
**DEVELOPMENT OF MODELS AND ALGORITHMS FOR ANALYSIS AND
PROCESSING OF MEDICAL BIOLOGICAL INFORMATION**

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Annotation

The achievements of modern medicine are largely based on the successes of physics, technology and medical instrumentation. The nature of the disease and the mechanism of healing are in many cases explained on the basis of biophysical concepts.

Keywords. Biophysics, medicine, disease, integration, education, biophysical methods, biomedical information.

Biophysics is the science of the simplest and most fundamental interactions underlying biological phenomena. The main content of biophysics is finding the general principles of biologically significant interactions at the molecular level, revealing their nature in accordance with the laws of modern physics, chemistry and mathematics. The study of biophysics in a medical university contributes to the formation of a scientific view of a living organism and the processes occurring in it in future doctors, studies the foundations of modern physical, biophysical methods, and reveals the physicochemical nature of life phenomena. The article deals with the problems of teaching biophysics, issues of integration and some methods for their solution.

The relevance of this problem is closely related to the science of biophysics, as well as to such currently developing areas as biomedical engineering, digital technologies in medicine. These areas are closely related to the teaching of biophysics to students of medical higher education shows that this is symbolic. The doctor in the course of his practical activities always builds work related to quantitative indicators (the patient's body temperature, blood pressure, the amount of medication taken, etc.). Therefore, it is necessary to know how these quantities are determined, what is their degree of accuracy and in what units of measurement they are expressed. Currently, the doctor must have an idea about the processing of measurement results, know how to use modern electronic computers (computers).

Physical, mathematical and biophysical knowledge is not only an important element of higher medical education, but also contributes to a comprehensive study of the human body. This is important for the development of medical science as an exact science. The expansion of the scientific and life outlook of the younger generation is a necessary pedagogical process, accompanied by familiarization with educational work. To achieve this, we must not classify subjects as Level I or II subjects, but based on the contribution that these sciences make to the development of our society. based on our need for these subjects in our lives, it is necessary to fight for the introduction of a comprehensive

education in which the sciences are inextricably linked, since this process is inherently unlimited. The definition of knowledge leads to a change in its boundaries.

For example, the theory of relativity shows that Newton's second law is limited by a speed much less than the speed of light, while quantum mechanics shows the specifics of applying the laws of mechanics to the motion of micromoving particles, etc. Physics and biophysics are dynamic sciences that are rapidly developing and are being actively introduced into biology and medicine. It is not easy to learn, but the time spent on them and it is undeniable that the enthusiasm will pay off both in the study of future courses and in the practice of the doctor. Therefore, at present, in medical universities and other universities, the teaching of biophysical and physical sciences, providing students with sufficient knowledge in these subjects, that is, practical skills in studying the processes occurring in the entire Universe, on earth, in the human body. Each student, having received enough knowledge in these subjects, will become a mature cadre in the future. Biophysics is necessary and important in the professional activity of a future medical specialist in solving professional problems. Medical schools around the world are gradually moving from a traditional discipline-oriented curriculum to an integrated one. Integrated learning helps future physicians gather facts in a single chain in order to get a complete picture of the clinical situation and develop a holistic approach to the treatment of a particular patient. In the preparation of a doctor, the acquisition of basic theoretical knowledge in the main fundamental disciplines taught in 1-2 courses of a medical university is of great importance. The training of a general practitioner, which takes place in several specialized and non-core departments of medical universities, aims to instill in students the skills of continuous improvement and effective application of knowledge for the analysis of clinical diseases, methods of treatment, predicting the effectiveness of their application. Our experience of working with students of a medical university has revealed a number of points that complicate the implementation of this task, which is due to a very modest number of hours in the curriculum; unequal level of initial training in natural disciplines and basic knowledge; difference in personal characteristics and goals for learning; a limited number of modern textbooks in biophysics.

Methods for integrating the content of fundamental disciplines teaching the subject "Biophysics" provides for: classroom, laboratory, practical and extracurricular methods. The formation of skills for the complex application of knowledge and methods of activity provides for: - a comprehensive explanatory and illustrative method; - complex problematic method; - complex partial-search method; - complex research method. The development of natural science and clinical thinking of students is carried out using theoretical and practical methods. The considered theory of integration is implemented in a practical aspect at the Department of Biophysics and Information Technologies in Medicine.

Practical lesson in Biophysics on the topic "Sound. sound phenomena. Sound characteristics. Weber-Fechner law. Determination of the length of the sound wave and the speed of sound" was carried out integrated with the subject "Otorhinolaryngology".

Physical acoustics was studied, which studies the features of the propagation of elastic waves in various media, and physiological acoustics, which studies the structure and operation of sound-receiving and sound-producing organs in humans. The purpose of studying the material is to familiarize with the nature of the origin and perception of sound by a person; sound, ultrasonic and infrasound methods of diagnostics and treatment of diseases.

In conclusion, we can say that a special role in the learning process should be given to the development of systemic thinking, the ability to replenish one's knowledge, orienting oneself in the flow of information of varying degrees of complexity and direction. The result of integration is a new quality of education, characterized by a certain level of integrity, orderliness, interconnection, interdependence of structural elements.

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