

UDC 378.14:796

EDUCATIONAL MODEL OF PHYSICAL TRAINING OF STUDENTS OF BIO-TECHNOLOGICAL PROFILES

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<https://doi.org/>

Abstract

In modern socio-economic conditions professional training of students in higher educational institutions is of great importance, which most concretely represents the principle of organic connection of physical education with the practice of work. The assistance in the preparation of harmoniously, highly skilled specialists is the purpose of physical education in educational institutions. In the process of training in the course of physical education, the following tasks are to be solved: education of students of high moral, volitional and physical qualities, readiness for highly productive work; preservation and strengthening of health, assistance in the correct formation and comprehensive development of the body, support of high working capacity throughout the period of training; comprehensive physical training of students; their profile physical training taking into account the peculiarities of future labor activity; acquisition of students the necessary knowledge on the basics of theory, methodology and organization of physical education and sports training; education of students convinced of the need to regularly engage in physical education and sports. Ukraine has a wide range of activities that create the necessary working and living conditions, improve the external environment, including the production environment, the further development of health care. At the same time, human activity, physical culture and sports are important factors for improvement, health improvement, which ultimately enhances the creative activity of man and his ability to work. Physical culture is an integral part of human life. Physical exercises play a significant role in the ability of members of society, which is why knowledge and skills in physical culture should be laid out in educational institutions of different levels in stages.

Despite the scientific achievements in the physical education and sport system, most of the issues of professional training were left out of the attention of domestic and foreign physicists and sports scientists. Taking into account this, we faced the task of developing an educational model of the professional physical training of students of the specialty of production and processing of livestock products and to identify the main components of the content of major physical training. We have developed the content of the curriculum for students of the specialization of the production and processing of livestock products, which consisted of two blocks: physical education and physical training.

Key words: major physical training, content, education, experts, model, students, occupations, experiment, physical education.

Богдан Семенів, Андрій Бабич, Петро Біленький, Олександр Ковбан. Освітня модель профілюючої фізичної підготовки студентів біолого-технологічних профілів. У сучасних соціально-економічних умовах важливого значення набуває професійна підготовка студентів у ВНЗ, яка найбільш конкретно втілює принцип органічного зв'язку фізичного виховання з практикою трудової діяльності. Мета фізичного виховання в навчальних закладах – сприяння підготовці гармонійно розвинених, висококваліфікованих фахівців. У процесі навчання з курсу фізичного виховання передбачено виконання завдань: виховання в студентів високих моральних, вольових і фізичних якостей, готовності до високопродуктивної праці; збереження й зміцнення здоров'я, сприяння правильному формуванню та всебічному розвитку організму, підтримки високої працездатності впродовж усього періоду навчання; усебічна фізична підготовка студентів; їх профілююча фізична підготовка з урахуванням особливостей майбутньої трудової діяльності; придбання студентами необхідних знань з основ теорії, методики й організації фізичного виховання й спортивного тренування; виховання в студентів переконаності в необхідності регулярно займатися фізичною культурою та спортом. В Україні здійснюється широкий комплекс заходів, що створюють необхідні умови праці та побуту, оздоровлення зовнішнього, у тому числі й виробничого, середовища, подальший розвиток охорони здоров'я. Водночас активність людини, засоби фізичної культури та спорту є важливими чинниками вдосконалення, зміцнення здоров'я, що, у підсумку, підвищує творчу активність людини, її працездатність. Фізична культура – невід'ємна частина життя людини. Вона займає досить важливе місце в навчанні, роботі людей. Заняття фізичними вправами відіграють значну роль у працездатності членів суспільства, саме тому знання й уміння з фізичної культури повинні закладатися в освітніх установах різних рівнів поетапно.

Нами розроблено зміст програми профілюючої фізичної підготовки студентів спеціальності виробництва та переробки продукції тваринництва, який складався з двох блоків: фізкультурна освіта та профілююча фізична підготовка.

