

Formation of motivation for professional and applied physical training in future elementary teachers

HALYNA BEZVERKHNIYA¹, TETIANA FEDIRCHYK², VIKTORIA TSYBULSKA³,
MYKOLA MAIEVSKYI⁴, TETIANA OSADCHENKO⁵, SERHII ILCHENKO⁶, ANNA HAKMAN⁷

¹Lutsk National Technical University, UKRAINE

^{2,7}Yuriy Fedkovych Chernivtsi National University, UKRAINE

^{3,4,5,6}Pavlo Tychyna Uman State Pedagogical University, UKRAINE

Published online: February 28, 2019

(Accepted for publication January 22, 2019)

DOI:10.7752/jpes.2019.s2045

Abstract. The purpose of our work is to 1) study the peculiarities of professional and applied physical training of future elementary teachers in various forms of education and 2) to develop guidance for the organizational and methodological conditions for the formation of motivation in students in order to improve the effectiveness of physical education and professional and applied training. To achieve these goals and objectives, we used the following research methods: theoretical analysis and review of references, observation, surveying, psychological and locomotor testing, pedagogical experiment, and methods of mathematical statistics. The motivations that encourage female students to study full-time from the second to fourth year increase in terms of “acquiring of knowledge” from 66.6% to 77.8% and “mastering a profession” from 66.0% to 87.0%. The motivation to study in part-time female students is lower than that in fourth-year full-time female students due to the prevailing motivation of “obtaining a diploma”. The results of the experiment formed the basis for the development of organizational and methodological conditions for the formation of motivation for professional and applied physical training of part-time female students. At the end of the study, the respondents’ objectivity of real self-evaluation of physical health increased to the “average” level of physical fitness in female students and to the level of physical fitness standards in upper-level students. The theoretical preparedness in female students improved by 21%, especially in terms of methodological issues.

Keywords: motivation, students, physical training

Introduction

Multiple scholars have studied motivation as a factor of versatile activities (Alexander E. Bolotin, 2015; Bezvernyaya, G. V., 2014; Elizabeth K., 2016; Fyshev, Yu. O., 2012 et al.). To implement any activity, it is necessary to set a goal, choose appropriate means to achieve it, accomplish the goal and arrive at the final result. The main driving factor is the motivation, i.e., the reason for the chain of human actions. Therefore, the effectiveness of activities will depend upon the awareness of the chosen goal and the significance of its achievement for social and spiritual human life (Andrieieva O., 2017-2018; Hakman A., 2017-2018; Iedynak G., 2017; Yarmak O., 2018 et al.).

Professional activities of teachers are complex and versatile. Their successful performance requires cognitive, constructive, prognostic, organizational, communication and analytical skills (Kolomyitseva, 2006; Krusevich, T. 2008). Each person possesses components of the abovementioned skills. However, their development requires certain conditions to be created while studying at the university. Therefore, the educational standard lists profession-oriented disciplines. Unfortunately, among these disciplines, there is no professional and applied physical training, which serves as the basis for the implementation of the acquired pedagogical skills in the practical activities of a teacher.

One may argue that professional and applied physical training is an integral part of the “physical training” discipline. However, full- and part-time curricula do not include this discipline, and thus, there is no professional and applied physical training. This causes a problem.

Methods

In this study, we used the following research methods: theoretical analysis and review of references, observation, surveying, psychological and locomotor testing, pedagogical experiment, and methods of mathematical statistics. Pedagogical observation consisted of systematic analysis and assessment of students' behavioral reactions, as well as assessment of educational process management without the researcher's intervention in the process.

The objects of observation were as follows:

- Students' attendance;
- Students' performance;
- Attitude toward physical training and sports;
- Students' behavior during the training;
- Attitude toward psychological testing.

The pedagogical experiment was conducted in the form of ascertaining and transformative experiment. The ascertaining experiment comprised studies of the indicators of motivation, interests of second- and fourth-year full- and part-time students, value orientations, empathy, level of physical health and physical fitness in order to determine their actual condition and compliance with generally accepted standards.

