

RESEARCH STUDY ON THE ROLE OF NUTRITION AND RECOVERY IN OPTIMIZING SPORTS PERFORMANCE IN PERFORMANCE SWIMS IN CHILDREN

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Abstract: Theoretical studies suggest that a balanced diet, adequate rest and nutritional supplements play an essential role in supporting sports performance, contributing not only to optimizing energy and muscle recovery, but also to maintaining emotional balance and optimal health, important factors for children who practice performance sports, such as swimming. Hypothesis: It is assumed that parents and coaches of children who are performance swimmers consider that a balanced diet, a regular rest schedule and an adequate intake of nutrients contribute significantly to improving sports performance, physical health and emotional balance of athletes. The purpose of the paper is to analyze the perceptions and behaviors of parents and coaches regarding the role of balanced nutrition, adequate rest and food supplements in supporting the sports performance of children who are competitive swimmers. Objectives of the paper: Assess the perception of the importance of balanced nutrition in improving the sports performance of children who are competitive swimmers; Analyze the impact of regular meals and types of foods (proteins, carbohydrates, calcium) on energy and muscle recovery; Determining the role of adequate rest (sleep, break periods) in maintaining the physical and emotional balance of athletes; Investigating the knowledge of parents and coaches about sports nutrition and its impact on children's health and performance.

Introduction: The athletic performance of children involved in competitive swimming depends not only on intense physical training, but also on essential factors such as adequate nutrition and adequate rest. Nutrition plays an important role in providing energy, repairing muscle tissue, and supporting the physical and mental functions necessary to sustain a high level of performance. At the same time, rest, including sleep and periods of active recovery, has a direct impact on the body's recovery and maintaining optimal physical and mental tone. The balanced

combination of nutrition, nutritional supplements and a well-structured rest regimen can significantly contribute to improving results in performance swimming competitions.

Physical exercise is essential for the health of children and adolescents, playing an important role in preventing obesity and promoting harmonious development. Adequate physical activity helps not only to increase physical performance, but also to the neurological development of the younger generations. In this context, nutrition plays a crucial role, and pediatricians must provide precise dietary guidance to prevent nutritional deficiencies and excessive use of inappropriate supplements [9]. Aquatic athletes, for example, need to eat a balanced diet that includes sufficient carbohydrates, protein, and micronutrients, such as vitamins A, D, and B12, to support both health and performance in the water. Consuming carbohydrates, either through sports drinks or specific foods, is vital to maintaining energy levels during intense training [4]. Dietary supplements can be beneficial, but it is important that they are used under the supervision of a sports nutritionist [12]. A recent study showed that whey protein can support muscle recovery after intense swimming training, reducing muscle soreness and promoting a favorable inflammatory response. However, no significant improvements in athletic performance were observed [3]. In this context, nutritional education becomes essential, helping young athletes understand the importance of a healthy and balanced diet for optimal performance [11]. Parents play an important role in supporting an appropriate diet for their child athletes, and studies show that their involvement in the dietary routine contributes significantly to maintaining a healthy lifestyle [8]. In most sports, increased dietary intake meets the nutritional needs of young athletes, who, unlike non-athletes, meet micronutrient requirements more efficiently [7]. However, some young athletes face challenges in balancing their diets, with excessive fat intake and a deficiency in carbohydrates and micronutrients, which can negatively affect performance and bone health [2]. These challenges can be overcome through appropriate nutrition education that supports the development of healthy and sustainable eating habits [5, 6].

Material-method: Hypothesis: It is assumed that parents and coaches of competitive swimming children consider that a balanced diet, a regular rest schedule and an adequate intake of nutrients contribute significantly to improving sports performance, physical health and emotional balance of athletes. The purpose of the paper is to analyze the perceptions and behaviors of parents and coaches regarding the role of balanced nutrition, adequate rest and food supplements in supporting the sports performance of competitive swimming children. Objectives of the paper: Assessing the perception of the importance of balanced nutrition in improving the sports performance of competitive swimming children; Analyzing the impact of regular meals and types of food (proteins, carbohydrates, calcium) on energy and muscle recovery; Determining the role of adequate rest (sleep, break periods) in

