maximum strength”, based on pre-test and post-test results.Based on the analysis results obtained data in table 5 as follows:

Table 5. t-Test Results of Pre-Test and Post-Test on Pyramid Complex Training (PCT)

Group	Average	t-test for Equality of means				
		t ht	t tb	Sig.	Difference	%
Pretest	85.3455	18.976	2,23	0,000	34,12	39,97%
Posttest	119.462					

From the t-test results in the table, shows that from t-test results can be seen that t calculate 18.976 and t table 2.23 (df 10) with a significance grade of p of 0,000.Therefore t calculate 18.976 > t table 2.23, significance and grade 0.000 < 0.05.Then this result shows there is a significant difference. Accordingly the hypothesis that reads “There is a significant effect of manipulation of Pyramid Complex Training (PCT) to maximum strength, accepted. Based on the data shows that PCT exercises is appropriate to increase maximum strength of 34.11 and increased his percentage amounted to 39.97%.

Hypothesis effect of Square Complex Training (SCT) methods on maximum strength

The first hypothesis reads “There is a significant effect of Square Complex Training (SCT) manipulation on maximum strength”, based on pre-test and post-test results. Based on the analysis results obtained data in table 6 as follows:

Tabel 6.t-Test Results of Pre-Test and Post-Test on Square Complex Training (SCT)

Group	Average	t-test for Equality of means				
		t ht	t tb	Sig.	Difference	%
Pretest	86.26	11.927	2,26	0,000	33,76	39,14%
Posttest	120.02					

From the t-test results in table, shows that t calculate 11.927 and t table 2.26 (df 9) with a significance grade of p by 0,000.Therefore t calculate 11,927> t table 2,26, and significance grade 0,000 <0.05. Then this result shows there is a significant difference. Accordingly the hypothesis that reads “There is a significant effect of manipulation ofSquare Complex Training (SCT)to maximum strength, accepted. Based on the data shows that Square Complex Training (SCT) exercises is appropriate to increase maximum strength of 33,76and increased his percentage amounted to 39.97%.

Hypothesis differences effect of Pyramid Complex Training (PCT) and Square Complex Training (SCT) methods on maximal strength

The third hypothesis reads “there are differences in the effect of Pyramid Complex Training (PCT) and Square Complex Training (SCT) methods on maximal strength”, Based on the analysis results obtained data in table 7 as follows:

Table 7. t-TestPyramid Complex Training (PCT) and Square Complex Training (SCT)

Group	Sig.	Information
PCT-SCT	.948	NotSignificance

Based on data in the table, it shows that the significance grade of 0.948> 0.05. Thus it shows no significant difference. So Hypothesis which sounds, there is significant difference between group Pyramid Complex Training (PCT) and Square Complex Training (SCT) to maximal strength, rejected. Based on the results of the analysis showed that the percentage increase of Square Complex Training (SCT) is better than Pyramid Complex Training (PCT), and the average posttest of Square Complex Training (SCT) is 120,02 and PCT group is 119,46, with the average difference of 0.56. Thus, the practice of Square Complex Training (SCT) is better than Pyramid Complex Training (PCT) group on maximum strength.

The results indicates that manipulation of Pyramid Complex Training (PCT) and Pyramid Complex Training (PCT) had a significant effect (p = 0.000 <) against an increase in maximum power. Furthermore, result of analysis shows that percentage increase of Square Complex Training (SCT) is better than Pyramid Complex Training (PCT), and the posttest of Square Complex Training (SCT) is 120,02 and PCT group is 119,46, with the average difference of 0.56. Thus that practice Square Complex Training (SCT) is better than a group of Pyramid Complex Training (PCT) to the maximum strength. The results of this research need to be examined based on theories and findings of earlier researchers associated with variables in the study.

Complex training appears to be an attractive option for developing the strength to people who have not been trained. So including strength training from the beginning to modality is an important aspect allows to do more specific training and practicing competitive techniques from the beginning (Juares, Rave, Navaro, 2009, p. 240). One way to combine two forms of training (weight training and pliometrik) is a training complex training or method of contrast. According to Ebben, (1998), a complex training program design should take into consideration the important variables such as exercise selection, load, and rest in between sets. Further research offers additional guidelines about this and also how variable effect on age and gender. Complex training may be effective for training the upper body and the lower body (Evans, 2000). In addition, the research of Evans, et al, (2000) revealed that the prerequisite training load intensity and strength (RM), which may be an important part of bring up the effect of complex training during pliometrik conditions.

In this case the variable is considered by same techniques because samples from homogeneous populations of education majors FIK UNY. The quality of the leg muscles, includes three components: the strength of limbs, power, and strength of reactive. In theory a great leg strength will increase the strength of reactive. Reactive power is defined as ability to change quickly from eccentric to concentric phase in a sequence of StretchShortening Cycle (SSC). The treatments in this study is a combination of weight training and pliometrik. Treatment of the two groups weight training (PCT and SCT) is the same i.e. APS method (ascending pyramid system) 8 6 RM RM RM 4 and so its effect on increasing muscle strength foot assumed the same. Pliometrik training on PCT Group emphasizes on the manipulation of functional training and SCT put more emphasis on the manipulation of amortization. Functional training in pliometrik training group PCT involves movement, rotation, lateral twist, an integrated balance and movement. This type of exercise involves acceleration, deceleration, and stabilization for multiarah movement in all 3 fields (frontal, sagittal, and transverse), and should be challenged in proprioceptif.Theoretically both forms of training will increase maximum strength.

According to Dr. Michael Yessis that the jump should run within 0.15 seconds or less, 0.1 - 0.2 seconds (Vissing, et al., 2008), <0.2 seconds (Edwin & Gordon, 2000), rapid muscle stretching when eccentric followed rapid concentric contractions (Ebben, 2001), as longer the amortization periodexercise pliometrik is getting less than optimal (Komi, 2003), combines fast and powerful movements that involve eccentric contractions, immediately followed by explosive concentric contractions (De Villarrea, et al, 2012, p.575).

The stretch shortening cycle more influential with rapid movement and minimal ground contact (Komi., 2003). Decrease time contact will increase the strength of the movement and the stored elastic energy is not lost. The faster clutch of eccentric action more concentric effect of the exercise more better.Eccentric coupling-concentric action quickly, generate power and deployment of the greater the muscle at giliranya athletes run faster, jump higher and change direction very quickly. Based on that theory, SCT training method should have a better effect in maximizing strength due to the shorter amortization time of 6.53 seconds / type of exercise than the 6.67 second PCT training/ exercise type.

While training on PCT, even if the contact time (amortization) longer, had a profit in beomechanical system adaptation, physiological and neurological consequences synchronization and coordination of horizontal and vertical jump movement, to the side, to future, backward, lateral, and twist.Similarity of treatment with test used also affect the results, more similar treatment with type of test used the higher influence on the measuring results. Illustration of the theory had similarity demonstrated by more economical runners generally outperform the less economical runner in similar actions.Physiologically they consume less oxygen for an identical work rate. In other words, at certain running speeds, they do not have to work harder.In this case SCT training method is more identical to the type of test used than PCT training method thus give better results.Besides it is also reinforced by training specification, specification of training refers to the methods and mechanisms responsible for physiological systems in responding to stress of exercise which is acute or chronic.

It can be summarized that SCT training methods more effective in increasing maximum power than PCT training methods. Thehe finding is at once gave new information that shorten the contact time (amortization) course is still not enough to increased maximum strength.Pliometrik training that involves a combination of vertical and horizontal jumping movements, sideways, forward, backward, and lateralward, direction of twist, and shorten phase amortization of badly needed for development of quality maximum strength.

CONCLUSION AND SUGGESTION

Manipulation of Complex Training exercises (Pyramid Complex Training (PCT) and the Square Complex Training (SCT)) can improve or enhance the power of the maximum. Based on the average

value of the exercise showed that the Square Complex Training (SCT) better than the exercise Pyramid Complex Training (PCT) against the maximum strength.

Based on the results of this study, for the trainers, sports teachers or sports coaches, policy makers at the club, and other researchers, are given the following suggestions: Needs a similar study with a group of athletes who are more trained to both men and women.SCT method is an alternative training method that can be used by trainers and athletes by modifying the number of contacts as it proves effective to increasing maximum strength.

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MANAGEMENT OF FACILITIES SPECIAL CLASS OF SPORT (KKO) IN SMA NEGERI 4 YOGYAKARTA

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Abstrak

Objectives: The policy of special sport class (KKO) is aimed at enhancing sports achievement in the educational environment. One of the decisive components is facilities. This study aims to find out the management of facilities of Special Class of Sport in SMA Negeri 4 Yogyakarta

Methods: This research is a qualitative descriptive research. This research was conducted in SMA Negeri 4 Yogyakarta. The subjects of the study were the Headmaster and Teacher of Physical Education of Sport and the chief of the special sport class (KKO) in SMA N 4 Yogyakarta. Data collection techniques used interviews, observation and documentation. Data analysis was done by qualitative data analysis.

Results: The results of this study indicate that in general management of facilities and infrastructure in a special sport class in SMA N 4 Yogyakarta is quite good. The facilities management is very good, with the function of planning, procurement, and maintenance and the use of facilities well managed. But the deletion function of the facility has not been done well. Infrastructure management is quite good, shown by the function of planning, procurement, maintenance well managed. But the use function has not been implemented properly.

Conclusions: Based on the results of this study can be concluded that the management of facilities and infrastructure of special sport class in SMA N 4 Yogyakarta has not been implemented optimally.

Keywords : management, facilities, Special Sport Class (KKO)

INTRODUCTION

Sports class activities at junior and senior high school levels are an activity to establish sports classes as a forum for the development of students' potential in sports. The policy of organizing this sports class program is not a policy that is born without foundation. The National Sport System as stipulated in the Law of the Republic of Indonesia No.3 Year 2005, article 25, especially paragraph 6 which reads "to develop sports achievement in educational institutions, in every education path can be established unit of sports activities, sports class, training and training center , sports schools, as well as a tiered and sustainable sports competition ". The above statement is the rule that became the basis of the birth of the policy of organizing the sports class.

An implementation of an educational program, including a sports class program is always influenced by the various components that are interconnected with each other. These components are subsystems in the education system or school. So if you want to develop a particular subsystem, demanding changes or adjustments to other subsystems. There are at least 8 components needed to support the achievement of education programs. These components include: (1) Students (2) Curriculum, (3) Educators and Teachers, (4) Facilities, (5) Funds, (6) Management , (7) Environment, and (8) Teach.

The presence of a sports class at school will help students with more sports skills to develop their potential according to the schedule, instruction and direction of the trainer at school without neglecting academic subjects, so that the portion of the exercise with students' academic learning is really worth noting. Therefore, the Directorate General of Primary and Secondary Education Management, Ministry of National Education, programmed the activities to be programmed in schools. In the region of Special Region of Yogyakarta, consists of Junior High School and Senior High School.

SMA Negeri 4 Yogyakarta is one of the leading high schools located in Yogyakarta Municipality, DIY Province. Currently SMA Negeri 4 Yogyakarta is a Stub of Independent Category School. Starting in the academic year 2010/2011, SMA Negeri 4 Yogyakarta made a breakthrough by opening a

special class named Special Class of Sports (KKO). With the existence of the class, SMA Negeri 4 Yogyakarta became one of the high school in DIY Province which has a special class of sports. This class is opened as a follow-up form of the school to accommodate and educate gifted students in the field of sports in order to achieve maximum performance without subordinating academic achievement. Therefore, the curriculum used in special sports classes is the same as the curriculum used in regular classes. Students who enter a special class of sports are students who have skills and achievements in certain sports. This is what distinguishes sports class special students from regular classroom students. If a regular class student uses the National Examination Score (NUN) as an entry requirement, it is different with a sports-specific class student.

Candidates for special sports class students must have a performance charter on the sport they are engaged in. In addition, prospective students must also pass in physical tests held by the school. If both of these conditions are met students are considered eligible to enter in a sports-only class even though the NUN is below average. In addition to obtaining general subjects, sports special class students also receive additional subjects that are used to practice according to their respective sports branches. Additional subjects are held twice a week on Wednesdays and Saturdays from 05.30 to 07.30. Based on interviews conducted by researchers with teachers of Physical Education SMA Negeri 4 Yogyakarta, it is known that each class of students special sports exercise on average for 5 - 10 hours in a day. Details of the activity in the school for approximately 5 - 7 hours. Exercise at the sports club each in the afternoon approximately for 2 - 3 hours. The number of activities undertaken by special sports class students, of course, requires schools and municipalities to provide adequate facilities so that students can practice well. Although the provision of facilities and infrastructure for sports-specific classes in collaboration with municipalities, schools should be able to properly manage the use, maintenance / maintenance and scheduling of sports facilities and infrastructure available in schools since parallel classes in SMA Negeri 4 are quite large. So that regular physical education education and special sports classes can run well. Based on the background of the above problem, the focus of the problem that will be formulated in this research is "How is the management of facilities and infrastructure of Special Class of Sport (KKO) in SMA Negeri 4 Yogyakarta?

This study aims to determine the management of facilities and infrastructure of a special class of sport in SMA Negeri 4 Yogyakarta. Theoretical benefits of research as a reference in the management of sports facilities and infrastructure in a special sport class. Practically this research is useful to provide corrections and inputs to the functions of sports facilities and infrastructure management in order to be improved to a better direction.

METHODS

Research approach according to Burhan Bungin (2007: 3), is the whole way or activities undertaken by researchers in conducting research starting from the formulation of the problem to the conclusion. This study uses a qualitative descriptive approach, where data on the management of sports-specific sports class facilities (KKO) in SMA N 4 Yogyakarta include planning, procurement, use, maintenance, inventory and deletion.

This research was conducted in June-November 2016. The research place at SMA N 4 Yogyakarta City Yogyakarta. Subjects in this study are people who will be used as informants in this study namely the principal and teachers physical education or coach. The data collection used in this research was conducted in three ways: interview, observation, documentation. The research instruments consist of: Interview Guides, Observation Guidelines, Documentation Guidelines.

Data analysis can be done through the preparation and interpretation activities to draw conclusions. Because, the relationship with the phenomenon to be interpreted in accordance with the natural setting, it must be met the analysis of qualitative data, namely naturalistic, induction and holistic analysis. Naturalistic, ie data analysis must be based on real situations that change naturally, open and no engineering control of variables. Induction analysis, which is fundamentally an

induction-minded procedure, reveals specific data, details, to find important, original, important, dimensional, relationship categories expressed in open-ended questions. Holistic, meaning the totality of phenomena must be understood by the researchers as a complex system, comprehensive linkage and not seen partially.

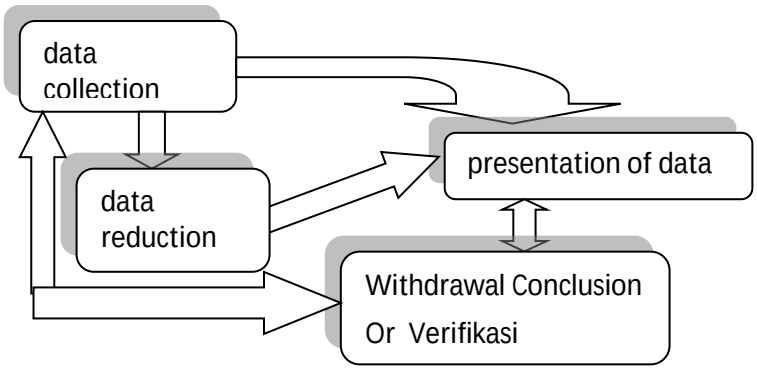

Figure1. Chart of Data Analysis Method
(Sugiyono,2014:405)

1. Data reduction
   Data reduction is done by creating a summary, encoding data, searching for themes.
2. Presentation of data
   Data presentation is an attempt to compile a set of information into an easily understood matrix or configuration.
3. Drawing conclusions
   The collected data is organized into units, then categorized according to the details of the problem. The data are linked and compared to each other so that it is easy to be deduced as the answer of each problem.

RESULTS AND DISCUSSION

A. Description of Research Setting

This research was conducted at SMA Negeri 4 Yogyakarta which addressed at Magelang Street, Karangwaru Lor, Yogyakarta in July until November 2016. Brief History of SMA 4 Yogyakarta, in 1952 with Decree of Minister of Education and Culture Number 3418 / B dated August 8, 1952, SMA Perdjoangan made high school with the name of SMA part B number II or famous with SMA B Negeri. This high school uses the building of SMA 3 Yogyakarta which is located at Jalan Yos Sudarso 7 with class system entering the afternoon. In the next development, changed the name to SMA 4 B until in 1963 the name of SMA 4 B changed its name again to SMA IV. Since occupy a new building on Jalan Magelang Karangwaru Lor Yogyakarta in 1997, the name of SMA IV was changed to SMU Negeri 4Yogyakarta until 2004 .The replacement of some of the names finally changed back in 2004 to SMA Negeri 4 Yogyakarta which is used until now. The date of the founding of SMA Perdjoangan on January 16, 1950 is commemorated as the anniversary of SMA Negeri 4 Yogyakarta.

This school has a superior vision in Faith and taqwa, Science and Culture. While the mission of SMA N 4 include:

1. Increase the appreciation and practice of each religion.
2. Growing a culture of reading, researching and writing.
3. Improve academic achievement, KIR, art and sport.
4. Cultivate noble character.
5. Building a school culture to implement 7K (Hygiene, Beauty, Order, Shyness, Discipline, and Kinship).
6. Develop local wisdom in school life.

7. Optimizing the participation of school committees, communities, and related institutions in the success of school programs.

Furthermore, it can be explained that the goal of SMA Negeri 4 Yogyakarta is divided into general goals and special purposes. Common goals include:

1. Developing the potential of learners to become human: be faithful and devout, creative, independent, responsible, capable, noble, healthy and knowledgeable.
2. Increasing intelligence, knowledge, personality, morality start, life skills independent and follow higher education.

Specific objectives consist of:

1. Prepare the devoted learners of God Almighty and have a noble character.
2. Preparing learners to be human personality, intelligence, quality & achievement in the field of arts & sports, science and faithful.
3. Provide ICT skills, and able to develop themselves independently.
4. Inculcating a tenacious & persistent attitude in competing, adapting to the environment & developing sportsmanship.
5. Equip science and technology to be able to compete & continue to higher level.
6. Improving professionalism & responsibility performance of teachers & employees.

In 2007, the Mayor and the Education Office of Yogyakarta City had first opened a special sport class at SMP Negeri 13 Yogyakarta. Hope Mayor of Yogyakarta after junior high school 13 Yogyakarta produce output, there is high school level that accommodate the athletes. For that, Mayor of Yogyakarta, Mr. Herry Zudiyanto issued the Decree of Mayor of Yogyakarta Number 57 / KEP / 2010 and appointed SMA Negeri 4 Yogyakarta to open a special class for sport. SMA Negeri 4 Yogyakarta was chosen by the Mayor because SMA Negeri 4 Yogyakarta is considered to have some adequate sports facilities although it still does not meet the sports standards. In addition, SMA Negeri 4 Yogyakarta including middle school so that the average value of students who enter the SMA Negeri 4 Yogyakarta is not too high nor too low. The appointment of SMA Negeri 4 Yogyakarta is also motivated by equality of vision and mission, the equation of vision is Superior in Faith and taqwa, Science and Technology, Art and Culture of Sport. While the mission equation of SMA Negeri 4 Yogyakarta is on the third point of improving academic achievement, Scientific Work of Youth, art and sport. Smart, qualified and achieving equations in the arts and sports fields, science and technology and faith, and inculcating to the students a tenacious and persistent attitude in competing, adapting to the environment and developing sportsmanship

Sport specific classes are one of the programs aimed at improving and producing young seeds who excel in sports. Sports class activities at high school level is an activity to form sports class as a container of potential development of students in the field of sports. Some achievements are achieved by SMA N 4 Yogyakarta, among others: 1st Winner Swimming Pool on behalf of Anisa Feritrianti paired with Claudia Megawati Suyanto, won gold medal after collecting score 70,776 from technical routine duet number at National Sports Week (PON) 2016. SMA N 4 Champion 1 Pocari Futsal Pocari Sweat Futsal Championship Championship 2016 Regional Yogyakarta, where SMAN 4 successfully defended the title in this edition. In the final, SMAN 4 successfully silenced SMAN 2 Ngaglik with a score of 4-1. Gold Medal Peparnas XV 2016 in West Java, on behalf of Gayuh Satrio managed to get 2 gold, 1 silver Chess branch at National Paralmpic Sports Week (Perpanas) XV / 2016 in West Java. The gold medal was obtained from Standard Chess and Quick Chess while the silver medal from Chess Standard. 2nd Winner Karate Students on behalf of Alfreda Tama Isfan became the 2nd champion Karate Championship Type Kata Masc U18 in Coupe Internationale De Kayl 2016 in the Netherlands, and many more achievements in the previous year.

B. Presentation of Results and Discussion

1. Management of facilities and infrastructure

The existence of facilities and infrastructure is one of the resources in the implementation of a special sport class in SMA Negeri 4 Yogyakarta. In order for the existence of facilities and infrastructure can be efficient, it must be managed with the best. This is in line with the opinion of Usman Husaini (2012, 6) which states that management is a series of activities directed directly to the effective use of organizational resources and efficiency in order to achieve organizational goals. At the beginning of the formation of a special sports class (special sporting talent / BIO), SMA Negeri 4 Yogyakarta allegedly have more sports facilities than other schools. Some sports facilities are already there, but still not enough and most are not yet available and not yet standard. As revealed by Mr. JT following: "Initially a special sports school class appointed directly by the mayor's father with the consideration that SMA Negeri 4 Yogyakarta has more facilities compared with other schools in the city of Yogyakarta.

Although if analyzed as a whole is actually not sufficient, because some facilities have not been privately owned. Like a soccer field, it still belongs to Karangwaru residents. So the school can not design and develop it. Besides that the field is also used some schools for learning Physical education in the morning. In the afternoon it is used by Karangwaru and surrounding villages. In addition the field is also still not standard. To meet the needs of the football branch by renting in Kridosono, swimming pool hire at UNY, badminton branch rent at PLPT Pingit as well as for Futsal branch also rent outside field. As for the means there are no obstacles because the needs can be met for use for one year. This means that the facilities used for one year is enough until the next year and never plan again in the course of one year of special sport classroom learning.

The statement of Mr. JT is reinforced by the following Ms. H:

"It would be great if all the sports infrastructure for the sports-specific class is integrated with the school. The reality of field distance with the school affects the learning of other subjects ". Moreover, the discipline aspect for students of sports that are team, such as soccer and futsal. '"Often subject teachers in the classroom have to be upset and retain emotion because they do not find students in the class during class time should be followed." On the same occasion Mr. JT added that "the existence of facilities that are considered less than ideal for a special class of sports, covered by hours of practice outside school". Because basically the special class of sports students who entered in SMA Negeri 4 Yogyakarta became a member of the sports club, where the training schedule in each club is more solid than the school hours.

Based on observations, documentation and interviews at SMA Negeri 4 Yogyakarta with headmaster and physical education teacher, also obtained information that SMA Negeri 4 Yogyakarta is one of the leading athlete field warehouses in Yogyakarta and Yogyakarta Special Region. Through the guidance of the city government of Yogyakarta under the auspices of the Office of National Unity (Kesbang). Office of National Unity is an office under the auspices of the City Government of Yogyakarta is specifically responsible for the task and responsible for the implementation of this special class of sports ranging from junior and senior high school. City Government of Yogyakarta then cooperate with Kesbang office then formed a special class for coaching athletes achievers in the city of Yogyakarta, which is named as KKO (Special Class Sports). Synergic cooperation between the city government and SMA N 4 Yogyakarta is relevant to that stated Riduone (2009), that the management of facilities and infrastructure as a process of cooperation efficient utilization of all educational facilities and infrastructure effectively.

Until now KKO SMA Negeri 4 Yogyakarta has various sports including Athletics, Basketball, Football, Archery, Volleyball, Taekwondo, Karate, Field Tennis, Table tennis, Chess, Swimming and Badminton. The KKO SMA Negeri 4 Yogyakarta class has created outstanding athletes, representing at various prestigious events ranging from DBL, NBL, POPDA, PORDA, Kejurnas, PON until there is one athlete from the swimming sport that champions in SEA GAMES. Certainly the success of athletes who joined in the class KKO SMA N 4 Yogyakarta can not be separated from the support of facilities and infrastructure in the facilitation of the unity office of the nation under the city of Yogyakarta city administration.

In a special program in a special class of sports there is an addition to the lesson in class KKO SMA Negeri 4 Yogyakarta hours are used for physical exercise in each sport that is occupied by each athlete/student. For KKO training schedule is on Wednesday morning and Saturday morning starting at 06:00 to 11 pm. For coaches on physical exercise in a sports-only class, the national unity office in cooperation with SMA Negeri 4 Yogyakarta provides a special trainer for the branches of the sport in the KKO class through the selection process. In addition to special training programs in the school also held an annual program on skills activities held by schools such as a try out agenda held by the class KKO to Malang and Ragunan funded by KESBANG.

Given the importance of sports facilities and infrastructure in support of the learning process in the KKO SMA Negeri 4 Yogyakarta, researchers will report the results of research related to management of facilities and infrastructure of the founder in KKO SMA Negeri 4 Yogyakarta. The following management of sports facilities and infrastructure ranging from planning and procurement, use, maintenance or maintenance, inventory and deletion.

1. Planning

According to Gunawan Ari H (1996: 8) argues that the adjustment of planning with needs analysis involves four stages, namely the identification of common objectives that may be achieved, setting goals based on their interests, identifying the difference between desired and what is really and determining the priority scale. Planning facilities undertaken by SMA Negeri 4 Yogyakarta conducted in accordance with the analysis of existing needs, the school also made a list of priority scale to be submitted to Kesbang.

Facilities for a special class of sports are mostly borne by Kesbangpor, the school is only an intermediary in the organization of special classes of sports. So for the procurement of facilities, schools make a list in advance to be approved by Kesbang. Procurement of sporting facilities by schools is conducted once a year simultaneously with the submission of programs from a special class of sports.

2. Procurement

Procurement is a business undertaken to establish and determine the necessary infrastructure needed to support an activity. Some management experts stated that "the procurement of facilities and infrastructure can be done by purchasing, own making, grants and leases". For the procurement of facilities and infrastructure that exist in SMA Negeri 4 Yogyakarta as the explanation in front that the field belongs to the school is a basketball court and tennis courts. Another field is by renting that is done directly by the unity office of the nation. For the provision of sports facilities patchwork for goods that are not feasible to be re-used within 1 year.

In one year, the SMA Negeri 4 Yogyakarta again recorded the procurement of sports facilities that may be damaged. Next will be directly reported to the office of the unity of the nation. For the existing budget the cost of procurement of sports facilities and infrastructure is directly financed from the city government budget of Yogyakarta through the national unity office. In reality in the field of obstacles that are still felt by the coach and athlete of course on the use of infrastructure that is a football field that is right in front of SMA Negeri 4 Yogyakarta.

3. Use

Each field of each sporting field in the KKO SMA Negeri 4 Yogyakarta class, provided by the national unity office, including trainers and sports facilities. The infrastructure that belongs to SMA Negeri 4 Yogyakarta is a basketball court. Football field right in front of SMA Negeri 4 Yogyakarta is owned by residents Karangwaru Lor. football field used for learning physical education schools that are around SMA Negeri 4 Yogyakarta. So on the morning of the field looks very crowded and chaotic.

The condition of the football field is still inadequate for physical education education and physical training of KKO students. At the same time used for physical learning regular class high school N 4 Yogyakarta, KKO and elementary school around SMA Negeri Yogyakarta. The primary schools are SD Negeri Bangirejo 1, SD Negeri Blunyahrejo, SD Negeri Karangwaru, SD Muhammadiyah Karangwaru. Overall in one day there are 6-8 classes carry out physical education education in Karangwaru Lor field. The intensity of field use is very high impact on the learning process becomes

not conducive due to very crowded field conditions. When the observation is done, there are several sports that use the football field is the branch of karate, athletics, table tennis and archery. At 06.00-07.10 WIB, the sports class still dominates in the field but at the time of regular learning which started at 07.00 WIB, the condition of the field has started to be crowded with the schools that started to use the field for physical education learning.

Conditions such as those described are of course still far from the principle of the use of facilities that is the principle of effectiveness and efficiency principles. The principle of effectiveness means that all use of educational equipment in schools should be directed solely in facilitating the achievement of school education objectives, either directly or indirectly. As for, the principle of efficiency means, the use of all educational equipment is sparingly and carefully so that all existing equipment is not easily exhausted, damaged, or lost.

4. Maintenance

Maintenance of educational facilities and infrastructure is an activity to carry out arrangements and arrangements for all facilities and infrastructure are always in good condition and ready to be used efficiently and successfully in achieving educational goals. According to Ibrahim Bafadal (2004: 49) there are several kinds of maintenance equipment in schools, namely: checking maintenance, preventive maintenance, maintenance of a mild repairs, maintenance that is heavy repair. Judging from the improvement there are two kinds of maintenance of school supplies, namely daily maintenance and periodic maintenance. Maintenance is the activity of guarding or preventing the damage of an item, so that the goods are in good condition and ready for use. Maintenance includes all sustained efforts to keep the equipment in good condition. Maintenance starts from the use of goods, that is by way of care in using it

Maintenance is done continuously on all inventory items. For the maintenance of sports infrastructure facilities in KKO SMAN 4 Yogyakarta conducted by and is the responsibility of athletes and coaches in cooperation with the school janitor. For sports facilities on the sports team and individually of course different, for the team of course sarpras care done together to provide responsibilities of complementarity and fill in order to maintain the durability condition of infrastructure after use in training and learning how to clean it first then brought to place a safe warehouse by considering the humidity of the room conditions around the room.

