

The Difference Between Physical Fitness and Motor Ability of State Junior High School Female Students Based on the Time Modification of Direct and Indirect Learning in Malang

Vinca Amanda Priutami¹, Febrita Paulina Heynoek^{2,*}

¹ Department of Physical And Health Education, Faculty of Sport Science Universitas Negeri Malang Malang, Indonesia

² Department of Physical And Health Education, Faculty of Sport Science Universitas Negeri Malang Malang, Indonesia

* Corresponding author Email: febrita.paulina.fik@um.ac.id

ABSTRACT

The aim of this research was to know the comparison of physical fitness and motor ability of junior high school female students based on the time modification of direct and indirect learning. The design of the research was descriptive quantitative by using causal comparative technique. Data collection technique used purposive sampling with 4 schools as the sample. The data were measured by using TKJI test and Barrow Motor Ability Test. Data analysis techniques used were One-Way Anova and One-Way Manova with hypothetical test $\alpha = 0.05$. From the result of Multivariate test, the level of physical fitness and motor ability that were analyzed altogether obtained a significance value of 0.000. The value was lesser than the significance value of 0.05, which means that there was a significant difference or, in other words, the alternative hypothesis was accepted.

Keywords: *physical fitness, motor ability, time modification.*

1. INTRODUCTION

Healthy is a condition of total well-being physically, mentally and socially, not only free from disease or disability [1]. Health is one of human activities supporter [2]. Health in adolescence is one of the important aspects in individual life cycle. Therefore, this period is the period where individual begins to learn and has functional ability and health.

Modernization in this era makes adolescent lifestyle less healthy. The unhealthy lifestyle causes stress and obesity. In Indonesia, according to Basic Health Research 2013 that the prevalence of fat on adolescent aged from 13-15 years old in Indonesia was 10.8 percent fat and 2.5 percent very fat (obesity) [3]. The increase of obesity in Indonesian adolescent was caused by lifestyle change, for example dietary pattern of high carbohydrate and fat as well as decreased rate of physical activity.

Physical activity or lack of sport gives bad impact on mental and physical health. Sufficient physical activity gives good effect and benefits. The advantage of daily workout covers increased strength and endurance, bone and muscle health, weight control, alleviate anxiety and stress, and increase self-confidence, school performance, and well-being [4].

Participation in elementary school on physical activity program related would increase concentration, getting good grades in mathematics, reading, and writing skills and reduce disruptive behavior [5]. Physical activity is an essential thing to maximize brain function. Research shows that the brain development related to movement and motor skill development. As the motor skill developed, brain neuron from the synapse that allows brain to function better. Moreover, physical activity reduces stress, improves mood, and increases the effect of calm among students.

School has an important role in giving chance to the students to involve in physical activity [6]. Physical

education is one of the ways to make the students active. In essence physical education is a process that produces holistic changes in individual quality physically and mentally as well as emotionally by utilizing physical activity and health [7]. The changes also related to physical development with their mind and soul. It can be said that school is an important facility for students to be actively involved in physical education as the improvement of individual quality physically, mentally and emotionally as well as physical development with their mind and soul.

State junior high school in Malang regency has used strengthening character education or Penguatan Pendidikan Karakter (PPK). In implementing PPK for 6 or 5 school days in a week in education unit of formal education path is given to each education unit together with School / Madrasa Committees and reported to Regional Government or ministry offices who handle the government affairs in the field of local religion in accordance with their respective authorities [8]. Based on the results obtained, there are 27 schools that have applied the system (PPK). The results of survey showed that 23 schools uses 3 hours of learning time for physical activity respectively and 10 schools uses 2 hours of physical activity and an hour for theory.

The aim of physical education, simply, is covering objectives in the domain of psychomotor, cognitive, and no less important in the affective domain [7]. Besides, physical education is intended to build the students' character to be physically and mentally healthy, and foster a sense of sportsmanship [9]. Current learning requires students to be active and think highly in the learning activities. This demand should be supported by good physical fitness because physical fitness would improve body health and academic achievement. Physical fitness for students obtained through physical education, sports, and health. Physical health is the essential aspect of psychomotor domain that relies on the biological development of organs [7]. This can be revealed that physical fitness is the efficient improvement of physiology functions that refer to organ quality aspect, such as strength (muscle), endurance (heart-lung), flexibility (muscles and joints).

