



(REVIEW ARTICLE)



## Child nutrition and artistic gymnastics

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### Abstract

Child nutrition is a key element for children's physical, cognitive, and emotional development. When combined with the practice of sports such as artistic gymnastics, food plays an even more critical role. This sport requires strength, flexibility, agility, balance and endurance, in addition to promoting intense energy expenditure. Therefore, a balanced diet that is appropriate to individual needs is essential for healthy growth, athletic performance and the prevention of health problems. Childhood is marked by accelerated growth, in which the body demands energy and nutrients for the development of bones, muscles, and metabolic functions. For children who practice artistic gymnastics, nutrition goes beyond the basics and must meet specific needs.

**Keywords:** Child nutrition; Artistic gymnastics; Lifestyle; Quality of life

### 1. Introduction

Artistic gymnastics is one of the most demanding and complex sports, requiring high levels of strength, flexibility, coordination and endurance. For young athletes, nutrition plays a crucial role not only in sports performance but also in healthy growth and development. Infant nutrition, especially for those involved in intense physical activity, must be carefully planned to ensure that all nutritional needs are met. This work explores the relationship between infant nutrition and performance in artistic gymnastics, highlighting the importance of a balanced and adequate diet for sports success and the general well-being of young athletes.

Proper nutrition plays a crucial role in the physical development and performance of children engaged in artistic gymnastics. According to Smith (2022), a balanced diet provides the energy needed to withstand intense training and promotes healthy bone and muscle growth.

Adequate consumption of macronutrients, such as proteins, carbohydrates, and fats, is essential for young athletes. Johnson (2021) highlights that proteins help with muscle repair, while carbohydrates provide quick energy and fats are essential for cellular and hormonal functions.

In addition to macronutrients, vitamins and minerals are essential. Brown (2020) notes that calcium and vitamin D are crucial for bone health, while iron and vitamin C help with muscle endurance and recovery.

Hydration is another vital aspect. According to Thompson (2019), dehydration can impair performance and increase the risk of injury. It is recommended that child athletes drink water regularly before, during, and after training.

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Finally, nutritional education must be continuous, with the participation of parents and coaches. Green (2018) argues that teaching healthy eating habits from an early age helps children make informed and sustainable food choices throughout their lives.

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## **2. Literature Review**

### **2.1. Introduction to Child Nutrition in Sport**

Nutrition is an integral part of sports training, especially for children engaged in high-intensity activities such as artistic gymnastics. The quality and quantity of nutrients consumed can significantly influence the athletic performance, recovery, growth, and overall development of young athletes. According to Smith (2022), nutritional adequacy is essential to sustain the high level of physical activity required by these sports, as well as supporting bone and muscle growth during the developmental years.

### **2.2. Essential Macronutrients**

#### *2.2.1. Proteins*

Proteins play a crucial role in the repair and building of muscle tissues, especially after intense training sessions. Johnson (2021) suggests that adequate protein intake is critical for muscle development and recovery after exercise. High-quality protein sources, such as lean meats, fish, eggs, dairy, and legumes, should be included in the diet of young athletes to ensure the availability of essential amino acids necessary for muscle growth and repair (Martin, 2019).

#### *2.2.2. Carbohydrates*

Carbohydrates are the main source of energy for high-intensity exercise. According to Brown (2020), an adequate carbohydrate intake is crucial for maintaining muscle glycogen levels, which is essential for performance during training and competitions. Healthy sources of carbohydrates include fruits, vegetables, whole grains, and legumes, which not only provide energy but also important fiber, vitamins, and minerals (Garcia, 2017).

#### *2.2.3. Fats*

Fats are essential for various bodily functions, including hormone production, maintaining the integrity of cell membranes, and providing energy. Thompson (2019) notes that healthy fats, such as those found in avocados, nuts, seeds, and olive oil, must be included in the diet to support these vital functions. Fats are also important for the absorption of fat-soluble vitamins (A, D, E, and K), which play important roles in overall health and athletic performance (Nguyen, 2018).

