



SPORTS HEALTH AND HEALTHY LIFESTYLE REGIME NUTRITION AND PHYSICAL ACTIVITY

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Healthy lifestyle

According to the World Health Organization, human health is: "A state of complete physical, mental and social well-being". As such, it is the result of the complex impact of environmental, socio-economic, and personal-psychological factors.

The health of people in modern societies faces many challenges such as stress, immobilization, polluted environment, harmful habits (addiction to computer games and internet, alcohol abuse, cigarettes, and drugs), improper and irregular eating. This harms our health and could lead to many diseases, lowering the quality of life and life expectancy. A healthy lifestyle is of great importance for longevity and maintaining a good quality of life. It includes:

- Regular 6 to 8 hours of restful sleep per day;
- Healthy diet;
- Intake of a sufficient amount of water – at least 1.5 liters per day;
- Optimal physical activity best combined with the natural factors – water, air, and sun;
- Abstinence from smoking and narcotics;
- Avoiding alcohol and medication abuse;
- If possible, avoiding stressful situations;
- Regular medical check-ups.

Coordination of physical exercises with the hygiene norms and rules is an important condition for achieving good health and high working capacity, creating a good mood, and improving discipline and organization. The proper use and complex combination of physical exercise with the nature and hygienic factors contribute to the full development of physical and spiritual abilities. Physical exercise improves people's health and working capacity, expands the content and forms of physical patterns and physical culture. They influence personality formation and improve the following moral and volitional qualities: tenacity, discipline, awareness, activeness, comradeship, sense of responsibility, etc. Physical work and physical exercise should complement each other in order to contribute to the all-around and harmonious development of the body.

1. Healthy hygiene regime

The hygiene regime is a certain order, rhythm of life, the way of combining, alternating, and performing study activity, work, recreation, nutrition, physical activity, and sleep. The right hygiene regimen plays an important role in the good health status of the body, protects against fatigue, and is essential for improving the physical condition.

The **daily regime** is the "backbone" of the hygiene regime. The goal is for the body to devise a plan, a program in which the change of various activities is largely automated and economical, with minimal energy consumption for the nervous system. The development of a daily regimen is the



correct allocation of time during the day for all types of activities – nutrition, sleep, awakesness, which should alternate rhythmically in a specific sequence. This subordinates the vegetative functions of the body to a certain rhythm. Violation of this stereotype is associated with more energy consumption, which leads to low efficiency of human activity, rapid fatigue, and premature wear and time of the body. The daily regime must take into account the type of nervous system, the nature of the study and work activity, climatic and geographical features, residential, household, and family living conditions, etc. It is necessary to observe it constantly throughout the year, under all conditions.

The mode of study, work, sports activity, and rest is related to energy consumption (fatigue) and recovery. With proper alternation of learning periods (work) and sports with rest periods, the body's working capacity is maintained for a long time at a high level. Prolonged energy consumption leads to fatigue or exhaustion if there is not enough rest. With exhaustion, the body's resistance, appetite, and weight decrease, attention, memory, wits, speed, and coordination abilities deteriorate, strong fatigue is felt, and various complaints, neuroses, etc. appear. Fatigue is a complex reaction of the body, which covers the whole organism. A variety of means are used to support recovery processes, but the most important are sleep, proper nutrition, and observance of a daily regimen.

Rest plays a fundamental role in the rapid elimination of emerging fatigue. It can be in the form of relative rest with a maximum limitation of activity (passive recreation) or the form of active recreation – more expedient and more effective in most cases. During active rest, the means of Physical Education and sports are used: physical exercises, gymnastics, tourism, sports, walks and games before or after studying (work), workouts, competitions, as well as the natural forces of nature (air, sun, and water) used for tempering the body.

As an additional means of Physical Education, natural forces (sun, air, and water) have a beneficial effect on the development of the human body. According to their strength, duration, and intensity of impact, they can cause general and specific reactions and changes of a physiological, biochemical, and psychological nature in the activity and behavior of people. With proper use, natural forces complexly affect and temper the body, increasing the viability and working capacity of man. Tempering procedures according to the means and forms by which they are applied are divided into air baths, sunbathing, and water baths.