Physical fitness is a measurement of a person's degree of health through a physical fitness test. Fitness is a physical where one's ability to do daily work efficiently without causing excessive fatigue so that he or she can still enjoy his or her free time [10]. Physical health is the essential aspect of psychomotor domain that relies on the biological development of organs [7]. The aim of physical fitness is improving physical quality in order to get physical fitness and good personal health degree. The improvement of physical quality would be beneficial if the workload provided is quite heavy and is carried out in a regular period of time, the

activity can affect body function. The changes in the function of body organs such as heart, lungs as well as the circulatory and respiratory system will be better and efficient [7].

Motor ability is the important component in supporting the performance of motor skills [11]. Motor ability is someone courage to be able to do various forms of movement in doing sports [12]. Motor Ability Test refers to a test whose objective is to make classification, guidance, and achievement determination.

FIT method is used as the reference on training load in which its frequency refers to the number of training sessions. Intensity is the level of effort or energy produced by an individual during training. Time is the duration spent during training. Type is a model of exercise. Physical and sport education impacts the students positively, the following FIT formula then can be applied: $F = \text{Frequency of exercise done in 3-5 times/week}$, $I = \text{Intensity, easy and moderate with Target Heart Range: } 50\% - 70\% \times (220 - \text{age})$, $T (\text{Time}) = \text{time spent during sport' activities is 30-60 minutes}$ [10]. According to the concept of learning time, the study of time-based variables in sports pedagogy has a lot of history as part of developing the understanding of daily life for teachers and students on physical education [13]. In learning activities, time is valuable resource for teachers. As in a research carried out in the classroom, time-based research provided one of the most widely known variables compared to teacher's effectiveness on physical education. Learning time variable is ALT-PE, ALT- PE is defined as the time that students spend appropriately/successfully on the subject [13].

SMP Negeri Kota Malang taught Physical Education by using modification model of different learning time which concerned on spent by the students. Among 24 state schools which apply KDP programs, 4 of them used modification of direct learning time covering the learning activities carried out for 3 hours with successive and indirect activities as the learning activities were conducted on 2 hour-physical activity model and 1 hour carried out in one day or on other days as structured-time pattern.

The structured time was very influential during class activities on the success or failure. The time variable was been studied mostly at the classroom level and it shown how the use of teacher time directly affected the students in spending their time, and impacted their opportunities in learning. In addition, at this level, teacher is very influential on students' achievement on regulating time instruction by maximizing the time that is directly related to learning and the students will really have the opportunity to practice their skills, be involved in game, and complete fitness tasks [13].

This research was intended to determine the comparison of physical fitness level and motor ability on female students at junior high school based on the modification of direct and indirect learning time.

2. METHOD

Descriptive research was used in this research. The researchers used quantitative descriptive research with comparative causal technique. To strengthen the data, this research used a test as quantitative type of research in since the obtained data were numerical data. The approach used in this research starts by identifying the influence of one variable on other variables, then looking for possible variables causing it [14].

During the implementation, the researcher compared the data related to causes and effect occurred while implementing the modification of physical education learning time in terms of physical fitness and motor ability level. The variables studied were physical fitness and motor ability. This research was carried out on the students with direct and indirect Physical Education learning time.

The population of this research were junior high school students located in Malang. The number of state junior high schools was 32 schools. Purposive sampling was applied in selecting the samples. Four junior high schools selected as the area of the research, namely SMP Negeri 8, 10, 22, 24.

The data collection method used in this research was measurement test technique that was physical fitness test on TKJI 2010 version and barrow motor ability test as well as the observation technique used to observe the implementation of the tests above. Based on the research purpose and consideration, the type of data obtained was ratio data and based on the independent variable which was as many as 2 variables covering the levels of physical fitness and motor ability. Then the data were analyzed through a test referring Multivariate Analysis Test (One-Way MANOVA). In testing the requirement, normality test was performed with Kolmogorov-smirnov technique and homogeneity test was done by using Levene test. Data analysis procedures were performed through SPSS version 23. Hypothesis verification was at significant level of $\alpha = 0.05$.