The maintenance of sports class facilities can be done not only to maintain and clean it, but also by checking the condition of the facilities is still feasible or not, then provide improvements if the facilities are found to be repaired so that existing infrastructure facilities can last long and can be maximized as the function supporting the achievement of desired targets as well as sports class athletes can excel maximally.

5. Inventory

Inventory of sports facilities and infrastructure at KKO in SMA Negeri 4 Yogyakarta is done by data collection and renewal of information of sport facility and infrastructure regularly. All facilities used are recorded using a special inventory book of sports facilities per semester. Inventory has been done carefully by physical education teachers, so that the learning process in KKO can run in accordance with the design and targets that have been determined.

6. Deletion

Elimination or deletion is a process of activities aimed at removing state property or state property from the inventory list under prevailing laws and regulations. Ibrahim Bafadal (1999: 89) the elimination of educational facilities and infrastructure is the activity of eliminating excessive facilities, infrastructure has been severely damaged that can not be repaired again, or because of others. The abolition of KKO sport facilities in SMA Negeri 4 Yogyakarta is conducted once a year, for facilities that can still be used, it is still used for physical education learning process for additional facilities in regular class. Then at the beginning of the year, again the procurement of new facilities to support the learning process of physical education.

Based on the above discussion the results of this study indicate that in general management of facilities and infrastructure in a special sport class in SMA Negeri 4 Yogyakarta is quite good. The facilities management is very good, with the function of planning, procurement, and maintenance and use of well-managed facilities. But the deletion function of the facility has not been done well. Infrastructure management is quite good, shown by the function of planning, procurement, maintenance well managed. But the function of the use has not been done properly.

CONCLUSION AND SUGGESTION

Based on the results of research and discussion that has been described before, it can be concluded as follows that the management of sports facilities and infrastructure carried out in a special sport class SMA Negeri 4 Yogyakarta has not been implemented optimally, characterized by the lack of good management function of some sports infrastructure, especially those who are not one's own.

Here are some suggestions from researchers on the results of research that has been found:

1. For the planning and provision of facilities, schools should collaborate with other parties to obtain more adequate and affordable sports facilities at school distance, such as submitting proposals to sponsors.
2. It should be necessary to review and review the implementation of a special sport class, if the Government of Yogyakarta will still continue the special class of sports for several years ahead.

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DEVELOPMENT OF LEARNING ATHLETIC LEARNING MODELS RELEASE DIRECTLY BASED GAMES IN ELEMENTARY SCHOOL

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Abstract

Objectives: This study aims to develop an effective, valid and practical short-distance athletic learning model.
Methods: Methods used Research and Development by 1) Analyzing Needs, 2) Creating initial draft Design, 3) Validating Experts, 4) Improving the design of validation results, 5) Conducting small group trials, 6) Revising Products, 7) Conducting group trials large, 8) Revise the large group trial product, 9) Analyze the final product.
Results: The results obtained in small group trials include cognitive, psychomotor and affective values. The mean of student's motivation score is 71.91% for the old learning model and the pulse rate is 62.51% while the learning model that has been developed the pulse rate increased by 71,09%. Results of large group trials for student motivation obtained by 80.75% and pulse using the old learning model 62.20% while the new learning 73.63%.
Conclusions: Based on the results of the research, the findings of athletic learning of short distance run based on game meet the criteria of effective, valid and practical. The implication of research result of development of game-based athletic learning model can be applied in physical education learning at elementary school.

Keywords: Model Development, Athletic Learning, Game Based

INTRODUCTION

Physical education is a vehicle for educating children, and experts agree that physical education is a "tool" to nurture young people so that they will be able to make the best decisions about physical activity undertaken and live a healthy lifestyle throughout their lives (Suprayitno, 2014: 8 -9). Goals will be achieved through the provision of direct and real experience of physical activity. Physical activity can be either a game or a sport chosen for the learning process. Physical activity or motion is used for the child's personality as a whole. Implementation of learning physical education includes several kinds of sports. One of the sports that is taught in physical education is athletics.

Athletics is a physical activity or physical exercise that contains natural or natural movements such as roads, running, jumping and throwing (Rumini, 2004: 5). The learning of athletic physical education short distance run number is still limited because not yet exact model or learning method used by teacher physical education, other supporting factor which result of student activeness in learning sport is delivery of material by teacher still use model or method of demonstration only without supported by model or method another. This affects the liveliness of the students on the athletic learning of short distance numbers in the elementary school. Students feel bored and lazy in doing athletic activities short distance running number so that required model or method of learning through model or method of play (learn while playing) at the time of learning athletic physical education short distance running number. Through instruction physical education expected elementary school students can gain a variety of experiences to express a personal impression of fun, creative, innovative, skilled, and maintain the freshness of the body and understanding of human motion. Through physical education students are expected to be active in following all learning process in school physical education by applying the model or learning method of play approach in athletic sports.

Margono, Mukholid, Purnama and Satyawan (2013: 82) Learning approaches that can be applied in athletic learning, include play approach, approach to competitions, and engineering

approach. The game in question is a game that is around elementary students including traditional games. Traditional games are the result of human cultivation in the past has excited children to have fun and have a very meaningful influence on the development of children. This game does not cost even very easy to play (Hartati, et al, 2012: 28). Traditional games are a wealth of local culture that should be utilized in physical education learning. Traditional games are very easy to play and have good benefits for child development. Hanafi (2012: 17-18) Modified athletics in the form of games is not a new thing, athletic learning with play is not much known among the main teachers of primary school supervisors. Athletics play is aimed at the aspect of athletic play activity. The goal of athletic modification is that from the beginning the basic elements of motion in athletics can be introduced to children in an interesting and fun way. Athletics is introduced to children with the game so it can arouse attention to do by emphasizing the element of playing in school.

METHODS

Research development according to Sugiyono (2010: 407) argues the method of research and development or in English research and development is a research method used to produce a particular product, and test the effectiveness of the product.

The types of data in this study are qualitative data. The qualitative data were obtained from the oral and written interviews of the masseur and the learning experts as the material for product revision, as a reference to the effectiveness of motion on the model of athletic learning model of short-range running games and student questionnaire as the product feasibility level in following the short distance run athletic learning game.

Stages of implementation are (1) Conducting observation activities in 2 elementary schools, namely elementary school number 166 Palembang and elementary school number 238 Palembang in getting the needs or constraints at the time of learning physical education take place. (2) Creating the initial product, in this study the initial product is the old learning model and new learning model. The new learning model is a short-distance athletic learning model based on the game. game on the initial product, which is the game of dragon snake, bentengan, black green, and mouse cat. (3) Conducting validation activities on the initial product. The initial product is validated by one master and one learning expert. (4) Conducting revision activities after prior validation of the initial product by the masonry expert and the learning expert. The initial product revision aims to provide a solution to the weaknesses or shortcomings of the product to be tested in small groups. (5) Prepare a draft of small group trial products and conduct small group trials. (6) Revision of product after small group trial, revision at this stage is done in order to know the location of weakness or deficiency of the product that was created before proceeding to large group trials. (7) Preparing the draft of large group testing products, at this stage the product is expected to no more shortcomings or weaknesses that are too much. (8) The eighth stage of the researcher conducted a large group trial in two schools namely elementary school number 166 Palembang and elementary school number 238 Palembang. (9) Revision after the implementation of group trials. This product phase will be validated and revised if needed before becoming the final product. (10) The end product is a valid, effective, and practical short-distance athletic learning model of athletic learning that enhances the active, creative, fun, interest, and motivation of short distance athletic learning.

The next step is the practical aspect of a product that is produced, for the practical aspects of data collection is done by giving a questionnaire and see the results of the questionnaire given to the students which contains about the practicality or ease in using new learning model products or athletic learning model runs a short distance based game is an aspect of effectiveness, to prove the effectiveness in the product of athletic learning model of short-range running games.

RESULT AND DISCUSSION

Sugiyono (2014: 172) valid research results when there is similarity between the data collected with the actual data occurred on the object under study. A valid instrument means the

measuring instrument used to obtain (measure) is valid. Valid means the instrument can be used to measure what should be measured.

Valid is a standard measure showing the accuracy of the research instrument. Collecting data by providing questionnaires with observation sheets obtained from validator evaluators of experts and learning experts, product testing and suggestions for product

This game-based athletic learning model is intended for teachers to meet the needs of the cognitive, affective, psychomotor, and motivational components of elementary school students. While the goal to be achieved is to produce a valid learning model assessment, practical use, and effective to obtain maximum results in implementing athletic learning short distance run at the level of elementary students.

Small Group Trial Results Data

Small group trials aim to identify and identify problems such as weaknesses, deficiencies, or product effectiveness when used by students. Products produced in small group trials development of athletic learning model running short-distance game in elementary school that is game of black green, bentengan, and cat mouse can be seen in table 1.

Table 1. Small Group Trial Data

No	Aspect of Assessment	Percentage	Criterion (meaning)
1	Cognitive (1-10)	72%	Good
2	Psychomotor (11-20)	71%	Good
3	Affective (21-30)	73.33%	Good
4	Motivation (31-40)	71.33%	Good
	Average	71.91%	Good

Data obtained on the small group trial gained an average percentage of new learning model or play-based learning model scored 71.91% with the criteria of "Good". Based on predetermined criteria, the new learning model or game-based model is more effective in the implementation of short-run athletic learning process of elementary school students in small group trials.

Product small group trial consists of three (3) stages of the implementation of learning athletics sprinting, namely: a) the stage of heating (warming up) the allocation of time for 1x15 minutes, b) the core stage allocation of time for 1x45 minutes, and c) the stage closing time allocation for 1x10 minutes.

Warming up stage of uses sixteenforms of heating, namely (1) Movement pushing hands upward is nonlocomotor movement or movement that does not move place. Based on student psychology, it aims to improve students' self-esteem before swinging into both hands when athletic learning runs at a short distance. Static movements push the hand upward is done with the student's starting position standing upright, then both hands pushed upwards with the five finger knuckles hands are linked to each other. The movement is performed for 10 seconds. (2) Static movements pushing hands up the right is a nonlokomotor movement or motion that does not move. Static movements pushing hands up the right can aim to move and flex the togok muscles and waist muscles to the right. Based on psychology aims to improve students' self-confidence before swinging into both hands when athletic learning runs a short distance. The waist static movements are done with the students standing upright, then the five finger joints are linked to each other and the two hands are pushed upwards. The movement is performed for 10 seconds. (3) Static movements pushing the hand towards the top left is a nonlokomotor movement or movement that does not move. This movement anatomically aims to move to flex the hand muscles in the muscle supraspinatus muscle, teres minor muscle, infraspinatus muscle, and subscapularis muscle. Static movements pushing the hand towards the top left can aim to move and flex the togok muscles and waist muscles to the left. Based on psychology aims to improve students' self-confidence before

swinging into both hands when athletic learning runs a short distance. The waist static movements are performed with the beginner student position standing upright, then the five finger joints are linked to each other and the two hands are pushed toward the top left. The movement is performed for 10 seconds. (4) Static movement pushing the horizontal hand to the right is a nonlokomotor or motion that does not move. Static movements pushing the hand towards the top left can aim to move and flex the togok muscles and waist muscles to the left. Based on psychology aims to improve students' self-confidence before swinging into both hands when athletic learning runs a short distance. The waist static movements are performed with the beginner student position standing upright, then the five finger joints are linked to each other and the two hands are pushed toward the top left. The movement is performed for 10 seconds. (5) Static movements push the hand horizontally to the left is a nonlokomotor movement or movement that does not move. This movement anatomically aims to move to flex the hand muscles in the muscle supraspinatus muscle, teres minor muscle, infraspinatus muscle, and subscapularis muscle. Static movements push the hands flat to the left aim to move and flex the waist muscle to the left. Based on psychology aims to improve students' self-esteem before swinging both hands and moving the pelvis during athletic learning runs a short distance. Static movements push the hand horizontally to the left is done with the student standing upright, then the five fingers are linked to each other and both hands are pushed horizontally to the left of the body. The movement is performed for 10 seconds. (6) The static movement pushing the horizontal hand towards the front is a nonlocomotor or motion that does not move. This movement aims to mobilize their anatomy to flex its muscles in the hands of *the supraspinatus* muscle *muscle, teres minor muscle, muscle infraspinatus,* and *subscapularis muscle.* (7) Static movements of folding and straightening of the hands are nonlocomotor movements or movements that do not move. This movement aims to mobilize their anatomy to flex its muscles in the hands of *the deltoidmuscle, the supraspinatus muscle, teres minor muscle, muscle infraspinatus,* and *subscapularis muscle.* Based on psychology aims to improve students' self-confidence before swinging into both hands when athletic learning runs a short distance. Static movements fold the right hand upwards and straighten the left hand to the right done with the student standing upright, then the right hand up and straightening the left hand to the right. The movement is performed for 10 seconds. (8) Static movements of folding and straightening of the hands are nonlocomotor movements or movements that do not move. This movement aims to mobilize their anatomy to flex its muscles in the hands of *the deltoidmuscle, the supraspinatus muscle, teres minor muscle, muscle infraspinatus,* and *subscapularis muscle.* Based on psychology aims to improve students' self-confidence before swinging into both hands when athletic learning runs a short distance. Static movements fold the left hand upwards and straighten the right hand to the left with the student standing upright, then the left hand up and straightening the right hand to the left. The movement is performed for 10 seconds. (9) Dynamic rotating movement of the hands is a nonlocomotor movement or movement that does not move. Based on psychology aims to improve students' self-confidence before swinging into both hands when athletic learning runs a short distance. Dynamic movement to two-handed play performed by students standing position, then to two hands rotating simultaneously. This movement is done alternately, if at the beginning to rotate to the front for 10 seconds then the next movement rotates backwards for 10 seconds. This movement has an implementation time amount of 20 seconds. (10) Dynamic movements rotate the waist is a nonlokomotor movement or movement that does not move. This movement aims to mobilize their anatomy to flex its muscles and joints waist. Based on psychology aims to improve students' self-confidence before swinging into both hands when athletic learning runs a short distance. Dynamic movements rotate the pelvis performed with the student standing position, then both hands placed on the pelvis and pelvis rotated alternately from right to left for 10 seconds and vice versa from left to right for 10 seconds. This movement has an implementation time amount of 20 seconds. (11) Static movement lifts the knee of the foot upwards is nonlokomotor movement or movements that do not move. This movement aims to flex its muscles anatomic knee or lower leg *patella.* Psychologically it aims to improve students' self-esteem before swinging and bending to the two knee legs at a time when athletic learning runs a short distance. The pelvic rotation is done

with the student standing, then the hands are placed in the pelvis, and the pelvis is rotated from right to left for 10 seconds and vice versa from left to right. For 10 seconds. This movement has an implementation time amount of 20 seconds. (12) Static movements pull the toes are nonlokomotor movements or movements that do not move. Psychologically it aims to improve students' self-esteem before swinging and bending to the two knee legs at a time when athletic learning runs a short distance. Static movement pull your toes up toward the back of the heel or sole of the foot touches the *hamstring muscles.* This form of heating movement can be performed by the students alternately for 10 seconds for the right leg and 10 seconds for the right leg with the amount of time of execution for 20 seconds. (13) Static movements to bend the leg knee are nonlokomotor movements or movements that do not move. This anatomical movement aims to flex the muscles of the knee or lower leg patella as well as make it a form of movement to extend the necessary steps in short-distance athletic learning. Psychologically it aims to improve students' self-esteem before swinging and bending to the two knees of the foot at a short-distance athletic learning course. Static movements to bend the leg knee is one form of warming movement that can be done by students seara alternately for 10 seconds to bend the right leg knee and 10 seconds to bend the left leg knee with the amount of execution time for 20 seconds. (14) Dynamic movements swing up and down legs are nonlokomotor movements or movements that do not move. Dynamic movement swings up and down legs is one form of warming movement that students can take turns for 10 seconds to swing the right leg and 10 seconds to swing the left leg with the amount of time the exercise for 20 seconds. (15) Dynamic movement of the foot is a nonlokomotor movement or movement that does not move. Psychologically it aims to improve students' self-confidence before swinging and moving on both feet when athletic learning runs a short distance. Dynamic movement of the foot up and down is one form of warming movement that can be done by students seara alternately for 10 to 20 seconds. (16) Dragon game aims to build a sense of confidence, to build a sense of courage, to stimulate balance, and to stimulate the basic motor. The difficulty level in the dragon serpent game is Very Easy, Its execution time is 10 to 15 minutes, Number of Participants in dragon serpent 6 to 15 students, and tools used None. Dragon dragon game is a form of warming through game form without tool or lokomotor (movement that causes body to move place). Dragon dragon game aims to prepare the student body before the implementation of athletic learning run short distance, the dragon game has a characteristic of singing while walking. Singing movement is expected to entertain students so as not to easily get bored doing the road movement in other words students are expected to feel happy while the movement of the road able to raise the pulse of students slowly. The dragon game drills muscles Musculus Quadratus Lumborum, Musculus Gastrocnemeus, Musculus Soleus, Musculus Flexor Digitorium Longus, and Musculus Longus Fibularis. The first form of student movement lined up one long back, participants or players 6 to 15 people. Dragon dragon game only use the activities of walking forward that accompanied the rhythm of chants sung by players. The doorman had two people clinging to the dragon's head, his duties only lowering into two hands simultaneously as the song was finished by the players or participants. Dragon dragon game is also able to train the motor and intellectual or intelligence elementary school students, because this game there is a Q & A session when one of the players or participants were caught by the two doormen. The gatekeeper will grab or hold onto his or her hands when the singing or rhythm is finished by the student then the doorman asks about something that is easily answered by the participant or player. The question can be like the name of fruit, food, clothing, color, animals, insects, and others. For participants or players who are able to answer questions from the doorman then the player is released and for players or participants who can not answer the question then the player becomes a substitute for the door guard while the door guard back into the player. A very simple warm-up movement before core learning begins, teachers can use the game method one of them is the dragon snake game. Dragon dragon game has a characteristic, namely: have a song in every game lasts. Dragon dragon game is a game that uses the movement of the road so that slowly raising the pulse of students and chanting on the dragon game can be used as a medium to entertain students or attract students to follow the learning with passion. The warm-up stage through the dragon-snake game can be performed by the master's teacher for 10 to 15 minutes.

The core stage used three traditional games children Indonesia, namely (1) The game of Bentengan aims to build a sense of confidence, to build a sense of courage, to stimulate balance, and to stimulate basic motor. The game of castle has difficulty level Very Easy, Time Allocation 10 to 15 minutes, Number of Participants 6 to 15 students, and Tools None. How Bentengan game execution is Bentengan game played by two teams, each consisting of 4 (four) to 8 (eight). Each team chooses a place as a base, usually a pillar of stone or a pillar as a 'fortress'. (2) The game of cat and mouse has a purpose to build a sense of confidence, to build a sense of courage, to stimulate balance, and to stimulate basic motor. The difficulty level is very easy, the allocation of time for 6 to 15 minutes, the number of participants from 6 to 15 students, and the tool used does not exist. The game of rat cats is a locomotor game or game that causes the body to move. These games use a lot of running in the coaching game of cat mouse to increase the speed straight ahead and speed agility. (3) The green black game has a purpose to build a sense of confidence, to build a sense of courage, to stimulate balance, and to stimulate basic motor. Difficulty level in the game of green black is very easy, the allocation of time for 6 to 15 minutes, the number of participants 6 to 15 students, and the tool used does not exist. The green black game is a locomotor game or game that causes the body to move.These games use a lot of running in the black game green coaching to improve the speed of action and reaction *(Reaction Speed).* Black and green games are the games that run the most runs. Green black game is very suitable as a learning medium athletics sprint. Games green black students were divided into two groups: the black team and the green team is lined up with the banjo and dealing with the opposing team. The named team (hiyam or green) as the game progresses is the team being chased. Missal when the referee shouts "hiiiiiiiiiiitam" then the black team that runs and the green team catch up to be caught and if the referee mentions "hiiiiiiiii green" then the green team that runs and the black team are chasing.

Closing stage used four forms of cooling motion, namely (1) Dynamic rotating movement of the hands is a nonlokomotor movement or movement that does not move. This movement is done alternately, if at the beginning to rotate to the front for 10 seconds then the next movement rotates backwards for 10 seconds. This movement has an implementation time amount of 20 seconds. (2) Dynamic movements rotate the waist is a nonlokomotor movement or movement that does not move. Based on psychology aims to improve students' self-confidence before swinging into both hands when athletic learning runs a short distance. Dynamic movement rotate the pelvis done with students standing position, then both hands placed on the hips and pelvis is rotated alternately from right to left for 10 seconds and instead of side to side for 10 seconds. This movement has an implementation time amount of 20 seconds. (3) Dynamic movements swing up and down legs are nonlokomotor movements or movements that do not move. Dynamic movement swings up and down legs is one form of warming movement that students can take turns for 10 seconds to swing the right leg and 10 seconds to swing the left leg with the amount of time the exercise for 20 seconds. (4) Dynamic movements of attraction and pull are nonlokomotor movements or movements that do not move. This movement aims to train the formation on the togok bar. Based on psychology aims to improve students' self-confidence before moving the body at the time of athletic learning to run a short distance. Dynamic movements pull each other and pull is one form of movement that can be done by students alternately for 10 to 20 seconds.

Data Results Trial Large Group

A large group trial aims to determine the effectiveness of the development of short-run athletic learning models based on games in primary schools. Changes that have been obtained from expert evaluation as well as large group trials whether the game-based learning model can be used in the actual environment can be seen in table 2.

Table 2. Data Trial Large Group

No	Aspect of Assessment	Percentage	Criterion (meaning)
1	Cognitive (1-10)	81%	Good
2	Psychomotor (11-20)	80%	Good
3	Affective ((21-30)	82%	Good
4	Motivation (31-40)	80%	Good
Average		80.75%	Good

The data obtained in a large group trial gained an average percentage of answer options according aspects assessed in the amount of 80.75%. Based on the criteria which have been determined k then, Bentengan game model has met the criteria of "Good".

The short-run athletic learning model of game-based short run on large group trials has been tested for its validity, these results are demonstrated by the questionnaire validation along with the sheets evaluated by the skilled consultant and the learning expert. The results of the product draft assessment of the game-based learning model, large group trials of validator expert validation obtained an average percentage value of 86% and the results of validation from the expert learning obtained average percentage value of 86%. Validation results that have been assessed by expert of physical education and expert validators of learning hence, the product of athletic learning model of short distance run based on the game has entered in good category or valid.

CONCLUSION AND SUGGESTION

Results of research learning model athletics sprint the products with the learning model based athletics sprinting game based on testing small group and large group test. Based on the analysis h acyl study concluded that the results of expert validation physical education on draft products based learning games on the small group trial the average percentage of 84% and testing a large group average percentage of 86% while the results of the validation learning experts on draft products learning model based games on try small group didapatka n average percentage of 86%, and then test a large group obtained an average 86% of the results of validation that has been assessed by experts physical education and learning experts then, products based learning game had been categorized as valid and can be used in teaching physical education and health in primary school.

Results of data analysis obtained the small group trial with an average percentage 71.91% and the analysis results obtained testing large groups of 80.78%. Based on predetermined criteria, the product of game-based learning model has been categorized as good or practical to use. The practicality of the product of game-based learning model is seen from the use of simple and affordable means and infrastructure. M odel new learning to get the average value increased, reaching 71.09% athletics sprint-based games learning model are given to students is effective to make students actively engaged and learning models athletics sprinting based games can already be used in the learning process athletics run a short distance to the elementary school students.

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THE EFFECT OF COOPERATIVE LEARNING MODEL OF TEAM GAMES TOURNAMENT ON LAY UP SHOOT TOWARDS THE LEARNING OUTCOMES (EXPERIMENTAL STUDY) ON BASKETBALL SMP NEGERI KARAWANG

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Abstract

Objectives: The objective of this research is describing the effect of cooperative learning model of Team Games Tournament (TGT) on lay up shoot towards the learning outcomes on basketball class VIII SMP Negeri 3 Karawang.
Methods: In this study, 60 students are involved as purposive random sampling by taking 2 classes as research sample (class VIII-E and VIII-J), which is consisting 60 students in total. Thirty students were in experimental group (EXP) while the other part was defined the control group (CON). The researchers use a quantitative approach with experimental methods. This study uses quasi-experimental design.
Both groups had got different treatment, whereas the experimental cooperative learning model games teams tournament was performed by Experimental group (EXP). Changes in performance (pre- vs post-test) of each group were analyzed by using t-test formula.
Results: From the calculation of two-sided t-test $\alpha = 0.05$, the result obtained a t-count 2,222, whith a t-table = 2,002.
Conclusions: Thus, it can be concluded that cooperative learning model TGT type give significant effect to the ability of lay up shoot of students of class VIII SMP Negeri 3 Karawang Barat.

Keywords: Cooperative learning model type TGT, lay up shoot

INTRODUCTION

Education is significant for the future of a nation, hence the practitioner had many efforts to increase the education quality i.e. to develop the teaching approach, education methods, education models and also education curriculum. The aim is to overcome the life challenge and its dynamics with outcome expected to create high quality students.

According to Piaget (in Tite Juliantine et al., 2012: 7), "the main purpose of education is to develop individuals into creative, inventive, inventive individuals." Another almost similar opinion states that education is a process help, guide, direct, and encourage individuals to grow and develop in accordance with the stages of development, so that they can adjust to life in the present and in the future. This means that the teacher must educate the child to be a person who is capable of doing new things, and not just repeat what the previous generation has done, keeping abandoning the values prevailing in the environment. Based on the description proves that physical education not only develops the physical aspects alone, but also develops aspects of cognitive, emotional, mental, social, moral, and aesthetic.

By developing some aspects other than physical aspect alone it is not impossible physical education can develop students' academic ability. So the role of physical education teachers should be able to emphasize to learners that the mastery of motor skills is not the only goal to be achieved in the learning process, but there are other educational goals that must be developed in the students as a whole that is growing and developing . these educational objectives are the development of all the potentials of the students both involving the cognitive, affective, psychomotor, and social dimensions in a broader sense.

The way to achieve the purpose of the education and also to involve students actively in order studying process is by using education methods and technology which support students to increase their curiosity which impact the teacher to diversify learning resources. Teacher should be more understand and able of teaching approach, study strategies, study method and study models in order to delivery learning materials to the students. When the teachers train the students the complex skills, they should be able to perform the learning materials to be more attractive so that it is easier to understand. For example in teaching layup shoot skills which is the most onerous skills for teachers to train the students, thus teacher need to use the right method in helping students barely difficult to learn it.

Definition of basketball according to the rules of basketball game article 1 (PP Perbasi: 2012), is : Basketball is played by 2 teams of 5 players each. The aim of each team is to score in the opponents' basket and to prevent the other team from scoring. Lay up shoot is one of basic skills of basketball games. Basketball is is a limited contact sport played on a rectangular court, the game has many individual techniques for displaying skill—ball-handling, shooting, passing, dribbling, dunking, shot-blocking, and rebounding. Sodikun (in Lubay 2010:23) said that " basketball is a game which has complex movement, combination of walking, running, jumping, the elements of power, velocity, flexibility, etc."

Broadly speaking the game of basketball is done by using the three elements of the technique that became the main game, namely: pass and catch the ball (passing and catching), dribbling (dribbling), and shooting (shooting). All three elements of the technique developed into many advanced techniques that allow basketball games to live and vary. For example, in the technique of passing and catching the ball there are several ways such as: chest pass, overhead pass, bounce pass, and so forth. In this series of techniques, also known as the pivot when holding the ball, one leg moves and one other leg remains on the floor as a pedestal. The technique of dribbling is closely related to traveling, ie the movement of the foot that is considered wrong because it exceeds the specified step. Also double dribble is a hand movement that is forbidden for dribbling with both hands or dribbling for the second time after the ball is ridden with both hands. Shooting techniques are closely related to deception, jumping and so on. So many game techniques to be mastered by a basketball player, making it difficult to specify one by one in this paper. Nevertheless, by mastering the three basic techniques and some advanced, one can already do basketball games, although not perfect.

According to teaching materials that teacher had given to the students at SMP Negeri 3 Karawang Barat, most of the students are saturated against the sports lesson , particulary the basketball due to students are not able to understand and posses the basic technique of basketball, mainly the basic technique of lay up shoot. Therefore, researcher construct the cooperative teaching model type Teams Games Tournament (TGT), which expectation that students barely saturation and at the same time could understand and able to use the basic technique of basketball, particulary layup shoot.

Team Games Tournament (TGT) is one among several models of physical education, moreover this type is kind of the cooperative training. According to Eggen and Kauchak in Strategies and Models for Teacher(1996:279), " cooperative learning is part of teaching strategic group which involve students cooperate in collaboration to reach group's goal". In cooperative training, students were encouraged to be cooperating and interactive to others in order to complete the tasks which assigned. By applying this Team Games Tournament (TGT) models, we expected that students could be motivated with the more attractive activities so that the results of learning could be achieved well. In TGT learning model, each individual in the team will cooperate and prepare himself or herself to play in the game actively and also explain to the team. In other words, by this models the students not only to listen the explanation from the teacher that often makes students saturated and become

passive, but also have to involve as peer tutors. This models also contains elements of games and reinforcement which be able to increase the student's skills of basketball basic technique, particularly for layup shoot because every individual are moving and doing actively.

Based on the description above , the authors tried to examine the condition of the realities faced by student in Basketball class. The issue was raised as research material entitled "The effect of cooperative learning model of Team Games Tournament on lay up shoot towards the learning outcomes (Experimental study) on basketball class VIII SMP Negeri Karawang."

METHOD

To obtain data in this research required data source called population and sample research. Regarding the population by Sugiyono (2013: 117) explained as follows: "Population is a generalization region consisting of objects or subjects that have certain qualities and characteristics set by the researchers to be studied and then drawn conclusions. The population in this study is the object or used as a source of data from a study. The population is the totality of all possible values, the results of counting or measurement, quantitative or qualitative, of the particular characteristics of all the complete and clear members of the group whose desires to study their properties.

