Bulletin of the *Transilvania* University of Braşov
Series IX: Sciences of Human Kinetics • Vol. 18(67) No. 1 – 2025
https://doi.org/10.31926/but.shk.2025.18.67.1.5

RELATIONSHIP BETWEEN BALANCED NUTRITION AND SPORTS PERFORMANCE IN SWIMMERS

I. BARDAN[1] E. VIZITIU LAKHDARI[2]

Abstract: *The study investigates the relationship between balanced nutrition and sports performance in swimmers, being analyzed the impact of nutritional intake on physical development, exercise capacity and post-training recovery. Methodology: 50 swimmers aged 8 to 14 were assessed by a questionnaire applied to parents, targeting the frequency of meals, intake of macronutrients and micronutrients, hydration and use of supplements. The results emphasize the importance of a diet adapted to the metabolic requirements of swimmers, highlighting the need for personalized nutritional diaries to optimize sports performance and prevent dysfunctions associated with intense effort.*

Key words: *study, nutrition, swimming, performance, athletes.*

1. Introduction

Nutrition is an important factor in optimizing the performance of athletes, helping to support physical exertion, muscle recovery and training effort. A balanced diet is vital in any sporting discipline, and lack of adequate knowledge can negatively influence athletes' results [2]. Understanding the interactions between eating habits, barriers to adopting a balanced diet and nutritional knowledge are essential to improve athletes' performance. Recent studies highlight that many teenage swimmers are not sufficiently informed about the role of nutrition, which can lead to poorer dietary choices [1]. A critical aspect identified in specialized literature is the fact that many athletes, especially female swimmers, are not aware of the risks associated with insufficient or excessive consumption of macronutrients. For example, a low carbohydrate intake can affect endurance and metabolic efficiency, which negatively influences performance in endurance events [3]. A study of competitive swimmers showed that only 38% of them follow an optimal eating plan, while over 60% have inadequate nutritional habits. This highlights the need for more effective nutritional education among athletes. Furthermore, there is a complex relationship between nutrition, body composition and sports performance.

[1] University of Physical Education and Sports Moldova, Chisinau Republic of Moldova.
[2] Interdisciplinary Center for Research in Motor Sciences and Human Health, USV, Suceava.

Although the role of nutrition is well known, many aspects remain poorly understood, particularly regarding physiological adaptations to various regimens and their impact on strength, speed, and endurance [5]. For adolescent athletes, especially those involved in intense training, the nutritional requirements are increased. In this context, parents play an essential role in ensuring an adequate diet. Access to food, consumption patterns and eating habits of young people are significantly influenced by parents' knowledge and attitudes towards nutrition [8]. Therefore, nutritional education should not be limited to athletes, but should also be extended to their families to promote long-term beneficial food choices. A correct assessment of nutritional status is important for optimizing sports performance. This influences overall health, body composition and post-workout recovery processes. An adequate caloric intake, balanced between macronutrients and micronutrients, contributes to the prevention of nutritional deficiencies and to the support of optimal long-term performance [6]. Energy intake should be tailored to the type and intensity of training, and food sources should include a variety of essential nutrients, such as complex carbohydrates, quality proteins, healthy lipids, and essential vitamins [7]. Despite existing recommendations, many athletes adopt restrictive or inappropriate diets, either due to dietary trends or lack of scientifically based knowledge [9]. Sports nutrition is not just about ensuring an optimal energy intake, but represents a complex strategy to support performance, prevent fatigue and accelerate recovery. Correct food choices considerably increase the physical and mental capabilities of athletes, giving them a significant competitive advantage [4].