3. RESULTS

The test results of physical fitness and motor ability on female students of class VII and VIII at each junior high school for the age group of 13-15 years consisted of 5 sets of test items for physical fitness and 6 sets of test items for motor ability. Fitness test covered 50-meter running, bending elbows, sitting for 60 seconds, upright jumping, and 800running. Whereas Motor

Ability involved Standing Board Jump, Medicine Ball Put, Envelope Run, Wall Pass, and Run 60 Yard Dash.

Based on physical fitness data, it showed that female students who followed the modification of direct learning time were categorized excellent since 0 students got 0%. Good category revealed 7 students were at 9.72%, then the average category obtained 25 students at 41.67% and in the poor category had 32 students at 53.33%. Whereas, the inferior category was 0% or 0 student. Concerning the results of the students who followed the modification of indirect learning time, there are 0% with the number of students of 0 students in the excellent category. In the good category, 3 students obtained 5%; while in the average category, there were 25 students at 41.67%; then in the poor category, 35 students were into 48.33%. While in the inferior category, 0 student got 0%.

Based on the above results, they described that the students who did motor ability test based on modification of direct learning time in the excellent category was 1 student at 1.39% while in the good category, as many as 7 students obtained 9,72%. In the average category, there were 13 students at 18.06% and in the poor category, 27 students were at 37.50%. Meanwhile, in the excellent category; as many as 24 students got 33.33%. Then, the results of the motor ability test based on the modification of indirect learning time in the excellent category was 1 student or 1.67% then in the good category were 5 students as much as 8.33%. While in the average category as much as 20% or 12 students then in the poor category obtained 27 students or 41.67%. In the inferior category obtained 17 students or 28.33%.

Normality test in this research used Kolmogorov-Smirnov technique with the normality test result obtained significant values of the students' fitness with time modification of direct learning as much as 0.200 and the students with time modification of indirect learning as much as 0.200. While the significant value of the students' motor ability with time modification of indirect learning was 0.200. Whereas, the homogeneity test with Levene's Test technique obtained the result that the students with time modification of direct and indirect learning was 0.195 and the students' motor ability was 0.016.

Testing of hypothesis by using One-Way Anova technique and One-Way Manova. The results of hypothesis test are shown in Table 1.

Table 1. Anova test of the students's physical fitness

	Sum of squares	df	Mean square	F	Sig.
Between groups	92.832	1	92.831	1.016	0.315
Within groups	11878.170	130	91.371		
Total	11971.002	131			

Based on Table 1, the ANOVA test for physical fitness showed a significant value of 0.315. This value was higher (>) than the significance level of 0.05 which means that the alternative hypothesis was rejected.

Table 2. Anova test of the students's motor ability

	Sum of squares	df	Mean square	F	Sig.
Between groups	300.675	1	300.675	17.795	0.000*
Within groups	2196.970	130	16.900		
Total	2497.645	131			

The result of ANOVA test for motor ability revealed the significant value of 0.000. This value was lesser (<) than the significance level of 0.05 which means that the alternative hypothesis was accepted (Table 2).

Table 3. Multivariate test

Effect	Value	F	Hypothesis df	Error df	Sig.
Hotelling's Trace	0.147	9.481	2.000	129.000	0.000*

The result of multivariate test of the students' time modification of direct and indirect of Hotelling's Trace test showed the F value as much as 9.481^b with a significance value of 0.000. This value was lesser (<) than the significance level of 0.05 which means that the alternative hypothesis was accepted (Table 3).

4. DISCUSSION

The test results of the students whose school used time modification of direct and indirect learning had the better results than the students whose school used direct learning time. The components of physical fitness covered by strength, endurance of the pulmonary heart, muscular endurance, body composition, and flexibility. While physical fitness related to skills included agility, balance, power, coordination, speed and reaction time [15]. Physical fitness at moderate condition means

endurance to do activities without feeling significant fatigue in the ordinary stage. The other factors which influence fitness were speed and strength to do something with distance of time traveled. Power is the ability to do activities suddenly and quickly by using all power in a short time [16]. During the observation there was no significant power occurred.

Related to the physical fitness level at the age of 13-15 year old for an excellent category which means endurance, strength, speed and power were not visible. Physical fitness is the ability of someone to do relative long activities without significant fatigue and have energy reserves to use the spare time, therefore there several factors inhibited covering having no energy reserves to use the spare time [17]. At the beginning of learning activities, the students' energy must be intact, however between male and female students had different characteristics. The factor which influenced the students' physical fitness was menstruation, because it affected the students' physical activities and vice versa the physical activities affected women's menstruation cycle. There were no female students who showed explosion of activities that seemed fast and agile.

