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ASSESSMENT OF STUDENTS' PROFESSIONAL COMPETENCES IN MEDICAL AND BIOLOGICAL DISCIPLINES

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Abstract. *The analysis of the specialized literature and the training methodology of the specialists in the field of physical education and sports allows us to mention that an education oriented towards the formation of competencies represents a necessary condition to apply a pedagogy of integration, where the student can become master of the situations could face in professional activity and personal life. To solve the problem mentioned in this article, we have theoretically researched and experimentally argued the process of training and assessment of skills specific to the module "Human physiology and motor activity" of students of physical education and sports through docimological tests (summative). The present research was conducted on a sample of second year students from the State University of Physical Education and Sports. In order to determine the level of training / development of professional competencies specific to the medical-biological disciplines of students, as well as to highlight the factors that influence their quality, during the 2018-2019 academic year we conducted a test, focused on assessing the level of possession of the knowledge, skills and abilities specified at the curriculum level. The analysis of the answers given by the sample of subjects included in the research at the initial stage of the pedagogical experiment, allows us to say that the level of acquisition of students' knowledge is low after the average score is 52.6 points and corresponds to grade 6 (six) required to review the methodology for teaching the curricular contents of the subjects that constitute the topics of the items proposed for evaluation at the end of semester 2 and to obtain superior results to the initial ones with a score of 67.5 points, which corresponds to grade 8 (eight), confirms that the methodology of training and assessment of professional skills in the module "Human physiology and motor activity" is correct and effective.*

Keywords: *assessment, professional skills, educational content, tests, physiological processes, etc.*

Introduction. Currently, in accordance with the normative acts that ensure the organization and development of the training process of specialists in the field of physical education and sports, a special interest in university education is the process of training and assessment of students' professional skills.

The evaluation identifies the learning outcomes, materialized in the competencies acquired by the students. The most commonly used assessment technique in intermediate tests and written exams is the summative test. The pedagogical functionality of a summative test is determined by the theoretical landmarks that underlie its elaboration.

In this regard, we consider that evaluation is a necessary component for the operation of any system and confirms its degree of efficiency. The data of the specialized literature [2, 4, 5, 6] and the practice of the educational process, identify two levels at which the evaluation can be conceived: a socio-economic evaluation and a pedagogical one. The first aims at the efficiency of the education system in terms of the relationship between the material and financial resources invested by society and the

results of education, materialized in the acquired skills.

The efficiency of pedagogical evaluation [6, 7, 8], as a component element of the educational process, depends to a large extent on the technique we apply. The most widely used assessment technique used in intermediate tests and written examinations is the summative test [4]. In order to determine the most frequent deficiencies in the students' knowledge, we conducted two tests in the disciplines "Human Physiology" and "Ergophysiology" which form the module "Human Physiology and Motor Activity".

Research methodology. In order to determine the level of training of professional skills specific to the medical-biological disciplines of the students of the faculties of physical education and sports, to highlight the factors that influence their quality, during the 2018-2019 academic year we conducted a test, which focused on assessing the level of possession of students' knowledge, skills and abilities. The given examinations were performed on a sample of second year students from the USEFS Faculties, thus conducting a cooperative research.

The testing included aspects of mastery / knowledge and understanding of general and particular physiological and sports terminology regarding the knowledge / possession of professional skills in students. The research sample consisted of 71 students. In order to perform the knowledge test, 2 standardized tests were elaborated, each following concrete objectives, containing directions, time limit for solving, verbal material, answer column, score for each item and total per test, evaluation grid. At the elaboration of the tests we were guided by the methodological-scientific elaborations of V. Cabac [2, 3], I.T. Radu [6], Vl. Paslaru, V. Cabac [7], Vl. Paslaru [8] which wide this issue.

One of the basic criteria in the professional training of students is their qualitative training, which is expressed by the correct acquisition from a scientific, morphological and structural point of view of all elements and processes / physiological processes / processes, as well as the quantitative one of determining and explaining specialized terms given domain.

Analysis and interpretation of research results. The obtained results show a poor preparation of the students in terms of argumentation, explanation, characterization, interpretation of mechanisms, notions, procedures related to human physiology (Table 1).

