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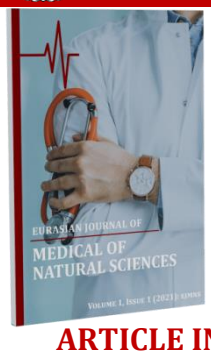

HARDENING OF THE BODY: THE KEY TO A HEALTHY LIFESTYLE

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ABSTRACT

A healthy lifestyle is an important aspect of modern society. One of the main components of such a lifestyle is the hardening of the body, which is a system of measures aimed at increasing the body's resistance to adverse external conditions. Hardening includes a variety of methods and techniques, such as outdoor hardening, water treatments, and physical activity, which helps improve immune system function, performance, and overall health. In the context of modern stress and various diseases, it is important to realize the need to introduce hardening practices into everyday life.

Introduction. Tempering is an obligatory element of physical education, especially important for young people, as it is of great importance for strengthening health, increasing efficiency, improving well–being, mood and vivacity. Hardening has been used since ancient times as a factor in increasing the body's resistance to various meteorological conditions. Any improvement is a long–term training. Therefore, hardening is a kind of training of the body's defenses, preparing them for timely mobilization. Hardening does not cure, but prevents the disease, and this is its most important preventive role. A hardened person easily tolerates not only heat and cold, but also sudden changes in external temperature, which can weaken the body's defenses. The main thing is that hardening is acceptable for any person, i.e. people of any age can practice it, regardless of the degree of physical development. Hardening increases the efficiency and endurance of the body. Tempering procedures normalize the state of the emotional sphere, make a person more restrained, balanced, they give vigor, improve mood. According to yogis, hardening leads to a fusion of the body with nature. There are no medical diversions from hardening, only acute febrile diseases. It is a deeply erroneous opinion that hardening procedures are contraindicated for weakened people. The task of a medical professional is to correctly select and dose these procedures individually for each person. A number of rules must be observed: The systematic use of hardening procedures at all times of the year, without interruptions. Gradual increase in the dose of irritant effect. Consideration of age and individual characteristics of the human body. All hardening procedures should be carried out against the background of positive emotions. Violation of these rules leads to a lack of positive effect from hardening procedures, and sometimes to hyperactivation of the neuroendocrine system and its subsequent depletion. Tempering activities are divided into general and special ones. Common ones include a proper daily routine, a healthy diet, and physical education. Special hardening procedures include hardening with air (air baths), sun

(sun baths) and water (water treatments), etc. One of the important factors of the environment in which a person lives is its temperature. The human body must constantly maintain a thermal balance at various external temperatures. The ability to maintain thermal balance is enhanced and achieves high reliability by tempering.

Hardening is a set of measures to increase the body's resistance to the effects of adverse weather and climatic conditions (low and high air temperatures, high humidity, low atmospheric pressure). A.P. Pavlov wrote that an organism can exist only as long as it is balanced with the surrounding conditions at every moment. As soon as this balance is seriously disrupted, it ceases to exist. The body continuously undergoes oxidative processes with the release of energy, which eventually turns into heat and is transferred to the external environment. The processes of heat generation and heat transfer are regulated by the thermoregulation system within its recovery capabilities.

Thermoregulation is understood as a set of physiological processes aimed at maintaining a relatively constant body temperature of humans and warm-blooded animals at a certain level.

The thermoregulation mechanism starts to act automatically when the ambient temperature differs from the body temperature. Nature has placed great opportunities in the human thermoregulation system, which allows it to tolerate significant fluctuations in ambient temperature without harming health. Violation of thermoregulation leads to diseases, and if heat transfer is completely stopped in any way, then after 4-5 hours a person dies from overheating.

In the processes of thermoregulation, the central nervous system plays a leading role, which reacts to various environmental stimuli and controls the entire activity of the body. All signals about temperature changes are perceived by nerve endings (receptors), skin, and transmitted along sensitive nerve fibers to the brain, from where "commands" are then sent to blood vessels, muscles, heart, lungs, liver, kidneys, and other internal organs involved in the production and consumption of thermal energy. No organ of the body remains indifferent to those environmental influences, the influence of which is primarily perceived by thermoreceptors.

The human body can be imagined as consisting of a "core" with a constant temperature and a "shell" that changes its temperature depending on the temperature conditions of the external environment.

The constant temperature (36.4 °C-37.5 °C) inherent in the internal organs of the body (the "core") is maintained by chemical thermoregulation. Chemical thermoregulation refers to the regulation of body temperature by changing the intensity of metabolism in the body, and, consequently, by changing the amount of heat produced (heat production).

When the ambient temperature decreases, the metabolic rate increases, more heat is generated, preventing hypothermia of the body, and the body temperature remains unchanged.

When the body cools, increased metabolism and additional heat generation in the body are also achieved through involuntary muscle contractions (tremors). Due to trembling, heat production can increase by 3 times.

