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**Professional Culture of the Specialist of the Future**

**SYSTEM-MODULAR TECHNOLOGIES IN THE EDUCATIONAL  
PROCESS OF PHYSICAL CULTURE**

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***Abstract***

The article contains the results of the application of the system-modular technology of training at Peter the Great St. Petersburg Polytechnic University on the discipline «Physical Culture» as one of the progressive and the most effective form of organization of the educational process. The results of the structure, the content of the modular technology on the Aerobics discipline are presented, the system-modular technology assumes mobility and openness in the planning of each training session, concretizes the goals and tasks for achieving the result. A system of integrated control of the success of mastering the educational material within the content of each module is presented. The system of quality control of students' training in Aerobics specialization consists in creating conditions for activating cognitive and creative activity of students, strengthening their motivation for exercising. The analysis of efficiency of system-modular technology's application, and an estimation of its importance for practical activity is given. The developed scales of the grade-rating assessment of the success of the students' motor activity at all stages of training showed the objectivity of the physical preparedness and functional state of students' assessing, which creates the prerequisites for activating motor and cognitive activities, increases motivation to increase the extant of the work itself and maintain a healthy lifestyle.

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**Keywords:** System-module technology, discipline, motor potential of students.



## **1. Introduction**

System-modular technology of training at the university on the discipline «Physical Culture» is recognized as a progressive and the most effective form of organization of the educational process (Konovalova, Gorlova, & Rossoshanskaya, 2013; Habil, 2017). Planning and evaluation is focused on achieving a concrete result at all stages of students' education, promoting to the rational use of the motor potential of involved students (Lyakh, Rumba, & Gorelov, 2013; Goginava & Rumba, 2014). Modular training allows to adapt the educational process to the individual needs of the personality, the level of preparedness and efficiency (Gorelov, Gorelov, & Grigorovich, 2015; Efremova, Ivanova, Plotnikova, & Chaykovskaya, 2016).

## **2. Problem Statement**

The development and implementation of modular technologies in planning the curriculum for practical aerobics classes is actual and has a high pedagogical value (Bushma, Zuikova, & Lipovka, 2017). Under the module, we mean a relatively independent unit of the educational and practical program on aerobics, which includes:

- clearly defined goals and objectives;
- the variability of the module elements' content;
- component of learning process management;
- an evaluation component that provides control and correction of the learning outcomes of the students (Bushma, Volkova, & Zuikova, 2015).

The use of system-modular technology implies mobility and openness in the planning of each training session, concretizes the goals and objectives for achieving the result. The practical section of the Aerobics training discipline is presented in the form of modules and their components. This system of aligned components of the module is implemented in the structure of training sessions and can vary depending on the level of the students' motor skills, while the target focus of the program is preserved (Mironova, Dementev, Pristav, Ustinova, & Grigorev, 2015; Nikolaenko, Grakhova, & Rakhimov, 2015).

## **3. Research Questions**

- 3.1. To develop a structure and content of modular technology on the discipline «Aerobics».
- 3.2. To implement a system of complex control of the success of mastering the educational material within the content of each module.
- 3.3. To analyze the effectiveness of the application of system-modular technology, to assess its significance for practical activities.

## **4. Purpose of the Study**

The organization of the educational process on the specialization of Aerobics with the use of system-modular technology of training.

## 5. Research Methods

- 5.1. analysis of literature,
- 5.2. sociological survey of students,
- 5.3. pedagogical supervision,
- 5.4. pedagogical experiment,
- 5.5. testing,
- 5.6. methods of mathematical statistics.

## 6. Findings

The organization of the study was carried out stepwise on the basis of the Institute of Physical Culture, Sport and Tourism of SPbPU, on Aerobics discipline from 2014 to 2018.

At the first stage, goals and objectives, diagnostic methods of research and criteria for their evaluation; modules' software content and their components were defined.

At the second experimental-search stage, split-leveled by the complexity of the content algorithms for realizing the practical part of the discipline, tested at training sessions, were modeled; their correction was carried out.

At the third stage, the results of the test tasks were analyzed, conclusions and practical recommendations were formulated.

For an objective assessment of the augmentation in motor qualities, a system of adequate tests, quantitative and qualitative evaluation criteria, which determined the strategy of the educational vector of training sessions, was used (Razuvanova, Koshelskaya, Karpova, & Medvedeva, 2016; Paulino, Sá, & Lopes, 2016; Zohreh, 2017).

The organization of the educational process for Aerobics specialization is presented in the form of a balanced set of modules that compose the basis of the practical course. Each module and their components reflect the content of the training, serve as a methodical guide to the mastering of the educational material and appear as the elements of the design, forming the system-modular program of the Aerobics training discipline.

The design of the lesson program is determined by the basic preparedness of the students and can have a low, medium or high level of complexity. Such an algorithm is oriented to the implementation of a specific pedagogical result, is accessible, visual and helps students to adapt more quickly to educational loads, observing didactic principles of education (Wójcik, 2017; Obraztsov, Uman, & Fedorova, 2017).

