

Future Physical Education Teachers' Preparation to Use the Innovative Types of Motor Activity: Ukrainian Experience

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Abstract – The purpose of the paper is to substantiate the model of future physical education teacher's preparation to use the innovative types of motor activity in professional activity. 267 respondents (204 students, future physical education teachers, and 63 teachers) participated in the research. Students were divided into two groups. The experimental group trained according to the author's model: future physical education teachers' preparation to use the innovative types of motor activity in the professional activity. The indicators «Volume of knowledge», "Gymnastic preparedness" and "Organizational actions", "Self-analysis" were defined to examine the readiness of future physical education teachers to use the innovative types of motor activity in professional activity. Qualitative and quantitative changes for each indicators of the readiness of the future physical education teachers to use the innovative types of motor activity in professional activities are reflected in positive dynamics, which is confirmed at the significance level of 0.05 according to the Student's statistical test. The pedagogical experiment has shown the effectiveness of the author's model of future physical education teachers' preparation to use the innovative types of motor activity in professional activities.

Keywords – motor activity, innovative types of motor activity, use of innovative types of motor activity in professional activity, future physical education teachers, future physical education teachers' preparation.

1. Introduction

Modern Ukrainian society is in a harsh competitive environment and should respond to national security challenges. This necessitates the training of specialists who are simultaneously physically active, well-conditioned and enduring, and capable of creative approach to problem solving. They should be able to perceive and to innovate in various fields of knowledge, including the field of physical culture and sports, which takes care not only of the Olympic results at the world level, but also of the nation health, promoting healthy lifestyles, etc. Therefore, at the current stage of the Ukrainian society development, the physical culture and sports as an integral part of human culture and national prosperity plays a significant role. Of particular importance is the modernization of the professional training of physical education teachers in higher educational institutions in order to acquire a set of innovative knowledge, skills and abilities in the field of physical culture and sports, formation of professional interests, professional motives and value orientations, which ensure the readiness of future physical education teachers to innovative professional activities and mobilization for the creation of innovation, their development and use.

Modernization of the future physical education teachers' preparation is provided by a number of newest legal documents at the State level, in particular, in the laws of Ukraine "On Education" (2017), "On Higher Education" (2014), in the "National Strategy for the Development of Education in Ukraine for the period till 2021", in the National Strategies for improving motor activity in Ukraine for the period until 2025 "Motor activity – a healthy lifestyle – a healthy nation" (2016), in the Concepts

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of the National Program "Health 2020: Ukrainian Choice" for 2012-2020 (2011), in the Strategy of Innovations Development in Ukraine 2010-2020 in the context of globalization of challenges (2009), in the Concept of the New Ukrainian School (2017), which emphasized the need for continuity, flexibility, accessibility, openness, humanistic orientation of the physical education.

On the basis of the analysis of legislative texts and regulations, theoretical sources, educational and methodical literature it was determined that physical culture is considered as a component of the general culture of the society, aimed at strengthening the health, development of physical, moral, volitional and intellectual qualities of a person in towards harmonious formation of personality. This necessitates significant changes in the professional training of future physical education teachers. Higher education institutions are responsible for the preparation of a new generation of teachers whose skills and level of qualification must be in line with the needs of the student population – the generation Z, who are individualists, supporters of youth currents and, at the same time, more active in terms of motor activity for leading and maintaining a healthy way of life.

It is established that in Ukraine and abroad (Great Britain, Columbia, Germany, the USA, France, etc.) the following kinds of motor activity, such as workout, parkour, roller skating, skateboarding, StrengthFlex, CrossFit, functional all-round competitions, breakdance, capoeira and etc., as well as health systems of different peoples of the world (hatha yoga, karate, wushu, shaping, oriental dances, etc.). These types of activities are not well-established in the sporting environment, not recorded as Olympic sports, and therefore considered to be innovative types of motor activity. Among the advantages of the introduction of innovative types of motor activity in school training we note: no need for special equipment; popularity in youth; reduction of traumatism, minimization of risk when working out of effective elements; prevention of extremism, alcohol and drug dependence in adolescents; comprehensive training for pre-conscripts; patriotic upbringing of the youth. On the one hand, the above necessitates the introduction of innovative types of motor activity in the training of physical culture. On the other hand, the above actualizes the need for the physical education teachers' preparation to use the innovative types of motor activity in professional activity.

