

Classification of Physical Fitness Levels among Universitas Negeri Makassar Students Based on Push-Up, Vertical Jump, and Sprint Tests **Darlina¹**

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Abstract

This study aimed to classify the physical fitness levels of students at Universitas Negeri Makassar based on push-up, vertical jump, and sprint test performances. A descriptive quantitative survey design was employed involving 82 students selected through purposive sampling. Participants met the criteria of being actively enrolled, physically healthy, and willing to complete all physical fitness assessments.

Data were collected using three physical fitness tests: the push-up test to measure upper-body muscular strength and endurance, the vertical jump test to assess lower-limb explosive power, and the sprint test to evaluate speed. Descriptive statistical analysis was conducted using mean, standard deviation, minimum and maximum values, followed by fitness classification based on the mean $\pm$ standard deviation approach.

The results indicated that students' physical fitness levels were predominantly classified as moderate across all test components. In the push-up test, 69.5% of participants were categorized as moderate, 18.3% as high, and 12.2% as low. In the vertical jump test, 78.0% were classified as moderate, while 11.0% were categorized as high and 11.0% as low. In the sprint test, 89.0% of participants were classified as moderate and 11.0% as low. These findings suggest that students possess adequate levels of muscular strength, explosive power, and speed, although their overall physical fitness has not yet reached an optimal level.

It can be concluded that the physical fitness level of Universitas Negeri Makassar students is dominated by the moderate category. The findings may serve as a basis for evaluating students' physical conditions and developing more effective fitness improvement programs in higher education settings.

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Introduction

Physical fitness is one of the most important indicators of an individual's health quality and functional capacity, particularly among university students who are in their productive years. In recent years, there has been a decline in physical activity levels among university students due to sedentary lifestyles, increased technology use, and low participation in structured sports activities. This phenomenon has contributed to reductions in physical fitness components such as muscular strength, explosive power, and speed, which are essential for supporting daily activities and physical performance (Santoso & Kartiko, 2024).

Empirical evidence indicates that the physical fitness levels of university students in Indonesia generally remain in the moderate to low categories, particularly regarding muscular strength and endurance. Previous studies have reported that the average scores of physical fitness tests, such as sprint and vertical jump assessments, among students and university populations have not yet reached optimal levels (Putra & Permadi, 2025). This condition is a concern because physical fitness not only affects physical health but is also associated with cognitive performance and academic productivity.

Physical fitness is commonly assessed using a variety of physical tests that measure key fitness components, including muscular strength, explosive power, and speed. The push-up test is used to assess upper-body muscular strength and endurance, the vertical jump test measures lower-limb explosive power, and the sprint test evaluates speed (Wicaksono & Bhakti, 2024). These tests are widely recognized as standard measures in sports science and physical education research.

However, most previous studies have focused on descriptive analyses or the effects of training interventions aimed at improving physical fitness, particularly among athletes or school-aged students. Comprehensive studies examining the physical fitness of non-athlete university students remain limited, especially those integrating multiple fitness components into a single analytical framework (Aftoni, 2024). This indicates a research gap that warrants further investigation.

Furthermore, earlier studies generally reported findings in the form of mean scores or simple fitness categories without providing a more detailed classification of individual fitness levels. In fact, physical fitness classification can offer a more specific description of the distribution of physical capabilities within a population and support the development of more targeted training programs (Husin & Siska, 2024).

A classification-based approach to physical fitness is important because it enables individuals to be grouped according to their physical capabilities, thereby providing a basis for decision-making related to exercise interventions and health policies. By utilizing a combination of physical fitness tests such as push-up, vertical jump, and sprint assessments, physical fitness classification can be conducted more comprehensively and objectively.

On the other hand, only a limited number of studies have specifically examined the classification of physical fitness among university students in higher education institutions, particularly in Eastern Indonesia, including Universitas Negeri Makassar. Environmental, cultural, and lifestyle factors may influence an individual's level of physical fitness (Rikalmi & Sitepu, 2025). Therefore, studies conducted within a local context are essential to provide more relevant and representative findings.

