

International Day of Healthy Nutrition

Nutrition is one of the most important factors determining human health . A balanced diet ensures harmonious growth and development, promotes health , improves mental and physical performance, helps adapt to changing environmental conditions, and prolongs life .



Rational (from the Latin word *rationalis* - "reasonable") nutrition is one that is organized in accordance with the real needs of a person and ensures an optimal level of metabolism.

However, modern people's diets often cannot be considered balanced. Consumption of foods high in animal fats , simple carbohydrates (sugar), and table salt, and a lack of vegetables , fruits, fish, and seafood in the diet are just some of the nutritional characteristics of people in developed countries today. All this leads to excess weight gain and obesity . Furthermore, nutrition plays a key role in the development of cardiovascular diseases, neoplasms, and type II diabetes . Nutrition is also essential for the development of gastrointestinal, musculoskeletal, and endocrine diseases. Poor nutrition can be associated with a number of foodborne infections and intoxications, helminthiasis, and poisoning with harmful chemicals.

In this regard, it is very important to know and adhere to the principles of healthy eating.

Laws of rational nutrition

1. The law of energy adequacy of nutrition.

The energy value of food (caloric content) is the amount of energy in kilocalories (kcal) or kilojoules (kJ) that the body receives upon complete digestion of food.

To maintain health and the necessary level of physical and mental activity, a balance between energy intake and expenditure is necessary. Daily energy expenditure is the sum of all energy expenditures over the course of a day. It consists of the basal metabolic rate (BMR) and energy expenditure for physical activity, digestion, growth, and adaptation to environmental temperature conditions. BMR is the minimum energy required to support vital functions at rest. BMR accounts for 60-70% of daily energy expenditure.

Each person's energy needs vary individually and depend on gender, age, weight, height, and physical activity level. If you consistently consume foods with a caloric content exceeding your daily energy expenditure, the excess energy will be stored as fat, ultimately leading to obesity and the development of various health problems.

2. The law of nutrient adequacy of nutrition.

Nutrients (from the Latin *nutrientia*, meaning "nutritious") are substances found in foods and essential for the body to function. They can be divided into two groups: macronutrients and micronutrients. Macronutrients include proteins, fats, and carbohydrates, which humans need in large quantities as they are the main building blocks for cells, tissues, and energy sources.

Protein is used for building cells, synthesizing hormones and Antibodies are necessary for the normal functioning of enzymes. Without sufficient protein, the normal functioning of the body's organs and tissues is disrupted.

The main sources of complete protein are animal products—fish, meat, dairy, seafood, and eggs. The body absorbs almost 100% of it. Plant protein is found in legumes, nuts, and grains, but is significantly less digestible — 60 % to 80%, while mushroom protein is only 20% to 40%. The recommended protein intake for adults is approximately 1-1.5 grams of protein per kilogram of body weight, and its share in the daily diet should be approximately 12-14%.

Fats are also used as building material for cells, help absorb fat-soluble vitamins and synthesize hormones, support the normal functioning of the nervous system.

A diet low in fats can lead to reproductive dysfunction, decreased mental capacity, frequent viral infections (acute respiratory viral infections), dry skin, brittle nails, hair loss, and poor vision in the dark.

The main sources of fat are nuts, seeds, unrefined vegetable oils, butter, and fish oil. The recommended fat intake for adults is approximately 1 gram per kilogram of body weight, and should account for approximately 30% of the daily diet. Saturated fats should not exceed 10%.

Carbohydrates are the main source of energy. If there is a shortage of these, the body begins to use fats and even protein to replenish energy, which can cause serious changes in metabolism and affect the functioning of the liver and kidneys.

Fast carbohydrates (glucose, fructose, sucrose) are found in large quantities in sweets, baked goods, and carbonated drinks. The body breaks them down instantly, providing the energy it needs, but only for a short time. Complex or slow-release carbohydrates (starch, fiber) are found in whole grains, legumes, and vegetables. The body breaks them down into simpler carbohydrates over at least two hours, providing a measured and stable supply of energy. The recommended carbohydrate intake for an adult is approximately 3-5 grams per kilogram of body weight, and should account for approximately 56-58% of the daily diet. Complex carbohydrates should account for the majority of this intake. Free sugars should account for less than 10% of total daily energy intake.

