

The mechanism of interaction between natural physical factors and the holistic organism forms the basis of the general theory of physiotherapy

Abstract

Optimal combination of drug therapy and physical factors increases the effectiveness of treatment and medical rehabilitation of patients. It is regrettable that search for methods of improvement of individual dosing of applied energies with approximation to the cellular level of dynamism (constant correction of parameters of applied physical factors during the whole period of treatment) and complex (in the presence of several diseases) treatment is conducted today obviously insufficiently. Perhaps this search is hampered by the current lack of a general theory of physiotherapy and imperfect classification of physical factors. In connection with this there appeared a necessity of development of principles and methods of comprehensive study of the action of physical methods in clinical conditions, and requirements for testing new apparatuses for physiotherapy increased sharply. The author of this direction was the outstanding scientist Vladimir Sergeyevich Ulashchik. In his opinion, creation of general theory of physiotherapy is one of the perspective tasks of scientific physiotherapy.

It is known that since the end of XIX century the principles of neurovism and reflex theory have been the theoretical basis of domestic physiotherapy. Subsequently, to the reflex theory of the mechanism of healing action of the external environment (natural and preformed physical factors) the influence of humoral and endocrine changes was added, but still with the leading principle of neurovism.

It should be noted that there have always been doubts that the reflexive theory can fully explain all causes and consequences of the interaction of external physical factors with the human body.

On this basis, "permanent" problems remained unresolved:

- common and specific in the action of physical factors;
- the selectivity of their action;
- correlation of nervous and humoral, local and general, functional and morphologic3al at single and course application of physiotherapeutic influence;
- inability to determine "dose-effect";
- the nature of the organism's primary reactions to environmental influences;
- the direction of the processes that predetermine the final result of the interaction between external physical factors and the whole organism;

Abbreviations: CNS, central nervous system; MFS, Matter-space; USSF, the unified super perfect stabilizing force of the universe; TM, time of the universe

Relevance and novelty of the research

The urgent task of modern medicine is early diagnosis of diseases, monitoring the course of the detected disease.

If to consider a man as a particle of the Nature and accept that all biological processes in his organism run according to the "Program", in strict subordination from elementary particles to complex structures, that suggests the idea of identity of laws of world around us and the Universe.

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- realization of all potential possibilities of obtaining the maximum desired positive clinical effect in physiotherapy.

Thanks to the tremendous advances in quantum mechanics (optics), chemistry, biology, supramolecular chemistry, and fiber-optic physics, it became necessary to review the mechanism of action of a physical factor and the response of the whole body in order to diagnose, prevent, treat, and rehabilitate patients.

Quantum therapy emerged before our era, when man began to consciously apply "natural factors" for therapeutic purposes with controlling "verbal support 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. In parallel, the culture of influence from outside on the holistic organism of any forces and means changed and improved, i.e. application of "natural factors" with therapeutic purpose acquired systemic character with subsequent emergence of new scientific discipline in medicine "physiotherapy". Its fundamentality is that all Universe, Space and surrounding world consists of elementary particles (quanta), devoid of repetitions and existing in three-dimensional dimension.

Keywords: evanescence infrared spectroscopy, quantum tunneling, super perfect energy-information field, general theory of physiotherapy

Then it is necessary to accept that all human vital activity, all the smallest bioprocesses in the organism are subject to the Highest Law of the Universe - the principle of "direct and reverse connection". Man is a complex non-linear system consisting of a huge number of different functional inimitable structures.

In this connection it is necessary to create the system of quick restoration of comfort stability of organs and systems of the whole organism due to individual approach in combination of parameters of natural and preformed physical factors with medicamentous preparations.

In this regard, the research topic chosen by the author is relevant in terms of early, safe non-invasive diagnostics from the skin surface

of diseases of internal organs and systems. Aimed at improvement of individual complex physiotherapy by means of developed mininanoscope (nanosensor).

Scientific novelty

In the presented work on the basis of experimental researches important concepts “the mechanism of interaction of environment (natural and preformed physical factors) and an integral organism are formulated for the first time:

- i. Existence of a single intangible, intangible and invisible “super perfect energy-information field” filling the entire space between elementary particles, atoms, molecules, cells, organs of the integral organism, the surrounding world and the cosmic space with all its contents.
- ii. Man is a part of the “energy-information system” of the Universe and their interrelation is effected through the perspiration system of the integral organism.
- iii. “Energy-information diagnostics” in the holistic organism is carried out by means of quantum tunneling.

Scientific significance

The scientific significance of the work consists in expanding and deepening the knowledge of the basis of “the Universe”, the controlling and stabilizing system of comfortable coexistence of all the contents of the surrounding World and the Cosmos.

In this regard, defines the leading place of man in the biosphere - the noosphere, as the most complex and intelligent being of Nature.

Introduction

It is impossible to imagine the world medicine of the XXI century 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 organs and systems of the holistic organism as an integral part of the Universe and Cosmos on the supramolecular level is the progress of medicine, expressed in the duration of comfortable life.

We should suppose that there is no need in convincing scientists of all disciplines that man is “the most organized particle” of nature and by his position has equal rights with all visible and invisible objects of the Universe and Cosmos. But man has a very modest knowledge of the mystery 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 taken into account that a human is a complexly organized nonlinear system and the main condition for comfortable existence of the organism is preservation of “energy asymmetry constancy” of the internal environment - the modern concept of homeostasis.

There is a biological system, specifically the cardiovascular system functions so flawlessly that it prevents all disturbances at the supramolecular level. When self-regulation becomes insufficient to maintain normal functions of the organism, it leads to the development of a pathological process (disease). In this connection it is necessary to carry out functional research of physical and chemical characteristics of all organs and systems of the integral human organism in norm and

pathology from one month of life till 80 years (to create a data bank) It gives an opportunity to compensate from outside the energy of those or other organism systems with “jewelry” accuracy and thereby to restore homeostasis.

Both within the whole organism, and between it and the biosphere, energy exchange takes place through the “perspiration system”. That is, the perspiration system functions everywhere: inside the cell, in the intercellular space, in the interorganic space and between the whole organism and the biosphere. One must remember that information does not exist on its own, nor can any physical category exist on its own. In this connection, science should recognize the existence of a single energy that is present everywhere; recognize “time, matter, space with information” as inseparable.

The original code of information changes synchronously with the changes of “time, matter and space” because it reflects their content.

