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THE INFLUENCE OF EXERCISE HABITS, EXERCISE MOTIVATION AND BODY MASS INDEX ON PHYSICAL FITNESS IN STUDENTS OF JUNIOR HIGH SCHOOL

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Abstract The purpose of this research was to determine the influence of exercise habits, exercise motivation and body mass index on the fitness in students of Junior High School 12 Bogor City. This research uses associative quantitative research methods, with test and non-test techniques. The analysis technique uses a path analysis approach. The population in this study were students in Junior High School 12 Bogor City with a sample of 80 students. The sample selection technique in this research used a simple random sampling method. Based on the results of this study, it can be interpreted that (1) There is a direct influence of exercise habits on body mass index with sig= 0.00 (2) There is no direct influence of exercise motivation on body mass index with sig= 0.177 (3) There is a direct influence of exercise habits on physical fitness with sig= 0.00 (4) There is a direct influence of exercise motivation on physical fitness with sig= 0.04 (5) There is a direct influence of body mass index on physical fitness with sig= 0.00 (6) There is no influence Indirect exercise habit through body mass index on physical fitness is 0.77 and (7) There is no indirect effect of exercise motivation through body mass index on physical fitness of 0.22.

Keywords: Junior High School; Exercise Motivation; Exercise Habits; Index Mass Body; Physical Fitness

INTRODUCTION

Regular physical activity is very beneficial for one's physical fitness. This physical fitness is the condition of a person in carrying out physical activities without feeling tired even after doing physical activities. Physical fitness is the ability to carry out daily activities or work and adapt to physical loads without causing excessive fatigue and still have energy reserves to enjoy leisure time or sudden work and be free from illness (Alamsyah, Hestiningih and Saraswati 2017). Someone will easily carry out daily activities if they have good physical fitness. U.S. The Department of Health and Human Services recommends exercising for at least 150 minutes per week. This activity must be based on the motivation of each individual, especially students in learning physical education.

Motivation to exercise as a psychological aspect that encourages students to exercise regularly and regularly. Ideally students are not only enthusiastic about learning physical education but can realize the importance of exercise for everyday life. Indicators of students realizing the importance of sports can be carried out by teachers, such as stimulating students to express

opinions about the benefits of exercise and the negative impact of lack of exercise.

Students who have an ideal body will experience relatively small movement barriers in physical learning. On the other hand, students who are overweight will experience relatively large obstacles because the mobility of students who have an ideal body will be easier than students who are underweight and overweight.

The 2021 Sport Development Index (SDI) results illustrate that there are still many indices with low results. This can be seen from the 2021 SDI which has been summarized below:

Index	Category	Total
Fittnes	Superior	2,43%
	Very well	3,43%
	Good	5,03%
	Currently	12,80%
	Not Enough	22,68%
Less		53,63%
	Active participation in sports	
	National (SDI 2021)	32,83%
	National (SDI 2006)	42%
Physical literacy : 1. Motivation and self-confidence 2. Physical competence 3. Knowledge and understanding 4. Engagement	Nasional	56%
Index mass Body (overweight)	National	27%
	Man	20,3 %
	Woman	33,9%



The 2021 SDI index with the four indices in the table above is included in the low category. The results of physical fitness which are included in the very poor category touch the number 53.63%. Then, the decline in active participation in sports was 9.17% of the results of the 2006 SDI. This was reinforced by the results of physical fitness in the webinar with the theme PJOK in New Paradigm Learning which was held by the Elementary School Directorate on Wednesday, October 27 2021, namely the number of students in the very active category only 2.1%. Judging from the excellent degree of physical fitness, it is only 0.14% (Directorate of Elementary Schools, 2021).

Learning physical education in schools is an appropriate activity for developing students' physical fitness. This activity can be presented with simple games to attract the attention of students, prevent boredom and make students see that education is a fun activity.

Physical fitness is the ability and ability of the body to make adjustments (adaptation) to the physical liberation given to it (from daily work) without causing excessive fatigue

(Muhajir in Rosmaini Hasibuan and Sri Wildani Siregar, 2017).

Physical fitness consists of several components. The components of physical fitness related to health are: heart and lung endurance, muscle endurance, muscle strength, body composition and flexibility. Then the components of physical fitness related to skills are: agility, balance, coordination, speed, explosiveness and reaction time (Johansyah Lubis, 2018)

Improving physical fitness requires a good respiratory system because breathing is important for one's survival. The purpose of the respiratory system is to get oxygen from the air to the body's tissues and get rid of carbon dioxide (Guyton et al, 2006). The vital capacity of the lungs is the maximum amount of air that an individual can inhale and exhale in one breath. The vital capacity of the lungs can be measured by asking the individual to make a maximum inspiration and then exhaling as much air as possible in his lungs into the measuring device (Corwin, 2009).