Researches by scholars [1], [2], [3] point to the importance of the problem of finding ways to modernize the training process of future physical education teachers in accordance with these trends. Among the ways of solving the problem, the national

scientists are suggesting a rethinking of the approaches to training specialists in the field of physical culture and sports and the specifics of the professional formation of future physical education teachers in the context of the innovations' introduction [4], [5], [6]. At the same time, the analysis of scientific and pedagogical sources shows the lack of fundamental researches, in which it would be proposed to upgrade the future physical education teachers' preparation, which is associated with the use of innovative types of motor activity in professional activities.

The theoretical analysis of scientific sources and the study of practical experience regarding the professional training of future physical education teachers made it possible to identify a number of contradictions, in particular, between:

- the urgent need of the society in harmonious physical and mental development of the younger generation and their mastery of innovative types of motor activity and inadequate training level of future physical education teachers to the use of such activity in professional activity;

- the need to modernize the professional training of future physical education teachers on the basis of modern innovations in the field of physical culture and sports and the lack of scientific developments and methodological support for their implementation in the training process of future physical education teachers.

The urgency of this problem, its lack of elaboration in the pedagogical theory, the needs of educational practice, the need to resolve the revealed contradictions set out the direction of our study.

2. Material and methods

2.1. Participants

106 students from the faculties of physical education and sports of the pedagogical universities were included in the control group (CG), which were trained in specialized disciplines in the most widespread way. The experimental group (EG) was made up of 98 students of the faculties of physical education and sports of pedagogical universities, whose training was carried out according to the author's model. The formation of control and experimental groups was carried out on the basis of the results of the previous examinations in such a way as to ensure that the readiness levels to the use of innovative types of motor activity in the professional activity of the students of both groups was statistically consistent. All participants were informed of the participation in this research.

2.2. Procedure (organization of research)

Experimental work was carried out in two stages. The confirmatory stage (2012-2015) included the definition of theoretical and methodological foundations for the future physical education teachers' preparation, the development of the author's model and the fixation of the initial results on the selected indicators. The formative stage (2015-2017) provided for an examination of the effectiveness of the developed model of the future physical education teachers' preparation to use the innovative types of motor activity on the basis of statistical analysis.

To characterize the readiness of future physical education teachers to use the innovative types of motor activity in professional activity, we have defined the indicators: «Volume of knowledge», which testifies to the level of theoretical training of students to use the innovative types of motor activity in professional activity; "Gymnastic readiness" and "Organizational actions", which determine the formation level of students' sports skills to perform certain actions of innovative types of motor activity, the formation level of students' pedagogical skills to perform these actions during the professional activity; "Self-analysis", which characterizes the attitude of students to use the innovative types of motor activity in their professional activities, their willingness for self-education and self-improvement in the field of innovative types of motor activity. Based on selected indicators, the following levels are set: intuitive, reproductive, conscious, creative.

The statistical processing method of the pedagogical experiment results on the "Volume of knowledge" indicator was to organize a test of knowledge, which provided for the use of different formats of questions and answers to them. The respondents were offered 100 theoretical questions; each correct answer was worth one point (Table 1.). Such testing was carried out twice – at the beginning and at the end of the experiment, on the basis of which there have been made conclusions about the effectiveness of the proposed approaches regarding the theoretical component of the future physical education teachers' preparation to use the innovative types of motor activity in professional activities.

To determine the readiness level on the "Gymnastic preparedness" indicator were used the systems of practical exercises on acrobatics, basic jumps, and gymnastic types of all-round competitions and innovative types of motor activity. The quantitative characteristic of gymnastic readiness was carried out on the basis of an expert survey: the student received one point if he performed the exercise correctly, and zero points if the exercise was performed with blunders or not performed at all. Experts were persons who have sufficient experience of coaching and teaching work on gymnastics and innovative types of motor activity. The maximum number of points for execution of the system of exercises was 40 points (Table 1.). Execution of the system of exercises of this type was carried out twice: at the beginning and at the end of the experiment, on the basis of which there have been made conclusions about the effectiveness of the proposed approaches in the context of practical training on the implementation of innovative types of motor activity in professional activities.

The statistical processing method of the pedagogical experiment results on the "Organizational actions" indicator was to test the skills and abilities to conduct physical education lessons with the use of exercises for the implementation of innovative types of motor activity. Students were offered an individual task, which consisted in developing fragments of lessons on innovative types of motor activity and their carrying out using various types of motor activity, including innovative, taking into account age, gender, fitness of the students. For each task students could get 20 points from experts, their distribution is shown in Table. 1. Such an integrated task was offered to students in the third and fourth year during the course of pedagogical practice.