Ключові слова: профілююча фізична підготовка, зміст, освіта, експерти, модель, студенти, заняття, експеримент, фізичне виховання.

Богдан Семенов, Андрей Бабич, Петр Беленький, Тарас Приставский, Александр Ковбан.
Образовательная модель профилирующей физической подготовки студентов биолого-технологических профилей. В современных социально-экономических условиях важное значение приобретает профессиональная подготовка студентов в вузах, которая наиболее конкретно воплощает принцип органической связи физического воспитания с практикой трудовой деятельности. Целью физического воспитания в учебных заведениях является содействие подготовке гармонично развитых, высококвалифицированных специалистов. В процессе обучения по курсу физического воспитания предусматривается решение задач воспитания у студентов высоких моральных, волевых и физических качеств, готовности к высокопроизводительному труду; сохранение и укрепление здоровья, содействие правильному формированию и всестороннему развитию организма, поддержание высокой работоспособности на протяжении всего периода обучения; всесторонняя физическая подготовка студентов; их профилирующая физическая подготовка с учетом особенностей будущей трудовой деятельности; приобретение студентами необходимых знаний по основам теории, методики и организации физического воспитания и спортивной тренировки; воспитание у студентов убежденности в необходимости регулярно заниматься физической культурой и спортом. В Украине осуществляется широкий комплекс мер, создающих необходимые условия труда и быта, оздоровления внешней, в том числе и производственной, среды, дальнейшее развитие здравоохранения. Вместе с тем, активность человека, средства физической культуры и спорта являются важными факторами совершенствования, укрепления здоровья, в конечном итоге повышает творческую активность человека, его работоспособность. Физическая культура – неотъемлемая часть жизни человека. Она занимает достаточно важное место в учебе, работе людей. Занятия физическими упражнениями играют значительную роль в работоспособности членов общества, именно поэтому знания и умения по физической культуре должны закладываться в образовательных учреждениях различных уровней поэтапно.

Несмотря на имеющиеся научные достижения в системе физического воспитания и спорта, большинство вопросов профилирующей физической подготовки остались без внимания отечественных и зарубежных ученых по физическому воспитанию и спорту. Учитывая это, перед нами встала задача разработать образовательную модель профилирующей физической подготовки студентов специальности производства и переработки продукции животноводства и определить основные компоненты содержания профилирующей физической подготовки. Нами разработано содержание программы профилирующей физической подготовки студентов специальности производства и переработки продукции животноводства, состоящий из двух блоков: физкультурное образование и профилирующая физическая подготовка.

Ключевые слова: профилирующая физическая подготовка, содержание, образование, эксперты, модель, студенты, занятия, эксперимент, физическое воспитание.

Introduction. Domestic and foreign scientists on physical education and physiology have determined the state of professional training of students of higher educational institutions of about one hundred specialties. The analysis of literature and practice has shown that despite the undeniable scientific achievements in the field of physical education, a considerable part of the questions of major training of students of higher educational institutions was left out of the attention of domestic and foreign scientists of physical education and physiology. Even where the specified type of physical education is carried out at a high organizational-methodical level, the effectiveness of physical training with the account of the chosen specialty is available only for the period of students studying in higher educational establishments. After graduating from the educational institution graduates quickly lose their level of physical training and, as a rule, do not use the acquired skills and abilities to increase their physical fitness, increase their special ability to work and prevent professional diseases. All this testifies to the need to improve the curriculum of the student's physical education.

In recent years, many searches have been conducted on the study of the problem of reducing motor activity of student youth in the process of learning [1; 3; 4], improvement of the contents of physical education of students [7; 8]. Several authors emphasize the need to use the latest technologies and techniques in physical education students higher educational institutions to increase motivation in classes [1; 5; 11].