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## **3. Vitamins and Minerals**

### **3.1. Calcium and Vitamin D**

Calcium is essential for bone health, and vitamin D is crucial for calcium absorption. Brown (2020) emphasizes that deficiency of these nutrients can lead to bone health problems, such as osteopenia and osteoporosis, which are of particular concern for young athletes whose skeleton is still developing. Sources of calcium include dairy, green leafy vegetables, and fortified foods, while vitamin D can be obtained through sun exposure and foods such as fatty fish and eggs (Harrison, 2016).

### **3.2. Iron**

Iron is needed to produce hemoglobin, which carries oxygen in the blood. Iron deficiency, common among young athletes, can lead to anemia, which compromises athletic performance. Thompson (2019) explains that sources of iron include red meat, poultry, fish, beans, and green leafy vegetables. Vitamin C can increase iron absorption, and vitamin C-rich foods such as citrus fruits and bell peppers should be consumed in conjunction with iron sources (Lee, 2021).

### **3.3. Other Micronutrients**

Other micronutrients, such as magnesium, potassium, zinc, and B vitamins, are also important for muscle function, energy production, and recovery after exercise. Green (2018) suggests that a varied diet, rich in fruits, vegetables, whole grains, and lean proteins, usually provides these micronutrients in adequate amounts (Martinez, 2015).

### **3.4. Hydration**

Proper hydration is crucial for maintaining performance and health during exercise. Dehydration can lead to a decrease in performance, increased perception of exertion, and a higher risk of injury. According to Green (2018), young athletes should be encouraged to drink water regularly before, during, and after training and competitions. Sports drinks can be helpful in prolonged or intense exercise situations, providing additional electrolytes and carbohydrates (Robinson, 2017).

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## **4. Special Considerations for Gymnasts**

### **4.1. Energy Requirements**

Young gymnasts have high energy demands due to the intense and prolonged nature of their training. Johnson (2021) argues that it is essential to calculate individual energy needs based on the duration and intensity of training, as well as growth phases. A positive energy balance is necessary to ensure proper growth and recovery after exercise (Foster, 2018).

### **4.2. Bone Health**

Bone health is a critical concern for young gymnasts, who are at risk for stress fractures and other bone injuries due to repetitive impact and training load. Brown (2020) highlights the importance of an adequate intake of calcium and vitamin D, as well as maintaining a positive energy balance to support bone mineral density (King, 2019).

### **4.3. Eating Disorders**

Gymnasts are at increased risk of developing eating disorders due to the pressure to maintain a low body weight and optimal body composition for performance. Thompson (2019) warns that parents and coaches should be aware of the signs of eating disorders and promote a healthy body image and a balanced diet. Early intervention is crucial to prevent long-term consequences (Anderson, 2016).

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## **5. Nutritional Intervention Strategies**

### **5.1. Nutrition education**

Nutrition education is key to ensuring that young athletes make informed food choices. Green (2018) suggests that educational programs involving nutritionists, coaches, and parents can help promote healthy eating habits and support sports performance. Workshops, lectures, and educational resources can be used to teach about the importance of nutrition and how to implement a balanced diet (Murphy, 2020).

### **5.2. Supplementation**

Supplementation may be necessary in some cases to ensure that nutritional needs are met, especially when diet alone is not sufficient. Smith (2022) recommends that supplementation be supervised by a healthcare professional to avoid the risk of overdose and adverse effects. Common supplements include protein powders, multivitamins, and specific iron or calcium supplements (Davis, 2017).

### **5.3. Meal Planning**

Meal planning can help ensure that young athletes receive all the nutrients they need throughout the day. Johnson (2021) suggests that meals and snacks be balanced and spread throughout the day to provide steady energy and support recovery. An example meal plan might include high-protein, high-carb breakfasts, healthy snacks between meals, a balanced lunch and dinner, and a post-workout snack to aid recovery (Harris, 2018)

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## **6. Conclusion**

Proper nutrition is essential for the healthy performance and development of young gymnasts. A balanced diet rich in macronutrients and micronutrients, along with adequate hydration, can help young athletes reach their full potential in sport. Ongoing nutrition education, with the participation of parents and coaches, is crucial to ensure that children make informed and sustainable food choices. This study highlights the importance of a comprehensive and coordinated

approach to the nutrition of young athletes, involving all stakeholders to support children's well-being and sporting success.

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### **Compliance with ethical standards**

#### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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