maintaining the physical and emotional balance of athletes; Investigating the knowledge of parents and coaches about sports nutrition and its impact on children's health and performance. In the research, the questionnaire method was used to analyze the opinions of parents and coaches regarding the impact of nutrition, rest and food supplements on the performance of children swimmers. The questionnaire was applied to a group of parents of athletes from the Suceava University Sports Club, under the coordination of coach Vizitiu Lakhdari Elena, during December 2024. The questionnaire was designed with 13 specific questions, with answer options, and the answers obtained will provide a clear picture of the perceptions of parents and coaches regarding the diet and sports regimen of children aged 6 to 14. Objectives of the questionnaire: Assessing the perception of parents and coaches on the importance of a balanced diet in supporting the sports performance of children swimmers; Identifying parents' opinions on regular meals, healthy snacks and adequate intake of nutrients (proteins, carbohydrates, calcium) in the diet of athletes; Examining the awareness of parents and coaches on the role of sleep and rest in maintaining children's physical and emotional balance; Determining the knowledge of parents and coaches about sports nutrition and the application of this knowledge in the daily diet of children swimmers; Investigating the attitude of parents and coaches towards food supplements, their use in supporting children's sports performance and health; Analyzing the perceived impact of balanced nutrition on the emotional state and concentration ability of child athletes; Verifying the relationship between rest and recovery periods (vacations, weekends) and the physical and mental performance of athletes. Research methods: Questionnaire method; Quantitative method; Descriptive analysis; Comparative method. Inclusion criteria: age of children; parents and coaches; children involved in performance training; completion of the informed consent form.

Results:

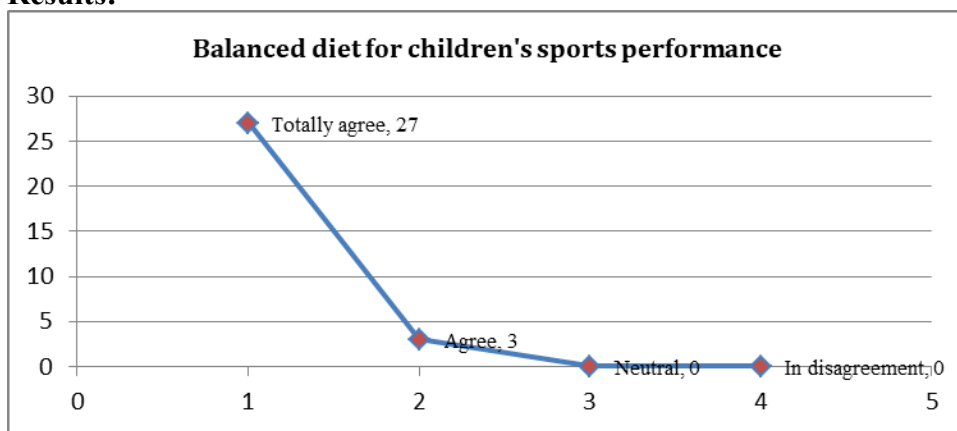


Fig.2 The importance of a balanced diet for improving a child's sports performance

The distribution of responses represents 90% of the total respondents, suggesting a strong consensus in favor of the importance of a balanced diet for children's sports performance, 10% of the total respondents, indicating a favorable opinion, but to a lesser extent, and there are no neutral or disagreeing responses, suggesting that all respondents either agree or completely agree with the statement.

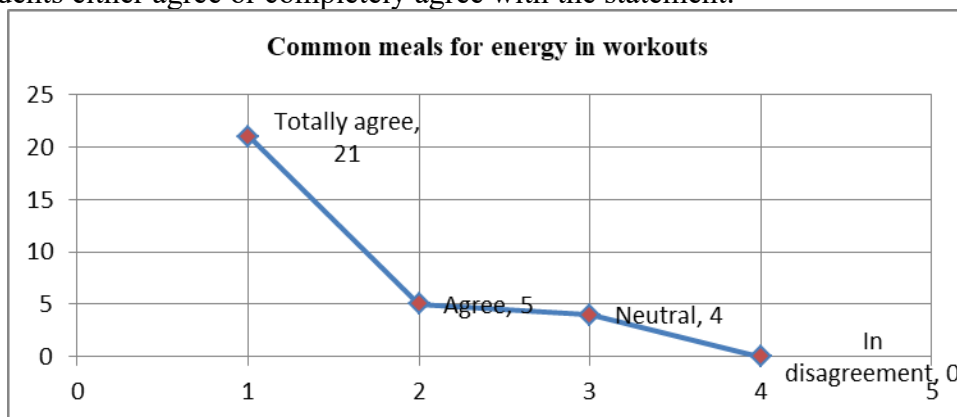


Fig.3 Regular meals for optimal energy in your child's workouts

The distribution of responses is 63.6% of the total respondents, suggesting strong agreement with the statement that regular meals help the child maintain optimal energy levels for training, 15.2% of the total respondents, indicating moderate agreement with the statement, 12.1% of the total respondents, suggesting that some of the respondents do not have a clear opinion or do not consider the link between regular meals and energy levels essential.