Fundamentals of special physical training, taking into account the specifics of future professional activities, are laid down in the works of R. T. Rayevskiy, V. A. Maksymovych. Problems of increasing the

effectiveness of profile physical training are devoted to the work of V. A. Romanenko, G. G. Lapshyna and others.

Due to many scholars, in particular L. P. Pylypej, O. I. Podlesnyj, S. I. Prisyajnyuk, B. S. Semeniv were defined contents, forms and methods of using physical culture and sports to increase the effectiveness of young specialists training. It which made it possible to organize in many higher educational institutions of the country targeted work on the physical training of students, taking into account the profession chosen by them [1; 3; 11]. Such attention is due to the fact that profiling physical training is one of the forms of preparation of students for future work [4; 9].

However, noting the scientific and practical interest in the problem of professional training of students, it is possible to state, that this direction in the system of physical education requires further study and improvement. Examples of profound scientific substantiation of the main physical training of students in a number of specialties do not solve this important problem for all higher educational institutions, especially those trained to be future specialists in the production and processing of livestock products. However, the labor efficiency of the technologist for the production and processing of livestock products largely depends on his individual abilities in terms of productive mental labor, the degree of endurance and the restoration of the functions of his organism, that is from his ability to work. Scientists of physical education and physiology proved, that a low level of physical and mental work capacity leads to rapid fatigue and overwork, a large number of errors and failures in the technological process of production, decrease in creative activity [5; 8]. A good functional state of the organism, in the first place, the cardiovascular and central nervous system, which has a maximum load [5; 6; 9], is of great importance for the successful work of the livestock production technologist. Searches have shown that technologists who are engaged in physical education are less likely to seek medical care than their non-athletes [8].

The Purpose of the Search. Physical education gives students knowledge, skills that will allow him to independently identify factors that negatively affect his state of health, compile and implement complexes of purposeful fitness and health training regimes, aimed at health improvement, prevention of professional diseases, increase of special ability to work and maintain it at a high level in the course of all professional activities.

Research Objectives.

1. To develop an educational model for professional physical training of students of LNUVM and BT named after S. Z. Gzhytskyj.
2. To carry out an experimental verification of the developed educational model of professional physical training of students of LNUVM and BT named after S. Z. Gzhytskyj.

Material and Methods of Research

The object of scientific research: educational process of profile physical training of students.

Subject of research: content, forms, means, methods of formation of knowledge, skills and abilities of students of LNUVM and BT named after S.Z. Gzhytskyj from the profile physical training in the process of physical education.

Research Methods:

1. Theoretical: analysis of educational normative documentation, psychological, pedagogical and methodical literature with the purpose of determining the state and perspectives of research problem; comparison of different views of scientists on the problem under investigation to determine the research directions and conceptual-categorical apparatus.
2. Empirical: pedagogical observation of the educational process, questioning and pedagogical testing for diagnosing the level of physical preparedness of student youth; pedagogical experiment (stated, forming) for the purpose of obtaining the information necessary for the development of an educational model of professional physical training of students in the process of learning, formation of knowledge, skills and motor abilities in the system of physical training of students, as well as to check its efficiency and improve the students health.
3. Mathematical methods of information processing.

Research Results. Discussion. The research was conducted on the basis of the Lviv National University of Veterinary Medicine and Biotechnologies named after S. Z. Gzhytskyj.

In with of experts of the department of physical education, sports and health of LNUVM and BT named after S. Z. Gzhytskyj (11 teachers) and professorial departments (27 teachers of LNUVM and BT named

after S. Z. Gzhytskyj), an educational model was proposed in the course of students' profiling physical training.

87,5 % of the experts actively supported our thesis on changing the priorities in the work on the physical education of students: it is much more important to give the student the necessary physical education than to solve the issues of their own physical training. The experts were motivated by their decision that any achievements in the physical training of students at the educational institution will quickly disappear after its completion, if the graduate is not able to continue such work on their own. It should be noted that the issue of proper profiling of fitness during training in the educational institution, experts also considered important, however put it in second place.