Air baths. Air is a universal remedy. On the human body, it acts through its humidity, speed, and various solid and liquid particles. Air baths are the easiest and most generally available treatments, in which the immediate impact of low temperature on skin receptors is used. It is best to start tempering with air in the summer, and in autumn and winter to carry out with a gradual decrease in air temperature. The characteristic of tempering through air baths is their beneficial effect on the nervous system, which in turn improves sleep, lowers increased excitability, and increases mood. Staying in fresh air causes an improvement in the activity of the cardiovascular and respiratory systems, activation of oxidation processes in tissues, etc. Thus, the tempering air procedures increase the working capacity of all body systems and ensure thermoregulation of the human body.

Sunbathing. The sun is the most powerful factor that affects the human body. Since ancient times, humans have appreciated the healing properties of the sun's rays. Sun rays have a beneficial effect on various skin diseases, increase immunity, act as a prophylactic agent against infectious diseases, improve general tone, intensify the body to produce vitamin D, which protects children from rickets, positively affects the central nervous system, etc.

Tempering with water. These are procedures of the greatest importance for tempering since compared to air, water has significantly greater heat intensity and thermal conductivity, it takes a greater amount of heat from the body, and therefore the defenses are much stronger. Tempering procedures using water are carried out when bathing in rivers, lakes, seas, and dams. Their combination with air and sunbathing can have an extremely beneficial effect on the body. It is very useful when bathing in water, to perform various physical exercises and games, which has an additional impact.



Principles of body tempering:

- **Repetition.** For this principle, regular conduct of the tempering procedures and training of the body is required to withstand small temperature fluctuations and humidity of the environment.
- **Gradualness.** This principle implies a consistent transition from shorter to longer-lasting regarding the duration, number, and form of procedures used.
- **Continuity.** An essential requirement of this principle is that the tempering procedures are carried out regularly and continuously. Their interruption for two to three weeks minimizes the previously gained effect.
- **Diversity.** The importance of tempering as a means of strengthening health is great, but it must be combined with physical activity, with the posology and selection of types of tempering procedures taking into account individual characteristics.

How can physical exercise and active recreation be included in the daily regimen?

In most recommendations for the active start of the school/working day, the main place occupies the energetic morning gymnastics. After waking up, it is good to stay in bed for about 10 minutes and perform the following: successive straining of the muscles of the legs, hands, body, face; self-massage of the face and neck; gymnastics for the eyes – movements left-to-right and up and down, closing and opening the eyelids with maximum frequency; stretching the limbs of the body; tightness and dissolution of the abdominal muscles (minimum 30 times).

After getting out of bed, it is good to perform generally developing exercises at a fast pace, as well as a water procedure – lysing with lukewarm water and rubbing with a towel.

On the way to school/university/work, it is advisable to walk 1.5-2 km before boarding a vehicle. During walking, it is advisable to do respiratory gymnastics in the following rhythm: at 2-3 steps is inhaled with medium depth, then exhaled, and retains breathing (15-20 steps) until an acute feeling of shortness of breath develops; 15-20 respiratory cycles is good to be performed.

During travel in transport, you can tighten the abdominal or other muscles 40-50 times. During studying/working, similar breathing and tonic exercises can also be performed.

If the studying is online, before the start of the learning process, between classes, or after completion, take 20-45 minutes for home workouts of varying intensity. On the Sports Department's website as well as in the established online sports courses in Faculties, you will find workouts for each week.

After completing the school/working day, it is again recommended to walk 1.5-2 km, but at a calm pace. Unlike morning walking, now the breathing is calm, deep with vigorous exhalation and deep inhalation.

For health benefits, a minimum of 2-3 times a week it is necessary to perform sports activities – cross, swimming, gym workout, aerobics, sports games, martial arts, etc.

Hygiene and sleep regime are necessary for the rest and recovery of nerve cells of the human body. This is subject to a certain 24/7 rhythm. Usually, after 12-14 hours of wakefulness, the first signs of a need for sleep are obtained. During sleep in the human body, the activity of vital functions is reduced. Sleep should be a minimum of 8 hours per day for effective recovery in an enhanced and prolonged study/work and sports activities. Sleep efficiency depends on its duration, depth, continuity, and speed of falling to sleep. Bedtime and waking up to be the same. A good microclimate of the sleeping room is needed – silence, semi-darkness, open window for air ventilation or ventilation before falling asleep, temperature 15-18°C, bed hygiene and of the duvets, etc.