The novelty of this study lies in the integration of three major physical fitness components—muscular strength, explosive power, and speed—within a single classification framework. Classification was performed based on the results of each physical fitness test, namely push-up, vertical jump, and sprint, which were subsequently categorized into low, moderate, and high fitness levels according to established physical fitness assessment norms. This approach is expected to provide a more comprehensive overview of students' physical fitness conditions compared to analyses based solely on mean scores.

Based on the foregoing discussion, this study aims to classify the physical fitness levels of students at Universitas Negeri Makassar based on the results of push-up, vertical jump, and sprint tests for each fitness component. The findings are expected to serve as a basis for evaluating students' physical conditions and as a reference for developing more effective and targeted physical fitness development programs.

Methodology

Research Design

This study employed a quantitative research approach with a descriptive design aimed at classifying the physical fitness levels of students at Universitas Negeri Makassar based on the results of push-up, vertical jump, and sprint tests. A descriptive quantitative approach was selected because the study focused on objectively describing students' physical fitness conditions through numerical data without providing any specific treatment or intervention to the participants. The research was conducted using a survey method, with data collected directly through physical fitness testing.

Samples and Sampling Techniques

The population of this study consisted of all students of Universitas Negeri Makassar (UNM). The sample comprised 82 students selected using a purposive sampling technique. Participants were recruited based on the following inclusion criteria: (1) active UNM students, (2) aged between 18 and 23 years, (3) physically healthy and free from injury, (4) not participating in intensive athletic training programs, and (5) willing to complete the entire series of physical fitness tests.

Instruments

The study utilized primary data obtained directly from participants through physical fitness measurements. Three testing instruments were employed: (1) the push-up test to measure upper-body muscular strength and endurance, (2) the vertical jump test to assess lower-limb explosive power, and (3) the sprint test to evaluate speed. These instruments are commonly used in physical fitness research due to their practicality, validity, and reliability in measuring fundamental fitness components.

Data Collection Procedures

Data collection was conducted in several stages. First, the researchers prepared the testing equipment and research venue. Second, participants received explanations regarding the objectives and procedures of each physical fitness test. Third, the tests were administered according to standardized testing protocols. The results of each test were recorded and used for the classification of students' physical fitness levels.

The classification system was based on the mean $\pm$ standard deviation approach for each variable. Scores below the mean minus one standard deviation were categorized as low, scores within the range of mean $\pm$ one standard deviation were categorized as moderate, and scores above the mean plus one standard deviation were categorized as high. Classification was performed separately for each fitness component to provide a more specific and comprehensive assessment of students' physical fitness conditions.

Data Analysis

Data were analyzed using descriptive statistical techniques, including the calculation of mean, standard deviation, minimum value, maximum value, and frequency distribution of physical fitness categories. These analyses were used to describe the physical fitness profiles of students based on the results of the push-up, vertical jump, and sprint tests and to identify the overall distribution of students' physical fitness levels.

Result

The results of this study indicate that the physical fitness levels of students at Universitas Negeri Makassar, as measured through push-up, vertical jump, and sprint tests, demonstrate considerable variation in physical performance. Descriptive statistical analysis was conducted to describe students' physical fitness conditions using the mean, standard deviation, minimum value, and maximum value for each research variable.

Table 1. Descriptive Statistics of Research Variables

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Push-Up	82	23.90	10.62	5	50
Vertical Jump (cm)	82	35.13	14.97	2.27	65
Sprint (s)	82	3.41	2.53	1.30	19.00

Based on Table 1, the push-up test results showed a mean score of 23.90 with a standard deviation of 10.62. The minimum score of 5 and maximum score of 50 indicate variations in upper-body muscular strength and endurance among students. For the vertical jump test, the mean score was 35.13 cm with a standard deviation of 14.97, suggesting considerable variation in lower-limb explosive power. Meanwhile, the sprint test produced a mean time of 3.41 seconds with a standard deviation of 2.53, indicating differences in speed performance among students.

To provide a clearer description of the distribution of students' physical fitness levels, a classification analysis was conducted using the mean $\pm$ standard deviation approach for each research variable.