This research was a quasi-experimental research which conducted at SMP Negeri 3 Karawang Barat. The population of this research were the students of SMP Negeri 3 Karawang Barat class VIII which is consisting of 13 class and 494 students in total. The sample was taken from 2 classes which is class VIII-E and VIII-J consisting 60 students out of population. The researchers used cluster random simple sampling technique to define the sample which based on groups or classes at SMP Negeri 3 Karawang Barat by raffling.

Having got sample by raffling method, authors assigned two groups, whereas one group consist of 30 students are the experimental group (EXP) and the rest of students are the control group (CON). Having obtained the sample by raffling, researcher assigned which one is the experimental group (EXP) and the other one is being control group (CON). The Experimental Group was obtaining treatment by using learning model of Team Games Tournament, meanwhile Control Group did not obtain any treatment but using conventional method only.

Data analysis technique obtained from the experiments, after collected all data on physic learning. Data were analyzed by using the steps below :

1. Calculating average score of sample group by using formulation from Nurhasan (2008:24) was as follow :

$$\bar{} = \frac{\sum}{}$$

Notes :
$\bar{}$ = Mean total
Xi = Mean score
$\sum$ = sum
n = number of sample

2. Calculating standard deviation by using formulation was follow :

$$S = \sqrt{\frac{\sum(- (\bar{})^2}{-1}}$$

Notes:

S = Standard deviation
n = Number of sample
$\sum(\quad - (\bar{\quad})^2$ = The sum of squares the average value of the data value is reduced in average

3. Test of normality data was deteremined by using Normality testing fomulation of Lilliefors. The testing procedur accodring to Nurhasan (2008:118) was follow:

a. Observation $X_1, X_2, \ldots X_n$ made a raw number $Z_1, Z_2, \ldots, Z_n$ by using the formula : $Z_i = \frac{\quad}{\quad}$ (X and S each representing the mean and standard deviation of the sample).

b. For these raw numbers a standard raw distribution list is used, then calculated by chance $F(Z_1) = P(Z \leq Z_1)$.

c. Next is calculated proportion $Z_1, Z_2, \ldots Zn \sum Z_i$. If the proportionini declared $S(Z_i)$, then : $S(Z_i) = \frac{\text{the number Z1,Z2,.....Zn that} \leq Zi}{n}$

d. Calculate the difference $F(Z_i) - S(Z_i)$ then set the absolute price.

e. Take the greatest price among the absolute prices of the difference. To reject or accept the hypothesis, we compare L_o with a criticle value L taken from the list to a real level α the selected. The criterion is: reject the null hypothesis if L_o obtained from the observed data exceeding L from the table list. In other cases the null hypothesis is accepted.

4. The test of homogeneity

The formula used according to Suseno (2013:134) are as follows:

$$F = \frac{\text{Greatest Variance}}{\text{Smallest Variance}}$$

Testing criterion is accept hypothesis if $F_{hitung} < F_{tabel}$ distribution with degrees of freedom $= (V_1, V_2)$ with a real level $\alpha = 0{,}05$.

5. Testing the significance of improving learning outcomes, using the t test with the formula of Suseno (2013:93) as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

The meaning of the signs in the formula is:

t = The value of t Count
n_1 = Number of sample groups 1
n_2 = Number of sample groups 2
S_1^2 = Variance on the initial test
S_2^2 = Variance on the final test
$\bar{X}_1$ = Avarage group 1 experiment
$\bar{X}_2$ = Avarage group 2 control

a. Compare the t-count value searched with t_{table} dengan with degrees of freedom nl + n2 -2 and the real level *α*: 0.05.

b. H_0 = if $t_{table} \geq$ value $t_{account}$ is rejected

c. H_1 = if $t_{table} <$ from $t_{account}$ is acceptable

RESULTS AND DISCUSSION

Data analysis *Pre-test*

Pre-test was conducted on 18 May 2015 for students of class VIII SMP Negeri 3 Karawang Barat year 2014/ 2015. *Pre-test* was being conducted by practicing in the fields which purpose to get to

know the student's ability of lay up shoot from the Experimental group into the Control group, before both of them got treatment.

Normality Test

H_0 = data in the experimental group and the control group were normally distributed. Once calculated using Microsoft Excel, the results obtained can be seen in the following table:

Tabel 1

Test of Normality of pre-test of Experiment and Control Group

Group	$\bar{}$	S	N	L_0	L_{tabel}	Interprestation
Experiment	2,30	1,42	30	0,150	0,161	H_0 be accepted
Control	2,47	1,53	30	0,154	0,161	H_0 be accepted

From the above group experiment data, it can be taken the absolute value of the largest value of 0.150 with the help of critical value L for liliefors test for the sample size of 30 and α = 0.05 then obtained L of = 0.161 therefore L0 (0.150) <Lα (0.161), then the hypothesis accepted or in other words can be formulated that the distribution is "NORMAL"

From the above group control data , it can be taken the absolute value of the largest value of 0.150 with the help of critical value L for liliefors test for the sample size of 30 and α = 0.05 then obtained L of = 0.161 therefore L0 (0.150) <Lα (0.161), then the hypothesis accepted or in other words can be formulated that the distribution is "NORMAL".

Homogeneity Test

From the above calculation, it can be seen that F_{hitung} = 1,42. While F_{tabel} in the F distribution with the level of significance 5% and *dk* = *n* – 1 = 30 – 1= 29. *dk* numerator dan dk denominator worth 29 gained F_{tabel} = 1, 85. t 1,then 42 < 1,85 F_{hitung} < $F_{tabel.}$

From the results can be interpreted that H_0 accepted and it can be concluded that the students in the experimental group and the control group have the same layup shoot capability. Then the data is homogeneous.

Data Analysis *post – test*

Post-test held on June 11, 2014 and on the students of class VIII SMP Negeri 3 Karawang West academic year 2014/2015. Post test was given to the experimental group and control group that were tested in practice to know the ability of lay up shoot of both groups after getting treatment (treatment).

Normality Test

H_0 = data in the experimental group and the control group were normally distributed. Once calculated using Microsoft Excel, the results obtained can be seen in the following table:

Tabel 2

Test of Normality of post-test of Experiment and Control Group

Group	$\bar{}$	S		N	L_0	L_{tabel}	Interprestation
Experiment	4,60	2,01		30	0,135	0,161	H_0 be accepted
Control	3,60	1,57		30	0,149	0,161	H_0 be accepted

Based on the criteria and the post-test normality test table above, it can be seen that L_0 of the experimental class and control class are 0.135 and 0.149. the L_0 value of the two classes is less than Ltabel seen from the lilifeors table with a significant value of 0.05 ie 0.161, it can be concluded that normal.

From the experimental group data mentioned above, it can be taken the biggest price of the largest value of 0.155 with the help of critical value L for liliefors test for sample size of 30 and α =

0.05 then obtained L of = 0.161 therefore L0 (0.135) <Lα (0.161), then the hypothesis is accepted or in other words can be formulated that the distribution is "NORMAL".

From the control group data above, it can be taken the absolute value of the largest value of 0.149 with the help of critical value L for liliefors test for sample size of 30 and α = 0.05 then obtained L of = 0.161 therefore L0 (0.149) <Lα (0.161), then the hypothesis accepted or in other words can be formulated that the distribution is "NORMAL"

Hypothesis Test

Hypothesis test using independent t-test test to find out whether the use of cooperative learning model type TGT affect the results of learning lay up shoot students. From the calculation results can be seen that t_{hitung} = 2,222. Whereas the ttable seen from the values in the t distribution with the 0.05 and α severity levels for the two tail test is 2,002. Then:

2,222 > 2,002 $\longrightarrow$ $t_{hitung} > t_{tabel}$

From the results obtained can be interpreted that H0 rejected and it can be concluded that the use of cooperative learning model TGT type significantly influence the ability of lay up shoot students.

First, the researchers used liliefors testing to examine normality data from the experimental group and control group before and after treatment given as required to use t-test formulation. Based on calculation which used Microsoft excel, the data was distributed normal upon the experimental group and control group before the treatment was given. Then, the researcher used formulation F_{hitung} to examine the homogeneity, result was $F_{hitung} < F_{tabel}$ whereas 1,35 < 1,85, so that H_0 is accepted. It means that the students in Experimental group and control group have the same ability of lay up shoot. So that the data is homogen.

Having analyzed the pre test data, the post-test data was being calculated with the same ways upon experimental and control groups. Both post test data of the groups calculated by using liliefors testing with the result that the post test data is distributed normally. Furthermore, researcher examine the hypothesis by using t-test with the purpose to know whether the applying of learning model cooperative TGT affect toward the student's lay up shoot ability

Finding shown that $t_{hitung} > t_{tabel}$ yaitu 2,222 > 2,002 so that H_0 is rejected. It means that learning applied model cooperative TGT affected significantly towards the student's lay up shoot ability.

CONCLUSION AND SUGGESTION

Learning model TGT cooperative type needs to be more socialized, because from the results of research that researchers do model learning cooperative type TGT enough to give a significant effect on the results of learning lay up shoot basketball game.

Based on the results and discussion above, some conclusion can be drawn namely : learning model cooperative TGT type effects significantly to the learning outcomes of lay up shoot lesson for the students in class VIII SMP Negeri 3 Karawang Barat which shown by calculation of t-*test* two side against α = 0,05, diperoleh $t_{hitung} > t_{tabel}$ yaitu 2,222> 2,002.

This research could increase the outcome learning of the lay up shoot lesson in the basketball class by applying model cooperative TGT type. So that, this cooperative model TGT type could be the alternative technique for the teachers in basketball class lesson lay up shoot.

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THE EFFECTS OF PRACTICE METHOD AND ACHIEVEMENT MOTIVATION ON MAXIMUM VOLUME OXYGEN OF FOOTBALL PLAYERS

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Abstract

Objectives: This research aimed to see the effect of continuing practice method and interval practice method and achievement motivation towards the improvement of VO2Max ability of football players.
Methods: The design of this research was true experimental with 2x2 level plan. Collecting sample in this research was by using purposive sampling technique. Distribution of sample group was based on the results of achievement motivation test. The results of achievement motivation were arranged from high to low. 27% from the highest scores (20 samples) was included into high achievement motivation group, while 27% from the lowest scores was stated by low achievement motivation group. To divide the samples, each practice method used matching paired technique. There were 10 players in continuing practice method group with high achievement motivation, 10 players in interval practice method group with high motivation, 10 players in continuing practice method group with low motivation, 10 players in interval practice method with low motivation. VO2Max ability of pre and post test of 4 groups was taken by Multistep Fitness test. The results were analyzed by using two paths ANAVA and Tuckey test if there was found the interaction between practice method variable with achievement motivation variable.
Result:1) There was an interaction between practice method and achievement motivation (F_{count}= 172.34>T_{table}= 4,11), 2) Continuing method (A_1) was more effective than interval method (A_2) (Q_h= 3.17 > Q_t = 2.93), 3) Continuing practice method with high achievement motivation (A_1B_1) the result was more effective than interval practice method with high achievement motivation (A_2B_1) (Q_h= 3.96 > Q_t = 3.79), 4) Interval method with low achievement motivation (A_2B_2) the result was not more effective than continuing method with low achievement motivation ($A1B_2$) (Q_h= 1.63< Q_t = 3.79).
Conclusions: Continuing practice method with high achievement motivation has significant effect towards the improvement of VO2Max of football players. Therefore, continuing method needs to be implemented and achievement motivation needs to be maintained in every exercise.

Keywords: Practice Method, Achievement Motivation, VO2Max

INTRODUCTION

Physical condition is one of the factors that determine the achievement in football.Physical condition is useful to maintain playing skills during 2x45 minutes in normal time to obtain the efficiency in applying techniques and tactics (Harbhajan&Gurpreet, 2013).Based on the observation of football players PS.UNP it was found that the players were often fatigue in second half. The players were often left by the opponents in scramble for the ball.The cause of the fatigue isdeclining endurance capability of players. The endurance is determined by VO2Max capacity of players. From data obtained,therewas still seen if the players had VO2Max in enough categories about 12 players, 25 players had good category and 3 players had high category. A football player actually should have good VO2Max category in order to undertake the task well.
VO2Max is maximum oxygen volume that is used by someone usually counted in L/minute (Hairy, 2003).VO2Max is body's ability to consume oxygen maximally per minute in maximum burden (Nawawi, 2008).VO2Max is influenced internally and externally.Internally VO2Max is influenced by lung, blood quality (hemoglobin), heart, blood vessels, muscles and motivation. Externally VO2Max is influenced by practice method. Practice method has an impact in increasing VO2Max.This impact is influenced by acute physiological response from result of specificpractice of different athletes that influence maximum cardiac output(Roels, 2005; Randers et al, 2013).Besides that,psychologically motivation directly related to desire, willingness and purpose of the players in the process of practice

(Zuber, Zibung&Conzelmann, 2014).Practice that is done with high motivation will have a maximum impact in increasing body organs functions that contribute in increasing VO2Max.

Practice method that mostly used in increasing VO2Max is continuing practice method and interval practice method. These methods are mostly done and compared because interesting to be researched. A number of researches existing give strengthening of the result of this research. The research that was done by Majid, Seyyed&Tahere (2013); Denis et al (1982); MacDougall et al (1998) and Harmer et al (2000) showed that both of these methods give the significant effect in heart index, respiratory and blood parameter. All aspects have the functions in improving aerobic fitness of athletes. However, the different result ofthe research that was done by Franch et al (1998). Billat (2001), Smith et al (1999), Laursen et al (2002) showed the result that there was no significant effect from both practice methods towards VO2Max.The differences from this research were caused by the differences of duration and practicetime implementation. The practice was longer and intense thus it has different effect to VO2Max.The differentiation wascaused by a change in aerobic power ability, lactate threshold, lactate production and return, lactate tolerance, acid base balance in muscles and systemic, formation of energy, muscle temperature, mitochondria, structure of proteins, globular enzymatic protein and gene activation(Whyte, Gregory, 2006: 30).

Based on the above explanation, it is jointly continuing practice method and interval practice method and achievement motivation thus (1) VO2Max of player that was given continuing practice method was higher than interval practice method group, 2) There was an interaction between practice methods with achievement motivation towards VO2Max capacity of PS. UNP players, 3) On high achievement motivation, VO2Max ability of PS. UNP with continuing practice method was higher than interval practice method. 4) On low achievement motivation, VO2Max of players with interval practice method was not higher than continuing practice method. The advantages of this research are the suitable method is found for the football players and seeing the role of motivation in improving VO2Max of football players.

METHOD

The design of this research was true experimental with 2x2 level plan. Collecting sample in this research was by using purposive sampling technique. Distribution of sample group was based on the results of achievement motivation test by using achievement motivation questioner with reliability coefficient 0.947. The results of achievement motivation were arranged from high to low. 27% from the highest scores (20 samples) was included into high achievement motivation group, while 27% from the lowest scores was stated by low achievement motivation group. To divide the samples, each practice method used matching paired technique. There were 10 players in continuing practice method group with high achievement motivation, 10 players in interval practice method group with high motivation, 10 players in continuing practice method group with low motivation, 10 players in interval practice method with low motivation. VO2Max ability of pre and post test of 4 groups was taken by Multistep Fitness test. The results were analyzed by using two paths ANAVA and tuckey test if there was found the interaction between practice method variable and achievement motivation variable.

RESULTS

Data Description

Table 1. Data description of eight groups research data that consist of range, mean, deviation standard, minimum and maximum score

Data group	n	Range	Maximum	Minimum	Median	Mode	Mean	Deviation Std
Group A1	20	16	56.2	40.2	49.9	50.8	49.045	3.9009
Group A2	20	10.9	54.8	43.9	48.45	48.5	48.235	3.2640
Group B1	20	16	56.2	40.2	50.4	50.6	49.745	3.6959
Group B2	20	11.6	54.3	42.7	46.95	48.4	47.625	3.3095
Group A1B1	10	16	56.2	40.2	50.7	50.8	50.57	3.2955
Group A2B1	10	10.3	54.8	44.5	48.6	48.5	49.14	3.4059

Group A1B2	10	11.6	54.3	42.7	47.75	48.4	47.02	3.7225
Group A2B2	10	10.4	54.3	43.9	46.65	46.5	47.33	3.0118

Normality test

Table 2. Summary of the results of normality test of practice method data and achievement motivation from research plan

Group	N	Lo	Lt	Summary
A1	20	0.1020	0.1900	Normal
A2	20	0.1750	0.1900	Normal
B1	20	0.1004	0.1900	Normal
B2	20	0.1575	0.1900	Normal
A1B1	10	0.1385	0.2580	Normal
A1B2	10	0.1789	0.2580	Normal
A2B1	10	0.1657	0.2580	Normal
A2B2	10	0.1896	0.2580	Normal

Homogeneity test

Variance Homogeneity Test Two Groups Treatment

Table3. Summary of Variance HomogeneityTest Result group $A_1$and $A_2$and B_1 and B_2

Group	N	Variance	F count	F_{table} (0,95)	Description
A1	20	16.65	1.48	2.21	Homogeneous
A2	20	11.28			
B1	20	14.95	1.26	2.21	Homogeneous
B2	20	11.83			

Variance Homogeneity Test Four Groups Treatment

Table4. Summary of Variance Homogeneity Test Result Four Groups Research Plan

Group	Variance Separate	Variance Combination	Price B	χ^2_h	$\chi^2_t(0.95)(3)$	Description
A_1B_1	19.08	1.1471	41.2960	1.3382	7.81	Homogeneous
A_1B_2	15.60					
A_2B_1	12.37					
A_2B_2	9.07					

Hypothesis Testing

Table5. Summary of the Results of Two Paths ANAVA towards VO2Max Data of Football Players

Variance Source	JK	Dk	RJK=JK/dk	Fh= RJK/RJK(D)	Ft (a=0,05)	Ft(a=0,01)
Between method(a)	6.56	1	6.56	5.04*	4.11	7.24
Between achievement motivation (b)	220.13	1	220.13	168.96*	4.11	7.24
Interaction (AxB)	224.52	1	224.52	172.34*	4.11	7.24
In group (D)	46.90	36	1.30			
Deduction total	498.12	39				

Based on the summary of the result of two paths ANAVA above, it can be mentioned that: (1)HipotesisAwal (H_0) stated that there was a difference of practice method influence between continuing method group and interval accepted method because the result showed F_{count} = 5.04 >F

$_{table}$ = 4,11. It can be concluded that VO2Max ability of football player PS. UNP that was trained by using continuing method was more effective than interval method. (2) HipotesisAwal (H_0)stated that there was no difference influence of high achievement motivation group with low achievement motivation group rejected because the results showed F $_{count}$ = 168.96>F_{table}= 4,11. (3) Alternative hypothesis (H_a) stated that there was an interaction between practice method and achievement motivation with VO2Max accepted because the result showed F_{count}= 172.34 >F_{table}= 4,11. It can be concluded that there was an interaction between practice method and achievement method towards VO2Max of football players PS. UNP.

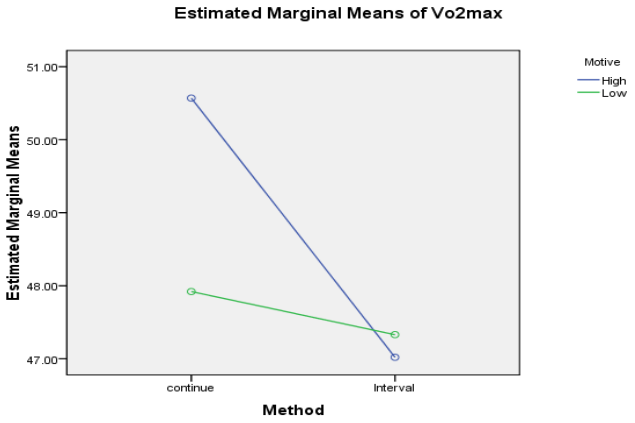

Figure1.
Interaction between Practice Method with Achievement Motivation towards VO2Max Ability of Football Players PS.UNP

Through research hypothesis that has provedthat stated there was an interaction between practice method and achievement method towards VO2Max PS.UNP therefore the analysis needs to be continued by Tuckey test.Summary of Tuckey test result is in table 6:

Table 6. Next Phase of ANAVA Result with Tuckey Test

Compared group	Dk	Qh	Qt (= 0.05)	Description
A1 and A2	1.27	3.17	2.95	Significant
A1B1 and A2B1	1.64	3.96	3.79	Significant
A1B2 and A2B2	1.64	1.63	3.79	No

Based on the result of next test by Tuckey test, it can be mentioned that: (1) Research hypothesis that stated the result of continuing method (A_1) was more effective than interval method (A_2) was accepted (Q_h= 3.17 > Q_t = 2.93).(2) Research hypothesis that stated the result of continuing practice method group with high achievement motivation (A_1B_1) was more effective than interval practice method group with high achievement motives (A_2B_1) was accepted (Q_h= 3.96 > Q_t = 3.79). (3) Research hypothesis that stated the result of interval method with low achievement motivation (A_2B_2) was more effective than continuing method with low achievement motivation ($A1B_2$) rejected (Q_h= 1.63< Q_t = 3.79) rejected.

DISCUSSION

The result shows that there is an interaction between practice method and achievement motivation that can be explained as motivation is a trigger in applying practice program. Motivation is an actual process orsource of triggerandindividualbehavior support to meet the needs to achieve

the particular purpose (Setyobroto, 2005). Achievement motivation is as an encouragement to be better than self ability and others (Rabideu, 2005). The result shows that motivation gives encouragement towards individual to do sport in intrinsic and extrinsic so that unconsciously the activity that is done can improve physical ability (Kilpatrick et al, 2005).

One form of encouragement that is done to achieve the purpose in an activity is strong motivation based. If encouragement can lead someone to practice maximally therefore the maximum result can be achieved. Practice method is easy to do if there is a strong motivation based to get the achievement. The result shows that continuing practice method group with high achievement motivation is more effective than interval practice method groupwith high achievement motivation. There is a result that interval method with low achievement motivation is not significantly different with continuing method with low achievement motivation. It can be concluded that achievement motivation has an important part to achieve practice goals.

Achievement motivation is someone orientation to keep effort to obtain the best result maximally and maintain the spirit in failed then go on to accomplish the task because of feeling proud to finish well (Setiadarma; 2007). Motivation occurs as a result of desire to get achievement and to have good ability (Murray, Figure 2 explains the process of achievement motivation until the particular purpose.

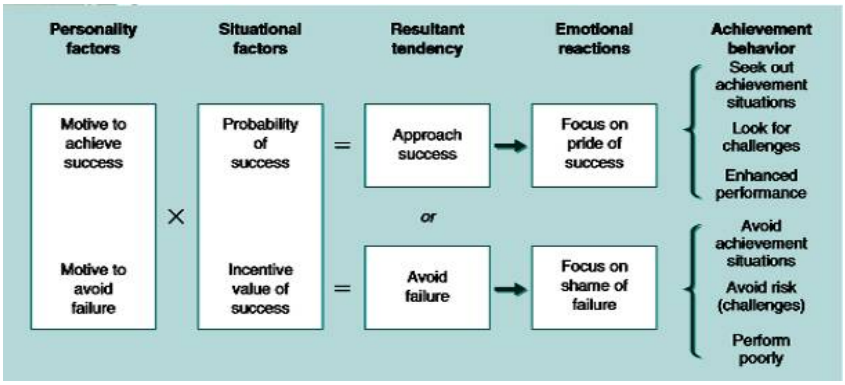

Figure 2. Need Achievement Theory (Murray: 1983)

Figure 2 above explains that motivation to achieve success is in thesituation that enables someone to be success. Result from that situation causessomeone to make approach that can raise their emotional to reach their success. It is seen from above explanation, high motivation must be owned by football playersof PS. UNP to achieve practice program that has been made to improve VO2Max in football.

CONCLUSION AND SUGGESTION

Continuing practice method with high achievement motivation has significant effect towards the improvement of VO2Max of football players. Because of that, continuing method needs to be implemented and achievement motivation should be kept in every practice.

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THE EFFECT OF PROTEIN SUPPLEMENT ON MAXIMUM STRENGTH TOWARD THE MEMBERS OF ONE GYM FITNESS CENTER PADANG

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Abstract

Objectives : The problem in this research was late maximum strength increase experienced by members of fitness at the moment doing weight training. This was caused by a lack of knowledge of fitness members about nutrition. The grant protein supplements manufacturer can be used as an alternative to increase the maximum power which is owned by the fitness members. The purpose of this research is to know the effect of protein supplement on maximum strength toward the members of One Gym Fitness Center Padang

Methods: The type of this research is quasi experiment. The population is all of the active members of *One Gym Fitness* Center Padang. The sample of this study is 26 people selected by using *purposive random sampling*, who are listed at *One Gym* less than a month. They were divided into two groups, 13 members in experimental group and 13 members in control group. For experimental group, the members were given the protein supplement after doing the exercise at One Gym Fitness during 16 times which each of the members consumed 1.5 gr/weight/day proteins. For control group, the members were not allowed to consume protein exaggeratedly. They also were not given the protein supplement during conducting the research. The instrument used in this research was the maximum power test using one repetition maximum method. The data analyzed by using t-test with $\alpha = 0.05$.

Results: The research results showed that the mean of the maximum strength of the arm muscles of experimental group is 28.46 (*Pretest*) and 52.31 (*Posttest*) (t_h16,98 > t_t 1.782); the mean of leg muscles is 60.77 (*Pretest*) and 83.85 (*Posttest*) (t_h14,85 > t_t 1.782). The mean of the maximum strength of the arm muscles of control group is 30.00 (*Pretest*) and 41.15 (*Posttest*) (t_h7,94 > t_t 1.782) and the mean of leg muscles is 61.92 (*Pretest*) and 71.15 (*Posttest*) (t_h5, 48 > t_t 1.782).

Conclusions: It can be concluded that there was a significant effect of manufacture protein supplement on maximum strength toward the member one Gym Fitness.

Keywords: protein supplement, maximum strength

INTRODUCTION

Health and fitness are the most valuable treasure and cannot be exchanged for any human use. Therefore, each person has a desire and craves for the healthy body, fit, and an amazing look. In order to achieve it, running healthy living pattern and exercise regularly are required. Basically, every kind of sport gives healthy and fitness toward a person's body. In addition, the other function of sport for a person's body is, it can improve and beautify the posture or the shape of a person's body. In the human body, there are several muscles that need to be trained to support performance in doing daily life activities, including the arm muscles, chest muscles, abdominal muscles, and leg muscles. These muscles have functions and respective roles which are very important in the body to perform daily activities such as refusing, hitting, lifting, running and so on. Thus, it needs to be trained to function as it should.

Weight training is the most appropriate way to train existing muscles in the body to function perfectly. The main function of doing weight training is to increase strength. Strength is the ability of the muscles to lift and resolve the maximum given load, thus if the strength of a muscle is trained regularly and surely programmed, then the muscles will be able to cope with and also withstand loads given in

daily activities without feeling exhausted. Consequently, regular and programmed weight training will improve the maximum strength of the muscles.

Weight training can be done independently by using the body as a burden, like: push-ups, sit-ups, and pull-ups. In addition, weight training can also be carried out at fitness centers (Fitness Center). A Fitness Center is a special place that is available to perform sports activities. Fitness Center provides a variety of tools to do weight training.

In order to get a maximum exercise and increasing strength, weight training needs to be done on an ongoing basis and programmed. Therefore, in doing weight training, it needs to be arranged a workout program, so the aim of weight training can be achieved perfectly. In addition to exercising regularly and programmed, consuming nutrients are also highly influential on muscles growth. Actually, in daily life, humans consume a wide variety of nutrients. According to [1] Welis & Syafrizar (2009:6-33) In general, nutrients can be classified into two: 1) Macro Nutrients such as carbohydrates, proteins, and fats. 2) Micro-Nutrients such as vitamins and minerals, water, and electrolytes.

One Gym is one of Fitness Center in Padang which provides the tools and offers a variety of training programs to its members. In practice, the members often have difficulty to get the maximum strength at the time doing weight training, whereas the members has done the exercise program that is recommended by the instructor of One Gym fitness center.

Granting the manufacturer supplements can be used as an alternative for members of One Gym fitness center to support the increasing the maximum power. So, the goal of the exercise which is done can be achieved maximally.

METHOD

The method used in this research was quasi experiment (Quasy-Experimental Design). Based on [2] Yusuf (2013:81), "methods of alphabets experiment is to find out whether or not there is a result of something that is imposed on the research subject .

The experimental design used in this study is a Two-Group Pre test – Post test Design, in line with [3] Sugiyono (2011:74) that said, "on the design, there are Pre-test before being given treatment", the results of the treatment can be accurately known, because it can be compared to the situation before the treatment is given. One group (the independent) were given preferential treatment by administering weight training manufacturers supplement who were also given preferential treatment as much as 16 times and then measured again (Post-test), meanwhile for the comparison group was the control group who were given weight training the same treatment without the use of supplements in any form.

This research was conducted in One Gym Fitness Center, on April 11th until May 6th, 2017. The population of this research was all the fitness member registered in One Gym Padang, there were 561 people as the population. A sample of these studies amounted to 26 people, and then divided into two groups, a total numbers of samples of the experimental group (the group given manufacturer supplements) were 13 people and so as control group that also had 13 people. The way of taking samples in this research was purposive sampling technique, then, in determining the Group, it was chosen randomly.

Protein supplement which was used in this research was high-protein milk powder. It was provided as168 gr (25 grams protein). This measure has been adjusted by the sample's average protein requirement per day through a Food Recall 2 X 24 hrs. A measurement of arm muscles strength was done by using maximal strength test method of One Repetition Maximum with the movement of the Barbell Arm Curl, meanwhile Squat was used for measuring the leg muscles strength.

In order to test the hypothesis of the research the researcher used the t Test with $\alpha = 0.05$.