What are the hygiene bad habits in the student regime?

Smoking is widespread and harmful to health. More than 3,000 chemical compounds, some of them carcinogenic and radioactive substances, and strong poisons have been identified in cigarette smoke. The air pollution from cigarette smoke inhaled (and by "passive" smokers) is 4.25 times



higher than exhaust air when internal combustion engines are operating and 1,100 times higher than exhaled human air.

Alcohol is a strong poison, and when using large amounts, death can occur due to alcohol poisoning. It has a detrimental effect on the entire human organism, but especially on the nervous system.

2. Nutrition, nutrients, and products. Principles of healthy eating.

Without food, water, and air, organisms cannot exist. Back in ancient times, Hippocrates has said, "Your food can be poison, but also medicine". Food is paramount to our health. The hectic daily life of modern man is a prerequisite for building harmful to health, eating habits, which can lead to increased morbidity and mortality. Improper nutrition is associated with numerous health problems such as obesity, cardiovascular disease, hypertension, heart attack, type 2 diabetes, some tumors. Each food has different qualities, chemical composition, and impact on the human body. By sourcing the necessary daily doses of nutrients, we enable our organism to function properly.

There are six groups of nutrients – proteins, carbohydrates, lipids, water, vitamins, and minerals. Of these, only proteins, fats, and carbohydrates can deliver energy to be used by the human body. These substances, in addition to acting as an energy source, have also plastic and regulatory functions and are therefore called **essential nutrients**. At the heart of any healthy diet is the proper combination and preparation of food. Healthy eating is just one element of the overall complex called a healthy lifestyle. To be healthy, we need more than 40 nutrients that are not formed by other nutrients in the body and can only be obtained from food. These essential nutrients include 9 amino acids contained in proteins, some fatty acids contained mainly in vegetable fats, vitamins, and mineral substances. Food also delivers substances, and energy sources for the body - proteins, carbohydrates, and fats. Foods, especially those of plant origin, are rich sources of biologically active compounds that are not nutrients but have an impact on human health. Fruits and vegetables are rich in vitamin C, carotene, vitamin folic acid, some mineral substances, and fibers. All fruits and vegetables mainly consist of carbohydrates and contain a large amount of water. Plant proteins, unlike animal ones, are poor in some essential amino acids, which is why they are called incomplete. The combination of legumes and cereals compensates for the insufficient amount of different amino acids in them and makes the plant protein complete. Milk is a source of complete protein containing essential amino acids, easily digestible calcium, vitamin B2, and vitamin A. Meat, poultry and fish are rich in protein, B vitamins group, iron, and zinc. Legumes and nuts are major sources of plant proteins, are rich in B vitamins, and are considered a plant alternative to meat and meat products as they are rich in protein. However, vitamin B12 is contained only in animal products.

Physiological functions of water.

We need to keep our bodies optimally hydrated. Approximately 70% of the total body weight is made up of water. This percentage is not a constant and can vary between different people relative to their body composition. Some of the functions and roles of water in the human body include transport of different substances; a catalyst for various chemical reactions; lubricant of the joints; body temperature regulator; protective function, including protecting the internal organs; source of minerals.

Factors influencing the availability of water in the body.

For the normal functioning of the body, it is important to maintain the balance of the fluids – the accepted ones should equal those spent. On average, through physiological processes, the body of a healthy adult loses about 1500 ml of water per day, and this loss increases with physical exertion; warm/hot weather; low humidity; high altitude; excessive consumption of beverages containing caffeine, and alcohol.

When choosing food, the modern person faces a wide variety of products that belong to one of the seven main food groups:



- Milk and milk products – rich in proteins, sources of vitamins (PP, B2, B12, A) and minerals (Ca and P) and fats;
- Meat, fish, eggs and their products – sources mainly of protein, unsaturated and omega-3-fatty acids, zinc, phosphorus and B vitamins, etc.;
- Sugar, fat, oil, etc.;
- Cereals and pasta – sources mainly of carbohydrates, vitamins, and minerals;
- Nuts and legumes – nuts are sources mainly of fats, vitamins, and minerals, and legumes mainly contain carbohydrates, plant proteins, fibers, vitamins (E, B1, B6), and minerals (calcium, phosphorus, copper, iron);
- Fruits – sources mainly of fiber, vitamins, and minerals;
- Vegetables – sources of fiber, vitamins, and minerals.