Taking into consideration that each cell, organ, system has its own physicochemical characteristics, confirming with own information, identification of difference between informational data of pathological process and “Data Bank” is a diagnostic process.

Self-regulation of the whole organism is performed by the cardiovascular system.

The theory of the structure and work of the brain includes an infinite variety of data on how the structures of the brain and the whole organism can interact with each other when a program of thought realization is received from the heart. The overriding function of the brain is the control of infinitely diverse physical and chemical motion at the quantum level. It is a super perfect executive power over life activity of the whole organism.

It is an independent science that goes beyond classical concepts and implements consistent execution of programs.

Computational neurobiology of the brain is not identical to mathematical analysis and computer modeling, but is a mystery of biocomputer modeling at the quantum level, providing super-perfect execution of programs in preservation of intracellular homeostasis of the whole organism and biosphere.

Artificial intelligence studies the programmed operation of computers to produce “intelligent” behavior, here the prohibition of providing interconnections between structures in the brain program is appropriate.

Explanation of the prohibition against acting externally on brain structures:

- i. The biological mechanism of functioning of functional brain structures at the quantum level is very poorly studied.
- ii. There is no scheme of interaction between brain structures and between all existing structures of the holistic organism on the quantum level.
- iii. Morphological and functional changes in the brain structures and the whole organism on the quantum level under the influence on the brain structures from the outside have not been studied.

Based on the above, there is no certainty about the correctness of the creation and improvement of robotics.

Currently, it is acceptable to use robotics in simple functions and tasks.

Investigation of physical properties of “time - universe” (TM)

It should be considered that “Time-World” is the smallest quantum particle in three-dimensional space. It is the only number of dimensions.

The existence of an infinite number of curves of any matter are not dimensions, but are created and built on the basis of three dimensions, but with individual speed and scale.

If we cannot measure or calculate one of the three dimensions because of its very small magnitude, then denying its existence theoretically is not possible.

The smallest elementary indivisible particle (VM) is endowed with an individual program to create matter, form and space as a whole.

When infinitely different clusters of elementary particles are formed, their parameters change, i.e. each elementary particle has a program changing infinitely, depending on the number, form of formed clusters (therefore the matter content will be infinitely different by defining characteristics of the whole Universe).

Thus, in every elementary particle of the Universe there is a complete program of all cyclic processes of infinitely different speed and scale, providing eternity of the Universe.

“Time-universe, 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 directionality of time is seen as a property of physical systems, not a property of time.

In natural science, the directionality of time always exists and is related to the fundamental difference between cause and effect.

The second possibility should also be considered by the methods of exact sciences.

From this position, time becomes a phenomenon of nature, not just a fourth dimension that complements the three-dimensional space.

Then the intervals of time measured by seconds should possess some more physical properties.

In contrast to the passive geometrical property of time, its physical properties must necessarily be active. Indeed, if they are real and are not the results of subjective perception of the world, then they must be found in action on material systems.

It means that time as a certain physical medium can influence on the substance, course of processes and connect with each other the most various phenomena, between which, it would seem, there is nothing in common. Such a view of time is perfectly valid. But only strict experiments of physical laboratory can prove it”[N.A. Kozyrev].

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

There is a clear sequence of actions of the stabilizing force (ESSV) located in it in all operations of transition to matter-space at the quantum level in the TimeUniverse program.

“Time-universe” can be schematically represented in three parts: matter, form, space (Figure 1).

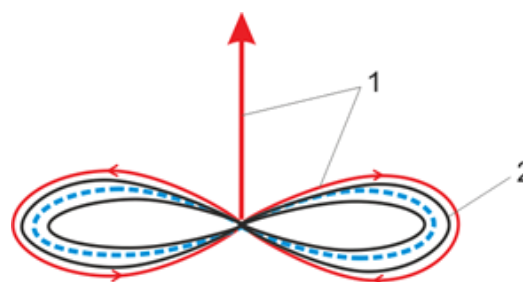


Figure 1 Schematic representation of the smallest.

An elementary indivisible particle.

(WSCH) - “Time of the Universe” (TM)

- i. The Unified Super Perfect Stabilizing Force of the Universe (USSF).
- ii. Matter-space (MFS)

(MFP - matter, form, space - a single whole, the form depends on the number of bends of matter).

According to the main postulates of Nikolai Kozyrev, “time” influences any processes and is their necessary component.

Everything in nature happens with either emission or absorption of time.

Time is a source of energy. Calculations carried out by Kozyrev showed that the activity of stars is not only due to internal nuclear reactions, because in this case they would shine for 4-5 billion years - and their life lasts much longer. So stars receive additional energy from the surrounding space.

In this connection, 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 considered that a quantum particle can be in a mixed state only, since in its motion path it changes the state of all contact quantum particles and all systems consisting of them. In the surrounding world there are no free corridors for motion of pure quantum particles, i.e. there are no free spaces.

On this basis, we put forward our concept that the source of energy of the Universe is the eternal, infinite motion of the smallest elementary particles (VM) with infinitely different velocities and scales as seen in Fig 1.

The surrounding world and the Cosmos with all its visible and invisible contents constitute “an invisible, intangible, intangible super perfect stabilizing force - the source of the cyclic process of the Universe”.

In this cyclic process “man” is the most organized unit of Nature and Cosmos, but so far has very modest cognitive capabilities of the mysteries of the cyclic process of the Universe.

It should be assumed that all the smallest elementary indivisible particles (SMENCH) are endowed with unequal programmed physical characteristics (the guarantor of eternity of motion) providing them with freedom, submission and humility in their infinite motion with infinitely different speed and scale.

The next postulate of Kozyrev: Time is an active substance that maintains the equilibrium of our World, does not spread like light, but appears everywhere at once. Based on our own experimental

investigations, we believe that Kozyrev's time is the "Time of the Universe" as the smallest elementary indivisible particle (SMENCH). The Universe consists of their infinite set, and every elementary particle (SMELF) contains programmed invisible intangible super perfect stabilizing force, which helps to maintain equilibrium of our World. Also we believe that on the basis of quantum physics the Universe has a control system identical to functional properties of the cardiovascular system of the integral organism and for this reason elementary particles (EM) appear everywhere at once, like red blood cells of the cardiovascular system in all cells of the integral organism, we believe that (EM) perform for the Universe functions identically to red blood cells and quantum physics and chemistry scientists will soon find a control system of the Universe.

