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Body Mass Index Survey of Students in the Physical Education Study Program

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ABSTRACT

Body Mass Index (BMI) is an easy-to-use method to assess the proportion between body weight and height, and is often used to detect potential risks of health problems. Observations on students revealed BMI discrepancies that are thought to be influenced by a sedentary lifestyle, lack of physical activity, and lifestyle patterns and academic pressures that do not support fitness. The purpose of this study was to identify the characteristics of Body Mass Index (BMI) in students of the Physical Education Study Program, FKIP, Tanjungpura University. In this study, the researcher applied a quantitative descriptive approach by utilizing a survey method. The population used was 76 Physical Education students of FKIP, Tanjungpura University, who were 4th-semester students. This study used a total sampling technique for sampling. The results of the study on the status of Body Mass Index of students of the Physical Education Study Program, FKIP, Tanjungpura University, showed that there were 5 students (6.58%) who were included in the very thin category, 5 students (6.58%) in the thin category, 60 students (78.95%) were in the normal category, 4 students (6.26%) in the overweight category and 2 students (1.52%) in the obesity category. It was concluded that the Body Mass Index of Physical Education students was in the normal category.

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B. Acquisition of data;
C. Analysis and interpretation of data;
D. Manuscript preparation;
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INTRODUCTION

According to Pranata & Kumaat (2022), physical fitness is a person's physical ability to carry out daily activities optimally and continuously without experiencing excessive fatigue. This is in line with Wardani & Nurudin (2020), who stated that physical fitness is defined as a healthy and fit body condition that allows a person to carry out daily activities efficiently and optimally. A good level of physical fitness allows a person to carry out physical activities and exercise optimally, complete daily activities with a healthy body without excessive fatigue, and have a lower risk of diseases caused by lack of fitness and physical activity (Budiarti et al., 2016). Based on the thoughts of these three experts, it is stated that physical fitness is a person's physical capacity to carry out daily activities

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efficiently and continuously without excessive fatigue, which allows the body to stay healthy, avoid the risk of disease, and be able to carry out activities optimally through improving physical condition and adequate exercise.

Physical fitness is one of the main benchmarks for evaluating a person's overall health. A person is considered fit if their body has little fat tissue, strong and dense bones, strong muscles, stable joints, and a highly resilient respiratory system (Yuliana & Sugiharto, 2019). A good level of fitness can support daily activities and reduce the risk of various diseases. One factor closely related to physical fitness is the Body Mass Index (BMI), which is a measurement method used to determine a person's weight status by comparing body weight to height. A BMI that is outside the normal range, whether too low or too high, can impact the body's physical capacity to perform optimal physical activities. Therefore, the relationship between physical fitness and BMI is important to study to understand the extent to which a person's body composition affects their fitness.

Body Mass Index (BMI) is an easy-to-use assessment method for evaluating the proportion between weight and height and is often used to detect potential risks of health problems such as obesity (Aprisuandani et al., 2021). BMI is often used as an indicator to identify obesity, although it better reflects overall excess weight than the exact percentage of body fat (Pratama & Zulfahmidah, 2021). Monitoring and maintaining a normal BMI is crucial for everyone's health. Several factors can contribute to changes in BMI, including age and gender (Budiman et al., 2022).

Based on observations conducted on fourth-semester students, BMI discrepancies were found in several individuals. Some students showed symptoms of being underweight, while others were overweight or obese. This raises concerns, considering that students should be in optimal physical condition at this age to support their studies and other campus activities. One factor suspected to be closely related to BMI discrepancies is physical activity. A sedentary lifestyle characterized by a lack of physical activity, such as prolonged sitting, infrequent exercise, and irregular sleep and eating patterns, is a common habit among students. Academic pressure, lack of free time, and a lack of awareness of the importance of physical activity are suspected to contribute to student lifestyles.

The benefit of knowing BMI for students is that it allows them to monitor their nutritional status and health, thus providing a basis for maintaining fitness and preventing the risk of weight-related diseases. Through BMI surveys among students, a general overview of their current physical condition, which is directly related to their physical fitness, can be obtained. This information is crucial for supporting efforts to promote a healthy lifestyle and serves as a reference in developing fitness development programs within the university environment.

