

PERFECTION OF EDUCATIONAL-TRAINING PROCESS ON THE BASIS OF ACCOUNT OF PARAMETERS SPECIAL PHYSICAL PREPAREDNESS OF RUGBY-PLAYERS

Pasko V.V.

Kharkiv State Academy of Physical Culture

Annotation. *Purpose:* to investigate the special physical fitness rugby, who were engaged in the experimental procedure. The technique is based on the application of the developed relations training load. *Material:* the study involved 60 athletes aged 16-18 years. *Results:* the program presents the main provisions of special physical preparation of athletes in the preparatory period of training macrocycle. Value for training work on special physical preparation as follows: September - the main emphasis is placed on special endurance and was 100 % of the training time; October - special endurance - 70%, strength endurance - 20% power capacity - 10%; November - respectively 50, 30, 20 %, December - 30, 40, 30 %. *Conclusions:* the proposed construction of a pilot version of training is more effective than traditional. It allows rational selection of training load. Also contributing to the priority development of physical qualities, gaming specialization athletes.

Keywords: Rugby League, training process, management, perfection, preparedness.

Introduction

Rugby league is a spectacle game which combines of lovers' predilections of different kinds of sport: during a match players do sprinter runs repeatedly, jump on catching of ball in the air, accomplish the throws of ball with hands, play feet and besides, they constantly enter into a power dual versus a rival [8].

Lately there is interest of a number of authors to the problem of perfection of organization of educational-training process of the contact playing types of sport [1-3, 5-8, 12-19, 21].

Physical preparation, as one of components of the system of the sporting training, as a rule, is correlated with mastering by sportsman of basic physical skills [4, 9-11] necessary for them in sporting activity-speed, power, coordinating, endurance and flexibility, and also some of their complex manifestations – speed-power, speed endurance and the like [21].

The special physical preparation is directed to the development of motor skills (their combinations), conditioned by the specific of concrete type of sport. Therefore during organization of process of the special physical preparation of sportsmen those muscular groups on which the basic loading fall are to be undergone prevailing influence during competition activity.

The special physical preparation is accepted to be classified in a view of specific requirements to the motor skills of sportsmen [9, 10]. Thus, means of its training are directed to permanent creation of pre-conditions for the improvement of high-quality and quantitative characteristics of the competition activity itself. It supposes a perfection of individual athletic preparedness with an accent, most of all, on perfections of quickness (in all its manifestations), speed-power skills and some types of the special endurance.

Thus, in the process of one large cycle of training session a body-conditioning is conducted at first, then on its basis the special foundation is built, on which base, in turn, it is possible to attain a high level of development of motor skills.

The research was conducted in accordance with the Consolidated research Plan of the Ministry of Education, Youth and Sports in 2011-2015 on theme 1.1 of «Research and Methodological Foundations of the information technology application in the preparation in the field of physical culture and sports», state registration number 0111U003130.

Purpose, tasks of work, material and methods.

Research purpose: perfection of control of educational-training process of sportsmen-rugby-players 16-18 of age.

Research methods: theoretical analysis and generalization of literary sources, pedagogical testing, methods of mathematical statistics.

Material and research methods: theoretical analysis and generalization of literary sources, pedagogical testing, methods of mathematical statistics.

60 sportsmen who are the participants of championship of Ukraine among youths under 18 years participated in an experiment. A control group was formed from two teams of Krivoy Rog consisting of 30 sportsmen from teams "Rhinoceroses" and "Miner" participated. An experimental group was made by sportsmen, who are engaging in Rugby league in Donetsk, it included 30 sportsmen from teams "Tigers of Donbas" and "Typhoon".

The complex of exercises on the special physical preparation included exercises for development of speed capabilities, a sprint with a ball was used in the general preparatory period of annual preparation. For development of strength the exercises were selected with a barbell: bench-press and squat with a barbell on shoulders. Lifting up barbells on a breast fixed the level of speed-power capabilities. Chin up in hang swing on horizontal bar was a mean for development of speed-power capabilities. Speed-power endurance was determined by shuttle run, and for the development of the special endurance – 5 min run.