It should be assumed that "Time-Broadcasting" represents a complete program of the whole Universe with its contents. It is a single whole where all information about the Universe in the past, present and future is stored simultaneously, i.e. the whole Universe can be created from one quantum particle "Time-World".

Matter and space depend on the program already embedded in the elementary particle (VM), and the form 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 energy of the smallest cluster of three quantum particles of "Time-World" can pass into matter-space. It happens by a mystery of nature, not yet accessible to human cognition.

The emergence of new variants of matter 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 form of matter on the supramolecular level. Thus, "Space" preserves and holds the form of matter programmed in the particle of "Time-World". The surface of matter is space, without matter it does not exist.

"Space" is a concentration of specific energy. Therefore, we are in a super-compact World. The smallest point visible to a naked eye is in a state of multiple bends, as it consists of infinite set of quantum particles ("Time-World") in individual unique arrangement of their combinations.

According to certain laws of Nature in the process of the Universe formation of clusters of elementary indivisible particles with instant change of their physical characteristics takes place.

During formation of infinitely different clusters of elementary particles all parameters of "TimeUniverse" undergo infinite changes in speed and scale, i.e. "TimeUniverse" - elementary indivisible particle is endowed with the program of instant transformation of its physical characteristics according to the cluster category included in it.

Space creates a compact, comfortable state of content throughout the universe, as it has elementary particles and the most gigantic clusters of stars in the same space; where everything is in dense and inseparable juxtaposition.

This should be understood and represented as follows: the inner space of animal and vegetable world, the whole biosphere, planets, stars, visible and invisible formations of the whole Universe is one

whole space and each elementary particle is perceptible in this space with infinitely different scale and speed. Space should be represented as the outer surface of matter.

These mysteries of nature are embedded in the elementary particle (EM).

At creation of this or that matter of the Universe there is a differentiated formation of clusters from elementary particles (EM) according to the program of nature inaccessible to cognition. These mysteries are not recognized by mankind, each elementary particle (VM) is unique in its three-dimensional change and with individual characteristics - a guarantor of eternity of motion.

It should be noted that in all systems of the Universe, from elementary particles to giant galaxies, there is only one kind of motion "forward" and two turns "right" and "left", so the numbers are always positive, there are no negative numbers.

Perhaps scientists have adopted negative numbers conventionally, 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 do not know the beginning. Any motion is cyclical, infinite. Maximum approach to the beginning of the cycle is accompanied by an explosive release of energy, since maximum approach of the end of the cycle to its beginning is the biggest "energy difference".

And a part of this huge energy again gives rise to the next cycle of motion, and a large part of energy replenishes the energy of the Universe and so continues infinitely. We proposed this concept, which was confirmed by studying the three-particle process of in-decay in the 20s-30s of the 20th century, i.e. in addition to the electron (positron) registered in the experiment, the electron antineutrino or neutrino escapes during the in-decay. The neutrino (antineutrino) has a zero charge, participates only in the weak interaction, and, as a consequence, is characterized by a very weak interaction with the substance. This is the "quantum touch".

All cycles are inimitable in speed and scale. This is also one of the elements of eternity of the surrounding World. The Universe is not expanding and contracting but performing its cyclic processes, each cycle has a beginning and an end. Scientists see only a cyclic process.

Man is a complexly organized energy-information-exchange system and the condition of his existence is to maintain the constancy of the internal environment or homeostasis.

From the perspective of quantum physics it follows that homeostasis is a comfortable sense of the whole organism at the supramolecular level.

In the literal sense, "constancy" is stagnation, it contradicts the laws of physics, gravity.

From the position of quantum physics, "space" is preservation of constant comfortably inimitable difference of internal stabilizing force of an integral organism and the surrounding world as a single super perfect stabilizing field (USSEP) of the Universe.

This is the common homeostasis of Nature and Cosmos, the guarantor of the Universe eternity.

For scientists of classical physics it is called "energy", and from the position of quantum physics it is called "ESSEP" - a single super perfect stabilizing energy-information field facilitating creation of matter, constantly in stable tension (tone) for harmonious coexistence

of all biosphere and Cosmos contents, consisting of elementary particles, i.e. supporting the Universe homeostasis.

Elementary particles (EM) with a set frequency and energy information for their further actions are suddenly released from the super perfect energy-information field” to create a new form of matter.

Interrelation of the surrounding world and the holistic organism is carried out through the perspiration system from the whole body surface of the holistic organism, i.e. information exchange between the surrounding world and the holistic organism at the supramolecular level is carried out freely. Consequently, according to the teachings of the great Russian scientist V.I. Vernadsky, a man is in the biosphere, i.e. direct contact of the perspiration system of the integral organism and the special system of the Universe, therefore (VM) appears everywhere at once.

In this connection any elementary particle of the integral organism is connected with all elementary particles of the Cosmos, i.e. information interchange takes place.

It is known that we communicate with the Universe through the vibrations of words, emotions and thoughts when we make choices and take 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 resembling it are called “strings” of energy by scientists, and we call them “Universe Time” (TM).

This energy is constantly passing through us and moving around us.

We ourselves, like radio stations, are constantly transmitting energy signals about ourselves to the surrounding space. Whether we are aware of it or not, each of us participates in the continuous energy exchange of the Universe.

A person’s individual energy field is like a “passport” to the outside world.

Substance is a form of matter made of fermions or containing fermions along with bosons; it 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, ions.

It should be assumed that the form of matter of a particular, definite composition is inherent in the program of an elementary particle (EM), because any substance consists of different number of clusters of elementary particles, their schematic arrangement within clusters and relative to the surrounding world is an infinite number of variants, i.e. the concreteness of matter depends on it. “A molecule is the smallest particle of a particular substance that retains its chemical properties”.

It also depends on clusters of elementary particles (EM) of their schematic arrangement and number, this determines the concreteness of matter. For this reason it is not possible to chemically separate the atom.

An atom or group of atoms can be electrically charged - this is an ion.

Ions determine the properties of matter, its possibilities of various transformations and phenomena, without disturbing the homeostasis of the surrounding world.

This is carried out due to the existing infinite number of variants of the program, embedded in the elementary particle (EM). The particles

that make up a given substance, depending on the electromagnetic forces of interaction, are in constant motion.

It is believed that the separation of particle motion into kinetic and potential motion is artificial. In nature and in the whole Universe, initially the rest energy does not exist. If we can fix by technique the motion of elementary particles, the rest state does not exist, but there is an oscillatory motion of low velocity and scale. The appearance of new variants of physical characteristics of energy and, consequently, infinitely many different variants of matter-space types depends on the size, number and arrangement of clusters in relation to each other (infinitely many variants).