The characteristics of the readiness of future physical education teachers in the psychological direction were carried out through the indicator "Self-analysis" according to the L. Berezhnova's method, which provides 18 questions and three answers to each (Table 1.).

Table 1. Rating scale by indicators

Indicators	Levels			
	Intuitive	Reproductive	Conscious	Creative
"Volume of knowledge "	0-20	21-50	51-80	81-100
"Gymnastic preparedness"	0-15	16-24	25-35	36-40
"Organizational actions"	0-5	6-10	11-15	16-20
"Self-analysis"	10-14	15-20	21-25	26-30

2.3. Statistical analysis

The comparison of averages in the control and experimental groups was performed with using the t-Student's test. The consistency of expert opinions was determined using the Kendall's coefficient of concordance (W) [7], [8]. The statistical validity of the coefficient of concordance was estimated using the Pearson's test (χ^2).

3. Results

The generalization of the problem of professional training of future physical education teachers and the various approaches to understanding pedagogical innovations has allowed to classify parkour, workout, skateboarding, roller sports, fitness programs (CrossFit, functional all-round competitions, StrengthFlex) as the innovative types of motor activity, which are aimed at the development of physical qualities of personality. So, it is possible to characterize the notion "the readiness of future physical education teachers to use the innovative types of motor activity in professional activity" as a complex integrated personality formation, which consists in mastering the knowledge on innovative types of motor activity, methods and techniques of their implementation and use in professional activities. It also is the basis for further creative self-fulfillment and professional self-improvement.

The readiness structure of future physical education teachers to use the innovative types of motor activity in professional activity is considered as a set of interrelated components: theoretical and practical (acquisition of knowledge on innovative types of motor activity, methods and techniques of their implementation), methodological (mastering technologies for teaching innovative types of motor activity) and individual and personal (availability of psychological qualities necessary for the teacher to use innovative types of motor activity).

The described structure of the readiness of future physical education teacher to use the innovative types of motor activity in professional activity was taken as the basis for developing a model of their professional training (Fig. 1.). In particular, the holistic approach points to the structuring and multicomponent of the notion "the readiness of future physical education teachers to use the innovative types of motor activity in professional activity". The professional and personal approach provides conditions for the development of personality and the realization of its natural potential during vocational training. A reducing approach implies the use of innovations in physical education classes, which requires for the teacher of physical education to have basic knowledge on the features of anthropometric development of students and its

relationship with permissible physical activity. The main purpose of the activity approach is to teach students to set goals and plan their activities for the development of professional qualities and self-education. An innovative approach implies the development of innovative knowledge and skills of the students on the introduction of innovative types of motor activity.

Among the principles of education we focused on the specific principles of physical education (continuity, progression of training actions, cyclicity, age adequacy of the influence, emotionality) and the principles of innovative professional activities in the field of physical education and sports (motivation, "innovative" knowledge, unity of traditions and innovation, forecasting and modeling, creativity) in conjunction with selected forms, methods and means that provide preparation to the use of innovative types of motor activity in professional activities [9], [10].

Improvement of the content implied modification of the curricular, development or updating of educational and methodological complexes of professional disciplines for modern sports to enrich motor experience with an orientation towards the use of innovative types of motor activity in professional activities:

1) the dominance of the analytical and synthetic method of training and the improvement of complex exercises and combinations based on the decomposition of the exercise into separate parts based on a semantic principle or biomechanical expediency, a conscious mastering of the basic structure of separate element, such improvement of parts and exercises as a whole;

2) the possibility of narrowly oriented (analytical) development and improvement of individual muscle groups, motor qualities or combinations of qualities, systems and organs, and influence on the mental abilities of the individual;

3) the combination of natural exercises (running, walking, jumping, jerks, etc.) with purely gymnastic movements or movements transformed into innovative by using the natural movements;

4) the ability to complicate exercises by changing the starting and ending positions, the combination of individual exercises, exercises in conditions of muscular and mental fatigue, emotional excitement or inhibition on different equipment in different conditions;

5) the intensification of classes by using music, the communicative effect of group exercises and mass performances;

6) the possibility of clear regulation of loads of different nature according to contingent (age, gender, preparedness, health status, etc.);

7) the combination of innovative types of motor activity with other kind of activity, a combination of natural movements with exercises, invented by human (for example, handstand, large turns, various flip-flops with turns, etc.);

8) the development of courage during the strict execution of complex exercises, high degree of orientation in space and time, timely use of safety equipment, sufficient initial level of development of physical qualities and technical preparedness.

