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SNATCH
SWIMMING AND NUTRITION AS TOOLS FOR CONTAINING HEALTH

NUTRITION OF ATHLETS

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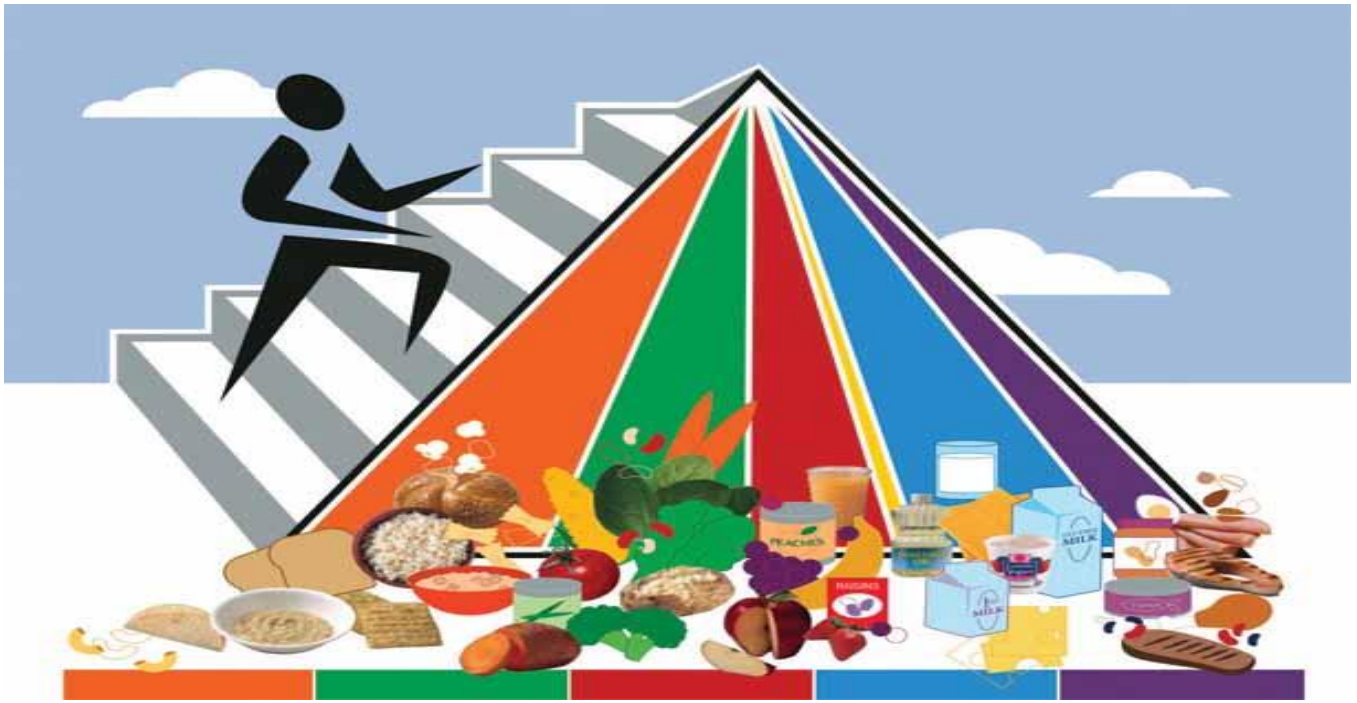
REGIME AND NUTRITION OF ATHLETES



A healthy and balanced diet is one of the most important factors in the success of athletes and is important for achieving the best possible sports results

THE GOAL AND PURPOSE OF ADEQUATE NUTRITION:

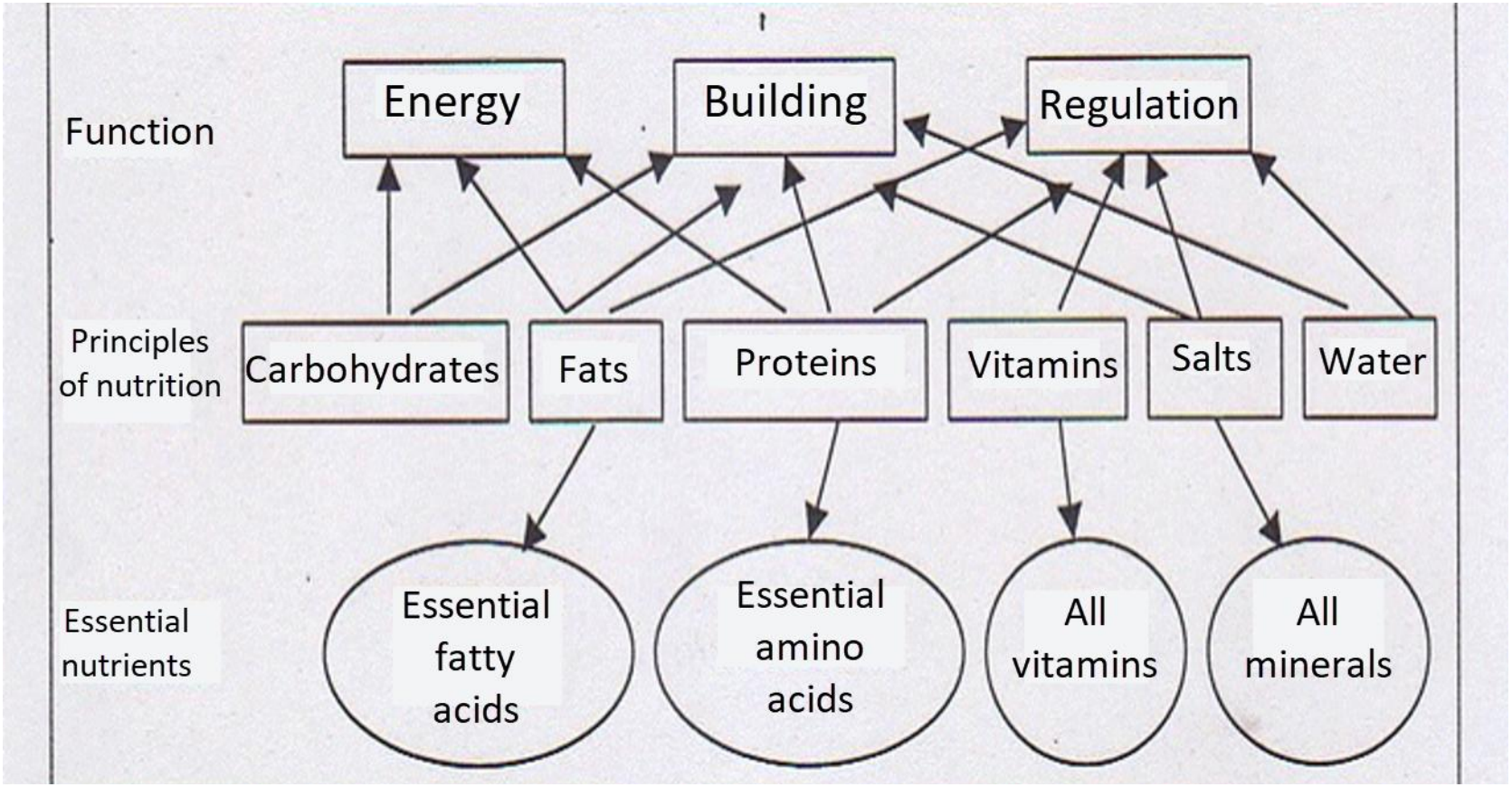
- Supplying the organism with energy and building materials, appropriate to the intensity, type and extent of physical activity
- Optimal growth and development of the organism through the training process
- Faster recovery between training and sports performance
- Achieving an ideal or optimal body weight and physical fitness
- Protection against injury and damage
- Improvement and advancement of fitness, strength and endurance necessary for successful sports performance and reduction of fatigue
- Protection and raising the level of resistance (immunity) of the organism
- Facilitating successful performance at competitions, despite stressful conditions (extreme mental and physical strain)
- Improvement of recovery and faster return to optimal form.

In addition to the training plan, athletes must also have a *nutrition program* because food should meet the nutritional needs of athletes **during training, competition and recovery**.

That is, food should provide enough energy and meet the needs for essential nutrients.

BASIC GROUPS OF NUTRIENTS NECESSARY FOR AN ATHLETE ARE:

- **ENERGETICS - carbohydrates / fats**
- **BUILDERS and REGENATORS – proteins / amino acids**
- **VITALIZING substances – vitamins, minerals, enzymes, electrolytes**
- **PROTECTIVE substances – nutraceuticals and phytochemicals**
- **TARGETED PRODUCTS - probiotics, antioxidants, vitaminoids**



Picture. Presentation of macro- and micronutrients and their functions in the body

Daily caloric intake should be distributed in the following ratio:

- **Proteins from 15 to 20 %**
- **Fat from 20 to 30%**
- **Carbohydrates from 60 to 70%**

CARBOHYDRATES

CARBOHYDRATES are an elementary source of energy in the body. Regardless of the possibility of using other nutrients for the purpose of obtaining energy (primarily fats), *carbohydrates* play a particularly important role in this regard for the following reasons:

- *glucose is the energy form that begins to be used first*
- *energy can only be obtained from glucose through an anaerobic process (without oxygen)*
- *the brain can only use glucose as a source of energy*

Through digestion and absorption, all *carbohydrates* introduced into the body are broken down into glucose, which is the only form of *carbohydrate* that can enter the cell where it is processed.

The World Health Organization suggests:
8-10 g CHO/kg. of body weight per day

Insufficient intake of *carbohydrates* can cause:
low energy level, reduced ability to work, loss of concentration, poor recovery, weight loss.

Carbohydrates are divided into:

Simple

Monosaccharides:

- glucose (grape sugar, blood sugar) – the most important representative of simple sugars, in the body it is dissolved in the blood and serves as a source of energy for all organs and muscles, it is found in fruit, honey, some types of vegetables;
- fructose (fruit sugar) – found in fruit, honey;
- galactose (milk sugar) - is most often found in the composition of lactose

Disaccharides:

- sucrose (table sugar)
- lactose (milk sugar)
- maltose (malt sugar) – found in fresh and fermented foods.

Complex sugars

Polysaccharides:

- starch - the most important carbohydrate, it is most often represented in the diet (over 50%), it is found in: grains, stalks, roots of plants, unripe bananas and apples, and mostly in cereals and their products, legumes and potatoes;
- cellulose and hemicellulose - found in plant cell walls;
- pectin - found in fruits and stems
- glycogen - animal sugar

GLYCEMIC INDEX OF CARBOHYDRATES

- **The glycemic index (GI)** of a food is a measurement unit for the speed with which the blood sugar level rises after consuming a certain type of food.
- ***High* GI** have simple carbohydrates (glucose) and foods such as: honey, white sugar, white bread... What they have in common is that they quickly enter the bloodstream, sharply raise blood sugar levels, cause increased secretion of the hormone insulin and rapid release of energy.
- Foods with a medium or ***low* GI** have such as: integral rice, pasta, various types of fruit, black bread, numerous types of vegetables, beans. These foods contain complex carbohydrates that take longer to break down, enter the bloodstream slowly, increase blood sugar concentration more slowly, gradually increase insulin secretion and provide energy for a longer period.