RESULTS

The research shows that there is increase of the maximum strength toward both of the groups. It can be seen from the table below:

Table 1 Hypothesis' analysis of Maximum Strength of Control and Experimental Group

Group	Maximum Strength	Mean		t_h	t_t α=0.05	conclusion
		Pre-Test	Post -Test			
Control	Arm Muscle	30	41,15	t_h7,94	1.78	Significant
	Leg Muscle	61,92	71,15	t_h5, 48	1.78	Significant
Experimental	Arm Muscle	28,46	52,31	t_h16,98	1.78	Significant
	Leg Muscle	60,77	83,85	t_h14,85	1.78	Significant

As the table of the result above, it can be seen that there was a difference at the mean of pre- and Post test of maximum arms muscle strength in control group. This control group did not consume protein supplements and natural supplements in weight training to increase maximum strength, it was evidenced by the obtained th = 7,94 > tt = 1.78. It is proven that weight training affects the maximum strength that is owned by a person's muscles. If it is seen from the average count of Pre-test and Post-test, the control group experienced a maximum increasing arm muscles strength 11.15 kg or 37.17% of the average of the initial tests.

[4] Chandler & Brown (2008:98-99) state that weight training can maintain muscle strength and endurance, improve coordination of muscle nerves and bone density. Furthermore he stated that weight training can lead to dramatic changes to the body. A lot of people doing weight training said that by having a well-built body not only make people feel good, but it also affects the way relate or interact with others, increasing the strength and endurance of muscles, and increasing coordination of muscles and nerves.

From the opinion that stated above, it can be concluded that by doing regularly, programmed and sustainability weight training, a person's maximum strength can be improved. It happens because the influence of the physiological process during the weight training, the muscles trained experienced an increasing in maximum strength enhancement functions.

Next for the results of the analysis of the second hypothesis testing, it was found the differences between the mean of pre test and Post test- of maximum leg muscles strength in control group. This control group did not consume protein supplements and natural supplements in weight training to increase maximum strength, evidenced by the obtained th = 5.48 > tt = 1.78. Based on the hypothesis test results proved that the weight training affects the maximum strength of the leg muscles of a person. If it was seen from the mean count between Pre-test with Post-test, the control group experienced an increasing in the maximum strength of the leg muscles 9.23 Kg or 14.97% of the mean pre-test. It was proven that weight training which was done by the samples that were in the control group had physiological effects against her body. So the maximum strength of leg muscles were experiencing increased after giving trained.

A study of [5] Mancuso and Howley (1993) show that he conducted research on the effect of weight training toward the 10 students in the United Kingdom got the results that by doing weight training on a regular basis for 8 weeks, it can increase a strength on someone on mean 20% of the initial load. It means that if it is associated with this research that had been done over the last 4 weeks, the samples had increased load of a mean 14.91%.

Based on the opinion above, it can be concluded that by doing weight training regularly, programmed and sustaining maximal can increase a person's legs muscle strength. It happens because the effect of the physiological process during the weight training, the muscles trained experienced increasing in maximum strength enhancement functions.

For the analysis of the third hypothesis testing, it was found that there was a difference mean of pre-and Post test-for arm muscles experimental group . Experimental group in this research was a group that consumes the protein supplement in weight training to increase the maximum power of the arm muscles, this was evidenced by th = 16,98 > tt = 1.78. If it was viewed from the difference in the mean, the maximum strength of the arm muscles of this experiment group had increased 23.85 kg. It means that the maximum strength of the arm muscles on this experimental group experienced an increasing from the mean pre-test 83.80%.

An increasing of maximum strength of the arm muscles occurred in experimental group in this study caused by exercise factor which was done regularly, programmed and continuously. In addition, other factors which also determined the maximum arm muscles increasing strength in this experimental group was the effect of supplements that consumed by the sample in this group. [6] Coulman (2014) argues that "*the Muscles need protein to get big and strong, when you're working on building them, you'll have to fuel them with a lot of protein-heavy food".* From this opinion, it can be concluded that muscle requires protein for a big and powerful body, by doing exercise regularly basis then we should give the intake of nutrients in the form of protein. It means that along with increasing of the size of the muscle, the function of the muscle will also grow. With the increasing of size of a muscle, then the strength of it will also increase.

Based on the explanation above, it can be concluded that the muscle function increases if trained regularly, programmed, and sustainable. To support a better improvement, a person needs a sufficient nutritional intake to his or her muscles. In this case the use or consuming supplements of protein with high-protein milk type is one of the alternatives to maximize the increase in maximum strength possessed by a person.

The results of the fourth hypothesis analysis showed that there was a difference of mean between Pre-test and Post-test of maximal strength of leg muscle of experimental group. This group consumed a protein supplement of weight training to increase maximal leg muscle strength, this is evidenced by th = 14,85> tt = 1.78. When viewed from the average difference, the maximal strength of the experimental group's leg muscles had increased by 27.08 kg. This means that the maximum strength of arm muscle in this experimental group experienced an increase of 44.57%.

Increased maximum strength of leg muscles that occurred in the experimental group in this study was caused by exercise factors that were done regularly, programmed and sustainable. In addition, another factor that also greatly determines the increase in maximal strength of the leg muscles in this experimental group was the effect of the supplements consumed by the samples in this group. [7] Zabalada and Naclerio (2016) argue "Whey protein as upper and lower body strength". Consuming high-protein milk will increase upper and lower body strength. This means whey protein influence on the power possessed by someone. If seen from the content of its function supplement manufacturer (Whey Protein) is high milk protein for muscle. As has been well known that muscle requires adequate intake of protein as a staple food for a person, with the fulfillment of nutritional intake required by the muscle coupled with the exercises performed then the function of the muscle will also increase. In this case, the relation was the increase in the maximal strength of the leg muscles experienced by the samples. As further, the result of the fifth and sixth hypothesis analysis can be seen from the data below:

Table 2. Hypothesis Analysis of Maximum Strength for Fifth and Sixth Hypothesis

Maximum Strength	Mean		t_h	t_t α=0.05	conclusion
	Control (Post-Test)	Experiment (Post-Test)			
Arm Muscle	41,15	52,31	4,67	1,71	Significant
Leg Muscle	71,15	83,85	5,55	1,71	Significant

Based on the table above, the results of the fifth and sixth hypothesis testing results proved that there were differences in the effect of the protein supplement to the maximal strength of the arm muscle and leg muscle of the study sample. Groups that consumed protein supplement had maximal arm muscle and leg muscle strength when compared to the control group. This could be seen from the results of the fifth hypothesis testing that said that the protein supplements give a better effect on the increase of the maximal arm muscle strength than the weight training without provision of this supplement was evident from th = 4.67> tt = 1.71. Along with that protein supplement also gave a better effect on the maximal strength increase of the leg muscles. This could be seen at th = 5.55> tt = 1.71 for the sixth hypothesis

If seen from the increase in the average count between two research groups, experiment group had increased the average that was better than the control group. An increase of the average maximum arm muscles strength count for group experiment was 23.25 kg. Meanwhile, for the control group only experienced an increase 11.15 kg. It means the supplement protein give better effect than the weight training without consuming supplements to increase maximum strength of arm muscle on weight training. For the maximum strength of leg muscle of experimental group, it also improved the average higher than control group that was 27,08 kg. While the control group only increased as 9.3 kg.

[8] Zabalada and Naclerio (2016) state that "Whey protein alone or as a part of a multi-ingredient appears to maximize lean body mass or fat-free mass gain, as well as upper and lower body strength." From the above opinion concluded that the protein supplement in the form of high-protein milk will maximize body mass without fat and increase fat-free muscle mass. This means that when consuming high-protein milk, then the muscle growth will occur maximally because the addition of mass is not derived from fat, but from fat-free muscle. Furthermore, the journal also explained that consuming supplements manufacturer of high-protein milk will also increase the upper and lower body strength. This can be interpreted that by consuming high-protein milk will increase overall muscle strength (a person's body)

According to [9] Cribb PJ, et all (2007) "Whey Protein seems to promote greater strength of gains and muscle morphology during RE training, the hypertrophy responses within the groups varied". They say that whey protein or high-protein milk will provide an increase in strength and muscle hypertrophy, but the increase varied. The increase can be interpreted variations caused by factors exercise. This means that when consuming high-protein milk, then the muscle growth will occur maximally.

Based on the above opinion, it can be concluded that the protein supplement can increase the maximum strength of the muscles of the arm and leg muscles of a person. However, the increase in maximum strength and arm muscles of the leg muscle varies. This is due to the exercise factor performed by that person. In addition to regular exercise, the body desperately needs a sufficient nutritional intake to improve physiological function, in short with regular and programmed load training, and consuming protein supplements of high-protein milk can increase a person's maximum strength.

CONCLUSIONS

As the result of the research above, it can be concluded that:

1. Weight training gives a significant effect on increasing the maximum strenght of the arm muscles of the control group.
2. Weight training gives a significant effect on increasing the maximal strength of the thigh muscles of the control group.
3. Protein supplement gives an effect to the maximum arm muscle of the member of One Gym Fitness Center Padang

4. Protein supplement gives an effect to the maximum arm muscle strength of members of One Gym Fitness Center Padang.
5. There is a difference in the maximum muscle strength of the arm between the experimental group and the control group.
6. There is a difference in maximal thigh muscle strength between the experimental group and the control group.

In short, there was an increase of maximum strength toward both of the groups. However, the experimental group experienced higher increase of maximum strength than the control group. It demonstrated that the protein supplement, given to experimental group, gave a significant effect toward the increase of individual's maximum strength. Hence, it is concluded that nutrition influences the result of an individual's treatment. Moreover, consuming protein supplement can be as an alternative way to fulfill the need of muscle. With the sufficient protein requirement needed by muscle then the function of the muscle is also increase.

As a final remark, since this research focused on the increase of maximum strength of muscle, it is hoped that other researchers can find other effect of the protein supplement manufacturers which increase one's maximum strength, it is related to the innovation and development of science in the science of sport.

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THE EFFECT OF PACITAN SWEET ORANGE JUICE TO MALONDIALDEHYDE LEVEL (MDA) AFTER ECCENTRIC ACTIVITY

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Abstract

Objectives: This research aim is to evaluate the effect of Pacitan orange Juice to Mallondialdehide Level (MDA) after doing Eccentric Activity
Methods: This is an experimental laboratories with post control group design. 30 male students of Sport Science Faculty between 18 to 20 years old were recruited by purposive random sampling. The sample was divided into two groups, 15 people as experimental and 15 people as control.
Both groups performed pull up activities, which include two sets with seven repetitions, and one minute paused. After completing pull up activities, 750 ml of orange juice was given to the experimental group, while control group got 750 ml of mineral water. After 1 hour, each group took blood-sampling test to determine the levels of malondialdehide and lactic acid after eccentric exercise.
Result: The result showed that the average MDA of control group was 8.489 ± 2.55 while mean MDA of treatment group was 6.095 ± 1.99. The t-test showed significant results between the control group and the treatment group with p_{value} = 0.008 <0.05
Conclucions: Pacitan orange juice revealed decrease the MDA levels after having eccentric activities. With regard to this, it can be concluded that with this treatment can respond to free radicals. The response is able to counteract ROS, which is containing the high antioxidant.

Keywords: Pacitan sweet Orange Juice, Malondialdehide Level, Eccentric Activity

INTRODUCTION

Physical activity or exercise will have a positive impact on the body, among others, to be healthier and fit. In addition to producing a positive impact, it is rare to think about the negative effects of physical activity, so this negative impact still needs to be examined. One of the negative impacts is the formation of oxidant compounds followed by the occurrence of oxidative stress events (Harjanto, 2003). Oxidative stress occurs due to an imbalance between the production of free radicals and the body's antioxidant defense system. To improve an achievement in sport many athletes are required to practice constantly regardless of time for rest or recovery.

Muscle damage is one of the most frequent causes of physical impairment in sports. An estimated 30% - 50% of all injuries to sports activities are caused by damage to soft tissues such as muscle (Fernandes et.all, 2011). In every sport there is always muscle contraction, one of the muscle contractions that occurs in sports activity is the eccentric contraction. Eccentric contractions tend to cause greater muscle damage compared to concentric contractions (Foss LM., 1998)

Eccentric contraction is a contraction in the muscle that has a length increase. Continuous muscle contractions will cause xanthine oxidase (XO) and NADPH oxidase (NOX) activity to increase so that oxygen radical formation is also increased (Nishino T, et all, 2005). Continuous muscle contraction and with high intensity will result in fatigue, stiffness and muscle pain (Clarkson P.M, Hubal MJ, 2002). This is a sign of one of the muscle damage that can cause various disturbances whether it is mechanical, electrical and chemical. Damaged muscle will be followed by the formation of reactive oxygen species (ROS) for body defense (Ong NO, Chia SE., 2001)

Under normal circumstances the formation of ROS will be offset the formation of endogenous antioxidants such as SOD (superoxide dismutase), GPx (glutation peroxidase), and catalase. When the formation of antioxidants is less than the formation of free radicals, oxidative stress will occur, which will attack polyunsaturated fatty acid (PUFA) and produce among other malondialdehyde (MDA), and damage DNA (deoxyribonucleic acid) and protein (Halliwell B, Gutteridge JMc., 1996). Anti-oxidants are electrons or reductants. This compound has a small molecular weight, but is able to activate the development of oxidation reactions, by preventing the formation of radicals. Antioxidants are also compounds that can inhibit oxidation reactions, by binding to free radicals and highly reactive molecules, cell damage will be inhibited (Paulsen G., 2009).

Orange is a fruit in Indonesia as one of the horticulture commodities that have priority to be developed. The one-year harvest period can be more than once and easily found in fruit market and supermarket stalls at relatively cheap prices and can be reached by all people. In addition, oranges are fruits favored by the community both as fresh fruit and processed. Orange has many benefits that are needed by the body. In Orange, the active ingredients that are important for health include vitamin C, flavonoids, carotenoids, limonoids, and minerals. Vitamin C is an antioxidant because it acts as an electron donor, so it can prevent other compounds from oxidation due to free radicals. Flavonoids are one of the antioxidants in the body, which can prevent cell damage caused by free radical activity. The main flavonoids in oranges are naringin, narirutin, and hesperidin (Iorio, E.L. 2007) contained in the skin of the fruit, seed (Tripoli, E. et.all ,2007) and pulp (Cano et.all, 2008).
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Based on the above description, it is necessary to examine the effect of giving sweet orange juice to mallondialdehide (MDA) level after eccentric activity. The expected benefit of this research is to reduce the negative impact of physical activity, so that positive impact of physical activity in the form of improvement of health status or improvement of sport achievement can be maximal.

METHOD

Design

This is an experimental laboratories with post control group design.

Material / Subject of the research

The subjects in this research is Student of Sport Science Program of Surbaya State University, with criterion of inclusion of man, age 18 to 20 years, have same weight and arm length, healthy condition based on examination by doctor, and not sports actors. Exclusion criteria include not willing to take the test, active on the dominant sports exercise using upper extremities and amounted to 30 people.

Instrumentation and procedure

Peripheral venous blood was collected from the antecubital vein of the subjects. Blood samples were transported and stored in the biochemistry laboratory where analyses were performed strictly following international guidelines (Banfi G and Dolci A, 2003). The following parameters were measured for malaondialdehyde [MDA]. *Procedure Measurement Malondialdehyde (MDA)*. MDA has been identified as the product of lipid peroxidation that reacts with thiobarbituric acid to give red species absorbing at 535 nm. All blood samples inserted into the sample rack and sorted according to the colour of the blood sample. 1 ml of patient or control serum was combined with 2 ml of Trichloroacetic acid (TCA) – Thiobarbituric acid (TBA) – Hydrochloric acid (HCL) solution and mixed

thoroughly, when heated for 15 minutes in boiling water bath. After cooling, the precipitate was removed by centrifugation at 3000 rpm for 10 minutes. The absorbency was determined at 535 nm against reagent blank, which was containing the entire reagent minus the serum.

Statistical Analiysis

Descriptive statistics were determkned for each variable recorded. Data are presented as mean ±SD, Normality test to measure wheather data obtained has normal distribution so it can be used in parametric statistic (inferential statistics). Paired t-test and independent t-test was applied for Statistical evaluation of the data generated using SPSS (Statistical Package for Social Studies) Version 19.0 Software. The Statistical significance level was put at 'p' value < 0,05 with Confidence Interval (CI) of 95 %.

RESULT AND DISCUSION

Result

The result of the research is the measurement data obtained from the whole variable data that is independent variable, dependent variable, and control variable. Data obtained from the results of research in the form of lactic acid and MDA blood samples from people try after the treatment of eccentric activity in the form of pull up, which tested with a significance level of 5% and processed with SPSS program.

In accordance with the design of data analysis, the initial step of the analysis will begin by performing descriptive statistical analysis aimed at obtaining a description of the distribution and for data summary for the presentation of results. The sample in this research is the students of sport science program of Surabaya State University which amounted to each group of 15 people.

In this study the sample is given the eccentric activity using pull up test done three sets, each set of 7 reps with pause between one minute set. The pull-up activity aims to provide an eccentric strain

After the pull up test, the control group was given mineral water drink of 750 ml. While the treatment group was given sweet orange juice drink as much as 750 ml.

Table 1. MDA in the control group was found to average 8,489 ± 2.55; MDA in the treatment group was found to average 6,095 ± 1,99.

Table 2 shows that the normality test results by using Shapiro-Wilk Test are normally distributed with p> 0,05. While normality test on MDA variable of control group and treatment is are normally distributed

Table 1. Mean±SD of Malondialdehide (MDA)

Group	Sample (N)	Mean ± SD MDA (nmol/ml)
Control	15	8,489 ± 2,55
Treatment	15	6,095 ± 1,99

Table 2. Normality test

Group	Sample (N)	MDA (nmol/ml)
Control	15	0,233
Treatment	15	0,388

F value> 0.05 then it can be concluded statistically that the variants between the two groups are equal. In the above results obtained value of F = 0.019 and the value of p (sig) is = 0.008. So it can be concluded there is a significant difference between MDA between control group and treatment group (table 3)

Table 3 Statistical result of independent samples test

	Sample (N)	F	Sig (2-tailed) Independent Samples Test
MDA	30	0,019	0,008

Discusion

This research is a laboratory experimental research, with research design used is posttest only control group design. Sampling in this research is student of Sport Science program of Surabaya state univeristy with criterion of inclusion of man, age 18 until 20 years, have same weight and arm length, healthy condition

Based on examinations by doctors, not sports actors. Exclusion criteria include unwilling to take the test, active in the dominant sports exercise using upper extremities. Both groups performed a pull up test performed three sets, each set of 7 reps with pauses between sets of one minute. After doing a pull up test the control group was given a 750 ml aquadest drink, while the treatment group was given a drink of pacitan sweet orange juice of 750 ml Intermittent 2 hours after drinking both groups were taken intravenous blood for lactic acid and MDA examination.

Average result of MDA control group 8,489 ± 2.55; while mean MDA treatment group was 6,095 ± 1,99. In Table 5.4 the free t test showed significant results between the control group and the treatment group where p = 0.008 <0.05. In this study the sample is given the action of eccentric activity in the form of pull up which is activity with high intensity. MDA decline in the treatment group in this study resulted from giving a feeling of pacitan sweet orange-rich antioxidants in counteracting free radicals caused by the eccentric activity of the pull up. This is in line with blood orange juice is a bioavailable source of antioxidants, which may be enough to improve the antioxidant defense system in acute time (Vogt, M., and Hoppeler, Hans H., 2014) . Meanwhile, according to research that dietary supplementation with ROC (Red Orange Complex) on handball athletes can reduce oxidative stress (MDA) and can protect against short-term and long-term health consequences in athletes involved in regular training program (Bubbico A and Kravitz L., 2010.).

The pull-up treatment and the provision of of pacitan sweet orange juice are expected to respond to free radicals in the body. The response is able to ward off ROS with an added pacitan sweet orange juice that is believed high antioxidants. Research conducted concluded that the treatment of high intensity in humans for 8 weeks can increase aerobic capacity and decrease lipid peroxidation and characterized by decreased levels of MDA (Donne ID et.all, , 2003).

CONCLUSIONS AND SUGGESTIONS

Physical activity is very important for human health. Pacitan sweet Orange juice reveals decreased levels of MDA after doing eccentric activity. With regard to this, it can be concluded that with this treatment can respond to free radicals. The response is able to counteract ROS, which contains high antioxidants

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COMMUNITY INTERESTS FOLLOWING TRADITIONAL SPORT ACTIVITIES IN CAR FREE DAY ACTIVITIES

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Abstract

Objectives :The purpose of this study is to know To know what factors that encourage the interest of the community to follow the traditional sports on car free day event in Bekasi City and to know which factors are dominant influence the public interest to follow the traditional sports on car free day in the city of Bekasi.

Method: used is descriptive method and population is society which come on car free day. The sampling technique used is Based on the sample used by the researcher, the researcher using the sample is the incidental sample. Incidental sampling is a sample determination technique by chance, ie anyone who accidentally / incidentally meets with the researcher can be used as a sample.

Results : showed that based on the data analysis above, it can be concluded that intrinsic interest is the strongest interest to obtain the result (83.24%) which encourage / influence the public interest in following the traditional sports on event car free day in Besaki city. While the extrinsic interest only get result of (66,02%).

Conclusions: Health indicators in Bekasi community interest in participating in traditional sports are the strongest indicator of the effect is getting the result (85%) while the lowest indicator in influencing the interest of the people of Bekasi city in following the traditional sport is the indicator of the role of others who only get the result of (54.75%) only.

Keywords: car free day, community interest.

INTRODUCTION

According to Bambang Laksono (2011: 1) Traditional sports or folk games are one of the nation's cultural assets that need to be conserved, excavated and grown because in addition to sports or games to fill the spare time also has the potential to be developed as a sport that can help improve physical qualities for the perpetrators. In order for this diversity to remain a unified whole, then the coordination of the relevant parties or the central and regional parties to facilitate the activities of traditional sport. So that can be conveyed to the wider community, so that this traditional sport is not abandoned, forgotten and recognized by other countries.

There are various types of traditional sports around us that we can meet but different nicknames in area respectively. Various types of traditional sports we have a lot of which is the cultural diversity of the nation, one of which is: Egrang, a traditional Indonesian game that is not yet known exactly from what region, but can be encountered in various regions such as: parts of West Sumatra with the name Tengkak- Iimp), Bengkulu, Ingkau means bamboo shoe, Lampung, Egrang means sprig of pancung made of long bamboo, Central Java, Jangkungan originating from long-legged birds. Gebuk pillow, is a game of agility where there are 2 players who beada above a bamboo where the bamboo pulled in like a bridge and the winner who managed to drop the opponent or who managed to collect more numbers. Long-horned, long-hawked games have long existed in areas along Rokan river waters, both Rokan Kanan and Rokan Kiri, Kampar districts, and Rokan downstream, such as in Siapi-api, Bengklalis, Riau. Running beams, running beams serimg contested on the celebration of independence of the Republic of Indonesia. The form of the game is a speed race over a certain distance above four

small blocks resembling a brick, which is where each step goes on the player must move the beam behind the fore as a place of footing and so next.

This game requires the agility, balance, and speed of the athlete. Drag mine, tug of war mine is the most people's sport played by society after sport banana climbing. This game is often done on the anniversary of the big day. Mine attraction sports can be played by a team of sons or daughters, the number of team members adjusted to the circumstances, using a mine. In this game is very dominant strength and endurance shift. stop, gameplay though it is often played in Jakarta but there are no signs of this game coming from Jakarta. This is present in most provinces in Indonesia. Patok catfish, citadel, thrust, blowpipe, blowpipe is a traditional sport that is mostly done by rural communities of Borneo and inland other islands as a tool to hunt, and gangsing. of course this requires the management and teacher a serious and continuous in addition to being a sport, can also be a tourism object that can add knowledge about traditional sports culture. And can grow with the passage of time, in order to be a foreign exchange country and can exported in the country that traditional sports in Indonesia is still there and growing

Society is one of the social system or unity of human life. It is in this society that sport begins to flourish and is widely popularized, so sport is becoming known. At times like this, exercise is very important for the body. Activity crowded communities make people less exercise through exercise. In fact, most people do not exercise. The society is currently dissolved by its work. People who have been too late in working less attention to sports activities. In fact, exercise is very important because it can help improve and can maintain fitness from the health of the body. But today society has abandoned the traditional sport in due to the development of modern times and the game is becoming more modern, society no longer play permaiankan traditional sports but gadgets that people today play, because gadgets are increasingly sophisticated. In the gadget is a lot of displaying a variety of game applications that sanggat in love for the people today. Though in addition to exercise the community, can do recreation to remove the fatigue everyday. Recreational places that can be visited are mountains, beaches, malls, or just a walk in places such as parks, car free day, etc. Place of recreation and exercise in Bekasi City one of them is place car free day.

Car free day is now also a public interest in the city of Bekasi and surrounding. The car free dar (CFD) in Bekasi City is one of the government's efforts to reduce the level of air pollution along Ahmad Yani road, South Bekasi, which was held since 19 October 2014. Car free day (CFD) is used by a number of citizens of Kota to do sports activities and also recreation. Car free day (CFD) is indispensable in preventing global warming in this world that has been very worrisome. Lots of activities are done on the car free day examples: gymnastics, jogging, walking, cycling, futsal, and there are some communities that we can be interested in there like, BMX, Skaters, animal lovers, and One of the activities done in car free day (CFD) in the city of Bekasi is a traditional sport.

In the car free day (CFD) program there is a traditional sports community already performing frequently, and bringing traditional sports such as stilts, long humps, joists, congklak, rubber jumps, and the community can also try the traditional sport and add to the sport traditional in because to remind or even develop a traditional sport today.

In fact, people who follow Traditional Sports activities on CFD Kota Bekasi have a motivation from within (Intrinsic) and motivation from outside the self (Extrinsic). Intrinsic motivation includes: The desire to follow traditional sports activities for hobbies, interests, or want to hone talent in traditional sports. While extrinsic motivation includes: the desire to follow traditional sports activities because of encouragement from friends or in order by parents.

METHOD

The method used is descriptive method and population is society which come on car free day. The sampling technique used is Based on the sample used by the researcher, the researcher using the

sample is the incidental sample. Incidental sampling is a sample determination technique by chance, ie anyone who accidentally / incidentally meets with the researcher can be used as a sample.

RESEARCH RESULTS AND DISCUSSION

Data processing of research results from the answers obtained from the survey of people who follow the traditional sports is set on the scale of the Factors Incentive Community Interest Against Traditional Sports On Car Free Day event in the city of BEKASI in the form of quantitative data. Quantitative data is data in the form of numbers or numbers. percentage, the percentage results are interpreted with a descriptive sentence. This is done in order to more easily understand the final results in qualifying the results of the study

The following is the percentage of categories of research results:

Table 1. Category Percentage Interval

Percentage Interval	Category
81% - 100%	Very High
61% - 80%	High
41% - 60%	Medium
21% - 40%	Low
0% - 20%	Very Low

Based on the above table, if the public has a percentage score between 0% - 20%, then the public interest to traditional sports in one indicator is stated very low. If the public has a percentage score of between 21% - 40%, then the public interest to traditional sports in one indicator is stated low. If the public has a percentage score in an indicator between 41% - 60%, then the public interest towards traditional sports in one indicator is stated moderate. If society has score percentage in one indicator between 61% - 80%, hence public interest toward traditional sport in one indicator is stated high. And if society has score percentage in one indicator between 81% - 100%, hence public interest to traditional sport in one indicator is stated very high.

Research result

Factors From Within (Intrinsic)

In order to reveal the intraken factor (intrinsic) factor of public interest toward traditional sport on event car free day in Bekasi city, 23 question is used, each question score between 1 and 5. So minimum score = 1 x 23 = 23, and maximum score = 5 x 23 = 115. Range of scores = 23 - 115 = 92 Interval class = 92: 5 = 18.4.

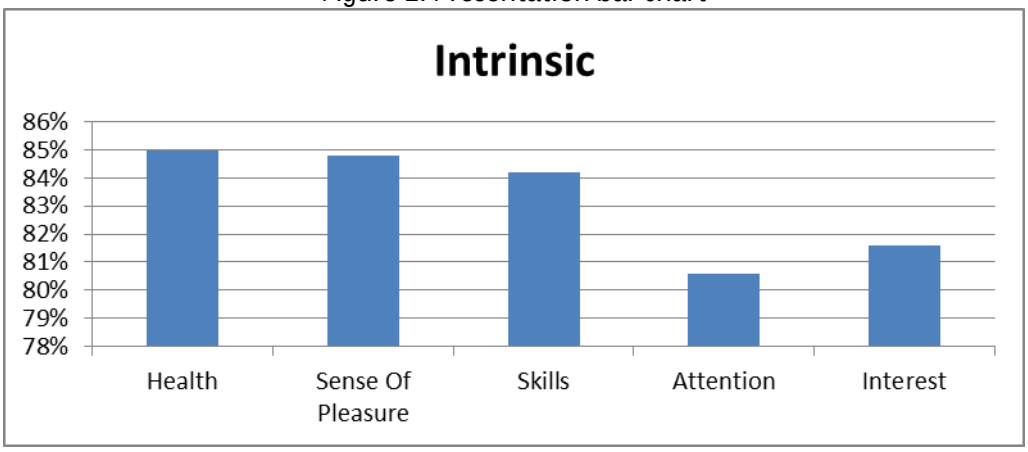
Table 2. Indicator of Instrinsic Category

No	Indicator	Persentage	Category
1	Health	85%	Very High
2	Sense Of Pleasure	84,8%	Very High
3	Skills	84,2%	Very High
4	Attention	80,6%	High
5	Interest	81,6%	Very High

From the table above, it can be concluded that the factors driving the public interest towards traditional sports on car free day event (intrinsic) in the community who followed the traditional sports, in health indicators by 85% and stated in the category level is very high. In the indicator of pleasure of 84.8% and stated into the category level is very high. In the skill indicator is 84.2% and stated into the category level is very high. While in the indicator attention of 80.6% and expressed into the high category level. And in the interest indicator of 81.6% and stated into the category level is very high.