“Time-Worlds (TM) with a set frequency and energy-information for their further actions are suddenly released from the super-perfect energy-information field” to create new matter. (Figure 2)

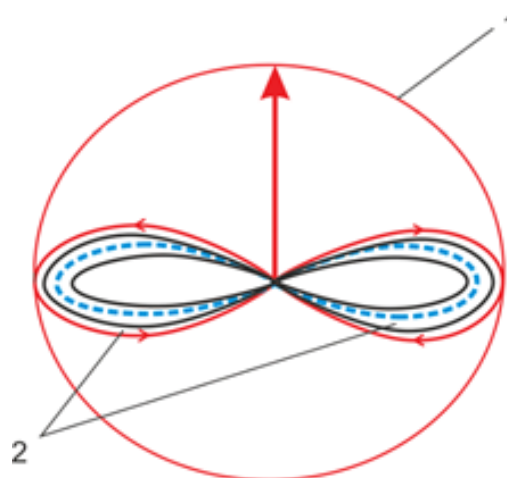


Figure 2 Schematic representation of the “Universe”.

1). “Universe”.

2). SMESH - “World Time” (WT).

According to A.L. Chizhevskiy “an obligatory condition for life of a living organism is the exchange of “electric” which forms the basis of the metabolic process, and that the total energy content in the cellular structures of the organism has a strictly definite value”.¹

The biopotential for each individual is strictly individual both in norm and in pathology. In this connection any nosology in each individual causes deviation of its biopotential according to the stage of disease development, i.e. formation of intermediate states of the organism with definite disturbances of its supramolecular structures.

This, in its turn, determines the clinical picture at the moment of the patient’s examination and is the leading condition for choosing the right treatment tactics by any specialist, so that the disease regression is accompanied by the restoration of destroyed supramolecular structures, excluding new gross disturbances at any level of the integral 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 physiotherapy is closely related to other areas of medicine, physics and biology.

Thus, revealing of etiology and pathogenesis of many diseases allows not only application of necessary physical factor, but also

development of rational technique, its application, combination with other physical factors.^{2,3,4,5}

Based on the advances in physics and the development of highly sensitive apparatuses, it became possible to determine the mechanism of action of low-energy physical factors at the cellular and subcellular level of the organism.^{6,7,8}

It was found that during the passage of any electromagnetic wave through the optical fiber, around the optical fiber is always formed evanescent waves perpendicular to the outer surface of the optical fiber, and at a distance from her evanescent waves fade.

These previously unknown properties of light were recently discovered by scientists from Japan, the United States, Ukraine and Korea.⁹

In this regard, we conducted a series of experimental studies (registration of standing evanescent wave photons on the skin surface after exposure to 480-3400 nm PVIP light). (Figure 3,4,5,6,7)

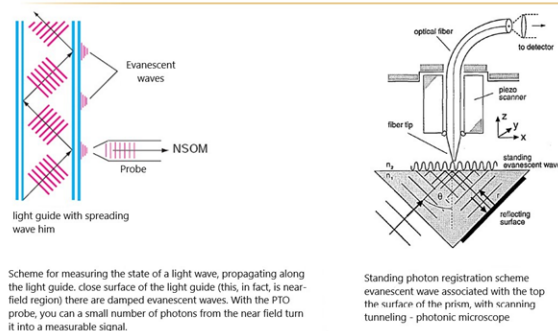


Figure 3 Evanescent Waves.

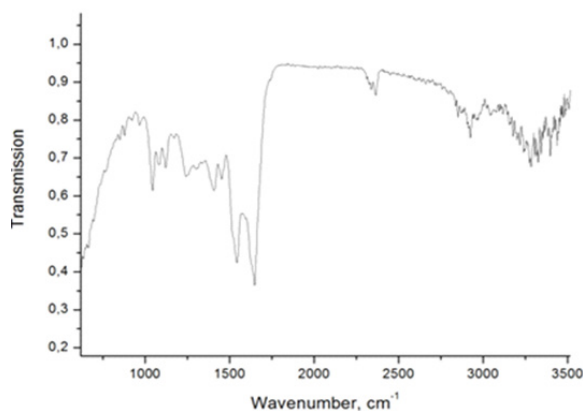


Figure 4 IR spectrum of the skin after exposure of the hand to yellow light through a fiber optic cable for ten minutes.

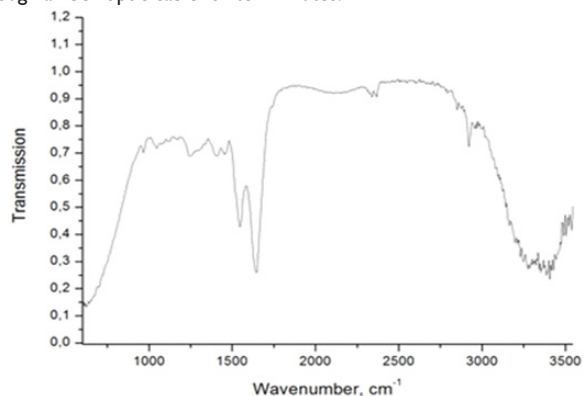


Figure 5 IR spectrum of the skin after immersing the hand in water irradiated with yellow light through a fiber-optic cable for ten minutes.

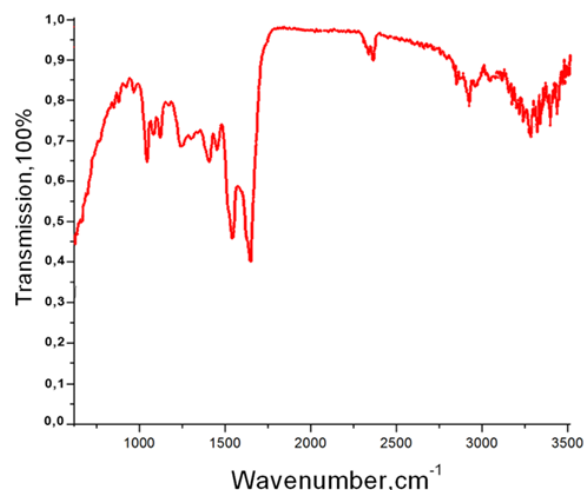


Figure 6 Infrared spectrum of skin after exposure of hand to polarized light of "Bioptron" apparatus for 10 min.