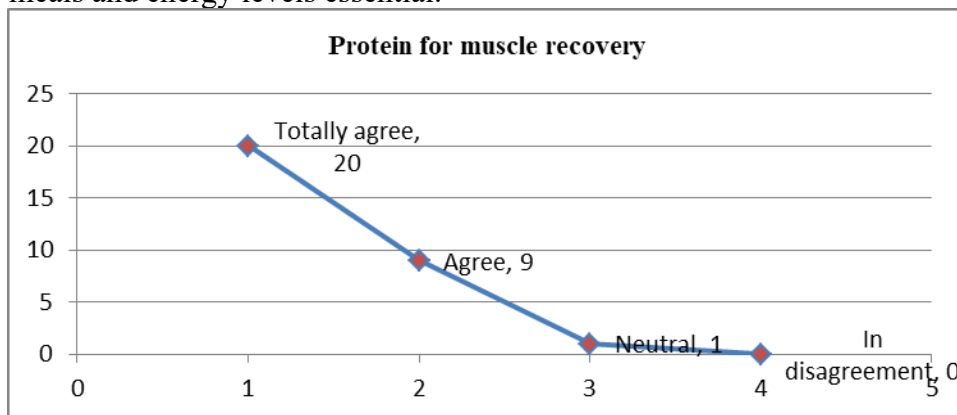


Fig.4 Protein for recovery and muscle building

Distribution of responses 66.7% of total respondents, suggesting strong agreement with the statement that it is important to have enough protein to support muscle recovery and muscle mass growth, 30% of total respondents, indicating moderate agreement with the statement, 3.3% of total respondents, suggesting that there is a small percentage of people who do not have a clear opinion about the importance of protein for muscle recovery and mass growth.

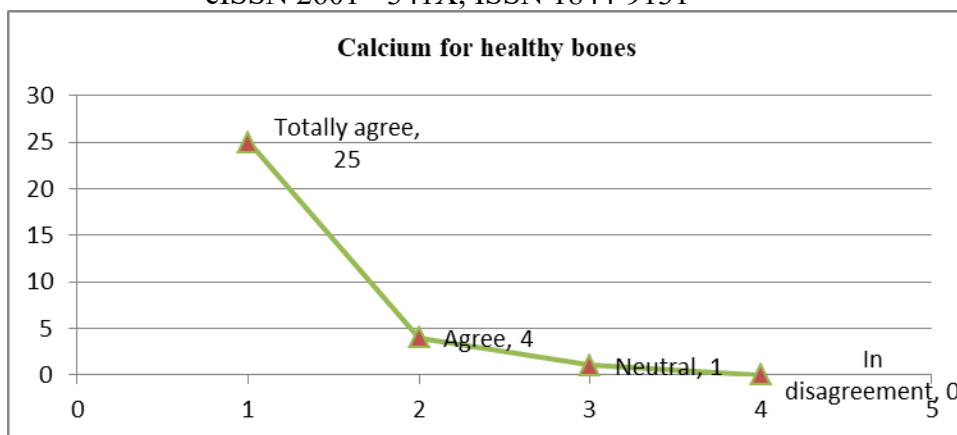


Fig. 5 Calcium for healthy bones in physical activity

The distribution of responses represents 80.6% of the total respondents, which suggests strong agreement with the statement that calcium-rich foods are essential for bone health, given intense physical activity, 12.9% of the total respondents, indicating moderate agreement with the statement, 3.2. % of the total respondents, suggesting that there is a small portion of respondents who are unsure or do not consider that the link between calcium and bone health in the context of physical activity is essential.

