International Journal Of Humanities Education And Social Sciences ***(IJHESS)*** *E-ISSN:* **2808-1765**
Volume 4, Number 4, February, *Page. 1600 – 1606*
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Body Mass Index Survey on the Level of Physical Fitness of PGSD Students at Mulawarman University

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Abstract

This study aims to determine the body mass index on the level of physical fitness of PGSD students at Mulawarman University. This research is a qualitative descriptive study using anthropometric tests and physical fitness tests. The sample of this study was PGSD students class of 2022 totaling 160 people, who were taken by cluster sampling technique. The results of the research data analysis show that 3.7% of students have a very low BMI, 21.9% of students have a thin BMI, 54.4% of students have a normal BMI, 18.1% of students have a fat BMI, and 1.9% of students have an obese BMI. Next, the level of physical fitness obtained by PGSD students was 3.1% in the very good classification, 11.9% in the good classification, 25% in the moderate classification, 51.9% in the less classification, 7.5% in the very less classification. So it can be concluded that overall the average body mass index on the level of physical fitness of PGSD students class of 2022 Mulawarman University is in the low category.

Keywords**: **BMI, Physical Fitness, PGSD Students.

INTRODUCTION

Physical fitness is an important element in a country's sports system. One aspect of physical fitness is the goal of superior sports coaching and development and producing quality human resources. Physical fitness is also literally physical fitness, which means physical suitability or physical strength that aims to maintain and improve the degree of static and dynamic health that supports every activity (Giriwijoyo & Sidik, 2012). In addition, physical fitness is also an important part of general education. It emphasizes aspects such as motor skills, critical thinking skills, social skills, logical thinking, emotional stability, aspects of a healthy lifestyle, and introduction to a clean environment. Physical fitness is closely related to personal physical activities such as work and exercise. The physical fitness required by each individual for work and activity has a different proportion of capacity from other individuals. According to Sudiana, I. K., (2014) explained that the main characteristics of physical fitness also act as a driving force and source of strength that guides the development and growth of the body towards a better direction, thus enabling the achievement of aspects in other components by the objectives and benefits to be achieved.

Physical fitness is also defined as a person's ability to perform activities according to work optimally without causing health problems or undue fatigue (Mehta R., et al., 2020). In current conditions in the field, students tend to get tired easily when doing lectures with material related to practicum that involves physical activity. In addition, the busyness in college assignments and a busy schedule of activities both on and off campus, homework, and even organizational activities, require students not to have much time for activities supporting physical fitness conditions. This will certainly affect the lifestyle of students related to eating habits, rest patterns, and physical activity, thus allowing students to experience a body weight that is not ideal even more towards obesity. Non-ideal weight conditions occur due to an imbalance

between energy intake and energy expenditure. This shows that students managing a diet that is not appropriate and appropriate not take the time to do sports activities or routine physical activity, even more, apply a sedentary lifestyle or lack of physical activity carried out.

The balanced concept that needs to be applied from the amount of calorie intake consumed must match the energy expended. The condition in the field identified in PGSD students class 2022 Mulawarman University is a lack of physical activity which is described through the low physical performance and student activeness in taking regional game courses. Therefore, various efforts are made to maintain and improve physical condition through physical fitness. However, in reality, based on observations, it is known that many conditions become obstacles to the level of physical fitness, such as environmental conditions, nutritional intake, dietary arrangements, facilities and infrastructure, gender, preferences/interests, and learning practices. Improved physical fitness can be achieved through regular exercise and activity through effective, simple, and fun programs to improve physical fitness. The importance of physical fitness among students is following the rapid development of technology and requires today's generation to keep up with the flow of developments that utilize digital technology so that there is less time for activities that involve physical activity and lead to a lack of initiative to exercise due to busyness or busy activities that do not play a role in physical activity and lack of interest in maintaining a fit physical condition (Bo, 2021). With the impact of this technological development, can indirectly lead to inappropriate patterns and lifestyles, more and more individuals who are less mobile, increasing stress conditions that will have an impact on the decline in health conditions to the risk of causing non-infectious diseases, including those related to cardiovascular disease, decreased functional movement, to the impact of obesity.

