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Influence of informational technologies on physical background of students engaged futsal in sport-oriented physical education

Abstract. Purpose: to determine the influence of usage informational technologies in sport-oriented physical education on physical background level of students engaged futsal. **Material and Methods:** in the research students (young man – $n=40$) of 18–20 year old were engaged. **Methods:** Analysis of literature sources formatted pedagogical experiment, maths statistics. **Results:** upon sum of two terms experiment with purposeful usage of informational technologies in sport-oriented physical education proved true improvement ($p<0,05$ – $p<0,001$) of test result that characterize strengths development (“Horizontal bar pull-ups” – by 33,3%, “Sitting-ups of the body per 1 min” – by 21,1%), flexibility (“Sitting bend forward” – by 26,8%), speed and speed-and-strengths qualities (“100 m race” – by 4,6%, “Standing long-jump” – by 4,8%). **Conclusion:** the results confirm the arguments and prove the feasibility of the use of information technology in the sports-oriented physical training of students in universities.

Keywords: student, sport-oriented physical education, informational technologies, futsal.

Introduction. The intensification of the educational process in HEI led to a tendency of the decrease in volume of physical activity of students. It has an adverse effect on their physical development, physical fitness and functional condition of their organism. In this regard the relevance of preservation and promotion of health of students increases [3; 7; 11].

The development of the scientific and technical progress promoted a computerization of all spheres of life. Such shifts have two parties of changes in life. First, the increase of communication opportunities by means of computer information technologies is followed by a rapid development of quantity and quality of information in all areas of life. Secondly, the reduction of time which is allowed for physical (motive) activity, and, respectively, leads to decrease in functionality and physical fitness of the most part of the population, in particular, of student's youth [2; 5].

According to researchers V. A. Kashuba, S. M. Futorny and N. L. Golovanova [4], a use of computer information technologies allows individualizing the process of physical training, increases activity of students, helps to intensify the educational process, increases motivation to classes by physical exercises, creates conditions for an independent work, promotes the development of a self-assessment at students, creates the comfortable environment in the course of classes by physical exercises. The increase of the efficiency of the process of physical training of students is the useful final result of it.

At the present stage a number of the techniques providing the creation of a complex idea of structure and features of a performance of technical and tactical elements and exercises, their demonstration in a game and historical interrelation, application of video technologies, animation elements with a use of 2D and 3D - animation in combination with Flahs-technologies, application of special characters of animation plots, application of color combinations, special effects 2D and 3D - animations for emphasis of separate technical and tactical elements are developed. The visualization of elements of technique and tactics, their modeling facilitates understanding and accelerates assimilation of a training material [1; 5].

However at SOPE in HEI an application of information technologies, on the one hand, has to differ from similar technologies for the qualified sportsmen, in connection with features and level of physical and special fitness of the students who are engaged in the chosen sports, and on the other hand, has to correspond to problems of the formation of a healthy lifestyle and consider features of a perception by student's youth of the provided information [2; 6; 8].

In the system of estimation of the progress of students on a discipline “Physical education” when using of the sports-oriented form of the organization of the educational process is expedient to consider quality which is expressed available skills of a performance of physical exercises, ability to work independently as during classes, and after hours [9].

In this regard a need of an active development and introduction of information technologies ripened in the process of sports-oriented physical education as the computerization of the educational activity is an objective need demanding the manifestation of mobility, initiative and creativity [3; 4].

Communication of the research with scientific programs, plans, subjects. The research is conducted according to the Consolidating plan of the research works in the sphere of physical culture and sport for 2013-2014 on the subject “Theoretic-methodical bases of application of information, pedagogical and medico-biological technologies for the formation of a healthy lifestyle” (No. of the state registration is 0113U002003).

The objective of the research: to investigate the influence of application of information technologies at sports-oriented physical education (SOPE) on the level of physical fitness of students ($n=40$) which are engaged in futsal.

Material and methods of the research: analysis of references, pedagogical experiment, methods of mathematical statistics. Students (boys – $n=40$) at the age of 18–20 years old were involved in the researches.

Results of the research and their discussion. The structural model SOPE of students with an application of information technologies was created by us on the basis of the system analysis of the organization of the process of training in higher education institution which was approved during our research. In the model of SOPE all students are engaged in the sports-oriented educational groups on the chosen sports (physical activity) which create a whole due to the existence of a complete form of creation of program material and the unified algorithm of estimation of the progress of students. An application of information technologies allows acquainting students about the existence of SOPE groups, optimizing process of the development of technical and tactical elements of different types of sport, improving physical fitness of a student [10].