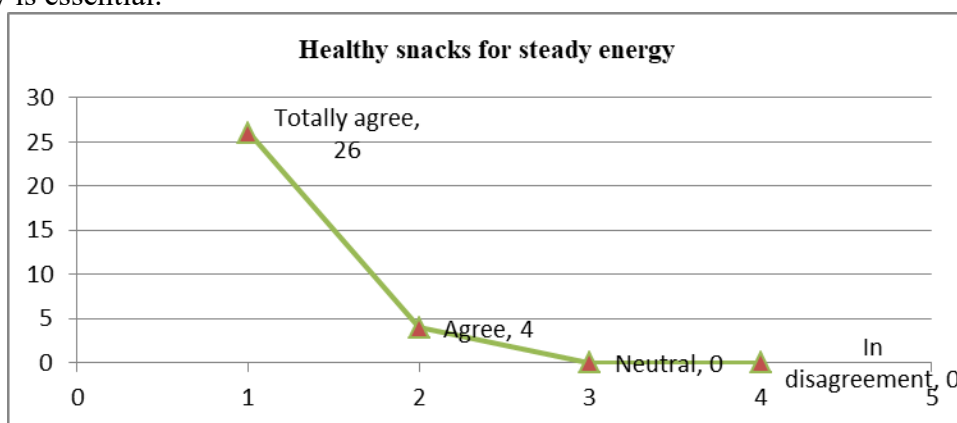


Fig.6 Healthy snacks between meals for consistent energy throughout the day

The distribution of responses represents 86.7% of the total respondents, suggesting strong agreement with the statement that healthy snacks between meals provide consistent energy throughout the day, 13.3% of the total respondents, indicating moderate agreement with the statement.

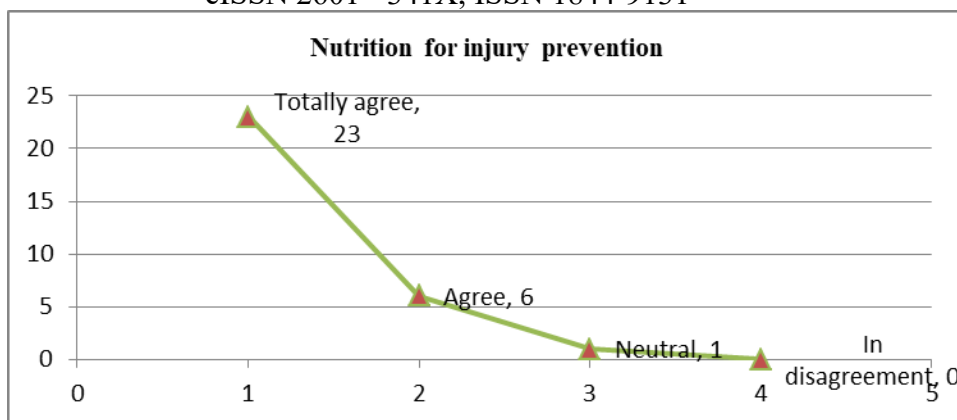


Fig. 7 Proper nutrition to reduce the risk of injury

The distribution of responses represents 76.7% of all respondents, suggesting strong agreement with the statement that proper nutrition reduces the risk of injuries, 20% of all respondents, indicating moderate agreement with the statement, 3.3% of all respondents, indicating that a small portion of respondents are unsure or do not believe that nutrition has a significant impact on the risk of injuries.