Female students who were at 13-15 year old experienced development changes from adolescence to adulthood [4]. This caused changes in development between childhood and adulthood which resulted in physical, cognitive, and psychosocial changes, also called adolescence. Women's physical changes were usually in the chest, hips and thighs. Changes in body shape of the female students provided certain psychological effects for them. These changes had an impact on the activities carried out.

Between schools which used time modification of direct and indirect learning found a significant comparison. The female students whose school used time modification of direct learning tended to be greater in the good category, this was normal because the students whose school used regular school policies by having the opportunity of extensive time use might not be utilized properly and vice versa.

Motor ability is the courage of someone to be able to do various forms of movement in doing sports [12]. However, optimizing the use of time used affected one's motor level. The tight schedule, regularity of time that was done continuously and regular teacher's supervision made children patterned with the habit of arriving on time and optimizing the use of time. When a child was racing against time, the child did something with the time prepared. A long time and a busy schedule caused boredom. The density of activities made the children lethargic to optimize their motor skills.

Between students who went to school using modification of direct learning time and students who went to school using modification of indirect learning

time, irregular things occurred, meant that not all categories in each school had the same power. Therefore, it was concluded that each school has advantages and disadvantages on each student.

5. CONCLUSION

Based on the results of analysis tests that had been carried out on the three hypotheses, stated that the conclusions obtained were in the first hypothesis which stated that there were no significant differences, in the second hypothesis stated that there were significant differences and in the third hypothesis stated that there were significant differences in physical fitness and motor ability of female students based on modification of direct and indirect learning time at State Junior High Schools in Malang. Based on the results of the analysis, it is suggested that these can be considered and maximized in learning time so as to improve physical fitness and motor ability.

REFERENCES

- [1] Ikatan Dokter Indonesia, "Kesehatan Anak," 2013.
- [2] G. Wiarto, Panduan Berolahraga Untuk Kesehatan Dan Kebugaran. Yogyakarta: Graha Ilmu, 2015.
- [3] Kementerian Kesehatan RI, "Riset Kesehatan Dasar," 2013.
- [4] D. E. Papalia and R. D. Feldman, Menyelami Perkembangan Manusia. Jakarta: Salemba Humanika, 2015.
- [5] S. K. Telljohann, C. W. Symons, and B. Pateman, Health Education Elementary and Middle School Applications. New York: McGraw-Hill, 2009.
- [6] California School Boards Association, "Moderate to Vigorous Physical Activity in Physical Education to Improve Health and Academic Outcomes," 2009. [Online]. Available: https://www.csba.org/GovernanceAndPolicyResources/DistrictPolicyServices/~media/CSBA/Files/GovernanceResources/PolicyNews_Briefs/StudentHealth/PhysEd_Activity/2009_11_FactSheet_ModerateToVigorous.ashx.
- [7] H. J. Husdarta, Manajemen Pendidikan Jasmani. Bandung: Alfabeta, 2015.
- [8] Peraturan Presiden Republik Indonesia No 87 Tahun 2017 tentang Penguatan Pendidikan Karakter. .
- [9] Undang-Undang Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional. .
- [10] D. P. Irianto, Bugar & Sehat dengan Berolahraga. Yogyakarta: Andi, 2006.
- [11] W. H. Edward, Motor Learning and Control. Canada: Yolanda Cossio, 2011.
- [12] A. Fenanlampir and M. Muhyi Faruq, Tes & Pengukuran dalam Olahraga. Yogyakarta: CV Andi Offset, 2015.
- [13] D. Kirk, The Handbook of Physical Education. London: Brithis Library Cataloguing, 2006.
- [14] H. Darmadi, Metode Penelitian Pendidikan dan Sosial. Bandung: Alfabeta, 2014.
- [15] C. Corbin, Concepts Of Physical Fitness. Americas, New York: McGraw-Hill, 2008.
- [16] A. Maksum and T. C. Mutohir, Sport Development Index. Jakarta: PT. Index, 2007.
- [17] M. Winarno, Dimensi Pembelajaran Pendidikan Jasmani Dan Olahraga. Malang: UM Press, 2006.