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Physics is a Science Forming Knowledge About Health

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Abstract: The article discusses physics is a science forming knowledge about health.

Keywords: Mathematics and physics. Physics and chemistry.

Mathematics and physics. Physics and chemistry. Physics has a huge impact on a number of related sciences. It so happened historically that biology and medicine did not fall into the category of exact sciences. The subject they study - a living organism - is so complex and diverse that it is still not possible to give its precise and comprehensive characteristics, to determine all the laws of its functioning. For many centuries, biology was only a descriptive science and practically did not explain most of the phenomena occurring in a living organism, including the human body.

Medicine from surgical and medicinal is becoming more and more "physical". Today, medicine has at its disposal a fairly large arsenal of physical technologies and equipment for the diagnosis and treatment of diseases [2]. That is why the study of physics is very important in a medical university.

At the moment, secondary education provides an opportunity for high school students to choose specialized subjects in which they plan to take exams for admission to a higher educational institution. For students who plan to enter a medical university, the undeniable choice falls on the subjects "Chemistry" and "Biology". Thus, this group of students, unfortunately, pays insufficient attention to the study of the subjects "Physics" and "Mathematics". As a result, becoming a student of a medical university, a freshman is faced with the problem of misunderstanding the material that the teacher conveys.

The main problem faced by physics teachers in medical schools is the passivity of students in the study of physics, in the weak motivational side of the learning process. Indeed, in medical universities, physics is a non-core discipline, but at the same time necessary and important for the further professional activity of future doctors [3]. Fortunately, the teacher is helped in this by the rating system for assessing students' knowledge, which allows them to involuntarily motivate them for systematic and high-quality self-training (most of the teaching load of the discipline "Medical and Biological Physics" is devoted to independent work of students).

The physics course for the specialty "Pediatrics" is designed for one semester and requires a serious basic level of knowledge in physics and mathematics. An important role in the assimilation of the educational material of the discipline "Medical and Biological Physics" is played by practical and laboratory classes, in which students learn the physical foundations of their future profession. The main task of the teacher is to help to understand not only the understanding of the processes occurring in the human body from the point of view of physics,

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but also to master modern methods of diagnosing and treating various diseases.

The course of studying the discipline consists of seven modules, each of which includes mastering the practical skills of using medical and diagnostic equipment.

When passing the topic "Lasers", the first-year students of the pediatric faculty mastered the purpose, design and use of laser radiation in therapy and surgery. Since children of any age, even from the first days of life, laser therapy or surgery can be performed if there are appropriate indications for this. It is important to take into account the peculiarities of the age of patients, the state of their nervous system, parameters and methods, which clearly differ from the recommendations for adult patients, but allow the safest and most effective treatment.

During the laboratory work "Investigation of the dependence of the resistance of a semiconductor material on temperature", students are invited to determine the thermal coefficient of resistance and the band gap of a semiconductor, measure the temperature using a thermistor. After all, there are times when a newborn needs to constantly monitor body temperature and, depending on the circumstances, preference is often given to thermistors.

Thus, physics has the necessary capabilities in the formation of knowledge about health, diagnosis and treatment of many diseases.

Health at all times was considered the highest value, the basis of an active creative life, happiness, joy and well-being of a person. In modern society, it also becomes a condition for material and social success. No wonder one of the criteria for the quality of education is the health and healthy lifestyle of students.

The school in its functions is not a medical institution, however, its importance for the formation of healthy lifestyle skills and knowledge about health is great. Among the most important areas of this activity is the development of an educational field for the valeological development of students. It should be noted that, along with other subjects of the natural science cycle, physics has great potential in the formation of such a field. But is it possible in principle to study the phenomena of life on the basis of physics? Is not life something special, inaccessible to physical research? Are the phenomena of life consistent with physical laws?