Below is the distribution diagram of each indicator of Interests (Intrinsic) Factors Driving Interest Community to Traditional Sport On Car Free Day Event in Bekasi City:

Figure 1. Presentation bar chart



1. External Factors (Extrinsic)

In order to reveal the external factors, the factors driving the public interest towards the traditional sports on the event car free day in Bekasi city, used 7 questions, each question score between 1 and 5. So the minimum score = 1 x 7 = 7, and maximum score = 5 x 7 = 35. Score range = 7 - 35 = 28. Class interval = 28: 5 = 5.6 (rounded to 6).

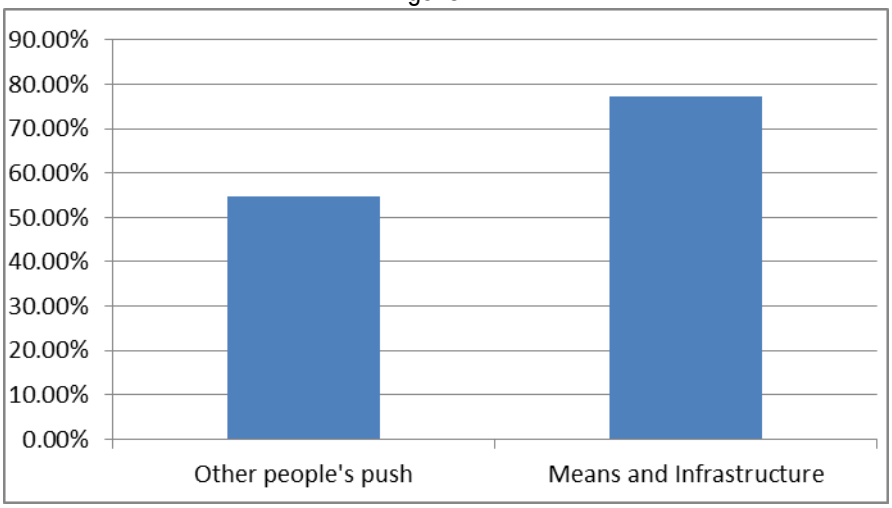
Table3. Extrinsic Category Indicator

No	Indicator	Presentage	Category
1	Other people's push	54,75%	Medium
2	Means and Infrastructure	77,3%	High

From the table above, it can be seen that the amount of interest (extrinsic) people who follow the traditional sport in the indicators of encouragement of others by 54.75%, and the percentage is entered into the medium. The infrastructure indicator is 77.3%, and the percentage is high.

Here are the results of research on Interests (Intrinsic) Factors Driving Interest Community Terhadp Traditional Sport On Car Free Day Event in the City of Bekasi:

Figure 4.2



CONCLUSIONS

Based on the research that has been done with the number of samples of 20 people who follow traditional sports that community interest in participating in traditional sports on car free day event in the city of Bekasi factor from within of 83.24% have interest in very high category. It shows that the encouragement or interest of the people who follow the traditional sports in the car free day event that comes from within it has grown. Internal factors (intrinsic) that encourage public interest to follow the traditional sport include 85% health, 84.8% pleasure, 84.2% skills, 80.6% attention, interest 81,6 % of some of these factors people have an interest in following traditional sports from within (intrinsically) in very high categories. While external factor (ekstrinsic) equal to (66,02%) have interest in high category. It shows that the encouragement or interest of the community in following the traditional sport that comes from outside (extrinsic) is great. Here are some indicators included in extrinsic interest factors such as other people's motivation indicator of 54.75%, and facilities and infrastructure indicator of 77.3%.

Based on the results of the study that most of the interest of the community who follow the traditional sports in car free day event in the city of Bekasi included into the high category. All this because the people of Bekasi city have the spirit of competing in following the traditional sport on car free day event in Bekasi city.

The high interest of Bekasi city community who follow the traditional sport did not escape from the role of factors that come from within (intrinsic) and external factors (extrinsic). These factors are

very important to be paid in order to obtain maximum results in knowing how much interest Bekasi city people in following the traditional sports. With this the things that have been described above are considered limitidation on the study.

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THE EFFECT OF TWO ACTIVE RECOVERIES IN REDUCING LACTIC ACID OF BADMINTON ATHELETES

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Abstract

ObjectivesThe objective of this study is to examine the effect of jogging and massage as recovery active on the change or removal of the lactic acid.

Methods The research subjects amounted to 12 men badminton athletes in Sumenep Regency. The subjects would be divided into two groups: jogging recovery group (Age 18 ± 2.09, weight 56.83 ± 6.67 kg and height 164.5 ± 6.15 cm) and massage recovery group (age 16.33 ± 1.03, weight 54.5 ± 3.27 kg and height 162.33 ± 7.76 cm). Levels of lactic acid subjects would be taken by using Accutrend Plus. Taking lactic acid levels was first performed before the research process was performed. The preliminary data were as a reference to normal circumstances. Then all subjects were given the same treatment that was a badminton match with a single system and rally point system. After the winner of the match had been known, the lactic acid of both subjects who had competed would be taken once more to see the change. And finally, the subjects would be giventreatment of recovery through jogging and massage in accordance with the group that had been determined. After that, their lactic acid was taken again.

ResultsThe data analysis used was Independent Test of T-Test. The results showed that recovery by jogging significantly ($p < 0.05$) lowered lactate acid levels compared with recovery by massage. Recovery active by jogging and massage could reduce lactic acid after doing exercise however recovery by jogging was able to reduced lactic acid more quickly than recovery by massage.

ConclusionThe conclusion of this study was that recovery with jogging more effective to reducing lactic acid after performing and exercises than massage.

Keywords: badminton, recovery, jogging, massage.

INTRODUCTION

Sport is a thing that will not be separated from human life at this time. The large number of sports available allows people to choose the type of sport they want and according to their interests. Badminton is one of the most popular sports in Asia. In Indonesia badminton is a second popular sport after soccer. Many achievements have been obtained by Indonesia. One of them is a gold medal from Susi Susanti on women's single and Alan Budi Kusuma on men's singles at the 1992 Olympics Barcelona. Since then it has competed at the Olympic level. Badminton sports attract various age groups, different levels of work units, skills, men and women to play this sport indoors or outdoors for the purpose of recreational means or as a venue for achievement (Kusnani et all, 2011). In Indonesia, there has already been many badminton clubs formed and the level of the competition ranges from junior to senior level.

In achievement sports, research is always conducted which is intended to improve the athlete's performance and to achieve maximum results during the competition. Game strategy as well as badminton needs reviewing very much in order to achieve the achievement that can be gained faster and optimally. Several factors that are involved in achieving success in sports is technical and tactical, mental preparation (psychological) and strategy in the game (Kurniawan, R. 2015).

Energy is an important factor in a game or practice. Energy obtained from the food eaten then processed through the process of digestion and metabolism. The main ingredients of energy are carbohydrates, fats, and proteins but also we need vitamin and mineral. This food will serve as a

carrier of energy and replace the damaged cells in the human body. Characteristics of badminton change energy system from aerobic system to anaerobic system. The capital needed in the short and long rally is energy from anaerobic system and aerobic energy (Forestier et.all, 1998)

An anaerobic system is an energy system that the process does not require oxygen, so it will produce lactic acid. Lactic acid occurs in humans when performing an activity or exercise using an anaerobic glycolysis energy system and anaerobic glycolysis is used in a fairly short time and does not use oxygen (Benardot, Dan. 2006).

Lactic acid accumulation in the body can be resolved by removing the lactic acid from the muscles to the blood, increasing blood flow, taken lactate by the liver, heart and skeletal muscle. Lactic acid can be removed or lowered by recovery. The main purpose of recovery is to restore the depleted energy supplies during activity, and the return of this energy supply is perfectly performed by the aerobic system. The process of recovery is just as important as the process during physical exercise. Incomplete recovery will decrease ability (Kurniawan, R. 2015).

In a sports competition, in addition to optimal training and adequate nutrition, one of the important factors that support athletes in gaining achievement is the optimization of the recovery period. This is because today there are many sports competition systems that require repetitive high intensity work with short duration of rest. Therefore, it is important for athletes to take advantage of recovery time and consider that the loading-recovery cycle is a key point of the exercise process (Kusnani et all, 2011).

Two forms of recovery are active and passive recovery. Active recovery is another type of recovery period in which a person performs a low-intensity exercise. Examples of active recovery is to perform activities such as running or walking in a certain period of time while example of passive recovery is only silence as sitting or lying down without doing any activity. Previous research has shown that active recovery is faster than passive recovery (Afriwardi dan Wenny Rahmalia Rezki. 2008,Pinar S., et.all, 2012, Monedero J. et.all, 2000)

In addition to using active recovery and passive recovery, there are other recovery techniques performed with the help of others through massage manipulation or known as sports massage. With jogging and massage, the results obtained show that jogging active recovery has a small index of fatigue. When it was viewed from the significance value of 0.335> 0.05, it means that there was no significant difference between the use of jogging and massage to the index value of fatigue. Meanwhile, when viewed from the average value based on the results of jogging and massage groups, it was found that the jogging group had equal to 3,809: 4,714. The results of the study were calculated by formula (RAST) (Kusnani et all, 2011).

The aim of this study is to examine the effect of jogging and massage as recovery active on the change or removal of the lactic acid.

METHOD

The design of this study is Quasi Experiment which is an estimate for information that can be obtained with true experiments in circumstances that are not possible to control and or manipulate all the relevant variables (Badriah Laelatuk. 2006.)

Sample

The sample used in this study was male athletes of Sumenep with an age range of 15-21 years. We used twelve athletes from Sumenep Regency. The subjects were divided into two groups i.e. jogging group and massage group. The anthropometric of the subject is shown in Table 1.

Table 1 Anthropometric of the subject

No.	Anthropometric	Groups	
		Jogging (n=6)	Massage(n=6)

1.	Age	18±2.09	16.33±1.03
2.	Weight (kg)	56.83±6.67	54.5±3.27
3.	Height (cm)	164.5±6.15	162.33±7.76

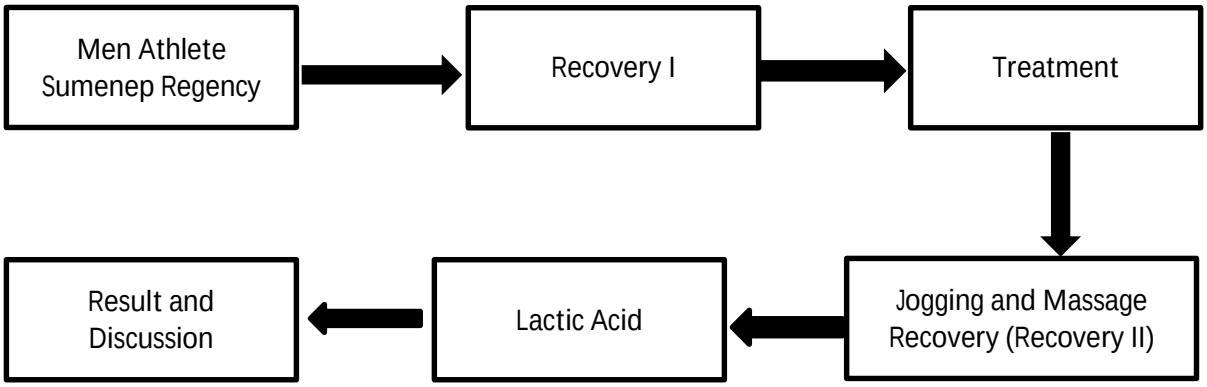

Figure 1. Research Design

Tools

The tool which were used to take lactic acid contents was Accutrend Plus. Accutrend Plus from Roche cobas made in Germany and it can measure glucose, Cholesterol, Triglycerides and Lactace.

Procedu**re**

All subjects must complete and sign the informed consent. All subjects were required to fast for 10 hours before the study. Subjects were given warming up to equal of physical condition. Taking of lactic acid would be done three times.

Recovery I

At this stage the subject's lactic acid content will be taken to determine whether it was normal or not and will be used as the initial reference of the researcher about the normal condition of the subject after given the treatment.

Treatment

At this stage all subjects will be given the same treatment that is a badminton match with a single type and rally point system following the rules set by BWF. After getting the winner of the match, the subject's lactic acid content was taken to see the change.

Recovery II

At this stage the subjects who have finished the badminton match, the winner and the loser will be given re-treatment of recovery with jogging and massage. The subject will perform the recovery in accordance with predefined divisions. On the jogging recovery subject will run around the field within 150 m in five minutes with light intensity. Meanwhile, for the massage recovery, some massage techniques were done i.e. the movement of effleurage (rubbing), petrisage (squeezing), friction, tapotament (body blow), vibration, shaking and they are done by experts in the field of massage.

The taking process of lactic acid is done by medical personnel and in accordance with the standards applicable in Indonesia, starting from the use of rubber gloves, cotton, and alcohol.

Data analysis

Data analysis in this study was Independent T - Test. The results of this test will show how much is the difference between jogging and massage recovery.

RESULTS AND DISCUSSION

Results

The content of lactic acid in recovery I shows different results and tends to be too different. This is because many research subjects perform activities that can increase lactic acid content before the data retrieval process. Actually each subject has been arranged in such a way so that their physical condition and physiology are the same.

Table 2.Result Lactic Acid (mmol)

No.	Information	Groups	
		Jogging (n=6)	Massage(n=6)
1.	Recovery I	2.47 ± 0.40	5.27 ± 1.01
2.	Treatment	5.00 ± 0.39	5.06 ± 0.14
3.	Recovery II	2.70 ± 1.17 *	4.40 ± 1.61

*) Significantly different between Treatment and Recovery II ($p<0.05$)

Content of lactic acid during the treatment that playing badminton showed an increase in both groups in the jogging and massage groups. The content of lactic acid obtained was not significantly different from that of previous studies (Cabello Manrique D et.all , 2000, Forestier et.all, 1998) Menzies, P, 2010). This suggests that there were high differences in lactic acid and could cause fatigue.

The results showed that lactic acid content on recovery by jogging decreased lactic acid significantly ($p <0.05$), whereas recovery with massage did not decrease lactic acid significantly. This indicates that a good recovery was done after the game for the recovery period was by jogging. However, recovery with massage also showed a decrease in lactic acid content.

Discussion

Result lactic acid after treatment to increase lactic acid the jogging recovery group increased and the results were consistent with several previous studies (Forestier et.all, 1998, Cabello Manrique D et all, 2003, Menzies, P., 2010). But in the massage recovery group to fall. This is because before the treatment of the badminton match the subject had rest for a while waiting for a turn and made it possible to lower lactic acid.

The accumulation of lactic acid can cause of fatigue (Pinar S., et.all, 2012). The phenomenon of fatigue can be caused by: 1) problem in the provision of energy; ATP-PC and anaerobic glycolysis, 2) accumulation of products such as [H +] lactic acid, 3) muscle mechanical failure to contract, and 4) nervous system changes (Majumdar, P, 1997). The incidence of muscle fatigue during exercise can be caused by many things, including: the depletion of energy reserves derived from ATP, creatine phosphate, and glycogen; accumulation of lactate in muscle; homeostatic disorders, e.g. impaired plasma osmolarity, plasma volume, decreased pH of body fluids and decreased electrolyte levels of body fluids; fatigue due to neuro muscular or central disorder; and fatigue caused by environmental conditions, both due to temperature and humidity (Kusnani et all, 2011).

This fatigue will affect the performance of athletes in the field (Monedero et all, 2000, Pinar S., et.all, 2012). Fatigue can cause damage to the coordination of the human body (Fox, Edward L. 1979), which will lead to decreased performance of athletes and the results of athletes can't compete with the maximum.

The consequence of the inadequate recovery time is the incomplete (re-synthesizing) ATP-PC that has been used up. The less recovery time, the recoverable ATP-PC as an energy source for

repetition of subsequent activities will also be reduced. When these conditions occur, there will be a mechanism of energy formation through anaerobic glycolysis system, while it is known that this energy system produces lactic acid that accumulates in the muscle and will eventually cause fatigue (Kusnani et all, 2011).

The lactic acid removal after the subject recovers with jogging and massage. Lactic acid levels in the jogging recovery group experienced considerable decline and lactic acid were almost in accordance with the initial state prior to the match. in the massage recovery group also tends to decrease but not too different. The results showed that both active recovery gave good results to restore physical condition after activity, but treatment with jogging treatment tended to be better compared with massage.

Decreased lactic acid during recovery after exercise or match is associated with several factors. These factors include the bicarbonate buffer system, the decrease or alteration of lactic acid from the muscle to the blood, the blood flow and a small or rapidly brought lactic acid to the liver, muscle and heart (Pinar S., et.all, 2012).

When performing active recovery by jogging then the body will get oxygen and make the body use aerob energy system. The lactic acid presents in the muscle will be carried by the blood and the oxygen to the liver to be re-processed into new energy that will be used by the moving muscles and the muscle that has produced lactic acid before (Kusnani et all, 2011).

After doing activity or exercise, lactate results in from anaerobic glycolysis of the muscle is released into the bloodstream and transported to the liver, where lactate can be converted back into glucose. This synthesis of glucose is called gluconeogenesis. This glucose can later be reused by the muscles that produce lactic acid. This is called the cori cycle (Kusnani et all, 2011). A decrease in blood lactate content may occur in passive recovery caused during rest after the activity of the cori cycles persists and the oxygen consumption at rest can be adequate so that glycolysis can take place (Kusnani et all, 2011).

Destination in sports is massage divided into three, namely the preparative, preventive and curative. The purpose of preparative is the goal to prepare the physical condition of the athlete before performing the motion activity; the preventive goal is the prevention goal, which is to create the physical condition of the athlete to be ready for further training. Massage efforts in this regard are expected to facilitate the circulation of blood, so that movement and coordination of the body can function properly, preventing and reducing accumulation of excessive combustion remains; the curative purpose of massage is limited to healthy tissue, so curative understanding in this case is to improve the physical condition of the athlete after exercise. With massage is expected to reduce or eliminate pain and fatigue, so that athletes can do the training or the next game in fresh physical condition (Kusnani, 2011).

Active recovery with massage can result lower lactate acid levels but in a long period of time. Massage has many benefits to the body after an activity or exercise. In the world of sports massage can be used for the recovery process and decreased levels of lactic acid in the body (Pinar S., et.all, 2012, Werapong et.all, 2005). In the process of massage, the resulting process is increased tissue and blood flow in the body (Pinar S., et.all, 2012). Increased blood flow has an important role in the process of reducing or eliminating lactic acid in the body. However, there is a study that shows no significant change in blood flow in muscles after a massage (Werapong et.all, 2005).

In some previous research results indicate that recovery with massage did not significantly different from passive recovery (Pinar S et. all, 2012, Werapong et.all, 2005). One of the factors associated with massage is the tissue or organ in the human body itself (Pinar S., et.all, 2012). This factor will affect the body's recovery system after doing the activity.

The game of badminton produces about 4.70 mmol (Menzies, P.,2010), 3.8 mmol (Cabello Manrique D et.all , 2000) and 6.8 mmol (Forestier et.all, 1998). This suggests that badminton is one sport that uses a combination of aerobic glycolysis and anaerobic glycolysis Cabello Manrique D, et all 2003). Lactic acid produced during a match can be removed or lowered at rest after each rally (gain points) or any change set. The average rest period is 11 seconds after the rally (Forestier et.all, 1998). Therefore, recovery by jogging and massage can’t be done during the game. This recovery can

be done at the time after the maximum exercise and after the match for the preparation of the next match on the next day.

CONCLUSION AND SUGGESTION

This research had limitation. The limitation was minimum of subject, difficult to keep condition of subjects for doing some activity because it can be influenced to lactic acid and limitation of tools. From the results of research that has been conducted to get the conclusion that active recovery with jogging significant can lower lactic acid level good enough after activity than with active with massage. But to form of recovery can reducing lactic acid after game and exercise. Active recovery by jogging indicates a decrease in lactic acid levels similar to the initial conditions before treatment.

However, the suggestion for further research is the measured recovery time that is measured and biased using other lactic acid gauges also can use more many subject.

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THE EFFECT OF AEROBIC DANCE AND CYCLING ON THE PSYCHOLOGICAL WELL-BEING OF TEENAGERS

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ABSTRACT

The objective of this study is to reveal the effect of aerobic dance, cycling and physical fitness on psychological well-being of 15-16 years old students of Vocational High School 4 Klaten (Central Java). This study is more focused on the variable of: (1) low impact aerobics dance and cycling as an independent variable, (2) physical fitness as a variable attribute, and (3) psychological well-being as the dependent variable. The population of this study was all fifteen and sixteen years old students in the tenth grade of Vocational High School 4 Klaten, and the total of the sample was 60. The study used the experiment factorial 2x2 block design. The data were collected using psychological well-being questionnaires, and analyzed using two way analysis of variance (ANOVA), followed by Tukey test, with the level of significance $\alpha = 0.05$. The results of this study are as follows. (1) There are differences in psychological well-being of the teenager students who involved in aerobic dance than those who cycle. The aerobic dance in increasing psychological well-being is more effective than cycling. (2) There are differences in psychological well-being of the teenager students who have high physical fitness. The teenager students who have high physical fitness in increasing psychological well-being is higher than those who have low physical fitness. (3) There is interaction between aerobic dance, cycling and physical fitness in psychological well-being of teenager students. The students who have high physical fitness and who are trained in aerobic dance and cycling obtain higher psychological well-being than those are trained in cycling. The students who have low physical fitness show that there is no difference in increasing psychological well-being from those who are trained in cycling.

Keywords: aerobic exercise, physical fitness, psychological well-being, teenager.

INTRODUCTION

Health is a very important element in life. Based on the health standards of the World Health Organization (WHO), health includes physical health, social and psychological. Psychological health is one factor where people can say really healthy. Healthy in a broad sense includes a healthy state of physical, mental and social wellbeing and not just the state of being free of disease or infirmity. In that sense implied a condition that indicates the level of functional ability of the human body. Sport or physical exercise in general can improve the health, both physical fitness and mental health.

Mental health can be affected by problems that suppress the mind, causing a variety of psychological disorders. Problems in life are not only faced by adults but also teenagers. Mental development very important, for especially in adolescence. The Teenager who are at this stage of development cannot be separated from the problems of life, which cause disruption to health both physically and psychologically.

Adolescence is a period of the most beautiful, fun, exciting, and full of color. In fact, adolescence is a time that causes a lot of problems. In adolescence, physical changes, emotional, social and rapidly. As an individual who is looking for identity, young women are at a high emotional nature, selfish, and unstable. In adolescence the physical condition to be one of problems young girls.

Physical changes in young women is very influential on psychological development, and will bring a huge impact on her confidence. Self-confidence is an attitude in a person who can accept the fact, can develop self-awareness, thinking positively, have the independence and the ability to have and achieve everything you want. The formation of self-confidence in young women came from the development of self-concept is acquired through social interaction.

Social interaction that occurs will shape the self-concept and positive self-acceptance. Positive self-acceptance with regard to young women who have the confidence, so it is easy to get along with others, promoted bold opinions, optimism, and well-controlled environment. By having confidence, girls begin to develop social interaction with peers, both same-sex and opposite gender.

Conversely, a low teenage daughter is hard to interact socially confident, shy, pessimistic, so, experiencing problems in adapting and interact socially. For example, Ana is 16 years old, a student of SMK Negeri 4 Klaten stated that he had difficulty adapting and interact socially. This is caused by physical conditions that give rise to distrust themselves so difficult to adapt to the environment, and the difficulty of making friends with the same sex or the opposite sex. This low self-esteem causes psychological discomfort, dissatisfaction, restlessness, anxiety, stress, depression and lack of acceptance of her self.

According to Hurlock (1997: 211) only a few young women who were satisfied with the state of his body, so that the incidence of poor self-concept and lack of self-esteem during adolescence. Young women who are able to deal with psychological problems caused by the physical, social and environmental, it will lead to positive psychological conditions and psychological well-being formed in him. Soul prosperous illustrates how positive a person to live and undergo psychological functions.

Researchers Ryff (Faturochman et al, 2012: 13) states that a person whose soul prosper when individuals are not merely free from stress or other mental problems. Moreover, individuals also have a positive assessment against him and is able to act independently, and not easily washed away by environmental influences. The importance of psychological well-being is so that people can live her life with a happy, calm and able to solve all problems.

Various ways can be done to get the mental and physical well-being, one with aerobic exercise. Type of aerobic exercise such as cycling, and aerobics is a good choice to improve the psychological well-being of young girls. Aerobic exercise is generally performed with the group, thus forming a good relationship with the environment and others. Movement in aerobics harmonious, dynamic, and their varied musical influence on the psychological. In addition, cycling is a sport that is fun, easy, can be done with the group, and at a low cost so as to provide a positive effect on the psychological.

According to Winberg & Gould (2007: 409) the benefits of exercise on psychological well-being can increase feelings of control, positive social interaction, improved self-concept, self-esteem, and confidence. Adolescents who have high fitness have a positive self-concept, namely: personality, socialization, family, and body image (Sharky, 2003: 28). The conclusion of the study is the impact of regular exercise although small positive changes. Taylor & Fox (Winberg & Gould, 2007: 409) Discover positive effects of physical exercise in self-perception and self-esteem after 10 weeks.

Another study conducted by Winberg and Gould (2007: 405) states that the benefits of moderate exercise can increase energy and reduce the level of tension. This is because when a person is doing physical exercise more than 20 minutes, it will secrete a hormone called endorphins which serves to regulate emotion. Some studies suggest that teens who exercise or who have a fitter body stress, and stress is smaller than the non-exercisers (Hagger & Chatzisarantis, 2005: 10). Other studies have shown that doing aerobic activity for 15 minutes, 2-3 times a week the body more fit with an increase of 50% (Winberg & Gould, 2007: 408). Therefore, the high fitness showed a high ability to work, because removing a considerable power in a long period of time without experiencing fatigue.

From the background of the above it can be concluded that the activity as a sport can be an effective means to improve fitness, psychological well-being, relaxes the mind, clear your mind, produce a feeling of happiness, thus reducing stress, in particular young women. Therefore, the researchers wanted to determine the effect of aerobic exercise and cycling on the psychological well-being of young women.

Effect of Aerobic Dance on Psychological Wellbeing

Aerobic dance can affect the psychological. Because aerobics dance is a fun activity and easy to do. Aerobic dance at the school is a new thing that aerobics is more interesting, and motivating young women. Aerobic dance is generally performed with the group, forming a good relationship with the environment and

others. Aerobic dance done systematically and aims in life means that individuals must develop and have a purpose in life.

Mechanical movements in aerobic dance associated with good posture so psychologically can help build self-concept, self-reliance and self-confidence. More of the harmonic motion in aerobics, dynamic, varied and stimulating hormone endorphins. Helps reduce tension, and as a means of self-expression. Therefore, it makes a person feel better and look better. Low impact aerobic dance using music that is not too hard and not too soft.

The existence of varied music in aerobic dance also affect psychologically. Music as a strong external motive may divert attention and excitement, so the number concentration during exercise is reduced, and the rate of perceived exertion decreased / lighter. It makes aerobics is not monotonous/ boring. While the weakness of aerobic dance include: the high cost of instructors, requiring equipment such as tape, sound system, cassette, compact disc (CD), special shoes aerobics.

Effects of Cycling on Psychological Wellbeing

Cycling is a sport that is fun and provides many benefits, one of which is a psychological benefit. Cycling does not require huge costs because the bike is very cheap and fuel-efficient. Cycling would be nice to be able to feel the positive things during cycling. Going to school by cycling for young women so much fun when done with friends. Cycling can be done by singing along, and be able to see the beautiful scenery and reduced perceived psychological stress.

At the time of passing through rugged terrain (off road), and the road uphill, an individual can not pass then indirectly trained to control emotions to achieve a goal. By the time the track cycling far, one would think, but can not pass there will be motivation to achieve the desired target. With the achievement of the desired target will come confidence, and positive self-concept. While the weakness of the exercise bike among other things: cycling is very familiar so interesting less impressive, does not need to adapt to the cycling movement. In addition, cycling can involve injury if not careful on the highway. Cycling on the road cause individuals inhale more toxic pollution caused by vehicles.

Benefits of Aerobic Exercise in Psychological

According to McAuley (Scully et al, 1998: 111) there is a positive relationship between exercise and psychological well-being in a decrease in stress, anxiety and depression. According to Cox (2007: 398) cognitive behavioral encourage exercise to generate positive thoughts and feelings that serve to counter negative moods such as stress, anxiety, depression, and confusion. This explanation is consistent with Bandura's theory (Cox, 2007: 398) when an individual experiencing a difficult task, individuals experience increased self-confidence.

Therefore, with increasing confidence to help counteract the effects of negative mood. Meanwhile, according to Bucher (1983: 360) Individuals WHO Participate regularly in physical activities Indicated they fell better. Many people indicate they simply feel better when they exercised than when they do not engage in physical activity. Perceptions of health and fitness help individuals to feel good.

That is, individuals who participate regularly in physical activity showed a much better individual. Many people show feel better when exercising than when not engaged in physical activity. Perceptions of health and fitness help people feel better. According to Winberg & Gould (2007: 409) the other benefits of exercise on psychological well-being can increase feelings of control, positive social interaction, improved self-concept, self-esteem, and confidence. Adolescents who have high fitness have a positive self-concept, i.e: personality, socialization, family, and body image (Sharky, 2003: 28). Social interaction associated with the sport with friends and colleagues is a fun thing and give effect to improve mental health (North et al, 1990; Cox, 2007: 398).

In addition, Daley & Bucanan (1999: 198) demonstrate the effect of aerobic exercise can improve self-perception of young women. This is in line with the opinion of Fox (Winberg & Gould (2007: 411) states that exercise and physical activity can be related to self-concept, self-esteem, and independence. McDonald and Hodgdon (Winberg & Gould, 2007: 411) also states exercise arobik (fitness training) can increase independence, life purpose, intelligence, and decrease discomfort.

