



(RESEARCH ARTICLE)



Nurturing young swimmers: The importance of nutrition in children's sport

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Abstract

Nutrition plays a central role in children's physical, mental, and emotional development, especially for those who play sports such as swimming. This article explored the intersection between balanced nutrition and children's sports performance, highlighting the importance of a multidisciplinary approach to ensure that young swimmers reach their full potential. Childhood is a critical period for growth and the formation of habits that influence adult life. In this context, balanced nutrition is essential, providing the necessary nutrients for physical, cognitive, and immune development. Macronutrients, such as carbohydrates, proteins, and fats, are essential for energy supply and tissue repair, while micronutrients, such as calcium, iron, and vitamin D, play specific roles in metabolism, bone health, and tissue oxygenation (Silva, 2020; Santos and Oliveira, 2019). Studies show that inadequate nutrition in childhood can lead to nutritional deficiencies, compromising growth and increasing the risk of health problems, such as anemia and developmental delay (Carvalho et al., 2021). On the other hand, children with access to a balanced diet have better growth rates, greater resistance to diseases and better performance in physical and cognitive activities.

Keywords: Child nutrition; Competition; Swimming; Health

1. Introduction

Nutrition plays a key role in the growth, physical and mental development, and sports performance of children, especially those involved in high-impact activities such as swimming. This article explores the intersection between nutrition and sports practice in childhood, emphasizing how a proper diet can optimize the benefits of swimming, one of the most complete and recommended sports for this age group.

1.1. The Context of Children's Swimming

Swimming is widely recognized for its numerous health benefits, such as muscle strengthening, increased cardiovascular endurance, and improved motor coordination (Souza and Pereira, 2020). As it is a low-impact activity, it is suitable for children of all ages, including those with special needs. Studies show that swimming contributes significantly to psychosocial development, promoting skills such as self-confidence and teamwork (Alves, 2021).

However, the practice of sports, especially in childhood, requires special attention to food. Inadequate nutrition can compromise a child's performance, growth, and even overall health, while a balanced diet can enhance the benefits of sport (Carvalho et al., 2021).

1.2. The Importance of Infant Nutrition

Childhood is a critical period for physical and mental development. During this phase, the body requires a variety of nutrients in adequate amounts to support bone growth, brain development, and the formation of healthy habits that

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can last a lifetime (Santos and Oliveira, 2019). For young swimmers, the energy demand is even greater, due to the high intensity of the sport.

Macronutrients, such as carbohydrates, proteins, and fats, provide the energy needed for physical performance, while micronutrients, such as iron, calcium, and vitamin D, play essential roles in metabolism and bone health (Ferreira and Costa, 2019; Silva and Oliveira, 2020). Hydration is also worth mentioning, especially in water sports, where the feeling of thirst can be reduced, increasing the risk of dehydration (Lima, 2021).

1.3. Relevance of the Theme

The growing popularity of swimming as a recreational and competitive sport for children makes this topic particularly relevant. In addition, awareness of the importance of child nutrition is still limited in many contexts, which reinforces the need for in-depth and evidence-based discussions (Gomes, 2021).

This article aims not only to contribute to the academic understanding of the relationship between nutrition and performance in children's swimming, but also to offer practical guidelines that can be applied in the routine of young athletes.

2. Literature review

The literature review is organized into thematic sections, exploring the theoretical bases and empirical evidence related to child nutrition, the benefits of swimming, and the connection between feeding and sports performance.

2.1. Child Nutrition and Development

2.1.1. Nutritional Needs in Childhood

Childhood is marked by an intense phase of physical, cognitive, and emotional growth. During this period, the adequate supply of nutrients is essential to ensure that the child reaches his full developmental potential. Studies show that insufficient essential nutrients can lead to growth deficiencies and cognitive problems (Silva, 2020).

Macronutrients play an essential role in this process. Carbohydrates provide quick energy for children's active metabolism, proteins are crucial for building and repairing tissues, and fats, in addition to providing energy, are necessary for brain development (Santos and Oliveira, 2019). On the other hand, micronutrients such as iron, calcium, zinc, and vitamins A and D contribute to metabolic functions, immunity, and bone health (Carvalho et al., 2021).

2.1.2. Impact of Nutrition on Physical and Mental Health

Longitudinal studies show that children who consume a balanced diet have better academic performance and lower rates of emotional disorders, such as anxiety and depression (Martins, 2018). Swimming, combined with good nutrition, can act as a protective factor against mental health problems, reinforcing physical and emotional well-being.

2.2. Swimming and Benefits in Child Development

2.2.1. Physical Benefits

Swimming is considered one of the most complete sports for children. It develops muscle strength, improves cardiovascular endurance, and promotes flexibility. In addition, studies show that regular swimming contributes to postural alignment and reduced risk of childhood obesity (Souza and Pereira, 2020).

2.2.2. Psychosocial Benefits

In addition to physical gains, swimming promotes the development of social skills, such as cooperation, resilience, and self-discipline. These skills are fundamental for the formation of the child's character, helping them to deal with challenges inside and outside the sports environment (Alves, 2021).