The physical fitness of each individual is different. The Indonesian Physical fitness test is very familiar to use for school students. This Indonesian physical fitness test is structured to



measure the level of physical fitness. The physical fitness test in this study was a group of adolescents aged 13-15 years, quoted from Johansyah Lubis' book (2018), consisting of:

1. Sprint 50 meters

This test aims to measure the speed that is carried out on a straight track or track and is not dangerous.

2. Hang your elbows (women) / Pull Up for 60 seconds (men);

This test aims to measure the strength and endurance of the arm and shoulder muscles.

3. Sit Up for 60 seconds

This test aims to measure the strength and endurance of the abdominal muscles.

4. Vertical Jump

This test aims to measure explosive power / explosive power.

5. Run 800 meters (women) / 1,000 meters (men). This test aims to measure cardiovascular, circulatory and respiratory endurance.

Exercise is one of the best ways to maintain a healthy body. Not only that, this physical activity is believed to produce ideal body weight.

U.S. The Department of Health and Human Services also recommends exercising for at least 150 minutes per week. According to the Ministry of Education and Culture, a person is advised to carry out good, measurable, and regular physical activity that needs to be done 3-5 times a week or every day for 30 minutes.

Sports activities must be based on awareness and motivation. Motivation according to Bimo Walgito in Erjati Abbas (2014) comes from the Latin word *movere* which means to move or to move. Basically this motivation departs from the motives that are owned by a person (Marno and Triyo, 2013) Motivation is defined as a power that exists in humans that encourages actions to move or act in achieving certain goals. According to Mc Donald in Kompri (2016) motivation is a change in energy within a person's personality which is characterized by the emergence of affective (feelings) and reactions to achieve goals.

Based on the study of motivation theory described above, the following are three important elements in Mc's theory. Donald. The description is as follows:

1. Purpose



Goals are the final result to be achieved by someone. A person's goals in terms of exercising for each person are different depending on what their needs are. The goals for exercising in Indonesia are regulated in Law 11 of 2022 concerning sports.

2. Feelings

Affective is related to a person's individual attitude. According to David R. Krathwohl, affective is a behavior that burdens feelings, emotions, or degrees of rejection or acceptance of an object.

3. Reaction / Motive

According to Sperling "Motive is defined as a tendency to activity, started by a drive and ended by an adjustment. The adjustment is said to satisfy the motive" (Mangkunegara, 2013).

Students who have good physical fitness will certainly have an impact on an ideal body. Body Mass Index (BMI) or Body Mass Index (BMI) is a tool or a simple way to monitor the nutritional status of adults, especially with regard to underweight and overweight (Supriasa, 2016). How to determine body mass index using the formula is as follows:

$$IMT = \frac{\text{Berat badan (kg)}}{\text{Tinggi badan (m)}^2}$$

Furthermore, the calculation results can be converted as follows:

IMT	Kategori
<- 3 SD	Sangat Kurus
<- 2 SD	Kurus
-2 SD sampai 1 SD	Normal
>1 SD	Gemuk
>2 SD	Obesitas

Table 1 Boddy Mass Index
Source: Kementerian Kesehatan RI

Based on the conditions on the field, having good physical fitness is important to carry out daily activities. Based on that, the researcher is interested in conducting a research entitled "The effect of exercise habits, exercise motivation and body mass index on physical fitness in junior high school students".

METHOD

This study uses associative quantitative research methods, with a quantitative approach and survey methods and using path analysis techniques. This study used four variables consisting of three exogenous variables (independent variables), namely exercise habits (X₁), exercise motivation (X₂), body mass index (X₃) and one endogenous variable (dependent



variable), namely physical fitness in junior high school students.

Population is a generalization area which consists of: objects/subjects that have certain quantity and characteristics determined by the researcher to be studied and then conclusions drawn. (Sugiyono, 2015). The population in this study were 688 students of Junior High School 12 Bogor City grades VIII and IX.

Research Instruments

The instruments used in this study are:

1. Physical fitness
 - a. Sprint 50 meters
 - b. Hang your elbows (women)/ pull up for 60 seconds (men);
 - c. Sit up for 60 seconds
 - d. Vertical jump
 - e. Run 800 meters (women) / 1,000 meters (men).
2. Exercise habits
Questionnaire with 1 question
3. Motivation to exercise
Questionnaire with 25 questions
4. Body mass index
Weight and height using the body mass index formula

DATA ANALYSIS

Data analysis techniques were carried out through two stages of

analysis, namely: descriptive and inferential data analysis. The following steps were taken before data analysis. That is: Descriptive statistics are statistics that are used to analyze data by describing or describing data that has been collected as it is without intending to make general conclusions or generalizations.