2. Objectives

1. Evaluation of the dietary habits of child athletes who practice performance swimming, especially regarding the consumption of proteins, carbohydrates, fruits and vegetables, and healthy snacks. This objective aims to identify current eating habits and the frequency of consumption of different food groups to determine whether they are adequate to support children's physical performance.
2. The study about the importance of hydration in sports performance involves the assessment of the perception of parents and coaches regarding the importance of hydration for children practicing performance swimming. This includes analysis of hydration habits, frequency of water and other beverage consumption, and their impact on children's physical performance and overall health.
3. Identifying the relationship between diet, hydration and swimming performance involves analyzing data collected from questionnaires to understand how a balanced diet and optimal hydration can contribute to the development of children's sports performance.

2. Material and Methods

The aim of this study is to analyze the relationship between balanced nutrition and the sports performance of swimmers aged between 8 and 14 years, identifying the impact of nutrition on physical

development, effort capacities and the recovery process. Highlighting the role of hydration and optimal eating habits in improving swimmers' performance. The paper's hypothesis: It is assumed that a balanced diet and adequate hydration positively influence the sports performance of swimmers between the ages of 8 and 14, and parents' perceptions of nutrition are a significant factor in the stability of eating habits and in the development of their performances. The organization and conduct of the research have been carried out at the Suceava Swimming and Kinetic Therapy Complex, the teaching pool of USV, a location dedicated to the teaching process of FEFS students, performance swimming within the CSU, and the recreational activity of the public from Suceava who love this sport. Data was collected in January 2025.

Data collection method: The questionnaire was distributed to parents of children practicing competitive swimming. Inclusion criteria: Children aged between 8 and 14 years. Performance swimming experience, at least one year of performance swimming practice/3 sessions per week, between 60 and 120 minutes, thus ensuring that respondents (parents) have experience in the field. Parental consent for research participation.

4. Results and Discussions

Following the collection of data through the 50 questionnaires, relevant information was obtained regarding the eating and hydration habits of children practicing performance swimming at CNK within the USV. The results obtained reflect both healthy behaviors and aspects that could improve athletes' performances.

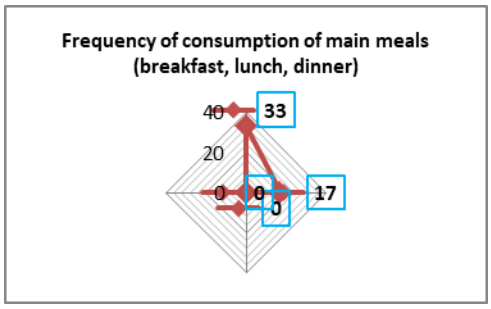

Fig.1. *Children's main meal frequency*

The frequency distribution of the answers (Figure 1) shows that 66% of the respondents consume regular main meals daily, which is a positive indicator for a constant and balanced diet, essential in supporting physical and sports performance. 34% of respondents mention that certain meals are sometimes skipped.

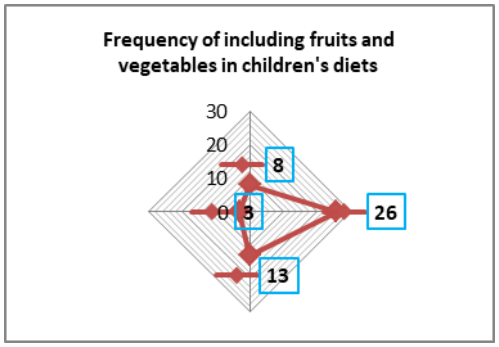

Fig. 2. *Frequency of fruit and vegetable consumption in children*

The frequency distribution of responses (Figure 2) shows that 52% of respondents include fruits and vegetables at every meal, which suggests a balanced and healthy diet. This is an ideal practice given the importance of fruits and vegetables in providing essential vitamins and nutrients. 26% respondents indicate that fruits and vegetables are consumed several times a week, which suggests that the frequency

is not sufficient to ensure a balanced diet. 6% of parents mention that fruits and vegetables are rarely included in the child's diet, which may signal a lack of variety in the diet, with possible long-term health implications.

