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THE USAGE OF MODULAR-RATING TECHNOLOGY IN THE EDUCATIONAL PROCESS OF PHYSICAL CULTURE

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Abstract

The article presents the developed technology of complex rating-control for assessing the knowledge, motor skills and attainments of students engaged in aerobics in a technical university, criteria of estimation the independent work of students of a technical university on the specialization of Aerobics. The methodology of modular-rating control of students' motor activity in practical aerobics classes, rating evaluation tables is presented. The system of rating control on the specialization of Aerobics includes 4 modules, the implementation of which allows the student to score 100 points. The substantive part of each module is based on traditional methods and forms of organization of evaluation. The adapted bases of rating control to the specifics of the educational process on the discipline "Aerobics" are presented. The effectiveness of the developed evaluation criteria is given. A modular-rating control technology that allows to evaluate the quality of the student's aerobics activities, ensuring active, creative, joint activity of the teacher and student has been developed. The openness of the control system allows the student to control the level of his achievements and make informed decisions in the chosen form of motor activity independently. The rating control system allows the teacher to approach the training of each student in a different way, motivating him to achieve a specific result, thereby increasing the effectiveness of training.

Keywords: Criteria of estimation, rating-control the independent work of students.

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1. Introduction

Under the conditions of modernization of tertiary education, the discipline "Physical Culture" needs a qualitative renewal, a search for new learning technologies (Lyakh, Rumba, & Gorelov, 2013; Politsinskaya, Sushko, & Semerenko 2016; Efremova, Ivanova, Plotnikova, & Chaykovskaya, 2016; Shchegolev, Lipovka, & Korshunov, 2016; Habil, 2017). The implementation in the educational process of innovative technologies creates the necessary conditions for students to have a creative approach in solving problems in their future professional activity. Innovative transformations in the specialization of Aerobics have a wide range of focus:

- updating and adjustment curriculum content;
- increasing of motivational activity of students to physical training, their adaptive well-being;
- monitoring of physical preparedness, functional and psychological state of students;
- creation of educational and methodological base, new generation benefits (Bushma, Zuikova, & Lipovka, 2017).

The effectiveness of innovations introduced in the university is assessed by results, which requires the development of appropriate forms of control and characterizes both the quality of the educational process and the student's learning activity in practical classes (Bushma, Volkova, & Zuikova, 2015; Steinberg, 2017). The introduction of the rating system organizes the educational process, strengthens the motivation of involved, provides for the possibility of a differentiated approach to teaching students, controlling their practical skills, contributing to the preservation and strengthening of the health of student youth (Mironova, Dementev, Pristav, Ustinova, & Grigorev, 2015; Nikolaenko, Grakhova, & Rakhimov, 2016; Lubysheva 2017).

According to many researchers, the rating method as a way of assessing knowledges, skills and attainments refers to the progressive methods of control. The application of the rating is a system that organizes the educational process and influences its effectiveness actively (Zagrevskaya, 2007; Starchekov, 2005).

2. Problem Statement

To develop a technology of complex rating-control for assessing knowledges, motor skills and attainments of students engaged in aerobics in a technical university

3. Research Questions

3.1. To develop a methodology for modular-rating control of students' motor activity in practical aerobics classes, rating evaluation tables.

3.2. To adapt the basis of rating control to the specifics of the educational process in the Aerobics discipline.Please replace this text with context of your paper.

3.3. To check the effectiveness of the developed estimation criteria. To assess the possibility of using them in teaching practice.

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4. Purpose of the Study

4.1. The purpose of the study: substantiation of the effectiveness of the modular-rating system's application as a method for assessing the quality of students' progress in aerobics classes.

4.2. The object of the research: a modular-rating system for assessing the activities of students engaged in the specialization of Aerobics.

5. Research Methods

5.1. Studying of literary sources

The analysis of literary sources allowed us to consider the module-rating system for assessing students' practical activity in the discipline "Physical Culture" as one of the innovative technologies that allow not only to assess the student's educational activity during the period of study at the university, but also to characterize the effectiveness of the educational process, to attract students to physical exercise.

