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Sports Nutrition Knowledge among Sub-Elite Finswimming Athletes

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ABSTRACT

Nutrition is crucial for optimal growth and athletic performance, yet Indonesian athletes often underestimate its importance. Studies show no significant differences in dietary attitudes among various levels of athletes, with conflicting findings on the link between nutritional knowledge and performance. Finswimming, governed by the Komite Olahraga Nasional Indonesia (KONI), requires high physical fitness, but many athletes are classified as obese. This highlights the need for better nutrition education to achieve a healthy body mass index. Misconceptions and lack of knowledge about nutrition negatively impact athletes' food choices. This study evaluates finswimming athletes' nutrition knowledge and its correlation with their dietary habits. This study surveyed 30 finswimming athletes in East Java, comprising 13 men and 17 women, using a questionnaire to collect data. Quantitative descriptive analysis was employed to interpret the results, utilizing descriptive statistical methods and Microsoft Excel for data analysis. The study found a significant correlation between nutrition knowledge and dietary intake among finswimming athletes. Advanced trainees had better nutritional knowledge. 80% correctly identified protein sources, but most had low overall nutrition knowledge, especially about consulting nutritionists and fluid intake. The average score of 43 indicates a need for improved nutrition education to enhance performance and health. The study revealed that the respondents had limited nutrition knowledge, particularly about consulting nutritionists and understanding fluid intake, although 80% knew their protein sources. With an average score of 43, there's a clear need for better nutrition education. Improving this knowledge would help athletes make smarter choices, enhancing their performance and overall health.

INTRODUCTION

Nutrition provides the necessary foundation for optimal growth and body function (Kerksick et al., 2017). One of the pillars of athletic performance is nutrition, which is considered an important factor to stay healthy and fit and to optimize athletic performance (Kerksick et al., 2017). To achieve the desirable nutritional status of an athlete, nutritional knowledge is relevant (Kerksick et al., 2017). This knowledge consolidates the rationale for improving dietary behaviour—which can vary from foraging to ingestion, encompassing the consumption of individual nutrients to meal plans, disordered eating to eating customs, and food preferences to cooking (Stok et al., 2018)—and provides the necessary competence to make nutrition-based food choices (Alaunyte et al., 2015; Dickson-Spillmann & Siegrist, 2011). After physical training, nutrition also plays an important role in determining sports performance (Kerksick et al., 2017). However, Indonesian athletes continue to underestimate the importance of sports nutrition in achieving peak performance (Ali et al., 2022).

Nutritional knowledge, which includes an understanding of concepts such as dietary recommendations and different sources of nutrients, significantly influences behaviours related to one's diet (Bradette-Laplante et al., 2016; Bhawra et al., 2023). A study found that there are no differences in dietary attitudes or understandings between elite, amateur, and recreational athletes (Torres-McGehee et al., 2012). Interestingly, there are two conflicting scientific studies regarding the relationship between sports performance and nutritional understanding. Athletes with poor levels of sports nutrition

knowledge were shown to have a greater percentage of body fat (Jagim et al., 2021), whereas another study showed no direct correlation between strong nutrition knowledge or practice and athletic performance (Folasire et al., 2015).

Through its association, *Persatuan Olahraga Selam Seluruh Indonesia* (POSSI), finswimming is one of the achievement sports included in the list of sports in the *Komite Olahraga Nasional Indonesia* (KONI) (CMAS, 2019). This sport is contested in two venues: diving in swimming pools and diving at sea (CMAS, 2019). Improved performance in finswimming is highly dependent on the athlete's physical condition (Sudarwati et al., 2023). An optimal fitness level is key for athletes to execute techniques and strategies well during training and competition (Sudarwati et al., 2023). Nutrition and physical fitness issues are crucial factors in athlete achievement (Kerksick et al., 2017). Therefore, it is important to have a good understanding of athletes' physical condition to provide them with the appropriate care to enable them to reach their full potential (Kerksick et al., 2017). Findings from previous studies show that the majority of finswimming athletes have a nutritional status that can be classified as obese based on body mass index (Yanuar, 2021). Therefore, there is a need for a more comprehensive nutrition education approach for finswimming athletes to help them achieve a body mass index that is within the normal range (Yanuar, 2021).

According to previous studies, athletes often experience misconceptions about nutrition and a lack of knowledge about dietary recommendations, which can negatively impact the foods they choose (Spronk et al., 2015; Heaney et al., 2011). Previous research has also shown the adverse effects of ignorance and the spread of incorrect nutritional advice, especially for athletes (Cockburn et al., 2014). Therefore, through the use of questionnaire answers, this study aimed to evaluate the understanding of sports nutrition among finswimming athletes and analyse the correlation between their diet and nutritional knowledge (Kerksick et al., 2017).

RESEARCH METHOD

This study used a descriptive quantitative approach with a survey method through questionnaire completion. The aim was to evaluate sports nutrition knowledge in finswimming athletes and analyze its correlation with their dietary habits. The data obtained were analyzed using descriptive statistical methods with the help of Microsoft Excel software.

The subsections in this study method include:

1. Participants' characteristics
2. Data collection techniques
3. Data analysis techniques

This study involved 30 finswimming athletes from the East Java region. The composition of the participants consisted of 13 men and 17 women. The athletes involved came from the sub-elite group and actively participated in training and competition activities facilitated by POSSI East Java.