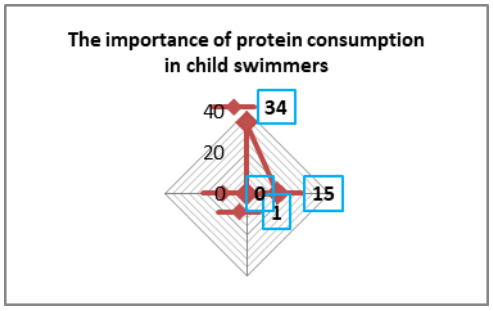

Fig.3. *The importance of protein for performance swimmers*

The frequency distribution of the responses (Figure 3) shows that 68% of the respondents consider protein consumption (lean meat, eggs, legumes) as very important for a child practicing performance swimming. This suggests a heightened awareness of the essential role it plays in young athletes' muscle development and recovery, essential for performance in endurance sports such as swimming. 15% of respondents say that this consumption is important, which indicates a positive attitude towards protein-rich food, even if it is not perceived as important as in the case of 68%. This could reflect a preference for a balance between nutrients in the child's diet. A very small percentage, 2% think it is moderately important, which suggests a lesser understanding of the importance of protein in supporting physical development and sports performance. They may be underestimating the role of protein in muscle recovery and supporting long-term physical performance.

No respondent considered the consumption of protein more important, which indicates that most parents are aware of the need for protein in the nutrition of a sports child, especially in the context of performance swimming.

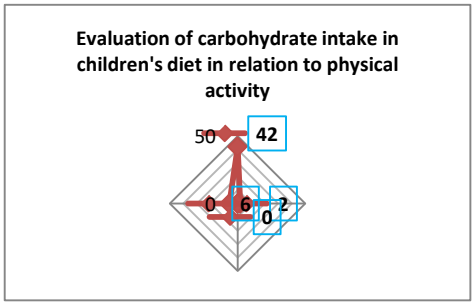

Fig.4. *Carbohydrate intake in the child's diet and physical activity*

The frequency distribution of responses (Figure 4) shows that 84% of respondents report the intake of carbohydrates (cereals, pasta, rice) in the child's diet as adequate for his needs, related to the level of physical activity. It suggests that most parents are aware of the importance of carbohydrates for the child's energy supply, especially for a young athlete involved in intense physical activity, such as performance swimming. A small percentage of 4% of the respondent state that the intake of carbohydrates is slightly below what is needed, which may indicate a possible insufficiency of the energy provided by the diet. They may need to adjust the amounts of carbohydrates to better support the child's physical performance. No one considered carbohydrate intake to be excessive, suggesting that most parents pay attention to nutritional balance, avoiding the risk of too much carbohydrate

consumption that could lead to weight gain or dietary imbalances. 6% of respondents are unsure about the adequacy of carbohydrate intake, which may indicate a need for additional education or counseling to better understand the nutritional needs of a child athlete.

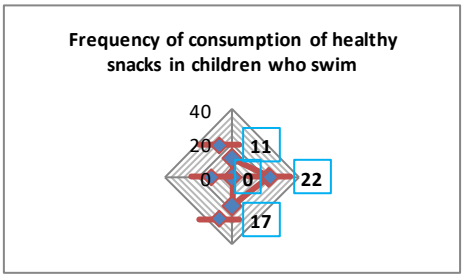

Fig.5. *Frequency of healthy snacks*

Regular snacks, before or after training, are important for sustaining intense physical activities. No one reported that healthy snacks are consumed very rarely, which suggests that most parents are aware of their importance and integrate them into the child's daily diet, especially in the context of physical activity. The frequency distribution of the answers (Figure 5) shows that 22% of the respondents say that their child consumes healthy snacks almost daily, which suggests a healthy eating habit, adapts to the energy needs of a child practicing performance swimming. This is a positive practice that helps maintain a constant level of energy and increase performance during training. 11% of parents indicate that their child eats healthy snacks every time, before or after training. This is an ideal practice, which ensures a balanced diet, helping the child to have enough energy for workouts and to recover from them. 17% of respondents mention that their child eats healthy snacks occasionally. This behavior may indicate less consistent feeding and could be established to better support the child's physical performance. Regular snacks, before or after training, are important for sustaining intense physical activities. No one reported that healthy snacks are consumed very rarely, which suggests that most parents are aware of their importance and integrate them into the child's daily diet, especially in the context of physical activity.