Taking into account the essence of readiness components of future physical education teacher to use the innovative types of motor activity, we have developed the indicators:

- «Volume of knowledge», which testifies to the level of theoretical training of students to use the innovative types of motor activity in professional activity;
- "Gymnastic readiness", which characterizes the formation level of students' sports skills to perform innovative types of motor activity;
- "Organizational actions", which determines the formation level of students' pedagogical skills to carry out innovative types of motor activity during professional activity;
- "Self-analysis", which characterizes the attitude of students to the use of innovative types of motor activity in their professional activities.

Based on the selected indicators, the following readiness levels were identified:

- intuitive level (fragmentation and stippling of the implementation of innovative types of motor activity and their use in professional activity);
- reproductive level (the ability to reproduce actions on the implementation of innovative types of motor activity in professional activities according to the model, their introduction into professional activity mainly on the basis of video materials);
- conscious level (knowledge of basic facts and concepts regarding the use of innovative types of motor activity in professional activities, acquisition of basic skills and techniques of such activities);
- creative level (the transfer of knowledge to new situations, the creation of original approaches, algorithms of cognitive and practical actions for the implementation of innovative professional activities).

The quantitative characteristics of the results obtained for each of the indicators are given in Table 2. According to the decision rule we conclude that at the beginning of the experiment the samples were statistically the same for each of the indicators. At the same time, at the end of the experiment, the control group was statistically different from the experimental one, which cannot be explained by accidental reasons.

Table 2. Quantitative characteristics of the experimental results for each indicator at the significance level of 0.05

Indicators	Grade point average (before the experiment)		Grade point average (after the experiment)		t-statistic value before the experiment	t-statistic value after the experiment
	CG	EG	CG	EG		
"Volume of knowledge"	26,0	29,4	45,82	56,6	-1,2	-3,2
"Gymnastic preparedness"	12,5	13,0	17,9	24,3	-0,7	-10,1
"Organizational actions"	5,3	6,5	8,7	11,6	-1,7	-4,8
"Self-analysis"	40,5	42,3	46,8	54,2	-0,6	-5,3

The positive dynamics of shifts at the conscious and creative levels of readiness of future physical education teacher before using innovative types of

motor activity in professional activities in EG and CG (Table 3.) confirms the effectiveness of the implementation of the training model (Fig. 1.).

Table 3. Dynamics of shifts in readiness levels of future physical education teacher to use the innovative types of motor activity in professional activity (%)

Indicators	Readiness level	EG	CG
Volume of knowledge	intuitive	-24,5%	-23,6%
	reproductive	-20,4%	-12,3%
	conscious	32,7%	30,2%
	creative	12,2%	5,7%
Gymnastics preparedness	intuitive	-34,7%	-18,9%
	reproductive	-32,7%	-10,4%
	conscious	37,7%	20,8%
Organizational actions	creative	28,6%	8,5%
	intuitive	-43,9%	-37,8%
	reproductive	6,1%	18,9%