Less than ideal conditions or even obesity are currently found among students, based on observations in the field, it is necessary to research to assess body mass index which then correlates with the level of physical fitness in students. Physical fitness is also an important part for students to support the productivity of activities and learning. Because in the field performance of PGSD students, they are more involved in educational aspects related to physical activity activities both in lectures and later adjustments to their future outcomes including work that will apply a collaboration system between theory, material, and physical activity in the classroom to the school environment or others. In supporting the achievement of the learning process and supporting optimal productivity, it is necessary to improve physical fitness conditions in students. A good physical fitness condition will be able to complete the learning process that can support the ongoing task load in learning completely and support personal productivity in other activities. This study was conducted to determine the body mass index on the level of physical fitness of PGSD students at Mulawarman University. Seeing the above problems, the researcher is interested in researching this topic.

RESEARCH METHODS

This research uses descriptive qualitative research methods based on methods, steps, and procedures involving data analysis used to research the condition of scientific objects where the researcher is the key instrument, data analysis and information obtained are inductive with observation and theory and research results focused on specific meanings. Sampling in this study is to use the Cluster Sampling technique, this sampling technique can be used in determining samples that refer to a group that has similarities or similar things even adjacent. To make the sample as a respondent and data source, the sampling is based on a predetermined population area or class. In this study, it was taken from one class of PGSD students, namely class 2022 as many as 5 classes with a total of 160 students consisting of 20 male students and 140 female

students. So the sample of this study was 160 people. Data collection for this study was by measuring body mass index and physical fitness tests. Then Body Mass Index (BMI) and categorized based on the interpretation of nutritional status according to anthropometric standards. The parameters used in measuring BMI are body weight and height (Supariasa, 2012), with the following formula:

$$\text{IMT} = \frac{\text{Body Weight (kg)}}{\text{Height (m) x Height (m)}}$$

Furthermore, after calculating the results of the body mass index and categorizing the nutritional status, the respondents will take a physical fitness test. The physical fitness test used in this study is the Indonesian Physical Fitness Test (TKJI). Each age group and gender of the sample becomes a series of tests, each of which distinguishes the category of test results, and 6 tests must be performed sequentially. The 6 tests provided consist of the 60-meter sprint, 60 second push-up, 60-second sit-up, a vertical jump, sit and reach, and bleep test. The data that has been collected from the fitness test items, then the data is analyzed using descriptive analysis techniques, namely by describing or describing the data that has been collected, then the data analysis used is by describing the frequency and percentage of the data.

RESULT AND DISCUSSION

Based on the characteristics of the sample in this study, the number of respondents was 160 students consisting of 20 men and 140 women. The overall average age of the respondents is 20 years old and are studying in semester 4 of the PGSD study program at Mulawarman University.

Table 2. Respondent Characteristics

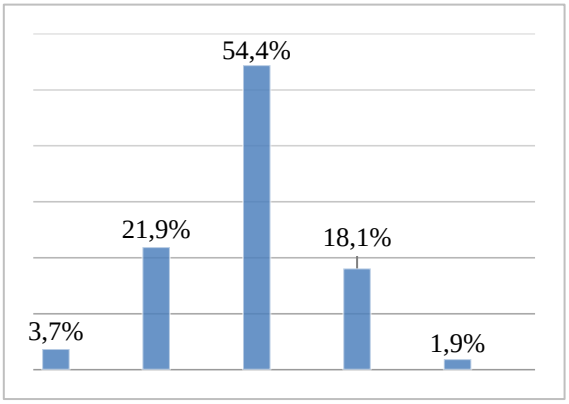
Gender	N	Average (age)
Male	20	20
Female	140	

The results of the analysis of the body mass index of the sample as a whole are presented in Table 3. By taking the measurement data on the weight and height of the respondent which is then used to interpret the classification of nutritional status based on BMI, is as follows:

Table 3. Classification of nutritional status based on BMI

IMT	N	Category
< 17,0	6	Very Thin
17,0 - 18,4	35	Thin
18,5 - 25,0	87	Normal
25,1 - 27,0	29	Overweight
> 27,0	3	Obesity
Total	160	

From the results of the interpretation of the data in Table 3 above related to body weight and height classified by nutritional status based on BMI and presented in the percentage bar graph below, it is known that there are 6 people, or 3.7% in the very thin category, 35 people or 21.9% in the thin category, 87 people or 54.4% in the normal or ideal category, 29 people or 18.1% in the fat category, and 3 people or 1.9% in the obese category.



Charts 1. Percentage classification of nutritional status based on BMI

Data from the results of the physical fitness test with 6 test items consisting of sit and reach tests, 60 second push-ups, 60 second sit-ups, vertical jumps, 60-meter sprints, and bleep tests that have been carried out by 160 students obtained a classification of physical fitness levels presented in table 4 below:

Table 4. Physical fitness level

Score Range	N	Classification	Percentage %
22-25	5	Very Good	3,1
18-21	19	Good	11,9
14-17	41	Moderate	25,6
10-13	83	Less	51,9
5-9	12	Very Less	7,5
Total	160		

Based on the results of the physical fitness test, it can be explained that the level of physical fitness obtained by PGSD students was 5 people or 3.1% obtained a very good classification, 19 people, or 11.9% obtained a good classification, 41 people or 25% obtained a moderate classification, 83 people or 51.9% obtained less classification, 12 people or 7.5% obtained a very less classification.

The results of the presentation of the level of physical fitness based on body mass index are presented as follows: as many as 5 students obtained physical fitness test results in the very good classification or 3.7%, consisting of 1 student with a thin BMI category and 4 students with normal or ideal BMI. Next, 19 students obtained physical fitness test results in the good classification or 11.9%, consisting of 1 student with BMI in the very thin category, 7 students in the thin BMI category, and 11 students with normal or ideal BMI. Next, 41 students obtained physical fitness test results in the moderate classification or 25%, consisting of 2 students with BMI in the very thin category, 15 students in the thin BMI category, and 24 students with normal or ideal BMI. Next, 83 students obtained physical fitness test results in the less classification of 51.9%, consisting of 3 students with BMI in the very thin category, 10 students in the thin BMI category, 45 students with normal or ideal BMI, and 25 students with overweight BMI. Next, as many as 12 students obtained physical fitness test results in the classification of very less or 7.5%, consisting of 2 students with thin BMI category, 3 students with normal or ideal BMI, 4 students with overweight BMI, and 3 students with obesity BMI.

Based on the results of this study, shows that body mass index influences the level of physical fitness. Because BMI is closely related to a person's nutritional status which involves a comparison between proportional to body weight and height (Aprianto & Nurwahyuni, 2021). So that the relationship between BMI and the level of physical fitness can be an early indication of a person's ability to be able to carry out physical activity effectively and efficiently without

causing excessive or significant fatigue. Or it can be interpreted that someone after doing an activity can still carry out other activities after making a short pause for the next rest. The level of physical fitness in the form of good physical condition will support good activities as well (Sinuraya et al., n.d.). When the workload or activity in uncertain conditions is balanced with a maintained and balanced physical fitness condition, it can help support running all activities smoothly. Therefore, it can be said that maintaining physical fitness conditions can increase a person's productivity in activities.