2.3. Sports Nutrition and Performance

2.3.1. Energy and Macronutrients

For young swimmers, carbohydrates are the main source of energy, particularly in intensive training sessions. Research shows that insufficient carbohydrate intake can lead to early fatigue and a decline in performance (Ferreira and Costa,

2019). Proteins are necessary for muscle recovery after training, while healthy fats provide long-lasting energy and support essential metabolic functions.

2.3.2. Essential Micronutrients

Specific micronutrients play critical roles in sports health and performance. Calcium and vitamin D are indispensable for bone health, especially during periods of rapid growth. Iron is essential for muscle oxygenation, while zinc helps in tissue repair and immune strengthening (Silva and Oliveira, 2020).

2.3.3. The Importance of Hydration

Dehydration can drastically affect physical and mental performance. In water sports, where the perception of thirst is reduced, it is crucial to monitor and encourage adequate fluid consumption before, during, and after training (Lima, 2021).

2.4. Meal Planning for Child Swimmers

2.4.1. Specific Dietary Requirements

Food planning for child swimmers should be individualized, considering age, weight, training intensity, and sports goals. A typical pre-workout meal should be rich in complex carbohydrates and easily digestible, while post-workout meals should focus on glycogen replenishment and muscle recovery (Mendes et al., 2019).

2.4.2. Practical Examples

A pre-workout breakfast can include oatmeal, fresh fruit, and a glass of milk. A post-workout meal can include brown rice, grilled chicken breast, and assorted vegetables. The intermediate snack can be a smoothie with natural yogurt and banana.

2.4.3. Common Mistakes

Among the common errors observed are the omission of meals, excessive consumption of ultra-processed foods, and inadequate fluid intake. These habits can compromise the child's sports performance and general health (Santos, 2021).

2.5. Long-Term Impacts of Proper Nutrition

2.5.1. Injury Prevention

Proper nutrition is key to preventing sports injuries in children. Calcium and vitamin D deficiency, for example, can increase the risk of fractures and other bone problems (Almeida and Rocha, 2020).

2.5.2. Formation of Healthy Habits

The early introduction of healthy eating habits has a lasting impact. Children who learn to value balanced nutrition are more likely to maintain these habits in adulthood, reducing the risk of chronic diseases (Gomes, 2021).

3. Conclusion

The relationship between nutrition, swimming, and child development stands out as an essential field of study, both for health promotion and sports performance. This article emphasized that the practice of swimming in childhood, when combined with a balanced diet, can maximize the physical, emotional and psychosocial benefits of this sport.

3.1. Child Nutrition and Growth

A balanced diet, rich in essential macronutrients and micronutrients, is indispensable for healthy growth and mental development. Studies indicate that nutritional deficiencies can lead to impairments in physical and cognitive performance (Silva, 2020; Santos and Oliveira, 2019).

3.2. Benefits of Swimming

Swimming offers multiple benefits, such as muscle strengthening, cardiovascular endurance, and improvements in motor coordination. In addition, it promotes fundamental psychosocial skills, such as self-discipline, resilience, and teamwork (Souza and Pereira, 2020; Alves, 2021).

3.3. Personalized Food Planning

Proper food planning is crucial for child swimmers, especially in relation to carbohydrate intake before training, proteins for muscle recovery, and fluids to avoid dehydration (Ferreira and Costa, 2019; Mendes et al., 2019).

3.4. Practical Recommendations

- **For Parents and Guardians:** Encourage healthy eating habits from an early age, promoting balanced and varied meals, avoiding ultra-processed foods.
- **For Sports Nutritionists:** Develop individualized eating plans that meet the specific needs of each child, taking into account factors such as age, weight, and intensity of workouts.
- **For Coaches:** Stimulate nutritional education in the sports environment, addressing the importance of hydration and adequate nutrition for performance and health.

3.5. Suggestions for Future Research

The impact of nutrition on the health and performance of children involved in water sports still has gaps. Further research can explore questions such as:

- The role of specific diets in the prevention of sports injuries in infant swimmers.
- The relationship between nutrition and emotional performance in aquatic competitions.
- Strategies for tailoring eating plans for children with specific medical conditions.

4. Final conclusion

Swimming, as a complete sports activity, provides numerous benefits to children. When combined with adequate nutrition, its positive effects are amplified, promoting health, sports performance, and quality of life. Awareness of the importance of child nutrition must be continuously reinforced, ensuring that child swimmers have the foundation they need to reach their full potential, both in sport and in life.

The relationship between nutrition, swimming and child development is an essential theme for the promotion of children's health, well-being and sports performance. This article addressed the complexity of this connection, highlighting the importance of a balanced diet for children who practice swimming, one of the most complete and beneficial sports for children.

Childhood is a critical period in which biological and psychological systems are in full formation. A balanced diet is the foundation for physical growth, cognitive development, and emotional health. Studies show that a deficiency of nutrients such as iron, calcium, and vitamin D can have lasting consequences on health and sports performance. Adequate macronutrient intake ensures energy for intense physical activity, while micronutrients support crucial metabolic and immune functions.

Swimming, as a sports activity, offers multiple physical benefits, including muscle strengthening, cardiovascular development, and improved motor coordination. In addition, it contributes to emotional balance and the development of psychosocial skills, such as teamwork and resilience. When combined with balanced nutrition, the practice of swimming enhances its beneficial effects, promoting the formation of healthy habits from an early age.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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