As the ambient temperature increases, the metabolic rate decreases, which leads to a decrease in heat production in the body. A reflex increase or decrease in the level of metabolism helps to maintain a constant body temperature. Inside the body, an automatically adjustable

stove operates, in which food, not firewood, burns. If the body cools down, the stove lights up and gives more heat, if it overheats, the stove goes out until the internal organs cool down to normal.

The mass of the tissues forming the "shell", i.e. the surface layer about 2.5 centimeters thick, is approximately 50% of the total mass of human body tissues. The temperature of the "shell" is regulated by physical thermoregulation.

Physical thermoregulation is the exchange of heat between the body and the external environment. The effects of low and high ambient temperatures are primarily perceived by the skin, one of the most important human vital systems. The skin is a body covering with a total area of about 1.5 square meters, which protects the body from harmful environmental influences: bacteria, cold, heat, participates in regulating body temperature; harmful products are removed through the skin, sweat evaporates. As the ambient temperature decreases, the heat transfer of the human body increases, and the greater the temperature difference between the external environment and the skin surface. To balance this process, there is a spasm of the skin vessels (capillaries) and the outflow of blood to the internal organs. The skin turns pale, its temperature decreases. As a result, the heat output to the external environment decreases, i.e. heat is saved. In the fingers, for example, due to the narrowing of the capillaries, the thermal insulation properties can be increased by 6 times.

Simultaneously with the constriction of capillaries and a decrease in skin temperature, the total heat production automatically (reflexively) increases and the blood supply to internal organs and deep tissues increases. After a short-term narrowing of the capillaries, they expand and fill with blood. The skin turns red, warms up, there is a feeling of pleasant warmth, the thermal balance of a person is restored.

Further cooling leads to a repeated, more persistent narrowing of the capillaries, blood stagnation occurs, the skin acquires a bluish tint, purple spots and stripes appear. This indicates a violation of thermoregulation; the heat produced is not enough to compensate for heat losses. As a result, hypothermia of the body may occur, and there is a risk of colds. For example, after prolonged bathing in cold water (for example, for 15 minutes at a temperature of 7 ° C), body temperature continues to drop until a period of stabilization, depending on the characteristics of the body and the degree of its hardening, for 10-140 minutes (on average - 50 minutes). Then the stabilization period continues for some time, when the body temperature does not fall or rise. Approximately the same time as for the period of temperature drop is required to restore the initial (before bathing) body temperature.

The mechanisms of hardening caused by the physiological nature of man.

Conditioned (acquired) reflexes play a huge role in maintaining a constant body temperature.

With the help of conditioned reflex changes, the body adapts better to cold and heat. An indispensable condition for the consolidation and preservation of conditioned reflexes is the systematic irritation of nerve endings by cold (heat) with their constant intensification.

When a stimulus is repeated, the arousal it causes in the central nervous system is superimposed on the trace left over from previous stimuli, and the repeated stimuli merge with this trace reaction.

The living conditions of modern man have reached an incredible level, increasingly distancing him from nature, of which he is a product. They (these conditions) reduce the body's resistance to constantly changing external, and in particular to meteorological, factors. It is possible to restore the body's resistance to adverse environmental factors solely with the help of hardening effects.

Hardening by repeated repetition of cold procedures in the same sequence causes corresponding changes in the activity of all organs and systems and makes them less susceptible to sudden fluctuations in ambient temperature.

Upon termination of tempering, the conditioned reflex developed, and with it the effect of tempering, gradually fade away, and after a few months the resistance to cold decreases sharply or disappears. The highest intensity of hardening is observed in the first months and in the first year of hardening. A steady hardening effect is achieved as a result of systematic training for 2-3 years. Active contrast hardening methods accelerate this process.

B.S. Gavrilenko notes that as the same hardening effects are repeated, the range of organs and systems involved in the response is reduced, the reactions gradually become more expedient, more economical, i.e. only those organs that contribute to the speedy restoration of the normal state of the body respond to the effect. The time between the primary vasospasm and their dilation is also shortened.

The physiological essence of hardening is the repeated exposure of the body to cooling, high temperature or alternating temperature effects, as well as the action of sunlight or artificial ultraviolet radiation. Tempering actions should be considered as one of the effective ways of acclimatization in relation to constantly changing meteorological conditions of the external environment. This process should be, in fact, an integral attribute of any person's activity, its permanent basis. Acclimatization is nothing more than the adaptation of an organism in general to constantly acting diverse factors, and in particular to unfavorable meteorological conditions of the environment and vital activity.

The effects of hardening procedures affect almost all body systems as a whole. Their influence primarily changes the state of the nervous and endocrine systems, which affects their regulatory function and ability to actively interact with the environment. In the initial period of hardening, there is an increase in the function of the pituitary gland, adrenal cortex and thyroid gland. Subsequently, the involvement of the endocrine glands in the formation of resistance to hardening procedures decreases somewhat. The adaptation of the body affects not only the central structures of the brain, i.e. it is reflected at the systemic level, but also more intimate mechanisms. In the process of hardening, functional changes affect the tissue and cellular levels. In particular, the activity of cellular enzymes is changing in the direction of increasing their activity, the chemical composition and the physico-chemical state of cells. The change in nervous regulation during body hardening is associated with the formation of new conditioned reflexes.

