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

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Annotation. The basic pattern of nutrition should be the correspondence between daily energy expenditure and daily caloric content of food. If the caloric content of food exceeds energy expenditure, this leads to fat deposition and digestive disorders. Insufficient caloric content with high energy expenditure leads to gradual exhaustion of the body, so to speak, to "self-eating".
Keywords: energy, water, carbohydrates, fats, proteins, vitamins, minerals.

Athletes have a daily energy expenditure of 3000-6000 kcal, and under very intense training and competition conditions, energy expenditure reaches 7000-8000 kcal. Energy expenditure depends not only on the amount of work performed, but also on the emotional factor, which is clearly revealed during competitions.

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

Good 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 competitions, the need for water increases sharply. During training and competitions, it is better to use mineral alkaline waters (Borjomi, Narzan and others), to which it is useful to add slices of lemon. Football players often drink tea with lemon. Water, juices or tea should be drunk in small portions, holding them in the 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 on water consumption: drink 6-8 glasses of water per day; drink 2 glasses of water 15 minutes before training or a game;

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

Drink 1 glass of water after drinking caffeinated beverages (caffeine is known to be a diuretic, which means it can cause dehydration).

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Keeping your body hydrated is a continuous, vital process that experts call hydration.
Water is a universal solvent. Most chemical compounds in the body are soluble in water.
Due to its low viscosity, water easily moves through blood and lymphatic vessels, through intercellular spaces and carries substances dissolved in it. Thus, water performs a transport function.
Water is involved in maintaining the constancy of body temperature, i.e. it performs a thermoregulatory function. Water forms a hydrated shell for high-molecular compounds (proteins, polysaccharides) and thus contributes to their stability. Water is an active participant in metabolism. For example, the breakdown of nutrients during digestion occurs exclusively by 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.
Mineral elements that are part of the body in large quantities (tens and hundreds of grams and even more than kg) have received a ml change macronutrients. Both short and long term loads require good Mai water saturation of the body, which must be regulated in the body and depending on the duration and intensity of 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 that predispose to dehydration.
Dehydration of about 1-2% of body weight (0.7 l to 1.4 l for a 70 kg person) can lead to a 10% decrease in muscle performance.
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 already 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, the loss of body weight due to sweating reaches 2 percent or more, which significantly reduces performance, and a loss of 7% leads to a refusal to continue working;
- use various drinks, focusing not on the feeling of thirst that arises, but on the intensity of the exercise, while remembering the following pattern: an increase in normal air temperature by 5C increases fluid consumption by 15%, an increase in body weight by 5 kg, more than 75 kg increases fluid consumption by 7%;
- replenishment of fluid losses should be done not with ordinary water, but with specially developed drinks that allow maintaining the proper level of performance due to the timely intake of easily digestible carbohydrates;
- consumption of carbohydrate drinks should begin before training and continue during and after it to maintain glycogenesis in the liver and muscles (glutamic acid preparations can be used for this purpose).

In the overwhelming majority of cases, in high-performance sports, they resort to the use of pharmacological agents and biologically active additives that replenish the required volume

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energy supply to the body and ensuring the delivery of plastic substances: substance additives or so-called sports nutrition, which is always used as a supplement to a balanced diet, and does not replace it.

There are currently hundreds, if not thousands, of sports nutrition companies. When choosing a product to use, a physician should rely on the following positions:

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 manufacturer must cover the entire spectrum of athletes' needs under various training regimes
3) testing of drugs is permitted only with the consent of the athletes and during training, starting with the minimum recommended doses of one of the drugs to determine the tolerance of its components
4) the use of sports nutrition should be systematic, and its volume and structure should vary depending on the intra-seasonal cycle.

Considering the extreme loads that cause the body's constant need for plastic material and coenzymes involved in the most important biochemical reactions, substrate food supplements (proteins, carbohydrates, protein -carbohydrate mixtures - gainers , vitamin-mineral complexes, carnitine, creatine, fatty acids and essential amino acid complexes (BCAA) and vitamin-mineral complexes (VMC) are systematically used in the practice of high-performance sports.

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

A distinctive feature of sports VMCs 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 training camps. During the season, it is sufficient to constantly take regular VMCs with an increased content of B vitamins (Vitrum, Vitminlight, Vitamax, Polizhen, MAX FOR MEN, etc.). Taking these drugs leads to a significant increase in physical and mental endurance, improves body structure, normalizes psychomotor reactions in unfavorable conditions of everyday activity.

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

One of the most widespread myths existing in the Fenerbahce environment is the opinion about the negative effect of creatine on the joint-muscle sense of football players, which supposedly leads to defects in the 1st. Our data indicate only the beneficial effect of the course and targeted (before games) intake of moderate doses of creatine in...

The course of treatment is carried out at educational and 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 reactions of ATP restoration from ADP (adenosine diphosphate), thereby providing the possibility of releasing large amounts of energy without visible energy depletion.

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In targeted programs for weight loss, one of the most common substrate supplements, L-carnitine, is often used. In these programs, it is used together with thermogenics during the entire period of weight loss before training in a dose of over 1500 mg. Another area of application of L-carnitine is its use before games and intensive training during the season for 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.

Biologically active additives (adaptogens, plant anabolics, immunomodulators, antihypoxants, hepatoprotectors, etc.)

The top of the pyramid of specialized sports nutrition are biologically active supplements and substances used for targeted activation of various metabolic links, correction of the psycho - emotional state and prevention of immunosuppression.

The use of these drugs can be either a course or a one-time nature. In our opinion, the optimal use of these drugs is against the background of constant hematological screening (biochemical blood test, immunogram, hormonal spectrum). However, in practice, constant monitoring is impossible due to logistical difficulties and paramedical factors (unwillingness of the athlete and coaching staff, lack of proper organization). Based on this, the use of these substances is often preventive and intuitive. In the program we have developed, the main attention is paid to 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 detected. 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 long-term intensive physical activity, changes in the immune status develop to one degree or another, which always precede clinical manifestations of overtraining. Based on this, we consider it advisable to take a course of preventive administration of modern safe immunomodulators twice a year in courses of up to 10-14 days.

One of the most important tasks is to activate the body's protective functions during prolonged intense physical activity.

Traditionally, antihypoxants are used for this purpose, such as lipid peroxidation inhibitors (Hypoxen, Actovegin, Ubiquinone, Serrata) and hepatoprotectors. (Essentiale, Heptral, Karsil, etc.)

In conclusion, it should be noted that, as in other areas of high-performance 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 measures.

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