DOI:10.28925/2664-2069.2020.1.1 UDK: 796.015

IMPROVEMENT OF THEORETICAL COMPETENCE OF BEGINNER ATHLETES IN CYCLIC SPORTS

Bohuslavska Viktoriia [1(ABDC)], **Hlukhov Ivan** [2(DF)],
Drobot Kateryna [2(EF)], **Pityn Marian** [3(ACF)]

[1] *Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University*, Vinnytsia, Ukraine
[2] *Kherson State University*, Kherson, Ukraine
[3] *Lviv State University of Physical Culture named after Ivan Boberskyi*, Lviv, Ukraine

Author contribution: A – study concept and design; B – data collection;
C – data analysis and interpretation; D – paper writing; E – paper editing;
F – paper final adoption.

Abstract

Introduction. Despite the constant modernization of the athletes' training system, as well as the existing legislative framework aimed at innovative transformations in the field of physical education and sports, currently, there is no information on the use of interactive tools in the theoretical training of athletes in cyclic sports, and it does not meet modern requirements for training athletes.

The study *aimed* to compare the effectiveness of training with the use of traditional and author's interactive tools of theoretical training of beginner athletes in cyclic sports.

Material and methods. In this work, the following research *methods* were used: theoretical analysis and generalization of literary sources, pedagogical observation, pedagogical experiment, pedagogical testing, methods of mathematical statistics. The study included 36 people involved in kayaking and canoeing at the stage of initial training. The sports experience of the subjects was 1-2 years, qualification at the level of III sports categories. Classes on the developed programs were conducted in the preparatory period of the macrocycle.

Results. Training, in which only the theoretical training tools recommended by the curriculum were used, proved to be ineffective in most sections of knowledge at the stage of initial training of athletes. Training sessions with the use of interactive tools proved to be more effective than classes that used only the theoretical training tools recommended by the curriculum.

Conclusions. Classes with the use of interactive theoretical training tools contributed more to the increase of the general level of theoretical training of young rowers at the stage of initial training - up to 57,4 % ($p < 0.05$) than classes using only theoretical training tools recommended by the curriculum. - up to 40,8 % ($p < 0.05$).

Prospects for further research in this direction include the development and experimental testing of the author's interactive tools for theoretical training, which will increase the level of theoretical training of athletes at different stages of training in cyclical sports.

Key words: theoretical training, cyclic sports, rowing, interactive means.

Introduction. Despite constant modernization of the athletes' training system, as well as the existing legislative framework aimed at innovative transformations in the field of physical education and sports [6; 11], currently, there is no information on the use of interactive tools in the theoretical training of athletes in cyclic kinds of sports, and it does not meet modern requirements for training athletes [1; 2; 3; 4].

There are quite a lot of scientific researches devoted to such components of the athletes' training as physical, technical, tactical, psychological and integral [10; 14], and theoretical information can be found in each of the conditional parts of the training [10]. Therefore, theoretical competence is an integral part of the athletes' training.

In contrast, the discrete issues of theoretical training of athletes are observed only in particular papers [9; 13; 15; 16; 17].

The attempt of solving this problem by M. Pityn [8] consisted in justification of the main statements of the theoretical training general concept in sports. Still, the realization statements of this concept did not suppose the specification according to the groups of sports as well as active implementation of interactive media in athletes' theoretical training determining the relevance of our study.

Connection of the work with research topics and plans. The paper is done within the topics: «Theoretical training basics in sports» for the years 2013−2017 (state registration number 0113U000659), «Theoretical and methodological basics of managing training process and competitive activity in Olympic, professional and adaptive sports» for the years 2016−2020 (state registration number 0116U003167) of the scientific and research work plan of Lviv State University of Physical Culture, and «Theoretical and methodological basics of programming and modeling of training athletes of different qualification» for the years 2016-2020 (state registration number 0116U005299) of the scientific and research work plan of Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University.

Due to the mentioned above, the **aim of the research** was to compare the efficiency of training with the use of traditional and author's interactive media of the beginner athletes' theoretical training in cyclic kinds of sports.

Material and methods.

Research body. The study included 36 people involved in kayaking and canoeing at the stage of initial training.

Research organization. The athletes were divided into two experimental groups: EG_1 and EG_2 having 18 and 18 people respectively. The sports experience of the subjects was 1-2 years, the qualification at the level of III sports categories. The classes as part of the developed programs were given during the macrocycle preparatory period.