Table 1

Indicators of physical fitness of students of the control (n=21) and experimental (n=19) groups before carrying out the experiment (futsal, young men)

Indicators of testing	Period of testing	Group	\bar{X}	S	m	t before-after the experiment	p before-after the experiment	t the control and experimental groups before carrying out the experiment	p the control and experimental groups before carrying out the experiment	t the control and experimental groups after carrying out the experiment	p the control and experimental groups after carrying out the experiment
Run on 100 m, s	before the experiment	experimental	13,70	0,62	0,14	3,14	0,001	-1,19	0,24	-3,59	0,001
	after the experiment		13,16	0,42	0,10						
	before the experiment	control	13,93	0,62	0,14	1,02	0,31				
	after the experiment		13,74	0,58	0,13						
A long jump from a place, m	before the experiment	experimental	2,51	0,17	0,04	-2,46	0,05	0,01	0,99	2,16	0,05
	after the experiment		2,63	0,14	0,03						
	before the experiment	control	2,51	0,14	0,03	-0,86	0,40				
	after the experiment		2,54	0,12	0,03						
Pulling up on a crossbeam, quantity of times	before the experiment	experimental	9,32	2,29	0,52	-4,23	0,001	0,68	0,50	4,01	0,001
	after the experiment		12,42	2,24	0,51						
	before the experiment	control	8,86	2,01	0,44	-1,28	0,21				
	after the experiment		9,67	2,11	0,46						
Shuttle run 4x9 m, s	before the experiment	experimental	10,60	0,72	0,17	1,74	0,09	0,02	0,98	-1,63	0,11
	after the experiment		10,23	0,60	0,14						
	before the experiment	control	10,60	0,81	0,18	0,00	0,98				
	after the experiment		10,60	0,81	0,18						
Rise in a sitting position for 1 min, quantity of times	before the experiment	experimental	37,11	6,81	1,56	-2,01	0,05	-0,02	0,99	2,26	0,05
	after the experiment		41,21	5,70	1,31						
	before the experiment	control	37,14	5,66	1,23	0,00	0,99				
	after the experiment		37,14	5,66	1,23						
An inclination forward from a sitting position, sm	before the experiment	experimental	8,47	2,14	0,49	-3,30	0,001	-0,15	0,89	2,71	0,01
	after the experiment		10,74	2,08	0,48						
	before the experiment	control	8,57	2,11	0,46	-0,68	0,50				
	after the experiment		9,00	1,97	0,43						

The forming pedagogical experiment is made for the definition of influence of information technologies on the level of physical fitness of students at SOPE during the period from September, 2013 to May, 2014 with the students who are engaged in the control (n=21) and the experimental (n=19) groups on futsal.

The pedagogical testing was held including a trunk inclination forward from a sitting position, shuttle run of 4x9 m, a long jump about places, run on 100 m, rise in a sitting position in 1 min., pulling up on a crossbeam with a research objective of dynamics of physical fitness of students during the conducting of the experiment. At the beginning of carrying out experiment indicators of physical fitness didn't differ at representatives of the control and the experimental groups.

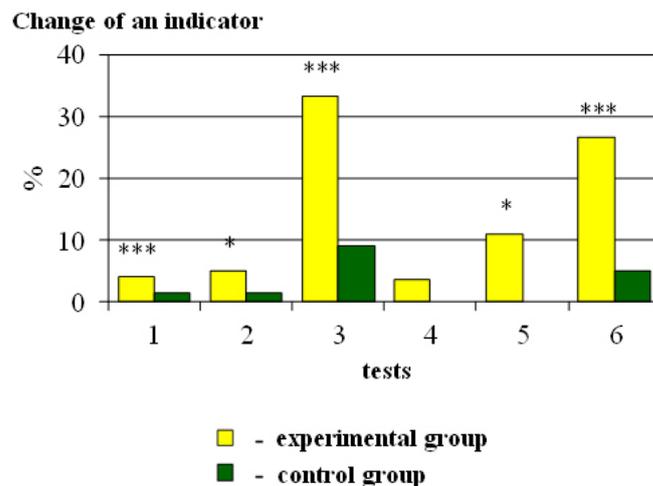
As a result of an application of information technologies in the educational process of SOPE the reliable increase of results of pedagogical tests on physical fitness is observed at the representatives of the experimental group who are engaged in futsal (tab. 1):

- "Run on 100 m" – from 13,7 s to 13,16 s (t=3,14, p<0,001);
- "A long jump from a place" – from 2,51 m to 2,63 m (t=2,46, p<0,05);
- "Pulling up on a crossbeam" – from 9,32 times to 12,42 times (t=4,23, p <0,001);
- "Rise in a sitting position in 1 min." – from 37,11 times to 41,21 times (t=2,01, p <0,05);
- "A trunk inclination forward from a sitting position" – from 8,47 sm to 10,74 sm (t=3,30, p<0,001).

The change of the above indicators is doubtfully in the control group (p>0,05).

In pic. 1 dynamics of a percentage change of physical fitness of students of the control and experimental groups before the experiment is visually presented. In the experimental group the greatest improvement of results is observed in the tests characterizing the development of force ("Pulling up on a crossbeam" – for 33,3%, at t=4,23, p<0,001, "Rise in a sitting position for 1 min." – for 21,1%, at t=2,01, p <0,05), flexibility ("An inclination forward from a sitting position" – for 26,8%, at t=3,14, p<0,001) and high-speed and power qualities ("A long jump from a place" – for 4,8%, at t=2,46, p<0,05, "Run on 100 m" – for 4,6%, at t=3,14, p<0,001). The minimum change of results is recorded in testing of dexterity ("Shuttle run" – for 1% (t=1,79, p>0,05)).

