

THE INFLUENCE OF PHYSIOLOGICAL ASPECTS OF THE DEVELOPMENT OF THE CHILD'S BODY ON THE CHOICE OF MATERIALS FOR CHILDREN'S CLOTHING

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Annotation:

In the modern world, the concept of "comfort" of clothing is inextricably linked with the safety of the product, since ensuring optimal indicators of properties characterizing the comfortable state of the body reflects its normal functioning. It should be noted that the design developments took into account those ergonomic requirements that are set out in the normative and technical documentation, but now the question is being raised about the design and creation of such industrial products and subject environment, with the use of which human activity becomes optimal, i.e. while ensuring high efficiency of activity, no harm will be caused to the physical health of a person

Keywords: comfortable, physiological, meteorological, physiology, clothing materials, thermoregulation, mechanism.

Determining the external parameters and finding the relationships between them, in which maintaining homeostasis would require minimal effort, is an important task, the solution of which will lead to the preservation of the health of the child's body and ensure a comfortable state of the indoor microclimate. In order to understand how to solve this problem, it is necessary to understand at least in general terms the physiological mechanisms of maintaining homeostasis. A modern person in his daily life dresses his children according to his habits and information about meteorological conditions. At the same time, it relies on subjective thermal sensations.

The regulation of the body's heat exchange with the environment is associated with a change in human behavior, i.e. a more or less involuntary change in posture, and also includes the choice of clothing in which the area of free heat exchange with the environment is determined: the length of the product, sleeve length, neckline, type of fastener, freedom of fit, etc. The afferent stimuli for this kind of behavioral reactions are subjective feelings of heat and cold.

Heat sensations are a subjective assessment of a person's thermal state. In an effort to protect their child from the cold, the parent tries to increase the required number of layers of clothing, which is not always required, but on the contrary can be harmful to health. The ability to assess the comfort of the microclimate of the storage space of the packages of materials is a tool with which it is possible to solve the preservation of the health of the child's body.

Maintaining body temperature at a constant level occurs due to internal thermoregulatory processes, the strengthening of these processes due to changes in external conditions leads to an increase in the intensity of the body's work. The physiology of a teenager is closer to the physiology of an adult than a child. In childhood, metabolic heat is of primary importance for the development of the body. The spatial distribution of temperature changes with changes in the proportions of the body at different stages of maturation of the organism. Proportions are the ratio of different parts to each other. The proportions of the body vary significantly depending on age.

The changes mainly occur due to a decrease in the relative size of the head and trunk and an increase in the relative length of the limbs. Changes in the proportions of individual parts of the body of children in the process of growth occur unevenly. Therefore, clothing for children in size cannot be either a reduced copy of clothing for adults, nor the same proportions with clothing for children of different ages.

In addition to differences in body proportions and body types, there is a difference among age groups in body thermoregulation. Data on the skin temperature of various parts of the body are presented.

The thermal balance in the body is maintained due to the high heat capacity of the blood. In a child, the thermal conductivity can vary 4-7 times depending on the thickness of the muscle and subcutaneous fat layer in the corresponding part of the body, due to the high blood flow rate.

The greatest fluctuations in thermal conductivity are observed in the extremities, where blood flow is carried out according to the principle of counterflow. Thus, the cardiovascular system of a child is an important component of thermoregulation, and overstrain of the thermoregulatory apparatus as a whole leads to significant loads on the cardiovascular system.

The thermal state of the body can be assessed by the following indicators:

- condition of the skin (paleness, redness);
- condition of superficial veins on the forehead and extremities;
- body temperature, skin temperature;
- temperature difference of the skin of the trunk and limbs;
- the amount of sweating, as well as general physiological indicators;
- respiratory functions (pulmonary ventilation, respiratory rate);

- hemodynamic parameters (minute volume of blood flow, heart rate, pulse pressure, arterial pressure, etc.);
- water-salt exchange. Mental and physical performance largely depends on how a person assesses their thermal condition.

The closest correlation of heat sensations with objective indicators of a person's thermal state is observed when he is in relative rest, as well as when performing light physical work. To a lesser extent, this relationship is expressed when a person performs both heavy and also works with pronounced nervous and emotional stress, which must be taken into account when assessing the microclimate. The water contained in the body evaporates at any air temperature. The evaporation process requires energy expenditure.

The body gives energy to the evaporating particles and thanks to this it cools down. This process always proceeds exactly the same. It is known that when 1 cm³ of water evaporates, about 0.58 kcal of heat is consumed. In conditions of thermal comfort and cooling, a person in a state of relative physical rest loses moisture by diffusion (imperceptible perspiration) from the surface of the skin and upper respiratory tract. By evaporation, 23-27% of the total heat is released into the environment. At the same time, normally 1/3 of the losses are due to evaporation from the surface of the upper respiratory tract and 2/3 from the surface of the skin. Moisture loss by diffusion is influenced by the pressure of water vapor in the air surrounding a person.

Since changes in water vapor pressure are small in terrestrial conditions, the amount of water loss due to evaporation of diffuse moisture is considered to be relatively constant (30-50 g/h). It varies somewhat only depending on the blood supply to the skin. The function of the sweat glands is almost exclusively conditioned by the need to give away the "excess" amount of heat produced or received from the outside. To perform this task, they consume the water contained in the body.

At rest, sweating begins at an ambient temperature of 28 – 29 ° C, and at temperatures above 34 ° C, heat dissipation due to evaporation and sweating is the only way to heat the body. Significant variations in the amount of moisture loss by sweating is an illustration of the fact that this indicator depends not only on environmental factors, but also on such individual characteristics of people as the size of the body surface, the condition of the skin, as well as the number of layers and the selection of a package of clothing materials.

It is also known that the release of sweat under the influence of emotional arousal reveals a great individual variability in relation to the ease with which it can be caused. On average, a person's sweating rarely exceeds 1500 g/h. When assessing the thermal state of the body, it is of interest not only the absolute amount of moisture loss by the body, but also the share of heat transfer by evaporation in the total amount of heat loss.

With the heat transfer by evaporation reaching 40% of the total heat loss, the tension of the thermoregulation mechanisms, subjectively assessed as "heat", is already noted. The high (depending on the humidity of the air) cooling capacity of sweat evaporation persists until profuse sweating, when excess sweat begins to drain from the surface of the body without evaporating and removing the corresponding heat from the body. With profuse sweating, 10-30 g of chlorides can be lost (with a total content of about 165 g in the body). A sharp shift in the water and electrolyte balance can lead to a number of pronounced violations.

Obviously, children's clothing is intended for children, but parents buy and make the final decision on the purchase. However, in the modern world, great importance has been attached to the development of the child, probably due to the ever-increasing information field. A significant part in the development of a child, including as a person, is the provision of various kinds of freedom of choice, for example, the choice of clothes. At the same time, independence is formed. In the conditions of a huge assortment range, in order to withstand competition, children's clothing should be primarily focused on the child. That is why it is so important to take into account the psychological and physiological aspects of children's development.

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