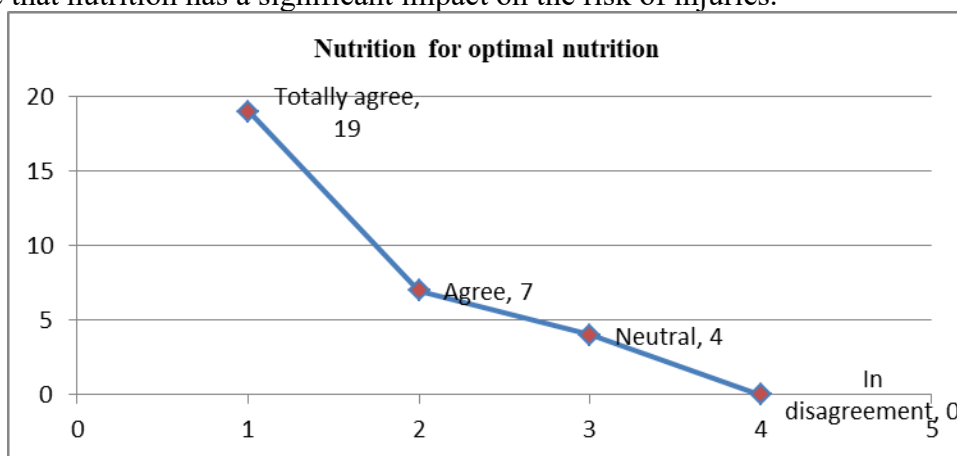


Fig.8 Nutrition knowledge to support optimal nutrition

The distribution of responses represents 57.6% of the total respondents, which suggests strong agreement with the statement that the person in question has sufficient knowledge about sports nutrition to support the child's optimal nutrition, 21.2% of the total respondents, indicating moderate agreement with the statement, 12.1% of the total respondents, suggesting that a small portion of the respondents are not sure or do not consider that they have sufficient knowledge in the field.

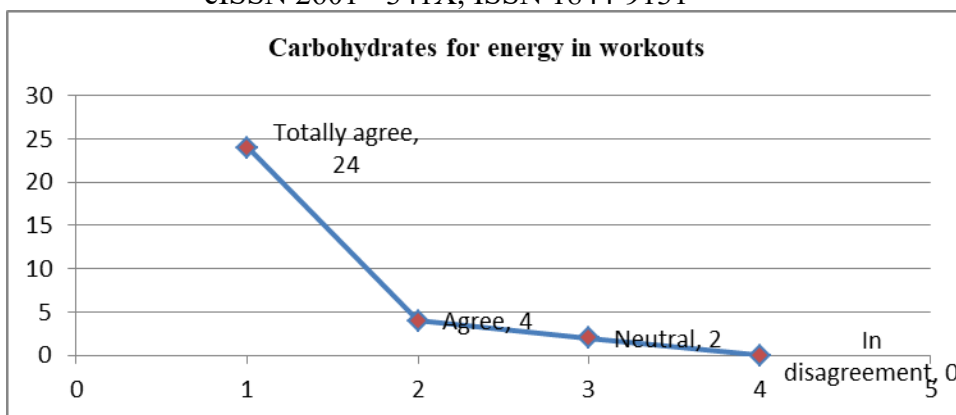


Fig.9 Healthy carbohydrates for energy support during intense workouts

The distribution of responses represents 80% of all respondents, suggesting strong agreement with the statement that including carbohydrates in a child's diet is important for sustaining energy during intense training, 13.3% of all respondents, indicating moderate agreement with the statement, 6.7% of all respondents, suggesting that a small portion of respondents are unsure or do not consider carbohydrates to be essential in this context.

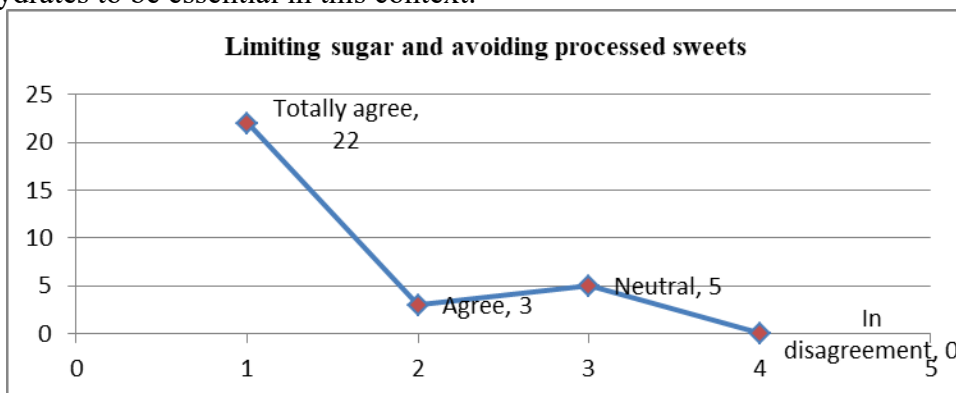


Fig.10 Amount of sugar for a healthy diet, avoiding processed sweets

The distribution of responses represents 64.7% of the total respondents, which suggests a strong agreement with the statement that it is important to pay attention to the amount of sugar in the child's diet and to avoid processed sweets, 8.8% of the total respondents, indicating moderate agreement with the statement, 14.7% of the total respondents, which suggests that some of the respondents are not sure or do not consider it essential to avoid processed sweets.