In both experimental groups (EG_1 and EG_2), the semantic content of the classes in theoretical training was the same and corresponded to the previously established innovative structure and content of theoretical training for that stage of training [2; 4; 12].

The difference was that in the group EG_1 only the media and methods recommended by the curriculum were used [5]. While within the educational

and training process of the EG_2 athletes also author's interactive media of theoretical training were implemented, namely computer games on the part topics of the athletes' theoretical training at the stage of preliminary initial training.

The pedagogical experiment using the developed interactive media lasted 30 weeks, one hour a week. The monitoring was done by conducting a test.

Using all author's interactive media of theoretical training took place according to the procedure including successive steps: conducting a preliminary talk (narration) with the athletes on the topic of an educational and training class; introducing the point of the game to the athletes; placing each player at the separate PC; providing assistance to the athletes (if necessary) while completing the game; determining the winner by the complex of factors (speed in execution, number of mistakes made, etc.); analyzing and discussing the results of the game specifying the pros and cons of the participants' actions.

Methods of research: theoretical analysis and generalization of literary sources and Internet information network; pedagogical observation to implement the analysis of the educational and training process in the athletes' theoretical competence; pedagogical experiment aimed at verification of the efficiency of using author's interactive media in theoretical training regarding the level of athletes's theoretical competence; pedagogical testing to establish the level of athletes' theoretical competence; methods of mathematical statistics to determine the fairness of differences between the figures of the 1st and 2nd testing assessments of the athletes (Sign test was used). This criterion is nonparametric and was used because the gained data is not applicable to normal probability law [7].

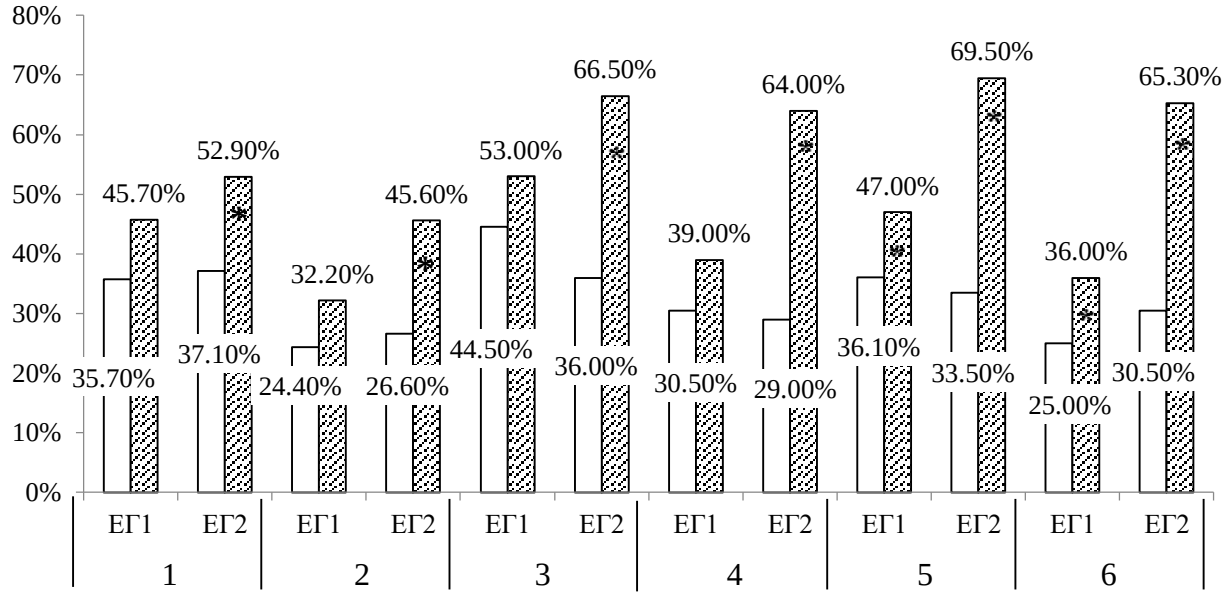
The research was carried out in accordance with the main bioethical principles.

Results of the research and discussion. To determine the fairness of differences between the indicators of the rowers' education levels before and after the pedagogical experiment (1st and 2nd testing assessments) the sign test was used. This criterion is nonparametric and was used because the gained data is not applicable to normal probability law [7].

At the stage of initial training, the educational and training classes as part of developed programs were given in two groups: EG_1 (n=18) and EG_2 (n=18). Thirty weeks after the beginning of the classes in the group EG_1 where only theoretical training media and methods required by the curriculum were used [5], within the unit «The history of kayaking and canoeing as sports» no statistically admissible changes were revealed.

