

The Mechanism of Interaction Between Natural Physical Factors and the Whole Organism Forms the Basis of the General Theory of Physiotherapy

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Submitted: 03 Jan 2023; Accepted: 08 Jan 2023; Published: 27 Jan 2023

Citation: Dodtievich, B. V. (2023). The Mechanism of Interaction Between Natural Physical Factors and the Whole Organism Forms the Basis of the General Theory of Physiotherapy. *Int J Clin Med Edu Res.* 2(1), 20-36.

Abstract

The optimal combination of drug therapy and physical factors increases the effectiveness of treatment and medical rehabilitation of patients. It is regrettable that the search for methods to improve the individual dosage of applied energies with an approach to the cellular level of dynamism (constant correction of the parameters of the applied physical factors during the entire treatment period) and complex (in the presence of several diseases) treatment is clearly not enough today. Perhaps this search is difficult due to the current lack of a general theory of physiotherapy and imperfect classification of physical factors. In this regard, there is a need to develop principles and methods for a comprehensive study of the effects of physical methods in clinical settings, and the requirements for testing new devices for physiotherapy have sharply increased. The author of this direction was an outstanding scientist Vladimir Sergeyevich Ulashchik. In his opinion, the creation of a general theory of physiotherapy is one of the promising tasks of scientific physiotherapy.

It is known that from the end XIX The basic principles of nervousness and reflex theory are the theoretical basis of Russian physiotherapy. Subsequently, the influence of humoral and endocrine changes was added to the reflex theory of the mechanism of therapeutic action of the external environment (natural and preformed physical factors), but still with the leading principle of nervism. It should be noted that there have always been doubts about the comprehensive explanation of the reflex theory of all the causes and consequences of the interaction of external physical factors with the human body.

On this basis, "permanent" problems remained unresolved:

- general and specific in the action of physical factors;
- selectivity of their actions;
- the ratio of nervous and humoral, local and general, functional and morphological with a single and course application of physiotherapy;
- inability to determine the "dose-effect";
- nature of the body's primary reactions to environmental influences;
- orientation of processes that determine the final result of interaction between external physical factors and the whole organism;
- realization of all potential opportunities for obtaining the maximum desired positive clinical effect during physical therapy.

Thanks to the great success of quantum mechanics (optics), chemistry, biology, supramolecular chemistry, and fibre-optic physics, it became necessary to review the mechanism of action of the physical factor and the response of the whole organism in order to diagnose, prevent, treat, and rehabilitate patients.

Quantum therapy originated before our era, when people began to consciously apply "natural factors" for therapeutic purposes with a governing "verbal accompaniment and explanation." With the subsequent development of scientific, technical and humanitarian disciplines (mathematics, mechanics, physics, chemistry, biology, etc.), the philosophy of using natural factors for therapeutic purposes changed. At the same time, the culture of external influence on the whole organism of any forces and means changed and improved, i.e. the use of "natural factors" for therapeutic purposes became systemic, with the subsequent emergence of a new scientific discipline in medicine "physiotherapy". Its fundamental nature is that the entire universe, the Cosmos and the World around us consists of elementary particles (quanta), devoid of repetitions and existing in a three-dimensional dimension

Relevance and Novelty of the Study

An urgent task of modern medicine is the early diagnosis of diseases, monitoring the course of the detected disease. If we consider a person as a particle of Nature and accept that all biological processes in his body proceed according to a “Program”, in the strictest subordination from elementary particles to complex structures, this suggests the idea of the identity of the laws of the World around us and the Universe. Then we should accept that all human life activity, all the smallest biological processes in the body obey the Highest law of the universe-the principle of “direct and feedback”. A person is a complex nonlinear system consisting of a huge number of different functional unique structures.

In this regard, it is necessary to create a system of rapid restoration of comfort and stability of organs and systems of the whole body, thanks to an individual approach in combination with the parameters of natural and preformed physical factors with medications. In this regard, the research topic chosen by the author is relevant from the point of view of early, safe non-invasive diagnostics of diseases of internal organs and systems from the skin surface. It is aimed at improving individual complex physiotherapy using the developed mininamicroscope (Nano sensor).

Scientific Novelty

In this paper, based on experimental studies, important concepts of the “mechanism of interaction of the environment (natural and preformed physical factors) and the whole organism” are formulated for the first time:

- 1. The existence of a single imperceptible, intangible and invisible “super-perfect energy-informational field” that fills the entire space between elementary particles, atoms, molecules, cells, organs of an integral organism, the surrounding world and outer space with all its contents.*
- 2. A person is a part of the” energy-informational system “ of the universe and their interrelation is carried out through the perspiration system of an integral organism.*
- 3. “Energy-informational diagnostics” in the whole organism is carried out by means of quantum tunnelling.*

Scientific Significance

The scientific significance of the work consists in expanding and deepening the knowledge of the basics of the “Universe”, which controls and stabilizes the system of comfortable coexistence of all the contents of the surrounding World and the Cosmos. In this regard, it defines the leading place of man in the biosphere – the noosphere, as the most complex and intelligent being of Nature.

Introduction

World medicine of the twenty-first century cannot be imagined without the use of natural and preformed physical factors. It should be noted that practical, theoretical, and experimental medicine in no country in the world corresponds to the level of development of physics, chemistry, supramolecular chemistry, quantum physics,

and optics. It should be understood that the fundamental study of the organs and systems of the whole organism as an integral part of the Universe and the Cosmos at the supramolecular level is the progress of medicine, which is expressed in the duration of a comfortable life. It should be assumed that there is no need to convince scientists of all disciplines that man is the “most organized particle” of nature and by position has the same rights with all visible and invisible objects of the Universe and the Cosmos. But man has a very modest knowledge of the mysteries of the universe.

Scientific medicine is developing slowly. This is a fact, if we compare the situation in it with what is happening in quantum chemistry. However, it should be borne in mind that a person is a complexly organized nonlinear system and the main condition for a comfortable existence of an organism is the preservation of the “constancy of the energy asymmetry” of the internal environment – the modern concept of homeostasis. There is a biological system, it is the cardiovascular system that functions so flawlessly that it prevents all violations at the supramolecular level. When self-regulation becomes insufficient to maintain normal it leads to the development of a pathological process (disease). In this regard, it is necessary to conduct a functional study of the physical and chemical characteristics of all organs and systems of the whole human body in normal and pathological conditions from one month of life to 80 years (create a data bank) This makes it possible to compensate for the external energy of certain body systems with” jewellery “ accuracy and thus restore homeostasis.

Both within the whole organism and between it and the biosphere, energy exchange is carried out through the “perspiration system”. That is, the perspiration system functions everywhere: inside the cell, in the intercellular space, in the inter-organ space, and between the whole organism and the biosphere. We must remember that information does not exist independently, nor can any physical category exist independently. In this regard, science should recognize the existence of a single energy that is present everywhere; recognize the inseparable “time, matter, space with information”.

The original code of information changes synchronously with changes in “time, matter and space” because it reflects their content. Given that each cell, organ, and system have its own unique physical and chemical characteristics that are confirmed by its own information, identifying the difference between the information data of the pathological process and the “Data Bank” is a diagnostic process. Self-regulation of the whole organism is carried out by the cardiovascular system.

The theory of brain structure and function includes an infinite number of different data on how the structures of the brain and the whole organism can interact with each other when a program of thought realization comes from the heart. The dominant function of the brain is to control infinitely diverse physical and

chemical properties of movement at the quantum level. This is a super-perfect executive power over the vital activity of the whole organism. This is an independent science that goes beyond the classical concepts and performs consistent execution of programs. Computational neuroscience of the brain is not identical to mathematical analysis and computer modelling, but is the mystery of biocomputer modelling at the quantum level, which ensures super-perfect execution of programs in preserving the intracellular homeostasis of the whole organism and the biosphere.

Artificial intelligence studies the programmed operation of computers in order to obtain “intelligent” behaviour, here the prohibition of ensuring the relationship between structures in the brain program is appropriate.

Explanation of the ban on external influence on brain structures:

1. The biological mechanism is very poorly understood functioning of functional brain structures at the quantum level.
2. There is no diagram of interaction between structures of the brain and between all existing structures a whole organism at the quantum level.
3. Morphological and functional changes were not studied structures of the brain and the whole organism at the quantum level at the same level when the brain structures are affected from the outside. Based on the above, there is no confidence in the correctness of creating and improving robotics. Currently, it is acceptable to use robotics when performing simple functions and tasks.

Investigation of physical properties “time-universe “(VM)

We should assume that the “Time-universe” is the smallest quantum particle in the three-dimensional dimension. This is the only number of dimensions. The existence of an infinite number of bends of any matter are not dimensions, but are created and constructed on the basis of a three-dimensional dimension, but with individual speed and scale. If we cannot measure or calculate one of the three dimensions due to its very small size, but it is theoretically impossible to deny its existence. The smallest elementary indivisible particle (VM) is endowed with an individual program for creating matter, form and space as a single whole.