The transformative experiment was conducted to test the developed organizational and methodological conditions for the formation of motivation for self-improvement to achieve certain standards for professional and applied physical training of students learning a trade of an elementary teacher. For this purpose, the control and experimental groups were formed. The duration of the experiment is one academic year.

Quick testing of empathy (I.M. Yusupov, 2006). This technique consists of six diagnostic scales of empathy, which express attitudes towards parents, animals, elderly, children, protagonists of works of art, unfamiliar and little-known people. This questionnaire contains 36 statements. The respondent should respond to each of them using 6 response options: "I don't know", "occasionally or never", "sometimes", "often", "almost always", "always or yes". Each response option has a corresponding score: 0, 1, 2, 3, 4, and 5.

Testing of theoretical knowledge of students in the "physical training" discipline. The students were surveyed to assess their theoretical knowledge in physical training. Sixty two (62) questions were developed concerning the Olympics, the theory of physical training, healthy lifestyle and methods of using physical exercises and self-control. Students were given answer choices, one of which was correct. Questions were included not only in the physical training program of university students, but also in the physical training program of junior students.

The study used locomotor tests: standing start running 30 meters, running 4×9 meters, standing long jump, seated position tilting, body raising for 30 seconds, and complex strength exercises. An individual testing portfolio was developed for each student to test their physical fitness.

The study was conducted in the Pavlo Tychyna Uman State Pedagogical University at the Faculty of Primary Education. The summative assessment involved 60 full-time female students and 60 part-time female students from the second and fourth years of study. The formative assessment involved third-year part-time female students: 25 female students in the control group, and 28 female students in the experimental group. All research subjects were females. Second-year female students were 18-19 years of age, and fourth-year female students were 21-22 years of age.

Results

By studying female students' motivation for training, we obtained new data that differed from what is already known (Maslow, A., 2006; Moskalenko, N. V., 2012; Tsybulskaya, V., 2014 et al.). Our data on female students from the Faculty of Primary Education indicate that second- and fourth-year full-time female students had the motivation for "acquiring of knowledge" increase by 10.2% and that for "mastering a profession" increase by 11%. On the contrary, second- and fourth-year part-time female students demonstrated the motivation for "mastering a profession" decrease by 10%. For the fourth-year full-time female students, the difference in the motivation for "acquiring of knowledge" and "mastering a profession" is 7.8% and 26%, respectively.

The analysis of answers to the method-related question indicates a decreased motivation to study in part-time female students up to the fourth year. To some extent, this is due to the loss of confidence in the choice of profession of an elementary teacher due to high intensity of work and low wages. This leads to a decrease in interest to study fundamental disciplines of the curriculum and to self-study core disciplines, which is the basis of part-time study. This statement is confirmed by the results of the analysis of methodology for determining the motivation for success.

Among second- to fourth-year full-time female students, the number of those who have an "average" level of motivation increases from 60% to 93.3%. Furthermore, the number of those who have a "low" level of motivation decreases by six times (to 6.7%). For part-time study, the number of those who have a "low" level of motivation doubles (26.7%), and the number of those who have an "average" level of motivation decreases by 10% (73.9%). In addition, 43% of fourth-year full-time female students and 30% of fourth-year part-time female students experience joy from attending school or working after holidays or a vacation.

The educative activity of a teacher consists of components that differ in their functional nature and require certain professional skills: cognitive, constructive, prognostic, organizational, communication and analytical skills (Pasichnyk V., 2018; Tovt, V., 2002).

In the teacher's profession, the communication component is essential because all pedagogical activities are communicative. The teacher's principal task is to ensure the position of the student as an active subject of

their own activities. This is possible through the teacher's communication skills, which are manifested in the ability to increase interest, evoke an emotional response, provide and maintain contact, prevent conflict, achieve an educational impact, and ensure an educational influence.

