Indonesian Journal for Physical Education and Sport
https://journal.unnes.ac.id/journals/inapes/index
e-ISSN 2774-4434 | inapes@mail.unnes.ac.id
https://doi.org/10.15294/inapes.xxxx

The Level of Nutritional Knowledge of Taekwondo Athletes at GTC Dojang, Semarang City

Naufal Ammar[a], Agus Darmawan[b]
[ab]Pendidikan Jasmani Kesehatan dan Rekreasi, Universitas Negeri Semarang, Indonesia

Correspondence: naufalammar1124@gmail.com
Received: 18 June 2025 **Accepted:** 27 October 2025 **Published:** 31 October 2025

Abstract
The background of the problem in this study stems from the fact that although there is awareness about the importance of nutrition in sports, many athletes still lack understanding of basic nutrition principles and how to apply them in daily life. This research aimed to assess the level of nutritional knowledge among Taekwondo athletes at Dojang GTC in Semarang City. This study employed a quantitative descriptive research design aimed at measuring the level of nutritional knowledge among Taekwondo athletes at Dojang GTC in Semarang City. The findings showed that most athletes possessed moderate to good understanding of basic sports nutrition concepts, such as the role of macronutrients, the importance of hydration, and recovery after training. However, a significant proportion of athletes still demonstrated low levels of nutritional knowledge. This highlights the need for structured and continuous nutrition education. Such education is essential not only to raise awareness about the role of nutrition in performance and recovery but also as a preventive measure against fatigue, injury, and reduced physical endurance. This knowledge gap also reflects the limited access to valid nutritional information and the minimal involvement of professional nutritionists in the coaching process at the dojang level. Therefore, interventions in the form of training, counseling, or guided meal planning are urgently needed to ensure that all athletes are equipped with adequate knowledge to support their athletic performance optimally.

Keywords: nutrition education; nutrition knowledge; taekwondo

1. Introduction

Taekwondo is a branch of martial arts that emphasizes a combination of technique and strategy, focusing on speed, agility, endurance, and strength. To achieve optimal performance in this sport, an athlete not only requires structured physical training but also appropriate nutritional support tailored to their body's needs. Balanced nutrition plays a vital role in supporting athletic performance, preventing injuries, accelerating recovery, and improving endurance during intensive training or competition (Istiqomah et al., 2021).

Developing an interest in sports is not only about engaging in recreational activities that promote physical health and spiritual well-being but also about guiding individuals to develop and maximize their potential to achieve peak performance.

Malnutrition, in its various forms, poses a significant threat to human health. The world today faces a double burden of malnutrition, which includes both undernutrition and overweight,

particularly in low- and middle-income countries. There are several forms of malnutrition, including undernutrition (underweight or stunted growth), vitamin or mineral deficiencies, overweight, obesity, and diet-related non-communicable diseases. The developmental, economic, social, and medical consequences of the global burden of malnutrition are severe and long-lasting, affecting individuals, families, communities, and nations (WHO, 2024).

Adequate nutritional intake plays a crucial role in improving physical fitness (Andriyanti, F. S., 2024; Wismoyo et al., 2024).

GTC Dojang Banyumanik, Semarang, is one of the Taekwondo clubs that not only focuses on developing athletes' technical and physical skills but also instills strong character values as part of mental and personality development. The club emphasizes responsibility as a fundamental value in every training process, including discipline, obedience to coaches, and consistent commitment to continuous learning and training.

A strong character is formed through three main dimensions: moral knowing, moral feeling, and moral action. These dimensions complement each other to create individuals who not only know what is right but are also motivated to do it and remain consistent in their actions. Values such as responsibility, independence, cooperation, mutual support, leadership, creativity, and sportsmanship are essential positive traits that must be instilled from an early age. Education and physical activities such as sports serve as strategic platforms for fostering these character traits in a tangible and sustainable way (Thomas Lickona, 1991).