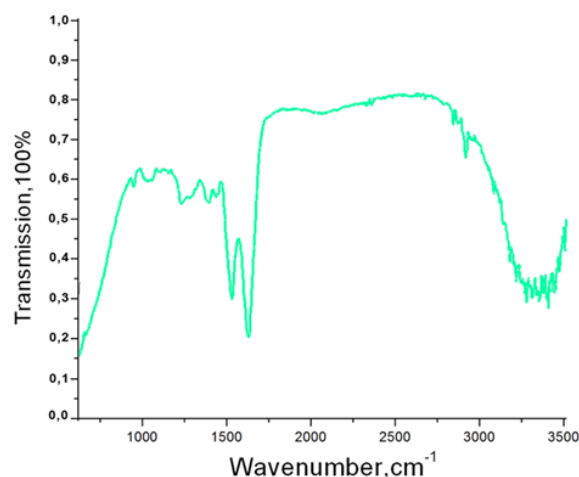


Figure 7 Infrared spectrum of the skin after hand immersion in water irradiated with Bioptron light for 10 minutes.

It was found that the evanescent infrared spectra of the skin after exposure to water activated by light through a fiber-optic cable from the apparatus "Bioptron", shows an increase in the absorption area in the spectral ranges of 3 200-3 500 cm^{-1} and in the range up to 800 cm^{-1} , that is there is an increase in hydration.^{10,11,12,13}

In this regard, there is a reason to use the apparatus "Bioptron" phototherapy through fiber-optic cable as a direct exposure and indirectly through the water in various diseases of the musculoskeletal system, skin and other organs and systems.

From given experiments it is possible to conclude, that photo-excitation of water by "Bioptron" source really leads to change of water structure. This was made possible by absorption of radiation from the source in water, stimulating the growth of water nanoclusters size bound by hydrogen bonding, which was made possible by identifying the unusual properties of light by the above mentioned scientists (the appearance of evanescent waves) and the creation of "scanning tunneling microscope". (Stefan Mendak and colleagues from Germany have created a working instrument capable of recreating two-dimensional images of three-dimensional nanoscale objects, using light of visible frequency and near-infrared spectrum. The device was based on "superlenses" consisting of thin strips of silver shaped like a tube with a central hole of about 2 μm . From the

inner surface of the tube, the evanescent waves pass through its layers outward perpendicular to the circumference and with this motion comes the primary magnification of the image, i.e., a “scanning tunneling microscope”).⁹

In works^{11,12,13,14} it is established that cardiovascular, nervous and lymphatic systems can be light guides and around them also form evanescent (attenuated) waves perpendicularly directed to the outer surface of vessels, capillaries, nerve roots when they are exposed to any area of skin surface by electromagnetic waves. Hence evanescent infrared spectroscopy of disturbed total reflection when touched with infrared fiber is unique, not traumatic, not requiring special skin preparation - there is “Spectrobiopsy of blood”, which reflects the whole information picture of the organism on supramolecular (atomic) level. (Figure 8,9,10,11,12,13)

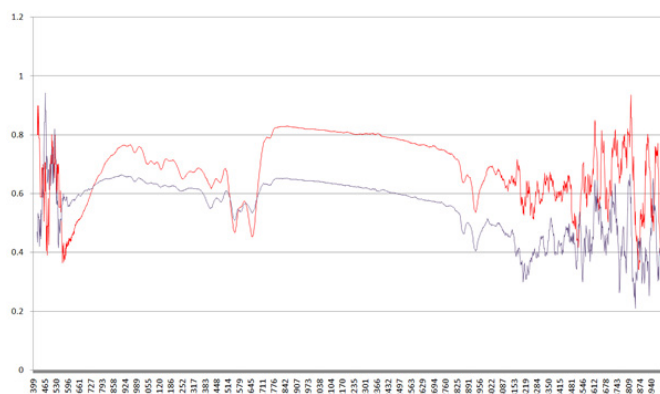


Figure 8 Spectrobiopsy of blood from the surface of the unexposed hand.

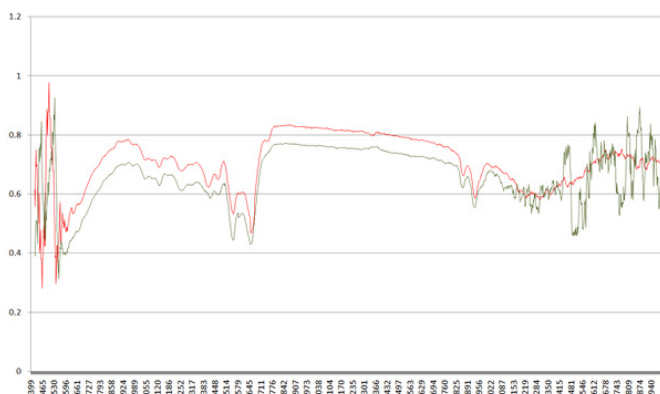


Figure 9 Spectrobiopsy of blood from the surface of the hand irradiated with yellow light for 10 min.

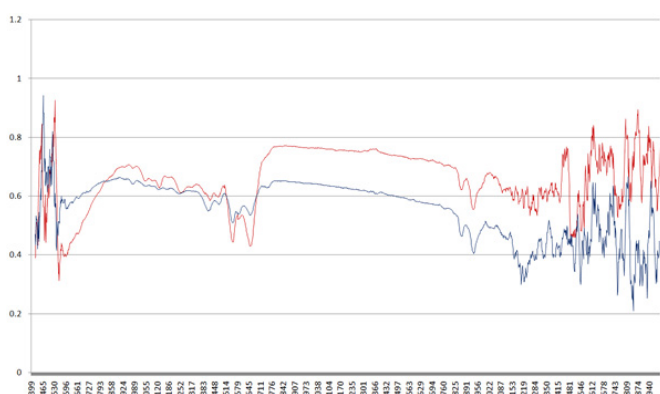


Figure 10 Spectrobiopsy of blood from the surface of the hand.

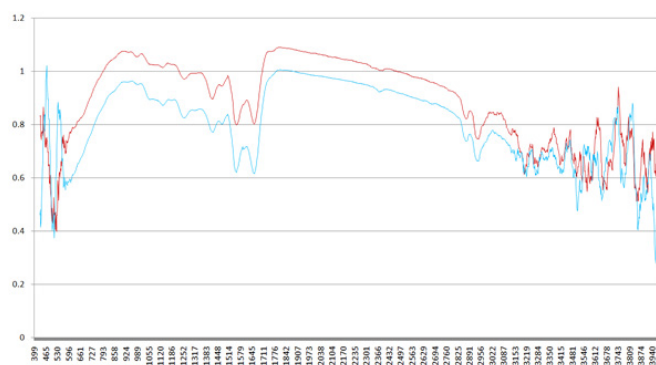


Figure 11 Spectrobiopsy of blood from the surface of the hand.