GLYCEMICAL INDEX OF CARBOHYDRATES

- Foods that have a low **GI** release energy gradually and moderately. If you plan to do some long-term activity that requires you to have enough energy several hours after eating or during the day, then it is preferable to consume foods with a low **GI**, so that you feel full for a longer time.

Foods with a low **GI** are considered foods that

GI lower than 50.

Foods with a moderate **GI** are considered foods that

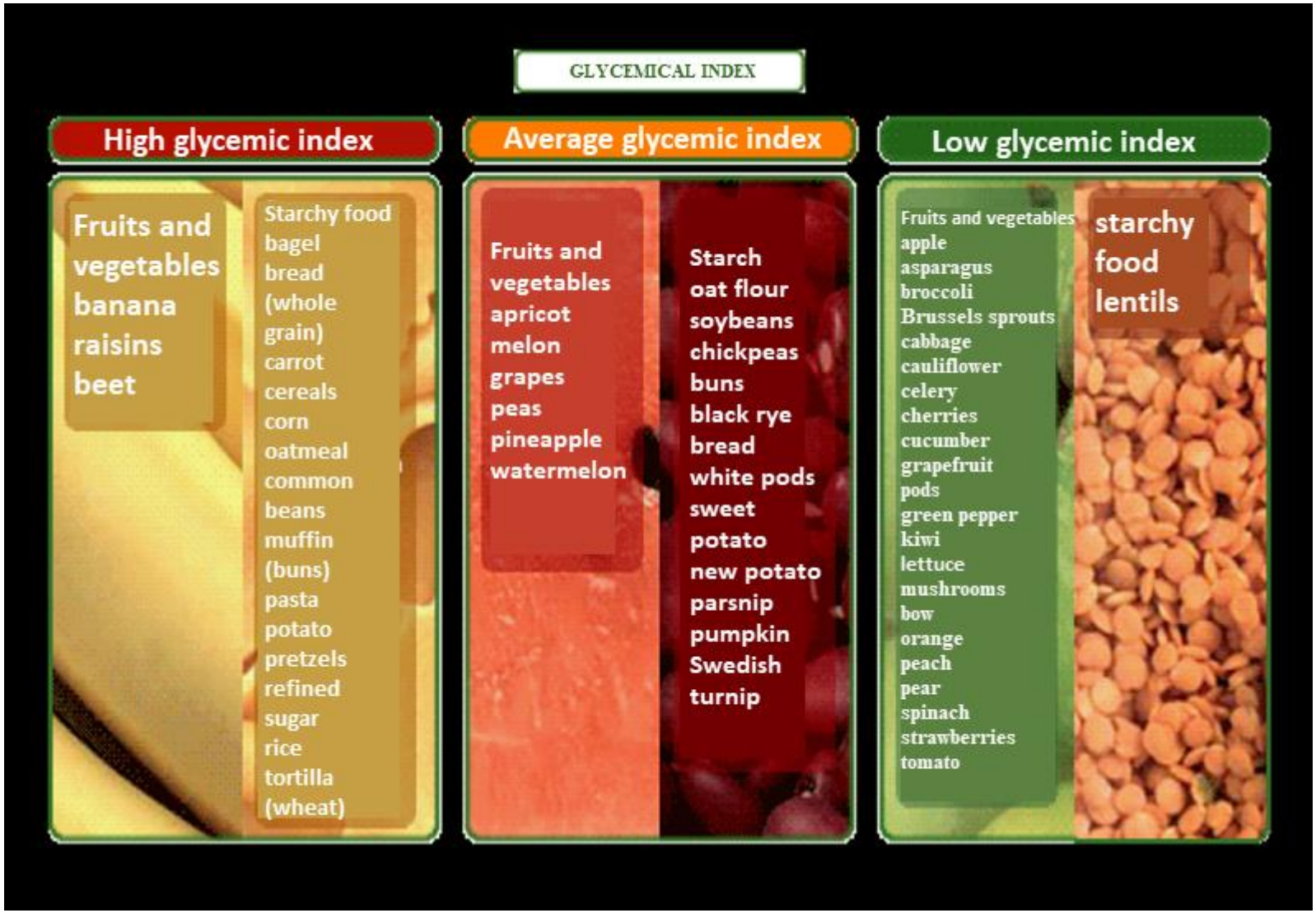
GI from 50 to 70.

Foods with a high **GI** are considered foods that

GI 70 or greater than 70.

Sudden changes in the level of glucose in the blood are not dangerous for healthy people, but over a long period of time, if the level of glucose in the blood rises and falls suddenly, several times during the day, this condition can damage vital organs and cause a state of chronic fatigue, so it is desirable to consume more foods with **lower GI**.

GLYCEMICAL INDEX OF CARBOHYDRATES



PROTEINS

PROTEINS

Protein intake is extremely important for athletes.

They are the most important structural component of our body.

Proteins are absolutely necessary for the growth, maintenance and strengthening of muscles, especially in the phase of intense loading.

Proteins, in addition to water, are the basic ingredient of the body and are found in muscles, skin, enzymes, hair, etc.