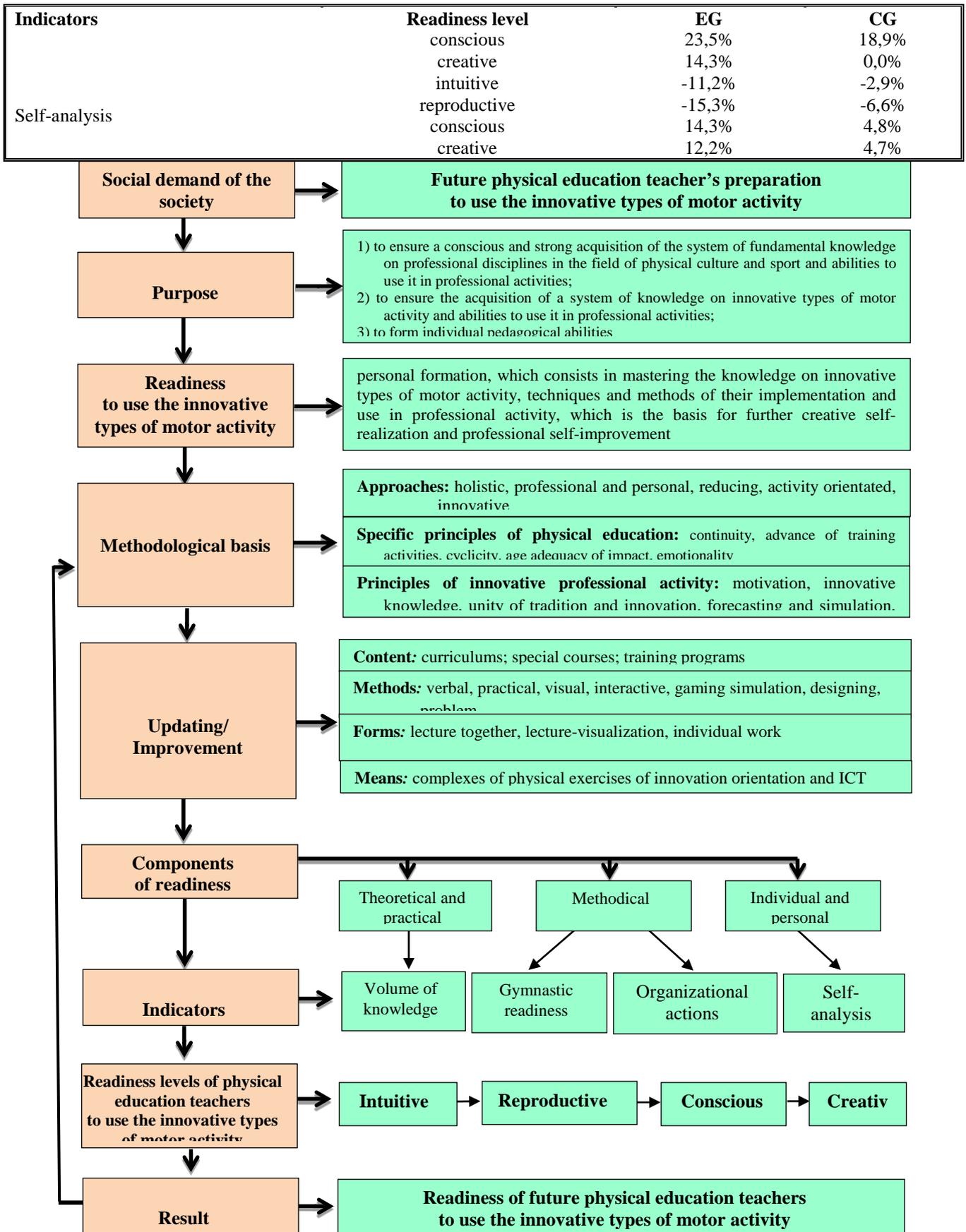


Figure 1. Model of future physical education teachers' preparation to use the innovative types of motor activity in professional activity

Thus, the pedagogical experiment has provided the results, the statistical analysis of which has confirmed the effectiveness of the proposed model of future physical education teachers' preparation to use the innovative types of motor activity in professional activity. It was confirmed by the statistical Student's test at the significance level of 0.05.

4. Discussion

Our research confirms and complements the information about the peculiarities of the future physical education teacher's preparation at pedagogical universities.

During the study, the main points of researchers in this field were confirmed:

- only physically active physical education teachers can effectively implement innovations in professional activity [11], [12];
- future physical education teachers should be encouraged to innovate sports to form models of innovative professional activities [13], [14], [15];
- it is necessary to consider the advanced sport and pedagogical experience in the process of preparation of future physical education teachers [16], [17], [18];
- future physical education teachers must acquire profound and comprehensive knowledge in the field of their specialty during their studies in higher education institution, to be aware of the latest achievements in the field of pedagogical science and physical culture and sports for the qualitative implementation of professional activity [19], [20], [21];
- it is necessary to take into account the psychological studies on the peculiarities of the younger generation development in the information society. This shows that the students of the digital generation have unique cognitive characteristics that condition the introduction and strengthening of the institute of guidance, the active use of visual images, more active use of interactive methods and the implementation of structured tasks. Working over these tasks the student will have the opportunity to independently set goals, tasks, plan their implementation, active use of knowledge about youth movements and use of this knowledge in professional activity, support of a healthy lifestyle, introduction of technologies for the development of critical thinking and elements of the competition [22].

Physical education teachers in their professional activities, we believe, should use the above. We believe that engaging in the innovative types of motor activity, competitive elements, and ICT support can contribute to the qualitative training of the younger generation regarding their physical development.