Micronutrients include vitamins and minerals that are needed by the body in very small quantities. However, virtually no process in the human body occurs without their participation. Micronutrients are not energy sources, but they participate in the absorption of food, the regulation of vital functions, and the processes of growth, adaptation, and development. They affect the human body

primarily indirectly, altering the activity of enzymes, hormones, proteins, and other biologically active substances.

Thus, in order for the body to receive the required amount of macro- and micronutrients, the diet should be varied and include sufficient amounts of vegetables, fruits, whole grains, legumes, animal products (meat, fish, eggs, milk and dairy products).

3. The law of enzymatic adequacy of nutrition.

Enzymes (from the Greek en, meaning "in," "within," and zýme, meaning "leaven") are ferments. The ability to digest and assimilate food depends on its chemical composition and the presence of the necessary enzymes in the human body. A deficiency, absence, or disruption of enzyme activity in the body can lead to pathological conditions known as enzymopathies. These conditions can cause digestive problems, skin or neurological symptoms, and, in children, developmental delays.

4. The law of biotic adequacy of nutrition.

Food products consumed must be safe and free of pathogenic microorganisms and their toxins, xenobiotics (pesticides, heavy metals, nitrates, nitrites, mycotoxins, etc.), and radionuclides in quantities exceeding permissible levels. Consuming food heavily contaminated with microorganisms or containing large amounts of toxic substances of microbial or non-microbial origin can cause food poisoning, often leading to serious health problems. To prevent food poisoning, it is necessary to follow a number of recommendations:

- do not use spoiled products, products with expired dates, or products that raise doubts about their safety;
- wash and process food thoroughly, thoroughly heat-treat raw foods;
- observe the rules of personal hygiene, wash your hands thoroughly before preparing and eating food;
- keep dishes and cooking utensils clean;
- comply with the terms and conditions of storage of food products.

5. The law of biorhythmological adequacy of nutrition.

The digestive tract, as well as other organs and systems, functions cyclically. Therefore, each person needs to adhere to a specific diet. Diet typically refers to the frequency of meals, the intervals between meals, the duration of each meal, and the distribution of foods and dishes among meals.

Each person's diet is unique. It depends on their social activity, habits, and the presence of specific medical conditions. While it doesn't require strict regulations, there are recommendations for optimal nutrition.

For a relatively healthy, able-bodied person, the frequency of food intake, as a rule, should be at least 3-4 times a day. The intervals between meals are 3–4 hours. Breaks longer than 4 hours can provoke a strong feeling of hunger and, as a result, lead to overeating.

To develop a positive dynamic stereotype of eating behavior, it is advisable to eat at a certain time of day.

With four meals a day, approximately 25% of calories should come from breakfast, 35-40% from lunch, 10-15% from an afternoon snack, and 25% from dinner. The timing of the last meal of the day can vary individually, but is best 2-3 hours before bedtime.

Furthermore, it's recommended to eat slowly and chew thoroughly. Poorly chewed food is less digestible and absorbed, and a delay between satiety and mealtime can lead to overeating.

When considering issues of proper nutrition, it is impossible not to touch upon such topical issues as water and table salt consumption.

Water is a fundamental molecule vital to the functioning of the entire human body. For optimal body function, it is necessary to consume sufficient amounts of fluid. For normal weight it is recommended to consume 25-30 ml of fluid per 1 kg of body weight. This includes water, tea, coffee, compote, soups, juices (and fruit). It is recommended that 50-70% of your total fluid intake be pure drinking water.

Salt, or sodium chloride, is a naturally occurring compound commonly used as a seasoning. High levels of salt are often found in canned goods, dried foods, and sauces. Besides enhancing flavor, it also serves as a food preservative, inhibiting bacterial growth in foods. Over the past few decades, salt has acquired a bad reputation due to its excessive consumption and the resulting negative impact on the human body (increased cardiovascular and urinary tract diseases, calcium leaching from bones and teeth, gastrointestinal irritation, and edema). According to WHO recommendations, salt intake should not exceed 5 grams (one teaspoon) per day.

No one can force a person to eat healthy. It's a conscious choice. And the sooner we realize the enormous contribution a balanced diet makes to maintaining and improving our health, the sooner we can change our lives for the better. After all, as the great ancient Greek physician Hippocrates said, "We are what we eat."

Eat right and be healthy!

The material was prepared by the physician-methodologist of the pathological anatomical department of organizational and consultative work, O.V. Ignatova.