Intense muscle load during training leads to an increased need for proteins.

Protein requirement per kilogram of body weight:

- **Non-athletes: 0.8 – 1.0 g**
- **Recreational athletes: 1.5 -1.7 g**
- **Gym / top sport: 1.8 g – 2.5 g**

PROTEINS

Since ***proteins*** and their individual constituents, ***amino acids***, cannot be stored, they must be taken regularly with food.

Proteins are found in different types of food.

Food of animal origin, such as meat, fish, eggs (white), milk, yogurt and cheese, is a good source of ***protein*** in terms of quality and quantity.

Proteins of animal origin are considered the number 1 choice in nutrition because they provide all the essential ***amino acids*** that the body needs.

Plant ***proteins*** are found in legumes, cereals, beans, lentils, nuts, wheat, rice, corn, barley, oats, rye, soybeans.

FATS

FATS (lipids) make up an important part of a healthy diet.

Chemical compounds that are counted as ***fats*** are **triglycerides, phospholipids and cholesterol.** The main part of phospholipids and triglycerides are ***fatty acids***.

In the body, ***fats*** serve as a source of energy for numerous metabolic processes.

Part of the ***lipids*** is used for the construction of cell membranes and as a basis for the absorption of vitamins A, D, E and K.

Triglycerides serve as a source of energy for the body**.**

Digested ***fats*** are stored in adipose tissue and the liver and serve as an energy reserve.

The recommended daily fat intake is 20-35% of the total daily energy intake

FATS

There are two types of fat:

- ***unsaturated fatty acids***
- ***saturated fatty acids***

Unsaturated fatty acids are often called 'healthy fats', as they have been shown to help reduce the risk of heart disease and cardiovascular disease.

There are two types of ***unsaturated fats*****: polyunsaturated and monounsaturated.**

Monounsaturated (olive oil, canola oil, avocado, nuts).

They help control blood cholesterol.

Omega-3 and omega-6 fatty acids are ***polyunsaturated*** (fatty fish such as sardines, anchovies, whiting, tuna or mackerel, eggs, flax seeds, walnuts, soybeans, sunflower and sesame seeds and their oil). By consuming them, we can reduce the risk of heart disease when they are consumed instead of saturated fats.

FATS

- **Saturated fatty acids** are considered 'unhealthy fats', because, when eaten excessively and often, they can cause higher blood cholesterol levels and a higher risk of cardiovascular diseases.
- **Saturated fats** are the main type of fat in milk, cream, butter, cheese, meat, and palm and coconut oil. Therefore, these types of fats should not be excessively consumed, but the body still needs them for normal functioning, especially for proper growth and development, but in moderate amounts

VITAMINS AND MINERALS

VITAMINS

- **They have a protective role in the body:**

they prevent the development of infections, diseases and raise the immune system to the appropriate level.

- **They ensure** normal growth and development of the organism.
- **They participate** in metabolic processes, obtaining energy (enzymatic conversion of carbohydrates, fats and proteins).

Some ***vitamins*** can be synthesized in the body (vitamins A, B3, D, K), while the rest must be taken into the body through food in sufficient quantity so that there are no negative consequences due to the appearance of a deficit. Adequate and proper nutrition ensures a sufficient amount of ***vitamins***, and supplementation is only necessary if there is a deficit of certain ***vitamins.***

Vitamins are divided into:

- ***soluble in water*** ***(B complex, C)***
- ***fat soluble*** ***(A, D, E, K)***

Vitamin A

- ***Sources of vitamins:*** Liver, carrots, sweet potatoes, pumpkin, apricots, green leafy vegetables, mango, cantaloupe, tuna
- ***Vitamin function:*** Vitamin A is important for controlling the growth and development of epithelial tissue, it participates in the creation of the visual pigment - rhodopsin. Together with some carotenoids, it is believed to enhance the function of the immune system. Due to its strong effect on epithelial tissue, retinol is used in the treatment of many skin diseases.
- ***Deficiency signs:*** Night blindness, dry eyes, dry and scaly skin, increased susceptibility to infections. Vitamin A deficiency is rare because many foods are rich in either already created vitamin A or beta carotene, which is the basis for its creation.
- ***Recommended daily dose:*** Adults and teenagers: 800 R.E.

*RE. = retinol equivalent, the unit for measuring vitamin A.

Vitamin B1 (Thiamine)

- ***Vitamin sources:*** Whole grains, seeds, nuts, sunflower seeds, pork, oats, tuna, salmon, avocados, pasta and grains, beans, legumes, tofu, artichokes.
- ***Vitamin function:*** Vitamin B1 is essential in carbohydrate metabolism. Therefore, the body's needs are increased when the diet is dominated by carbohydrates.
- ***Deficiency signs:*** Weakness, nervous system disorders, cardiac arrest. In the developed world, the lack of this vitamin is rare.
- ***Recommended daily dose:*** Adults and teenagers: women 1.1 mg, men 1.5 mg.

Vitamin B2 (Riboflavin)

Vitamin B2

- ***Sources of vitamins:*** Offal, dairy products, seafood, eggs, meat, enriched bread and cereals, almonds, tofu, artichokes, turnips, spinach, sweet potatoes.
- ***Vitamin function:*** Vitamin B2 is indirectly involved in maintaining the integrity of the erythrocyte membrane. It is often called the factor of cell growth or respiration. It is involved in the breakdown of fats, proteins and carbohydrates. It is necessary in the utilization of energy from food. It is involved in metabolic processes throughout the body.
- ***Deficiency signs:*** Dry, scaly, cracked skin; eyes extremely sensitive to bright light, painful red tongue. Vitamin B2 deficiency is rare.
- ***Recommended daily dose:*** Adults and teenagers: women 1.3 mg, men 1.7 mg.