The effective manifestation of communication skills depends on negative factors, which psychologists call "internal obstacles" (V. Stolin), "psychological barriers" (B.D. Parygin), and "repulsive forces" (V. Levi). One of these psychological traits is empathy. Empathy is necessary for the teacher to improve the performance and to develop communication skills in communicating with children.

We have recorded a significant decrease in the level of empathy for children in full-time students from 8.8 points in the second year to 7.7 points in the fourth year. This decrease is attributed to the teaching practice at elementary school, the direct involvement in practical communication with children, and the lack of professional awareness in female students. For the part-time students, although the level of empathy for children is not very high, it remains stable in the second and fourth years (8.2 and 8.1, respectively).

Therefore, during the period of study at a pedagogical university, it is necessary to reveal students' empathy towards children to adjust their attitude towards learners and to develop their communication skills where possible. The professional and applied physical fitness of elementary teachers has theoretical and practical components that are oriented towards the job description of the teacher. In the literature, we did not come across any studies into the identity of the levels of components of fitness in students from the faculties of primary education in various forms of education. Theoretical knowledge test conducted under the physical training program (62 questions) revealed an increase in the correct answers by 14% ($p < 0.05$) in second- to fourth-year full-time female students and by 3.5 % ($p > 0.05$) in part-time female students. Compared with the theoretical test results in second- to fourth-year students with economics majors (Zakharina, E. A., 2008), we observe an identical pattern of increase in the number of correct answers in female students from 58.9% to 61.6%. However, the overall score is slightly higher in fourth-year female students from the Faculty of Primary Education (64.1%) than that of the economics majors (61.6%). Significant differences were reported for the part-time female students: their total level of correct answers is 54.7% up to the fourth year, which is 10% lower than that in full-time students. The greatest differences are reported for questions related to the Olympics (13.2%), methodological questions (15%) related to the fundamentals of self-training and the organization of the physical training process in junior schoolchildren. When questioning female students about the need for theoretical and methodological knowledge for self-training and improvement of their physical skills, we found that positive answers in fourth year part-time students received the highest score (8.7%). The need for knowledge in self-control over their physical condition in these female students is 2.6 points higher than that in full-time female students.

The result of the physical training process is to improve the functional capabilities of the body, and consequently, physical health. We recorded the positive dynamics for all indexes of physical health in second- to fourth-year female students and the transition of the general index of physical health to a higher "average" level.

In part-time female students, all indexes of interest are lower than those in full-time female students. In addition, there was no positive dynamics in the indexes of interest from the second- to fourth-year due to the lack of compulsory physical training classes and systematic extracurricular activities. This is confirmed by the results of testing physical fitness. The tasks of physical training for professional activities include specific features of physical fitness. Therefore, we selected a set of locomotor tests from the school curriculum in physical training at elementary school and one test (a comprehensive strength exercise) from the physical training program for university students. The findings show that full-time female students have a positive dynamics of increase in the results of field-specific tests peculiar to junior schoolchildren (standing start running 30 meters, running 4×9 meters, standing long jump, seated position tilting, body raising within 30 seconds). The level of display of the abovementioned physical qualities in the fourth year is in line with the average indicators in upper-level students. However, the results are slightly lower than the standard for students. This level of physical fitness allows students to carry out professional teaching activities. The results of locomotor tests in part-time female students correspond to the level of 9- to 10-year-old schoolchildren and will be a limiting factor for the activities of the organizer and direct participation in action-oriented games, recreational activities and qualified physical training classes at elementary school. We have identified the factors that adversely affect the professional and applied physical training of part-time female students from the Faculty of Primary Education, namely, the lack of compulsory physical training classes, low level of physical activity, lack of targeted field-specific extracurricular activities and low level of motivation for self-improvement. Therefore, we have developed organizational and methodological conditions for the formation of motivation for professional and applied physical training.