In contrast, after thirty-weeks-long trainings using the author's gaming media, in the group EG_2 we established statistically admissible difference between the levels of the rowers' theoretical competence before and after the pedagogical experiment within the unit «The history of your kind of sports». Thus, before the start of the pedagogical experiment the average level of the young athletes' theoretical competence was 2.61±0.2 points, and after it increased to 3.67±0.33 points. In percentage ratio such difference equals 15.71% ($p< 0.05$) (*fig. 1*).

On the unit «Humanitarian and socializing knowledge in athletes' training» in the group EG_1 no



statistically admissible changes of the young rowers' theoretical competence

Fig. 1. **Indicator of the athletes' theoretical competence at the stage of initial training (EG_1, n=18 and EG_2, n=18, % of correct answers)**:
▭ — before the start of the trainings; ▨ — 30 weeks after the start of the trainings; * — $p< 0.05$ –probability of difference in indicators in respect of raw data; Knowledge units: 1 – The history of kayaking and canoeing as sports; 2 – Humanitarian and socializing knowledge in athletes' training; 3 – The content of sports training; 4 – Medical and biological basics of sports training; 5 – Material and technical support; 6 – Safety rules

levels were revealed before and after the pedagogical experiment, though the tendency for their increase was observed.

In contrast, the training in the group EG_2 contributed to statistically admissible increase of the athletes' theoretical competence level. Thus, before the start of the training with the use of the author's theoretical competence gaming media the average educational levels of the rowers on this unit were 1.33±0.13 points, and after – 2.28±0.2 points. The difference between the indicators equals 13.57 % ($p<0.05$).

As well as on the previous one, on the unit of theoretical training «The content of sports training» in the group EG_1 no statistically admissible changes of the s athletes' educational levels were revealed. At the same time, in the group EG_2 the rowers' theoretical competence levels increased admissibly from 0.72±0.13 points before the start of the pedagogical experiment to 1.33±0.07 point after its completion. The difference between the indicators before and after the completion of the pedagogical experiment resulted in 30.5 % ($p<0.05$).

Similar dynamics of changes of the indicators of average theoretical competence levels is observed on the unit «Medical and biological basics of sports training». In the group EG_1, 30 weeks after the start of the trainings no statistically admissible changes of the rowers' educational levels occurred, though there is a visible tendency for their further increase. In contrast, in the

group EG_2 over the same period of trainings the average indicator of the athletes' knowledge levels on the topic of this training unit increased from 1.16±0.2 points to 2.56±0.13. In percentage ratio such difference between indicators equals 35.0 % (p<0.05).

The educational and training classes in the athletes' theoretical competence on the unit «Material and technical support» caused statistically admissible changes of average indicators of the rowers' education levels of the group EG_1 before and after the pedagogical experiment. Thus, before the start of the classes this level equaled 0.72±0.07 points, and after the experiment completion it increased by 10.9 % (p<0.05) and equaled 0.94±0,13.

At the same time, in the group EG_2 the educational and training classes in theoretical competence using the author's gaming media resulted in considerably higher increase of the young rowers' theoretical competence levels. Thus, before the start of the training this indicator equaled 0.67±0.07 points, and after the experiment completion it increased admissibly to 1.39±0.07 points. The difference between the indicators equals 36.0% (p<0.05).

On the unit «Safety rules» both in the group EG_1 and EG_2 30 weeks after the start of the classes, statistically admissible increase of the athletes' theoretical competence levels was revealed. For instance, in the group EG_1 the athletes' educational levels before the start of the classes equaled on average 1.0±0.13 points, and after the pedagogical experiment completion they increased by 11.0 % (p<0.05) and equaled 1.44±0.2 points. In the group EG_2 the athletes' educational levels before the start of the classes equaled on average 1.22±0.13, and after the pedagogical experiment completion they increased by 34.75 % (p<0.05) and equaled 2.61±0.13 points.

We should pay attention to the fact that both in the group EG_1 and EG_2 statistically admissible increase of the athletes' overall theoretical competence levels were revealed in all the suggested knowledge units at the stage of initial training. For instance, in the group EG_1 before the start of the pedagogical experiment the average theoretical competence levels by the results of the tests equaled 7.56 ±0.4 points, and after its completion they increased admissibly to 9.78±0.6 points. Such increase in percentage ratio equals 9.25 % (p<0.05).