The food pyramid is the optimal model for proper nutrition and might have a great influence on a healthy lifestyle. Planning is very important. If we have already built up habits about how we eat (and that includes the kind of food we take in, when we take it and how many times a day, we take it), it would be very difficult to change them if we do not start planning. Food pyramids are one of the tools that help us take this first step towards healthy eating – they show us how to prepare our meals in a balanced way, how many times a day to eat, and are a reminder that an active lifestyle is an important part of any regime or diet. It is recommended to distribute meals in 5 portions per day or at least 3.

Why should we use the recommended food pyramids? Limited nutrition leads to a decrease in body mass, cessation of growth, and weight loss. Excessive consumption of food of high energy value leads to obesity and contributes to the development of diseases.



Principles of healthy eating:

- Adequacy – to supply a sufficient amount of all the nutrients, fiber, and energy necessary for the body.
- Balance – the nutrients should be in balanced proportions, and one substance should not be excluded or replaced with another.
- Calorie control – the precisely compiled menu would provide the body with the necessary dose of energy for the day. The amount of energy taken with food must be such as to maintain optimal weight.
- Moderation – there should not be overdone with the so-called “harmful foods”, the intake of which could lead to problems with metabolism, overweight, and many other conditions.
- Variety – intake of varied food. Balanced nutrition is when all the substances necessary for the body (proteins, fats, carbohydrates, fiber, vitamins, and minerals), are well combined.



How do we know that we eat healthily?

- Start an optimal diet. It is better for the food intake to be more frequent but in smaller portions.
- Choose the right way of cooking. Minimize frying and try mainly to bake, boil and stew the products.
 - Forget fast-food restaurants – the hamburgers, donuts, fried chicken, shawarmas, etc. offered there, are an absolute antonym of proper nutrition. Fried foods as well as margarine contain the so-called “trans fat” which the body cannot process and should be avoided.
 - Replace the juices in bottles and boxes and the fizzy drinks with water. Water should be drunk 30 minutes before or after meals. Fluid intake during meals leads to dilution of gastric juices, and food cannot degrade well in the stomach. It ferments in the intestine and is not well digested, which leads to swelling, flatulence and causes diseases. It is useful to drink water in the morning on an empty stomach. This helps to purify the body and for good digestion. The daily water intake is individual and is determined by the weight – should be 25 – 30 ml per kilogram.
 - Forget processed foods, semi-finished products, ready-to-eat, packaged foods, and long-lasting products – the preservatives, colorants, and flavor enhancers that are used in them are extremely harmful to the body and cause many diseases. Eat homemade food!
 - Limit the intake of refined (white) sugar and avoid artificial sweeteners. For example, numerous studies alert about the huge health risks due to the regular consumption of aspartame.
 - There should be at least 51% of varied, raw, and fresh food in each meal. When the products are thermal treated, much of the vitamins and minerals are destroyed. Unprocessed foods deliver different types of macro and micronutrients (vitamins and minerals) that slow the rise in blood sugar (regular increase in blood sugar, is associated with fat storage and an increase in excess weight, rapid decline in energy and tone after eating, risk of diseases such as diabetes, etc.).
 - Eat a variety of seasonal food. It is not only cheaper but also contains exactly what the body needs in the given season. Eat the fruit separately – the best would be 30 minutes before the main meal.
 - Eat regularly, in peace, and chew well. To be fully absorbed, the food must be well crushed. Digestion begins already in the oral cavity, therefore is important to chew for a long time.
 - Constant hunger. You may feel hungry frequently if your diet lacks protein, fiber, or fat, all of which promote fullness and reduce appetite. Extreme hunger is also a sign of inadequate sleep and chronic stress. Additionally, certain medications and illnesses are known to cause frequent hunger. The constant need to eat is tested when our body does not get the necessary nutrients. Paradoxically, being overweight can be seen as a symptom of malnutrition – a lack of essential nutrients. In this light, diets in which fat is avoided can be very dangerous – the lack of body-healthy fats can lead to an underperforming appetite and, accordingly, weight gain, energy deficiency, thyroid problems, blood sugar, and much more. The very concept of fat is too generalizing as there are different types of fats that can vary from harmful to essential to the body. The so-called “trans fats” should be avoided. They are contained in margarine and fried foods. Saturated (animal) fats should be consumed moderately. The most useful are the unsaturated fats – those in fish, raw nuts and seeds, in avocados, cold-pressed oils, etc.
 - Go out in the sun every day and exercise often. Vitamin D3, which is very important for humans, is produced by our body with the help of sunlight. Its absence leads to depression and many other diseases.