The organizational conditions stipulated that the Department of Theory and Methodology in Physical Training would organize extracurricular activities for part-time students from the Faculty of Primary Education during the school year. A schedule of organizational measures was developed to include the dates of assignment of tasks to students, reporting on the accomplishment of such tasks and the dates of the final test. Methodological conditions included: - Provision of female students with relevant methodological literature (an exercise book "Together with Fizkulturkin" by N.V. Moskalenko and a textbook "Control during Physical Training of Children, Adolescents and Youth" by V. Bezverkhnia).

- Development of the content for methodological and practical tasks for female students during the year.

The experiment was conducted from September 2017 to May 2018 and involved third-year part-time students from the Faculty of Primary Education. The experimental group included 28 female students, and the control group included 25 female students. The experimental group was composed of volunteer female students. The performance criteria of the developed organizational and methodological conditions for the formation of motivation in female students for professional and applied physical training of elementary teachers were as follows:

- involvement in systematic physical exercises;
- motivation for attending classes;
- motivation for success;
- level of theoretical knowledge;
- level of physical health;
- level of physical fitness.

The results of the transformative experiment indicate the activation of extracurricular practical activities in part-time female students. Thus, in the experimental group, the involvement in various forms of systematic physical exercises increased to 75%. There appeared a new motivation for physical exercise - "to achieve the proper level of professional and applied physical training" (95%); the motivation of "improved health" and "improved physical fitness" also increased. The greatest motivator for female students was the periodic monitoring of their own performance in terms of physical fitness as well as comparison with the standards of younger students.

In the experimental group of female students, the self-evaluation of health and physical fitness increased from 5.7 points to 6.4 points and from 5.7 points to 8.2 points, respectively, as evidenced by the actual test results. This indicates an increased objectivity of evaluation of female student's own physical abilities.

Positive dynamics in motivation for studying was noted. The motivation for "acquiring of knowledge" increased by 10%, and the motivation for "mastering a profession" increased by 14%. Female students with a high level of motivation for success (29%) and empathy for children (39%) were reported.

As a result of the proposed experimental program, the level of theoretical knowledge in female students has increased, especially in terms of the general theory of physical training (by 25%) and teaching and self-training methodology (23%). Therefore, the proposed organizational and methodological conditions for enhancing extracurricular activities in part-time students aimed at improving general and professional and applied physical training had a positive effect. The basis is an increase in the motivation for self-study of educational and methodological literature, an increase in the level of theoretical knowledge in physical training, as well as an increase in the level of physical activity through various forms of systematic physical exercises.

In this study, we developed motivators to be included in systematic physical activities aimed not only at improving overall physical fitness, but also at enhancing relevant future professional activities. Then, with the "immersion" in independent theoretical, methodological and practical training of part-time students, we observed the appearance of new motivation for physical exercises, such as "achieving appropriate standards of professional and applied physical fitness", and a new hierarchy of values with a priority of "acquiring new knowledge." We understand that comparison of the results of physical fitness in female students of the experimental and control groups with different scope of physical activity may not seem entirely correct. However, we focused specifically on developing conditions that would encourage part-time students to practice their own physical exercises, which is almost impossible for the teacher to check. However, the objective criterion for extracurricular activities in female students is an increase in the level of physical health and physical fitness. We acquired information about the values of students from pedagogical specialties, the structure of students' motivation for physical training with respect to empathy and adequate self-evaluation of physical abilities. New information was acquired about: 1) the peculiarities of professional and applied physical training of full- and part-time female students from pedagogical specialties; 2) the structure of motivational factors affecting independent professional and applied physical training; 3) the limiting factors that adversely affect the professional and applied physical training of female students; 4) the organizational and methodological conditions contributing to the formation of motivation for professional and applied physical training in part-time female students, 5) the possibility of formation of motivation for professional and applied physical training in part-time female students in the absence of compulsory physical training classes.

Discussion

The works by A.I. Podlesny (2008), S.O. Ryassa (2008), G.I. Gonchar (2013) et al. were devoted to the study of motivation for professional and applied physical training.