METHODS

In this study, the researcher employed a quantitative descriptive approach using a survey method as a data collection tool. A descriptive research method is an approach

used to provide a comprehensive overview of the data, objects, or phenomena being studied. Furthermore, the data is analyzed and compared with actual conditions in the field, and directed towards finding solutions to emerging problems to align with ongoing developments (Rengkuan et al., 2023). Descriptive research is conducted by exploring information related to the current phenomenon, clearly defining the objectives to be achieved, designing the approach to be used, and collecting various types of data as a basis for compiling the research report (Jayusman & Shavab, 2020). Research using the survey method is a type of research that involves sampling from a specific population and utilizes questionnaires as the main instrument in the data collection process (Rohmatunisha et al., 2020). Thus, the purpose of this study is to present a structured and comprehensive description of the phenomenon being studied through a quantitative descriptive approach, by collecting factual data in the field using a survey method, so that it can be analyzed and compared with actual conditions to produce a relevant understanding and solutions to existing problems.

This study involved 76 Physical Education students from the Faculty of Teacher Training and Education, Tanjungpura University, who were enrolled in the same semester. The instrument used in this study was Body Mass Index (BMI) with a classification based on the Indonesian population. This is a descriptive study that aims to present a factual picture of the body composition of Physical Education students in 2025. Body Mass Index was used as a variable in this study by calculating the ratio between body weight in kilograms and height squared in meters.

$$IMT = \frac{Weight\ (Kg)}{Height(m) \times Height(m)}$$

Data analysis in this study was conducted using percentage-based quantitative descriptive analysis techniques. Researchers grouped the test results into five categories: very thin, thin, normal, overweight, and obese.

Table 1.
Body Mass Index Threshold

Classification	BMI
Underweight	<18,5
Normal	18,5 - 22,9
Overweight with risks	23 – 24,9
Obesity	25 – 29,9
Obesity II	≥30

Source: P2PTM, Ministry of Health, Republic of Indonesia (2019)

The WHO recommends a BMI classification that takes into account the characteristics of Asian populations, such as ethnicity, culture, and socioeconomic conditions. Although the average and median BMIs in Asian populations are lower than those in non-Asians, the risk of obesity can be higher. In Indonesia, BMI classification is not differentiated by gender, with the normal category falling within the range of 18.5–25.0. A BMI of 25.1–27.0 is considered overweight, while a BMI above 27.0 is considered obese (Aziz, 2021). The complete classification is presented as follows:

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Table 2.
Classification of Body Mass Index in the Indonesian Population

Classification	BMI
Underweight	<17,0
Thin	17,0 - 18,5
Normal	18,6 – 25,0
Overweight	25,1 – 27,0
Obesity	>27,0

Source: PMK No. 41 of 2014

RESULTS AND DISCUSSION

Result

The findings of this study were obtained through a data collection process using a survey method to assess the body composition of Physical Education students. This study was conducted using a survey method through the collection of data related to Body Mass Index (BMI). BMI measurements were carried out using a formula involving body weight and height.

Based on the data presented, the classification or category of Body Mass Index (BMI) of students in the Physical Education Study Program, FKIP, Tanjungpura University, can be explained in the following description.

Table 3.
Classification of Student Body Mass Index

Classification	BMI	Quantity	Percentage
Over thin	<17	5	6,58%
Thin	17-18,5	5	6,58%
Normal	18,6-25	60	78,95%
Overweight	25,1-27	4	6,26%
Obesity	>27	2	1,52%

