

Nutritional Requirements Necessary for Students (Based on the Example of Athletes)

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Abstract: *Biopolymers and micronutrients are of particular importance in the nutrition of athletes compared to the general population. This is because athletes are actively engaged in physical exercise, so both energy production and consumption are intensive. In order to compensate for energy expenditure, special attention should be paid to rational nutrition. It can be observed that ordinary people consume everyday food products in their daily diet. It can be seen that they consume them without paying attention to their nutritional value and balance. This is very important for athletes, especially students, whose nutritional value is of great importance. Ordinary people have less energy consumption than athletes, and those who engage in physical activity fundamentally differ in the quantity, quality and composition of food consumed.*

Key words: *energy, balanced nutrition, systolic ejection, biomedica, athletes, nutritional value, vitamins, endurance, functionality, morphological aspect.*

Enter. It is known that the problem of nutrition in the training of highly qualified specialists is always an extra challenge for athletes. In modern sports, the level of records is determined by the training of athletes. The increase in physical load during the training, the increase in competitive activity and the time difference in the regions and frequent changes in climatic conditions, as well as training in the mountains, technical equipment of the athletes - all this requires strong physical stress and strong will to achieve high achievements of the athlete.

The high functional state of athletes is based on their balanced rational nutrition. In different sports, diets are drawn up and recommended taking into account different times of the year (in winter, the need for energy is 10% more than in the rest of the year) and climatic conditions, the age of the athlete, as well as gender, weight, sports experience and other personal parameters. In such cases, the athlete's diet should be as follows:

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- the power of the currently consumed food corresponds to the energy expenditure;
- balanced - i.e. containing all the necessary nutrients (proteins, fats, carbohydrates, vitamins, mineral salts in the necessary proportions);
- the presence of both plant and animal products in the food, i.e. not limited to only plant or animal products;

➤ Such as light and easily digestible food.

Determining the main nutritional requirements for athletes is the main goal of the article.

Analysis and results. Athletes spend 2-3 times more energy during training sessions and competitions than normal people. During vigorous physical activity, the number of contractions of the heart is 200 d/m, and the breathing rate is 70-80 cycles per minute. At the same time, the systolic ejection of the heart increases by 2-3 times. Pulmonary ventilation (depending on the amount of air in several minutes) up to 20 times and arterial blood pressure of 100 mm. increases to the column of mercury. Therefore, in order to ensure morphologically healthy development and high functionality, the athlete must know rational nutrition. In athletes, the mass of skeletal muscles increases by 50% of the body mass (30-35% in non-athletes), and the volume of the heart increases by 30% compared to normal people. The intensity load of mental emotionality is slightly higher in spotters.

Food preparation is very important in the recommended nutrition of athletes. In it, the main attention should be paid to the naturalness and diversity of the products, as well as to the appearance of the food. Eating time should be 3 times a day, but for highly skilled athletes, it should be 4 or 5 times.

It is necessary to pay attention to the fact that the power of the consumed food corresponds to the athlete's energy consumption, in this case, his age, gender, sports experience and skill, as well as the type of sport. Quantitative ratio of food components is strictly individual, depending on the direction of competition and training of representatives of various sports. The daily amount of energy required for 1 kg of body mass in various sports is presented in Table 1 below. A diet that provides endurance is recommended for athletes engaged in special sports. Proteins make up 14-15% of total energy consumption, 17-18% in sports requiring speed and strength, and 20% in sports such as bodybuilding and barbell.

**Table 1 Daily energy index and basic nutrient requirements in various sports
(per 1 kg of body mass)**

Sports	protein, g	fat, g	carbohydrate, g	Power, kcal
Gymnastics, figure skating	2,5	1,9	9,75	66
Athletics, running, jumping	2,5	2	9,8	67
Marathon	2,9	2,2	13	84
Swimming, a ball game played in water	2,5	2,4	10	72
Weightlifting, bodybuilding, throwing	2,9	2	11,8	77
Wrestling, boxing	2,8	2,2	11	75
Sports games	2,6	2,2	10,6	72
Cycling	2,7	2,1	14,3	87
Skiing is a short distance away	2,5	2,2	11	74

Skiing - long distance	2,6	2,4	12,6	82
Skating	2,7	2,3	10,9	74

Even for athletes, it is not recommended to take more than 3 g/kg of protein, because the body cannot cope with the release and assimilation of such masses in sports such as weightlifting, throwing, and athletic gymnastics. But the lack of protein (less than 2 grams per 1 kg of body weight) does not allow the normalization of metabolic processes. In addition, an increase in the release of important vitamins such as vitamin C, thiamin, riboflavin, pyridoxine, niacin and K salts from the body can be observed.

Proteins can be used in the body as an energy carrier in addition to their plastic function, as it is known that 10-14% of absorbed protein is oxidized and provides the necessary energy for the body.

At the same time, there are special requirements for the quality of consumed proteins, which include the composition of amino acids and the presence of essential amino acids.

The amount of protein absorbed by athletes is related to the balanced amino acid composition. As it was considered, 55-60% of animal protein is the optimal amount in the diet.

Fat is one of the important components of consumed food, and the most suitable fat for athletes is lactic acid products and vegetable oils, which are considered easy to digest. It is better to reduce the amount of fat in the diet before high training and competition, because they are difficult to digest during high physical and emotional stress processes.

During the maximum and sub-maximum loads, the supply of the body can be implemented mainly with carbohydrates, with the saturation of carbohydrates in the body, at such times, fructose is recommended. The advantage of fructose over glucose is that when fructose is taken, it does not cause significant changes in blood sugar and does not require the pancreas to produce (increase in) the hormone insulin. In addition, the amount of glycogen in skeletal muscles decreases to a much lower level than when glucose is consumed.

One of the most important components of nutritional balance is the absorption of adequate amounts of vitamins and minerals (or with additional pharmacological means). According to American experts, the fact that the results are 1.5-2 times higher than other athletes is undoubtedly related to the nature of the food and the quality of the products.

In addition, the need for vitamins (in addition to food) and its increase does not mean that athletes will perform better in sports. On the other hand, overdosing on vitamin preparations can cause very serious consequences for the body.

We can safely accept that in order to maintain competitive activity, it is necessary to pay special attention to the process of balanced nutrition, and biomedical support for the correct organization of nutrition in athletes is the most important.

Choleritic drugs are recommended to be prescribed 5-10 minutes before meals, they enter the duodenum with food and stimulate bile secretion. After meals, K salts, B2, Na, Fe are usually prescribed, as well as existing drugs to reduce, water-insoluble and fat-soluble (for example, fat-soluble vitamins - A, D, E, K) drugs. If the drugs are consumed before meals, they inflame the mucous membrane of the stomach, so these drugs can be eliminated by washing them with water, starch, and slimy milk.

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