In contrast, in the group EG_2 the difference between the indicators before the start of the pedagogical experiment and after its completion is considerably higher. Thus, before the start of the experiment the average theoretical competence level equaled 7.72±0.4 points, and after – it increased admissibly to 13.78±0.73 points. In percentage ratio such increase equals 25.25 % (p< 0.05) (*fig. 2*).

Thus, as a result of the analysis of the data gained, it was established that under the influence of 30-weeks-long trainings in the group EG_1 using only the media required by the curriculum for the stage of initial training statistically admissible increase was revealed only in two knowledge units: «Material and technical support» and «Safety rules». Average indicators of the correct answers to the test questions in the mentioned units equal 47.0 % and 36.0 %, respectively.

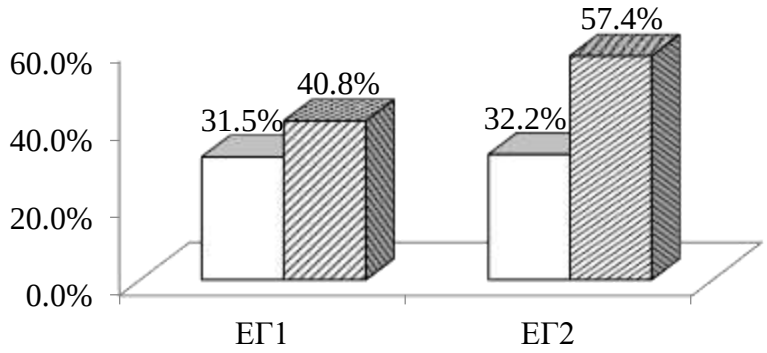


Fig. 2. **Average indicator of the athletes' theoretical competence in the groups EG_1 (n=18) and EG_2 (n=18) at the stage of initial training, in %:**
□ — before the start of the trainings; ▨ — 30 weeks after the start of the trainings

At the same time, despite the lack of statistically admissible increase of the athletes' educational levels in the group EG_1 in most knowledge units before and after conducting of the pedagogical experiment, admissible increase of the athletes' overall theoretical competence levels was revealed.

It can be explained by a minor increase of the athletes' educational levels in each separately taken knowledge unit, which resulted in promotion of statistically admissible increase of the overall value of theoretical competence in all knowledge units of the young rowers.

In the group EG_2 where the author's gaming media were used during the classes with the athletes statistically admissible increase of the rowers' theoretical competence was recorded in all knowledge units. We are of the opinion that this is due to the gaming media of the athletes' theoretical training providing a lot higher level of emotional coloring of the class than the one using only the theoretical training media recommended by the curriculum [5] for such stage of training. At the same time, a great impact on the athletes' motivation towards getting knowledge in the chosen sport is gained by a competitive component causing the rating of the players and being depicted after the finish of the online-game by the group of athletes.

Conclusions:

1. The trainings, during which only the theoretical training media recommended by the ongoing curriculum were used, appeared to be not very efficient in most knowledge units at the stage of initial training of athletes.

2. The trainings, during which also the gaming media were used except those recommended by the curriculum, promoted admissible increase of the theoretical competence levels in all suggested units for the stage of initial training.

3. The analysis of the research results allowed revealing the knowledge units in which the biggest number of the correct answers to the test was recorded. They are the following units: «Material and technical support», where the percentage ratio of the correct answers equals 69.5 %, «The content of sports training» – 66.5 %, «Safety rules» – 65.3 %, «Medical and biological basics of sports training» – 64.0 %. We suppose that the higher knowledge level in these units can be explained by a possibility of their practical use.

Prospects for future search in this direction imply the development and experimental verification of the author's interactive media of theoretical training promoting the increase of the athletes' theoretical competence levels at different stages of training in cyclic sports.

References:

1. Bohuslavska V, Briskin Y, Pityn M. Directions of application of the latest information technologies in the field of physical culture and sports. *Dnipro Sports Bulletin*. 2017;2:16–20. Ukrainian.
2. Boguslavska V. Priority of theoretical training in cyclical sports (based on a survey of trainers-teachers). *Physical culture, sports and health of the nation: coll. of sci. works*. 2017;4(23):9–13. Ukrainian.
3. Boguslavskaya VYu. Information technologies of a new paradigm of education in physical culture and sports. *Physical culture, sports and health of the nation: coll. of sci. works*. 2017;3:19-24. Ukrainian.
4. Boguslavskaya VYu. Priority of means of theoretical training in cyclic sports (on the material of the survey of athletes). *Scientific journal of the Drahomanov National Pedagogical University. Ser. 15. "Scientific and pedagogical problems of physical culture" physical culture and sports: coll. of sci. works*. 2017;9(91):15-18. Ukrainian.
5. Kayaking, canoeing and rowing slalom: textbook. progr. for children and youth sports schools, specialized children and youth schools of the Olympic reserve, schools of higher sportsmanship and schools of the Olympic reserve. Kyiv. 2007. 104 p. Ukrainian.
6. Law of Ukraine "On Basic Principles of Information Society Development in Ukraine for 2007—2015" of January 9, 2007, № 537-16. Available from: http://zakon.rada.gov.ua/cgibin/laws/main.cgi?nreg = 537-16. Ukrainian.
7. Kostiukevych VM, Voronova VI, Shynkaruk OA, Borysova OV. Fundamentals of research work of undergraduates and graduate students in higher educational institutions (specialty: 017 Physical Culture and Sports): textbook. Vinnytsia: Nilan Ltd. 2016. 554 p. Ukrainian.
8. Pitin MP. Theoretical training in sports: a monograph. Lviv: LSUFK. 2015. 372 p. Ukrainian.
9. Pitin MP, Briskin YA, Boguslavskaya VY. Theoretical and methodological bases of theoretical training management of athletes in the system of long-term improvement. In: V.M. Kostiukevych, ed. Theoretical and methodological foundations of managing the process of training athletes of different qualifications: a collective monograph. Vinnytsia: Planer LLC. 2017; 56-85. Ukrainian.
10. Platonov VN. The system of training athletes in Olympic sports. General theory and its practical applications [for coaches]: Kyiv: Olympic lit., 2015. 680 p. Russian.

11. On priority areas of innovation in Ukraine: Law of Ukraine of 08.09.2011 № 3715-VI (as amended). Information of the Verkhovna Rada of Ukraine. Available from: http://zakon2.rada.gov.ua/laws/ show /3715-17. Ukrainian.
12. Bohuslavska V. Priority of theoretical preparation for cyclic sports (on the material of examination of sportsmans and trainers). *Studies in Sport Humanities*. 2017;21:29-36. DOI: 10.5604/01.3001.0011.7038.
13. Briskin Yu, Pityn M, Zadorozhna O, Smyrnovskyy S, Semeryak Z. Technical devices of improvement the technical, tactical and theoretical training of fencers. *Journal of Physical Education and Sport*. 2014;3:337−341. DOI:10.7752/jpes.2014.03051.
14. Cheban Y, Chebykin O, Plokhikh V, Massanov A. Mental resources for the self-mobilization of rowing athletes. *Journal of Physical Education and Sport*. 2020; 20(3):1580−1589. DOI:10.7752/jpes.2020.03216.
15. Pityn M, Bohuslavska V, Khimenes Kh, Neroda N, Edeliev O. Paradigm of theoretical preparation in sports. *Journal of Physical Education and Sport*. 2019; 19(6): 2246-2251. DOI:10.7752/jpes.2019.s6338.
16. Pityn M. Features of theoretical training in combative sports. *Journal of Physical Education and Sport*. 2013; 13(2):195−198. DOI:10.7752/jpes.2013.02032.
17. Torrents C, Balagué N. Dynamic systems theory and sports training. Education. Physical Training. Sport. 2006.

The authors claim no conflict of interests.

Information about the authors:

Bohuslavska Viktoriia
ORCID:0000-0003-3609-5518
Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University,
Vinnytsia, Ukraine
E-mail:vik.bogusl@gmail.com

Hlukhov Ivan
ORCID: 0000-0003-4226-5253
Kherson State University,
Kherson, Ukraine
E-mail:swim.ks.ua@gmail.com

Drobot Kateryna
ORCID: 0000-0002-1421-2464
Kherson State University,
Kherson, Ukraine
E-mail:kdrobot6@gmail.com

Pityn Marian
ORCID: 0000-0002-3537-4745
Lviv State University of Physical Culture n.a. Ivan Boberskyi,
Lviv, Ukraine
E-mail:pityn7@gmail.com

The article received July, 10, 2020.

Bohuslavska Viktoriia, Hlukhov Ivan, Drobot Katerina, Pityn Maryn. Improvement of theoretical competence of beginner athletes in cyclic sports. *Sport Science and Human Health*. 2020; 1(3):4-11. DOI:10.28925/2664-2069.2020.1.1