

# Analysis of Nutritional Status of Sport Science Students

Jewi Triputri Lase<sup>1</sup>, Hatolala Halawa<sup>2</sup>, Yuliana Jupriani Zebua<sup>3</sup>, Surni Gulo<sup>4</sup>, Alfani Sastriaman Gulo<sup>5</sup>, Nur Amin<sup>6</sup>

<sup>1</sup>Sport Science Department, Universitas Ngudi Waluyo, jewilase04@gmail.com

<sup>2</sup>Sport Science Department, Universitas Ngudi Waluyo, hatolalaoofficialhal@gmail.com

<sup>3</sup>Sport Science Department, Universitas Ngudi Waluyo, juprianizebua193@gmail.com

<sup>4</sup>Sport Science Department, Universitas Ngudi Waluyo, surnigulo9@gmail.com

<sup>5</sup>Sport Science Department, Universitas Ngudi Waluyo, alfanisatriaman@gmail.com

<sup>6</sup>Sport Science Department Universitas Ngudi Waluyo, nuramin@unw.ac.id

Email Correspondence: jewilase04@gmail.com

| Article Info                                                                              | Abstract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Article History<br>Submitted, 2026-05-14<br>Accepted, 2026-05-19<br>Published, 2026-06-30 | Nutritional status is one of the important indicators in determining a person's level of health and physical fitness, especially among Sport Science students. This study aimed to analyze the nutritional status of students in the Sport Science Study Program at Universitas Ngudi Waluyo. The research employed a quantitative descriptive method with a cross-sectional design to describe the nutritional status of respondents at a single point in time. The sample consisted of 46 students who met the inclusion criteria, including being in good health and willing to participate in the entire measurement process. Data were collected through anthropometric measurements, including height, weight, and body fat percentage. Nutritional status was assessed using Body Mass Index (BMI) and body fat percentage. The collected data were then analyzed descriptively to determine the distribution and proportion of students in each nutritional status category, providing a general overview of the nutritional status of students in the Sport Science Study Program at Universitas Ngudi Waluyo. Sport Science students at UNW selected using a sampling technique to determine the number of participants. The instruments used for data collection included a microtoise to measure body weight and height, while the Body Mass Index (BMI) formula was used to calculate students' nutritional status. The data obtained were analyzed using descriptive correlation analysis. The results showed that 6 students (13.0%) were categorized as underweight, 31 students (67.04%) had normal nutritional status, and 9 students (19.06%) were categorized as overweight. The conclusion of this study is that the majority of Sport Science students have a normal nutritional status. |
| Keywords: Nutritional status, students, sport science                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Introduction

Nutritional status is one of the important indicators in determining a person's level of health and physical fitness (Amin, 2018), especially among Sport Science students. Nutritional status is generally assessed using the Body Mass Index (BMI), which is the comparison between body weight (kg) and height squared (m<sup>2</sup>). BMI is often used because it is simple, practical, and easy to apply on a population scale. However, BMI has limitations because it cannot distinguish between fat mass and muscle mass, which may lead to bias, especially in individuals with high muscle mass such as sport science students (WHO, 2020).

In addition to BMI, nutritional status can also be assessed through body fat percentage measurement, which provides a more accurate description of body composition. According to Heyward & Wagner (2004), body fat percentage is a more specific indicator in assessing health risks because it directly shows the proportion of fat in the body. The limitations of BMI in identifying body composition were also explained by Wiranata & Inayah (2020), who stated that BMI cannot describe body tissue distribution in detail. This may affect the results of initial screening in determining nutritional status (Dong et al., 2025).

Sport Science students at Universitas Ngudi Waluyo (IKOR UNW) are a group with specific characteristics, namely relatively high levels of physical activity and involvement in various sports activities. This condition may affect body composition, especially increased muscle mass, which can influence BMI values. Individuals who actively exercise tend to have

Corresponding author:

Jewi Triputri Lase

Jewilase04@gmail.com

The 3th International Conference on Health, Faculty of Health, Vol 3 No 1 2026

Universitas Ngudi Waluyo

higher muscle mass than body fat, causing BMI values to appear high even though their actual nutritional status is normal (Walsh et al., 2018). Therefore, assessing the nutritional status of IKOR UNW students is not sufficient by using BMI alone but should also be supported by body fat percentage measurements.