Nutritional knowledge is one of the crucial factors supporting athletic performance, especially for Taekwondo athletes who undergo high-intensity training. The energy and nutritional requirements of athletes differ from those of non-athletes, as they need sufficient intake to maintain strength, endurance, and recovery.

However, in practice, not all athletes have an adequate understanding of proper nutrition. A lack of knowledge regarding the types of food, appropriate portion sizes, and optimal meal timing may negatively affect performance and increase the risk of fatigue and injury. Although the importance of nutrition in sports has often been discussed, many athletes still demonstrate low levels of understanding of proper nutrition. Nutritional knowledge forms the foundation that determines an individual's ability to select food that meets their body's needs.

Several factors influence physical fitness levels among students, one of which is nutritional status. The better a student's nutritional status, the better their physical fitness will be. Adequate nutritional intake helps maintain body stability, ensuring good fitness levels and balanced energy needs, leading to overall better health (Pamuji & Setiawan, 2023).

A lack of nutritional knowledge can negatively affect athletes' eating patterns, leading to insufficient or excessive calorie consumption, poor food choices, and imbalances between macronutrient and micronutrient intake. Moreover, factors such as education level, training experience, access to information, and social habits can also influence an athlete's level of nutritional knowledge. For instance, athletes with limited access to nutrition information tend to follow eating patterns that do not align with their sports' physical demands. Therefore, conducting a survey on the nutritional knowledge of athletes at GTC Dojang Banyumanik is highly relevant

to provide a comprehensive overview of this condition and serve as a basis for more targeted intervention planning.

In the sports context, proper nutritional intake plays a significant role in supporting athletic performance. Sports nutrition involves strategies for appropriate food and fluid consumption before, during, and after training to support energy availability, muscle recovery, and endurance (Rodriguez et al., 2009). Athletes with good nutritional knowledge tend to make better dietary choices that match their training and competition needs. Proper hydration also plays an essential role, as even mild dehydration can decrease physical ability and concentration (Sawka et al., 2007).

According to Kurniawan et al. (2022), sports nutrition education provided to athletes, coaches, and physical education teachers significantly contributes to improving nutrition literacy and practical understanding of nutrient needs before, during, and after training or competition. They emphasize that nutrition education not only increases knowledge but also helps establish healthier eating and drinking habits in sports environments.

This is consistent with the views of Rodriguez et al. (2009) and Burke & Deakin (2015), who highlight that good nutritional knowledge influences dietary decision-making, which in turn affects physical performance, endurance, and recovery after intense physical activity.

A study conducted by Septiananda et al. (2023) found that the level of nutritional knowledge significantly affects physical fitness and nutritional status in the studied sample. Better nutritional knowledge tends to be associated with healthier eating habits and more appropriate food choices, ultimately having a positive impact on individuals' physical condition and nutritional status. This finding underscores the importance of a sound understanding of nutrition to support overall health and athletic performance.

2. Method

This study is a quantitative descriptive research aimed at measuring the level of nutritional knowledge among Taekwondo athletes at GTC Dojang, Semarang City. A quantitative approach was chosen because it allows for the collection of numerical data that can be statistically analyzed to obtain an objective overview of the athletes' level of nutritional knowledge (Sugiyono, 2017).

Data processing was carried out using a simple scoring method, in which each correct answer was assigned a score of 1, and each incorrect answer a score of 0. The final score was then calculated as a percentage using the following formula:

$$Dp = (n/N) \times 100\%$$

Where:
Dp = data in percentage
n = score obtained or number of athletes in each category
N = total score or total number of respondents

Based on data analysis of 25 respondents, it was found that 10 athletes (40%) had a good level of nutritional knowledge, 8 athletes (32%) were in the fair category, and 7 athletes (28%) were categorized as poor.

These results indicate that although the majority of athletes (72%) possess adequate to good knowledge about nutrition, around 28% still demonstrate a low level of nutritional understanding. This suggests that nutrition education programs should be particularly focused on athletes with lower levels of understanding to improve dietary quality and optimize athletic performance.