Vitamin B3 (Niacin)

- ***Sources of vitamins:*** Seafood, tuna, swordfish, salmon, meat, peanuts and peanut butter, wheat germ, wheat bran, fortified cereals and pasta, barley, rice, buckwheat, wild rice, sunflower seeds, potatoes, avocados, mushrooms**.**
- ***Function of vitamins:*** It is used in prophylaxis and treatment of pellagra, it is also used to therapy diseases of the circulatory system and migraine, hyperlipidemia.
- ***Signs of deficiency:*** Dry, cracked, inflamed skin; disorders of the digestive and nervous systems. Deficiency of this vitamin is rare in developed countries. It is a supplement for enriching many types of foods, and the body can produce niacin from tryptophan, an amino acid found in many protein-rich foods.
- ***Recommended daily dose:*** Adults and teenagers: women 15 mg, men 19 mg.

Vitamin B6 (Piridoksin)

Vitamin B6 (Piridoksin)

- ***Sources of vitamins:*** Tuna, salmon, avocado, potatoes, meat, bananas, chickpeas, plum juice (fresh or dried), sunflower seeds, sweet potatoes, artichokes, rice bran**.**
- ***Function of vitamins:*** Acts as a coenzyme for protein metabolism. If the body needs extra energy, it helps cells convert proteins and glycogen from the liver into energy. It strengthens the immune system and helps build neurotransmitters in the brain.
- ***Signs of deficiency:*** Cramps, nervous system disorders, inflamed skin. Vitamin B6 deficiency is rare since it is found in most protein foods, and the usual diet is rich in protein.
- ***Recommended daily dose:*** Adults and teenagers: women 1.6 mg, men 2.0 mg.

Vitamin B12

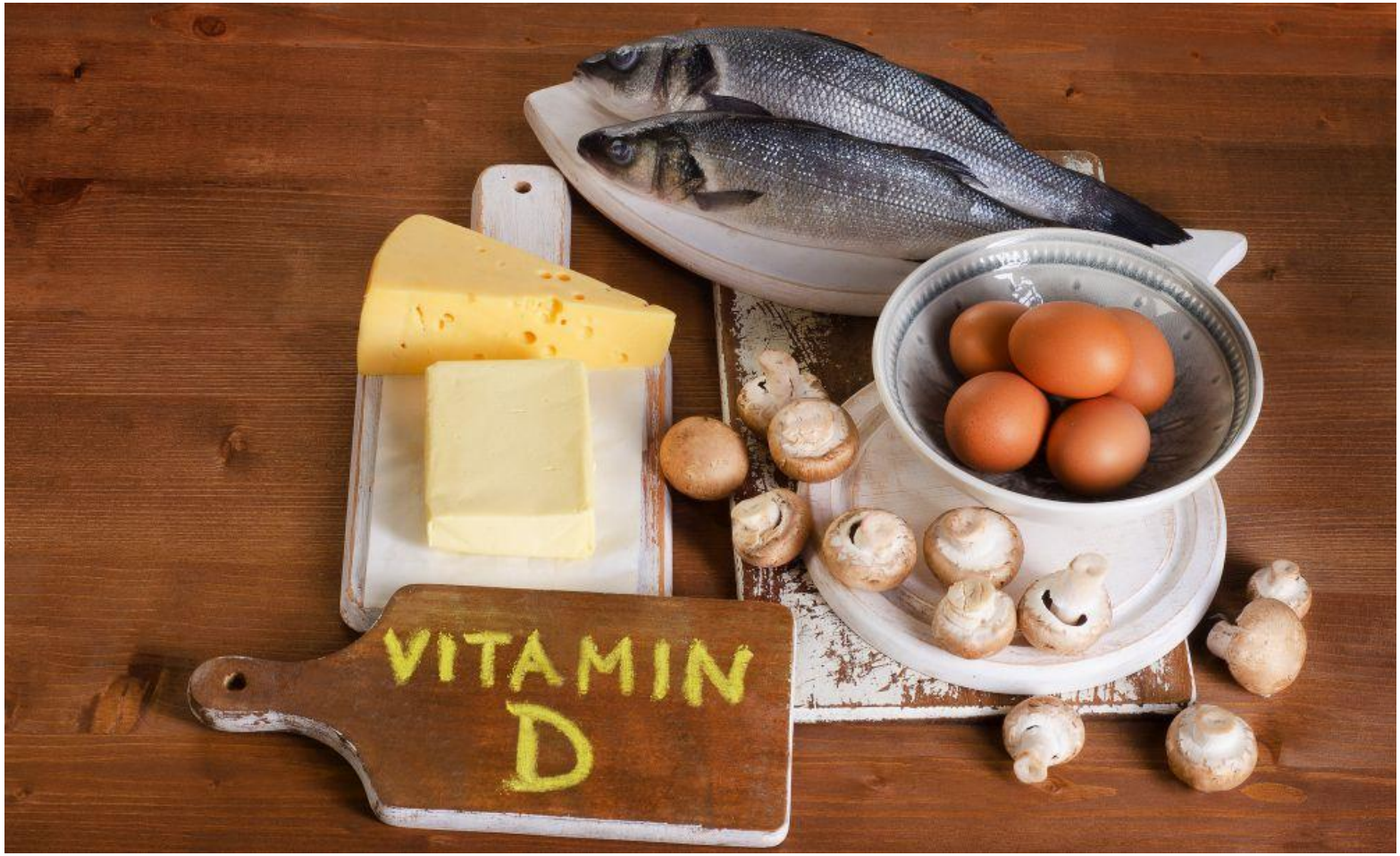
- ***Sources of vitamins:*** Seafood, meat, yogurt, milk, cheese, eggs
- ***Vitamin function:*** Directly or indirectly, vitamin B12 is involved in almost all metabolic systems. It is essential for normal growth and nutrition of all cells, for normal erythropoiesis, for the regulation of epithelial cells.
- ***Signs of deficiency:*** Cramps, nervous system disorders, inflamed skin. Anemia, nerve damage.
- ***Recommended daily dose:*** Adults and teenagers: 2 mcg.