When infinitely different clusters of elementary particles are formed, their parameters change, i.e. each elementary particle has a program that changes infinitely, depending on the number and shape of the clusters formed (therefore, the content of matter will be infinitely different in determining characteristics of the entire Universe as a whole). Thus, each elementary particle of the Universe contains a complete program of all cyclic processes of infinitely different speed and scale, ensuring the eternity of the Universe.

“Time-universes”, matter, space “ are an inseparable unity, i.e. they are monolithic, there is no distance between them, this is the mystery of Nature. “In the exact sciences, the direction of time is considered as a property of physical systems, and not as a property of time. In natural science, the direction of time always exists and is associated with the fundamental difference between causes and effects. It is necessary to consider the second possibility by methods of exact sciences. From this perspective, time becomes a natural phenomenon, not just a fourth dimension that complements three-dimensional space.

Then the time intervals measured by the clock must have some other physical properties. Unlike the passive geometrical property of time, its physical properties must necessarily be active. Indeed, if they are real and are not the results of a subjective perception of the world, then they must show up in their action on material systems. This means that time, as a certain physical environment, can affect matter, the course of processes and connect a variety of phenomena with each other, which, it would seem, have nothing in common. This view of time is perfectly valid. But it can only be proved by rigorous experiments in a physical laboratory.”

In this regard, we can safely assume that the “Time of the universe” (VM)- this is a special programmed energy for the possibility of transition to a specific matter-space is always only in three-dimensional dimension, but with an infinitely different number of bends.

The program of “Time of the Universe” contains a clear sequence of actions of the stabilizing force located in it (EHRC) in all operations of transition to matter-space at the quantum level.

“Time-universes” can be schematically represented in three parts: matter, form, and space

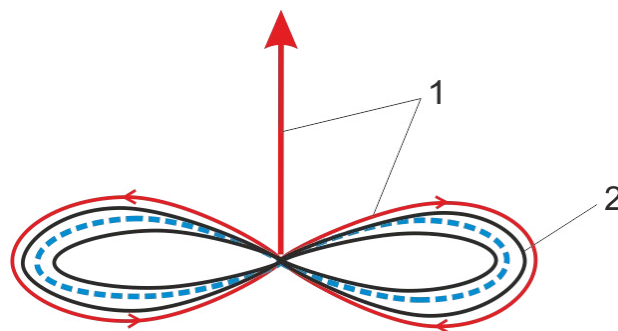


Figure 1: Schematic representation of the smallest elementary indivisible particle (SMENCH) - “Time of the universe “(VM)

1). A single super-perfect stabilizing force of the universe (EHRC).
2). Matter-space (MFP)
(MFP – matter, form, space – a single whole, the shape depends on the number of bends of matter).

According to the main postulates of Nikolai Kozyrev's *vremya*, *vremya* affects any processes and is their necessary component. Everything in nature happens either with the release or absorption of time. Time is the source of energy. Kozyrev's calculations showed that the activity of stars is caused not only by internal nuclear reactions, since in this case they would shine for 4-5 billion years – and their life lasts much longer. This means that the stars receive additional energy from the surrounding space.

In this regard, it is difficult to agree with the opinion of Landau and Lifshitz that a quantum particle can be in one of two types of states-pure or mixed. It should be assumed that a quantum particle can only be in a mixed state, since in its path of motion it can change the state of all contact quantum particles and all systems consisting of them. In the surrounding world, there are no free corridors for the movement of pure quantum particles, i.e. there are no free spaces.

On this basis we put forward our concept that the energy source of the universe is the eternal, infinite motion of the smallest elementary particles (VM) with infinitely different speeds and scale (Figure 1).

The surrounding world and the Cosmos with all visible and invisible contents are “invisible, imperceptible, intangible super-perfect stabilizing force-the source of the cyclical process of the Universe.”

In this cyclical process, “man” is the most organized unit of Nature and the Cosmos, but so far has very modest cognitive capabilities of the mystery of the cyclical process of the Universe. It should be assumed that all the smallest elementary indivisible particles (SMENCHS) are endowed with different programmed physical characteristics (the guarantor of the eternity of motion), which provide them with freedom, submission and humility in their infinite movement with infinitely different speeds and scales.

Kozyrev's next postulate: time is an active substance that maintains the balance of our World, does not spread like light, but appears everywhere at once. Based on our own experimental studies, we believe that Kozyrev time is the “Time of the Universe” as the smallest elementary indivisible particle (SMENCH). The universe is made up of an infinite number of them, and each elementary particle (SMENCH) contains a programmed invisible intangible super-perfect stabilizing force that helps to maintain the balance of our World. We also believe that on the basis of quantum physics, the Universe has a control system identical to the functional properties of the cardiovascular system of an integral organism, and for this reason elementary particles (VM) appear everywhere at once, like red blood cells of the cardiovascular system in all cells of an integral organism, we believe that (VM) perform functions for the Universe identical to red blood cells and scientists of quantum

physics and chemistry will soon find a system for controlling the universe.

It should be assumed that “Time-creation” is a complete program of the entire universe with its contents. This is a single whole, where all information about the Universe in the past, present and future is stored simultaneously, i.e. from one quantum particle “Time-universe” it is possible to create the entire Universe.

Matter and space depend on the program already laid down in the elementary particle (VM), and the shape depends on the number of dimensions of matter. They cannot exist separately, because they are created according to an individual information program. Form and space repeat matter in all its dimensions at the supramolecular level, there is no distance between matter, form and space, they cannot exist separately. Already the energy of the smallest cluster of three quantum particles of the “Time-universe” can pass into matter-space. This happens by a mystery of nature, which is not yet accessible to human knowledge. The appearance of new matter variants depends on the size, number, and location of clusters relative to each other. There is no distance between matter and space, because space repeats the shape of matter at the supramolecular level. Thus, “Space” preserves and keeps the form of matter programmed in the particle of “Time-universe”. The surface of matter is space, without matter, it does not exist “Space” is a concentration of specific energy. Therefore, we are in an ultra-compact World. The smallest point visible to the naked eye is in a state of many bends, because it consists of an infinite number of quantum particles (“Time-universe”) in an individual unique arrangement of their combinations.

According to certain laws of Nature, in the process of the Universe, clusters of elementary indivisible particles are formed with an instantaneous change in their physical characteristics. During the formation of infinitely different clusters of elementary particles, all the parameters of the “Time-universe” undergo infinite changes in speed and scale, i.e., “Time-universe” - an elementary indivisible particle is endowed with a program for instant transformation of its physical characteristics according to the category of the cluster included in it.

Space creates a compact, comfortable state of the contents of the entire universe, since in its elementary particles and the most gigantic clusters of stars are located in one space; where everything is in dense and inseparable contact. This should be understood and represented as follows: the inner space of the animal and plant world, the entire biosphere, planets, stars, visible and invisible formations of the entire Universe is one whole space and each elementary particle is felt in this space with infinitely different scale and speed. Space should be represented as the outer surface of matter.

These mysteries of nature are inherent in the elementary particle (VM). When creating a particular matter of the Universe, there is a differentiated formation of clusters of elementary particles (VM) according to the program of nature that is inaccessible to

cognition. These mysteries are not recognized by humanity, each elementary particle (VM) is unique in its three-dimensional change and with individual characteristics-the guarantor of the eternity of movement. It should be noted that in all systems of the Universe, from elementary particles to giant galaxies, there is only one type of forward movement and two turns “to the right” and “to the left”, so the numbers are always positive, negative numbers do not exist.

Perhaps scientists have adopted negative numbers conditionally, for the convenience of developing different disciplines of science. It should be noted that the number “ 0 “ also does not exist at the human level of knowledge, because we are not the creators of the World. We don’t know the beginning. Any movement is cyclical, infinite. The maximum approach to the beginning of the cycle is accompanied by an explosive release of energy, since the maximum approach to the end of the cycle to its beginning is the largest “energy difference”. And part of this huge energy again gives rise to the next cycle of movement, and most of the energy replenishes the energy of the universe and so goes on indefinitely. Our proposed concept is confirmed by the study of the three-particle b-decay process in the 20-30s of the twentieth century, i.e., in addition to the electron (positron) recorded in the experiment, an electron antineutrino or neutrino is released during b-decay. Neutrinos (antineutrinos) have zero charge, participate only in the weak interaction and, as a result, are characterized by a very weak interaction with matter. This is the “quantum touch”. All cycles are unique in speed and scale. This is also one of the elements of the eternity of the surrounding World. The universe does not expand or contract, but performs its own cyclical processes, each cycle has a beginning and an end. Scientists see only a cyclical process.

A person is a complexly organized energy-information-exchange system and the condition for its existence is the preservation of the constancy of the internal environment or homeostasis. From the point of view of quantum physics, it follows that homeostasis is a comfortable feeling of a single whole organism at the supramolecular level. In the literal sense, “constancy” is stagnation, it contradicts the laws of physics, gravity.

From the point of view of quantum physics, “space” is the preservation of a constant and unique difference between the internal stabilizing force of an integral organism and the surrounding world as a single super-perfect stabilizing field (ESSEP) of the universe.