RESULTS

In Structural Model Path Coefficient 1, it is explained that the significance value of X_1 is 0.000. X_2 is 0.004, and X_3 is 0.000, which means that the value is less than or equal to 0.05 for variables X_1 , X_2 and X_3 . So it can be concluded that all data is related and significant to variable Y.

In Structural Model Path Coefficient 2, it is explained that the significance value of X_1 is 0.000. X_2 is 0.177, which means that the value is less than or equal to 0.05 for variable X_1 and the variable whose value is greater than 0.05 is X_2 . So it can be concluded that exercise habits are related to Body Mass Index and motivation to exercise is not related to Body Mass Index.

DISCUSSION

Based on the research results above, the following matters can be discussed as follows:



1. The individual test of the exercise habit variable on the body mass index of junior high school students obtained the path coefficient $X_1 = -0.455$ with a value of $\text{Sig.} = 0.000/2 = 0 < \alpha = 0.05$, so H_a is accepted and H_0 is rejected. This means that there is an influence of exercise habits on the body mass index of junior high school students.

Based on the results of research data analysis, it is shown that exercise habits have a negative effect on body mass index. The results of this data analysis mean that the higher a person's exercise habit, the lower their body mass index will be. This happens because exercise activities will burn calories in the body so that body weight is controlled and makes BMI normal.

However, basically to get a good body mass index it is not only enough to have good exercise habits, but you also have to follow a healthy lifestyle and eat nutritious food so there are other factors that must be considered in order to get good physical fitness. The results obtained in the research are in accordance with the results obtained by Humayrah (2009), who found that the habit of exercising for at least 60 minutes a week can reduce the risk of excessive increases in body mass index. These

results mean that exercise habits have a negative influence on body mass index.

2. The individual test of the exercise motivation variable on the body mass index of junior high school students obtained the path coefficient $X_2 = 0.137$ with a value of $\text{Sig.} = 0.177/2 = 0.06 > \alpha = 0.05$, so H_a is rejected and H_0 is accepted. This means that there is no direct influence of exercise motivation on the body mass index of junior high school students.

Based on the results of research data analysis, it is shown that motivation to exercise has no effect on body mass index. The results of this data analysis mean that someone who has high motivation to exercise does not necessarily have an ideal body mass index. This can happen because having an ideal body mass index is not only influenced by motivation to exercise, but must also be supported by other factors such as regular exercise, good nutritional intake and a healthy lifestyle to get an ideal body mass index.

The results of the study are in accordance with the findings of Weni, K., et al (2015) who found that teenagers who had excessive intake of macronutrients, frequently consumed fast food, were physically inactive, had



mothers and fathers with obese status, and did not eat breakfast. , there is a greater risk of obesity. In this study, it was not found that exercise motivation factors could influence the incidence of obesity in adolescents.

The results of this research are supported by Deviani U and Galih A.S (2017) entitled Factors that influence body mass index in adolescents aged 15-18 years at SMAN 14 Tangerang. The results of the study showed that there was a relationship between the variables body image (p-value = 0.002), physical activity (p-value = 0.000), breakfast habits (p-value = 0.049) and nutrient intake (p-value = 0.043) with the index body mass.

3. The individual test of the exercise habit variable on the physical fitness of junior high school students resulted in a path coefficient of $X_1 = 0.294$ with a value of $\text{Sig.} = 0.000/2 = 0.00 < \alpha = 0.05$, so H_a is accepted. This means that there is a direct influence of exercise habits on the physical fitness of junior high school students.

Based on the results of research data analysis, it is shown that exercise habits have a positive effect on physical fitness. The results of this data analysis mean that the higher a person's exercise

habit, the higher their level of physical fitness. Things that need to be considered when exercising are the form and need for exercise, frequency, intensity, time and type of exercise.

These results are in accordance with the research results of Dedy and Noorje (2022) which stated that sports and physical training models can encourage growth, physical development, improve motor skills, and reduce the risk of obesity. Apart from that, the benefits of sports and physical training models that are carried out regularly and in a programmed manner can improve physical fitness, especially for teenagers. So it can be interpreted that the habit of exercising has a positive influence on the physical fitness and health of teenagers.