According to the results of the expert evaluation, we proposed two basic blocks in the educational model of students' profiling physical training: educational (theoretical) and practical PPT.

The experts were asked to fill in a questionnaire developed by us, which contained an author's version of the system of means for theoretical and practical training of students from the PPT.

The results of the experts evaluation of the author's version of the educational model of student's physical training are shown in table 1, from which it is evident that the greatest support of experts was given to positions 1.2 and 1.6 of the first section and position 2,3 of the second section. The discussion on this issue has shown that experts considered the most important thing so that the graduates are well aware of the theory and methods of physical training in the light of their future profession and able to implement them independently, and, to create the proper conditions for the student for classes in physical education and sports, taking into account professional activity (2.3).

Three positions (1,7, 1,8, and 1,9) did not receive support from most experts, therefore, they were excluded from the final version. After the discussion it became known that the development of the methods of prediction of resistance to fatigue (1,8) did not receive more than 50 % of the vote just because it concerned not all specialties, but methods for assessing the effectiveness of the PPT in the discussion the discussion sounded like a necessary knowledge to a graduate, but only 47,6 % of the votes received the questionnaires.

The experts noted during the discussion, that measures for the physical training of students, offered in the educational model with the aim of increasing the educational and special ability to work (2,1) and for the purpose of prophylactics and prevention of professional diseases (2,2), can and should be realized on regulated physical education lessons, as well as in independent classes outside the schedule.

Table 1

Results of Expert Evaluation of the System of Means of Physical Education of Students LNUVM and BT Named After S. Z. Gzhytskyj

No	Topics Section	% of Experts	Serial number for Significance
1	2	3	4
1	Physical education		
1.1	Theoretical training from the sections of the program on physical education	85,7	5
1.2	Methodology of using physical culture and sports from the sections of the program of physical education	100,0	1–2
1.3	Learning of basic requirements for professional physical training	48,9	7
1.4	Learning basic occupational diseases	95,2	3–4
1.5	Methods of prophylaxis of occupational diseases by means of physical culture and sports of students	95,2	3–4
1.6	Mastering the methods of organizing independent exercises in physical culture and sports with elements of professional physical training	100,0	1–2
1.7	Assimilation of the basic forms and methods of planning of profile physical training	23,8	9
1.8	Development of forecasting methods of resistance to fatigue	42,8	8
1.9	Learning methods for assessing the effectiveness of profile physical training	47,6	6

End of table 1

1	2	3	4
	Practical training		
2	Physical training is aimed at the training and educational process	76,5	4
2.1	Physical training is aimed at increasing the special ability to work	78,1	3
2.2	Physical training is aimed at the prophylactics and prevention of occupational diseases	85,7	2
2.3	Carrying out independent physical training sessions taking into account the peculiarities of future professional activities	100,0	1

In total, of the 13 sections that were proposed in the working version, the experts left 8 sections, and did not add any. The final version of the system for training students in the PPT program counted 8 measures: four of the theoretical physical education and four of the practical profile physical training.

On the basis of preliminary expert evaluation data, a variant of the educational model of student training was compiled to the use of physical culture and sports in future professional activities (educational model of physical training is shown in fig. 1).