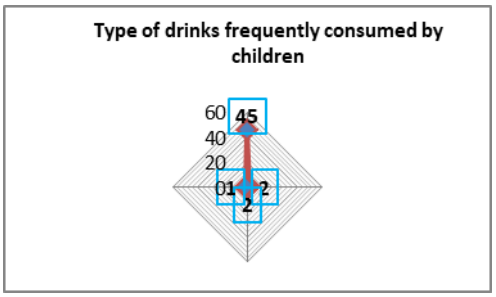

Fig.6. *Drinks frequently consumed by children*

The frequency distribution of the answers (Fig. 6) shows that 95% of the respondents indicate that their child consumes water as the main drink, which is a very positive signal in what they identify. Water is essential for physical performance, especially in the case of a child practicing performance swimming, to help maintain the body's water balance and support optimal physical functions. 2% of respondents mention that their child is consuming natural sugars without sugar, which is a healthy choice and a good alternative to sugar-added drinks, as they provide essential vitamins without adding extra calories or sugars. Another 2% of parents indicate that carbonated or energy drinks are consumed by the child, which can be of concern as these drinks can contain high levels of sugar and

caffeine, which can negatively affect long term health and lead to dehydration. In addition, only 1% of respondents say that their child consumes drinks with added sugar, which suggests a limit on these types of drinks, which is beneficial for the child's health.

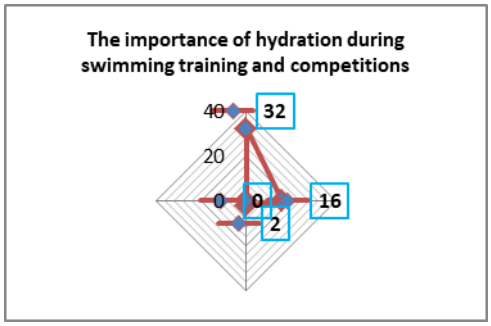

Fig.7. *The importance of hydration in swimming training and competitions*

The frequency distribution of the answers (Figure 7) shows that 64% of the respondents for hydrated health very important during training and swimming competitions. This high percentage underlines the general awareness of parents regarding the importance of hydration regarding the cause to support physical performance and to prevent dehydration, which can negatively affect both performance and general health of the child.

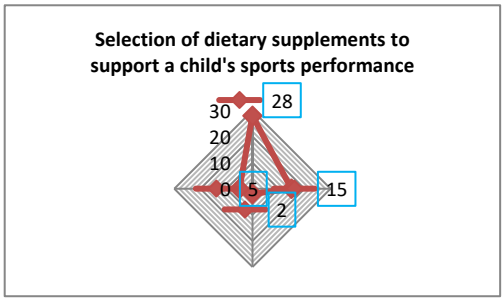

Fig. 8. *Choosing nutritional supplements for your child's sports performance*

The frequency distribution of responses (Figure 8) shows that 56% of respondents choose dietary supplements based on the recommendations of a specialist, which is encouraging and suggests a responsible and educated approach. 30% of respondents rely on information from the media or the internet, which may indicate a need to increase nutrition education and promote information safety.

5. Conclusions

Most parents are aware of the importance of a balanced diet for their children, as a large proportion of them state that fruits and vegetables are consumed regularly.