While Ortega., et al (2008: 6) states that: ... The positive effects of physical fitness on psychological well-being are as follows: (a) Increasing physical fitness via aerobic and resistance training is Usually associated with

a Decrease in fat mass and an increase of in lean mass. This is quite visible to individuals, leading to enhancement of body image, the which may explain some of the other improvements in psychological outcomes. (b) Increased fitness may have a direct effect on neurochemicals in the brain such as serotonin or endorphins.

That is, the positive effects of physical fitness on psychological well-being are as follows: (a) improve physical fitness through aerobic associated with a decrease in body fat mass. This causes an increase in body image, and other psychological improvement. (b) an increase in fitness has a direct effect on chemicals in the brain such as serotonin nerve or endorphine which serves to enhance the mood.

According to Cox (2007: 399) "exercise is associated with the production of brain chemicals that have a" morphine-like "effect on the exerciser (pain reduction and general euphoria)". That is, exercise related to brain produces chemicals such as morphine that have an effect in the reduction of pain and pleasure). According Hangger & Chatzisarantis (2005: 25) the other benefits of exercise as follows: Participating in regular exercise has many benefits. You might learn how to play a new game or sport as well as improving your general level of fitness and well-being at the same time. Exercise can be a great fun. It does not necessarily cause injuries or make you feel uncomfortable, hot and sweaty if you exercise at an intensity you feel comfortable.

That is, participating in regular exercise has many benefits. Can learn how to play a new game or boost fitness and well-being at the same time. Exercising can be fun does not always result in injury to the intensity corresponding to the individual. While Cox (2007: 396) gives an explanation of why a person exercising. The top five s good that adults and young adults, ages 16-44, give for exercise are these: (a) to feel in good physical shape, (b) to improve and maintain health, (c) to be alert mentality, (d) to have fun, (e) to get out of doors. The top five s good, that older adults, ages 45-74, give for exercise are these: (a) to be Mentally alert, (b) to feel in good physical shape, (c) to get out of doors, (d) to feel independent, and (e) to relax and forget the cares.

That is, five reasons adults and young adults aged 16-44 and 45-74 years give reason to exercise is (a) was in good physical condition, (b) to maintain health, (c) to be more vigilant, (d) fun, (e) a breath of fresh air. It can be concluded that the exercise effect on psychological well-being and fitness. Physiologically, this is caused by substances produced as endofrine, and serotonin during exercise. To the resulting psychological effects can be seen from the increase in self-confidence, social interaction, environment, self-reliance, and the purpose of life as psychological well-being.

Research Hypothesis

Based on the study of the theory and framework of the above theory can be put forward the hypothesis, or a temporary answer to the problems which are:

1. There are differences in the psychological well-being of young women who trained with aerobics dance and trained by cycling.
2. There is the influence of the fitness level of psychological well-being of young girls.
3. There is an interaction between aerobics, cycling, fitness and psychological well-being of young girls. There are differences in the average of the four treatment groups.

METHOD

Research method and participants

The study used the experiment factorial 2x2 block design. The population of this study was all fifteen and sixteen years old students in the tenth grade of Vocational High School 4 Klaten (Central Java) 315 people, Because of the limitations of the study, the sampling for this research is done in stages. (1) Determine the sample is purposive sampling technique with particular consideration. Retrieved 112 people entered the predetermined criteria. (2) Divide the group cycling and aerobics random sampling (random) i.e 56 people group bikes and 56 people group aerobics. (3) The next step is to conduct a fitness test which is an attribute variable in this study. This test is to determine the groups that have high fitness and low fitness. The way to do is to rank the results of the fitness score of each child in each treatment group. To determine the high and low fitness levels using a percentage, i.e 27% for the upper limit representing the high score and 27% representing a low score group (Miller, 2002: 68). Therefore, of the 27% group and 27% high-low group is really a different group in the extreme. (4) Finally Retrieved 60 samples, with the following explanation.

Table 1. Four Sample Group

Variable Manipulative	Exercise	
Variable Attribute	Aerobic dance (A_1)	Cycling (A_2)
High Fitness (B_1)	15	15
Low Fitness (B_2)	15	15
Total Sample	60 people	

Research Variables

The independent variables in this study are aerobics dance and cycling, and variable attributes role in this study is physical fitness. The dependent variable is the psychological well-being.

Data Collection Tools

The data Collecting Using questionnaire and test. Instruments in this study using questionnaires and psychological well-being and fitness test. (1) Scale of psychological well-being adopted from Carol D. Ryff (Abbott., Et al, 2006: 5-6) is a standard instrument for measuring psychological well-being. This instrument uses a scaled version 42 (7 questions for each dimension). (2) Physical Fitness Test, using the Cooper test run of 2.4 Km.

Analyze

The data Analyzed using two way analysis of variance (ANOVA), followed by Tukey test, with the level of significance $\alpha = 0.05$.

RESULTS

The test used in this study Analysis Of Variance (ANOVA) of two way. Furthermore, to determine differences in psychological well-being among the four groups were given different treatments analyzed by Tukey's test. Reasons advanced test using Tukey due to data owned by each group as much. Two-way analysis of variance was used to test the main effect (main effect) is independent variable (aerobics and cycling) and variable fitness attributes (simple effect) on the dependent variable, namely the psychological well-being

Table 2. Summary of Two-Way ANOVA Results of Calculation

Source Variance	*Mean Square*	F	Sig.
Model	41.378	16.457	.000
Exercise (dance & bike)	11.267	4.481	.039
Fitness	91.267	36.299	.000
Exercise* Fitness	21.600	8.591	.005
Error	2.514		

1) Testing Hypothesis 1

Significance test the hypothesis Ha: There are differences in the treatment of psychological well-being of young women, and Ho: there is no difference in the treatment of psychological well-being of young girls. From the table note the price significantly for 0.000 with F count 16.457. This means that there are differences in the treatment of psychological well-being of young women who are trained in aerobics or cycling.

Significance test the hypothesis Ha: there is a treatment effect (aerobic dance and cycling) on the psychological well-being of young women, and Ho: there is no effect of treatment (aerobic dance and cycling) on the psychological well-being of young girls. From the table it can be seen the price significantly for 0.039 with F count 4.481. This means there is the effect of exercise, both aerobics and cycling on the psychological well-being of young girls.

2) Testing Hypothesis 2

Significance test the hypothesis Ha: there is a fitness effect on psychological well-being of young women, and Ho: there are no fitness to psychological well-being of young girls. From the table it can be seen the price significantly for 0.000 with F count 36.299 so, reject Ho

hypothesis stating no fitness effect on the psychological well-being of young women. This means there is a fitness effect on psychological well-being of young women.

3) Testing Hypothesis 3

Significance test the hypothesis Ha: there is interaction between aerobics, cycling, fitness and psychological well-being of young women, and Ho: there is no interaction between aerobics, cycling, fitness and psychological well-being of young girls. From the table note the price significantly for 0005 with F count 8591. This suggests that there is interaction between aerobics, cycling, fitness and psychological well-being of young girls.

Test Using Tukey Test

After being tested, the variance is necessary to test the difference per couple by Tukey's test to determine the significantly different pairs and pairs are no different. In determining the pairs that differ significantly and were not different can be seen in the following table.

Table 3. Summary of Tukey Test Results

No	Compered Group	*Mean Difference* Rerata absolute (q_0)	dk	HSD (q_t)	Ket
1	A1 dan A2	0.86	2:60	0,79	Signifikan
2	B1 dan B2	2.60	2:60	0,79	Signifikan
3	A_1B_1 dan A_2B_1	1.94	4:60	1,49	Signifikan
4	A_1B_1 dan A_1B_2	3,67	4:60	1,49	Signifikan
5	A_1B_1 dan A_2B_2	3,47	4:60	1,49	Signifikan
6	A_2B_1 dan A_1B_2	1,63	4:60	1,49	Signifikan
7	A_2B_1 dan A_2B_2	1,53	4:60	1,49	Signifikan
8	A_1B_2 dan A_2B_2	-0.2	4:60	1.49	NonSig.

Based on the results of the analysis are shown in the table shows that the results of the analysis of variance per group indicates that there are 7 (seven) groups differed significantly (q0> qt) ie, q_{count} is greater than $q_{tabel.}$ While one group there were no significant differences due to (q0 <qt) because q_{count} less than q_{table}.

In group A1 (dance) and A2 (cycling) there are differences in average significantly from the second treatment, meaning that psychological well-being of young women who trained with aerobic exercise is better than cycling. In group B1 (high fitness) and B2 (low fitness) there is a difference significant average fitness level, meaning that psychological well-being of young women who have a high level of fitness is better than the low fitness.

In the fourth treatment group differences were significant mean of each treatment, meaning that psychological well-being of young women A1B1 group (high fitness gymnastics) have an average difference significantly from those of the other three treatment groups (A2B1, A1B2 and A2B2). In the treatment group A2B1 and A2B2 no difference significant average, meaning that psychological well-being of young women who have a low fitness of the two treatments did not difference.

Discussion of Results

1. *Psychological Welfare difference between the trained Young Women with Aerobic Gymnastics and trained with Cycling*

Based on the analysis of research data, stated that other research hypothesis about the difference in effect between aerobics and cycling failed rejected. This means that the higher aerobic exercise goal achievement in adolescent psychological well-being when compared to cycling. Studies conducted by Daley & Bucanan (1999: 198) demonstrate the effect of aerobic exercise can improve self-perception, social, self-reliance in young girls. Aerobics provides the opportunity for individuals to develop strong social relationships and a positive self-view.

Aerobics has advantages during the training process. Aerobics at school is a new thing that aerobics is more interesting, and motivating young women. Aerobics are generally performed with the

group, forming a good relationship with the environment and other people. Aerobics done systematically and aimed it means the individual in life must evolve and have a purpose in life.

Movement in which the girls are not hard and easy due to the low impact aerobics exercise. Aerobic exercise is a combination of movement, music, tempo and shouts. Low-impact aerobic dance provide benefits in reducing stress and the resulting risk of injury experienced by very small. Movement in aerobics harmonious, dynamic, and stimulating hormone endofrin. When a child can adjust the movement and music, the better the psychological. The music is varied as a strong external motive may divert attention and excitement, so the number concentration decreases during exercise, and decreased levels of perceived exertion / lighter. It makes aerobics is not monotonous / boring. While the weakness of aerobics among others: the high cost of instructors, require equipment such as tape, sound systems, cassette, compact disc (CD), special shoes aerobics.

In the sport of cycling is a sport that is fun and provides many benefits, one of which is a psychological benefit. Cycling is not costly because the bike is very cheap, and fuel-efficient. Cycling would be nice to be able to feel things that are positive at the time of cycling. Going to and from school by bike for young girls so much fun when done with friends. Cycling can be done by singing along, and can see beautiful scenery so, fatigue, and decreased perceived psychological stress. While the weakness of cycling exercise among others: cycling is very familiar so memorable less interesting, no need to adapt to the cycling movement. In addition, cycling can effect injury if not careful on the highway. Cycling on the highway causing individuals inhale more toxic pollution caused by vehicles.

Based on the discussion, it can be concluded that both aerobic exercise and cycling effect on psychological well-being of young women. Aerobics and cycling has advantages and disadvantages of each. Young women can choose aerobic exercise according to his ability.

2. *Differences in Psychological Wellbeing of Young Women Who Have Had Fitness High and Low Fitness*

Based on the analysis of research data, stated that the hypothesis about the difference between the effect of high fitness and low fitness failed rejected. This means that adolescents who have high fitness is better in achieving the goals of psychological well-being when compared with young women who have a low fitness. Young women who have a high fitness demonstrate the ability to work high, energetic, due to issue a number of considerable energy in a long period of time without experiencing fatigue. Young women who have a body fit more easily adapt to environmental conditions that can affect the psychological well-being. Teens who have high fitness will have a positive self-concept, namely: personality, socialization, family, body image. Poor psychological condition closely related to a person's physical condition. Therefore, someone who has a low fitness was associated with lower psychological well-being and depression.

3. *Interaction between exercise aerobics dance, cycling and fitness to the psychological well-being.*

Results-oriented analysis of the interaction effect can be demonstrated that there is a significant interaction between aerobics, cycling, and fitness to the psychological well-being of young women (McAuley, Hangger & Chatzisarantis; 2005, Winberg & Gould; 2007, Cox; 2007, Ortega et al; 2008). Young women who have a high fitness demonstrate the ability to work high, energetic, due to issue a number of considerable energy in a long period of time without experiencing fatigue. However, contrary to adolescents who have low fitness exercises showed no significant difference. This shows that the effectiveness of an exercise related to the physical capabilities and characteristics of adolescents who were trained.

Conversely, adolescents who have high fitness (B1) of the two exercises are aerobics and cycling does not show a striking difference but significant effect. This means that for adolescents who have high fitness will be more adaptable, it will automatically make both physical and psychological condition is increasing. For the difference of the four treatment groups can be seen from the mean difference in the Tukey test.

It can be seen from the four treatment groups there were significant mean difference of each treatment, meaning that psychological well-being of young women high fitness aerobics group has a

significant mean difference from those of the other three treatment groups. In the treatment group and the low fitness aerobics and fitness cycling low that there is no significant mean difference, meaning that psychological well-being of young women who have a low fitness of the two treatments did not differ.

Psychologically adolescents who have high fitness will have a positive self-concept, namely: personality, socialization, family, body image. Social interaction associated with the sport with friends and colleagues is fun and gives effect to improve mental health. Therefore teenager, who has a high fitness more quickly adapt to environmental conditions that can affect psychological well-being.

It can be concluded that aerobic exercise, aerobics and cycling can improve psychological well-being among others: acceptance, relationships with others, autonomy, purpose of life, environmental mastery, intelligence, and decrease discomfort. Of the four treatment groups were higher fitness aerobic exercise group showed an average difference better psychological well-being. This means that both aerobics, cycling, fitness and psychological effect on the welfare of young women.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the results of research that has been described performance discussion it can be concluded that:

1. There are differences in psychological well-being of young women between the group aerobics and cycling groups. Psychological well-being of young women aerobics group showed a better effect than the group cycling.
2. There are differences in psychological well-being of young women between the high fitness and low fitness. Psychological well-being of young women high fitness group showed a better effect.
3. There is an interaction between exercise aerobics, cycling and fitness to the psychological well-being of young women. High fitness aerobic exercise group showed an average difference better psychological well-being of the other groups.

Implications

The implications of this research are very useful for schools, teachers, students and parents, to better understand the benefits of fitness and exercise so that it has a good psychological well-being. By exercising teen daughter avoid stress, anxiety, and depression caused by internal and external factors. So with maafaat exercising young woman has psychological wellbeing that covers self-confidence, social interaction, the purpose of life, the environment, and independence.

Limitations of Research

The limitations of this study are as follows:

1. In this study, the treatment group was not given the tools cycling speedometer to measure the distance, and speed (RPM). This is because researchers have limitations in the provision of tools and equipment are very expensive due to the cost.
2. Measuring the pulse of practice still use manual way, so that the achievement of training zone sometimes fickle, but still within a predetermined exercise zone.
3. In the experimental study of free variables outside the control of the variables studied to be done strictly. The research was carried out in schools and the sample was not quarantined, the implementation of experiments need to adjust the rules at school. So that the effect of female student with a variety of learning outside the research is not fully controlled.
4. In this experimental study to external factors such as nutritional factors, and the family economy, which can not be fully controlled so as to affect the results.
5. Each child has different abilities and different psychological conditions. The presence of environmental factors and of the child that can not be fully controlled, thus affecting the results of this study.

Suggestions

Based on the research results, implications, and limitations of the study can be recommended the following matters:

1. Aerobic Gymnastics and cycling very well when done by young women to improve psychological well-being.
2. For young women can choose aerobic exercise such as gymnastics and cycling in accordance with the economic ability possessed.
3. Music varied aerobics can be one way to motivate students to follow the daughter of fitness gymnastics at school.
4. Cycling is fun and does not require expensive, therefore the young women who have a bike should use it to improve fitness and psychological well-being.
5. Cycling to school is a great way to improve fitness and psychological well-being because cycling can be carried out with friends to become happy.

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SURVEY OF THE LEISURE TIME ACTIVITIES OF THE STUDENTS OF FACULTY OF SPORTS SCIENCE, UNIVERSITAS NEGERI YOGYAKARTA

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Abstract

Objectives: The objective of this study was to investigate the leisure time activities of the students of Faculty of Sports Science, Universitas Negeri Yogyakarta.
Methods: This study was an observational study which used a questionnaire as a research instrument. The population of this research was the students of the Faculty of Sports Science which consists of students from Sports Science Study Program; Coaching Education Study Program; Physical Education, Health and Recreation Study Program, and Elementary School Physical Education Teacher Education Study Program. The sampling technique of this study was simple random sampling. There were 201 students participated in this study. The data collection technique used a closed-questionnaire, in which the students choose the most suitable option with themselves. The data were analyzed using a quantitative descriptive analysis in form of percentage.
Results: Results shown the using of leisure time related to free activities were for playing (72%), doing favorite sports (97%), doing art activities (58%), visiting friends (88%), playing gadget (91%), adding sleep time (88%), adding study time (76%), enjoying time (87%), and watching TV (76%). Furthermore, the using of leisure time to enhance skills as a students were for visiting library (39%), joining extra courses (24%), reading newspaper (41%), having a discussion (70%), doing group tasks (54%), and increasing understanding of courses (55%). Related the using of leisure time for community, the students used their leisure time to get involved in organizations (62%), get involved in organizations on the campus (31%), get involved in organizations in the village (46%), get involved in religious organizations (18%), and get involved in scout organization (7%). For the use of leisure time regarding to promote themselves as a college students, the students used their leisure time for watching sports games (97%), joining sports games (88%), trying to get involved in games (73%), doing sports (945), and are proud to be a sports science students (96%).
Conclusions: The leisure time of the students of the Faculty of Sports Science of UNY was utilized meaningfully and positively, although not optimally. The institution should have periodic guidance and monitoring. The students should understand this better and select leisure time activities which support their main duty as students.

Keywords: college students, leisure time

INTRODUCTION

Generally, time usage depends on a person's interests. Time will keep running until the end of days and has been set by its creator, Allah. In www.wikipedia.org, " time is the entire series of moments when process, action or action takes place or happens. " Time is an interval between two conditions/events, or the length of time an event takes place. According to Christopher (1992: 4) the French call *leisure* as *Loisir* meaning free time. According to Maslow (Soekidjo, 2007: 224), one's needs are classified based on priority scale into several stages; (1) physiological needs, (2) safety needs, (3) social/affiliation needs, (4) esteem needs, and (5) self-actualization needs. Jensen (1977: 2) states that time in a day is classified into three which are; working time (economic requirements), self-care time (biological requirement), and spare time (leisure time). Working time is time used to fulfill life necessities, such as earning a living, while for students working time is time used to study at school. Self-care time is time to take care of oneself to look proper such as; resting, eating, drinking, and improving appearance. Leisure time is remaining time besides to work and take of oneself. Christopher (1983: 5) classifies leisure time into true leisure and enforced leisure. True leisure is the

real spare time which we can use in any way we want. Enforced leisure is forced spare time such as sickness or unemployment.

Time cannot be stored and searched, but it must be utilized. Time will keep running indefinitely. Someone who can manage their time well masters life and is able to utilize time for various things in their life. Conversely, someone who cannot use time wisely will always be disadvantaged and will not get a replacement. In Al-Quran in *Al-Ashr* (103): 1-3, Allah says, " by time, indeed mankind is in the loss, except for those who have believed and done righteous deeds and advised each other to truth and advised each other to patience. "

College students have the same opportunity to use their time to do various activities on the campus and the society. Within 24 hours, students join lectures for around six (6) to eight (8) hours, take care of themselves for eight (8) hours, and use their leisure time freely for eight (8) hours a day. So, they perform activities they want, activities expected by the society, activities to enhance their skills as students, and activities for promotion as students.

In the academic regulation of Universitas Negeri Yogyakarta, one credit (1 sks) consists of 50 minutes of meeting lecturer, 60 minutes of performing a structured task, and 60 minutes of performing independent task or self-enrichment. So, if a student uses their time optimally, they will go to lecture and learn for 8 hours, sleep, bathe, etc. for 8 hours, and have spare time for 8 hours.

Based on cursory observation, in average, students graduate in over four years although the curriculum allows them to finish their study in four (4) years. The question is how do students use their time to finish their study? Especially, while studying, they have Academic Advisor (PA). Based on this description, it was identified that the use of leisure time of the students of Faculty of Sports Science of UNY was poor and not optimal, their awareness in developing their knowledge outside of their class was low, and their utilization of their leisure time should be reviewed. Therefore, this study only discusses the time utilization of students outside of time for joining lectures and time for self-care. Leisure time means they are free to use it any way they want but it should be useful for themselves and their environment. The problem was determining the usage of leisure time of the students of Faculty of Sports Science of UNY. The study was performed to determine the utilization of leisure time of the students of Faculty of Sports Science of UNY.

METHOD

This study is an observational study which used a questionnaire to collect data. The study describes student's usage of leisure time outside of classroom and self-care in a certain period. The variable in this study was the utilization of leisure time, i.e. true leisure time which is leisure time to be used freely in any way one wants. Utilization of leisure time is activities outside of lecture time and self-care time. The activities were measured by questionnaires with the indicators of free usage of leisure time, usage of leisure time for the society, usage of leisure time to enhance skill, usage of leisure time for promotion as a college student. Arikunto (1998: 115) states that the definition of population is the entire research subjects. In this study, the research population was the students of Faculty of Sports Science of UNY, consisting of IKOR, PKL, PENJAS, and PGSD Physical Education study program students. The sampling technique was simple random sampling. The total sample was 201 students. The instrument was a questionnaire. Arikunto (1998: 140) states that questionnaire is a number of written questions to gain information from respondent on themselves or things they know. According to Sutrisno Hadi (1991: 7) there are three main steps to prepare instrument which are; defining construct, investigating factor, and preparing question items with outline of free usage of leisure time, usage of time to enhance student skill, usage of leisure time for the society, usage of leisure time for promotion of main duty. Data was collected by a closed questionnaire which is questionnaire which contains answers, so respondents only have to select answers by leaving checkmark on the corresponding column. The analysis technique was descriptive quantitative presented in percentage. Percentage (P) was calculated by dividing cumulative frequency (F) by total respondent (N) multiplied by 100%, using equation: $P = F/N \times 100\%$.

RESULTS AND DISCUSSION

The research results were described in detail, i.e. free usage of leisure time based on four categories of the background of usage, which are the free usage of leisure time, usage of leisure time to enhance skill, usage of leisure time as expected by society, and usage of time for self-promotion. According to Hartoto (1983: 40), utilization of leisure time based on activity location are indoor and outdoor activities. Indoor activity is an activity performed inside building, e.g.; indoor port, art performance, hobby, music, etc.. Outdoor activity is an activity performed outside of the building, e.g.; outdoor sport, hobby, music, art, etc.. Nearly all activities can be classified in these categories, the difference is the location. The research results are described below:

1. Free usage of leisure time

Based on the research results, 72% students liked playing outside of college hours, 97% students had sport as their hobby, 58% students performed arts when they had the opportunity, and 88% students visited their friends. A number of 91% students used their leisure time freely to use their cell phone, 88% students used their leisure time freely to nap, 76% students used their leisure time freely to study, 87% students used their leisure time freely to relax with friends and 76% students used their leisure time freely to watch TV.

Considering the research result, a college student is a student studying in college. Generally, college student's obligation is finishing study various knowledge to develop intellectual intelligence, emotional intelligence, and spiritual intelligence within a set period. Undergraduate students take 144 credits in four years. According to academic regulation, one credit (1 sks) consists of 50 minutes of meeting lecturer, 60 minutes of performing a structured task from the lecturer, and 60 minutes of performing the independent task.

Based on student's free usage of leisure time, most students use the time for positive activities for themselves and their environments. This fact is in line with the recreational principle that all human have the same opportunity to use leisure time in any way they want. However, some students used time freely to nap. It was a significant loss because they had slept enough at night. It supported Al Qurans Al *Al-Ashr* (103): 1-3, Allah says, " by time, indeed mankind is in the loss, except for those who have believed and done righteous deeds and advised each other to truth and advised each other to patience. " However, well studied closely, this is understandable because students of Faculty of Sports Science also practice sports besides theoretical lectures, so they were tired and needed rest.

2. Usage of leisure time to enhance skill

The research results showed that 39% students used their leisure time to enhance their skills by visiting library 1-3 times a week. 24% students used their leisure time for courses and 41% students used their leisure time to read the newspaper. 70% students used their leisure time for discussion and finishing group task. 54% students used their leisure time for discussion when there was an opportunity, i.e. when there was an assignment. 55% students used their leisure time to study.

The research result illustrated that student's opportunity to study in the library was not used optimally. Only 39% students visited the library. The analysis showed that every subject did not require being discussed and finished using books in the library, but using skill practice in the field and or electronic books. On the other hands, lecturers did not demand students to go to the library to look for material and enrich their insight in learning.

The habits of going to the library, taking the course, reading the newspaper, and having a discussion with friends were under 50 %, meaning the students were not really able to use the opportunity to add activities outside of college hours. So, they relied on the knowledge they gained from their lecturers. According to Monks (1999) in *www.library.usu.ac.id*, a college student is a teenager who studying in college. According to Kartono on the same site, college time is full of challenges, demanding students to determine their attitudes and choices, as well as demanding ability to adapt. Therefore, students should use their leisure time to enhance skills which support their main duty as college students of sports science.

3. Usage of time for the society

The research results showed that 62% students used their leisure time for the society to join the organization, 46% students used their leisure time to join the organization in the village, 18% students used their leisure time to join the religious organization as RISMA, mosque staff, head of department, section and network head, female Muslim affairs, treasurer, security. A number of 7% students used their leisure time to join scout as Bayangkara, BMP guide, vice chairman, scout board, scout guide, cub scout.

Using leisure time for the society meant that students used their leisure time for activities outside out college hours and or in accordance with the demand of the society they live in. The activities included being administrators of a student organization, student cooperative, youth organization, religious organization, etc.. Students desire to join organization was moderate. It meant usage of time for social activities was quite positive. According to the Department of Education and Culture (1997: 28), " From a recreational activity, many positive values for physical, psychological-emotional, intellectual/educational, and spiritual growth and development can be found. "

4. Usage of leisure time for promotion as student

The research results showed that 97% students used their leisure time to watch sports match, 88% students used their leisure time to join sports match, 73% students used their leisure time to try to be involved in a sports match, 94% students used their leisure time to work out in a week, and 99% students were proud to be sports student.

According to Maslow (Soekidjo, 2007: 224), one's needs are classified based on priority scale into several stages; (1) physiological needs, (2) safety needs, (3) social/affiliation needs, (4) esteem needs, and (5) self-actualization needs. Physiological needs are needs to survive, so this is the primary need of every human. Safety needs are broad because it could be safe from the physical or psychological threat of human, nature, etc.. Social needs are needs to integrate into an environment. Esteem needs motivate someone to unleash their skills maximally. Self-actualization needs are ones need to always enhance their personal abilities. The research result showed that almost all students of faculty of sports science were proud to be sports students. This was signified by their involvement in sports activities passively (as spectators) and actively (participant of sports match and or competition.)

CONCLUSION AND SUGGESTION

Based on the results of analysis and discussion, it is concluded that free usage of leisure time, usage of leisure time to enhance skill, usage of leisure time for the society, and usage of leisure time for promotions student, were utilized for positive activities, although not optimal. The institution should have periodic guidance and monitoring. The students should understand this better and select leisure time activities which support their main duty as students

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ANTROPOMETRY AND PHYSICAL FITNESS FACTORS DETERMINANT DRIBBLING AND PASSING FUTSAL ABILITY OF STUDENT EXTRACURRICULAR AGED 12-15 YEARS

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Abstract

Objectives: the objectives of this study is to determining the anthropometic and physical fitness factors of determinant dribbling and passing futsal ability students extracurricular age 12-15 years.

Methods: The population of this study is all extracurricular futsal players who are in Surakarta. Sample of 80 students. Obtained by simple random sampling technique. Technique of collecting data using test and measurement .This research uses a quantitative approach with exploratory factor analysis (EFA) design aided with the computer program of Software SPSS Version 17 for Windows.

Results: The results showed that there are 3 factors that affect the ability of dribbling and passing futsal in students aged 12-15 years. These factors are (1) first factor representing leg length, foot length, balance, flexibility, (2) second factor representing dribbling-passing and endurance capability, (3) Third factor representing agility, speed, and coordination.

Conclusions: The conclusions in the study of anthropometric factors and the dominant physical fitness of dribbling and futsal are the first factors. These factors consist of variable limb length, foot length, flexibility, balance. The second factor, this factor consists of dribble and passing variables and endurance. The third factor, this factor consists of variables are variables agility, speed, coordination

Keywords: Anthropometry, Physical Fitness, Dribbling and Passing, Exploratory Analysis, Futsal

INTRODUCTION

Sports achievements alone in Indonesia according to the Law of SKN number 3 of 2015 is a sport that foster and develop sportsmen in a planned, tiered and sustainable through the competition to achieve achievement with the support of knowledge and technology sport. Futsal sports entered Indonesia around the year 1998-1999. Sport started getting familiar in the community but has not progressed like football. The history of Indonesia itself was officially recorded in 2002, when Indonesia was in good faith by AFC (Asian Football Confederation) to organize the final round of Asian futsal championship in Jakarta. Seeing what Indonesia achieved, within a period of less than 4 years the State of Indonesia is able to host the holding of inter-state futsal, it is a pride and achievement for Indonesia. In the Southeast Asian region alone, Indonesia ranks third, the urur is still under Thailand and Vietnam. As for the world scene, Indonesia itself is ranked 45 out of 114. It makes homework for futsal sport in the country, a job that is not easy as it reverses the palm of the hand. Need long-term in preparing a team to get to the world stage. An achievement that Indonesian society dreams of futsal sport. The futsal game requires the dominant basic techniques during the game, one element with the other not biased to each other, but during execution in the game, will

show the percentage of which basic technique is often done. That is dribble and passing. From the results of observations on the ability to play futsal at the age of 12-15 it is known that the ability to dribbling and passing is still low. Found that 30 students who follow futsal coaching, only 13 students who master the technique dribbling and passing correctly while 17 other students are still in the category of moderate and less. This means for ages 12-15 years, students who master dribbling and passing of 43.4%.