This is the common homeostasis of Nature and the Cosmos, the guarantee of the eternity of the Universe. For scientists of classical physics, it is called “energy”, and from the point of view of quantum physics, it is called “ESEP”-a single super-perfect stabilizing energy-informational field that contributes to the creation of matter, is constantly in a stable voltage (tone) for the harmonious coexistence of all the contents of the biosphere and the Cosmos, consisting of elementary particles, i.e. maintaining the homeostasis of the Universe.

Elementary particles (VM) with a set frequency and energy information for their further actions are suddenly released from

the “perfect energy-information field” to create a new form of matter. The relationship between the surrounding world and the whole organism is carried out through the perspiration system from the entire surface of the body of the whole organism, i.e. the exchange of information between the surrounding world and the whole organism at the supramolecular level is carried out freely. Consequently, according to the teachings of the great Russian scientist V. I. Vernadsky, a person is in the biosphere, i.e. direct contact of the perspiration system of an integral organism and the special system of the Universe, so (VM) appears immediately everywhere.

In this connection, any elementary particle of an integral organism is connected with all elementary particles of the Cosmos, i.e. information is exchanged. It is known that we communicate with the universe through the vibration of words, emotions and thoughts when we make choices and perform certain actions. Events are the language of the universe, so it is very important to perceive and understand the response signs that it sends us. Vibrations that resemble it, scientists call “strings” of energy, and we call them “ Time-of-creation “(VM). This energy is constantly passing through us and moving around us. We ourselves, as radio stations, constantly transmit energy signals about ourselves to the surrounding space. Whether we realize it or not, each of us participates in the continuous energy exchange of the universe. The individual energy field of a person is like a “passport” for the surrounding world.

Matter – one of the forms of matter consisting of fermions or containing fermions along with bosons, has a rest mass, unlike some types of fields, such as electromagnetic. Substance – a form of matter of a certain composition, consisting of molecules, atoms, and ions. It should be assumed that the form of matter of a specific, definite composition is laid down in the program of an elementary particle (VM), since any substance consists of a different number of clusters of elementary particles, their schematic arrangement within clusters and relative to the surrounding world – this is an infinite number of options, i.e. the concreteness of the substance depends on it. “A molecule is the smallest particle of a particular substance that retains its chemical properties.”

This also depends on the clusters of elementary particles (VM), their schematic arrangement and quantity, and this determines the concreteness of the substance. For this reason, it is not possible to chemically separate the atom. An atom or group of atoms can be charged electrically-this is already an ion. Ions determine the properties of a substance, its possibilities of various transformations and phenomena, without violating the homeostasis of the surrounding world.

This is done thanks to the existing infinite set of variants of the program embedded in the elementary particle (VM). The particles that make up a given substance, depending on the electromagnetic interaction forces, are in constant motion. It is believed that the separation of particle motion into kinetic and potential is artificial. In nature and in the entire universe, initially, the energy of rest does

not exist. If we can fix the motion of elementary particles with a technique, then there is no state of rest, but there is an oscillatory motion of low speed and scale. The appearance of new variants of the physical characteristics of energy and, consequently, infinitely many different variants of the types of matter-space depends on the size, number, and location of clusters in relation to each other (an infinite number of variants).

“Time-universes” (VM) with a set frequency and energy information for their further actions are suddenly released from the “perfect energy-information field” to create new matter.

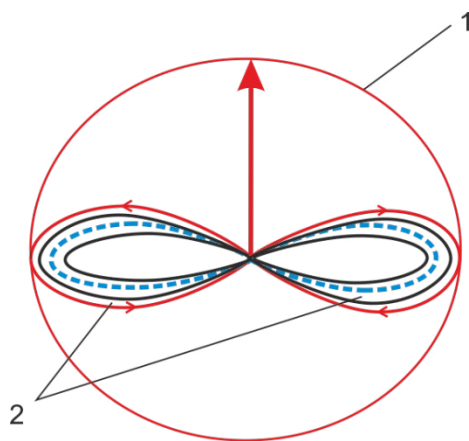


Figure 2: Schematic representation of the “Universe”.

- 1). “The universe”.
- 2). SMENCH - “Time-of the universe” (VM).

According to A. L. Chizhevsky, “an obligatory condition for the life of a living organism is the exchange of the” electric” that forms the basis of the metabolic process, and that the total energy

content in the cellular structures of the body has a strictly defined value” [12]. The biopotential for each person is strictly individual, both in normal and pathological conditions. In this regard, any nosology in each individual causes a deviation of its biopotential in accordance with the stage of development of the disease, i.e. the formation of intermediate states of the body with certain disorders of its supramolecular structures.

This, in turn, determines the clinical picture at the time of examination of the patient and is the leading condition for choosing the right treatment tactics for any specialist doctor, so that the regression of the disease is accompanied by the restoration of destroyed supramolecular structures, excluding new gross violations at any level of the whole organism. This concept is not the main principle for drug therapy, due to the lack of highly informative research methods: frequency, dose, mechanism of action of pharmacological drugs at the supramolecular level. Clinical physical therapy is closely related to other areas of medicine, physics, and biology. Thus, the disclosure of the etiology and pathogenesis of many diseases allows not only the use of the necessary physical factor, but also the development of a rational methodology, its use, and combination with other physical factors [10-22].

Based on the achievements made in physics and the development of highly sensitive equipment, it became possible to determine the mechanism of action of low-energy physical factors at the cellular and subcellular levels of the body [2-15]. It is established that when any electromagnetic wave passes through the light guide, evanescent waves are always formed around the light guide perpendicular to the outer surface of the light guide, and when evanescent waves are removed from it, they fade out. These previously unknown properties of light were recently discovered by scientists from Japan, the USA, Ukraine, and Korea [3]. In this regard, we conducted a number of experimental studies (registration of photons of a standing evanescent wave on the skin surface after exposure to PVIP light of 480-3400 nm).

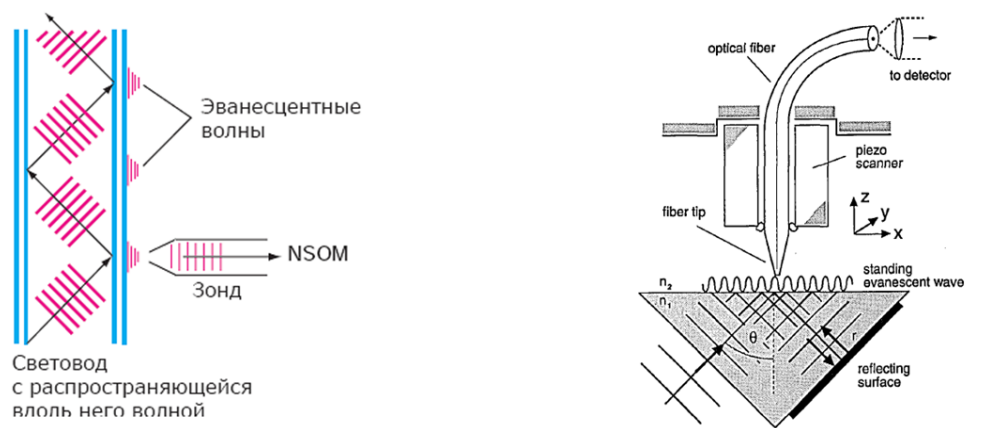


Схема измерения состояния световой волны, распространяющейся по световоду. Вблизи поверхности световода (это, собственно, и есть область ближнего поля) существуют затухающие эванесцентные волны. С помощью зонда NSOM можно небольшое количество фотонов из ближнего поля превратить в измеряемый сигнал.

Схема регистрации фотонов стоячей эванесцентной волны, связанной с верхней поверхностью призмы, при помощи сканирующего туннельного фотонного микроскопа

Figure 3: Evanescent waves.

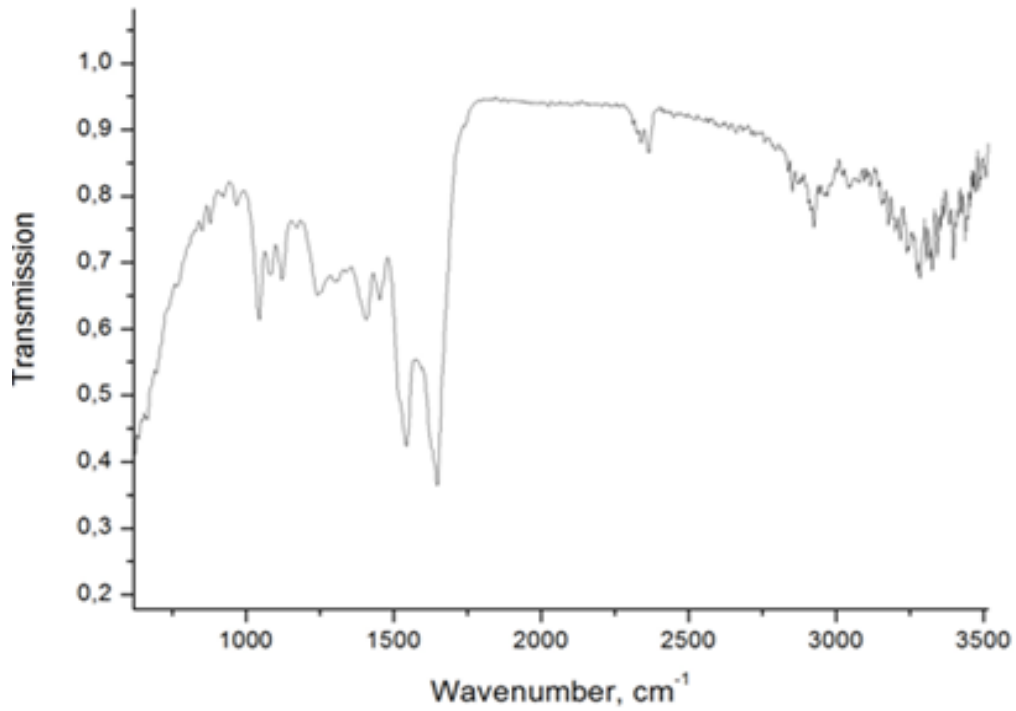


Figure 4: IR spectrum of the skin after exposure to yellow light through a fiber-optic cable for ten minutes.