Vitamin C (Ascorbic acid)

Vitamin C (Ascorbic acid)

- ***Sources of vitamins:*** The richest source of vitamin C are a variety of fruits and vegetables. Most have pomegranate, black currant - 200 mg/100g, red pepper - 190 mg/100g, parsley - 130 mg/100g, kiwi - 90 mg/100g, broccoli - 90 mg/100g, red currant - 80 mg/100g, papaya - 60 mg/100g, strawberries - 60 mg/100g, orange - 50 mg/100g. This was followed by lemon, melon and cauliflower with 40 mg/100g, then grapefruit, raspberry, tangerine, spinach and kale with 30 mg/100g.
- ***Vitamin C*** builds strong connective tissue that stabilizes muscles and bones, it is an antioxidant that improves iron absorption; accelerates wound healing; maintains the strength of capillaries; strengthens the immune system, has been proven to help in the treatment of bronchitis, bruises, colds, glaucoma, elevated cholesterol, infections and wounds.
- ***Signs of deficiency:*** Cramps, nervous system disorders, inflamed skin. Bleeding gums, slow healing of wounds; easy getting bruises, weakened immunity.
- ***Recommended daily dose:*** Adults and teenagers: 60 mg.

Vitamin D



Vitamin D

- ***Sources of vitamins:*** For most people, the source of vitamin D is the sun. In food it is found in milk, dairy products, yeast, egg yolk, oil from the liver of cod and meat of fish from cold seas, salmon and herring.
- ***Vitamin function:*** Improves the absorption of calcium and phosphorus that are needed for strong bones. Sunlight stimulates a cholesterol-like substance that creates vitamin D.
- ***Signs of deficiency:*** Brittle, brittle bones and weak muscles – a disease called rickets.
- ***Recommended daily dose:*** Mostly 10 to 15 minutes of exposure to the arms, shoulders or face to the sun 2-3 times a week, it is enough to meet the daily requirement of vitamin D. In food, the recommended daily dose for adults and teenagers: 200 I.U
- *I.U. International Unit

Vitamin E

- ***Sources of vitamins:*** Polyunsaturated oils and seeds: sunflower, saffron, corn; almonds, hazelnuts, peanut butter, wheat germ, tomato concentrate, avocado, peaches, oat bran. The best source: sunflower seeds.
- ***Function of vitamins:*** The action of vitamin E in the body is multifaceted and still not fully explained. Its most important function in the body is to act as an antioxidant and neutralizer of free radicals. It maintains good function of nerves, muscles, skin, red blood cells, and heart and bloodstream.
- ***Signs of deficiency:*** Anemia, neurological damage. The consequences of vitamin E deficiency are not as clear as with other vitamins.
- ***Recommended daily dose:*** Adults and teenagers: Women: 8 mg, men: 10 mg.

Vitamin K

Vitamin K

- ***Sources of vitamins:*** Green leafy vegetables, kale, broccoli, onions, lettuce, cabbage, spinach.
- ***Function of vitamins:*** Vitamin K plays an important role in blood clotting.
- ***Some proteins***, important for normal bone metabolism, on which calcium intake in bone depends, are also dependent on vitamin K.
- ***Signs of deficiency:*** Bleeding, decreased blood clotting. The deficiency is rare because the bacteria that make up the normal intestinal flora create the vitamin K needed by the body.
- ***Recommended daily dose:*** Adults and teenagers: Women: 65 mg Men: 70 mg.

MINERALS

Mineral substances (calcium, magnesium, potassium, sodium, chlorine, phosphorus, i sumpor)

and trace elements.(crom, cobalt, bakar, iodine, željezo, manganese, molybdenum, selenium, cink and nikal) are essential substances that are introduced into the body with food.

Any lack of nutrients sooner or later leads to fatigue, lack of energy and strength, the appearance of weakening of the immune system, strengthens the tendency to injury and gives poor results of athletes.

Minerals prone to the appearance of deficits are:

magnesium, calcium, potassium, sodium, chromium, desire, zinc and selenium.

Calcium

Calcium

- ***Mineral sources:*** seafood, dark green vegetables, sesame, sunflower seeds, milk, cheese, eggs, nuts, dried fruits, sardines.
- ***Mineral function:*** Prevents the formation of viral sores in the mouth, regulates heart rhythm, kidney function, lowers blood pressure, is involved in Structuring DNA, promotes muscle contractions. Calcium is the most abundant mineral in the human body, it is essential for healthy bones and necessary for almost every cell for normal functioning.
- ***Signs of deficiency:*** Muscle spasms on the arms and legs may occur, bone softening, back and leg cramps, bone fragility, rickets, weak growth, osteoporosis, teeth decay, depression…
- ***Recommended minimum daily dose:*** 800 mg – 1200mg.