Close to the problems of our research are the works, in which the main attention is devoted to the purposeful development of pedagogical skills of students of higher education institutions in the field of physical culture and sport in the process of studying vocational and pedagogical disciplines [6]. The main task of a higher educational institution, which prepares future physical education teachers, should be the formation of professional activity subject capable of raising their professional potential, to acquire knowledge on the organization of the process of physical education and social culture in the field of physical education and sports, taking into account modern pedagogical technologies, imbued with innovations.

In our study:

- for the first time model of the future physical education teachers' preparation to use the innovative types of motor activity in professional activity has been developed, theoretically substantiated and experimentally verified;
- the indicators (Volume of knowledge, Gymnastic readiness, Organizational actions and Self-analysis) and readiness levels (intuitive, reproductive, conscious and creative) of physical education teachers to use the innovative types of motor activity in professional activity and methods of their determination have been specified;
- theoretical and methodological provisions on the content, forms and methods of professional training of future physical education teacher were further developed.

During the experimental implementation of the formation model of the readiness of future physical education teacher to use the innovative types of motor activity in the professional activity, the modern forms of organization and conducting of training sessions were widely used. They were used with the increasing role of interactive forms of organization of the educational process and using individual educational trajectories for students. Modern technologies and control means were involved. Complexes of innovative gymnastic exercises and appropriate methodological support were created.

Further research needs to be devoted to the problem of identifying ways to improve the branch standard for higher education institutions, taking into account the requirements of the information society to the future physical education teachers' preparation, and to the problem of the use of innovative activities in the field of physical culture and sport to increase the effectiveness of self-study and training work of future physical education teachers. The study of the introduction of the future physical education teachers' technologies of contextual education, multimedia content training,

and organization of distance learning in Smart approaches into the educational process is also perspective.

5. Conclusions

According to the results of the confirmatory experiment, it has been established that the future physical education teachers' preparation for the use of innovative types of motor activity in the professional activity is compounded by the next facts: the low level of theoretical preparation of students of physical education and sports of pedagogical universities regarding the study of innovative sports; insufficient level of basic gymnastic readiness of future physical education teachers for performing physical exercises of innovative character; insufficient amount of time for the development of skills and abilities of using physical exercises of innovative character in future professional activities; insufficient attention to the implementation of innovative types of motor activity of a higher level of complexity in the individual training programs of future physical education teachers.

We have experimentally established that in order to prepare future physical education teacher for the use of innovative types of motor activity in professional activity, one should focus on the formation of such knowledge and skills: knowledge of innovative types of motor activity, basics knowledge on performing of gymnastic all-around exercises, knowledge of physical qualities development techniques, the ability to plan and realize the educational process in the field of gymnastics, knowledge of methods, techniques, forms and tools of organization of recreational gymnastics for pupils and different age groups of the population.

The pedagogical experiment has confirmed the effectiveness of the proposed model of future physical education teachers' preparation to use the innovative types of motor activity in professional activity, which includes interconnected structural components (conceptual, content, procedural, evaluation), forms (lecture together, lecture-visualization, lectures and practical classes, individual work), methods (verbal, practical, visual, interactive, problem, gaming simulation, designing) and means (complexes of physical exercises of innovation orientation and ICT) that provide the future physical education teachers' preparation to use the innovative types of motor activity in professional activities.

