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Research Article

# THE IMPORTANCE OF SPORTS NUTRITION AND CORRECTION OF WATER-ELECTROLYTE BALANCE IN FOOTBALL

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## ABSTRACT

The article describes recommendations for correcting water-electrolyte balance during physical training of football players, as well as daily energy expenditure and caloric content of daily menu products.

## KEYWORDS

Preparation of football players, daily energy expenditure, water-electrolyte balance, correction.

## INTRODUCTION

The main pattern of nutrition should be the correspondence of daily energy consumption and daily calorie content of food. If caloric intake exceeds energy expenditure, this leads to fat deposition and digestive disorders. Insufficient calorie content with high energy expenditure leads to gradual depletion of the body, so to speak, to "self-food".

Athletes' daily energy expenditure is 3000-6000 kcal, and under very intense training and competition conditions, energy expenditure reaches 7000-8000 kcal.

Energy consumption depends not only on the amount of work performed, but also on the emotional factor, which was clearly revealed during competitions.

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An athlete's nutrition must be rational, that is, sufficient in quantity and complete in quality. Rationality is based on balance - the optimal ratio of basic nutrients: carbohydrates, fats, proteins, vitamins, mineral salts and their components (essential and nonessential amino acids, lipids and unsaturated fatty acids, microelements, etc.).

Adequate nutrition is achieved by the correct ratio of nutrients in the diet. There are six classes of nutrients: water, carbohydrates, fats, proteins, vitamins, minerals.

Water is life. The human body consists of 60-65% water. Metabolism occurs in an aquatic environment. Water is contained in tissue cells, blood, and digestive juices.

The amount of water in an athlete's diet should be 2-2.5 liters, taking into account soups, milk, coffee, tea, as well as water contained in various dishes, fruits and vegetables. On days of intense training and competition, the need for water increases sharply. During training and competitions, it is better to use alkaline mineral waters (Borjomi, Narzan and others), to which it is useful to add slices of lemon. Football players often drink tea with lemon. You should drink water, juices or tea in small portions, keeping it in your mouth for a long time.

When increasing exercise, water serves two important functions:

regulates body temperature, in particular, provides cooling during exercise;

delivers nutrients to cells and removes "waste" from them.

Here are some recommendations for football players regarding water consumption: drink 6-8 glasses of water per day; drink 2 glasses of water 15 minutes before training or playing;

after training or a game, drink 2 glasses of water more than you need to quench your thirst;

drink 1 glass of water every 15-30 minutes during training or play;

drink cooled liquids to speed up the transition of substances from the stomach to the blood, as well as to cool the body more quickly;

drink 1 glass of water after drinking caffeinated drinks (caffeine is known to be a diuretic and therefore causes dehydration).

Getting enough water into your body is an ongoing, vital process that experts call hydration.

Water is a universal solvent. Most body chemicals are soluble in water.

Due to its low viscosity, water easily moves through blood and lymphatic vessels, through intercellular spaces and transports substances soluble in it. Thus, water performs a transport function.

Water is involved in maintaining a constant body temperature, i.e. performs a thermoregulatory function. Water forms a hydration shell for high-molecular compounds (proteins, polysaccharides) and thereby contributes to their stability. Water is an active participant in metabolism. For example, the

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breakdown of nutrients during digestion occurs exclusively through hydrolysis, i.e. with the participation of water. Water is also the end product of a number of chemical processes occurring in the body. A large amount of water (about 400 ml per day) is formed during tissue respiration. The human body contains about 3 kg of mineral (inorganic) substances, which is 4% of body weight. The mineral composition of the body is very diverse, and almost all known mineral elements can be found in it, however, their content is not the same.

Both short and long-term exercise require a good supply of water to the body, which must be regulated depending on the duration and intensity of the physical activity. To avoid dehydration, it is important to remember about thermoregulation, which is influenced by climatic conditions (temperature, wind), as well as factors such as level of training, clothing, etc. In addition, fatigue and stress are additional factors predisposing to dehydration.

Dehydration of the order of 1 - 2% of body weight (from 0.7 liters to 1.4 liters for a person weighing 70 kg) can lead to a decrease in muscle performance by 10%.

Dehydration of more than 4% can lead to severe fatigue, heaviness in the legs, shortness of breath, and also negatively affects the nervous system.

Over 6 - 8%, this is a real risk of death from dehydration. The most common cause of electrolyte deficiency is the neglect of many athletes to timely and adequately replenish fluid losses. In this regard, it is necessary to remember the following:

- ✓ during training or a game, a decrease in body weight due to sweating reaches 2 percent or more, which significantly reduces performance, and a loss of 7% leads to refusal to continue working;
- ✓ use various drinks, it is necessary to focus not on the feeling of thirst that arises, but on the intensity of exercise, while it is necessary to remember the following pattern: a rise in normal air temperature by 5C increases fluid consumption by 15%, an increase in body weight by 5 kg, more than 75 kg per 7% increases fluid intake [1,2].
- ✓ replenishment of fluid losses must be carried out not with ordinary water, but with specially designed drinks that allow maintaining the proper level of performance due to the timely supply of easily digestible carbohydrates;
- ✓ consumption of carbohydrate drinks must be started before training and continued during and after it to maintain glycogenesis in the liver and muscles (for this purpose, glutamic acid preparations can be used).