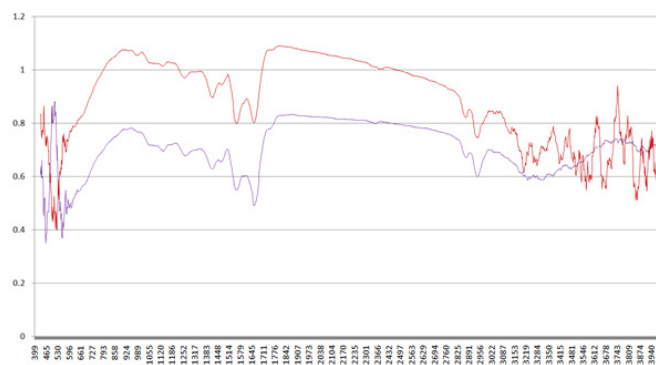


Figure 12 Spectrobiopsy of blood from the surface of the hand.

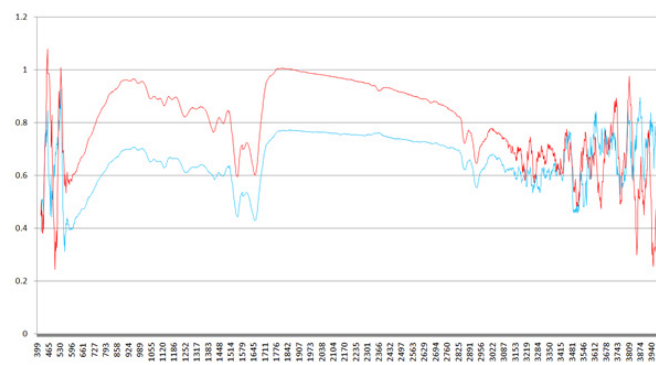


Figure 13 Spectrobiopsy of blood from the surface of the hand.

Our concept of occurrence of tunnel effect of integral organism under influence of low-energy electromagnetic waves is supported by works of native and foreign scientists. They disclosed the reasons of evanescent waves appearance: doctor of physical and mathematical sciences professor German Nikolayevich Zhizhin, doctor of physical and mathematical sciences professor Evgeny Andreevich Vinogradov, V.N. Galysky, A.I. Furs, L.M. Barkovsky and others. They believe that during the interaction of photons and elementary excitations of the medium polaritons are formed. The interaction of electromagnetic waves with the excitations of the medium (phonons) resulting in their binding becomes particularly strong when their frequencies and wave vectors coincide (resonance). In this region, bound waves, i.e. polaritons at the interface of the two media are formed and exponentially decrease with distance from the interface (near field). The phonon is a quasi-particle introduced by Russian scientist Igor Tamm and represents the quantum of vibrational motion of atoms in a crystal.

Scientists have discovered pseudoparticles traveling on the surface of light-sensitive materials.

It is known that the English physicist Josephson in 1962 on the basis of the theory of superconductivity Bardin-Kuper-Schriffer predicted stationary and non-stationary effects in a superconductor-dielectric contact.

Two superconducting layers separated by a negligibly thin insulator layer only a few atoms thick will behave as a single system.

When a current of no more than a critical value is passed through the contact, 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 a dielectric without resistance due to the tunneling effect. Electrons can overcome the barrier even in the absence of voltage applied to them (Cooper pair tunneling). The effect is called the stationary Josephson effect.¹⁵

If a constant voltage is applied on either side of the junction, quantum mechanics predicts that the Cooper pairs of electrons will begin to move through the barrier first in one direction and then in the opposite, resulting in an alternating current whose frequency increases as the voltage increases. This effect has been called the “unsteady Josephson effect”.^{15,16}

According to the laws of physics, when an integral organism is exposed to electromagnetic waves, evanescent waves are formed on the outer side of all capillaries, vessels, nerve trunks and roots; this is the set of “scanning tunnel biomicroscopes”, and recording the effects of PVIP light on the organism is done using “scanning tunnel photon microscope” see Figure 1 (Fermi-Pasta-Ulam phenomenon: “reverse energy return”).

Therefore, it should be considered that the animal organism is a single superconducting system operating on the principle of the Josephson effect in superconductors.

In this connection there is a reason to state that we have revealed new, previously unknown mechanisms of weak electromagnetic waves influence on the holistic organism and ways of registration of the organism’s response reactions. In other words, the integral organism functions according to the principle of “near-field scanning tunneling biomicroscope”, as it corresponds to the description of the device by Stefan Mendek from Germany.

Cardiovascular, nervous and lymphatic systems can be light conduits and around them also form evanescent (attenuated) waves perpendicularly directed to the outer surface of vessels, capillaries, nerve roots when they are exposed to any area of the skin surface by electromagnetic waves, i.e. whole organism enters the mode of operation of “scanning tunneling microscope”, that is why evanescent infrared spectroscopy of disturbed total reflection when touching the infrared fiber is unique, not traumatic, not requiring special skin preparation - there is “blood spectrobiopsy”, on which the whole information picture of the body at the atomic level is reflected. (A new progressive trend in medicine).^{11,12,13}

Professor K.A. Samoylova in her studies argues 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 dinucleated phosphate oxidase (NADPH-oxidase) and nucleotide containing bioperoflavoprotein-NO-synthase. When exposed to visible and IR light, these enzymes localized in the cell membrane are activated and, using the surrounding oxygen, produce its active forms (AOS) - superoxidanion, 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 the specialized intracellular mechanisms of activation signal conduction.

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

Before reviewing specific examples of the biological activity of NO in humans and animals, we should once again point out the polyfunctionality of its action, which cannot be reduced only to “positive” or only to “negative” effects.^{18,19,20}

The biological response to NO is largely determined by the conditions of its generation - where, when and in what quantity this compound is produced.^{19,21}

It should be noted that so far insufficiently studied: localization, distribution of NO-sitase, non-enzymatic formation of nitric oxide, the participation of NO in the regulation of the nervous system, in protective immunological reactions, the participation of NO in 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 is necessary to state the necessity of expanding basic research on the basis of an academic research institute with attraction of specialists in physics, chemistry, cytology, physiology, biology, optical physics to create methodology followed by development of the topic and program on the issue of slowing down of natural aging of a living organism.