5.2. Methods for testing the physical and functional preparedness of students

5.3. The Poll

5.4. The Questionnaire

5.5. Methods of mathematical statistics

6. Findings

The pedagogical experiment was conducted on the basis of the Institute of Physical Culture of Sport and Tourism of SPbPU on the specialization of Aerobics, 328 students of 1st and 2nd courses took part in it. The organization of the study was carried out in 3 stages.

At the first stage we developed evaluating modules and rating control scales that take into account the specifics of Aerobics, conducted a pedagogical survey, defined test tasks and criteria for their evaluation **(**Paulino, Sá, & Lopes, 2016; Zohreh, 2017; Yukiko, 2017).

The system of rating control on the specialization of Aerobics includes 4 modules, the accomplishment of which allows the student to score 100 points. The substantive part of each method relies on traditional methods and forms of organization of evaluation.

Module 1. Assessment of attendance during the term (table 01).

Table 01. Assessment of attendance of physical education classes

Score	**1**	**2**	**3**	**4**	**5**
Attendance as %	10-29%	30-49%	50-69%	70-84%	85-100%

6.1. Module 2. Assessment of students' physical preparedness

Physical fitness is characterized by the degree of development of the basic motor qualities. The content of the module includes compulsory and additional test tasks approved by the department and Aerobics specialization in assessing the speed-strength qualities, endurance and flexibility. Evaluative

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scales, where each result corresponds to a certain score from 1 to 5, have been developed (table 02). The maximum number of points a student can gain is 50 (Wójcik, 2017; Obraztsov, Uman, & Fedorova, 2018).

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Table 02. Assessment of the results of testing the physical preparedness of students

Score	1	2	3	4	5
Trunk lifting from a supine position, q-ty of times per 30 sec.	To 10	10-15	16-20	21-25	Over 25
Trunk lifting from a prone position, q-ty of times per 30 sec.	To 20	20-25	26-30	31-35	Over 35
Flexion and extension of hands from a prone position, q-ty of times per 30 sec.	To 15	15-20	20-25	26-30	Over 30
Running 100 m	15,7	16,0	17,0	17,9	18,7
Trunk lifting from a supine position, q-ty of times per 1 min.	To 20	20-27	28-35	36-44	Over 44
Flexion and extension of hands from a prone position, q-ty of times per 1 min.	To 30	30-40	41-50	51-60	Over 60
Running 2000 m	10.15	10.50	11.15	11.50	12.15
Trunk lifting from a supine position, q-ty of times	To 40	40-60	61-80	81-99	Over 99
Flexion and extension of hands from a front plank on a bench, q-ty of times	To 3	3-8	9-15	16-25	Over 25
Trunk bending standing on a gym bench, sm	To 5	6-10	11-15	16-20	Over 20

6.2. Module 3. Assessment of the functional state of students

The most important indicator of the functional state of the cardiovascular system is the pulse (heart rate) and its changes. We included five indicators in the content of the module (table 03). The maximum number of points a student can gain is 25.

Table 03. Assessment of physical fitness and health of students

Score	1	2	3	4	5
Resting heart rate	Over 100 bpm	90 – 99 bpm	80 – 89 bpm	71 – 79 bpm	Less than 70 bpm
Pulse excess	Over 100 %	75% - 100%	50% - 75%	25% - 50%	До 25 %
Recovery time after 20 sit-ups, in 30sec., per min.	Over 7	5 – 7	3 – 5	2-3	Less than 2
The value of the Ruthier index	Over 10	8 – 10	6 – 8	4 – 6	Less than 4
Number of diseases per term	Over 3	3	2	1	0

6.3. Module 4. Assessment of the student's independent and creative work.

The criteria of estimation the level of students' creative potential, the ability to perform tasks independently, and the students' interest in the creative approach of accomplishment the independent work were developed and tested in practical exercises (table 04). The content of the module includes preparation and conduct of the preparatory part of the lesson; the main part of the aerobics classes; compilation and

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carrying out with the group of a complex of power exercises; compilation and study of a complex of dance exercises in aerobics. The maximum number of points a student can gain is 20.