In the overwhelming majority of cases in elite sports, they resort to the use of pharmacological agents and biologically active additives that replenish the required volume energy supply to the body and ensuring the delivery of plastic substances: substance supplements or so-called sports nutrition, which is

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always used as a supplement to a balanced diet, and does not replace it.

Currently, there are hundreds, if not thousands of sports nutrition companies. When choosing the product to use, the doctor should rely on the following points:

1) the drugs used must be certified in the country, which guarantees not only the safety of these products, but also their compliance with anti-doping legislation

2) the product line of the manufacturing company must cover the entire range of athletes' needs for various training regimes

3) testing of drugs is permissible only with the consent of athletes and during training, starting with the minimum recommended doses of one of the drugs to determine the tolerability of its components

4) the use of sports nutrition should be systematic, and its volume and structure vary depending on the seasonal cycle.

Considering the extreme loads that determine the body's constant need for plastic material and coenzymes involved in the most important biochemical reactions, in the practice of elite sports, substrate nutritional supplements are systematically used (proteins, carbohydrates, protein-carbohydrate mixtures-gainers, vitamin-mineral complexes, carnitine, creatine , fatty acids and essential amino acid complexes (BCAAs) and vitamin-mineral complexes (VMC) [4,5].

The most common substrate additives are proteins and carbohydrates, including in the form of gainer mixtures (Start-Gainer, Energy-Optemeizer, Max-Amino), as well as creatine, carnitine, L-carnitine and vitamin-mineral complexes[6].

A distinctive feature of sports IUDs is the multiple excess of the recommended daily doses of the main minerals and vitamins included in their composition, so they must be used during intensive and long-term training camps. During the season, it is sufficient to constantly take conventional IUDs with a high content of B vitamins (Vitrum, Vitaminlight, Vitamax, Polizhen, MAX FOR MEN, etc.). Taking these drugs leads to a significant increase in physical and mental endurance, improves body structure, and normalizes psychomotor reactions in unfavorable conditions of daily activity.

In addition to sports ICH, especially in the absence of timely biochemical monitoring, a preventive course of magnesium, the deficiency of which can lead to damage to muscle tissue, and zinc, which is fundamentally important for steroidogenesis, is necessary.

One of the most common myths that exists in the football community is the opinion that creatine has a negative effect on the joint-muscular sensation of football players, which supposedly leads to physical defects. Our data indicate only the beneficial effects of a course and targeted (before games) intake of moderate doses of creatine in combination with BCAAs: with a course intake of up to 2 grams per day

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for 10-1 I days, with a single use before games up to 3-5 grams.

The course intake is carried out at training camps with mandatory breaks between them, up to 5-7 days, in order to optimize the adaptive reactions of the athlete's body.

Creatine monohydrate is phosphorylated in the liver, converted into creatine phosphate, which, entering the mitochondria of cells, participates in the reactions of ATP reduction from ADP (adenosine diphosphate), thereby providing the ability to release large amounts of energy without visible energy depletion.

One of the most common substrate supplements, L-carnitine, is often used in targeted weight loss programs. In these programs, it is used along with thermogenics throughout the entire pre-workout weight loss period at a dose above 1500 mg. Another area of application of L-carnitine is its use before games and intensive training during the season for a more efficient flow of energy supply processes, in such cases a dosage of up to 1500 mg is used 45-60 minutes before the game.

Dietary supplements (adaptogens, herbal anabolics, immunomodulators, antihypoxants, hepatoprogectors, etc.)

The top of the pyramid of specialized sports nutrition are dietary supplements and substances used for targeted activation of various parts of metabolism, correction of psycho-emotional state and prevention of immunosuppression.

The use of these drugs can be either a course or a one-time use. Optimal, in our opinion, is the use of these drugs against the background of constant hematological screening (biochemical blood test, immunogram, hormonal spectrum). However, in practice, continuous monitoring is impossible due to logistical difficulties and paramedical factors (reluctance of the athlete and coaching staff, lack of proper organization). Based on this, the use of these substances is often preventive and intuitive. The program we have developed focuses on maintaining a high level of endogenous testosterone in the athlete's blood, as well as preventing the development of immunosuppression and activation of the body's protective functions (hepatoprotectors, prebiotics, antihypoxants). To implement the first point of the program, we recommend the use of anabolic agents of plant origin and prohormones ( Tribulus, Ecdysterone, etc.) in courses of up to 10-14 days against the background of intense physical activity 2-4 times during the season.

In practical medicine, immunomodulators are used only when changes in the immune status are identified. While recognizing the correctness of this approach in relation to ordinary people, we cannot agree with it in relation to high-level athletes, since almost always, against the background of prolonged intense physical activity, more or less pronounced changes in the immune status develop, which always precede the clinical manifestations of overtraining. . Based on this,

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we consider it advisable to take a course of preventive treatment with modern safe immunomodulators twice a year in courses of up to 10-14 days.

One of the most important tasks is the activation of the body's protective functions against the background of prolonged intense physical activity. Traditionally, antihypoxants are used for this purpose, such as inhibitors of lipid peroxidation (Hypoxen, Actovegin, Ubiquinone, Serrata) and hepatoprotectors (Essentiale, Heptral, Karsil, etc.)

## CONCLUSION

In conclusion, it should be noted that, as in other areas of elite sports, the development of pharmacological and nutritional correction programs in football is not possible without knowledge and understanding of the physiology of the training process, and without a clear understanding by the team's coaching staff of the importance of these activities.

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