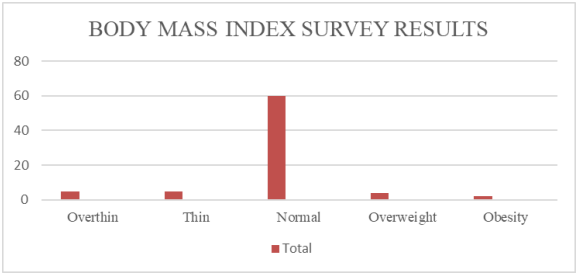

Figure 1.
Body Mass Index Survey Results Diagram

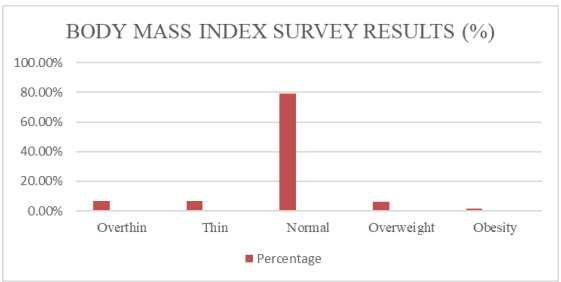

Figure 2.
Body Mass Index Percentage Survey Results Diagram

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The percentage results of the table showing the Body Mass Index (BMI) status of students majoring in physical education at the Faculty of Teacher Training and Education, Tanjungpura University, indicate that there are 5 students (6.58%) who are classified as very thin, 5 students (6.58%) who are classified as thin, 60 students (78.95%) who are classified as normal, 4 students (6.26%) in the overweight category, and 2 students (1.52%) in the obese category.

Discussion

Body Mass Index (BMI) is a measurement tool used to estimate a person's body fat percentage by calculating the ratio between weight (kg) and height in square meters (Umbu et al., 2022). The results of the Body Mass Index (BMI) test on respondents who used weight and height measurements showed that the average was in the normal category. The importance of Body Mass Index (BMI) for the body is as an indicator to assess whether a person's weight is balanced with their height. BMI helps identify health risks related to weight, such as obesity, underweight, or ideal weight. By knowing their BMI, individuals can more easily understand their body condition and take the necessary actions to maintain or improve their health. According to Usni Zamzami Hasibuan and Palmizal & Usni Zamzami Hasibuan (2021), Many factors influence Body Mass Index (BMI) values, including nutritional intake, diet, physical activity intensity, lifestyle, socioeconomic status, educational background, level of knowledge, surrounding environment, history of chronic diseases, and body fat percentage. Based on the table, it can be concluded that the Body Mass Index of Physical Education students is in the normal category due to the physical activities that are always carried out in lectures. However, 6.58% are in the very thin category, 6.58% are in the thin category, 6.26% are overweight, and 1.52% are obese. Interviews with respondents whose Body Mass Index (BMI) was outside the normal range revealed that there was an imbalance between their diet or nutritional intake and their physical activity. This reflects an unbalanced lifestyle that has the potential to affect overall nutritional status.

The findings of this study are consistent with those of Pratama & Zulfahmidah (2021). The findings show that respondents who exercised 3–4 times per week consisted of 0 people (0.0%) in the underweight BMI category, 8 people (72.7%) in the ideal weight category, 1 person (9.1%) in the overweight category, and 2 people (18.2%) in the obese category. The study states that physical activity, duration, and frequency of exercise affect the achievement of Body Mass Index (BMI). The results indicate that sufficient physical activity, exercise with the right duration, and regular frequency can help a person achieve an ideal Body Mass Index (BMI).

Physical activity is any form of bodily movement that involves skeletal muscle function and results in the utilization of a certain amount of energy, which can be classified into light, moderate, and vigorous intensity (Gurnida et al., 2020). A lack of physical activity combined with an unbalanced diet can cause energy to accumulate in the body as fat, which in turn affects changes in Body Mass Index (BMI) (Krismawati et al., 2019). This is in line with Christianto (2018), who states that when food intake is excessive

and not accompanied by adequate physical activity, the intake can accumulate in the body and hurt health, causing the body to experience an imbalance that has a high potential to cause obesity. Wahyuti et al. (2022) also argue that low levels of physical activity can significantly increase the likelihood of obesity. These three opinions state that the imbalance between high food consumption and lack of physical activity plays an important role in the accumulation of body fat, which leads to an increase in Body Mass Index (BMI) and significantly increases the risk of obesity.

Rapid technological developments have also changed lifestyles from active to more passive. Lack of physical activity results in energy in the body not being used efficiently. If this condition is not accompanied by a reduction in food intake, an imbalance will occur in the body (Meila et al., 2022). The impact of this imbalance is not only limited to the body's metabolism, but also affects a person's physical fitness and nutritional status. Adolescents who have low physical activity and a tendency to choose practical ways due to their busy schedules will potentially experience a shift in their lifestyle towards habits that are less beneficial to their health. In carrying out physical activities, the quality of functional movement is greatly influenced by the effectiveness and efficiency of the movements performed by individuals (Meila et al., 2022).

