

## Organization Of Rational Nutrition of Athletes in Training and Competitive Activities

Reymbaeva Roza Saparbaevna<sup>1</sup>, Koshchanov Dauletbay Erejepovich<sup>2</sup>, Ernazarova Raya Allanazarovna<sup>3</sup>, Patullaeva Aynura Sabitovna<sup>4</sup>

<sup>1</sup> PhD, Nukus branch of the Uzbek state university of physical education and sport

<sup>2</sup> PhD, Nukus branch of the Uzbek state university of physical education and sport

<sup>3,4</sup> assistant, Nukus branch of the Uzbek state university of physical education and sport

### Abstract

At present, the achievement of high sports results is impossible without very large physical and neuropsychic loads that athletes are exposed to during training and competitions. To offset energy costs and activate processes restoration of the health of athletes, it is necessary to supply the body with an adequate amount of energy and essential nutritional factors.

**Key words:** rational nutrition; athlete, function, training, energy.

**Introduction.** Good nutrition is one of the most important conditions for ensuring the high performance of an athlete. The biological role of food is to provide the body with energy, plastic material, biologically active substances that are spent on maintaining a constant body temperature, performing all functions and biochemical processes, digesting and assimilation of food, as well as performing mechanical work by the muscles. Rational construction of the daily diet can increase efficiency, and irrational, on the contrary, reduce it or even lead to illness. Athletes are often challenged to change their body weight, such as cutting fat or gaining muscle mass. Rapid weight loss due to water and starvation lead to convulsions and decreased performance. Extremely severe diseases associated with food restriction are anorexia and bulimia. The adequacy of nutrition largely depends on the qualitative composition of food, which gives an idea of the content in it in a sufficient amount of individual nutrients necessary for fulfillment.

At the same time, not only the absolute content of each nutrient is important, but also the ratio between them, which determines the so-called nutritional balance. Knowing the nutritional value and purpose of individual nutrients, it is possible, by compiling diets of various quality, to actively influence the functional activity of the body, promote the development of skeletal muscles, eliminate excess body fat, increase efficiency and endurance. The most favorable ratio of proteins, fats and carbohydrates (balanced nutrition formula) for adults who are not involved in sports is 1:1:4, for athletes - 1:0.8:4. When conducting training and competitions in mid-mountain conditions, it is especially important to reduce the proportion of fats in the diet due to an increase in hypoxia, the ratio should be 1:0.7:4, since the athlete's body gets rid of fat faster this way. The need for basic nutrients can be calculated by taking into account the percentage of calories that each nutrient provides from the total caloric intake of the diet. According to the formula of a balanced diet, the percentage of proteins, fats, carbohydrates should be as follows: 14%: 30%: 56%, in mid-mountain conditions 15%: 24%: 61%.

Based on these formulas, the energy value of each food product is calculated, and then, using the energy coefficients, the content of the main nutrients in the diet is calculated. Example: with a caloric content of the diet of 3000 kcal, the share of proteins according to 1 formula is 420 kcal, the share of fats is 900 kcal, the share of carbohydrates is 1680 kcal. Knowing the energy coefficients of the main nutrients during their oxidation in the body (1 g of protein - 4.1 kcal, 1 g of fat - 9.3 kcal, 1 g of carbohydrates - 4.1 kcal), you can calculate the content of these nutrients in grams. In this example, the amount of proteins will be 102 g, fat - 97 g, carbohydrates - 410 g. It should be noted once again that the final diet is selected taking into account the individual reaction of the athlete's body to exercise and food intake. Features of an individual reaction are determined by daily weighing and determining the composition of tissues. In modern sports, there are often problems associated with long-term maintenance of optimal physical shape, stressful situations, emotions and huge tension in training and competition.

One of the main solutions to these problems is a balanced diet, which should meet the body's needs for basic nutrients, replenish energy costs, and ensure recovery after stress. The basic nutrition of athletes and athletes must comply with the basic principles, which are adequacy, usefulness, balance, saturation, individuality in the consumption of food products. According to the principle of adequacy, the quantitative and qualitative compositions food products must correspond to the peculiarities of the lifestyle and the specifics of the loads used by the athlete. Taking into account this requirement, the nutrition of athletes specializing in speed-strength and strength exercises will differ markedly from the nutrition of athletes performing exercises that require a significant manifestation of endurance. In speed-strength sports, the main focus is on the consumption of foods high in protein and amino acids, while for endurance athletes, the main focus is on the consumption of foods rich in carbohydrates, vitamins and minerals.

The principle of usefulness implies the presence in the consumed products the principle of balance in the basic nutrition of athletes means that the content of the main nutrients and their structural components in the consumed food should be in strictly defined ratios. Effective doses for individual nutrients are determined based on the dose-effect relationship. However, the optimal dose of a given nutrient, usually referred to as the norm, and the very nature of the dose-response curve can change markedly in the presence of another nutrient. For example, an increase in the dose of vitamin C in the basic nutrition of athletes inevitably requires an increase in the intake of vitamins B6, B12, zinc, folic acid and choline.

When choosing the optimal doses for individual nutrients, the possibility of multiple chain interactions is taken into account. Thus, vitamin B2 deficiency disrupts the metabolism of vitamin B12, which in turn leads to impaired folic acid metabolism.

Violations in the metabolism of folic acid are accompanied by disturbances in the metabolism of vitamin C, resulting in impaired absorption of iron in the body. A decrease in iron absorption leads to an increase in copper absorption, while zinc metabolism in the body is disturbed. This situation is typical in the search and

development of balanced basic diets. The principle of saturation means that all essential nutrients must be present in sufficient quantities in the basic nutrition of athletes. This principle is applied in practice deviation from the recommended norms in the organization of basic nutrition of athletes leads to a violation of physiological functions and a decrease in performance. This situation is noted both in the case of the development of deficient conditions, and when using large doses of individual nutrients. For example, exceeding the amount of vitamins A and K, as well as selenium, chromium and iron by only 5-6 times, can lead to the emergence of functional conditions characteristic of toxic effects. When vitamin E deficiency is detected, the zinc content in the body decreases, since both of these nutrients are used as antioxidants, all essential nutrients, sufficient to maintain a high level of metabolism in the body.

Performing sports exercises is associated with significant energy expenditure, so the basic diet of athletes should include all the necessary substances that are sources of energy in the body the use of biologically active food additives (BAPD).

When organizing the basic nutrition of athletes, it is necessary to take into account the biochemical individuality of a person. Due to the genetic predisposition in the structure and functions of the body, and most importantly, due to the nature and speed of metabolic reactions occurring in it, people differ markedly in the choice of food. To maintain a normal metabolism, a person must consume food based on his individual warehouse, habits and established lifestyle. The choice of sports specialization and the nature of the applied physical activity also affect the individual diet. It has been experimentally established that individual differences in vitamin C intake can reach tenfold in athletes. In many athletes, the intake of vitamin C in basic foods in the amount of more than 5000 mg is not yet accompanied by the excretion of this vitamin in the urine, which would indicate saturation of the body with it. At the same time, in other athletes, the intake of 1000 mg of vitamin C is already accompanied by its pronounced excretion in the urine. The optimal construction of the basic nutrition of athletes in accordance with their biochemical individuality is possible only with constant contact between the coach and the doctor with a specialist in sports nutrition.

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