Table 2. Classification of Students' Physical Fitness Levels

A. Push-Up Test

Category	Interval	Frequency	Percentage
Low	< 13	10	12.2%
Moderate	13–34	57	69.5%
High	> 34	15	18.3%
Total		82	100%

B. Vertical Jump Test

Category	Interval (cm)	Frequency	Percentage
Low	< 20	9	11.0%
Moderate	20–50	64	78.0%
High	> 50	9	11.0%
Total		82	100%

C. Sprint Test

Category	Interval (s)	Frequency	Percentage
High (Fast)	< 0.88	0	0%
Moderate	0.88–5.94	73	89.0%
Low (Slow)	> 5.94	9	11.0%
Total		82	100%

Based on the classification results, the majority of students were categorized as having a moderate level of physical fitness across all fitness components. In the push-up test, most students (69.5%) were classified in the moderate category, indicating that their upper-body muscular strength and endurance were at an adequate level. In the vertical jump test, 78.0% of students were categorized as moderate, suggesting that their lower-limb explosive power was relatively good but still requires further improvement.

Similarly, in the sprint test, the majority of students (89.0%) were classified in the moderate category. These findings indicate that the students' speed performance was generally adequate, although a proportion of students remained in the low category. Overall, the results demonstrate that the physical fitness levels of students at Universitas Negeri Makassar are predominantly classified as moderate, with considerable variation in physical performance across the different fitness components. These conditions may be influenced by students' levels of physical activity, lifestyle patterns, and daily exercise habits.

Discussion

The results of this study indicate that the physical fitness levels of students at Universitas Negeri Makassar were generally classified as moderate across all physical fitness components, namely push-up, vertical jump, and sprint tests. These findings suggest that the physical capabilities of non-athlete university students remain varied and unevenly distributed. In the push-up test, the majority of students were classified in the moderate category, indicating that their upper-body muscular strength and endurance were at an adequate level. This condition may be influenced by the limited engagement of students in regular strength-training activities in their daily lives.

Regarding the vertical jump component, most students were also categorized as having a moderate level of performance. These results indicate that the students' lower-limb explosive power was relatively good but had not yet reached an optimal level. Lower-limb explosive power is strongly influenced by physical activity levels, exercise habits, and individual fitness conditions. Students who regularly participate in sports and physical activities tend to demonstrate better muscular power than those who maintain sedentary lifestyles.

Similarly, the results of the sprint test showed that the majority of students were classified in the moderate category. This finding indicates that the students' speed performance remained at an adequate level and had not yet reached maximum physical performance. Variations in sprint performance among students may be influenced by physical condition, motor coordination, and the intensity of regular training.

Overall, the findings indicate that the physical fitness levels of students at Universitas Negeri Makassar remain predominantly within the moderate category, with considerable variation in physical performance across different fitness components. These findings are consistent with previous research conducted by García-Hermoso et al. (2020), which demonstrated that physical activity levels and lifestyle patterns significantly influence individual physical fitness. Furthermore, Suchomel et al. (2018) explained that each component of physical fitness possesses distinct physiological characteristics and therefore requires specific and targeted training interventions to achieve optimal physical performance.

The findings of this study imply that regular evaluations of students' physical fitness should be conducted as a basis for developing more effective physical training programs. Through the classification of physical fitness levels, educators and educational institutions can objectively assess students' physical conditions, enabling physical fitness development programs to be tailored according to students' specific needs.

Conclusion and recommendation

Based on the findings of this study, it can be concluded that the physical fitness levels of students at Universitas Negeri Makassar, as measured through push-up, vertical jump, and sprint tests, were generally classified as moderate. In the push-up component, 69.5% of students were categorized as moderate, while 78.0% and 89.0% of students were classified as moderate in the vertical jump and sprint tests, respectively. These findings indicate that students' upper-body muscular strength, lower-limb explosive power, and speed remain at an adequate level but have not yet reached optimal performance.

The classification of physical fitness levels in this study demonstrates that the majority of students possess relatively good physical conditions; however, further improvement through regular physical activity and structured exercise programs is still necessary. Therefore, the objective of this study, which was to classify the physical fitness levels of university students based on push-up, vertical jump, and sprint test performances, has been successfully achieved. The findings of this study are expected to serve as a basis for evaluating students' physical conditions and for developing more effective physical fitness improvement programs within higher education institutions.

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