3. Result and Discussion

Results

This study examined the level of nutritional knowledge among athletes at GTC Dojang Banyumanik, a Taekwondo club located in Semarang City that has previously participated in international championships.

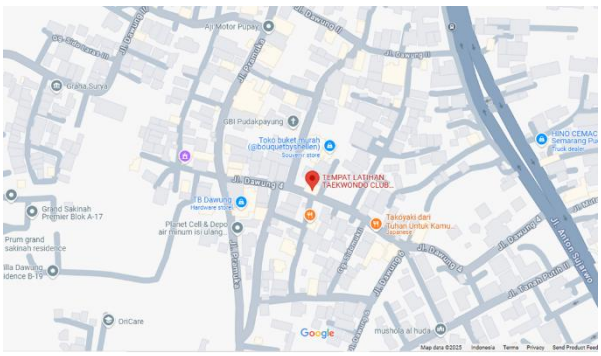

Figure 1. Location of GTC Dojang Banyumanik

Practically, this research aims to make a tangible contribution by providing insights and information regarding the level of nutritional knowledge among Taekwondo athletes at the dojang level. The findings of this study are expected to be useful for coaches, athletes, and club administrators as a foundation for designing more targeted training programs, particularly in the area of nutrition education that supports performance improvement and athlete fitness.

Additionally, these findings may serve as valuable input for relevant stakeholders in developing sustainable and needs-based athlete development strategies.

Theoretically, this research intends to expand the body of knowledge and literature in sports nutrition, particularly regarding the nutritional knowledge level of martial arts athletes such as Taekwondo practitioners. By focusing on a specific population athletes at the dojang level this study can serve as a scientific reference for understanding the relationship between nutrition education and its practical implementation in sports.

The findings are also expected to encourage further research on the role of nutrition education in supporting athlete health and performance, thereby enriching academic studies in the fields of sports science and public health.

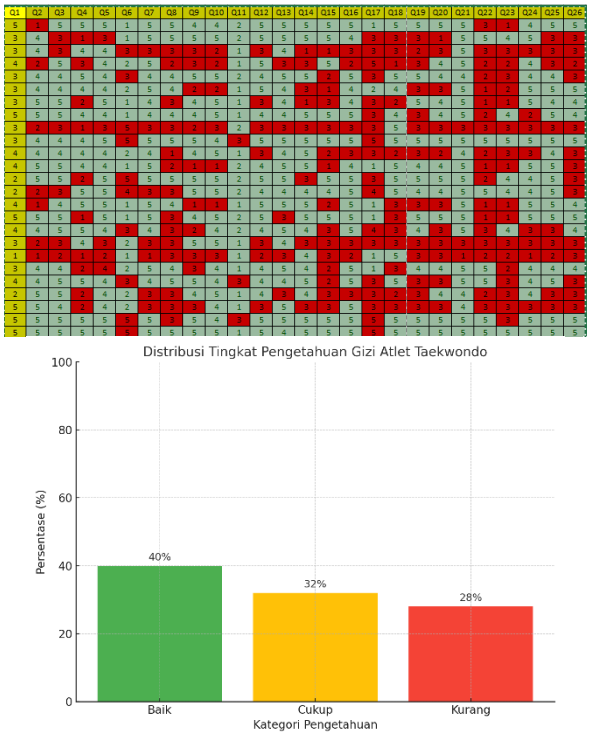

Figure 2. Distribution of nutritional knowledge among taekwondo athletes

Based on field observations, the results show that 40% of athletes were categorized as having good nutritional knowledge, 32% as moderate, and 28% as poor. These results were obtained after athletes participated in training sessions of moderate intensity.