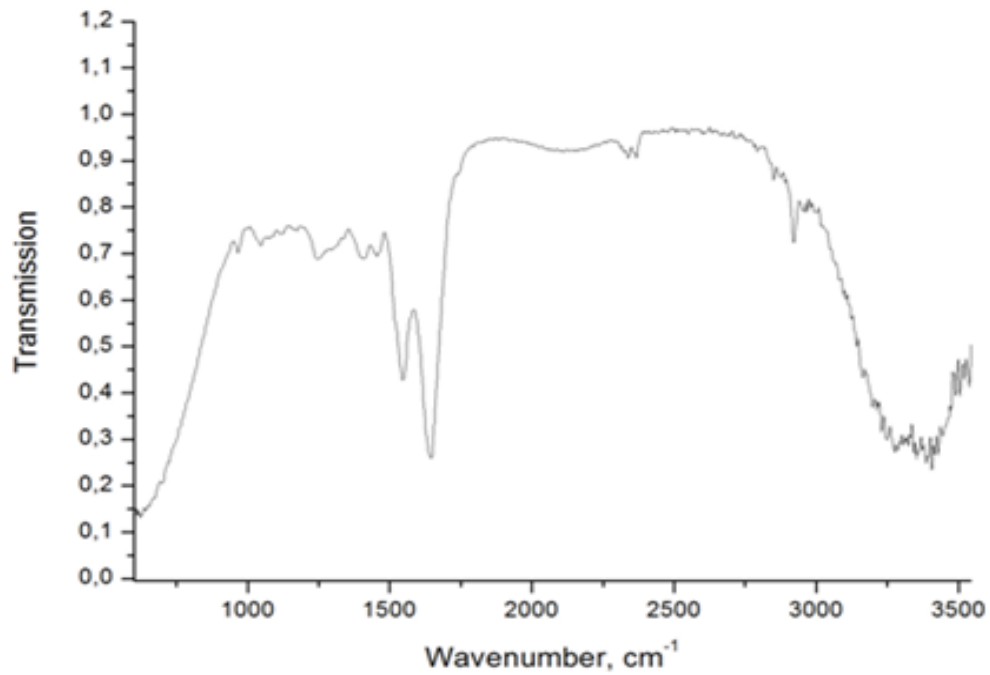


Figure 5: IR spectrum of the skin after submerging the hand in water irradiated with yellow light through a fiber-optic cable for ten minutes.

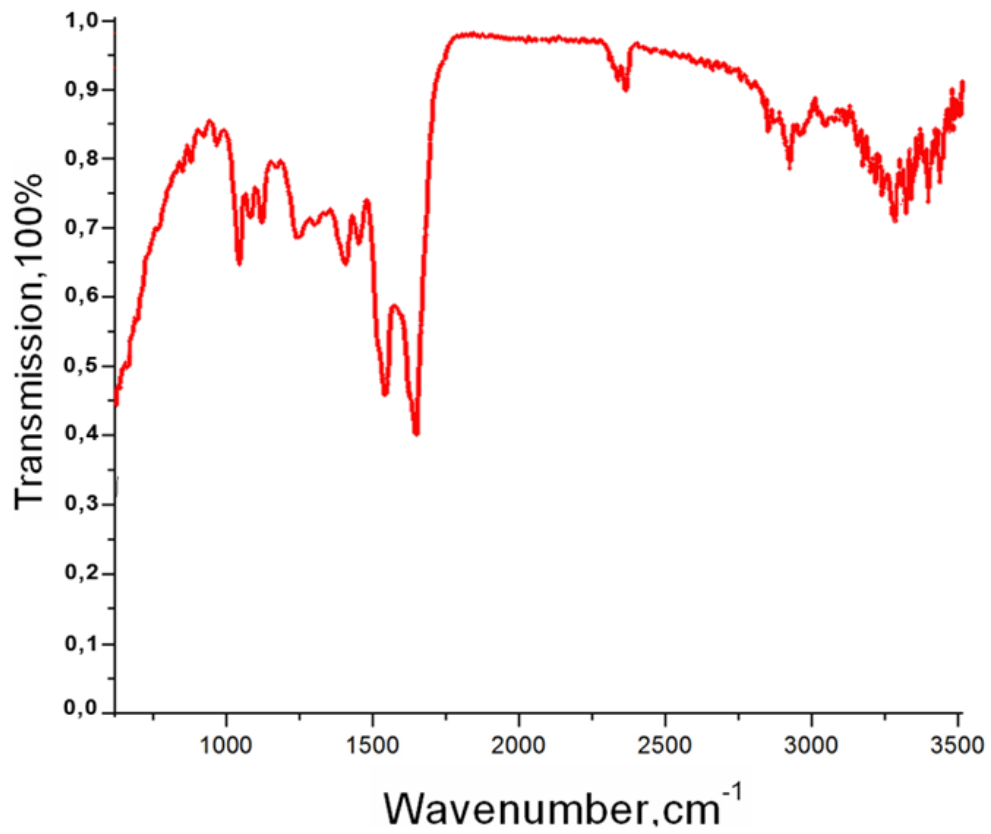


Figure 6: IR spectrum of the skin after exposure to the hand with polarized light of the Bioptron device for 10 minutes.

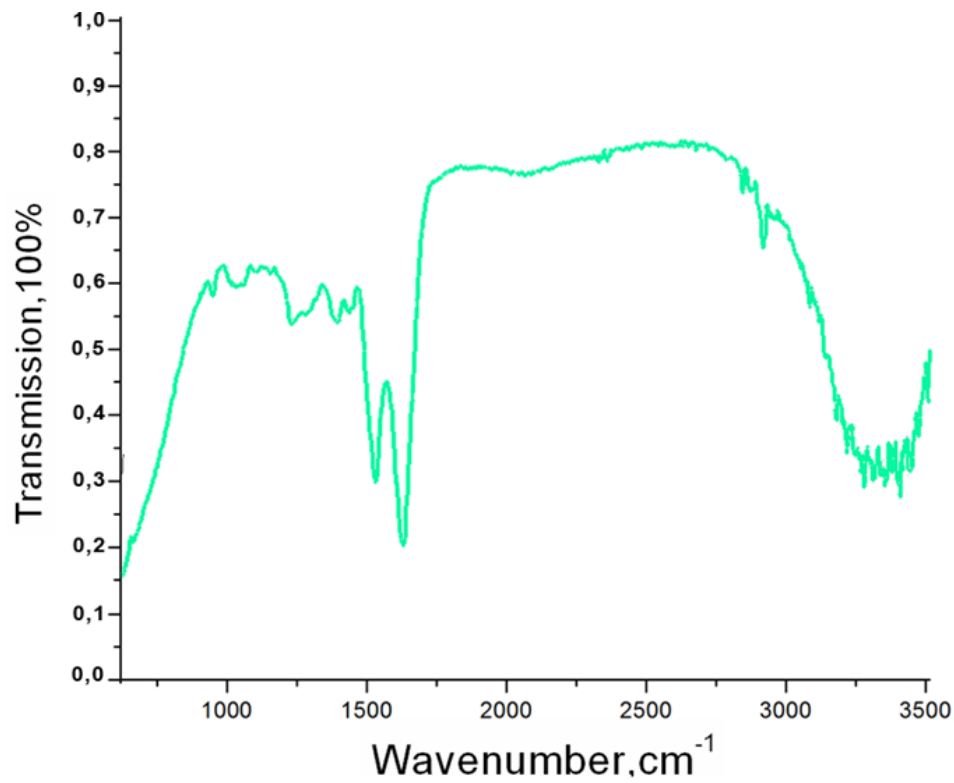


Figure 7: IR spectrum of the skin after submerging the hand in water irradiated with “Bioptron” light for 10 minutes.

It was found that evanescent infrared spectra of the skin after exposure to water activated by light through a fiber-optic cable from the Bioptron device show an increase in the absorption area in the spectral ranges 3,200-3,500 cm⁻¹ and in the range up to 800 cm⁻¹, i.e., hydration increases [5-8].