Module 1. The warming-up module (M1) ensures homogeneity of the effect in the preparatory part of the classes by means of basic aerobics (basic aerobics steps and their variations) and a set of general development exercises taking into account the specificity of the dance style of the subject. The proposed workout options are lined up in a sequential chain, performed at a slow or medium tempo of 110-130 beats per minute at a heart rate of up to 120 beats per minute in a non-stop style with modern musical accompaniment.

Module 2. The dance module (M2) helps to master your body better, gracefully move and control your movements, form a movement culture and expand the base of motor skills, provide multifaceted impact on the body (weight reduction, posture improvement, shaping, health improvement, etc.), develops plasticity, flexibility and coordination of movement, affects the psycho-emotional component of students.

The M2 components are the complexes consisting of exercises:

various types of dance aerobics: latin, salsa, merengue, samba, tango, afro, belly dance, funk, jazz, hip-hop, rap, folk, etc.;

- with elements of Thai boxing, karate, aikido, boxing, wushu, etc.;
- with elements of classical and modern choreography;
- with a variety of devices: step, fitball, slide, etc.

Each dance complex is characterized by movements and music that correspond to a certain style. A variety of influences largely depends on the choice of musical accompaniment. The complexes are sequentially connected in a single module (from 6 to 10) and are performed in the main aerobic part of the session. The recommended intensity of the load is provided by the heart rate of 65-80% of the maximum, that is, 140-160 beats per minute - the optimum pulse for a student of 18 years.

Module 3. The module for the development of motor qualities (M3) purposefully solves the problems of:

- development and improvement of the level of physical fitness;
- satisfaction of the body's natural need for optimal muscle activity;
- personal motivation of students to correct the problem areas of the figure.

The M3 components are the power complexes of exercises, the complexes of exercises for the development of flexibility, performed in the main part of the training session. Each power complex is aimed at the development of a certain group of muscles and consists of 8-12 different exercises. The selection and construction of the module on the basis of its content is determined by the tasks of the specific training session. The execution of the module is recommended with 10-second pauses between the complexes in the zone of medium intensity at a heart rate from 100 to 140 beats per min.

Module 4. The control module (M4) ensures the objectivity of quantitative and qualitative indicators at all stages of the control, the results of which characterize the effectiveness of the introduction of system-modular training technology in the Aerobics specialization.

The effective component of the module reflects the quality of the application of the learning technology and includes:

- analysis and assessment of the extent of learning by students the practical material;
- phased-gate diagnostics of development of motor qualities and functional status of students;
- accomplishment of the program of independent assignments developed by Aerobics specialization instructors for each module;
- the model of the grade-rating evaluation of the level of students' academic achievements developed by the teachers.

The system of quality control of students' training in Aerobics specialization consists of creating conditions for activating cognitive and creative activity of students, strengthening their motivation for physical exercises.

As a result of the introduction of system-modular technology on the specialization of Aerobics, there was a positive dynamics of physical and functional state in 94% of students, an increase in attendance of second-year classes by 71%.

Analysis of the results of independent work within the content of each module showed a significant improvement in the quality of tasks, increased motivation and cognitive activity in training. 90% of students noted that an important condition for motivational activity is the correspondence of the content of independent works to their interests and opportunities.

The results of the pedagogical survey showed that:

only 35% of students consider themselves to be completely healthy;

38% of freshmen don't want to exercise;

92% of students consider it necessary to have the opportunity to independently choose the type of motor activity;

66% of respondents believe that openness and concretization of the content of classes is an incentive for self-improvement;

82% of sophomores are engaged in aerobics, taking into account personal interests;

73% of respondents feel satisfaction from their studies.

## **7. Conclusion**

The introduction of a modular system in the educational process is helped by modern information technologies that form a new style of work for both the teacher and the student (Volkov, Volkova, & Lutchenko, 2014; Raitina, Yurmazova, Plankina, & Raitin, 2016; Sílvia, Bernardo, & Feliciano, 2017; Steinberg, 2017). Specificity of the discipline requires visual qualitative and accessible methodological aids, training complexes of exercises for different levels of physical fitness of students. Information blocks of exercises are presented by video files that help students to master and improve the practical section of the aerobic training program. Looking through the video, the student learns the technical features of the movements at the right pace, concentrating on the most difficult moments for him. The use of computer technologies ensures accessibility to the material at any convenient for the student time.

- 7.1 System-modular technology for teaching students was developed and tested in the practical section of the curriculum on aerobics, filling of each module and its components with the possibility of correction of content and complexity, depending on the initial test scores of students was structured.
- 7.2 System-modular technology is presented as a program for teaching students practical activities and is controlled by the success of the test tasks, independent work within the content of each module.
- 7.3 The developed scales of the grade-rating assessment of the success of the motor activity of students at all stages of training showed the objectivity of the assessment of the physical fitness

and functional state of the students, which creates the prerequisites for activating the motor and cognitive activity, increases the motivation to the volume swell of the work itself and maintain a healthy lifestyle.

- 7.5. The organization of the educational process on Aerobics specialization on the basis of system-modular technology increases the efficiency and quality of classes, takes into account the personal needs and opportunities of students, improves the attendance rate of training sessions.
- 7.6. The system-modular technology contributes to the realization of potential opportunities for students, allows the teacher to approach differently the training of everyone, motivating them to achieve a concrete result.

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