The above concepts are confirmed with high statistical precision on the example of the created new rehabilitation technology: “Underwater horizontal traction of the spine with underwater phototherapy” to solve the urgent medical and social problem treatment of patients with degenerative-dystrophic lesions of the lumbosacral spine with herniated disc protrusions, one of the most common neurological pathologies in the world. (Figure 14)



Figure 14 Installation of underwater horizontal extension of the spine with underwater phototherapy via fiber optic cable.

At the present stage of development of regenerative medicine, a wide range of medicamentous and non-medicamental methods (physiotherapy, traction and manual therapy, reflexotherapy, therapeutic physical training) as well as surgical (surgical) treatment are used to treat this category of patients.

At the same time, it is not possible to achieve the desired therapeutic effect of the methods used, due to the ineffectiveness of their combined application.^{2,3,4,5}

Our system "combined application of underwater horizontal extension of the spine with underwater phototherapy via fiber optic cable" can restore the disturbed functions in 96-98% of patients with degenerative-dystrophic lesions of the spine due to regression of herniated disc protrusion by 30-50% and anti-inflammatory antioxidant effect of underwater phototherapy, but so far such complex in this pathology is not used anywhere else in the world. (Figure 15)

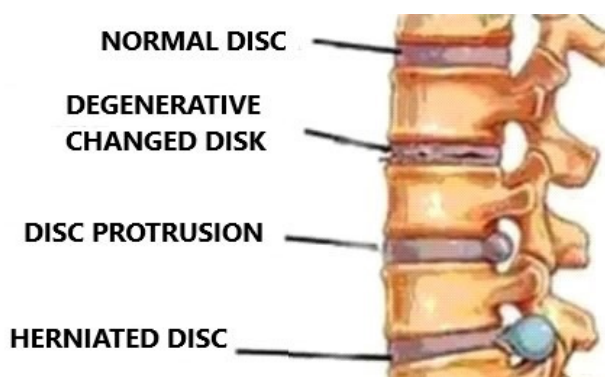


Figure 15 Degenerative-dystrophic changes in the spine.

At the same time the recurrence rate within 5-7 years is only 0.5%, and the pain is gone in all patients after the first procedure. This is due to the unique combination of underwater horizontal traction of the spine with underwater phototherapy (yellow light with infrared 480-3400 nm) through an optical-fiber cable.¹⁰

The validity of the treatment results was substantiated by modern highly sensitive informative methods of assessment of 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.^{13,22}

It should be noted that the presented rehabilitation technology is superior to all existing pharmaceutical means, non-drug methods of treatment and takes the deserved leading place in primary prevention of degenerative-dystrophic lesions of the spine in teenagers, sportsmen, drivers of highways, railways and other transport modes with driving time more than 60 minutes a day.

We believe that high efficiency of anti-inflammatory immunomodulatory, antiviral and antitumor action of 480-3400 nm polarized light is confirmed by fundamental studies of Russian and foreign scientists: Doctor of Biological Sciences, Professor K.A. Samoilova Institute of Cytology RAS, Saint Petersburg, 2003; Doctor of Medical Sciences, Professor L.N. Gerasimova Burn Center of Research Institute of Emergency Care named after N.N. Sklifosov, Moscow; Chief children's physiotherapist of Moscow, Professor M.A. Khan Russian Scientific Center for Restorative Medicine and Spa. N.V. Sklifosovsky, Moscow; chief pediatric physiotherapist of Moscow, MD, Professor M.A. Khan, Russian Scientific Center for Restorative Medicine and Balneology, Russian Ministry of Health, Moscow; Professor M. Lenz, Oxford University, UK; Professor L.

Medinica, Institute of Dermatovenereology Clinical Center, Belgrade University, Yugoslavia.^{10,14}

The phototherapy performed with PVIP-light is characterized by a very rapid "disappearance" of proinflammatory cytokines - tumor necrosis factor (TNF- α), interleukins - IL-6, IL-2, IL-12 - from circulating blood, which is registered already 30 minutes after the first irradiation. Thus, at initially high concentration of TNF- α it falls 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). Simultaneously the plasma content of anti-inflammatory cytokines - IL-10 and transforming growth factor - TRF- β increases¹, there is a sixfold increase in blood of the most important immunomodulator - interferon- γ (IFN- γ)^Y, even at its initially normal level. The most important function of this cytokine is activation of cellular immunity (functional state of monocytes, macrophages, natural killer cells and cytotoxic T-lymphocytes), which primarily increases antiviral and anti-tumor resistance of the body.¹⁷

Experiments with PVIP-irradiation of blood in vitro give grounds to connect all described effects with the direct effect of light on blood. In all variants of the experiments light not simply stimulates, but regulates cytokine content.

Also, in vivo there is also direct contact with the cardiovascular system (blood) through the medium of perspiration.

It is an instantaneous effect at the cellular, supramolecular (atomic) level.^{12,13,14}

Therefore, there is a reason to believe that the system of underwater horizontal traction of the spine with underwater phototherapy for primary prevention in adolescents and sportsmen and improvement of life quality in patients with degenerative-dystrophic lesions of the spine deserves prompt introduction into practice of rehabilitation medicine centers, medical and physical fitness dispensaries, sanatoriums and resorts, physical therapy departments of medical and prevention institutions, boarding houses.

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

The main objectives of clinical physiotherapy.

- I. Clinical trials of new physiotherapeutic methods and techniques.
 - II. Clinical research and re-evaluation of old physiotherapy methods and techniques.
 - III. Development of an effective and safe physiotherapy method.
 - IV. Organization of information services and advice to various professionals.
 - V. Training for students and physicians.
- In practice, clinical physiotherapy addresses the following issues:
- i. Selection of a physiotherapeutic method for treating a particular patient at the time of clinical assessment;
 - ii. Determination of the most suitable parameters of physical factors and their mode of application, combination with other physical factors;
 - iii. The choice of exposure pathways for the physical factor;
 - iv. Monitoring the effects of physiotherapeutic factors;
 - v. Prevention and management of adverse reactions.

Before prescribing treatment, the physiotherapist must answer the following questions.

