

## EXPERIENCE OF USING A VIRTUAL METHODS FOR STUDENTS' PRACTICUM AT STUDYING CONTRACTILE MUSCLE FUNCTIONS

**Shimkevich E.M., Kalashnikova E.J., Lukyanova E.A., Protsenko V.D.**

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**The purpose:** to analyse level of training and perception of a material by students at use of virtual programs.

**Materials:** vertical myograph, kymograph, stimulator, Ringer's solution, «SimMuscle» license disk of «Virtual physiologists» series.

**Object of research:** a frog.

Most of Russian medical institutes use classical experiments with application of live biological objects at training of medical students. They don't use alternative methods, considering that a basis of physicians training is the received practical skills, including practical experience of preparing of biological objects. However the basic ethical question is use of animals in the laboratory researches not for new discoveries, but for acknowledgement of in advance known results.

For example, frog is usually prepared either by the teacher, or by one of students. All the rest are observers of performance of experiment only. Hence, the course in which use of live objects is practically supposed doesn't include preparing of these tissues by students. In virtual laboratories, preparation process can be shown via step-by-step video clips with possibility of repeating each step of process. Unlike the real experiment, in virtual laboratory each student has possibility independently to select indicators of devices, to see result, and if necessary to change parameters.

In collaboration with Normal Physiology department of medical faculty of the Peoples' friendship university of Russia the experiment for comparison of the virtual program and real experiment has been made. Laboratory work «Single muscle contraction. Tetanus. Optimum and pessimum» was choose. The group of students after listening of lecture on a theme «Physiology of muscles» has been divided on two subgroups.

The first subgroup passed laboratory preliminary received a muscular preparation of a frog. The second subgroup carried out the same experiment in a computer class with use of the computer program «SimMuscle», the developed by H.Brown (Marburg University, Germany). After that the test with practical questions has been given out students of both subgroups.

Both subgroups have shown similar results of control testing.

Thus, we can conclude that knowledge received by using alternative methods for education is comparable with results of classical techniques. Besides virtual systems frame conditions for creative intellectual process and dilate a circle of knowledge of students at the expense of synthesis of bases of biophysics, biocomputer science, physiology and the general biology.

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