Abnormal changes in BMI, whether increases or decreases, can also be caused by inaccuracies in nutritional intake, such as inconsistent eating patterns and an imbalance with the body's needs. This problem involves an unbalanced intake of protein, carbohydrates, fats, vitamin C, and various other energy sources. Additionally, insufficient intake of iron-rich foods and folic acid also contributes to abnormal BMI values (Manila et al., 2021). According to Marmi in Oktanasari & Ayuningtyas (2022), various factors that cause malnutrition include irregular patterns, a lack of understanding about nutritional intake, tendencies towards certain types of diets, the significant influence of the mass media, and individual freedom in determining eating habits. In addition, the influence of other countries' eating cultures also contributes. Balanced nutrition can only be achieved through the implementation of an appropriate and needs-based diet, which also contributes to achieving an ideal Body Mass Index (BMI) (Lupiana et al., 2022). This is in line with Alam et al. (2022), who state that the body basically requires adequate nutritional intake to support optimal growth and development. Therefore, it is essential to consume high-quality food in adequate quantities.

Another opinion with the results of research by Fadli & Hariyoko (2022) related to the Body Mass Index (BMI) levels of students participating in sports extracurricular activities at SMAN 1 Bululawang, out of 40 participants, 8 people (20%) were severely underweight, 3 students (7.5%) were underweight, 26 students (65%) had an ideal body weight, 1 student (2.5%) was slightly overweight, and 2 students (5%) were severely overweight. Based on these research results, it can be concluded that 65% of students participating in extracurricular sports at SMAN 1 Bululawang have a nutritional condition or Body Mass Index (BMI) in the ideal weight category. In this study, this means that most of them have good awareness and understanding of maintaining their nutritional intake.

This is also in line with the results of a study by Oktanasari & Ayuningtyas (2022), which showed a relationship between understanding balanced nutrition and body mass index in 12th-grade female students at SMK YPE Kroya, with a chi-square p-value of 0.261 and a significance level of 0.003 ($p < 0.05$).

Another factor that can affect Body Mass Index (BMI) is gender. This study found that men generally have higher BMI values and are at greater risk of being overweight or obese than women. These differences can be influenced by various aspects, such as differences in body composition, diet, physical activity levels, and lifestyle tendencies between men and women. Additionally, hormonal and metabolic factors also play a role in influencing body fat distribution, which ultimately affects each individual's BMI category.

The factor of gender is also consistent with the results of research by Budiman et al. (2022). This study revealed a relationship between BMI characteristics and gender. Men tend to have a higher BMI category, namely, overweight, obesity level 1, and obesity level 2. Meanwhile, women are more likely to be found in the normal and underweight BMI categories than men. Therefore, it is important to implement health and fitness intervention programs, especially in academic environments such as universities, to consider gender factors in planning physical activities and nutrition education. With a more specific and needs-based approach for each group, efforts to prevent and treat obesity and other nutritional problems can be carried out more effectively and sustainably.

CONCLUSION

Body Mass Index (BMI) can be used as a benchmark in evaluating an individual's nutritional status and health, which can be caused by various factors such as diet, nutritional intake, physical activity, lifestyle, and gender. BMI measurements of physical education students show that the majority are in the normal category, although a small number are overweight or obese. The imbalance between consuming high-calorie foods and low levels of physical activity is the main cause of increased BMI. In addition, technological developments have contributed to a more sedentary lifestyle, which affects fat accumulation in the body.

Research also shows that men generally have a higher Body Mass Index (BMI) than women, which may be due to hormonal differences, body composition, and lifestyle. Regular physical activity, such as sports and exercise, has been proven to play an important role in maintaining an ideal BMI and improving physical fitness. Knowledge of balanced nutrition and awareness of maintaining a healthy lifestyle also contribute to achieving optimal nutritional status.

Therefore, in order to achieve and maintain an optimal Body Mass Index (BMI), a combination of regular nutritional intake accompanied by adequate physical activity, as well as adequate nutrition education among adolescents and students, is necessary. This is important to prevent the risk of obesity and malnutrition, which can have an impact on long-term health.

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