Discussion

Nutrition has a significant impact on the fitness and performance of athletes. The better an athlete's nutritional status, the better their physical fitness and overall performance. Istiqomah & Kristiyanto et al. (2022) found a relationship between nutritional status and physical fitness ($p = 0.028$). The correlation coefficient ($R = -0.401$) indicated a moderate inverse relationship between the two variables, meaning that as nutritional status increases beyond the ideal range, physical fitness tends to decrease. In general, athletes with good nutritional status tend to have better physical fitness levels.

Nutrition plays a fundamental role in supporting athletic performance by providing the energy required for physical activity. A balanced intake of carbohydrates, proteins, and fats contributes to energy storage in the form of muscle glycogen, which serves as the primary fuel during high-intensity exercise. According to Burke et al. (2017), the consumption of carbohydrates before, during, and after training can enhance work capacity and accelerate muscle recovery, making it an essential component of an athlete's diet.

In addition to carbohydrates, protein is a key nutrient for repairing muscle tissues damaged during intense training. Consuming protein after exercise can increase muscle protein synthesis, which is essential for adaptation and recovery (Phillips et al., 2016). This recommendation is particularly

relevant for athletes seeking to improve strength and endurance, including those engaged in high-intensity sports such as Taekwondo.

Healthy fats, such as omega-3 fatty acids found in oily fish, also play a significant role in athletic performance. Calder (2020) explains that omega-3 fatty acids possess anti-inflammatory properties that can reduce muscle damage and accelerate recovery. Furthermore, healthy fats contribute to cognitive function, which is vital for strategy and decision-making in sports like Taekwondo that demand quick responses and high levels of coordination.

Adequate hydration is another crucial yet often overlooked factor in maintaining optimal performance. Casa et al. (2015) demonstrated that dehydration of as little as 2% of body weight can significantly reduce both physical and mental capacity in athletes. Therefore, ensuring proper fluid intake before, during, and after exercise is an essential component of a comprehensive training and nutrition program.

This study reveals an important reality regarding the level of nutritional knowledge among Taekwondo athletes at GTC Dojang Banyumanik, Semarang City. Although Taekwondo demands high levels of physical performance including strength, endurance, speed, and rapid post-training recovery not all athletes possess sufficient understanding of essential nutritional aspects that support these abilities.

From a total of 25 respondents, the results show that 40% of athletes have good nutritional knowledge, 32% are in the moderate category, and 28% fall into the low category. This indicates that nearly one-third of the athletes, aged approximately 12-20 years, still lack basic awareness of the importance of nutrition in supporting physical fitness and sports performance.

4. Conclusion and Recommendation

The low level of nutritional knowledge among athletes is influenced by several factors, such as limited access to reliable nutrition information, the suboptimal role of nutrition professionals in athlete development at the dojang level, and the absence of structured and sustainable nutrition education programs. This situation is regrettable, considering that proper nutritional fulfillment can help prevent fatigue and support optimal athletic performance.

References

Almatsier, S. (2009). *Prinsip Dasar Ilmu Gizi*. PT Gramedia Pustaka Utama.

Andriyanti, F. S., & Kurniawan, W. R. (2024). Profil tingkat kebugaran jasmani peserta ekstrakurikuler sepak bola putri sekolah dasar di Kabupaten Kudus. *Indonesian Journal for Physical Education and Sport*, 5(1), 81–88. https://journal.unnes.ac.id/journals/inapes

Burke, L. M. (2021). Nutritional approaches to counter performance constraints in high-level sports competition. *Experimental Physiology*, 106, 2304–2323. https://doi.org/10.1113/EP088188

Calder, P. C. (2017). Omega-3 fatty acids and inflammatory processes: from molecules to man. *Biochemical Society Transactions*, 45(5), 1105–1115. https://doi.org/10.1042/BST20160474

Casa, D. J., Armstrong, L. E., Hillman, S. K., Montain, S. J., Reiff, R. V., Rich, B. S., Roberts, W. O., & Stone, J. A. (2000). National athletic trainers' association position statement: fluid replacement for athletes. *Journal of Athletic Training*, 35(2), 212–224.