According to the Indonesian Ministry of Health (2023), nutritional status categories based on BMI include underweight, normal, overweight, and obesity. These categories can provide an initial overview of students’ nutritional conditions, but they need to be further examined using a body composition approach to obtain more accurate results. By understanding the nutritional status of IKOR UNW students comprehensively, educational institutions can develop more appropriate coaching programs in terms of training patterns, nutritional management, and healthy lifestyle improvement.

Based on the explanation above, this study aims to analyze the nutritional status of Sport Science students at Universitas Ngudi Waluyo using BMI indicators supported by body fat percentage measurements. The results of this study are expected to provide a more comprehensive overview of the nutritional condition of students and serve as a basis for improving students’ health, fitness, and physical performance.

Methods

This study used a quantitative observational design with a cross-sectional approach, in which data collection was conducted at a specific time to analyze the nutritional status of Sport Science students at Universitas Ngudi Waluyo in 2026. The research sample consisted of 46 IKOR UNW students, including 40 males and 6 females. The sampling technique used was purposive sampling, namely students who met "Participants must meet the research criteria, namely being in good health and willing to participate in the entire measurement process".

Nutritional status measurement was carried out using Body Mass Index (BMI). Body weight was measured using a digital scale, while height was measured using a stadiometer. BMI values were calculated using the formula of body weight (kg) divided by height squared (m<sup>2</sup>), and then categorized into underweight, normal, and overweight categories. The Body Mass Index was calculated using the following formula: BMI = Body Weight (kg) / (Height (m))<sup>2</sup>.

In addition to BMI, to obtain a more accurate overview of nutritional status, body fat percentage was also measured using the skinfold method with calipers. Measurements were taken at several body sites, namely the chest, abdominal, triceps, subscapular, suprailiac, midaxillary, and thigh. The total skinfold value was then used in the Jackson & Pollock method to calculate Body Density (BD), which was subsequently converted into body fat percentage using the Siri formula. The use of this method aimed to complement BMI measurements in assessing the nutritional status of sport science students more comprehensively, especially in distinguishing fat mass from muscle mass. The collected data were then analyzed descriptively to provide an overview of the distribution of students' nutritional status based on Body Mass Index (BMI) categories and body fat percentage. This descriptive analysis aimed to determine the number and proportion of students in each nutritional status category, thereby providing a general overview of the respondents' nutritional status in the study.

Results and Discussion

Based on measurements conducted on 46 Sport Science students at Universitas Ngudi Waluyo in 2026 (40 males and 6 females), variations in Body Mass Index (BMI) were found, ranging from underweight, normal, to overweight categories. These results indicate differences in nutritional status among students, which can be explained through their respective BMI values.

Table 1. Characteristics of Respondens

| Variable | Min | Max | Mean ± SD    |
|----------|-----|-----|--------------|
| Age      | 17  | 29  | 19 ± 1.9     |
| Weight   | 40  | 81  | 54.93 ± 8.7  |
| Height   | 147 | 178 | 160.58 ± 6.1 |

Table 2. Category of BMI

| No    | Category    | Amount | Percent |
|-------|-------------|--------|---------|
| 1     | Underweight | 6      | 13      |
| 2     | Normal      | 31     | 67.4    |
| 3     | Overweight  | 9      | 19.6    |
| Total |             | 46     | 100     |

Based on the results of the study conducted on students of the Sport Science Study Program at Universitas Ngudi Waluyo, the distribution of nutritional status was as follows: 6 students (13.0%) were categorized as underweight, 31 students (67.04%) were in the normal category,

and 9 students (19.06%) were categorized as overweight. These results indicate that the majority of students had nutritional status within the normal category.

The dominance of normal nutritional status in this study indicates that most students have achieved a balance between energy intake and body requirements. This is particularly important for students in the field of sports, as good nutritional status plays a role in supporting physical fitness, body endurance, and physical performance. Students with normal nutritional status tend to have optimal body conditions to participate in academic activities and sports activities.