Hardening effects cause a twofold response in the body: specific and non-specific.

The specific effect of tempering procedures is expressed in improving the body's ability to maintain a constant internal environment - homeostasis. The body's resistance to cold increases with cold adaptation or resistance to solar radiation under the influence of high temperatures and ultraviolet radiation. This is achieved by improving thermoregulation

mechanisms. The body acquires an increased ability to maintain the temperature of the internal environment at a constant level, despite sudden changes in weather conditions: heat or cold, increased sunlight. At the same time, hardened people can tolerate significantly greater fluctuations in the parameters of the internal environment, compared with people who are not hardened. Among other things, hardened people are much less likely to get sick or not at all, not only with colds, but also with many other somatic diseases. They acquire increased physical and mental performance in comparison with people who have not undergone the hardening process.

The nonspecific hardening process is expressed in an increase in the general (nonspecific) resistance of the body to the effects of a wide variety of adverse factors of the external and internal environment of the body. The indirect effect of tempering procedures is expressed in a decrease in morbidity, an increase in overall (physical and mental) performance, and changes in the quantity and quality of health for the better.

Features of tempering procedures

The effect of hardening procedures can be achieved only with the correct method of their implementation. It is based on the use of psychological phenomena and patterns associated with the formation of conditioned reflexes. It should be noted that the formation of reflex connections, as well as their strength, can be achieved only if systematic and regular hardening procedures are carried out. Hardening should be carried out daily and throughout the year (in winter, spring, summer and autumn). By the way, hardening methods can be very diverse. When carrying out tempering, it is best to adhere to a well–known medical rule: weak stimuli contribute to the better functioning of functions, strong ones interfere with it, excessive ones are harmful.

d) taking into account individual characteristics of a person and his state of health. Hardening has a very strong effect on the body, especially on people who are starting it for the first time. Therefore, before you start taking hardening procedures, you should consult a doctor. Given the age and condition of the body, the doctor will help you choose the right hardening agent and advise you on how to use it to prevent undesirable consequences.

Medical monitoring during tempering will reveal the effectiveness of tempering procedures or detect undesirable health abnormalities, and will also give the doctor the opportunity to plan the nature of tempering in the future.

Self-control is also an important factor in evaluating the effectiveness of tempering. With self-control, the hardener consciously follows the hardening of his well-being and, based on this, can change the dosage of hardening procedures. Self-monitoring is carried out taking into account the following indicators: general well-being, body weight, pulse, appetite, sleep.

e) the complexity of the effects of natural factors. Natural environmental factors that are widely used to harden the body include air, water, and solar radiation. The choice of hardening procedures depends on a number of objective conditions: the time of year, the state of health, climatic and geographical conditions of the place of residence.

The most effective is the use of a variety of hardening procedures that reflect the full range of natural forces that affect humans on a daily basis. The hardening effect is achieved not only by using special hardening procedures, but also includes the optimal microclimate of the room

in which the person is located and the heat-protective properties of clothing that create a microclimate around the body.

The most favorable for tempering is the so-called dynamic, or pulsating, microclimate, in which the temperature is not maintained at a constant level, but fluctuates within certain limits. It is necessary to train the body for fast and slow, weak, medium and strong cold effects. Such comprehensive training is very important. Otherwise, a biologically inexpedient, rigidly fixed stereotype of resistance to only a narrow range of cold influences will be developed.

The effectiveness of hardening procedures is significantly increased if they are combined with sports exercises. At the same time, it is important to ensure that the amount of stress on the body is also different.

Hardening is most often considered as the process of adapting the body to changing weather and climate conditions. But when we talk about hardening as a means of physical education, we mean not only the adaptation of the body, which occurs under the influence of adverse conditions. Hardening should be considered as a conscious application in a certain system of measures that increase the body's resistance and foster the ability to be applied quickly and without harm to health to various environmental conditions. Hardening should begin from early childhood and continue throughout life, modifying the forms and methods of its application depending on age.

The health-improving value of air baths, sunbathing, and water treatments is undeniable. Seasoned people get sick less, they tolerate diseases more easily. The availability of hardening products lies in the fact that they are always at hand, the main thing is that they can be used in one form or another, at any time of the year, in any conditions. They do not require complex equipment and special cabinets; the methods of their application in skilled hands are not difficult.

Conclusions: Hardening the body is an effective tool for maintaining and improving health, increasing immunity and physical endurance. Regular hardening procedures contribute not only to improving physical condition, but also to a positive effect on mental health. It is recommended to introduce various hardening methods into daily practice in order to achieve sustainable results and form a healthy lifestyle.

These results highlight the importance of tempering as a foundation for maintaining health in modern society, and may be useful for further research in this area.

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