2. Physical activity. The influence of physical exercises on the body.



Physical activity, health, and quality of life are closely related. The development of our civilization changed man's way of life. Reduced physical activity due to the uptake of modern technologies in everyday life has led to alarming conclusions in many studies on people's poor health status. The sedentary lifestyle is a major risk factor for the development of many chronic diseases and is one of the main causes of early death in the modern world.

The World Health Organization (WHO) defines physical activity as: "any bodily movement produced by skeletal muscles that results in energy expenditure above resting level". In addition to personal, the level of physical activity is also influenced by environmental factors that can be physical (construction and infrastructure of the living environment), social and economic.

The term "physical activity" should not be confused with "physical exercise", which is a planned, structured, and repetitive activity designed to improve or maintain one or more components of physical fitness. In general, physical activity can be:

- With low intensity – which is practicing physical activity less than 30 minutes a day or one that increases metabolism up to 2-3 times compared to the main one. Such activities are light housework, a walk in the park, and others.

- With moderate-intensity – which leads to slightly increased breathing, a slight acceleration of the pulse, and a feeling of warming. Metabolism increases from 3 to 6 times compared to the main one. Such activities are fast walking (speed about 5 km/h), work in the garden (mowing with an electric lawnmower, harvesting), hard housework, slow climbing of stairs, cycling (with a speed of about 17 km/h), swimming with moderate speed, light aerobics, moving weights under 20 kg, etc.

- With high-intensity – which leads to increased heart rate, shortness of breath, and sweating. Metabolism increases at least 6 times compared to the main one. Such activities are intense aerobics, dancing, cycling (with a speed of over 17 km/h), mowing with a manual lawnmower, digging, rapid climbing of stairs, fast swimming, active sports, and games (football, basketball), moving weights over 20 kg, etc.

The duration and weekly frequency of physical activity are also important for improving health. To improve the state of the respiratory and cardiovascular systems, bone health, and to reduce the risk of developing chronic non-infectious diseases and depression, for people aged 18-64 years, WHO recommends:

- The total physical activity performed in one week should be at least 150 minutes of moderate or 75 minutes of high-intensity, or an equivalent combination of moderate- and vigorous-intensity activity, which means that to maintain a normal level of physical activity requires a minimum of 30 minutes per day or at least 5 times a week. High-intensity aerobic physical activity may be divided into intervals, but they should last not less than 10 minutes. For additional health benefits, adults may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity throughout the week.

- Muscle strength and endurance and flexibility exercises should be done at least two, three times a week.

- The frequency and intensity of workloads should be tailored to the fitness level of the person. The frequency and intensity must increase gradually.

In conclusion, any physical activity leads to health benefits, but to strengthen and improve it, it must be of moderate and/or high intensity and with the necessary weekly frequency.

Depending on its intensity, duration, and frequency, physical activity causes changes in all organs and systems of the human body to a lesser or greater extent.

The positive effect of physical exercise on the human body is an indisputable fact. It is well known that regular physical activity and sports improve the functioning of the nervous, respiratory,



musculoskeletal, and cardiovascular systems. Physical exercise is a natural activator of metabolism and contributes to its optimization. It improves the immune response, lowers the illness risk, and reduces inflammation. It also increases vitality and last, but not least, increases the capacity to perform physical and mental work.

The nervous system occupies a fundamental place in the overall life of a person. It coordinates, controls, and integrates the activities of all organs and systems. It implements the adaptation of man to the environment and his behavior to external and internal biological and social irritants in everyday life. Regular physical exercises lead to the following positive changes in the nervous system:

- improve the blood circulation of the brain;
- improve perceptions, thinking, memory, and attention;
- improve mental capacity, self-esteem, and mood;
- improve strength, mobility, and balance of the main nervous processes – excitation and retention;
- in people with good physical fitness, there is a more accurate course of nerve processes, faster response, and differentiation, during exercise. These changes lead to greater and faster mobilization of the body's reserves, increase its functional capacity, ensure optimal economy in the course of its vital functions and increase its resistance. These changes increase its functional capacity, ensure optimal efficiency in the course of vital functions and increase its resistance.