Table 1. Assessment of knowledge in the discipline "Human Physiology" (%)

	The question	Min 1p.	2p.	3p.	4p.	5p.	6p.	7p.	Max 8p.
1.	Argue the mechanisms that ensure the circulation of blood through the blood vessels.		3,33		20	46.67	30		
2.	Explain the volume of oxygen in the blood.		6.67	60	33.33				
3.	Define blood pressure and the factors that cause it.		5	10	23.33	51	10		
4.	Characterize linear velocity and volumetric blood velocity. Changes in these indices in effort.			16.67	43.33	23.33	16.67		
5.	Define gas partial pressure and its role in gas exchange in the lungs and tissues.			53.33	46.64				
6.	Interpret the arterial-venous difference of oxygen and the notion of oxygen-volume of the blood.	3.33	3.67		30	43	20		
7.	Characterize carbohydrate metabolism, carbohydrate functions, and their role in exercise.			6.6	10	60	23.33		

8.	Argue the importance of water and mineral salts for the body.			3.30		70	26.7		
9.	Explain the influence of physical exertion on the function of the kidneys and sweat glands.		6.67	20	30	26.7	10	**6.67**	
10.	Name the glands with internal secretion and classify the hormones according to their chemical structure.			1.3	2.7		42	**24**	**30**
11.	Explain the role of the pancreas in physical exertion.			6.7	23.3	40	30		
12.	Argue the role of the vestibular and motor analyzer in directing movements.			3.4	13.3	60	23.3		
13.	Characterize the general structure and functions of the central nervous system.		8		30	53.3	8.7		
14.	Name the functions of the spinal cord, midbrain, and diencephalon.			73.3	26.7				
15.	Define and classify the body's reflexes.		16.7	70	13.3				

Scoreboard:
85 – 80 p NOTE „10" 79 – 74 p NOTE „9" 73 – 67 p NOTE „8" 66 – 61 p NOTE „7" 60 – 56 p NOTE „6" 55 – 50 p NOTE „5" 49 p … insufficient score

From those presented in Table 1 we can see that in item 9 *"The influence of physical exertion on the function of the kidneys and sweat glands"* more than half of the students accumulated 2 points (6.67%), 3 points (20%) and 4 points (30%) this item was marked with a maximum score of 7 points obtained by only 6.67% of students. This is explained by the fact that students do not know deeply the general problems related to the field of physiology in general and human, they are limited only to the superficial description of the working mechanisms of the body, which is reflected in the score obtained.

However, a small percentage of students demonstrated deep knowledge in this field, obtaining a maximum score (30%) for most of the proposed items (items 1, 10 and 15).

The analysis of the data regarding the knowledge of the physiological aspects of the human body within the motor activities we observe that out of the total number of tested students, the most accumulated points that fall within the limits of the average (3-4-5 points). This proves once again that students do not fully master the knowledge provided by the teacher and give little time for thorough learning of the physiological processes in the body, which is very important for the future specialist in physical education and sports.

In order to determine the level of training of the competencies specific to the discipline "Ergophysiology", we carried out a test of the second year students. The test consisted of 27 items, each being rated with points per item and per test (Table 2).

Table 2. Assessment of knowledge in the discipline "Ergophysiology" (%)

	The question	**Min 1p**	**2p.**	**3p.**	**4p.**	**5p.**	**Max. 6p**
1.	What is the need to know the physiology of motor activity for physical education teachers and coaches.		65.38	34.62			
2.	Give the definition of "starting state" and characterize the physiological mechanisms of this state.		49.04	50.96			
3.	Define the notion of heating, and characterize the physiological aspects of this process.	52.89	47.11				