In this regard, there is a reason to use phototherapy with the Bioptron device through a fiber-optic cable both under direct exposure and indirectly through water for various diseases of the musculoskeletal system, skin and other organs and systems.

From the above experiments, we can conclude that the photoexcitation of water by the “Bioptron” source actually leads to a change in the water structure. This was made possible by the absorption of the source’s radiation in water, which stimulated the growth of the size of hydrogen-bonded water nanoclusters, which was made possible by the identification of unusual properties of light by the above-mentioned scientists (the appearance of evanescent waves) and the creation of a “scanning tunneling microscope”. (Stefan Mendak and his colleagues from Germany have created a working tool that can recreate two-dimensional

images of three-dimensional nanoscale objects using light of the visible frequency and near-IR spectrum. The device is based on “superlenses” consisting of thin strips of silver, shaped like a tube with a central hole of about 2 microns. From the inner surface of the tube, evanescent waves pass through its layers to the outside perpendicular to the circle, and during this movement, the primary image magnification occurs, that is, a “scanning tunneling microscope”) [3].

It was established in [6,7,8,9] that the cardiovascular, nervous, and lymphatic systems can be light guides and evanescent (damped) waves are also formed around them, perpendicular to the outer surface of blood vessels, capillaries, and nerve roots when they are exposed to electromagnetic waves on any part of the skin surface. Therefore, evanescent IR spectroscopy of disturbed total reflection when touching an IR fiber is unique, non-traumatic, and does not require special skin preparation - there is a “Blood Spectrobiopsy”, which reflects the entire information picture of the body at the supramolecular (atomic) level (Figure: 7,8,9,10,11,12).

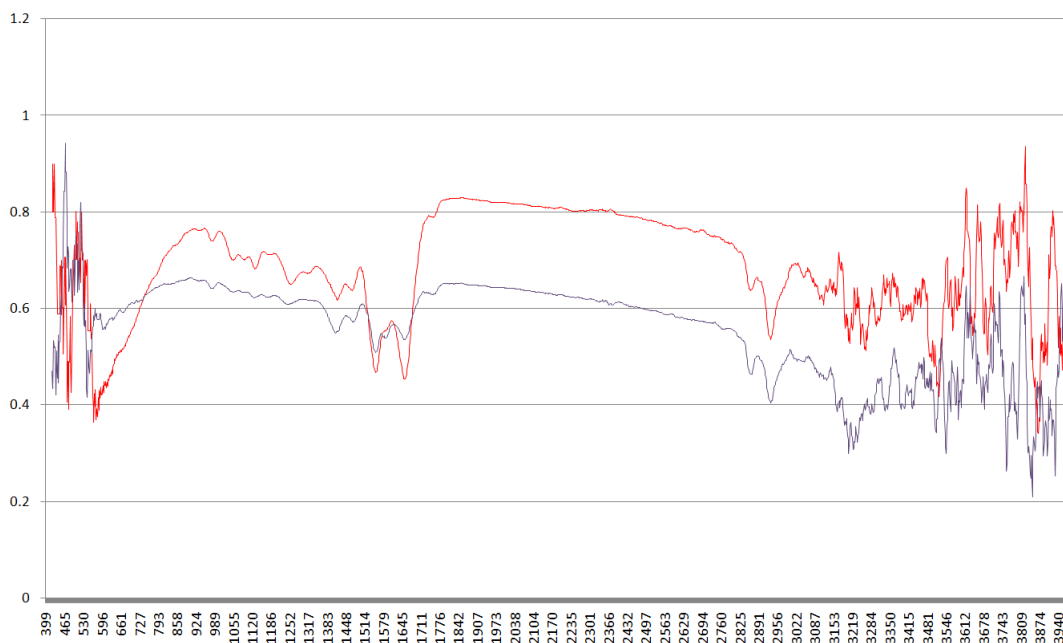


Figure 8: Spectro-biopsy of blood from the surface of an unirradiated hand.

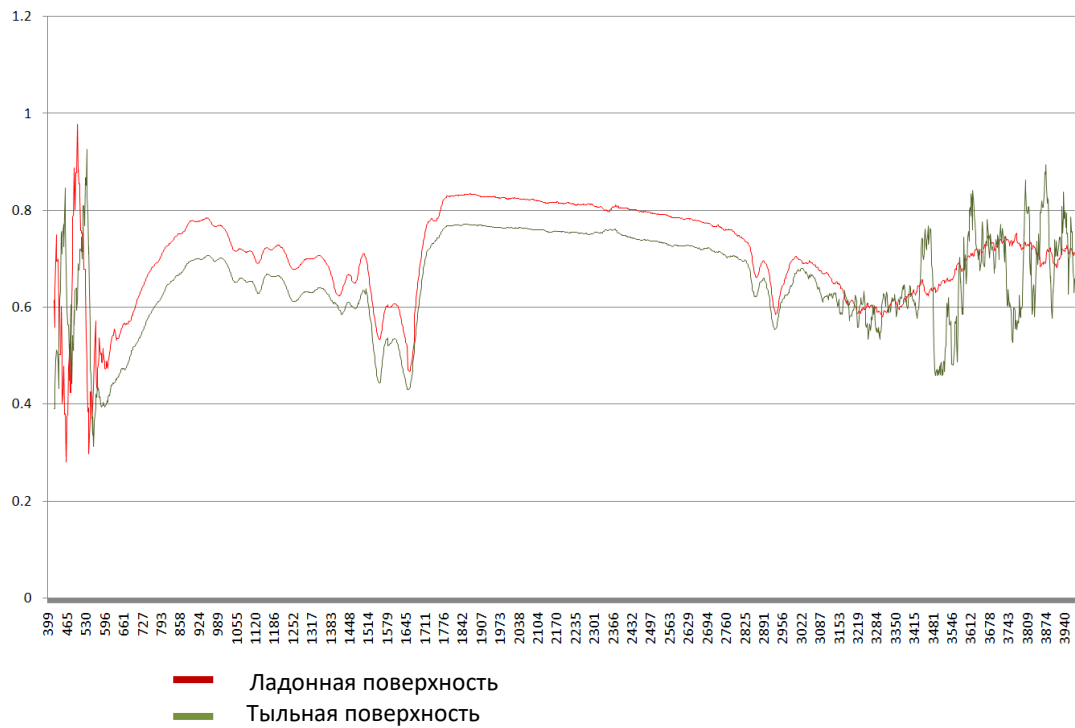


Figure 9: Spectro biopsy of blood from the surface of the hand irradiated with yellow light for 10 minutes.

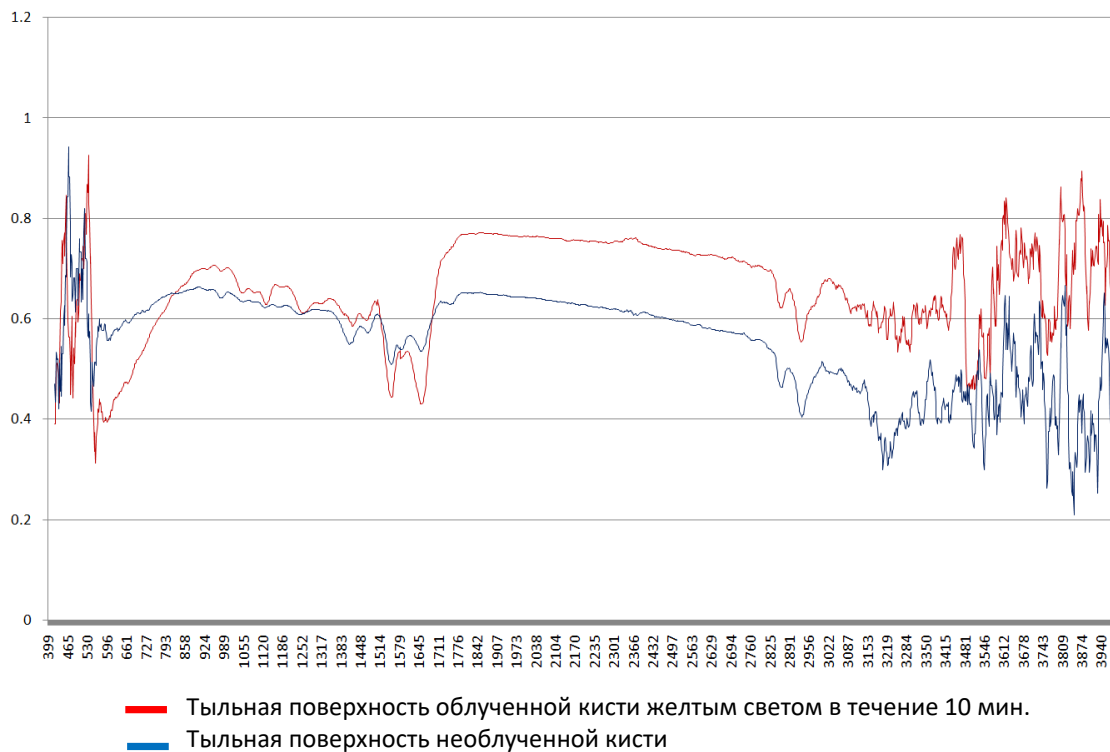


Figure 10: Spectro-biopsy of blood from the surface of the hand.