In his research, A.I. Podlesny stated that the motivation for professional and applied physical training of students learning the boatmaster trade was influenced by the propensity to choose the trade, the need to achieve, the motivation to focus on success (Tatyana Mokrova, 2018).

S.O. Ryassa found that the professional development of university female students with major in physical training would be more successful if the students strove for continuous self-improvement and mastering

of skills in terms of self-education (26.83%), targeted acquisition of the necessary professional skills and abilities (10.98%), a high level of general knowledge (8.0%), self-study (6.10%), as well as the ability to organize their own extracurricular activities (4.88%). G.I. Gonchar emphasized that with each year students' motivation to study decreases, as does the physical activity of students from the Faculty of Physical Training (Andrieieva O., 2018). Our findings are supported by authors (Fyshev, Yu. O., 2012) who report a decrease in the level of specially organized physical activities in second- to fourth-year female students from the Faculty of Primary Education from 60% to 50%. This is attributed to the lack of compulsory physical training classes after the second year. This is supported by the purpose of attending physical training classes. Thirty percent (30%) of second-year female students indicated that they attended physical training classes in order to make the grade in physical training, with 23.3% and 16.7% of fourth-year female students attending the physical training classes in order to improve physical fitness and due to the benefits of physical exercises, respectively.

We studied the attitude to the "physical training" discipline using a methodology modified by O.Yu. Marchenko. Comparing the findings of studies conducted by O.Yu. Marchenko, G.I. Gonchar, A.A. Bilichenko involving students, it can be noted that the overall assessment of the attitude of students toward the "physical training" discipline is approximately the same. The attitude of students toward the discipline who go in for sports is nearly 1 point higher than that of students who do not. This confirms the low level of interest of female students in independent exercises (1.7 - 2.3 points). However, our studies further developed the idea of female students about the importance of the "physical training" discipline for future professional activity. Thus, from the second to the fourth year, the "interest in the "physical training" discipline" increases by 0.5 points ($p < 0.05$); "the necessity of theoretical knowledge in physical training" for future work" increases by 0.7-1.3 points ($p < 0.05$); and "the interest in teacher's classroom instructions" increases by 0.5 points ($p < 0.05$).

The conclusions by researchers G.V. Bezverkhnia, E. Fedorenko, M.M. Sainchuk, O.Yu. Marchenko, O.O. Bilichenko on sports that female students primarily prefer, including aerobics, fitness, bodybuilding, water fitness, and game sports, are also confirmed.

Conclusion

The professional and applied physical fitness of elementary teachers has theoretical and practical components. The general level of theoretical knowledge in second- to fourth-year full-time female students is growing due to a decrease in the number of female students with a low level of knowledge from 66.7% to 33.3% ($p < 0.01$) and an increase in the number of female students with an average level of knowledge from 33.1% to 60% ($p < 0.01$). However, only 2 fourth-year female students had a sufficient level. Among part-time students, no positive dynamics is observed in terms of theoretical preparedness in physical training. The number of female students with a low level of knowledge ranges from 50 to 46.6%, with an average of 47 to 53%. The developed organizational and methodological conditions for enhancing extracurricular activities in part-time students aimed at improving general and professional and applied physical training had a positive effect: an increase in the motivation for self-study of educational and methodological literature, an increase in the level of theoretical knowledge in physical training, as well as an increase in the level of physical activity through various forms of systematic physical exercises.

Our study offers new possibilities for the formation of motivation for professional and applied physical training in part-time students from other pedagogical specialties in the absence of compulsory physical training classes.

Conflict of interests. The authors declare that there are no conflicts of interest.