"However, 13.0% of the students were still categorized as underweight. This finding indicates that a proportion of students had body weight below the recommended normal range based on Body Mass Index (BMI). This condition may be influenced by several factors, including inadequate energy and nutrient intake, irregular eating habits, skipping meals, or engaging in high levels of physical activity without sufficient nutritional support. Among sport science students, being underweight may result in reduced muscle mass and limited energy reserves, which can negatively affect physical performance, decrease strength and endurance, and increase the risk of fatigue and injury during sports activities and practical coursework."

On the other hand, 19.06% of students were included in the overweight category. This indicates excessive energy intake compared to body requirements. "Factors contributing to overweight among students may arise from various aspects, including high-calorie dietary patterns, excessive consumption of fast food, frequent intake of sugary beverages, and insufficient physical activity outside academic activities. In addition, a sedentary lifestyle, such as spending excessive time sitting and engaging in minimal daily movement, may further increase the risk of becoming overweight. Among sport science students, overweight conditions can negatively affect physical performance, particularly in terms of agility, speed, movement coordination, and endurance. Furthermore, excess body weight may increase the workload on the musculoskeletal system, thereby raising the risk of fatigue, sports-related injuries, and other health problems if the condition persists over a long period. Therefore, maintaining a balanced diet and engaging in regular physical activity are essential for achieving optimal nutritional status and physical fitness."

Compared to previous studies, these results are consistent with several studies showing that the majority of students have normal nutritional status, although some still experience nutritional problems, both Undernutrition and overnutrition. This confirms that although the overall nutritional condition of students is generally good, attention is still needed for groups outside the normal category. Overall, the results of this study indicate that the nutritional status of students in the Sport Science Study Program at Universitas Ngudi Waluyo is dominated by the normal category, although there are still significant proportions in the underweight and overweight categories. Therefore, efforts are needed to increase awareness of the importance of balanced nutrition, proper physical activity management, and nutrition education for students in order to achieve and maintain optimal nutritional status.

## Conclusion

The conclusion of this study is that the majority of sport science students have normal nutritional status 31 (67,4%).

## References

- Amin, N. 2018. Buku Ajar: Gizi Olahraga. Surabaya: UNUSA PRESS
- Dong, Y., et al. (2025). Body composition assessment and limitations of BMI in nutritional screening. *Journal of Nutrition Research*, 44(2), 115–123.
- Ginta, K. W. F., Polii, H., & Wungouw, H. I. S. (2025). Relationship between Body Mass Index (BMI) and visceral fat thickness in adolescents. *CliniC*, 13(3), 343–347.
- Heyward, V. H., & Wagner, D. R. (2004). *Applied Body Composition Assessment*. Champaign, IL: Human Kinetics.
- Ministry of Health of the Republic of Indonesia. (2023). Guidelines for nutritional status categories based on Body Mass Index (BMI). Jakarta: Ministry of Health of the Republic of Indonesia.
- Nurjanah, S., & Rahmawati, D. (2021). Analysis of students' nutritional status based on Body Mass Index in higher education. *Jurnal Gizi Indonesia*, 9(2), 85–92.
- Pratiwi, R., & Setiawan, B. (2020). Relationship between physical activity and nutritional status among sport students. *Jurnal Keolahragaan*, 8(1), 45–53.
- Putri, A. R., & Kurniawati, I. (2022). Analysis of body fat percentage and BMI among sports faculty students. *Jurnal Ilmu Keolahragaan*, 15(1), 23–30.
- Saputra, M. H., & Lestari, Y. (2021). Relationship between Body Mass Index and physical

- fitness among university students. *Jurnal Sport Science*, 10(2), 101–109.
- Walsh, J., et al. (2018). BMI and body composition in athletes: limitations and alternatives. *Sports Medicine Journal*, 36(4), 289–297.
- Wiranata, A., & Inayah, R. (2020). Limitations of Body Mass Index in assessing nutritional status. *Jurnal Gizi dan Kesehatan*, 12(1), 45–52.
- World Health Organization (WHO). (2020). *Body Mass Index: BMI classification and health implications*. Geneva: WHO.