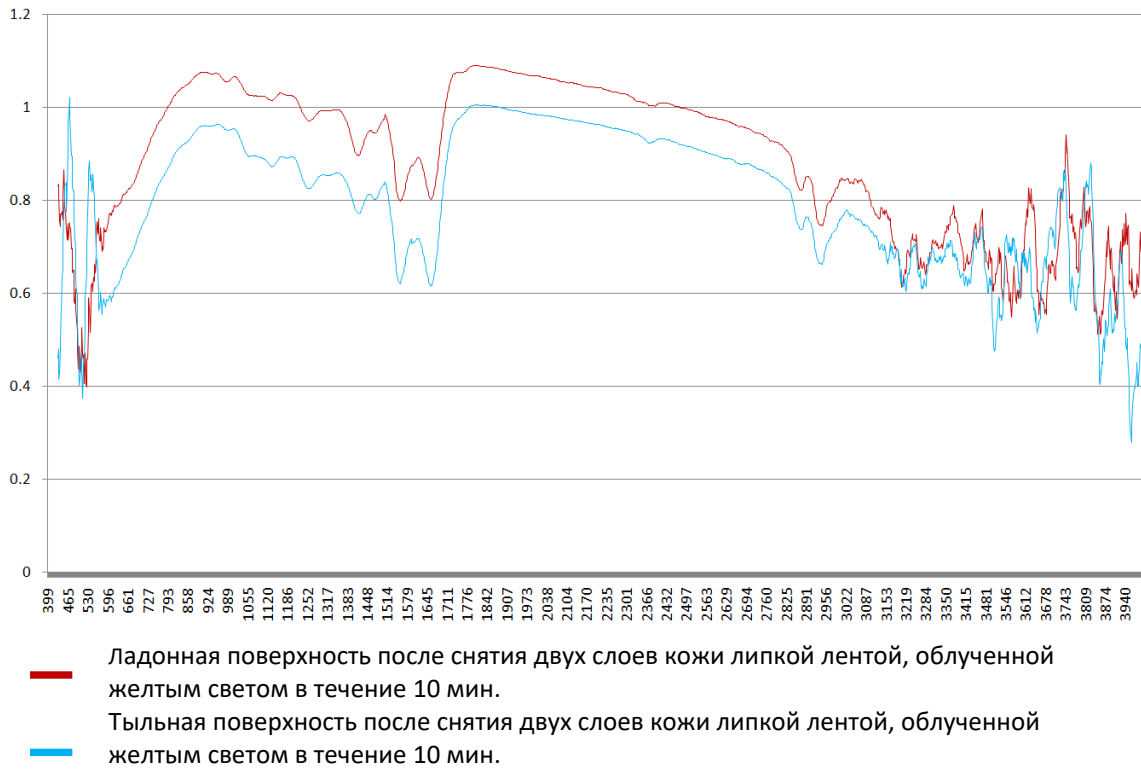


Figure 11: Spectro-biopsy of blood from the surface of the hand.

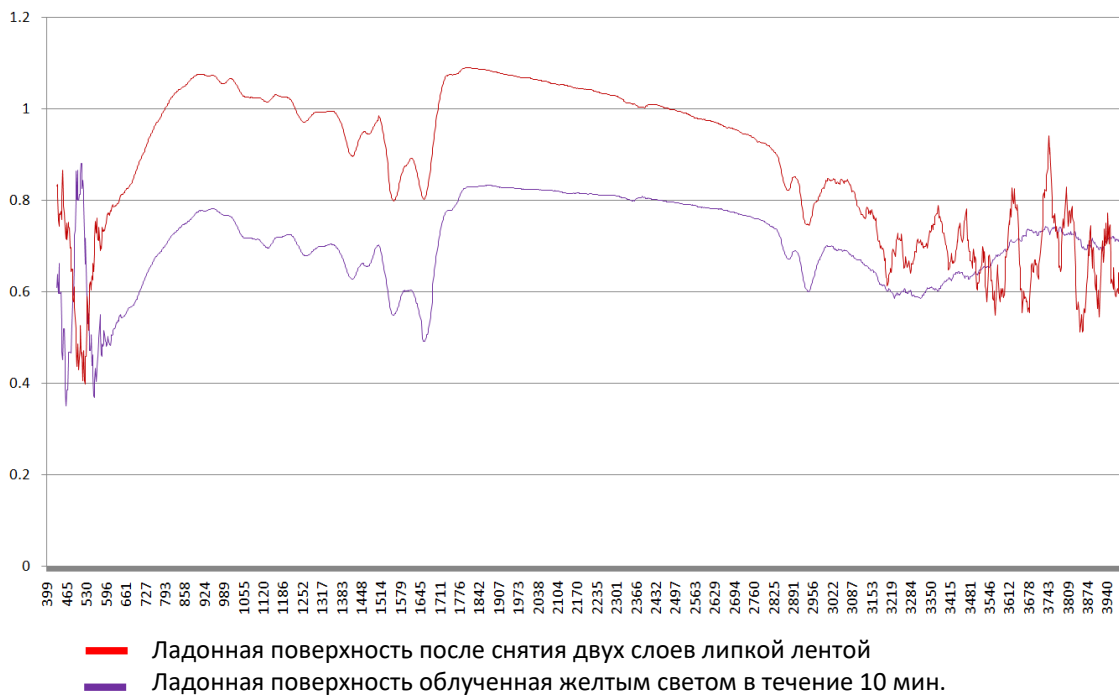


Figure 12: Spectro-biopsy of blood from the surface of the hand.

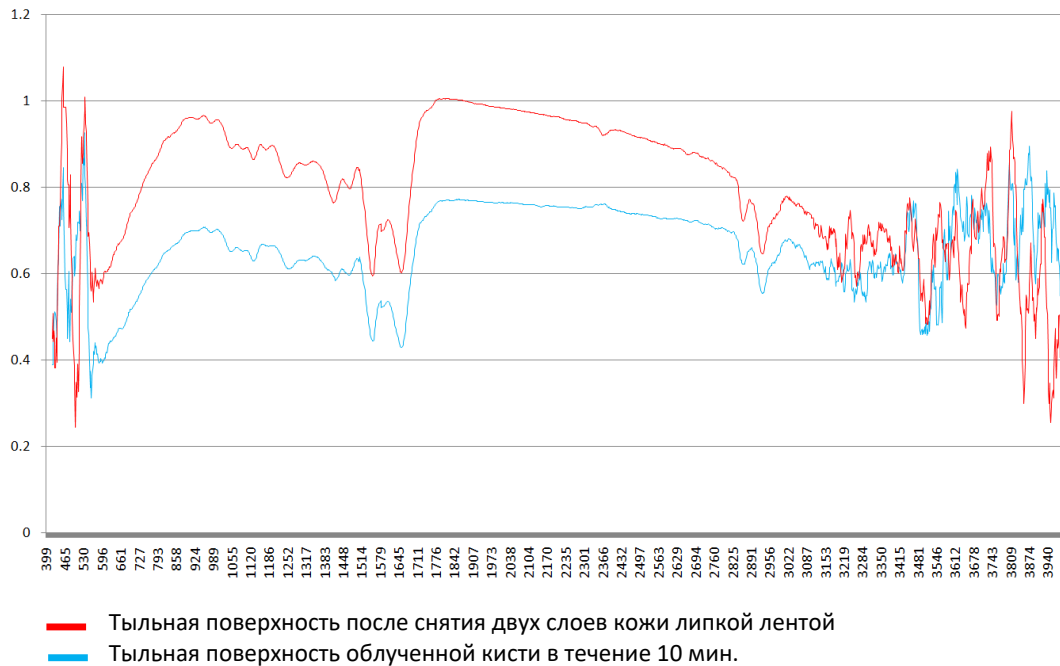


Figure 13: Spectro-biopsy of blood from the surface of the hand.

Our concept of the emergence of the tunnel effect of an integral organism under the influence of low-energy electromagnetic waves is supported by the work of domestic and foreign scientists. They revealed the causes of evanescent waves: Doctor of Physical and Mathematical Sciences, Professor German N. Zhizhin, Doctor of Physical and Mathematical Sciences, Professor Evgeny A. Vinogradov, V. N. Galynsky, A. I. Furs, L. M. Barkovsky, etc. They believe that the interaction of photons and elementary excitations of the medium produces polaritons. The interaction of electromagnetic waves with excitations of the medium (phonons), which lead them to coupling, becomes especially strong when their frequencies and wave vectors coincide (resonance). Bound waves are formed in this region, i.e. polaritons at the interface of two media and decrease exponentially with the distance from the interface (near field). Phonon is a quasiparticle introduced by the Russian scientist Igor Tamm and is a quantum of vibrational motion of crystal atoms.