4. The individual test of the exercise motivation on the fitness of junior high school students obtained the path coefficient $X_2 = -0.213$ with a value of $\text{Sig.} = 0.04/2 = 0.02 < \alpha = 0.05$, so that H_a was accepted and H_0 was rejected. This means that there is a direct influence of exercise motivation on physical fitness in students at SMPN 12 Bogor City.

Based on the results of research data analysis, it is shown that exercise motivation has a negative effect on



physical fitness. The results of this data analysis mean that the higher a person's motivation, the lower their level of physical fitness. This is because when collecting data there were students who were not honest in filling out the questionnaire, the students had not implemented the habit of exercising in their daily lives, which should be 3 - 5 per week with a duration of 30 minutes. This can be seen from the physical fitness score which is in the low category, then influenced by the weather being too hot during the physical fitness assessment, students have also never previously carried out a physical fitness assessment using the Indonesian Physical Fitness Test (TKJI) norms.

There are still students who have not serious about data collection. This can be seen from the joking attitude, the lack of facilities and infrastructure causing students to wait longer, such as the pull up pole, limited space for the vertical jump test. Other supporting factors must be balanced with a healthy lifestyle and eating nutritious food so that there are other factors that must be considered in order to achieve good physical fitness.

This result contradicts the findings of Prabowo, et al. (2022) who in

their research found that there was a significant direct influence of motivation on physical fitness of 16.81%. Meanwhile, Sepriadi (2017) stated that motivation to exercise has an influence on physical fitness levels by 15.93%.

5. The individual test of the body mass index variable on the physical fitness of junior high school students resulted in a path coefficient of $X_3 = 0.874$ with a value of $\text{Sig.} = 0.000/2 = 0.00 < \alpha = 0.05$ so H_a is accepted. This means that there is a direct influence of body mass index on the physical fitness of junior high school students.

Based on the results of research data analysis, it is shown that body mass index has a positive effect on physical fitness. The results of this data analysis mean that the higher a person's body mass index, the higher their level of physical fitness.

This is because the results of taking physical fitness scores are less accurate because there is no treatment in taking physical fitness scores. When taking physical fitness data, students have not implemented the habit of exercising in their daily lives, which should be 3-5 per week with a duration of 30 minutes. This can be seen from the physical fitness score which is in the low category, then



influenced by the weather being too hot during the physical fitness assessment, students have also never previously carried out a physical fitness assessment using the Indonesian Physical Fitness Test (TKJI) norms. There are still students who have not serious about data collection. This can be seen from the joking attitude, the lack of facilities and infrastructure causing students to wait longer, such as the pull up pole, limited space for the vertical jump test. Other supporting factors must be balanced with a healthy lifestyle and eating nutritious food so that there are other factors that must be considered in order to achieve good physical fitness.

6. Based on the results of the Sobel test using the online Sobel Test Calculator for the Significance of Mediation, the Sobel test value, statistics -0.28556083 and Sig. $0.77 > 0.05$, meaning that there is no indirect influence of exercise habits through body mass index on physical fitness among SMPN 12 Bogor City students.

Based on the results of data analysis, it shows that there is no influence of exercise habits through body mass index on physical fitness. The research results are in line with the findings of Zahroh & Isfiandari (2015) that there was no

influence of physical activity on changes in BMI in acceptors of three-month hormonal contraceptive injections. These results mean that physical activity, including exercise, has no effect on high and low BMI. These results also support the findings of Albab (2022) that the correlation coefficient (r) value of BMI with the physical fitness of coastal adolescents is $0.320 > 0.05$.

7. Based on the Sobel test results using the online Sobel Test Calculator for the Significance of Mediation, the Sobel test statistic value was -1.16470608 and Sig. $0.22 > 0.05$, so there is no indirect effect of motivation to exercise through body mass index on physical fitness in junior high school students. When connected to the fourth hypothesis, there is a direct influence of exercise motivation on physical fitness. However, if body mass index is included, there is no significant effect. Good physical fitness results are one of the goals in physical education. Of course, having physical fitness cannot be achieved instantly. Need to have exercise habits, good motivation, healthy lifestyle.

CONCLUSION

Based on the results of this study, it can be interpreted that (1) There is a direct influence of exercise habits on



body mass index with sig= 0.00 (2) There is no direct influence of exercise motivation on body mass index with sig= 0.177 (3) There is a direct influence of exercise habits on physical fitness with sig= 0.00 (4) There is a direct influence of exercise motivation on physical fitness with sig= 0.04 (5) There is a direct influence of body mass index on physical fitness with sig= 0.00 (6) There is no influence Indirect exercise habit through body mass index on physical fitness is 0.77 and (7) There is no indirect effect of exercise motivation through body mass index on physical fitness of 0.22.

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