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Nutrition for Children Involved in Sports

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ABSTRACT

In the development of sports nutrition, at all stages of the exercise process, the scientific substantiation of approaches to the diet of athletes remains relevant. The aim is to conduct evidence-based research to develop a methodological framework for nutrition based on individual characteristics of the organism, as well as to evaluate a set of measures for the organization of functional nutrition.

Keywords:

Carbohydrate, Protein, Nutritive, Functional Nutrition, Macronutrient, Prebiotic, Vitamin.

Introduction

The current level of development of sports requires high results from children and youth, which are achieved through great physical and mental stress. Proper nutrition is the most important factor in the health of the child, on which his well-being and physical development depend. To replenish the expended energy, to activate anabolic processes, it is necessary to provide the body with macronutrients such as proteins, fats, carbohydrates and micronutrients - minerals, vitamins and other important biologically active substances [1-5].

The main parts

When developing sports nutrition at all stages of the training process, the scientific substantiation of approaches to the diet of athletes remains relevant. In solving these problems, measures are being taken to create and use products with high energy value, easily digestible, enriched with the necessary complex of vitamins and minerals, including the development of methodological foundations of nutrition, taking into account

the individual characteristics of the organism, as well as the organization of functional nutrition. Our task was to conduct evidence-based research for a comprehensive assessment.

Recommendations for the preparation of diets for child athletes have been developed and reflected in the instructions[6-9].

The athlete's diet should be based on all factors - general (type of sport, stage and conditions of the training process) and all the individual characteristics of the athlete's body.

The most reasonable approach is the child's diet. It is necessary to conduct individual comprehensive examinations based on the assessment and analysis of the chemical composition of food, as well as an assessment of the physical characteristics of the body. Take into account its individual dietary capabilities. Account.

In world sports practice, at different stages of the training process, special nutritional techniques are used to increase muscle tissue anabolism, increase glycogen stores or, conversely, reduce them and increase muscle

endurance to prolonged physical exertion. During the race, nutrients are used to restore physical activity as quickly as possible. To optimize the diet, you can use pro- and functional foods enriched with prebiotics, vitamins, minerals and omega-3 [10-14].

The need of athletes for energy and nutrients varies significantly, primarily depending on the sport and at different stages of the training process [15]. Depending on the characteristics of motor activity and taking into account the energy consumption of the body, the following sports groups are conditionally divided. Cycling (cycling, sprinting, rowing, swimming, skiing, etc.). This type of sports activity requires a lot of energy, and the work itself is performed with great tension and high intensity [16].

Sports that require speed and strength (sprint, synchronized swimming, diving, weightlifting, etc.). The main feature of these sports is the need to perform very vigorous physical activity in a short time.

Sports games (basketball, football, handball, etc.), in which athletes were directly involved in episodes of the game, which is characterized by a constant change of strong muscle activity and rest. In addition to endurance in these sports, coordination of movements and mental stability of athletes are important.

Hard-to-adapt sports (jumping, gymnastics, skiing, figure skating, mountaineering, etc.). in the exercise of this sports group, the dynamic mode of work of some muscles is characterized by a combination of static movements of other muscles. In a competitive environment, coordination must be maintained [17-24].

Features of muscular activity: a variable level of motor activity, dynamic and static high-voltage movements, a combination of strength and speed.

Team and mixed sports (equestrian sport, pentathlon, triathlon, biathlon, cross-country skiing, orienteering).

Difficult technical sports (bobsleigh, parachuting, swimming, racing), not characterized by a high level of physical activity, but within the limits of neuropsychic stress [25]. The share of essential nutrients in the total energy value of food in athletes of different specialties is not the same (Table 1).

Table 1. The recommended percentage of essential nutrients in the daily diet of athletes from different industries is %.

Sports	Protein	fat content	carbohydrate
Speed takes strength	17-18	30	52-53
Cyclical	14-15	25	60-61
Complex coordinator	15	28	57
Martial arts	17-18	29	53-54
Sport games	15-17	27-28	55-58

When organizing the nutrition of athletes, one should be guided by the following principles: 4-5 meals a day are optimal (if necessary, you can eat 6 times a day. The interval between meals should be 2.5-3.5 hours. Exercises Eating before meals should not be overeat, as active digestion impairs blood circulation and oxygen supply to working muscles [26-31];

Between the main meal and strong muscle work should be 5 hours. At the end of the exercise, the main meal should be 40-60 minutes later. Exercising on an empty stomach is unacceptable, as they lead to a decrease in carbohydrate resources and a decrease in mobility. Before training, meals should consist of easily digestible foods. Before playing sports, fatty foods that are digested in the stomach for a long time (animal fats, fried meat), as well as foods that are formed in the intestines (beans, peas, beans, etc.) are not allowed.

To shift the acid-base balance to the alkaline side after heavy physical exertion, it is necessary to partially limit the consumption of acidic foods and increase the intake of alkaline foods [32-35].

Protein has a special place in the nutrition of children and adolescents involved in sports. The balance between protein synthesis and breakdown is the metabolic basis of trained muscle adaptation. Protein is a plastic substrate. The recommended amount of protein for athletes is 1.2-1.6 g/kg/day. Lack of protein in the diet not only affects exercise performance, but can also lead to stunted growth and reduced resistance to infectious diseases. An excess of protein in the diet does

not increase adaptation to physical activity (Phillips S.M., 2004). However, when weight maintenance or weight loss is required, the amount of protein is increased to reduce body weight, protein intake is 3 g/kg/day [36-41].

Exercise requires changes in the intake of animal and vegetable proteins. The share of animal protein in the diet of young athletes should be at least 60%. The remaining 40% must be derived from plant proteins. In training aimed at improving speed and strength, as well as by increasing muscle mass, performing long and strenuous physical activity, the proportion of animal protein can be 80%. The following products contain 10 g of protein [42-47].

50 g of beef or chicken, processed cheese;

55 g low-fat cheese;

60 g cod;

70 g lean pork, butter, cottage cheese;

80 g, eggs (2 medium eggs), buckwheat;

85 g boiled sausage;

90 g of sausage, corn, millet,

100 g pasta; semolina or barley groats;

125 g of wheat bread;

140 g of rice;

200 g green peas;

350 g of milk, sour cream, kefir;

500 g potatoes, white cabbage;

700 g of carrots, beets;

2.5 kg of apples and pears. The need for a sufficient amount of fat in the diet of young athletes as a high-energy substrate, and also ensures the absorption of other food components - vitamins and some amino acids.

You can not limit the consumption of products containing animal protein, as their consumption satisfies the need for protein [48-51].

According to modern scientific data, the optimal ratio of proteins and fats in the diet of young athletes is 1:0.8:0.9. The following foods contain 10 g of fat:

10 g of vegetable oil;

12 g butter, margarine;

16 g mayonnaise;

20 sheep fat;

25 g smoked sausage;

30 g, sprat (canned),

30 g chocolate, cake

cream;

35 g cheese

100 g creamy ice cream,

310 g daily

The share of vegetable fats should be 25-30% of the total amount of fat consumed, which ensures the optimal content of polyunsaturated fatty acids in the diet [52-53].

Conclusion

In children and adolescents, carbohydrate metabolism is characterized by high intensity. Unlike the body of an adult, a child with increased physical activity is not able to quickly mobilize internal carbohydrate resources and maintain the required intensity of carbohydrate metabolism. Young athletes are recommended to consume the bulk of carbohydrates (65-70%) in the form of polysaccharides (starch), 25-30% of simple and easily digestible carbohydrates (fructose, glucose) and 5% fiber.

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