References

- Alexander E. Bolotin; Vladislav V. Bakayev; Sergey A. Vazhenin. 2015. Educational technology of using the system of Pilates for the prevention of spine disorders of female students. *Journal of Physical Education and Sport*, 15(4). 724 - 729. DOI:10.7752/jpes.2015.04110
- Andrieieva O., Hakman A., Balatska L., Moseychuk Y., Vaskan I., Kljus O. Peculiarities of Physical Activity Regimen of 11-14-Year-Old Children During Curricular and Extracurricular Hours. *Journal of Physical Education and Sport*. 2017(4). 2422-2427. (SNIP) : 0.904. (SJR) : 0.429.
- Andrieieva O., Galan Y., Hakman A., I. Holovach. Application of ecological tourism in physical education of primary school age children. *Journal of Physical Education and Sport* 2017 (1). 7-15. (SNIP) : 0.904. (SJR) : 0.429.
- Andrieieva O., Hakman A. Health status and morbidity of children 11-14 years of age during school. *Journal of Physical Education and Sport*, 2018 Supplement issue 2, 1231 – 1236. (SNIP) : 0.904. (SJR) : 0.429.
- Anna Bozhkova, Petya Slavcheva-Hinkova, Daniela Lekina. 2017. Impact of specialized sports program for students with health issues. *Journal of Physical Education and Sport*. Supplement issue 1. 3 – 6. DOI:10.7752/jpes.2017.s1001
- Bezvernaya, G. V. Peculiarities of Empathy of Female Students with Pedagogical Majors / Bezvernaya, G. V., Tsybulskaya, V. V. // *Slobozhansky Pedagogic Bulletin*, 2014. - No. 4. - P. 5-8.