Creswell, J. W. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). SAGE Publications.

Devlin, B. L., Leveritt, M. D., Kingsley, M., & Belski, R. (2017). Dietary Intake, Body Composition, and Nutrition Knowledge of Australian Football and Soccer Players: Implications for Sports Nutrition Professionals in Practice. *International Journal of Sport Nutrition and Exercise Metabolism*, 27(2), 130–138. https://doi.org/10.1123/ijsnem.2016-0191

Heaney, S., O'Connor, H., Gifford, J., & Naughton, G. (2011). Towards an understanding of nutrition for sports performance. *International Journal of Sports Science & Coaching*, 6(1), 155–163. https://doi.org/10.1260/1747-9541.6.1.155

Istiqomah, I. P. N., Kristiyanto, A., & Ardyanto, T. D. (2022). Hubungan Status Gizi dengan Kebugaran Jasmani Atlet Taekwondo Remaja. *Fisio Mu: Physiotherapy Evidences*, 1–7.

Kurniawan, C., Surisman, S., Adi, S., & Priyono, D. (2022). Pelatihan gizi olahraga untuk atlet, pelatih, dan guru pendidikan jasmani. *Jurnal Pengabdian Masyarakat Ilmu Pendidikan*, 1(1), 45–49. https://doi.org/10.23960/jpmip.v1i01.61

Lickona, T. (1991). *Mendidik untuk membentuk karakter: Bagaimana sekolah dapat memberikan pendidikan tentang sikap hormat dan bertanggung jawab* (Terj.). Bantam Books.

Notoatmodjo, S. (2003). *Pendidikan dan Perilaku Kesehatan*. Rineka Cipta.

Pamuji, H. I. P., & Setiawan, I. (2023). Tingkat kebugaran jasmani siswa kelas V SD Negeri Tawangmas 01, SD Negeri Tanjung Mas dan SD Negeri Sekaran 01 pasca new normal tahun 2022. *Indonesian Journal for Physical Education and Sport*, 4(Edisi Khusus 1), 1–7. https://journal.unnes.ac.id/sju/index.php/inapes

Phillips, S. M., Chevalier, S., & Leidy, H. J. (2016). Protein "requirements" beyond the RDA: implications for optimizing health. *Applied Physiology, Nutrition, and Metabolism*, 41(5), 565–572. https://doi.org/10.1139/apnm-2015-0550

Rodriguez, N. R., DiMarco, N. M., & Langley, S. (2009). Position of the American Dietetic Association, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and athletic performance. *Journal of the American Dietetic Association*, 109(3), 509–527. https://doi.org/10.1016/j.jada.2009.01.005

Sawka, M. N., Burke, L. M., Eichner, E. R., Maughan, R. J., Montain, S. J., & Stachenfeld, N. S. (2007). American College of Sports Medicine position stand. Exercise and fluid replacement. *Medicine & Science in Sports & Exercise*, 39(2), 377–390. https://doi.org/10.1249/mss.0b013e31802ca597

Septyananda, R., & Suripto, A. W. (2023). Tingkat Kebugaran Jasmani dan Indeks Massa Tubuh Peserta Didik di SD Negeri Gejayan Kabupaten Sleman. *Indonesian Journal for Physical Education and Sport*, 4(Edisi Khusus 1), 8–13. https://doi.org/10.15294/inapes.v5i1.59719

Sugiyono. (2013). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Sugiyono. (2017). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, dan R&D* (Edisi ke-23). Bandung: Alfabeta.

Trakman, G. L., Forsyth, A., Devlin, B. L., & Belski, R. (2017). A systematic review of nutrition knowledge assessment tools validated in athletes and coaches. *International Journal of Sport Nutrition and Exercise Metabolism*, 27(3), 311–322.

World Health Organization. (2004). *Vitamin and mineral requirements in human nutrition* (2nd ed.). https://www.who.int/publications/i/item/9241546123