Potassium

- ***Mineral sources:*** Bananas, seafood, green pepper, dried fruits**.**
- ***Mineral function:*** Potassium is the most important element that significantly affects the work of the heart muscle and the functioning of the entire muscular and nervous systems. It takes care of the equalization of charge in the finest regulating mechanisms of the cell, is a major factor in the regulation of body fluids, participates in the electrical stabilization of the cell membrane and acid-base content. Potassium plays a role in many fundamental biochemical processes**.**
- ***Signs of deficiency:*** External symptoms are: muscle weakness, nausea, changes in the activity of the heart muscle and therefore a drop in blood pressure**.**
- ***Recommended daily dose:*** 2000 mg.

Magnesium

Magnesium

- ***Sources of minerals:*** Food from the sea, whole grains, yellow corn, lentils, dried fruits, walnuts, leafy vegetables, apples, celery, lemon, figs, grapefruit**.**
- ***Mineral function:*** Magnesium relaxes muscles, maintains a stable heart rhythm, normal nerve and muscle function, and stimulates metabolism**.**
- ***Signs of deficiency:*** With deficiencies, heart spasms, nervousness, muscular irritability, confusion, kidney stones may occur**...**
- ***Recommended daily dose:*** 350 mg.

Sodium

- ***Sources of minerals:*** Table salt
- ***Mineral function:*** Sodium ions are extremely important for regulating acid-base balance and together with calcium and potassium ions that maintain the function of nerve and muscle cells**.**
- ***Signs of deficiency:*** Lack of sodium in a normal diet is generally not possible, but it can occur due to some diseases, such as diarrhea, vomiting, burns and tumors**.**
- ***Recommended daily dose:*** 500 mg.

Phosphorus

Phosphorus

- ***Mineral sources:*** Whole grains, legumes, nuts, vegetables, sunflower seeds**.**
- ***Mineral function:*** Phosphorus is a macromineral, whose role in the body is multifaceted. In bones, phosphorus with calcium makes apatite (calcium phosphate), which has an important structural component of the bone matrix. Brain tissue is rich in phosphorus, which means that phosphorus is essential, both for growth and development, as well as for the good functioning of the brain. The most important role of phosphorus is in cellular biochemistry**.**
- ***Signs of deficiency:*** Phosphorus deficiency is rare, but if it does occur, weakness and vomiting occur, and osteomalacia and rickets**.**
- ***Recommended daily dose:*** 800 mg.

Iodine

Iodine

- ***Mineral sources:*** Onions, beans, seafood**.**
- ***Mineral function:*** Iodine is known as an element that almost exclusively enters the thyroid gland and there plays a major role in the thyroid hormone thyroxine (T4). Thyroxine has a role in regulating the combustion process and thus can manage the pace of energy collection**.**
- ***Signs of deficiency:*** Thyroid enlargement, slow mental reactions, dry skin and hair, weight gain, loss of physical and mental vitality**.**
- ***Recommended daily dose:*** 150 mcg.

IRON

Iron

- ***Sources of minerals:*** Iron is found in red meat, chicken, seafood and other foods of animal origin, and feri iron in dark green vegetables, whole grain products, nuts and other plant foods.
- ***Mineral function:*** Iron is an essential element in the construction of oxidation and reduction processes in the cell, a central factor in oxygen transport processes. This means that it participates in transporting oxygen and draining carbon dioxide from the lungs before it exhales as a gas**.**
- ***Signs of deficiency:*** Signs of deficiency are: fatigue, headache, weakness, irritability, dizziness, palpitations, wheezing, burning of the tongue, constipation(constipation), brittle nails**.**
- ***Recommended daily dose:*** 10 mg.

Zinc

Zinc

- ***Sources of minerals:*** Sunflower and pumpkin seeds, food from the sea, organically grown meat, mushrooms, eggs**.**
- ***Mineral function:*** Zinc is present in all organs, and most of it is found in erythrocytes, bones, muscles, liver, prostate. It is involved in a large number of enzymatic systems in the body (e.g. cell growth and division, immune system, reproduction...)**.**
- ***Signs of deficiency:*** It can occur as delayed sexual maturation, prolonged healing of wounds, white spots on the nails of the fingers on the hands, growth retardation, signs of tension, fatigue, decreased vivacity, tendency to infections**.**
- ***Recommended daily dose:*** 15 mg.

Selenium

Selenium

- ***Mineral sources:*** Brazil nuts, whole grains, asparagus, garlic, eggs, mushrooms, lean meat and seafood**.**
- ***Mineral function:*** Of particular importance is its function of protection against poisoning (liver necrosis). The human body contains about 10-25 mg of selenium. Its action is recognizable in the protection against heart attack, angina pectoris, rheumato-arthritic diseases, interference with the conduction of nerve impulses and weaker immune state**.**
- ***Signs of deficiency:*** Premature aging, heart disease, dandruff and skin sagging may occur.
- ***Recommended daily dose:*** 70 mcg.

The most important thing in the diet of athletes is to

meet the energy needs of the body.

The recommended daily energy intake depends:

on gender, age, height, mass and physical activity during the day.

To achieve energy balance

energy intake must be equal to energy consumption.