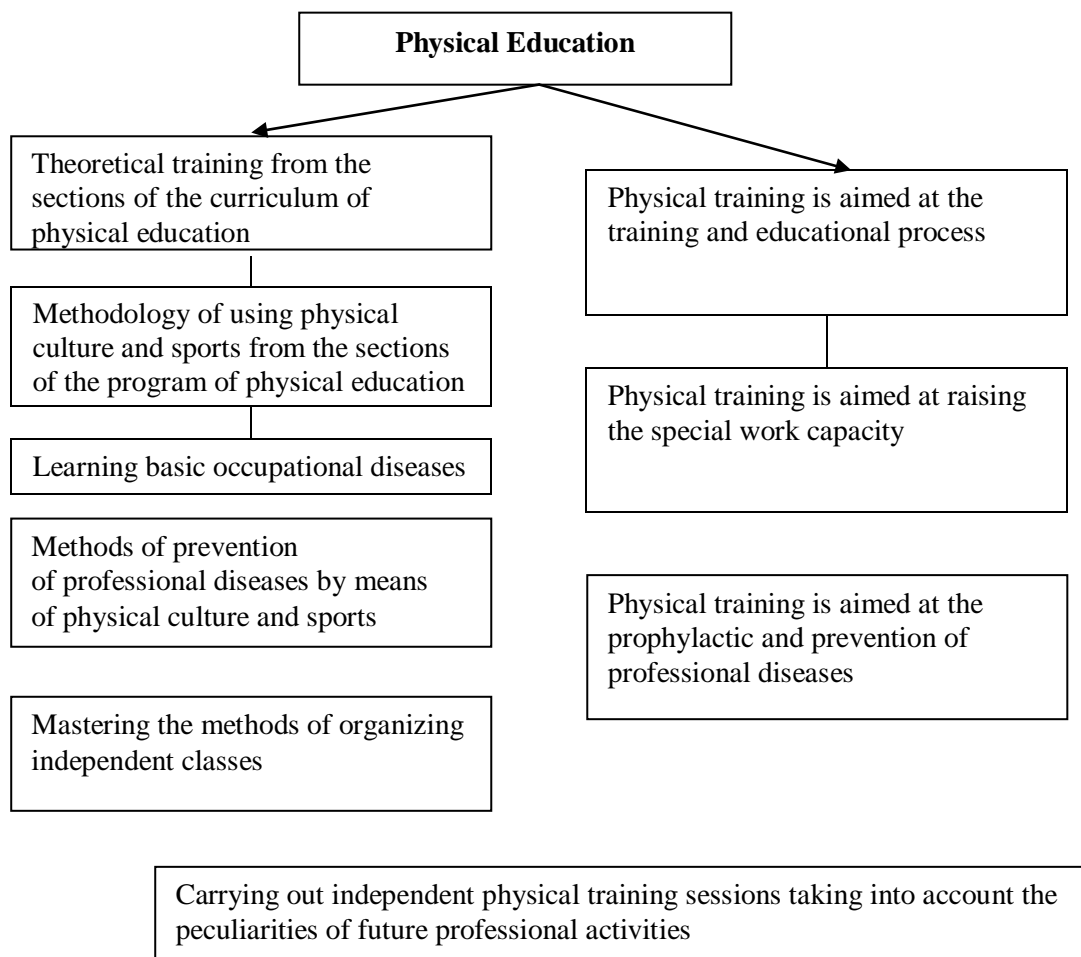


Fig. 1. Educational Model of Professional Physical Training of Students

The curriculum developed by us, the program and the contents of profiling physical training have undergone an experimental substantiation in the conditions of real educational and pedagogical activity. For this purpose from September, 2016 from the students of the fourth year studying in the specialty of technology of production and processing of livestock products, two groups were formed: one is experimental, for which the educational process of profile physical training was constructed on the basis of worked out and reflected in the sections of the working curriculum and the schedule of the educational

process; the second one is the control, where professional physical training was carried out with the help of traditional principles and methods of teaching without a definite educational theoretical section, mainly due to practical physical training.

The interview, which was conducted before the beginning of the experiment with the students of both groups, showed that the students of the experimental group (20 persons), and the students of the control group (20 persons) were equally illiterate in the educational and theoretical issues of professional physical training.

During the first semester of 2016, the educational and theoretical material from the PPT was submitted to the students of the experimental group, and were conducted methodological exercises on the organization of PPT. After that, a student assessment of the speciality of physical training was carried out, the results of which are shown in table 2.