Scientists have discovered pseudopod articles traveling on the surface of light-sensitive materials. It is known that the English physicist B. Josephson in 1962 predicted the stationary and non-stationary effects in the superconductor-dielectric contact on the basis of the Bardeen - Cooper-Schrieffer theory of superconductivity. Two superconducting layers separated by a negligibly thin insulator layer only a few atoms thick will behave as a single system. When passing a current through the contact, the value of which does not exceed the critical value, there is no voltage drop across the contact (despite the presence of a dielectric layer).

This effect is caused by the fact that conduction electrons pass through the dielectric without resistance due to the tunnel effect.

Electrons can cross the barrier even in the absence of a voltage applied to them (Cooper pair tunnelling). The effect is called the stationary Josephson effect [14].

If a constant voltage is applied on both sides of the junction, quantum mechanics predicts that Cooper pairs of electrons will move through the barrier first in one direction, and then in the opposite direction, resulting in an alternating current, the frequency of which increases as the voltage increases. This effect is called the “non-stationary Josephson effect” [11, 14].

According to the laws of physics, when an entire organism is exposed to electromagnetic waves, evanescent waves are formed from the outside of all capillaries, vessels, nerve trunks and roots, this is a set of “scanning tunnel biomicroscopes”, and the registration of the effect of PVIP light on the body is carried out using a “scanning tunnel photon microscope” see Figure 1 (phenomenon Fermi-Pasta-Ulama: “reverse energy return”).

Therefore, it should be assumed that an animal organism is a single superconducting system operating on the principle of the Josephson effect in superconductors. In this regard, there is reason to assert that we have identified new, previously unknown mechanisms of the effect of weak electromagnetic waves on the whole organism and methods for recording the body’s responses. That is, the whole organism functions according to the principle of a “scanning tunnel biomicroscope of the near field”, as they correspond to the description of the device by Stefan Mendek from Germany.

The cardiovascular, nervous and lymphatic systems can be light guides and evanescent (damped) waves are also formed around them perpendicular to the outer surface of blood vessels, capillaries,

and nerve roots when they are exposed to electromagnetic waves on any part of the skin surface, i.e. the whole organism enters the “scanning tunnelling microscope” mode of operation, so evanescent light is transmitted to the external surface of the blood vessels, capillaries, and nerve roots. IR spectroscopy of disturbed total reflection when touching an IR fibre is unique, non-traumatic, and does not require special skin preparation – there is a “blood spectroscopy”, which reflects the entire information picture of the body at the atomic level (A new progressive direction in medicine) [6,7,8].

Professor Samoilova K. A. in her research states that the most important role in the stimulating effect of optical radiation on cells and tissues is assigned to two light-absorbing enzyme complexes with oxidant properties-nicotine-adenine-dinucleotide-phosphate oxidase (NADP-oxidase) and the nucleotide-containing bipteroflavoprotein-NO- synthase. Under the influence of visible and IR light, these enzymes located in the cell membrane are activated and, using the surrounding oxygen, produce its active forms (ROS) – peroxidation, hydrogen peroxide, hydroxyl radical and nitric oxide (NO) it is these highly reactive molecules that conduct the light signal from the surface of the irradiated cell to its nucleus, affecting specialized intracellular mechanisms for conducting the activation signal.

It has already been established that the formation of nitric oxide in the systemic circulation – NO - it is the most important mechanism of such effects of visible and IR light as dilation of blood vessels and platelet disaggregation, without which phototherapy could hardly be highly effective [20].

Before proceeding to consider specific examples of the manifestation of biological activity NO in humans and animals, it is necessary to point out once again the polyfunctionality of its action, which cannot be reduced only to “positive” or only to “negative” effects [19-21].

Biological response to NO It is largely determined by the conditions of its generation – where, when, and in what quantity this compound is produced [1,19]. It should be noted that to date, the following areas have not been sufficiently studied: localization, distribution NO- sites, nonenzymatic formation of nitric oxide, involvement of NO in the regulation of the nervous system, in protective immunological reactions, the participation of NO in the activity of the central nervous system(CNS), the role of nitric oxide as a regulator of cellular processes in the formation of multiple organ failure.

Based on the above, it should be argued that it is necessary to expand basic research on the basis of an academic research institute with the involvement of specialists in physics, chemistry, cytology, physiology, biology, and optical physics to create a methodology with the subsequent development of a topic and program on slowing the natural aging of a living organism. The above concepts are confirmed with high statistical accuracy by

the example of a new recovery technology created: “Underwater horizontal extension of the spine with underwater phototherapy” to solve an urgent medical and social problem - treatment of patients with degenerative-dystrophic lesions of the lumbosacral spine with herniated protrusions of intervertebral discs, one of the most common neurological diseases worldwide.

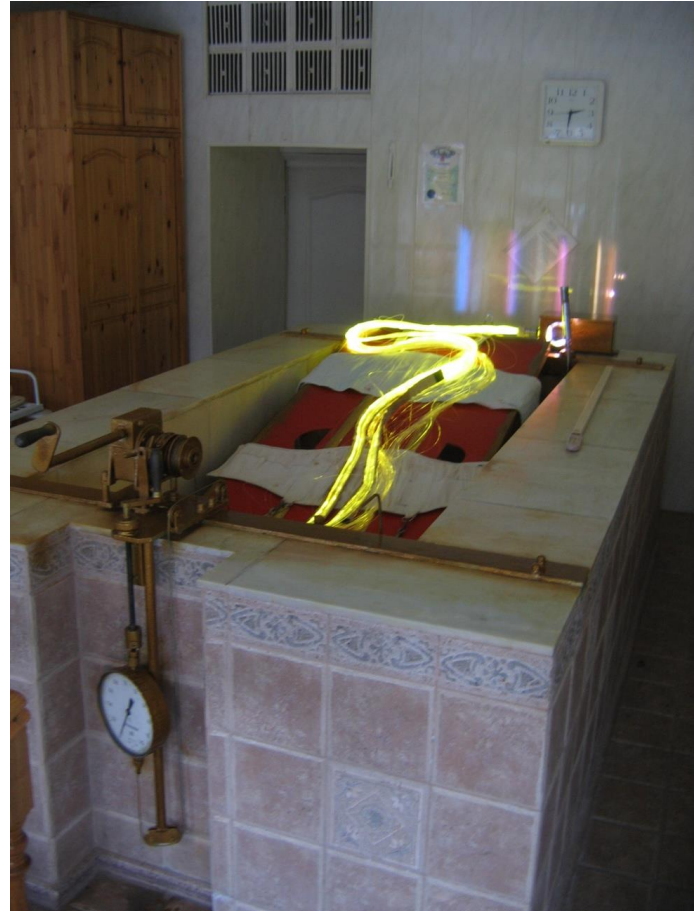


Figure 14: Installation of underwater horizontal spine extension with underwater phototherapy via fibre-optic cable.

At the present stage of development of rehabilitation medicine, a large arsenal of medical and non-medical methods (physiotherapy, traction and manual therapy, reflexology, physical therapy), as well as surgical (operative) treatment is used to treat this category of patients. However, it is not possible to achieve the desired therapeutic effect from the methods used, due to the ineffectiveness of their combined use [10-22]. And our system: “the combined use of underwater horizontal spinal extension with underwater phototherapy through an optical fibre cable” can contribute to the restoration of impaired functions in 96-98% of patients with degenerative-dystrophic lesions of the spine, due to the regression of herniated protrusion of intervertebral discs by 30-50% and the anti-inflammatory antioxidant effect of underwater phototherapy, but so far such a complex is not used in this pathology. nowhere else in the world.



Figure 15: Degenerative-dystrophic changes of the spine.

At the same time, the re-treatment rate within 5-7 years is only 0.5%, and the pain goes away in all patients after the first procedure. This is due to the unique combination of underwater horizontal spinal traction with underwater phototherapy (yellow light with infrared 480-3400 nm) through a fiber-optic cable [5]. The reliability of the treatment results is justified by the use of modern highly sensitive informative methods for assessing the state of intervertebral discs (MRI and CT) and pathological morphological processes using blood plasma spectroscopy, blood spectrobiopsy from the skin surface for the first time in world medical practice [4, 8].

It should be noted that the presented recovery technology surpasses all existing pharmaceutical products, non-drug treatment methods and takes a well-deserved place. It dominates the primary prevention of degenerative-dystrophic lesions of the spine of adolescents, athletes, drivers of road, railway and other types of transport with a driving time of more than 60 minutes per day.

We believe that the high efficiency of anti-inflammatory immunomodulatory, antiviral and antitumor effects of polarized light 480-3400 nm is confirmed by fundamental studies of Russian and foreign scientists: Doctor of Biological Sciences, Professor Samoilova K. A. Institute of Cytology of the Russian Academy of Sciences, St. Petersburg, 2003; Doctor of Medical Sciences, Professor Gerasimova L. N. Burn Center of the Research Institute of Emergency Medicine. N. V. Sklifosovsky, Moscow; Chief Children's Physiotherapist of Moscow, Doctor of Medical Sciences, Professor M. A. Khan. Russian Research Center for Restorative Medicine and Balneology of the Ministry of Health of the Russian Federation, Moscow; Professors M. Lenz, University of Oxford, Great Britain; Professors L. Medinica, Institute of Dermatovenereology of the Clinical Center, University of Belgrade, Yugoslavia [5,9].