According to M. Sajoto (1995: 11) that "one aspect of achievement in sport is the biological aspect that includes structure and posture. Anthropometric characteristics can be determinative in enhancing or determining performance and ability level (reilly al., 2000). Manfried Scholich (1986) says that physical fitness as a whole is the basis of preparedness to compete. History of science development shows a direct relationship between the increased status of a science with the level of development of measurements in the field of science. (Arma and Muslim.1978: 1). With the advancement of science and technology, indicating that a measurement of humans and sport is necessary, it is as written by Arma and Muslim (1978: 19) that testing is important in sports.

The anthropometric factors and physical fitness are factors that the trainers need to know in terms of providing training programs to the students noting the anthropometric factors and physical fitness requirements of the extracurricular futsal age of 12-15 make the background in this study. Therefore the authors will conduct research about Antropometry and Physical Fitness Factors Determinant Dribbling and Passing Futsal Ability of Student Extracurricular Aged 12-15 Years.

METHOD

The approach taken in this research is quantitative research method using Exploratory Factor Analysis design. One multivariate is used in sports to measure the dominant variables of anthropometry and physical fitness in dribbling and passing abilities in futsal where 9 variables have been collected will be processed and analyzed using computerized statistics program with SPSS system (Statistical Product and Service Solution) version 22. Multivariate statistics require many mathematical calculations that are not possible to do manually.

The sample in this research is 80 students of Extracurricular Faculty of Junior High School in Surakarta, Variable in this research is length of leg, foot length, endurance, speed, agility, balance, coordination, ability and ability of passing and dribbling. Factor analysis can be regarded as one of the quite complex statistical techniques therefore this analysis is usually done with the help of computer by using software or package of statistic program like SPSS. (Siswandari, 2015: 153). Steps in performing factor analysis:

1. Obtain a correlation matrix of all the variables studied, using Kaiser-Meyer_olkin's statistics of Sampling Adequacy (KMO) to decide whether in general a factor analysis is feasible to use. High KMO values (between 0.5 to 1.0) have an indication that factor analysis is suitable or feasible to use but if the value is below 0.5 then factor analysis is unlikely to be used.
2. Factor extraction, with this extraction it is possible to classify as many P variables or items / items into Q factor factors (where Q <P). Thus it can be said that the extraction of these factors is intended to determine the number of factors (eg Q fruits) required to represent the real variables. The extraction method used is Principle Component (pc).
3. Rotation factor, the extraction of research factors will derive the factor matrix which is the initial model obtained before the rotation.
4. Interpreting computer output, Barlett's test of sphericity, Kaiser-meyer-olkin measure of sampling adequacy (KMO), Eigenvalue, Factor Loading, Communality, Percentage of variance, Residual.

In addition to interpreting the final step factor that needs to be done in the factor analysis is the model accuracy test with residual or residual (error prediction). This reveals the detection of whether the resulting model of factor analysis is appropriate or not.

RESULTS

Based on the results of data analysis using the software SPSS 17 for Windows there is influence between factors with dribbling ability and passing futsal on extracurricular age 12-15 years. The result of analysis is 3 factors:

Tabel 1. Number of Factors Generated After Factor Analysis from Total Variance Explained Table In Section Initian Eigenvalue

Total	% of Variance	Cumulative %
3.283	36.475	36.475
1.320	14.662	51.137
1.139	12.650	63.788

Based on the data table 1. about the number of factors generated after factor analysis with SPSS Version 17 for Windows, it can be seen, from 9 variables treated yield 3 factors yng have eigenvalue above 1.0, artiny there are 3 new factors generated from factor analysis. The first factor with eigenvalue of 3.283, the second factor with eigenvalue of 1.320, the third factor with eigenvalue of 1.139.

Tabel 2. Factors Formed after Factor Rotation

Faktor	Variabel	Factor Loading	Eigenvalue	% Of Varians	Cumulative %
1	x2	0.929	3.283	36.475	36.475
	x1	0.844			
	x8	0.819			
	x6	0.244			
2	x9	0.758	1.32	14.662	51.137
	x3	0.752			
3	x5	0.357	1.139	12.65	63.788
	x4	0.661			
	x7	0.609			

The first factor is the highest and most powerful factor affecting dribbling and passing futsal. This factor has eigenvalue 3.283 and has a value of variance 36.475% means this factor contributes 36.475% to the ability of dribbling and passing futsal. This factor consisted of variable length of leg, foot length, flexibility, balance with factor loading ranged from 0244 until 0.929 mean correlation indicator with new factor is between 0.244 until 0.929. The high correlation lies in the variable length of the leg and the lowest is the balance variable.

The second factor is the second highest factor affecting dribbling and passing futsal. This factor has eigenvalue 1.320 and has a value of 14.662% variance means this factor contributes 14.662% to the ability of dribbling and passing futsal. This factor consists of dribble and passing variables and endurance with loading factors ranging from 0.758 to 0.752 means the correlation of indicators with new factor is between 0.758 to 0.752. The high correlation lies in dribbling and passing variables and the lowest is variable endurance.

The third factor is a third order factor affecting dribbling and passing futsal. This factor has eigenvalue 1.139 and has a value of 12.650% variance means this factor contributes 12.650% to the ability of dribbling and passing futsal. This factor consists of variable agility, speed, coordination with loading factor ranging from 0.357 to 0.609 means the correlation of indicators with new factor is between 0.357 to 0.609. The high correlation lies in the variable speed and the lowest is the agility variable.

DISCUSSION

Instead, accurate kickers contained significantly greater quantities of relative lean mass and significantly lower quantities of relative fat mass in their kicking leg, which might explain their ability to mediate and control foot velocity production in accordance with heightened limb co-ordination and control; providing accurate kickers with a greater opportunity to strike the ball in the right place, at the right time and in the right direction (Urbin et al., 2011). A possible explanation for the findings of this study is that flexibility is significantly affected by the movement autonomy to which the joint is regularly subjected (Erlandson et al., 2008).

Dribbling and passing, Technique refers to the relationship and harmony a player demonstrates with the ball and describes the performance of a solitary action in isolation from the game, e.g. pass or dribbling (Bate, 1996). Dribbling a ball was chosen in this study as this represents one of the most exciting aspects of the game for spectators, and a great deal of time is devoted in training to its practice (Reilly & Thomas, 1979). assessed the aerobic fitness of indoor soccer players at different competition levels and reported that these players had higher maximum oxygen uptake levels, better running economies and higher ventilator thresholds than athletes who played other team sports at the same level (Alvarez et al. 2009)

conducted a study on twenty young people being trained elite male players aged 16.4 ± 0.9 years, weight 67.2 ± 9.1 kg, and height of 176.3 ± 7.4 cm. All participants were tested for speed and countermovement jump (CMJ). Participants were divided into experimental group (n = 10) and control group (n = 10). In the group, the results indicate that the experimental group had a statistically marked improvement in their performance in the speed and CMJ (2.7 cm) (Tonnessen E., Shalfawi S.A., Haugen T., Enoksen E., 2011,). Based on our results, we can conclude that the futsal and soccer players differ in the intensity exertion during the game, but not in motor activities such as agility. Agility is a veryimportant component of futsal and soccer and it represents a common characteristic. (Milanović, Z. et al.2011) Based on that fact it can be said that the players in this two sports are very similar in agility performance. In soccer, speed plays an important role; the accelerated pace of the game calls for rapid execution of typical movements by every member in a team. In many instances, successful implementation of certain technical or tactical maneuvers by different team members is directly related with the degree of velocity deployed (Kollath & Quade, 1991)

CONCLUSION

The conclusion in the study of anthropometry factor and the dominant physical fitness in dribbling and futsal is the first factor. This factor consists of variable limb length, foot length, flexibility, balance. The high correlation lies in the limb length variable and the lowest is the equilibrium variable. The second factor, this factor consists of Dribble and passing variables and durability the high correlation lies in dribbling and passing variables and the lowest is variable endurance. The third factor, this factor consists of variables are variables agility, speed, coordination the high correlation lies in the variable speed and the lowest is the agility variable.

SUGGESTION

Based on the results of research on the analysis of factors, it can be submitted some suggestions as follows: For coaches should understand the various factors that influence and support futsal playing skills especially dribbling and passing futsal skills. In addition to factors, trainers also understand variables other than anthropometry and physical fitness to make it easier to train and improve dribbling and passing skills. The trainer needs to develop a careful plan of practice with a sequence of logical exercises before the technique dribbling and passing skills is actually taught to the futsal athlete. To colleagues to be able to do further research on research instruments in futsal game.

ACKNOWLEDGMENT

This study has been supported by a Sport Science Program, Sebelas Maret University. We thanks to all players, or student in junior high school 4 Surakarta and junior high school 4 Muhammadiyah Surakarta. We also thank the sports science students for their assistance in collecting the data.

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MULTI STATION REBOUNDER TOOL DEVELOPMENT AS A GUIDE FOR TRAINING INSTRUMENT BASED ON INDEPENDENT FOOTBALL

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Abstract

Objectives: The objective of this study is development of multi station rebounder tool as a guide for training instrument based on independent football.
Methods: In this study, researcher used the qualitative descriptive with the secondary data for the basic principle think with the forum group discussion with the expert, stake holder and fencing athlete.
Results: The results of this research is a prototype of multi station rebounder tool as a guide for training instrument based on independent football.
Conclusions: Has been produce the prototype of multi station rebounder tool as a guide for training instrument based on independent football, 2. The prototype of training independent rebounder instrument have to guiding especially for football, and 3. The training process can do it more effective and efficient than before.

Keywords: Development, Football, Multi Station, Rebounder

INTRODUCTION

The development and change of time demands that humans be more productive in any case. Science and Technology is one form that coincides with its development. Knowledge and Technology has entered the field of sports that aims to facilitate and improve sports achievements in the world, as in Law No. 3 of 2005 Article 20 paragraph 1 which reads "Sports achievement is intended as an effort to improve the ability and potential of sportsmen in order to improve dignity and dignity of the nation".

The rapid advance of Science and Technology (IPTEK) cannot be denied that new innovations are emerging as a solution of the problem as per the needs of the times. Advances in Science Technology or Science and Technology have helped a lot of human activities in various activities, especially for sports that help in training and games. IPTEK support in the field of sports is very influential on the athlete achievement. UU No. 3 of 2005 Article 20 paragraph 3 explains that "Achievement implemented through the process of development and development in a planned, tiered and sustainable with the support of science and technology sports. From the phrase states that science and technology have a positive influence for the progress of national sports achievement. Likewise that is expressed by (Sri Haryono dkk, 2013: 1) Achievement is influenced by two factors, namely: (1) Internal factors of athletes, including physical ability, intelligence, psychomotor and affective, (2) external factors from athletes, namely factors supporting between others: coaches, parental support, availability of infrastructure, training programs, research results, neighborhood work or school, community, close friends and others

Use of science and technology in the field of sports is not small. The usefulness of science and technology itself is very diverse and complex to help trainers in designing the method of exercise and even help athletes in training, games and exercises independently. Researchers as academics in the field of sports, especially in coaching realize the importance of application of science and technology in the process of training and athlete development, because one of the benefits of sports technology products is to facilitate in sharing methods and variations of exercise

Football includes a type of game that consists of a combination of elements of motion that takes a long time to master the basic techniques well. The basic technique of football consists of techniques of kicking the ball, holding the ball, dribbling the ball, heading the ball, deception, snatching the ball, throwing in, and goalkeeping techniques (Luxbacher, 1992: 42).

According to Herwai (2004: 21-24) the basic motion of the game of soccer includes: (1) motion or technique without the ball. During a soccer game, the player's attack must be able to run with short or long strides to change the running speed. Other movements such as walking, jumping, jumping, jumping, rolling, turning, turning, twisting and stopping abruptly. (2) motion or technique with the ball including: the ability of motion or technique with the ball include: (a) Introduction of ball with body parts (ball feeling), (b) passing ball, (c) kicking the ball into the goal (shooting) (d) dribbling, (e) receiving the ball and the ball (receiving and controlling the ball), (f) heading the ball (heading), (g) faking (feinting, (h) taking the ball (sliding), (i) throw-in, (j) goal keeping. Of some things or previous basic motion elements, judging by the importance of motion or basic technique, the player and coach must pay special attention to every exercise especially if new stage of early age coaching.

Attention is the exercise. It means to improve and direct the ability of motion or basic technique to perfect movement. The motion in question is motion that can help the player achieve a good game efficiently and effectively. According to Sukadiyanto (2011: 13) The purpose of the exercise in general is to help coaches, teachers to exercise exercise and have the ability to conceptual and skills in helping to reveal the potential of sportsmen to reach the peak of achievement.

The basic technique is a technique that belongs to the foundation (base) is the most basic training menu aimed at developing basic skills required by all players. Building a solid foundation is a must. Just as people build houses, the stronger the foundations, the greater the shape and variety of the building. So the importance of technical training and basic motion on football players need special attention in running the process of coaching and training. So practitioners and experts in the field of football play an active role in its development, as academics can make a breakthrough by making technology in an effort to improve the technique and basic motion of players.

The observations that researchers have done in most soccer training institutions such as the Football School (SSB) in DIY with the objective of observation are to know "is there a tool that helps in the process of training basic soccer techniques that can be used with multipurpose functions?" The results obtained in general shows that some tools that support the process of training techniques and basic soccer include: cone, marker, stake, goal and ball. Some variations with the tool are like to train agility, speed, accuracy and other strength, while for the technique of passing, ball control, shooting, heading, catching the ball (goalkeeper) is still lacking the means or tools. Though the technique component is very important in effective and efficient game. Researchers also observed exercises on some SSBs in DIY regarding the training process, most SSBs apply training schedules approximately three times a week with the duration of each exercise two to three hours. The researchers found that the problem of ineffective exercise in some SSBs where the number of pupils with coaches is unbalanced in ratios has an impact on the lack of maximum attention to the development of each student.

Based on this background, the researcher is interested to develop the tool "Multi Station Rebounder Tool as a Guide for Instrument of Basic Training of Football Based on Independence".

METHOD

The research used in this research is research development (and development). Called research-based development (research-based development). According Sugiyono (2012: 407), development research method is a research method used to produce a particular product, and review the effectiveness of the product. In other words, to produce a particular product required needs analysis and to test the effectiveness of the product. (Add a reference method R n D).

RESULTS

Product Specifications

The products produced through this development research have the following specifications:

1. Multifunctional Rebounder tool for basic soccer technique practice Net-sized rebound: 150 cm x 150 cm, goal: 150 cm x 200 cm
2. Framework made of iron and aluminum with color combination of greatness UNY, FIK and PKO is a combination of blue, yellow and red.
3. The rebounder web is made of nylon strings on the back of the top, bottom rear, left and right sides and the front that can be used as a medium for variation of target or goal.

Figure 1. Multi Station Rebounder Tool as a Guide for Instrument of Basic Training of Football Based on Independence

DISCUSSION

A. Descriptive Theory

1. The nature of the Coaching Media

a) Definition of the Nature of the Coaching Media

The coach is a professional whose job is to help the sportsman and team improve the performance of the sport. Since the training is a profession, the trainer is expected to provide its services in accordance with the standards / professional sizes that exist. One professional standard specifies that the service should be provided in accordance with the latest development of scientific knowledge of the field. So, it is important for the trainer to be an active consumer research produced by sports scientists.

To optimize the appearance, ensure safety and improve the welfare of the athlete. The trainers should regularly adjust to the latest developments and change their training practices. This kind of change can occur only when the coach (Dwijowinoto, 1993: 5):

1. Have an understanding of the established principles of each field of knowledge

2. Regularly seeking new knowledge in sports science. Trainers need not be scientists in the true sense, but to become professionals, coaches must be an active consumer of scientific information and apply them.

Coaching is often regarded as one of the most interesting and satisfying professions of all professions. Many trainers are greatly admired by the community and respected by their athletes. Many trainers are truly skilled in human movement and skilled throughout their career as trusted master teachers. Many coaches truly love their profession and will not exchange it with others. Many trainers regularly produce team and champion sportsmen. Indeed the coaching can be a very pleasant and satisfying work (Dwijowinoto,1993: 1).

But some people who pursue a coaching career get it as unpleasant or satisfying. Often, these people start with a picture of ideal coaching, which will ultimately only be discouraged and disappointed. Prospective trainers must know that success does not always await everyone who plunges into the world of coaching. Like any other profession, coaching requires a passionate coach (Dwijowinoto, 1993: 1):

1. Have the basic pleasure and the required properties
2. Have skills and knowledge that increase the likelihood of success.

b) Explosion of Knowledge in the Science of Coaching

There are times when a trainer is needed is a passion for working with sportsmen and basic sports knowledge. First, successful peers must understand the principles of science that can explain and show the appearance of the sportsman.

The knowledge boom in the science of coaching has reached an amazing profession. In the United States, many colleges and universities support research aimed at researching human movements. Many new research magazines are being published to accommodate the growing number of studies generated by various sports sciences. As sport grows increasingly important and becomes a real part of American society, scientists of various disciplines use their talents to study athletes and their performances (Dwijowinoto, 1993: 2).

c) Scientific Approach to Coaching

Most established coaches argue that the successful training is part art and some other science. This implies that training demands creativity and interpretation of individuals and situations. The authors agree with this opinion. Truly the successful coach must develop a coaching opinion with its own cirri and through experience must develop a "sixth sense" that leads them into making decisions. However, the artistic and creative aspect of coaching must be based on a solid science base. There is no level of creativity that will result in success / success if the scientific basis of training practice is less than perfect (Dwijowinoto, 1993: 3).

2. Basic Technical Techniques of Soccer Game

The basic techniques of soccer games include baiting the ball, kicking the ball and heading the ball. According Sucipto, et al. (2000: 17), the basic techniques of football games are as follows:

a. Kick

Aim to feed, shoot at goal and sweep to thwart the opponent's attack. Some kind of kick, ie kicking by using inner legs, outer legs, back and lower back.

b. Stop

Aim to control the ball. Some kind of that is to stop the ball with the inner leg, stop the ball with thighs, and stop the ball with thighs and stop the ball with the chest.

c. Dribbling

Aiming to approach the target distance to pass through the opponent, inhibit the game. Some of the kind is dribble with the outer legs, inner legs and with the back foot.

d. Head

Aim to feed, score goals and break the opponent's attack. Some kinds of that is headed the ball by standing and jumping.

e. Grabs

Aim to seize the ball from the opponent. Grab the ball done while standing and gliding.

f. Throw in

Can be done with prefix or no prefix

g. Keep the goalkeeper

It is the last defense in football. The guarding of the goal covers capturing the ball, throwing the ball, and kicking the ball.

While the division of basic techniques according to Soekamti (1984: 17) consists of two kinds:

a. Non-sphere motion techniques that include
1) Jumping and jumping.
2) Relying on no balls or fake movement
3) Run and change direction

b. Technique of movement with ball covering
1) Kick the ball.
2) Receive the ball.
3) Cropped the ball
4) Fooling motion with the ball
5) Seize the ball
6) Dribble
7) Grabbing the ball

In practice, the two basic techniques are always happening and done in the game. Basic techniques without balls and basic techniques with balls must be able to be combined in game situations as needed.

According Komarudin (2005: 38), the outline of soccer techniques consists of:

a. Basic Controls

1) Ball Control

Is the ability of players when receiving the ball, then try to master it until the moment the player will pass the ball to his friend. The ball can be done with all the body parts that are allowed in the legs, thigh, chest and head.

2) Dribbling Ball

One of the exciting spectacles in football is the ability of a player who has mastered the ball technique well and the dribbling is through his enemy (dribbling). The goal of dribbling is through the opponent, directing the ball into empty space, escaping from the opponent's escort, opening up space for comrades, and creating chances to shoot into the opposing goal. According to Danny Mielke (2007: 1), "Dribbling is a basic skill in football because all players must be able to control the ball while moving, standing, or preparing to do an operand or a shot." Dribbling can be done using the player's inner legs, the outer legs and the back foot.

b. Kicking the ball (Passing)

According to Danny Mielke (2007: 19), "Passing is the art of moving the ball momentum from one player to another player". Passing is best to use the foot, but other body parts can also be used. There are several passing that can be done among others as follows:

1) Short Operant (Short Passing)

A good short operant is an operand along the ground or down and the ball is steady. Short runs can be done well when the attitude of both feet is in the correct position.

2) Long Pass Operands (Long Passing)

Done when the player kicks the ball up to the target, the target kick usually has a relatively long distance compared to the short operand. The target of the kick is a teammate or direct placement on goal to score. Usually this kick is done when a foul on the midfield, goal kick, corner kick, as well as feedback from the side of the side of the field that often allows the striker to score goals.

3) Kicking the Ball Into The Goal (Shooting)

The occurrence of goals is the most anticipated moment by football fans in the world. Over 70% of the goals come from shooting or shooting. Kicking the ball into the goal with the feet can be done with all the legs, but technically so that the ball can be kicked properly can be done with the back foot or tortoise feet, the inside legs, outer legs, inner back and legs the outside part.

c. Heading the Ball (Heading)

One of the basic techniques that can be used in all positions and corners of the field is the ball, which is generally done with the head. This technique is done to pass and direct the ball to a friend, drove the ball in the defense area, controlled the ball, and made a header to score. Danny Mielke (2007: 53), heading can be a very powerful weapon when attacking and is a skillful defense.

d. Seize the Ball (Sliding Tackle-shielding)

Seize the ball in the game of football as long as the player who will take the ball is really about the ball that is controlled by the opposing player. The ball's goal is to hold back the opponent's players towards the defender's goal, postpone fast games, thwart attacks, drive the ball off the field and to counter-attack. In seizing the ball can be done by standing, floating or while dropping the body either from the front, side or back.

According to Danny Mielke (2007: 39) said that inward throwing can be a powerful weapon in the plan of a team attack. A very powerful inner throw can push the ball from the sidelines to the center of the field, down the sides of the field, or to the front of the goal

e. Throw In

When passing a field line by a team A player, team B player must throw in, so the game can be resumed. So the goal of throwing the ball is to revive the game after the ball out of the game field over the side line.

f. Goalkeeper

According Sucipto, et al (2000: 38) "goalkeeper is the last defense in the game of football". A soccer player to play football well and correctly, should be able to master the basic techniques of football. Some of the basic techniques with soccer ball that a football player needs to possess or control of is to kick the ball, receive the ball, dribble, shoot the ball, fake gestures, snatch the ball, throw in, and goalkeeping techniques. A player who has the basic technique the good ones tend to play good football too and will be neatly organized in teamwork.

2. M-station Rebunder

M-Stasion is a Danish product made of stainless steel and lightweight aluminum, Surface strings produce maximum rebound of the ball. M-Stasion is designed as an individual football practice as well as a group that uses it as controlling the ball, heading the ball and helping the kipper in practice (Bola otomotif, 2013). Many football clubs use this tool to train young and senior players one of them English club Arsenal.

Many overseas companies are producing these tools, with so many uses, more and more types of rebound tools are in production, for example one of the tools are:

Spot Elite

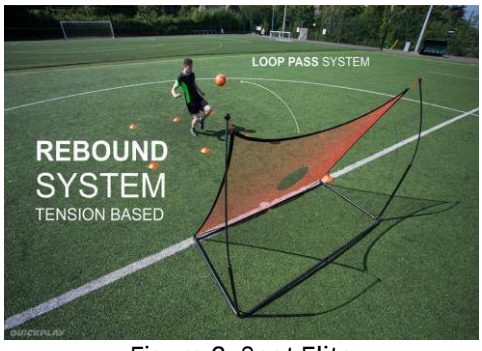

Figure 2: Spot Elite
(Source: www.quickplaysport.com/football-rebounders)

Spot Elite rebounder takes it to the next level. The system is now freestanding with unnecessary sandbags or weights. On 8'x6 'the coach has a big target to work with a soft pass system that will loop the ball more than ever. frames made with professional standards with heavy-duty coated steels and solid fiberglass core uprights. Spot Elite packs down and sets it up in two minutes so the only institutional rebounder is truly portable.

FEATURES:

- The SPOT Elite is the perfect rebounder for club or home use.
- Durable design that allows the SPOT Elite to be assembled in just 2 minutes; in or out in any weather without the need for sandbags or pegs.
- Designed and produced for high class, institutional level for use by club / academy or home use.
- The SPOT Elite is light and comes with all the pre-embedded poles and carrying bags making a fully portable rebounder.
- The SPOT Elite uses innovation and design to offer a large piece of soccer training equipment for individuals and clubs to work on a variety of skills and techniques to transfer to in-game situations.

DETAILS:

- Skip Dimension: L 244cm H 180cm D 110cm (8 'x 6' x 3.7 ').
- Weight: 13.5 kg.
- Packaged Size: Only 27.5cm x 13.5cm x 122cm.

Product Description of Multi Station Rebounder Tool as a Guide for Instrument of Basic Training of Football Based on Independence

Coaching Media was developed in the form of Rebounder tool or ball reflector. The initial product generated is called "Rebounder Tool for basic soccer technique practice" to provide an understanding of the exercises in improving the basic soccer techniques. Media product of coaching tools for football basic technique is developed with the concept of introducing ways to improve quality physically correct to the sports actors. Thus the development of ladder tools for football basic exercises is expected to be used as a source of training that is interesting and liked by children so it can be an alternative in introducing the way of improving the correct physical quality with ladder tools.

The rebounder tool product for the basic soccer technique exercises that has been developed has a unique shape as per usability, practical and can be adjusted according to reflection desire.

The development of this rebounder tool consists of a framework that can be connected in to and so that it can be easily carried anywhere, there is a hinge in the corner so it can make it easier to adjust the reflection of the ball.

CONCLUSION

The results of research development of Multi Station Rebounder Tool Development as a Guide for Training Instrument Based on Independent Football tools as a media training technique football is could have to use as a coaching medium to provide a method of training basic soccer training against the perpetrators of the sport

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DEVELOPMENT OF TOOL DETECTOR LJDOF-SDH FOR LONG JUMP AS A MEDIA FOR BASIC MOTOR OF TRACK AND FIELD LEARNING BASED ON SENSOR

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Abstract

Objectives: The objective of this study is development of tool detector LJDOF-SDH for long jump as a media for basic motor of track and field learning based on sensor.
Methods: In this study, researcher used the qualitative descriptive method with the secondary data for the basic principle think with the forum group discussion and forum group interview with the expert, stake holder and the student.
Results: The results of this research is a prototype of tool detector LJDOF-SDH for long jump as a media for basic motor of track and field learning based on sensor. The development of detector validation tools take off long jump based sensors as a means to validate the results take off long jump at the time of athletic basic motion learning, this validation detector tool is more effective than the previous operating tool.
Conclusion: After going through several stages of development of the operation of detector validation of the sensor-based off off by using laser sensor, this research can be concluded that is:
1. The creation of detector validais appliance take off long jump based sensor with specification:
a. CPU: ATmega328.
b. Data control: Arduino IDE
c. Sensor: ky-008.
d. Battery system: lipo 3cell 12V / 2500mah.
e. Indicator: 9G servo motor
f. Application of long jump detector
2. Product worthy to be used in terms of work system tools and equipment resistance to external disturbances such as shock resistance from the body athletes when take off.
3. Product analytical tool has been completed with guidance manual of use which have been prepared by researcher.

Keywords: Development, Long Jump, Sensor, Learning Process, Physical Education Department

INTRODUCTION

The progress of science and technology (Science and Technology) has been growing rapidly recently. This is marked by the number of new innovations emerging in various fields of science. Sports is a science that also really need assistance by the technology to support when doing such an activity.

The term "athletic" comes from the word "atlon" (greek) meaning "race" or "race". For us, athletics is a sport consisting of three race numbers, namely: street and running number, jump and throw. Americans, English and many other countries, including the region in ASEAN used the term "Track and Field", and the Dutch call the term "Atletiek" (Tamsir Riyadi, 1985: 1).

The athletic sports branch is a physical activity consisting of dynamic and harmonious basic movements, ie roads, jumps and throws (Edy Purnomo, 2007: 1). Of the four numbers are officially there are 44 events in the match in multievent activities such as PON, Sea Games and Olympics. Each number on the athletic branch has different characteristics. One of them in the long jump number of validity is determined by the judge about the validity of the jumper in making the jump.

In the long jump number there is a repulsion pedestal marked with a flat beam planted with a prefix and the surface of the landing site. This is a legitimate area for jumpers, whereas jumpers are declared invalid when touching the beam's edge closer to the landing site. The edges are

the frontier line of a plastisin indicator board mounted as a tool for the jury to see the validity of a jumper in a leap.

Please note that sometimes need carefulness and accuracy in paying attention to detail plastisin indicator board installed, so that lead to errors in declaring whether or not the results of exercise or learning especially long jump numbers. In this research the research team will add the sensor tool to minimize the error along with some counterparts as a marker of the jump result is good and correct or not that is visual and auditory and also equipped with leap recorder chip that can be transferred to computer data about quality of jump result so that later hope will greatly facilitate the lecturer pengels athletic basic motion courses in the assessment.

Perhaps this has been a concern for a long time and has been given a solution. For example, by using a video recording when jumping jumps with camera video recorder, to be able to determine the validity of a jumper. It cannot be denied, this is a good solution. However, video recorder cameras are usually used only in high-level prestice competitions, for example at the National and International levels. This is because to be able to use the video recorder camera must use a relatively expensive funds.