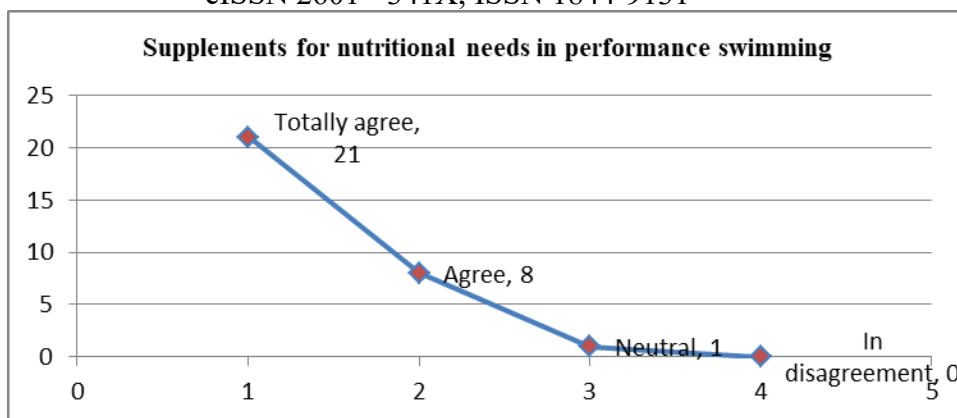


Fig. 11 Food supplements to support nutritional needs in performance swimming

The distribution of responses represents 70% of the total respondents, which suggests a strong agreement with the statement that food supplements are necessary to support the nutritional needs of the child in competitive swimming, 26.7% of the total respondents, indicating a moderate agreement with the statement, 3.3% of the total respondents, suggesting that a small percentage of respondents are not sure or do not consider food supplements essential in this context.

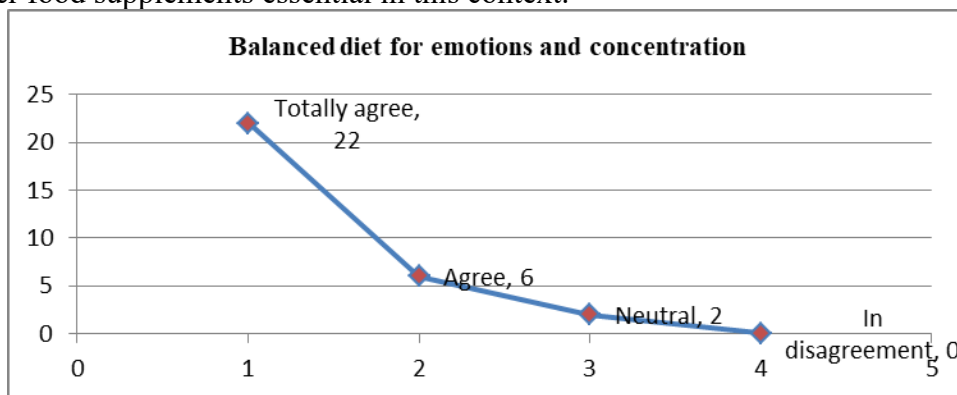


Fig. 12 Balanced nutrition for the child's emotional state and concentration

The distribution of responses represents 70% of the total respondents, suggesting strong agreement with the statement that food supplements are necessary to support the child's nutritional needs in competitive swimming, 26.7% of the total respondents, indicating moderate agreement with the statement, 3.3% of the total respondents, suggesting that a small percentage of respondents are unsure or do not consider food supplements essential in this context.