Daily energy consumption is divided into three components:

- ***basal metabolism*** shows the energy that the body consumes in a state of rest
- ***the thermal effect of food*** displays the energy spent for absorption, metabolism and storage of nutrients
- ***thermal effect of activity*** that involves energy expenditure due to physical work, muscle activity, and volitional physical activity

How to calculate energy needs?

The calculation of energy needs primarily starts from the determination of "***basal metabolism***".

Basal metabolism is the amount of energy needed to meet the energy needs of a person lying in a waking state..

A completely precise way to calculate exists, but it is performed in laboratory conditions, and for daily application a simple method is used in which the weight of an individual person is multiplied by 22.2, therefore:

person "X" weighs 75 kg

Her basal metabolism is:

75 x 22.2 = 1650 kcal

With this simple way, we calculated the basal energy needs of an individual person. The next thing that follows is determining the amount of activity for an individual and increasing the size of the basal metabolism for that value.

Thus, for individual activities, the size of the basal metabolism increases for:

- ***low active persons: 20 - 40 % BM***
- ***medium-active people: 40 - 60% BM***
- ***very active people: 60 - 80 % BM***

Assessment of daily energy needs of athletes depending on the category of sports activity

Energy required for athletes (kcal/day):

- ***little active****

  BM x 28 + 30

- ***moderately active*****

  BM x 32 + 40

- ***very active******

  BM x 42 + 50

BM = body mass; * Recreation; ** training 45-60 min/daily; *** training 60-120 min/daily;

In order to improve the results with nutrition, athletes must eat from **5** to **6** meals a day, and in each of the meals must be represented all nutrients:

- ✔ ***carbohydrates***
- ✔ ***proteins***
- ✔ ***fats***
- ✔ ***Vitamins and minerals***

- ***Pre-workout*** food intake proven to improve training ability.
- ***During training,*** water and electrolyte replenishment is key, which is achieved by abundant hydration and sports drinks with 6-8% carbohydrates.
- ***After training,*** athletes must replenish the spent glycogen reserves, which requires a meal rich in carbohydrates, but also proteins if an anabolic effect on the muscles is to be achieved.

NUTRITION DURING THE DAY:

- In the morning ***BEFORE BREAKFAST***, it is recommended to drink a glass of water at room temperature in which you have squeezed the juice of 1/3 lemon, to encourage the removal of mucus that has accumulated in the body and lemon will stimulate alkalinity. After that, take some of the fruit (banana, apple, pear and berries) to enter the body of fresh enzymes and stimulate a good metabolism

❖ *BREAKFAST*

it should contain whole grain and low glycemic index (as oats) enriched with fruit, dried fruit, nuts, seeds and a tablespoon of honey, or prepare your usual morning meal.

❖ ***Snack or meal after morning training***

let it be your chosen recovery drink – of the usual composition: protein or carbohydrate protein recovery drink (smoothies or shakes from fruits, vegetables, nuts, seeds, cereals).

- ***LUNCH*** – rich in vegetables and fresh spices of soup (broccoli, cauliflower, kale, celery, green beans, carrots, parsley) cream soups/chicken broth; seasonal vegetable salads or mixed salad with olive oil/beetroot salad; veal / chicken /turkey boiled or baked/ liver / fish (tuna steak); rice / haydah porridge / polenta / baked potatoes

- ***AFTERNOON SNACK***
- 2 hours before training ideal snack: fruits, berries, dried fruits (raisins, figs, apricots, prunes, cranberries, dates), nuts (nuts, almonds, hazelnuts, pistachios, cashews), seeds (flax, sesame, sunflower, pumpkin, chia).

❖ *DINNER*

always contains a protein meal – fish, seafood, meat, poultry, cottage cheese or an omelet of 2-3 eggs; grilled vegetables (zucchini, eggplant, peppers, tomatoes, onions) / rhizotto or pasta with seafood; lettuce/brown salad/ shopska / tuna salad with vegetables.

❖ *MEAL BEFORE BEDTIME*

before bedtime: a cup of low-fat yogurt, kefir, acedophile; honey 30 g

HYDRATION

About 60% of body weight is water.

Of the average five liters of our blood, even 85% is water.

In our body, WATER has a diverse efficiency and is involved in many processes:

- Digestion
- absorption
- Circulation
- The secretion of nutrients responsible for most vital processes.

The most important thing for athletes is proper hydration.
before, during and after physical activity

Before physical activity:

- always start exercising at full hydration by drinking often and in small sips in the time before training or competition;
- the type of liquid consumed depends on personal preference, and may include water, freshly squeezed fruit juice or sports drinks;
- before physical activity, 400-500 ml of fluid is ingested 2 hours before the competition/ training;
- it is important to consume fluids for enough time before physical activity so that all the fluid can be absorbed and achieve optimal hydration of the body, while this allows the kidneys to excrete excess fluid in the urine before, and not during physical activity.

During physical activity:

- take smaller amounts of fluid at regular intervals throughout the duration of physical activity, in sufficient quantity to meet fluid needs;
- in addition to water, consume isotonic energy drinks that will allow the athlete to properly train or compete without burden on the body;
- during physical activity fluid intake is approximately 100-150ml, every 20 min. You should not wait for thirst to appear, because it is often not a proper indicator of dehydration.

After physical activity:

Start hydration immediately, and try to consume sufficient amounts of fluids to compensate for the weight loss caused during exertion. This is especially important if there will be more effort (training or competition) in the same day. For example, do a complete rehydration after a morning workout to prepare for afternoon exercise, and also between competitions held in tournaments on the same day.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