Table 2

**Success of Students of Experimental and Control Groups
From the Educational, Theoretical Course of Professional Physical Training**

No	Themes of the Program	Average score		
		Experimental-Mental Group	Control Group	Differences Between Groups
1	Theoretical training in the sections of the curriculum of physical education	4,3	2,2	2,1
2	Methodology of using physical culture and sports in the sections of the program of physical education	3,9	2,5	1,4
3	Learning basic professional diseases	4,25	2,11	2,04
4	Methods of prevention of professional diseases by means of physical culture and sports	4,5	2,1	2,4
5	Mastering the methods of organizing independent exercises in physical culture and sports with elements of professional physical training	3,8	2,3	1,5
6	Physical training is aimed at the training and educational process	4,6	2,00	2,6
7	Physical training is aimed at increasing a special ability to work	4,7	2,2	2,5
8	Physical training is aimed at the prevention of occupational diseases	4,4	2,4	2,0
9	Carrying out independent physical training sessions taking into account the peculiarities of future professional activities	4,8	2,7	2,1
Total		4,34	2,27	2,07

As can be seen from the above data, the students of the experimental group basically mastered the knowledge necessary for the organization of their professional activities. Their success in all the themes of the program ranged from 3.8 to 4.8 points. There were some cases of unsatisfactory marks on certain topics in the experimental group: on themes 2 and 5, respectively, one, two marks.

Students who did not pass such training (control group) could not give correct answers to most questions. According to table 2, their success was basically unsatisfactory – 2,27 points (from 2,02 to 2,5).

During the 2nd semester 2016 to 2017 students from the experimental (20 people) and the control group (20 people) were independently used the means of physical culture and sports during the educational process, and having the industrial practice.

As can be seen from table 3, the professional ability of students of the experimental group after conducting a pedagogical experiment was higher than of the students of the control group.

Table 3

Comparative Characteristic of Special ability of Graduate Students

№	Indicator	Experiment. Group		Control Group		Differences	
		$X \pm Mx$	σ	$X \pm Mx$	σ	t	p
1	Number of viewed signs, units	220,4±12,1	26,3	123,8±8,3	18,6	6,64	≤0,05
2	Number of made mistakes, units	2,8±0,4	1,1	6,9±0,8	2,3	4,6	≤0,001
3	Number of signs per line, units.	68,0±2,5	5,8	30,4±2,3	5,1	11,09	≤0,001

All this testifies, however, is that a student possesses the knowledge and skills necessary to strengthen his health, to improve his physical fitness to, increase his professional ability to work - motivation for physical education classes in him is as good twice as compared with the control group.

This is evidence of the effectiveness of using the educational model of student’s physical education.