The opinion of Molina-Garcia, P., et al., (2020) explains that the components of physical fitness related to functional body movements as a whole are associated with posture starting from the head parallel to the spine and sternum and lower limbs. BMI is the best predictor of head and lumbar spine posture, cardiorespiratory fitness lower limb posture in the frontal plane, agility lower limb posture speed in the sagittal plane, and thoracic spine functional movement. In accordance with the opinion of Kharbanda, M., & Indra, K., (2014) that the population having a normal body mass index showed a greater improvement in the aerobic work capacity study, indicating that sedentary college students need proper nutrition, education, and physical exercise appropriate to their physical capacity. Although indirectly in addition to BMI, several other factors affect the level of physical fitness, some of these are determined by: a) heredity, or genetic factors. Genetic factors play a role in determining a person's physical potential. This includes the presence of certain genes that can affect how well a person can develop muscle strength, cardiovascular endurance, and other factors (Sepriadi, Hardiansyah & Syampurna, 2017). The physical component is one aspect that plays a role in performing tasks to support active activities. In activities related to physical fitness, it contributes to the development of a person's personality. So physical fitness activities require effort and self-control from the perpetrator which can contribute to the personal growth of the perpetrator, including personal motivation in assessing ideal and appropriate body proportions even related to self-appearance, as well as initiatives to maintain health and avoid various diseases (Khan, Kumari, Mandal, & Bhardwaj, 2022). The process of physical fitness aims to increase physical strength, develop motor skills, knowledge and insight, healthy living behavior and active movement, sportsmanship, and mental intelligence. Physical fitness is related to the quality of a person's endurance and health level so it is needed for smooth growth and development rates to support daily performance productivity (Nurajab, E., 2019). One aspect that needs to be improved through physical fitness to achieve the goal of a good level of physical fitness is related to strength, speed of movement, muscle explosiveness, flexibility, agility, and balance. Physical fitness components are elements that determine the level of physical fitness of each individual (Prasetio & Sutisyana, 2017).

However, this also does not play a full role, but a healthy lifestyle and exercise habits, as well as including biological factors and sociocultural factors can also maximize physical fitness and can affect the ability of each aspect of the physical fitness component compared to people who are not trained or sedentary. b) age factors, there is a condition of cardiorespiratory endurance that physiologically increases in childhood and reaches its peak between the ages of 18 and 20 years (Yusuf, H., 2018). The relationship between age and body flexibility is that flexibility increases until early adolescence and after that period then decreases if no exercise or physical activity trains to maintain or develop its abilities. Furthermore, the relationship with aerobic power peaks at the ages of 18 and 20 years for boys and at the ages of 16 and 17 years for girls, this coincides with the age of peak muscle mass development. This suggests that endurance capacity per unit of lean body mass may decrease or remain unchanged. c) Gender, in general, women generally have better flexibility abilities than men. Anatomical differences between the female and male genders, as well as movement patterns and regular physical activity habits, can cause differences in BMI conditions that affect flexibility and muscle strength (Li et al., 2024). d) Physical activity is a determinant in any body movement involving skeletal muscles

that causes a significant increase in resting energy expenditure. Physical activity can also be defined as physical movements that cause muscle contractions that affect performance and endurance. Furthermore, according to Boonsem et al., (2021) outside physical activity that refers to leisure time and is chosen based on the needs and interests of each individual and differentiates between the interests of male and female students in choosing sports and exercises that start from choosing a plan, structured, and repetitive exercises or even by including competitive physical activities to improve or maintain physical fitness.

CONCLUSION

Based on the results of the research that has been conducted, it can be concluded that of all PGSD students class of 2022, most have a normal body mass index and most have a low level of physical fitness, which is described as follows:

a. of the 6 students who have a very thin body mass index have a good physical fitness level of 1 person, moderate 2 people, less 3 people.
b. of the 35 students who have a thin body mass index have a very good physical fitness level of 1 person, good 7 people, moderate 15 people, less 10 people, very less 2 people.
c. of the 87 students who have a normal body mass index a very good physical fitness level of 4 people, good 11 people, moderate 24 people, less 45 people, very less 3 people.
d. of the 29 students who have an overweight body mass index have a physical fitness level of less 25 people, very less 4 people.
e. of the 3 students who have an obesity body mass index, all have a very less physical fitness level.

From the data obtained, it is known that the higher the body mass index value, the lower the level of physical fitness. This is evidenced by the condition of students who have a body mass index of fat and obesity who have a level of physical fitness that is less than once.

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