Table 04. Criteria of estimation the independent work

№ sub-s	**Criteria**	
1	Musical accompaniment and choreography of movements	The musical accompaniment is not monotonous, it has a style and a melody.
		The musical accompaniment has a beginning, an ending, phrases, accents, rhythmic beats.
		Exercises are made in full conformity with the style and nature of the selected music.
		The movements coincide with the beginning, ending, phrases, accents, rhythm and tempo of the music.
		Exercises are smoothly and consistently combined with each other in coherence with the structure of the music.
2	Exercise Technique	Correct position of the body, posture, poise while doing exercises.
		Exercises are performed with perfect technique, maximum accuracy, accurate locus.
		Exercises are performed with both the right and left legs.
		Exercises are continuously combined without unnecessary pauses.
		A high level of physical preparedness (strength, flexibility, endurance, amplitude) is demonstrated.
3	Complexity and coordination of movements	Simultaneous participation in the exercise of a large number of body parts (head, shoulders, hands, feet, etc.)
		Using asymmetrical movements of the hands and feet.
		Changing the orientation in space, changing the direction of motion.
		The combination of various movements in a bunch, a path of steps, jumps with movements of hands.
		Change in the rhythm or amplitude of motion.
4	Evaluation of the creative component	A variety of exercises due to the use of asymmetric movements, changes in rhythm, amplitude and direction of movement.
		Not only familiar exercises are included, but also new and unique movements.
		Throughout the exercise, movements are shown in different directions (back and forth, aside, diagonally, angle wise, rotationally, etc.).
		Formation of new exercises in a bunch.
		Originality of the independent work's presentation.
5	Artistry	Artistry and natural, unaffected expression.
		Execution is expressive and emotional.
		Exercises are carried out, leaving the impression of lightness and fusion, with a high degree of perfection and virtuosity.
		An ability to control facial expression during the execution of movements.
		Self-giving, passion and energy are shown in the performance of exercises.

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At the second stage, the developed system of modular-rating control at the beginning and the end of the academic year was used in the practice of the educational process, aimed at assessing the student's personal achievements in the specialization of Aerobics. With the help of a poll at the beginning and at the end of the academic year, a study of the motives that induce students to do aerobics was conducted.

At the third stage the results of polling and testing students at the beginning and at the end of the academic year were analyzed, a comparison of the initial and final data was done, conclusions and practical recommendations were formulated.

The rating of each student is made up of the assessments received for each module. The effectiveness of the developed modules is determined by the ability to capture the reliability of the result, to create prerequisites for implementing an individual, differentiated approach to learning, to monitor the dynamics of results and characterize the success of training.

7. Conclusion

The final rating was compared with the initial results shown at the beginning of the first term. (Volkov, Volkova, & Lutchenko, 2014; Raitina, Yurmazova, Plankina, & Raitin, 2016; Sílvia, Bernardo, & Feliciano, 2017). The reliable changes and positive dynamics of the results of the final rating at the end of the second year of study on specialization should be noted. The questionnaire revealed an increase in the number of respondents, having health-improving motives and increasing their communicative activity in the field of physical culture and sports of 37%. There was a decrease in the number of students attending classes in order to obtain an exam in time of 42%. Therefore, the rationally organized process of training on the specialization of Aerobics, which includes a modular-rating technology for assessing the individual achievements of the student, contributes to the formation of a motivational and needful attitude to physical culture, improves the performance and attendance of training sessions.

7.1. A modular-rating control technology that allows to evaluate the quality of the student's aerobics activity, ensuring active, creative, joint activity of the teacher and student has been developed.

7.2. The openness of the control system allows the student to control the level of his achievements independently and make informed decisions in the selected form of motor activity, namely:

- to determine the strategy of the educational vector of aerobics, taking into account the individual level of physical fitness;
- to assess the degree of adaptive resources of the body;
- to change the structure of motivational attitudes towards a healthy lifestyle;
- to develop creative potential, realizing their individual abilities in performing the independent work;
- to intensify learning activities, comparing their results with the results of fellow students

7.3. The rating control system allows the teacher to approach the training of each student in a different way, motivating them to achieve a specific result, thereby increasing the effectiveness of training.]

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