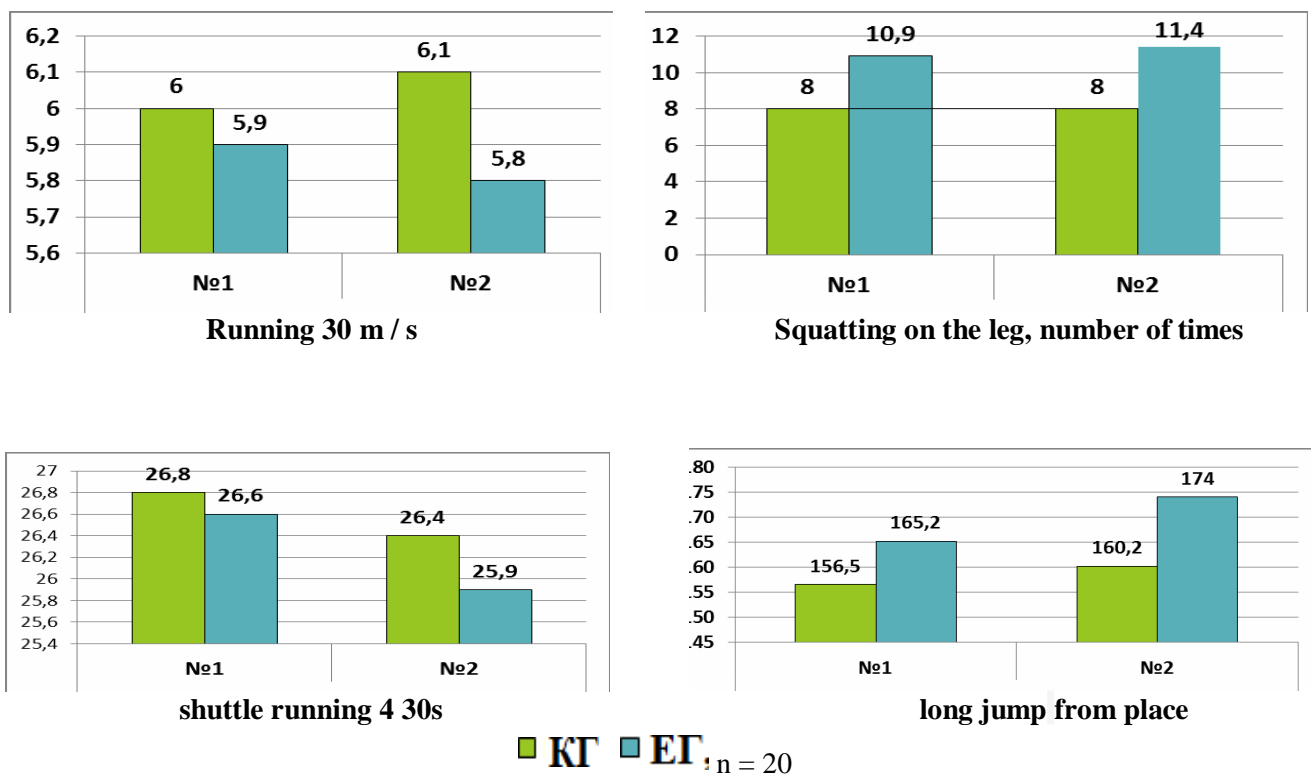


Fig. 2. Influence of Molding Experiment on Physical Capacity, Where: № 1 – at the Beginning; № 2 – at the end of the Experiment

The special physical students capacityof the experimental group after the pedagogical experiment as can be seen from Figure 2 was higher than the control group students by 15–20 %.

As we can see from table 4, the activity of students of the experimental group after the end of the study according to the SAT method increased by 46.4%, of the control group by 26,9 %. This is evidence of the effectiveness of using the educational model of student’s physical education.

Table 4

Change in Activity (units) of Students of LNUVM and BT Named After S. Z. Gzhytskyj According to the HAM test Data During a Pedagogical Experiment

Group	Num. of Pers.	Beginning of the Experiment		End of Experiment		The Magnitude of the Increase in %
		$X \pm Mx$	σ	$X \pm Mx$	σ	
Control Group	20	2,6±0,2	0,07	2,3±0,4	0,1	26,9
Experimental Group	20	2,8±0,4	0,1	4,1±0,6	0,3	46,4

Conclusions and Perspectives of Further Research

1. Taking into account the expert assessment of the system of training for students professional physical training, we had a variant of the educational model with the PPT, which consisted of two blocks: educational (theoretical) and practical.

2. The educational model of preparation of students for the use of means of physical culture and sports in our future professional activity, was developed and experimentally substantiated by us, which provides the necessary theoretical training of students. This model provides the necessary knowledge, skills and abilities for the independent use of physical education and sports facilities with the purpose of increasing professional performance, prevention of professional diseases, improvement of the psycho-emotional state of a person.

Prospects for further research – to develop a method for forecasting the tiredness of future specialists in the production and processing of livestock products. To develop fitness and health complexes of exercises, which would reduce the level of fatigue in the process of training and professional activity.

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Received:15.01.2018