Regarding the importance of protein in the diet of sports children, parents are generally well informed about the need for an adequate protein intake for children who practice performance sports. A high percentage of parents believe that protein is essential for supporting physical performance, which reflects a good understanding of its role in muscle recovery and maintaining good physical fitness. Although monitored, most parents know that their children's carbohydrate intake is adequate for their physical needs, there is an opportunity to optimize the diet to ensure a better balance between protein, carbohydrates and other nutrients. Continuous education of parents on sports nutrition can contribute to a better structured diet adapted to the needs of children who practice performance swimming. In terms of hydration, most parents are aware that water is the main drink consumed.

Acknowledgements

We would like to thank the parents who participated in this research and dedicated time and attention to completing the questionnaire. Their contributions were important to better understand the food and hydration needs of children who practice performance in swimming. Thanks to their involvement and support, we will be able to develop more effective strategies to support athletes' health and performance.

References

1. Aikasasbeh, W., Akroush, S.: *Investigating the interrelationships among food habits, sports nutrition knowledge, and perceived barriers to healthy eating: a study of adolescent swimmers.* In: Frontiers in Nutrition , 11 , 1381801, 2024, https://doi.org/10.3389/fnut.2024.1381801.
2. Amawi, A.T., Moualla, D.S., Alshuwaier, G.O., Al-Nuaim, A.A., Bursais, A.K., Aljaloud, K.S., et al.: *Knowledge and attitude of dietary supplements among Arab Olympic athletes and coaches in preparation program for Tokyo 2020 Olympic games*. In: Int J Hum Mov Sports Sci. (2023) 11:368–77. doi: 10.13189/saj.2023.110214.
3. Das, P. K., Saha, P., Das, E.: *Study of close relation of nutritional knowledge, practices and attitudes towards health risks of competitive swimmers.* In: EXCEL International Journal of Multidisciplinary Management Studies, 2013, 3(10), p. 45-67.
4. Irandoust, Kh.: *The Interplay of Nutrition, Physiology, and Performance in Sports: A Comprehensive Review.* In: Health Nexus, 2023, 1(3), p. 21-30. https://doi.org/10.61838/kman.hn.1.33
5. Martín-Rodríguez, A., Belinchón-deMiguel, P., Rubio-Zarapuz, A., Tornero-Aguilera, J. F., Martínez-Guardado, I., Villanueva-Tobaldo, C. V., Clemente-Suárez, V., J.: *Advances in understanding the interplay between dietary practices, body composition, and sports performance in athletes.* In: Nutrients, 2024, 16(4), 571. https://doi.org/10.3390/nu16040571.
6. Mielgo Ayuso, J., Maroto Sanchez, B., Luzardo Socorro, R., Palacios Le Blé, G., Palacios Gil Antuñano, N., González Gross, M., M.: *Evaluation of nutritional status and energy expenditure in athletes. Nutricion hospitalaria,* 2015, 31(Supl. 3), 227-236., https://doi.org/10.3305/nh.2015.31.sup3.8770.
7. Potgieter, S.: *Sport nutrition: A review of the latest guidelines for exercise and sport nutrition from the American College of Sport Nutrition, the International Olympic Committee and the International Society for Sports Nutrition*. South African journal of clinical nutrition, 2013, 26(1), 6-16.,eISSN: 2221-1268, print ISSN: 1607-0658
8. Serarslan, Dilara, Kaya Cebioglu, I.: *The Increase in Parental Knowledge May Change the Nutritional Knowledge and Consumption of Professional Adolescent Swimmers: A Cross Sectional Study*. In: Türkiye Klinikleri Spor Bilimleri Dergisi, 2024, 16(1). Doi: 10.5336/sportsci.2023-99517.

9. Storlie, J.: *Nutrition Assessment of Athletes: A Mode for Integrating Nutrition and Physical Performance Indicators.* In: International Journal of Sport Nutrition and Exercise Metabolism, 1991, 1(2), p. 192-204.DOI: https://doi.org/10.1123/ijsn.1.2.192