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Abstract: This article examines the relationship of physics to biology and medicine. In addition, the benefits and harms of rays in medicine are described. Special attention was paid to considerations about the effect of rays and electric current on the human body,

Key words: Physics, biology, light, medicine, human, electric current, blood pressure, blood viscosity.

Ways to make connections between physics and biology courses are roughly as follows:

- studying the phenomena and laws that affect the life of plants, animals and people and explaining these effects ;
- study of electromagnetic radiation with different appearance in the lower layers of the atmosphere and explain their impact on the organic world;
- introducing students to physical phenomena and laws affecting the development of plant, animal and human growth in biology classes;

- study of physical methods and physical tools of research used in biology. It is desirable to include complex experiments and laboratory work in physics and biology. It is useful to carry out laboratory work aimed at determining the density and volumetric mass of different agricultural products, and comparing the thermal conductivity of different soils. The doctor should have an idea about the nature and laws of the physical, physico-chemical processes occurring in the human body. The use of physical knowledge in medicine is multifaceted. For example, a complex physiological process such as blood circulation is actually a physical process, because the flow of liquid is related to the spread of elastic vibrations along the vessel, the mechanical work of the heart, etc. And breathing is gas movement, heat transfer, evaporation. related to such processes. It is necessary to understand the physical basis of such microprocesses , to correctly evaluate the state of the organism, the origin of some diseases, and the effects of medicinal substances. The achievements of modern medicine are largely based on the achievements of science in physics, technology and medical technology. The nature of illness and healing often have a biophysical basis. According to Landau, "there are only two natural sciences, one is physics and the other is all the rest." He was right about that. We all know that many methods of diagnosis and research are based on physical principles and ideas. Most modern medical devices are physical devices by design. It is known that blood pressure is a mechanical quantity and an indicator that characterizes a number of diseases. Hearing the sounds inside the body, i.e. auscultation, allows you to get information about the condition of its organs. The laws of physics underlie devices such as ultrasound stethoscopes used in modern medicine. Diagnostic methods based on the recording of electric potentials generated in a living organism - electroencephalography, electromyography, electrogastrography, electrocardiography - are widespread and physical methods that reflect the activities of the brain, muscles, stomach, and heart. Modern medical devices based on fiber optics make it possible to see the internal spaces of the body. Spectral analysis methods are widely known for the achievements of atomic, nuclear, ie EPR, NMR and ultrasound physics, including x-ray diagnostic and therapeutic methods, radioisotope methods.

For the purpose of treatment, exposure to the body with various physical factors is widely used in medicine. Including electric and electromagnetic effects, ultraviolet and infrared rays, laser therapy and gamma rays, today constitute modern methods in the physiotherapy clinic. In addition, when analyzing the importance of physical science and its connection with clinical sciences, it is necessary to mention the physical properties of materials and biological systems used in medicine. It is important to have information about their mechanical strength, load resistance, elasticity, electrical conductivity for the preparation of various electrodes and prostheses used in medicine .

Due to the contraction and expansion of the heart, the blood in the body moves in an orderly manner through the vessels, and as a result, a biocurrent is formed. Biotok, in turn, creates a biofield. It appears as a product of biofield-bioelectromagnetic fields. Each person has a biofield that reflects their individual genetic uniqueness. In turn, the electromagnetic activity of the blood molecule, which occurs due to the movement of blood cells in the human body, also controls their biochemical activity. Biofield-a living organism can be called a general management system. This management develops depending on the organ area of the body, its tissues and the cells of each element and holds the four fundamental principles of the life program at the level of the organism: development, service →→ production, →death.

Physiological effects of infrared light are based on its heat generation phenomenon, also called heat rendering effect. The increase in temperature due to the absorption of this light leads to the acceleration of metabolism in the tissues. Short-wave infrared light, as well as red light, penetrate much deeper. When we close our eyes and look at a strong light source, the blood red color that flows through the veins of the eyelids can serve as evidence that red light passes through the skin. This feature of the rays makes it possible to use infrared light to heat the tissues that are somewhat deep. This light makes the skin red like a spot. Exposure of skin receptors to heat leads to expansion of blood vessels in a reflex way and the appearance of arterial hyperemia. For this reason, infrared rays should be used to reduce pain, but not when the inflammatory tissue is filled with blood, but when the process has started to stagnate and return. In physics, there is an inextricable connection between permeability and blood viscosity. Viscosity in liquids is called internal friction. If the coagulation of blood decreases or increases from the norm, this indicates a clinical sign of the disease. For example, blood viscosity increases when a person has the flu or coronavirus. On the contrary, the viscosity decreases from the norm in tuberculosis and sweating diseases. Blood viscosity changes to 4-5 MPa in the heart. In sick people, it varies from 1.7 to 22.9 mpas. So before we know about the viscosity of blood, we need to have a general physical knowledge about viscosity. Improved blood circulation leads to improved tissue nutrition, cell proliferation and tissue regeneration, wound healing, and wound healing. The increase in the elements of the blood form and the increase in the oxidation processes in the place where the light is applied causes an increase in metabolism and a faster absorption of pathological products. After stopping the exposure, the skin redness will disappear.

The apparatus used for infrared light therapy consists of a light source, a reflector and a tripod. A metal spiral serves as a light source. When a current passes through it, it heats up to a maximum 500°Ctemperature and becomes scorched. Most of the emitted light is infrared light absorbed by the skin. Light is given to limited parts of the body from a distance of 60-70 cm for 20-30 minutes and more. The patient should feel a pleasant warmth. The light treatment is carried out daily. Currently, magnetic fields are widely used for therapeutic purposes. Fixed and variable magnetic fields are divided into low-high and variable magnetic fields, and low-frequency and

ultra-high-frequency fields. The magnetic field has the effect of increasing the absorption and widening of the vessels, which leaves the pain, affects the trophic. The magnetic field has an antiparabolic effect on peripheral nerves, and enhances inhibitory processes in the cerebral cortex. Currently, a fixed magnetic field is often applied to magnetophoric applicators with rubber plates containing barium ferrit cake, for example, attached to painful areas of the arm, leg or spine. The duration of treatment is 10-12 hours. of electric current on the human body : the electric current is directed mainly through the membranes of nerve trunks along the way of blood and lymph vessels towards the cells with the liquid conducting the electric current between the cells. In this regard, the path of the electric current in the body does not always correspond to the shortest path between the electrodes, but can pass through areas far away from the place where the electrodes are located. The current enters the body mainly through the sweat glands, partially through the sebaceous glands. Electric current moves not only ions, but also protein particles and water molecules in tissues. The ions accumulated on the cathode side soften the membrane of cells and increase their permeability. This leads to increased cell excitability. And in the anodic area, the excitability of the cells decreases as the negative ions thicken the cell membrane, allowing the pain to decrease. Under the influence of a constant current, certain physiological changes occur in the tissues located on the path through which this current passes. First of all, the receptors located in the skin are affected, which makes a person feel as if a needle is pricking or a little stinging. This impression quickly reaches the cerebral cortex along the appropriate nerve pathways. Touching the skin with current causes reddening of the part where the electrodes are located, i.e. hyperemia. This hyperemia lasts for 1.5-2 hours. Blood and lymph circulation increases in the skin and other tissues, complex physical-chemical changes occur in them. Hyperemia contributes to the strengthening of regeneration processes and the absorption of products formed from tissue decomposition. The constant current causes morphological changes in the skin, helps to restore nerve conduction in the affected area and increase the regeneration of nerve elements, increases metabolism in tissues.

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