Data were collected using a questionnaire instrument designed to evaluate athletes' understanding of sports nutrition. The questionnaire covered various indicators such as energy sources, protein requirements, types of carbohydrates, importance of hydration, and understanding of consulting a nutritionist.

Data analysis was done descriptively quantitatively, by categorizing the scores of the answers into three levels: high (76-100%), medium (51-75%), and low (≤50%).

RESULTS AND DISCUSSION

Below are the results of categorizing the nutritional knowledge of finswimming athlete respondents.

Table 1. Score Categorization

Category	Score
High	76-100%
Medium	51-75%
Low	≤50%

Researcher data source (2024)

Based on Table 1, the participant score categories are as follows.

Table 2. Participant Score Category

Category	Frequency	Percentage
High	0	0%
Medium	7	23%
Low	23	77%
Total	30	100%

Researcher data source (2024)

Based on Table 2, it was found that the scores of the participants fell into the medium (51-75%) and low (≤50%) score categories. The distribution of the participants' total scores is described in Table 3.

Table 3. Participant's Total Score

Score	Frequency	Percentage (%)
10	1	3%
15	3	10%
20	2	7%
30	2	7%
35	1	3%
40	4	13%
45	6	20%
50	4	13%
55	1	3%
65	3	10%
70	2	7%
75	1	3%

Total	30	100%

Researcher data source (2024)

Based on Table 3, it was found that the participants' lowest score was 10 and the highest score was 75, with the most frequently obtained score being 47, achieved by 4 participants (20%).

A water sport called finswimming incorporates aspects of diving with the use of leg-bars (Monofin).

This sport demands physical endurance, proficient swimming technique, and effective use of fins (CMAS, 2019). Therefore, endurance athletes, including finswimming athletes, are advised to consume more protein to support training demands (Kerksick et al., 2017). For endurance-trained athletes, the recommended protein intake is 1.2–1.4 $g \cdot kg^{-1} \cdot day^{-1}$ (Kerksick et al., 2017; Thomas et al., 2016). Protein serves as supplementary fuel for resistance training and provides amino acids necessary for developing and/or maintaining muscle mass (Kerksick et al., 2017). Furthermore, protein is essential for replenishing substrate stores and facilitating skeletal muscle repair and rebuilding during post-exercise recovery (Kerksick et al., 2017). Consuming protein after resistance-based exercise has been shown to enhance the rate of skeletal muscle protein synthesis, increase muscle mass, and improve strength (Morton et al., 2018). Based on the questionnaire results, 80% of respondents (n = 24 correct responses; n = 6 incorrect responses) demonstrated awareness of protein sources beneficial for finswimming athletes.

The nutritional awareness and performance of collegiate athletes in the Filipino community was studied by Duran et al. (2020), who found that age and gender did not significantly influence nutritional performance, which was generally moderate. Athletes with greater nutritional knowledge exhibited improved nutritional performance, and a substantial correlation was found between nutritional knowledge and performance (Duran et al., 2020). Similarly, research by Alghannam et al. (2019) showed that higher nutritional knowledge can lead to improved athletic performance, even when the study only evaluated hydration rather than broader dietary behaviours. Athletes with adequate nutritional knowledge can make informed dietary choices that ensure they meet energy and nutrient requirements (Kerksick et al., 2017). Proper nutrition enables athletes to perform optimally, recover more rapidly from injuries, and reach their full potential (Thomas et al., 2016; Kerksick et al., 2017).

Our study identified a significant correlation between nutrition knowledge and dietary intake among finswimming athletes. Athletes with advanced training levels generally possessed more sport-specific nutritional knowledge than those at novice or intermediate levels. This suggests that athletes engaged in longer and more intense training programmes are more motivated to acquire and apply nutritional information relevant to their sport (Kerksick et al., 2017). Therefore, coaches and support staff should integrate training volume and intensity considerations when delivering nutritional guidance to improve both performance and health outcomes. Employing a registered sports dietitian would allow coaching, strength and conditioning, and athletic training staff to focus on sport-specific tasks while ensuring athletes receive expert nutrition education (Dolan et al., 2020).

Based on the survey results, respondents' knowledge of nutrition fell into two categories: medium and low, with the majority in the low category. This indicates a pressing need to improve nutritional knowledge among finswimming athletes. Poor understanding of nutrition can lead to suboptimal food choices, inadequate energy availability for training and competition, and increased risk of injury with prolonged recovery times (Maughan et al., 2018). Nonetheless, most respondents were aware of the importance of protein-rich foods for improving finswimming performance, suggesting that past educational efforts have had some positive impact. However, gaps remain in knowledge about fluid requirements and the benefits of consulting a nutritionist. Understanding hydration needs is critical for maintaining performance during training and competition, while guidance from a nutritionist can provide tailored recommendations (Sawka et al., 2007).

The mean knowledge score of respondents was 43, indicating that finswimming athletes would benefit from enhanced nutritional education. Strategies such as seminars, workshops, written resources, and one-on-one consultations with coaches or sports nutritionists could be employed to improve knowledge and promote optimal performance. By strengthening nutritional literacy, finswimming athletes can maximize their potential and achieve superior results in competition (Kerksick et al., 2017; Thomas et al., 2016).

CONCLUSION

The study found a that most respondenrs had low overall nutrition knowledge, especially about consulting nutritionists and fluid intake, even though 80% correctly identified protein sources. The average score of 43 indicates a need for improved nutrition education to enhance performance and health.

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