The level of the development of physical qualities at representatives of the control group in the «Rise in a sitting position for 1 min.» and «Shuttle Run» tests after carrying out the forming experiment didn't change, but high-speed and power and high-speed qualities of students of the control group improved: «A long jump from a place» – for 1,2%, «Run on 100 m» – for 1,4%.



Pic. 1. Change of the level of physical fitness of students of the control (n=21) and the experimental (n=19) groups before carrying out the forming experiment (futsal, young men):

1 – run on 100 m, s; 2 – a long jump from a place, m; 3 – pulling up on a crossbeam, quantity; 4 – shuttle run, s; 5 – rise in a sitting position in 1 min., quantity; 6 – a trunk inclination forward from a sitting position, sm; * – distinctions are reliable at p<0,05; *** – distinctions are reliable at p<0,001

The maximum change of results of physical fitness at students of the control group, as well as at representatives of the experimental group, is recorded in "Pulling up on a crossbeam" – 9,1%. Dynamics of all above indicators at representatives of the control group is doubtful (p>0,05)

Conclusions. It is confirmed by the experimental research that an application of the author's model SOPE with the purposeful use of information technologies promoted the reliable changes of the following indicators of testing of physical fitness of the students who are engaged in futsal: "Run on 100 m" – on 0,57 s (t=3,14, p<0,001), «A long jump from a place» – on 0,12 m (t=2,46, p <0,05), «Pulling up on a crossbeam» – on 3,10 times (t=4,23, p<0,001), «Rise in a sitting position in 1 min.» – on 4,11 times (t=2,01, p<0,05), «Trunk inclinations forward from a sitting position» – on 2,26 sm (t=3,30, p<0,001).

The received results confirm reasonably and prove the expediency of the use of information technologies at sports-oriented physical education of students in HEI.

Prospects of further researches. Further researches will be directed on the definition of influence of an application of information technologies on physical and technical fitness of students of HEI in the chosen sports at sports-oriented physical education.

References:

1. Vasilyev D. A. *Sovremennyye problemy fizicheskoy kultury v vuzakh [Modern problems of physical training in high schools]*, 2006, p. 86–87. (rus)
2. Borisov V. V., Oleynik O. N., Timoshenko V. V. *Molodoy uchenyy [Young scientist]*, 2014, vol. 17, p. 459–461. (rus)
3. Yermakov S. S., Ivashchenko S. N., Guzov V. V. *Fizicheskoye vospitaniye studentov [Physical education students]*, Kharkov, 2012, vol. 4, p. 59–61. (rus)
4. Kashuba V. A., Futornyy S. M., Golovanova N. L. *Slobozans'kij nauk.-sport. visn. [Slobozhanskyi science and sport bulletin]*, Kharkiv, 2011, vol. 4, p. 157–163. (rus)
5. Kozina Zh. L. *Fizicheskoye vospitaniye i sport v vysshikh uchebnykh zavedeniyakh [Physical education and sport in higher educational institutions]*, BGTU im. Shukhova, Belgorod, 2013, p. 179–186. (rus)
6. Kozlov A. V. *Alternativnaya metodika sportivno-orientirovannogo fizicheskogo vospitaniya studentov gumanitarnykh vuzov : diss. ... kand. ped. Nauk [Alternative methods of sports-focused physical training of students of liberal arts colleges : PhD diss.]*, 2006, 178 p. (rus)
7. Olkhoviy O. M. *Sportivnyy visnik Pridniprova'ya [Sports Bulletin Dnieper]*, Dnipropetrovsk, 2014, vol. 1, p. 219–224. (ukr)
8. Temchenko V. A., Sirenko R. R. *Fizicheskoye vospitaniye studentov [Physical education students]*, 2010, vol. 3, p. 99–101. (rus)
9. Temchenko V. A., Petrenko Yu. M., Makhonin I. N. *Problemy i perspektivy razvitiya sportivnykh igr i yedinoborstv v vysshikh uchebnykh zavedeniyakh [Problems and prospects of the development of sports and arts in higher education]*, Belgorod – Kharkov – Krasnoyarsk – Moskva, 2013, p. 341–345. (rus)
10. Temchenko V. O. *Sportivno-orientovane fizichne vikhovannya u vishchikh navchalnikh zakladakh iz zastosuvannyam informatsiyних tekhnologiy : avtoref. dis... k. fiz. vikh [Sports-oriented physical education in higher education through information technology : PhD thesis]*, Dnipropetrovsk, 2015, 20 p. (ukr)
11. Futornyy S. M., Kashuba V. A. *Fizicheskoye vospitaniye studentov [Physical education students]*, Kharkiv, 2011, vol. 3, p. 94–98. (rus)

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