It so happened that biology and medicine did not fall into the category of exact sciences. The subject they study - a living organism - is so complex and diverse that it is still not possible to accurately describe its characteristics and patterns. For many centuries, biology was only a descriptive science and practically did not explain the causes of most of the phenomena occurring in a living organism, including the human body. The use of the achievements of physics and chemistry made it possible not only to explain the processes occurring in the human body from the standpoint of the laws of these sciences, but also to develop modern methods for diagnosing and treating various diseases. It is impossible to imagine today's medicine without being equipped with the richest set of physical devices that make it possible to raise the struggle for the life and health of people to a higher level. Knowledge about the capabilities of the human body and ways to increase the health potential are becoming relevant.

The educational field of valeological development of students can be structured as follows:

1. Valeological support of the educational process in the classroom - a comfortable spatial environment, compliance with safety regulations, dynamic pauses, relaxation, a favorable psychological climate, a developing educational environment.

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2. The basic program - in the systematic courses "Physics" and "Biology" actualization of educational material of valeological content.
3. Integrated blocks, lessons - conducting integrated lessons in physics and biology, including integrated lessons "Man and his health as an object of physical knowledge" into thematic planning for each class of blocks.
4. Optional classes - conducting optional classes in the 11th grade "Man and his health as an object of physical knowledge."
5. Extra-curricular work on the subject - publishing thematic newspapers and bulletins "Human Health and the Laws of Nature", holding a series of extra-curricular activities "How knowledge of the laws of physics will help maintain and strengthen one's health", organizing research activities for students, etc.
6. One of the elements of this field is optional classes for students of grade 11 "Man and his health as an object of physical knowledge", the program of which is labeled "Recommended by the scientific and methodological institution "National Institute of Education" of the Ministry of Education of the Republic of Uzbekistan". The development of a program of such classes is caused by the need to expand inter-subject communications of natural science disciplines, humanitarization of physical education, updating knowledge about the capabilities of one's body, ways to increase health potentials.

Tasks of extracurricular activities:

• formation of a holistic natural-science picture of the world;
• awareness of man as a part of nature;
• study of human life processes from the standpoint of the laws of physics;
• formation of the need for maintaining health and healthy lifestyle skills. As a result of attending extracurricular activities, students should be able to:
• realize a person as an object of nature, following its laws;
• apply the laws of physics to explain the processes of human life;
• explain the impact of the environment on the human body;
• to model their behavior aimed at maintaining and strengthening health using the acquired knowledge.

The structure of the educational material of the classes is consistent with the structure of the educational material of the subject "Physics" and includes the main topics of the latter, which examine the significance of the relevant laws for human life. The content of the educational material expands the knowledge of students in the field of natural sciences, in the field of application of physical laws, connects them with human life, with health issues.

The main forms of organizing training sessions are a seminar, a role-playing game (in which students take on the position of researchers), laboratory work, and an excursion. The main methods of work are problem-search and research. It is expedient to widely involve students in abstract work and apply the project method in relation to the development of physical instruments for studying the characteristics of the human body.

The program can be of particular importance for schools that implement, as a main direction, work to improve the health of students. The topics of individual lessons can be included in the thematic planning of a systematic physics course.

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At the moment, the educational and methodological manual for a teacher under this program has the signature stamp “Recommended by the scientific and methodological institution “National Institute of Education” of the Ministry of Education of the Republic of Uzbekistan”. The manual provides thematic planning of extracurricular activities, as well as materials for conducting each lesson, which include exemplary methodological recommendations, a list of issues under consideration, factual material for the teacher that can be used in class. At the end of each topic is a list of tasks that, at the discretion of the teacher, can be solved in the classroom. The tasks are selected according to the subject of the elective, but they contribute to the repetition of almost all sections of the physics course. Approximate recommendations for laboratory work are also given.

In addition, the publishing house of the National Institute of Education, within the framework of the Republican Program "Young Talents of Uzbekistan ", published a book for students "Human Physics", which contains extensive popular scientific material on this topic. Indicative is the design of the cover of the book, which depicts two hearts: one - as a biological system, the other - as a mechanical one.

These materials can be used not only during extracurricular activities, but also in physics and biology lessons, during extracurricular activities (including integrated ones) in these subjects.

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