4.	Explain the process of framing in effort and characterize the forms of this process.	35.58	64.42				
5.	Stable condition, phases and physiological joints of this condition.	50.0	50.0				
6.	Describe the processes of "fatigue" and characterize the physiological mechanisms of these processes.		37.5	36.54	25.96		
7.	Define the recovery processes and characterize the physiological processes of this condition. Phases of recovery.	8.65	20.2	39.42	31.73		
8.	Characterize the essence and physiological mechanism of motor skills formation.			20.20	32.69	34.61	12.5
9.	The role of vegetative components in the development of motor skills.	8.65	91.35				
10.	Characterize the conditions for the manifestation of muscle strength.			39.42	60.58		
11.	Define absolute, relative muscle strength and strength deficit		47.11	52.89			
12.	What are the clues that characterize the exercise capacity of the muscles?	6.73	20.20	43.27	29.80		
13.	What we call "muscle hypertrophy" and what is its morphofunctional aspect.		4.80	60.59	34.61		
14.	Characterize the forms of manifestation of speed	4.80	6.74	50.96	37.5		
15.	What is the morphofunctional aspect of the manifestation of speed?		25.96	37.5	36.54		
16.	Define the quality of "resistance" and its forms.	25	75				
17.	What is the role of maximum O2 consumption (max. VO2) for training aerobic endurance and assessing the health of the population?		25.08	20.50	17.3	15.02	22.1
18.	What are the indications and physiological mechanisms of anaerobic endurance?		7.7	37.5	54.80		
19.	What are the indications and physiological mechanisms of aerobic endurance?		9.62	39.42	50.96		
20.	Characterize the morphofunctional aspect of training and training efforts.			13.46	41.35	45.19	
21.	Characterize the biological principles of training.			34.62	65.38		
22.	Characterize the morphofunctional indices of the controlled training state during the relative rest state.	2.89	35.58	61.53			
23.	Characterize the morphofunctional indices of the controlled training state of the dosed effort.	8.66	45.19	46.15			
24.	Characterize the morphofunctional indices of the controlled training state of the maximum effort	6.73	40.39	52.88			
25.	Characterize the morphofunctional indices of the controlled state of training during the recovery period.	5.78	38.46	55.77			
26.	What are the changes in the cardiovascular system generated by sports training.				25.96	37.5	36.54
27.	Characterize the morphofunctional aspect of the training state.			15.38	20.19	36.55	27.88

Scoreboard:

100 – 95 p NOTE „10”; 94 – 89 p NOTE „9”; 88 – 82 p NOTE „8”; 81 – 76 p NOTE „7”; 75 – 70 p NOTE „6”; 69 – 64 p NOTE „5”; 63 p … insufficient score

The purpose of this test (Table 2) was for students to define the basics, to argue the physiological processes that take place in the body, the physiological mechanisms of the body, to explain the connection of athletes' health in correlation with morphofunctional indices of training, and characteristic of the physiological peculiarities of different states of the organism.

The analysis of the answers given by the subjects included in the research allows us to find that a good part of the students obtained a low score in a series of items proposed for solving, such as in Item 7 *."Define the recovery processes and characterize the physiological processes of this condition. The recovery phases"*- 8.65% of the students obtained a point out of the 4 reserved for this item and 31.73% obtained the maximum score. From the mentioned results, the students do not give enough time to study the recovery processes and do not know enough about the rehabilitation processes, this being a strong point of sports medicine. Next, we see that the same situation is outlined in a few other items such as: item 12 *"What are the clues that characterize the effort capacity of the muscles?"* out of the maximum score of 4 points, 6.73% of the students obtained a point, the maximum score being accumulated by 29.80% of students, item 14 *"Characterize the forms of manifestation of speed in physical education and sports activities"*, 4, 80% accumulated one point out of the 4 possible for this item, the others accumulated 2 points each - 6.74% of students, 50.96% accumulated 3 points, the other 37.5% of students accumulating maximum points. From the above it can be seen that students do not have lasting knowledge about the notion of speed and the forms of its manifestation.

At the items with the highest score reserved for students: item *8 "Characterize the essence and mechanism of development of motor skills"* most students obtained an average score of 4 (32.69%) and 5 (34.61%) points. This situation is explained by the fact that students do not master the study material well, they assimilate it only superficially. We can follow the same situation in item 17. *"What is the role of maximum O2 consumption (max. VO2) for training aerobic endurance and assessing the health of the population?"*, average score 2 points - 25.08%, 3 points - 20.50%, 4 points - 17.3 %, 5 points - 15.02% and a maximum score of only 22.1% of students.

Concluding those mentioned in Table 1 and Table 2, we can say that the level of knowledge acquisition of students is low and desirable, which requires us to review and improve the curricular contents of the disciplines that are the topics of the proposed items for solving and also, the improvement of the tests in order to obtain a clearer image on the development of the researched problem.

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