Regular physical exercises lead to favorable structural and functional changes of the respiratory system, which are expressed in:

- improved mobility of the chest and diaphragm;
- increased pulmonary vital capacity;
- increased respiratory volumes;
- increased maximum pulmonary ventilation;
- increased time for keeping the breathing at rest,
- breathing of the trained person is much more economical and effective;
- the body's oxygen supply is more adequate.

Physical exercises also have a beneficial effect on **the musculoskeletal system:**

- improve blood circulation;
- maintain the trophy (nutrition) of articular cartilage, by increasing the release of synovial fluid;
- stimulate bone and soft tissue trophy;
- increase bone density and reduce the risk of developing osteoporosis in adulthood. Increased bone density significantly reduces the possibility of the occurrence of injuries and fractures;
- increase the strength of soft tissues such as tendons, ligaments, etc;
- maintain the contractile ability and elasticity of the engaged muscles;
- increase the joints mobility;
- increase muscle strength and endurance;
- reduce the risk of injuries during physical activity;
- develop coordination, balance and create motor skills and habits for occupational, household, and other daily activities;
- improve body structure, including fat reduction, muscle mass increase, and posture improvement.

Physical exercises also have a **beneficial effect on the cardiovascular system, digestive system, and metabolism.**

The typical for the modern lifestyle, reduced physical activity, is considered as a cause and risk factor for the development of cardiovascular diseases, such as arterial hypertension and heart



attack. Physical exercises cause temporary, permanent, functional, and structural changes in the cardiovascular system. They lead to its improvement, expediency, economy, greater functional capacity, and higher working capacity. During physical activity, the stroke volume and the minute volume of the heart increase.

➤ Improves blood circulation and favorably changes the blood's composition. Reduces the concentration of blood sugar. This effect determines the importance of physical activity for the implementation of glycemic control, which is extremely important for the prevention of diabetes mellitus and its complications.

➤ Physical exercises serve to eliminate congestive phenomena and for preventing thrombosis.

➤ The blood circulation of the myocardium and its trophic is improved. represents the innate ability of the heart muscle (cardiac muscle or myocardium) to contract. An increase myocardial contractility at rest leads to a delay in cardiac activity and a decrease in blood pressure. Exercise increases systolic blood pressure and decreases diastolic blood pressure. Diastolic blood pressure shouldn't change significantly during exercise.

Physical exercises also have a positive effect on the **digestive system**:

➤ Diaphragm movements and abdominal muscles mechanically and by the neural reflex pathway affect the motor function of the stomach and intestines. They normalize their tone, normalize peristalsis, improve blood clotting of the digestive organs and their secretory and resorption function.

➤ Diaphragm and muscles movements positively affect the work of the lymphatic system, which is responsible for detoxifying the human body.

➤ Physical exercises also affect digestion by activating metabolism. Increased energy needs under physical loads stimulate digestive functions. The digestive system ensures the energy balance in the body through the acquisition and effective use of energy substances in muscle work. Physical load, in particular muscle work, increases the energy expended of the body and metabolism.

➤ Having a tonic and normalizing effect on the central nervous system, physical exercises also increase the activity of the glands of internal secretion, and they are involved in metabolism. In the absence of proper physical activity, the metabolism of fats and carbohydrates is disturbed, which is a risk factor for diseases such as **obesity** and **diabetes mellitus**.

There are a few ways that exercise lowers blood sugar:

➤ Insulin sensitivity is increased, so the muscle cells are better able to use any available insulin to take up glucose during and after activity.

➤ When muscles contract during activity, the cells are able to take up glucose and use it for energy whether insulin is available or not.

Managing obesity includes a combination of lifestyle changes, increased physical activity, and dietary modifications.

The six key lifestyle behaviors for a long healthy life are getting enough sleep, eating healthy food, being physically active, maintaining healthy body weight, not smoking, and limiting alcohol.

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