Based on these considerations, it is expected to develop a long jump validation detector tool that utilizes laser sensors that will be connected to sign lights, flags, data recorders of jumps that also use dual electrical system (AC-DC) and buzzer able to detect whether or not the jump results while doing repulsion as a simple solution. The smaller sensor size is easier to apply to many needs, in addition to accurate needs for the sensor also includes ease of use, sensitivity and price levels. In addition, by using AC-DC electrical technology then this tool will be very flexible to be used anywhere.

METHOD

This research uses research with research and development method. Research and development is a research method used to produce a specific product used research that needs analysis and to test the effectiveness of these products in order to function in the wider community, it is necessary research to test the effectiveness of these products (Sugiyono, 2011: 297).

According to Sumadi Suryabrata (2013: 77) the purpose of developmental research is to investigate patterns and growth sequences and changes as a function of time. This study aims to modify the tool on plastisin board in long jump by using sensor system KY-008 Laser, where this sensor will detect whether or not a jumper in jumping at the time of learning process of athletic basic motion and operational make it easier for lecturer and student to observe and see whether or not someone is in a leap.

RESULTS

Product design

The design of this product will use Ky-008 laser sensor, arduino nano for the brain of the program and photodiode to drain the flow of electricity or light to arduino uno which will in return and become a sign.

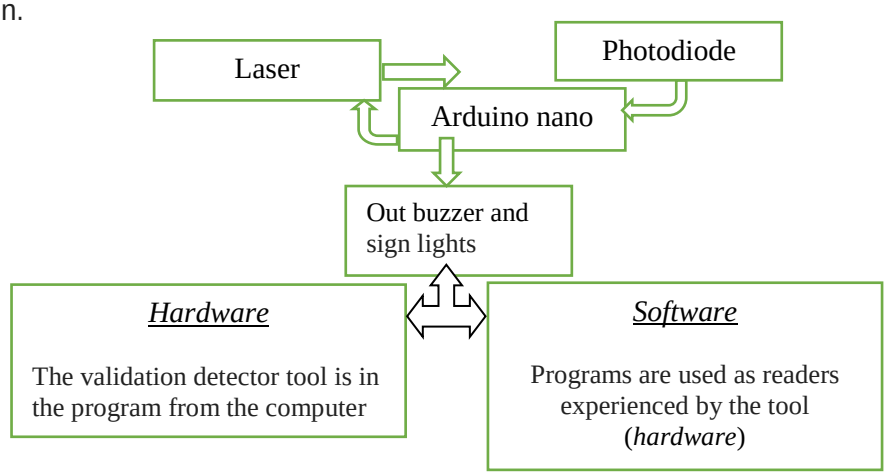

Figure 1. Technical product design flow

a. Scheme detector validation tool take off long jump based sensor

In this long jump off detection validation detector circuit, we use medium-sized electronic components so that it does not require much space to place this validation detector tool. In addition it is also calculated the function of these components in order to obtain the desired results. Therefore, the design of the tool should not be arbitrary.

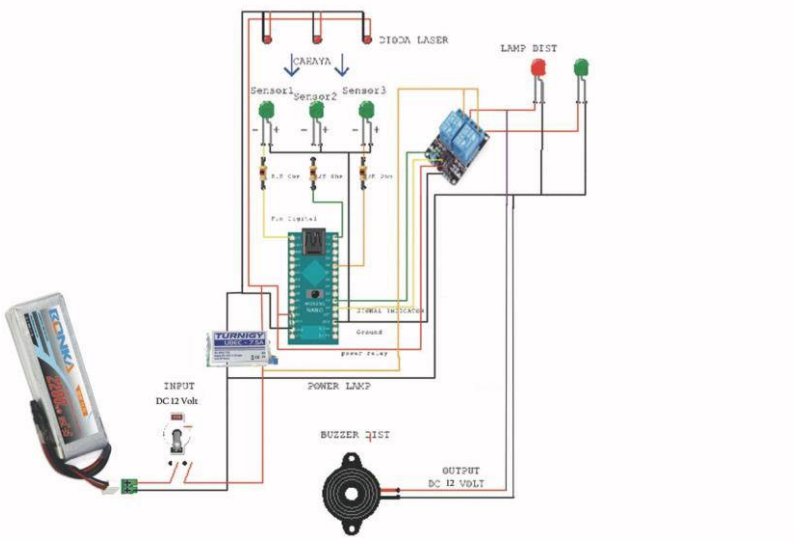

Figure 2. scheme of detector validation detection tool take off remote jump based sensor

b. Layout tool

The design of the tool should be tailored to the original purpose of manufacture. So the tool will work as expected. In addition, the physical form of the tool must also be in accordance with the place that has been in order to be easy during assembly.

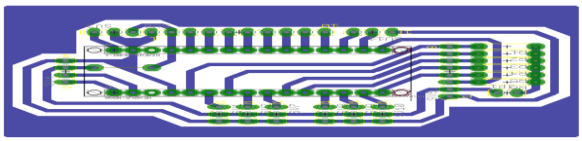

Figure 3. Design flow validation tool detector

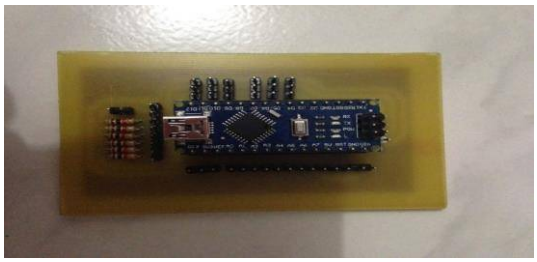

Figure 4. Physical form design of detector validation tool takes off long jump based sensor

DISCUSSION

Theory Description

1. The nature of long jump

According Mochamad Djumidar (2004: 65) jump is a movement to lift the body from a point to another point further or higher by square off run fast or slow by resting one leg and landing with the feet / other body members with a good balance. Jumps and jumps are almost the same word but have a difference between the two. Jump is done by using one foot as a pedestal while jumping using two legs as pedestal.

The long jump is the result of a horizontal velocity made from square off to the vertical motion produced from the foot of the pivot, the formulation of the feet of the two aspects was substantially derived from the foot of the pivot, the formulation of the feet of the two aspects yielded a parabolic motion force and the central point of gritafification (Djumidar, 2001: 12.40). "Long jump is the simplest and simplest number compared to other field numbers. This is because students prior to the long jump learning, this will result in students will quickly learn the long jump correctly "(Eddy Purnomo & Dapan, 2011: 93).

According Soegito, et al (1994: 60) the main elements of the sport's long jump consists of a movement run by the prefix, contrary motion, the movement of the air and ended up with the movement of the elements landing movement. Own style and contribute to results jump in the form of distance. The four movements must be performed in an unbroken series.

According Soegito, ddk (1994: 65) that must be paid attention to the teacher in keeping the far jump is:

a. Children to keep this speed keep the running speed to take the prefix until it reaches the pivot.
b. Use the explosive force of the foot while performing repulsion on the pivot with a fast and dynamic push.
c. Changing slightly left position when it reaches the pivot block, intended to reach a more upright body.
d. Use the arm compensation movement properly and appropriately.
e. Look at the landing movements appropriately.
f. Master the correct movement of the arms and legs in terms of straightening and bending.

The two main techniques used in long jumps are hanging techniques and kicking techniques (walking in the air). The kicking technique is more popular but both techniques have been used by elite athletes to reach more than 8.83 meters (29 feet) (Gerry A. Carr, 2003: 135).

Based on the description above, the long jump is a sport that is in desperate need of concentration and good technique movement, although the long jump is the number sport that is very simple but in the long jump, concentration and techniques is needed because if a jumper is not concentrating and taking account of measures to resist on a pedestal board, sometimes a jumper will experience a jump failure or so-called leap disqualification.

2. Long jump components

The long jump is a combined movement of the prefix, repulsion, time to float and land. The movements are repeated and between each other support so that the mastery of each movement becomes very important.

The components of the long jump component are as follows:

Figure 5. Overall motion (IAAF 2000: 35)

3. Board of support

The holder should be marked with a planted block aligned with the prefix and the surface of the landing site. The more beam edges with the rectangle are the pedestal boundary lines. Right after the boundary line has to be mounted plasticin indicator board as an aid to the jury, the construction of the pedestal should be rectangular, made of wood or other hard materials that match the length of length 1.2.2m and the width of the beam of 20 cm and the thickness of 10 cm, the beam must be white.

4. Plasticin indicator board

This board is a sturdy board with a width of 10 cm and a length of 1.22 cm made of wood or other materials suitable and should be painted in contrast to the beam, if possible the color of the

plasti should be different from the beam and indicator board. This board should be mounted on the grooves on the prefix path, just after the side of the beam nearest to the landing site. The surface should start from the surface of the support beam to a height of 7 mm. the edges shall have an edge slope and the edge closest to the prefix lane on the lid with the plastic layer extending 1 mm thick or the ends cut in such a way that the curvature when plastically filled will have a slope of a 45 ° angle.

5. Long jump detector based sensor detector component

a. Sensors

D Sharon, et al (1982), says the sensor is a device that serves to detect symptoms or signals derived from changes in energy such as electrical energy, physical energy, chemical energy, biological energy, mechanical energy and so on.

1) Characteristics of the sensor

In selecting the appropriate sensors and transducer equipment and in accordance with the system to be in the sensors it is necessary to note the following common sensor sensations.

2) Linearity Sensor

There are many sensors that produce output signals that change continuously in response to continuously changed inputs. For example, a heat sensor can generate voltage according to the heat it feels.

3) Sensitivity Sensor

Sensitivity will show how much sensor sensitivity to quantity is measured. Sensitivity is often expressed by numbers that indicate "change in output versus input change units". Some hot sensors can have a stated sensitivity with "one volt per degree", which means a one degree change in the input will result in a one volt change in the output. Other heat sensors may have a sensitivity of "two volts per degree", which means having twice the sensory of the first sensor. The sensor linearity also affects the sensitivity of the sensor. If the response is linear, then the sensitivity will also be the same for the overall measurement range. Sensors with responses to the image (b) will be more sensitive to high temperatures than low temperatures.

4) Sputter sensor time

The time response on the sensor shows how fast it responds to input changes. For example, an instrument with poor frequency response is a mercury thermometer. The input is temperature and the output is mercury position. Suppose that the temperature changes occur piecemeal and continuous with time.

b. Photodiode

Photodiode is a type of diode whose resistance varies when the light falling on the diode varies in intensity. In the dark the value of the resistance is so great that practically no current flows. The stronger the light that falls on the diode the smaller the value of resistance, so that the current flowing larger. If the photodiode of the p-n continuous-voltage connection is irradiated, the current will change linearly with the increase of the applied light flux at the junction.

Figure 6. *Photodiode (ryankudeta.wordpress.com)*

Photodiodes commonly used are silicon (Si) or gallium arsenide (GaAs), and others include indium antimonide (InSb), indium arsenide (InAs), lead selenide (PbSe), and tin sulfide (PBS). These materials absorb light through the characteristics of the wavelength range, for example: 250 nm to 1100 for nm silicon, and 800 nm to 2.0 μm for GaAs.

The photo diode is a type of diode that serves to detect light. Unlike the usual diode, this electronics component will convert light into electric current. Light that can be detected by this photo diode ranging from infrared light, visible light, ultra-purple to X-rays. Photo diode applications ranging from automobiles on public roadways automatically, camera light gauges as well as some medical equipment.

c. Buzzer

Buzzer Electrical is an electronic component that can convert electrical signals into vibrations of sound. In general, Buzzer which is an audio device is often used in the series of anti-theft, Alarm on Watches, House Bell, Reverse Warning on Trucks and other danger warning devices. Buzzer types are often found and used is a type of Buzzer Piezoelectric, this is because Buzzer Piezoelectric has many advantages such as cheaper, relatively lighter and easier in combining it to other Electronics Circuit.

Figure 7. Buzzer *(teknikelektronika.com)*

d. Arduino Nano

Arduino Nano is one of the microcontroller development board that is small, complete and supports the use of breadboard. Arduino Nano was created with ATmega328 microcontroller base (for Arduino Nano version 3.x) or ATmega 168 (for Arduino version 2.x). Arduino Nano more or less has the same functionality as Arduino Duemilanove, but in different packages. Arduino Nano does not include DC type Jack jacks, and is connected to a computer using a Mini-B USB port. Arduino Nano is designed and manufactured by Gravitech company.

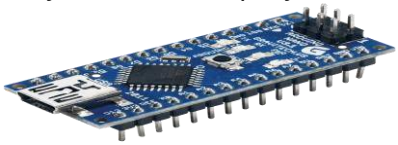

Figure 8. Arduino nano *(ilearning.me)*

Arduino Nano can be activated via a Mini-B USB connection, or through an external power supply with an unregulated voltage between 6-20 Volts connected via pin 30 or VIN pin, or via an external power supply with a 5-volt regulated voltage via pin 27 or 5V pin . The resources will be automatically selected from a higher voltage source. The FT232L FT232L chip on the Arduino Nano will be active when powered via USB, when the Arduino Nano is powered from outside (Non-USB) the FTDI Chip is off and the 3.3V pin is unavailable, while the TX and RX LEDs blinks when digital pins 0 and 1 are in HIGH position.

e. Software arduino idea

The IDE stands for Integrated Developtment Enviroenment, or simply an integrated environment used for development. Referred to as the environment because through this software Arduino done programming to perform the functions embedded through the programming syntax. Arduino uses its own programming language that resembles the C language. Arduino programming language (Sketch) has been made changes to facilitate beginners in doing the programming of the original language. Prior to being sold to the market, the Arduino microcontroller IC has been embedded in a program called Bootlader that serves as a mediator between the Arduino compiler and the microcontroller.

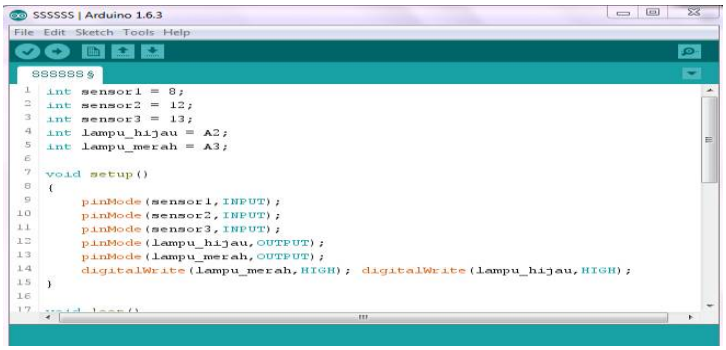

Figure 9. Software arduino ide *(sinauarduino.com)*

Programs written with the use of Arduino Software (IDE) are referred to as sketch. Sketch is written in a text editor and stored in a file with the .ino extension. The text editor of Arduino Software has features like cutting / pasting and seraching / replacing that allow you to write program code.

In Arduino IDE Software, there is a kind of black message box that displays the status, such as error messages, compile, and upload the program. At the far right of the Arduino IDE Sotware, shows the configured board along with the COM Ports used.

f. Batre li-po 3c

Lithium Polymer Battery or commonly called with LiPo is one type of battery that is often used in the world of RC. Primarily for RC type aircraft and helicopters.

LiPo batteries do not use liquids as electrolytes but instead use dry polymer electrodes that are shaped like thin film plastic coatings. This film layer is arranged in layers between the anode and the cathode which results in ion exchange. With this method LiPo batteries can be made in various shapes and sizes. Outside of the advantages of the LiPo battery architecture, there is also a drawback of weak ion exchange flow occurring via dry polymer electrolytes. This causes a decrease in charging and discharging rate. This problem can actually be overcome by heating the battery causing ion exchange to be faster, but this method is considered not to be applied to everyday circumstances. If scientists can solve this problem then the security risks in batera lithium type will be greatly reduced.

Figure 10. Batre Li-po 3S

1) Voltage

In NiCad or NiMH batteries each cell has 1.2 volts while the Lipo battery has a rating of 3.7 volts per cell. The advantage is that high battery voltage can be achieved by using fewer number of cells.

On any LiPo battery pack besides the voltage there is a label symbolized by "S". Here "S" means cell owned by a battery pack (battery pack). While numbers in front of symbols indicate the number of cells and usually range between 2-6S (although sometimes there are 10S). Here are some examples of LiPo battery notation.

a) 3.7 volt battery = 1 cell x 3.7 volts
b) 7.4 volt battery = 2 cells x 3.7 volts (2S)
c) 11.1 volt battery = 3 cells x 3.7 volts (3S)
d) 14.8 volt battery = 4 cells x 3.7 volts (4S)
e) 18.5 volt battery = 5 cells x 3.7 volts (5S)
f) 22.2 volt battery = 6 cells x 3.7 volts (6S)

2) Capacity

Battery capacity shows how much energy a battery can store and is indicated in miliampere hours (mAh). This notation is another way of saying how much load can be charged to a battery for 1 hour, after which 1 hour the battery will be completely discharged.

For example a RC LiPo battery that has a 1000 mAh rating will be completely discharged if given a load of 1000 miliampere for 1 hour. If the same battery is loaded 500 miliampere, then the battery will be completely discharged after for 2 hours. So even if the load is increased to 15,000 miliampere (15 Amps) then the energy in the battery akah used up after only 4 minutes. (15 Amp is the number of loads commonly used in 400 class RCs). As has been explained, with such large current

loads it is an advantage when using a battery with a larger capacity (eg 2000 mAh). That way the discharge time will increase to 8 minutes.

3) Discharge Rate

The usual discharge rate symbolized by "C" is a notation that states how fast a battery can be safely discharged. In accordance with the above explanation that the electrical energy in the LiPo battery is derived from the exchange of ions from the anode to the cathode. The faster ion exchange that can occur then means the value of "" C ".

A battery with a 10C discharge rate means that the battery can be discharged 10 times the actual beterai capacity. so too 15C means 15 times, and 20C means 20 times. etc.

Let's use the above 1000 mAh battery example as an example. If the battery has a 10C rating then the battery can withstand a maximum load of up to 10,000 miliampere or 10 Ampere. (10 x 1000 miliampere = 10 Ampere). This figure means equal to 166 mA per minute, then the 1000 mAh battery energy will be exhausted in 6 minutes. This figure is derived calculated by calculating the amount of current per minute. 1000 mAh divided by 60 minutes = 16.6 mA per minute. Then then multiply 16.6 with the C rating (in this case 35) = 166 mA load per minute. Then divide 1000 by 166 = 6.02 minutes.

4) Internal Resistance

Internal Resistance is a number indicating the rate of resistance contained in the battery component. This resistance will determine the speed of ionization from the anode to the cathode. There are three main advantages offered by LiPo battery type batteries than other types such as NiCad or NiMH are: LiPo battery has a light weight and is available in various shapes and sizes a) LiPo battery has a large electrical energy storage capacity b) The LiPo battery has a high energy discharge rate, which is very useful in the RC field. In addition to the advantages it has, this type of battery also has several disadvantages, namely: (1) LiPo battery price is still quite expensive when compared with NiCad and NiMH batteries (2) High performance of LiPo batteries must be paid for shorter lifespan. The LiPo battery age is about 300-400 times the 31 recharge cycle. In accordance with the treatment given on the batteries. (3) Security reasons. LiPo batteries use a combustible electrolyte. (4) LiPo batteries require special handling to last a long time. Charging, Discharging, and storage can affect the age of this type of battery.

g. Ubec

Ubec 3A 5V Changing the voltage, high to low or vice versa, requires the right circuit, so that power can be delivered with the highest level of efficiency possible. Lowering the voltage by using a regulator IC like the 7805, is very commonly used. This regulator has the ability to handle currents up to 1A, with a minimum Vin equal to 7V, to produce 5V output. With a simple calculation, if Vin = 9V, then the power dissipation ~ 4 Watts, one large enough value (heat). Or, using a LDO type linear regulator, like 2940, which also has the ability to handle currents up to 1A, with a minimum Vin equal to 5.5V, to produce 5V output.

Figure 11. Ubec 3A 5V *(cristianto.tjahyadi.com)*

Another option is the switching regulator. For the need to supply a servo motor or other circuit that operates at a voltage level of 5V - 6V, it can use UBEC. UBEC - Universal Battery Elimination Circuit is an electronic circuit that takes power from a battery pack or other DC source, and lowers it to a voltage level of 5V or 6V. The maximum input voltage depends on the UBEC specification.

UBEC is usually used in applications requiring higher currents, and the device is capable of delivering power with efficiency up to 92%. When selecting UBEC, make sure the selected UBEC model has a current rating that fits the needs (load).

h. Servo 9g Motor

Servo motor is a device or rotary actuator (motor) designed with a closed-loop feedback control system (servo), so it can be set-up or set to determine and ensure the angular position of the motor output shaft. servo motor is a device consisting of DC motor, series of gear, control circuit and potentiometer. A series of gears attached to the DC motor shaft will slow the rotation of the shaft and increase the servo motor torque, while the potentiometer with the change of resistance when the motor rotates serves as a determinant of the rotation position of the servo motor shaft rotation.

The use of a closed-loop control system on the servo motor is useful for controlling the movement and the end position of the servo motor shaft. Simple explanation like this, the position of the output shaft will be in the sensor to know the position of the shaft is exactly as desired or not, and if not, then the input control will send a control signal to make the position of the axis exactly at the desired position. For more details about closed-loop control systems, consider simple examples of some other applications of closed-loop control systems, such as setting temperature on air conditioners, refrigerators, irons and so on.

Servo motors are commonly used in industrial applications, but they are also used in many other applications such as radio controlled toy cars, robots, aircraft, and so on.

Figure 12. Motor servo 9g *(elektronika-dasar.web.id)*

There are two types of servo motors, AC and DC servo motors. AC servo motors are more able to handle high currents or heavy loads, so it is often applied to industrial machines. While DC servo motors are usually more suitable for use in smaller applications. And when distinguished by rotation, there are generally two types of servo motors that are on the market, the servo rotation motor 180 and servo rotation continuous.

1) Standard servo motor (servo rotation 180) is the most common type of servo motor, where the output spindle is limited only 90 towards the right and 90 towards the left. In other words the total round is only half circle or 180 .
2) Motor servo rotation continuous is a type of servo motor that is actually the same as the standard servo type, it's just the rotation of the axis without limitation or in other words can rotate continuously, either to the right or left.
3) The working principle of servo motor. Servo motors are controlled by providing pulse width modulation (PWM) signals via control cables. The width of the control signal pulse provided will determine the angular position of the rotation of the servo motor shaft. For example, a pulse width of 1.5 ms (milli seconds) will rotate the servo motor shaft to a 90 angle position. If the pulse is shorter than 1.5 ms it will rotate to the position 0 or to the left (counterclockwise), whereas if the pulse is given longer than 1.5 ms then the servo motor shaft will rotate toward the position 180 or to the right (clockwise). More details see the picture below.

i. Power supply

Switching power suplly is a power supply design with good power efficiency. Currently electronic devices that use the adapter more and more diverse. Starting from cheap electronic equipment such as radios to mobile phones. The need for an adapter as an alternative as a battery replacement is preferred because the battery can not last long and automatically make the operational cost of an electronic device becomes larger. With an adapter no longer needed the battery but its weakness can not be carried easily because the adapter must always be connected to the PLN power grid.

Figure 13. power supply

But even so the adapter is still used. Of the various adapter available in the market, the conventional adapter with a voltage-lowering transformer and a simple voltage regulator is more common than an adapter with switching technology.

Adapter is also known as power supply. Good supply power should be able to provide good regulatory stress and be able to provide sufficient current to the load. The unregulated voltage at the supplanted power output may cause the electronic equipment to use the power supply to be damaged, especially the voltage regulation section (if any) but if the equipment does not have an internal voltage regulation circuit then it is certain that the electronic equipment will be damaged.

j. Ftdi

The FT232RL module is a USB signal conversion module to a reliable and practical TTL / UART (USB-to-TTL Converter) signal for use in microcontroller-based electronics circuits, so your handheld electronics device can communicate with other devices via USB standard communications.

This module can be used as a USB-to-serial adapter for arduino boards that do not have on-board USB functions such as Arduino Pro Mini.

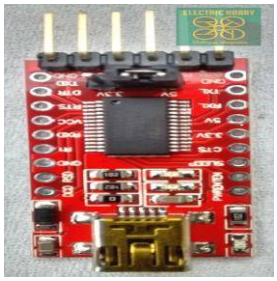

Figure 14. Ftdi

The attached USB connector is a female mini-B type connector. For Linux / MacOS / X users no driver is required to access this electronic component because the operating system will automatically recognize this USB chip and install the appropriate driver automatically.

Note: This module already includes a data connection cable, you do not need to purchase a Standard-A / Male to Mini-A / Male USB Connector Cable cable separately.

For the Windows operating system, please download the FTDI driver at the link listed below. There are two kinds of drivers, VCP (Virtual Communication Port, COMxx) that works like a regular COM port and Direct Driver (D2xx) for quick access via API (Application Programming Interface).

By default, this module works on a 5V voltage. If desired, cut the track jumper on the back of the PCB with the cutter, then connect (short) the middle pad with the 3.3V pad (see the picture on the pin configuration section below). If you often work with both levels of voltage, our electronics components store also sells FTDI-232 / DVS which has a voltage-selector jumper so there is no need to do this hacks.

k. Visual video

Visual Studio 2010 is basically a computer programming language. Where the understanding of the programming language is the commands or instructions understood by the computer to perform certain tasks.

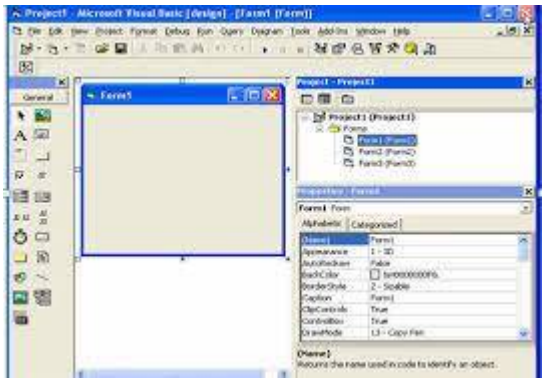

Figure 15. visual video display

Visual Studio 2010 (often referred to as VB .Net 2010) in addition to being called a programming language, is also often referred to as a tool to generate windows-based application programs. Some of the capabilities or benefits of Visual Studio 2010 include:

1. To create a windows based application program.
2. To create program helper objects such as, for example: ActiveX controls, Help files, Internet applications and so on.
3. Test the program (debugging) and generate EXE ending programs that are executable or can be directly executed.

Visual Studio 2010 is a fairly easy language to learn. For novice programmers who want to learn the program, the Visual Studio environment can help make the program in the blink of an eye. As for advanced programmers, great ability can be used to create complex programs, such as a net-working environment or client server.

Visual Studio language is quite simple and uses commonly used English words. We no longer need to memorize syntax or various language formats, in Visual Basic everything is provided in the choices that are left to be taken as needed. In addition, the visual development tools make it easy for us to develop Windows-based applications, are mouse-driven and highly versatile.

A Brief History of Visual Studio 2010

Here are some important points in the history of its development:

1. First released in the name of Visual Basic issued in 1991, the Visual Basic is still based on DOS and for Windows
2. Visual Basic 3.0 was released in 1993
3. Visual Basic 4.0 was released in 1994 with support for 32 bit applications
4. Visual Basic 6.0 was released at the end of 1998
5. Visual basic for next is the .Net version released in early 2002
6. In 2003 Visual Studio 2003 was released to improve the performance of Visual Studio 2002 by launching the .NET Framework version 1.1.
7. In 2005 Microsoft issued Visual Basic Version 8.0 or commonly called Microsoft Visual Studio 2005.
8. In 2008 Microsoft also issued version 9.0 or commonly called Microsoft Visual Studio 2008.
9. Until the year 2010 Visual Studio is already in version 10.0 or commonly called Microsoft Visual Studio 2010, which in it has added a new programming language that is F # which is a refinement of previous versions.

Visual Studio Visuals 2010

Some of the features of Visual Studio 2010 include:

- Using a programming platform called studio developer, which has the same look and tools as Visual C ++ and Visual J ++. That way you can migrate or learn other programming languages easily and quickly.
- Has a powerful compiler that can generate executable files faster and more efficiently than ever before.

- Has some new wizard additions. The wizard is a tool that simplifies the creation of an application by automating certain tasks.
- Visual Studio 2010 has several features for the development of various applications including; Windows Development, Web Development, Office Development, Sharepoint Development, Cloud Development (Windows Azure), Silverlight Tooling, Multi-Core Development, Customizable IDE.

CONCLUSION

The results of the development of detector validation tools take off long jump based sensors as a means to validate the results take off long jump at the time of athletic basic motion learning, this validation detector tool is more effective than the previous operating tool. By using this laser sensor along with other supporting components then students and lecturers only need to see and validate take off on a leap. After going through several stages of development of the operation of detector validation of the sensor-based off off by using laser sensor, this research can be concluded that is:

1. The creation of detector validais appliance take off long jump based sensor with specification:
   a. CPU: ATmega328.
   b. Data control: Arduino IDE
   c. Sensor: ky-008.
   d. Battery system: lipo 3cell 12V / 2500mah.
   e. Indicator: 9G servo motor
   f. Application of long jump detector
2. Product worthy to be used in terms of work system tools and equipment resistance to external disturbances such as shock resistance from the body athletes when take off.
3. Product analytical tool has been completed with guidance manual of use which have been prepared by researcher.

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Published by
Faculty of Sport Sciences
Universitas Negeri Yogyakarta

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FAKULTAS ILMU KEOLAHRAGAAN
UNIVERSITAS NEGERI YOGYAKARTA
1 Oktober 1951 - 1 Oktober 2017

Faculty of Sport Sciences Universitas Negeri Yogyakarta

ISBN 978-602-8429-74-0