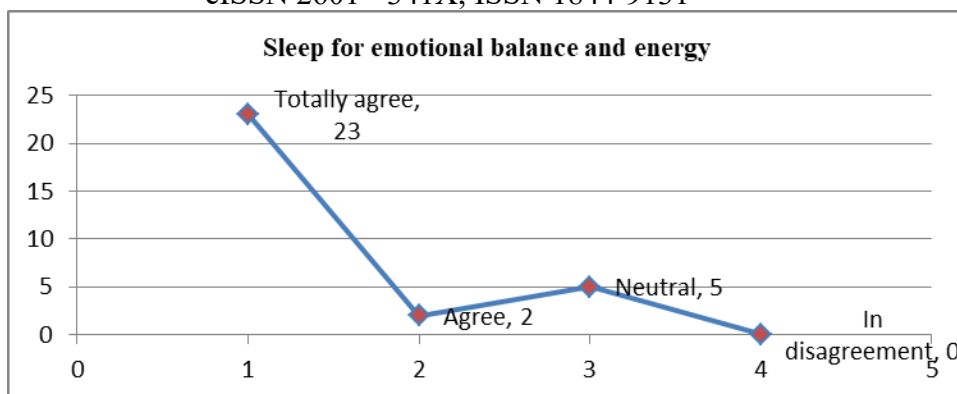


Fig.13 Adequate sleep for emotional state and energy in training

The distribution of responses represents 70.97% of the total respondents, which suggests a strong agreement with the statement that there is a link between the child's balanced diet and his emotional state and ability to concentrate, 19.35% of the total respondents, indicating a moderate agreement with the statement, 6.45% of the total respondents, suggesting that a small percentage of respondents are not sure or do not consider that balanced diet significantly influences the emotional state and ability to concentrate.

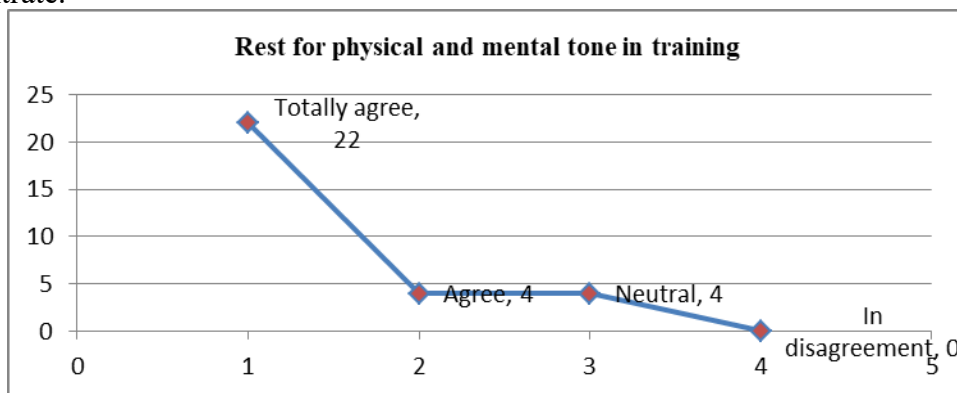


Fig.14 Rest periods (weekends and holidays) to maintain physical and mental tone in training

The distribution of responses represents 70.97% of the total respondents, which suggests strong agreement with the statement that adequate sleep can maintain a balanced emotional state and provides the energy needed for sports training, 6.45% of the total respondents, indicating moderate agreement with the statement, 16.13% of the total respondents, which suggests that some respondents are not sure or do not consider that sleep has a significant impact on emotional state and sports performance. For each question, there are no disagree responses, suggesting that all respondents either agree or are neutral with the statement.

Discussions: High-carbohydrate diets are effective in improving performance in activities that deplete muscle glycogen, and pre-workout meals with

a high glycemic index support CHO metabolism. Consuming 5–6 protein meals per day, each exceeding 25 g, stimulates muscle anabolism. Supplements such as caffeine, nitric oxide, β -alanine, and sports supplements (CHO, protein, micronutrients) can help improve performance and health in athletes, including physically active women [10]. The study investigated the level of nutritional knowledge among adolescent swimmers during a crucial period of adolescence, which plays a key role in establishing sustainable health habits. The study, conducted at the University of Jordan, included 60 adolescent swimmers and used a detailed questionnaire to assess nutritional knowledge. The results indicated a moderate level of knowledge, with a mean score of 59.5 out of 110. No significant differences were observed between groups based on body mass index, training experience, or gender. The study highlights the importance of integrating nutritional knowledge into adolescents' training regimens to optimize their health [1].

Conclusions: A significant percentage of respondents agree that adequate nutrition and quality sleep play an essential role in maintaining energy and a balanced emotional state, essential for children's sports performance. Most respondents agree that rest periods, such as weekends and holidays, contribute to maintaining adequate physical and mental tone, essential for performance in sports training. Most respondents believe that it is important to pay attention to the amount of sugar, to include carbohydrates and proteins in the child's diet and, in some cases, to use food supplements to support nutritional needs in performance sports.

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