- Elizabeth K. Wells, Megan L. Avery, Brooke R. Catanzarito, Brandon N. Wilson, Jennifer A. Bunn. 2016. Assessment of breakfast and physical activity habits in college students at a rural private institution. *Journal of Physical Education and Sport*. 2016(3).770 - 775. DOI:10.7752/jpes.2016.03123
- Fyshev, Yu. O. Assessment of Motivational Factors for Physical Training of Students / Fyshev, Yu. O., Lutsenko, L., Shcherbak, R. M. // *Slobozhansky Scientific and Sports Bulletin*. - Kharkiv., 2012. - No. 3. - P. 164-169.
- Hakman A., Nakonechniy I., Moseychuk Y., Liasota T., Palichuk Y., Vaskan I. Training Methodology and Didactic Bases of Technical Movements of 9-11- Year-Old Volleyball Players. *Journal of Physical Education and Sport*. 2017(4). 2638-2642. (SNIP) : 0.904. (SJR) : 0.429.
- Hakman A., Nakonechniy I., Balatska L., Filak Y., Kljus O., Vaskan I. Peculiarities of physical and mental capacity of 6-9-year-old children under elementary school conditions. *Journal of Physical Education and Sport*, 2018 Supplement issue 2, 1192 – 1198. (SNIP) : 0.904. (SJR) : 0.429.
- Hakman A., Vaskan I., Kljus O., Liasota T., Palichuk Y., Yachniuk M. Analysis of the acquisition of expertise and mastery of physical skills for performing techniques by young footballers. *Journal of Physical Education and Sport*, 2018 Supplement issue 2, 1237 – 1242. (SNIP) : 0.904. (SJR) : 0.429.
- Iedynak G., Galamandjuk L., Kyselytsia O., Nakonechniy I., Hakman A., Chopik O. Special Aspects of Changes in Physical Readiness Indicators of Young Men with Different Somatotypes between 15 and 17 Years of Age. *Journal of Physical Education and Sport*. 2017(4). 2690-2696. (SNIP) : 0.904. (SJR) : 0.429.
- Kolomiytseva, O. E. Optimization of Professional and Applied Physical Training of Students from Secondary Humanitarian Educational Institutions: Thesis ... for a Degree of Ph.D. in Physical Training and Sports. 24.00.02 - Physical Training, Physical Education of Different Social Groups / Kolomiytseva, O. E. - Kharkiv, 2006. - P. 12.
- Krusevich, T. Demand and Motivational Approach to Organizing Physical Training of Students / Krusevich, T., Podlesny, O. // *Theory and Methodology of Physical Training and Sport*. - 2008. - No. 2. - P. 69.
- Lubysheva, L. I. Theoretical and Methodological Substantiation of Physical Training of Students / Lubysheva, L.I., Gruznykh, G. M. // *Theory and Practice of Physical Training*. - 1991. - No. 6. - P. 9-12.
- Maslow, A. Motivation and Individuality / Maslow, A. = [Rev. 3]. - St. Petersburg.: Piter, 2006. - 352 p.
- Moskalenko, N. V. Motivational Priorities of Students in Physical Education and Sports / Moskalenko, N. V., Sychova, T. V. // *Sports Bulletin of the Dnieper Region*. - 2012. - No. 2.- P. 10-14.
- Pasichnyk V., Pityn M., Melnyk V., Karatnyk I., Hakman A., Galan Y. Prerequisites for the physical development of preschool children for the realization of the tasks of physical education. *Physical Activity Review*, 2018, vol. 6, 117-126.
- Physical Education: Curriculum for Ukrainian Higher Educational Institutions with Accreditation Level 3 and 4 / Compiled by Raevsky, R. T., Tretyakov, M. A., Kanyshevsky, S. M. - K., 2003. - 44 p.
- Tatyana Mokrova, Nina Bryukhanova, Aleksander Osipov, Tatyana Zhavner, Ekaterina Lobineva, Albina Nikolaeva, Anna Vapaeva, Polina Fedorova. 2018. Possible effective use of Kangoo Jump complexes during the physical education of young students. *Journal of Physical Education and Sport*. Supplement issue 1. 342 – 348.018 DOI:10.7752/jpes.2018.s146
- Tovt, V. Motivational Component of Physical Training of Student Youth / Tovt, V., Mykhailovych, S. // *Young Sport Science of Ukraine: Collection of Studies in Physical Training and Sports*. Rev. 6: in 2 Vol. - L.: Panorama Publishing, 2002. - V. 1. - P. 406-409.
- Tsybulskaya, V. Professional and Applied Physical Training as Part of Physical Education of Pedagogical Universities at the Present Stage / Tsybulskaya, V. V. // *Physical Training of Children, Adolescents, Youth and Adults Nowadays: Proceedings of the 2nd International Research and Practice Online Conference*. (Uman, April 10). - Uman: Visavi Publishing, 2014. - 176 p.
- Yarmak O., Blagii O., Palichuk Y., Hakman A., Balatska L., Moroz O., Galan Y. Analysis of the factor structure of the physical condition of girls 17-19 year-old. *Journal Of Human Sport & Exercise*. Supplementary Issue: Spring Conferences of Sports Science. Costa Blanca Sports Science Week, 26-28 April 2018. Calpe. Alicante, Spain. 259-268. (SNIP) : 0.232. (SJR) : 0.163.
- Yarmak O., Galan Y., Hakman A., Dotsyuk L., Blagii O., Teslitskyi Y.. The Use of Modern Means of Health Improving Fitness during the Process of Physical Education of Student Youth. *Journal of Physical Education and Sport* 2017 (3). P. 1935-1940. (SNIP) : 0.904. (SJR) : 0.429.
- Yarmak O., Galan Y., Nakonechniy I., Hakman A., Filak Y., Blahii O. Screening System of the Physical Condition of Boys Aged 15-17 Years in the Process of Physical Education. *Journal of Physical Education and Sport*, 2017. Supplement issue 3. 1017-1023. (SNIP) : 0.904. (SJR) : 0.429.
- Zakharina, E. A. Formation of Motivation for Physical Activity During Physical Training of Students from Higher Educational Institutions: Thesis ... for a Degree of Ph.D. in Physical Training and Sports. 24.00.02 - Physical Training, Physical Education of Different Social Groups / Zakharina Yevgeniya Anatolievna. - K., 2008. - 198 p.