- i. What specific changes in the patient's condition does he/she want to achieve?
- ii. What physical factors can have the desired effect?
- iii. Which physiotherapy technique is most suitable for this patient?
- iv. In what combination and sequence should the chosen physiotherapy method be applied with other physical factors?

Ultimately, the effectiveness and safety of physiotherapy depends on the physician's ability to correctly assess all of these factors, a thorough knowledge of both clinical medicine and experimental physiotherapy is necessary.

"The science which studies physical and chemical characteristics and mechanism of action of physical factors with symptom-syndrome principle of their application in physiological parameters in complex therapy of patients; possibility of applied physical factors to stabilize upset 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.

I. Natural:

- a) Solar power.
- b) Cosmic energy.
- c) Temperature (airspace, water: rivers, lakes, seas, mineral waters, therapeutic mud).
- d) Human endobioenergy.
- e) Communication apparatus of the energy system (energy centers).
- f) Superstrong acoustic-electromagnetic waves (solitons) in human DNA.
- g) The energy of plant life.
- h) Exobioenergy (leeches, bees, etc.)

II. Energy produced artificially:

- a) Electric.
- b) Magnetic.
- c) Light.
- d) Thermal.
- e) Hydropower.
- f) Mechanical.
- g) Radiowave.
- h) Energies derived from air pressure and gases.
- i) Fermi-Pasta-Ulam generator (for creation of soliton electrosonic fields).

- j) Resonance laser spectroscopy of radio wave emitters of objects including chromosomes, living cells and tissues.
- k) Biomolecular optoradioelectronic computer systems are analogues of chromosome organism biocomputer.
- l) IR spectroscopy in the 4000-400 cm region-1 on a Perkin-Elmer 2000 Fourier spectrometer.
- m) Raman spectroscopy of Raman light scattering.
- n) Evanesence spectroscopy.

The second principle.

According to the most important areas of use of therapeutic physical factors.

I. For therapeutic purposes:

- a) Natural factors.
- b) Preformed factors.

II. Rehabilitative direction:

- a) Natural factors.
- b) Preformed factors.

III. Physioprophylaxis:

- a) Primary prevention - mainly by natural factors.
- b) Secondary prevention - mainly by preformed factors.

IV. Physiodiagnostics:

- a) Electrodiagnostics.
- b) Electropuncture diagnosis.

The third principle.

On the physical and chemical basis of action of physical factors:

- i. Heat generation.
- ii. Ionic shifts.
- iii. Formation of free physical substances.
- iv. Free radical generation.
- v. Conformational changes.

The fourth principle.

By type and mode of energy action.

I. Direct electric currents:

- a) Continuous.
- b) Impulse.

II. Alternating electric currents:

- a) Low frequency.
- b) Medium frequency.

III. The electric field:

- a) Permanent.
- b) Impulse.
- c) High Frequency and Ultra High Frequency.

IV. Magnetic field:

- a) Permanent.
- b) Impulse.
- c) Low frequency.
- d) High frequency.

V. Electromagnetic radiation of the radio frequency range:

- a) Ultra-high frequency (centimeter and decimeter band).
- b) Extreme High Frequency (EHF).

VI. Electromagnetic radiation of the optical range:

- a) Infrared.
- b) Visible.
- c) Ultraviolet (DUV, SUF, CUV).
- d) Monochromatic, coherent.

VII. Mechanical energy:

- a) Mechanical stress (therapeutic massages, manual therapy, acupuncture).
- b) Mechanical vibrations:
 - i. Vibration.
 - ii. Ultrasound.

VIII. Airspace Factors:

- a) Atmospheric pressure:
 - i. Periodically changing.
 - ii. Reduced.
 - iii. Elevated.
 - iv. Partial (reduced RO₂ and increased RO₂)
 - v. Increased RO₂ and RHe (oxytotic).
 - vi. Increased RDF₂ (carbogen therapy).
- b) Aerons.
- c) Aerosols.

Fifth Principle.

According to the mechanism of action of physical factors.

Principle six.

By the ability to interact with the bioenergy of cells and tissues.

The seventh principle.

By the way in which the pharmacological agents are administered to the body.

Clinical physiotherapy is closely related to other areas of medicine, physics and biology.

Thus, revealing of etiology and pathogenesis of many diseases allows not only application of necessary physical factor, but also development of rational technique, its application, combination with other physical factors and pharmacological agents.^{3,11,14}

Based on the advances in physics and the development of highly sensitive apparatus, it became possible to determine the mechanism of action of low-energy physical factors at the cellular and subcellular level of the organism.^{9,1}

It was found that when passing through the light guide of any electromagnetic wave, around the light guide is always formed evanescent waves perpendicular to the outer surface of the light guide and at a distance from her evanescent waves are attenuated. These previously unknown properties of light have recently discovered scientists from Japan, the United States, Ukraine and Korea.⁶ In this regard, we conducted a series of experimental studies (registration of photons of a standing evanescent wave on the surface of the skin after exposure to a PVP light of 480-3400 nm).

Conclusion

1. New, previously unknown mechanisms of impact of weak electromagnetic waves on holistic organism and methods of their registration are revealed. That is, holistic organism consists of many “near-field scanning tunneling biomicroscopes”, and registration of the results of the impact of light PMIP on the organism is carried out with the help of “scanning tunneling photon microscope”.
2. All cells of a living organism are endowed with a unique program of individual infinite speed of all processes of their activity in particular and in general (i.e. transition from one state to the following one...).
3. It was found that exposure to energy of any physical factor is dosed and regulated (physiodynamics) by nanotechnologies and freely traceable to each molecule of the integral organism (physokinetics) without disturbing supramolecular structures, without negative consequences.

Such a high level of pharmacodynamics and pharmacokinetics is not available in the modern world pharmaceutical science.

4. It was revealed that biopotential for each individual is strictly individual both in norm and in pathology. In this connection any nosology in each individual causes deviation of its biopotential according to the stage of disease development, i.e. formation of intermediate states of the organism with definite disturbances of its supramolecular structures.
5. Clinical physiotherapy is a science, which studies energy and bioinformational systems of the body and possibilities of their correction on the subcellular level by physical factors for stabilization of disturbed biological processes of organs and systems.
6. It has been established that any disease is unique for each person: etiopathogenesis, clinical picture, state of intermediate cyclic morphological supramolecular formations of organs and body systems.

Consequently, applying “established medication standards by disease” to all patients with the same diagnosis is unscientific and extremely dangerous.

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Conflicts of interest

The authors have no conflicts of interest to declare.

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