A special feature of phototherapy performed using PVIP light is the very rapid "disappearance" of pro-inflammatory cytokines-tumor necrosis factor (TNF- α), interleukins-IL-6, IL-2, and IL-12 from the circulating blood within 30 minutes after the first irradiation. Thus, at the initial increased content of TNF- α , it decreases by 30 times, IL-8 – by 4-6 times, IL-2 – by 4-10 times, and IL-12-by 12

times (by the end of the course). At the same time, the content of anti-inflammatory cytokines-IL-10 and transforming growth factor-TFR- β in the blood plasma increases, as well as a rapid six-fold increase in the blood of the most important immunomodulator – interferon- γ (IFN- γ), and even at its initially normal level. The most important function of this cytokine is the activation of cellular immunity (the functional state of monocytes, macrophages, natural killers, and cytotoxic T-lymphocytes), which primarily increases the body's antiviral and antitumor resistance [20].

Experience with PVIP-blood irradiation in vitro they give grounds to link all the described effects with the direct action of light on the blood. In all variants of experiments, light not only stimulates, but regulates the content of cytokines. Also, in vivo there is also direct contact with the cardiovascular system (blood) through perspiration. This is an instantaneous effect at the cellular, supramolecular (atomic) level [7-9].

In this regard, there is reason to argue that the system of underwater horizontal spinal extension with underwater phototherapy, for the primary prevention of adolescents, athletes and improving the quality of life of patients with degenerative-dystrophic lesions of the spine, deserves rapid implementation in the practice of rehabilitation medicine centers, medical and physical culture dispensaries, sanatorium-resort institutions, physical therapy departments of therapeutic and preventive centres, institutions, boarding houses.

Based on the above, I present the tasks of clinical physiotherapy and the principles of modern classification of physical factors.

The main tasks of clinical physiotherapy.

1. Clinical trials of new physiotherapy methods and techniques.
2. Clinical studies and reassessment of old physiotherapy methods and techniques.
3. Development of an effective and safe physiotherapy method.
4. Organization of information services and advisory assistance to various specialists.
5. Training of students and doctors. In practice, clinical physical therapy addresses the following issues:

- selection of a physiotherapy method for the treatment of a particular patient at the time of clinical assessment of the condition;
- determination of the most appropriate parameters of the physical factor and the mode of their application, combination with other physical factors;
- choosing ways to influence the physical factor;
- monitoring the effect of physiotherapy factors;
- prevention and elimination of adverse reactions.

Before prescribing treatment, the physical therapist should answer the following questions.

1. What specific changes in the patient's condition does he want to achieve?
2. What physical factors can have the desired effect?
3. What physiotherapy technique is most suitable for this patient?
4. In what combination and sequence to apply the chosen physiotherapy method with other physical factors?

Ultimately, the effectiveness and safety of physical therapy depends on the doctor's ability to correctly assess all these factors, and it is necessary to rely on in-depth knowledge of both clinical medicine and experimental physiotherapy.

“The science that studies the physicochemical characteristics and mechanism of action of physical factors with the symptomatic-syndromic principle of their application in physiological parameters in complex therapy of patients; the possibility of applied physical factors to stabilize the disturbed biological process of organs and systems is clinical physiotherapy.”

To improve clinical physiotherapy, there is a need to create a modern classification of physical factors according to the following principles.

First Principle:

By energy source

1. Natural resources:

- Solar energy
- Cosmic energy
- Temperature (air space, water: rivers, lakes, seas, mineral waters, therapeutic mud)
- Human endobioenergy
- Communication apparatus of the power system (power centers)
- Superstable acoustic-electromagnetic waves (solitons) in human DNA
- Energy of the plant world
- Exobioenergy (leeches, bees, etc.)

2. Artificially generated energy:

- Electric
- Magnetic
- Svetovaya street
- Thermal power
- Hydroelectric power
- Mechanical
- Radio wave
- Energy generated by air pressure and gases
- Fermi-Pasta-Ulam generator (for creating soliton electric sound fields)
- Resonant laser spectroscopy of radio wave emitters of objects, including chromosomes, living cells, and tissues.
- Biomolecular-optoradioelectronic computer systems are analogs of the body's chromosomal biocomputer
- IR spectroscopy in the 4000-400 cm range-1 on a Perkin-Elmer 2000 Fourier transform spectrometer
- Ramon Raman spectroscopy
- Evanesence spectroscopy

The second principle:

On the most important areas of use of therapeutic physical factors.

1. For medicinal purposes:

- Natural factors
- Preformed factors

2. Rehabilitation area:

- Natural factors.
- Preformed factors

3. Physio prophylaxis:

- Primary prevention is mainly due to natural factors.
 - Secondary prevention –mainly by preformed factors.
- #### **4. Physio diagnostics**
- Electrodiagnostic
 - Electropuncture diagnostics

The third principle:

On the physico-chemical basis of the action of physical factors:

1. Heat generation.
2. Ion shifts.
3. Formation of free physical substances.
4. Generation of free radicals.
5. Conformational changes.

The fourth principle:

By type and mode of action of energy.

1. Constant electric currents:
 - Continuous ones.
 - Pulsed ones
2. Alternating electric currents:
 - Low frequency
 - Medium frequency
3. Electric field:
 - Permanent
 - Pulsed
 - High and ultra-high frequencies
4. Magnetic field:
 - Permanent
 - Pulsed
 - Low frequency
 - High frequency
5. Electromagnetic radiation in the radio frequency range:
 - Ultra-high frequency (centimeter and decimeter ranges).
 - Extremely high frequency (EHF).
6. Electromagnetic radiation of the optical range:
 - Infrared.
 - Visible content.
 - Ultraviolet (DUF, SUF, KUF).
 - Monochromatic, coherent.
7. Mechanical energy:
 - Mechanical stresses (therapeutic massage, manual therapy, acupuncture).
 - Mechanical vibrations:
 - Vibration.
 - Ultrasound.

- Air space factors:
- Atmospheric pressure:
- Periodically changing.
- Reduced value.
- Increased value.
- Partial (reduced RO₂ and increased PO₂).
- Increased PO₂ and RNe (oxygenohelotherapy).
- Increased RSO₂ (carbogenotherapy).
- Aérons.
- Aerosols.

The fifth principle: By the mechanism of action of physical factors.

The sixth principle: By the ability to interact with the bioenergy of cells and tissues.

The seventh principle: According to the method of administration of pharmacological agents into the body.

Clinical physical therapy is closely related to other areas of medicine, physics, and biology. Thus, the disclosure of the etiology and pathogenesis of many diseases allows not only the use of the necessary physical factor, but also the development of a rational methodology, its use, combination with other physical factors and pharmacological agents [7,9,16]. Based on the achievements made in physics and the development of highly sensitive equipment, it became possible to determine the mechanism of action of low-energy physical factors at the cellular and subcellular levels of the body [3, 12].

It is established that when any electromagnetic wave passes through the light guide, evanescent waves are always formed around the light guide perpendicular to the outer surface of the light guide, and when evanescent waves are removed from it, they fade out. These previously unknown properties of light were recently discovered by scientists from Japan, the USA, Ukraine and Korea [2]. In this regard, we conducted a number of experimental studies (registration of photons of a standing evanescent wave on the skin surface after exposure to PVIP light of 480-3400 nm).

Conclusions

1. New, previously unknown mechanisms of the effect of weak electromagnetic waves on the whole organism and methods of their registration are revealed. That is, the whole organism consists of a set of "scanning tunnel biomicroscopes of the near field", and registration of results of influence of PVIP of light on an organism is carried out by means of a "scanning tunnel photon microscope".

2. All cells of a living organism are endowed with a unique program of individual speed of infinite movement of all the processes of their activity in particular and in general (i.e., the transition from one state to the next.).

3. It is established that the effect of energy of any physical factor is dosed and regulated (physiodynamics) using nanotechnologies and its path to each molecule of the whole organism is freely traced (physiokinetics) without violations of supramolecular structures, without negative consequences. Modern world pharmaceutical

science does not have such a high level of pharmacodynamics and pharmacokinetics.

4. It was found that the biopotential for each person is strictly individual, both in normal and pathological conditions. In this regard, any nosology in each individual causes a deviation of its biopotential in accordance with the stage of development of the disease, i.e. the formation of intermediate states of the body with certain disorders of its supramolecular structures.

5. The science that studies the energy and bioinformatic systems of the body the possibility of their correction at the subcellular level by physical factors to stabilize the disturbed biological processes of organs and systems is clinical physiotherapy.

6. It is established that any disease is unique for each person: etiopathogenesis, clinical picture, state of intermediate cyclic morphological supramolecular formations of organs and systems of the body. Consequently, the use of established medical standards for diseases "for all patients with the same diagnosis is unscientific and extremely dangerous.

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