References

- [1]. De Meyer, J., Soenens, B., Aelterman, N., De Bourdeaudhuij, I., & Haerens, L. (2016). The different faces of controlling teaching: implications of a distinction between externally and internally controlling teaching for students' motivation in physical education. *Physical Education and Sport Pedagogy*, 21(6), 632-652. DOI: 10.1080/17408989.2015.1112777 .
- [2]. Larsson, H. & Nyberg, G. (2017). "It Doesn't Matter How They Move Really, as Long as They Move". Physical Education Teachers on Developing Their Students' Movement Capabilities. *Physical Education and Sport Pedagogy*, 22(2), 137-149.
- [3]. Jagiello, M., Iermakov, S. S., & Nowinski, M. (2017). Differentiation of the somatic composition of students physical education specialising in various sports. *Archives of Budo Science of Martial Arts and Extreme Sports*, 13, 63-70.
- [4]. Klopov, R. V. (2010). *Professional training of future specialists in physical education and sports with the use of information technologies: theory and practice*. Zaporizhzhia: Vyd-vo Zaporizkoho natsionalnoho un-tu.
- [5]. Konokh, A. P. (2007). *Theoretical and methodical principles of professional training of future specialists in sports and recreational tourism in higher educational institutions*. Dokt. Diss. Kyiv.
- [6]. Stepanchenko, N. I. (2017). *System of professional training of future physical education teachers in higher educational institutions*. Dokt. Diss. Lutsk.
- [7]. Bikel, P. J. & Kuell, D. (1983). *Mathematical statistics*. Moscow, Finance and Statistics.
- [8]. Grabar', M. I. & Krasnyanskaya, K. A. (1977). *The application of mathematical statistics in pedagogical research. Nonparametric methods*. Moscow, Pedagogy.
- [9]. Balashov, D. I. (2017). Chronological analysis of the use of innovative types of motor activity with a gymnastic orientation in the professional training of specialists in physical culture. *Visnyk Cherkaskoho universytetu. Serii: «Pedahohichni nauky»*, 13-14, 15-22.
- [10]. Balashov, D. I. & Shishenko, I. V. (2017). Experimental preparation of future teachers of physical culture to innovative professional activity: analysis of results by methods of mathematical statistics. *Physical and Mathematical Education*, 4(14), 337-345.
- [11]. Bielski, J. (2000). *Teoretyczne i metodyczne podstawy efektywności pracy nauczyciela wychowania [Theoretical and methodical basis for the effectiveness of teacher education]*. Piotrków Trybunalski: Wyd. Filii Kieleckiej WSP w Piotrkowie Tryb.
- [12]. Iermakova, T. S. (2014). Forming a health culture of future teachers in Polish educational establishments. *Physical Education of Students*, 18(5), 14-9. DOI: 10.15561/20755279.2014.0503

- [13]. Faulkner, G., Dwyer, J. & Irving, H. (2008). Specialist or Non-specialist Physical Education Teachers in Ontario Elementary Schools: Examining Differences in Opportunities for Physical Activity. *The Alberta Journal of Educational Research*, 54(4), 407.
- [14]. Kohl III, H. W., & Cook, H. D. (Eds.). (2013). *Educating the student body: Taking physical activity and physical education to school*. National Academies Press.
- [15]. Skurikhina, N. V., Kudryavtsev, M. D., Kuzmin, V. A., & Iermakov, S. (2016). Fitness yoga as modern technology of special health groups' girl students' psycho-physical condition and psycho-social health strengthening. *Physical education of students*, 2, 24-31.
- [16]. Fogel, V. A., Miltenberger, R. G., Graves, R. & Koehler, S. (2010). The effects of exergaming on physical activity among inactive children in a physical education classroom. *Journal of Applied Behavior Analysis*, 43(4), 591-600.
- [17]. Podrigalo, I., Iermakov, S., Rovnaya, O., Zukow, W. & Nosko, M. (2016). Peculiar features between the studied indicators of the dynamic and interconnections of mental workability of students. *Journal of Physical Education and Sport*, 16(4), 1211. DOI: 10.7752/jpes.2016.04193
- [18]. Sobyenin, F. I., Pakhomova, L. E., Petrenko, O. V., & Nikolaeva, E. S. (2017). Attitudes of physical education teachers to modern physical education trends. *Theory and Practice of Physical Culture*, (6), 9-11.
- [19]. Druz, V. A., Iermakov, S. S., Nosko, M. O., Shesterova, L. Y. & Novitskaya, N. A. (2017). The problems of students' physical training individualization. *Pedagogics, Psychology, Medical Biological Problems of Physical Training and Sports*, 21(2), 51. DOI: 10.15561/18189172.2017.0201
- [20]. Kerpanova, V., & Borodankova, O. (2013). *Physical Education and Sport at School in Europe*. Education, Audiovisual and Culture Executive Agency, European Commission. Available from EU Bookshop.
- [21]. Semenikhina, O. V., Drushlyak, M. G., Bondarenko, Y. A., Kondratiuk, S. M., & Ionova, I. M. (2019, May). Open Educational Resources as a Trend of Modern Education. In *2019 42nd International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)* (pp. 779-782). IEEE.
- [22]. Isaeva, E. R. (2012). A new generation of students: psychological features, educational motivation and difficulties in the process of first year training Retrieved from: http://medpsy.ru/mprj/archiv_global/2012_4_15/nomer/nomer20.php [Accessed: 13 July 2019].