In an experimental group a feature of correlation of training work is on the special physical preparation (fig. 1), directed to the development of basic physical skills (capabilities), is as follows:

- September: a basic accent is put to the special endurance and made up 100% of training time;
- October: the special endurance – 70%, power endurance – 20%, power capabilities – 10%;
- November: the special endurance – 50%, power endurance – 30%, power capabilities – 20%;
- December: the special endurance – 30%, power endurance – 40%, power capabilities – 30%;
- January: power endurance – 40%, speed-power endurance – 20%, power capabilities – 30%, speed-power capabilities – 10%;
- February: power endurance – 30%, speed-power endurance – 30%, power capabilities – 20%, speed-power capabilities – 20%;
- March: power endurance – 20%, speed-power endurance – 30%, power capabilities – 20%, speed-power capabilities – 30%;
- April: power endurance – 10%, speed-power endurance – 20%, power capabilities – 10%, speed-power capabilities – 40%, speed capabilities – 20%;
- May: power endurance – 10%, speed-power endurance – 10%, speed-power capabilities – 40%, speed capabilities – 40%;
- June: power endurance – 10%, speed-power endurance – 10%, speed-power capabilities – 40%, speed capabilities – 40%;
- July: power endurance – 10%, speed-power endurance – 10%, speed-power capabilities – 40%, speed capabilities – 40%;
- August: power endurance – 10%, speed-power endurance – 10%, speed-power capabilities – 40%, speed capabilities – 40%.

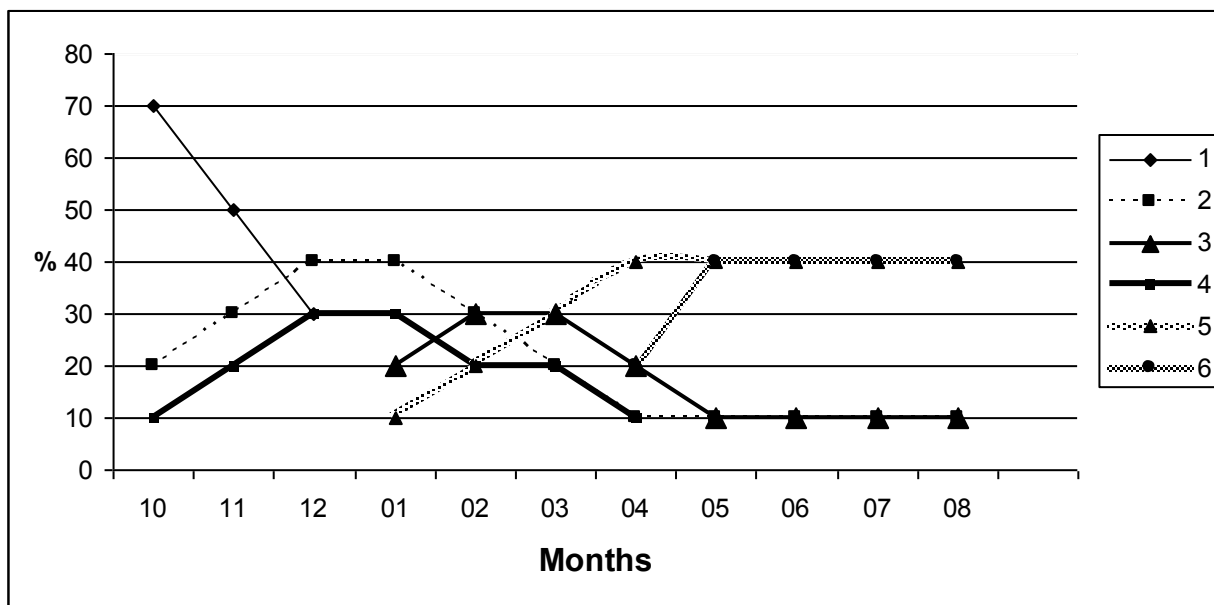


Fig. 1. Plan-chart of special physical preparation of experimental group
% – an index of distribution of load; 1 – special endurance;
2 – power endurance; 3 – speed-power endurance; 4 – power capabilities;
5 – speed power capabilities; 6 – speed capabilities.

The basic constituent of the special physical preparation by means of experimental methods (fig. 1.) was a plan of preparation with determination of percent correlations of orientation of the development of physical capabilities which is basic for rugby league, namely variations of loading related to the speed-power component against a background of endurance. On the first stage, an attention was paid to development of endurance, power endurance, speed-power endurance, to the power capabilities with the gradual lowering and passing on to the increase of speed-power capabilities, on the second one – lowering of speed-power endurance with passing on to the speed capabilities. Future on the retention was performed at one level of speed-power capabilities with predominance of speed capabilities which are the basic constituent of the competition activity in Rugby League.

The results of application of experimental methods and comparison of them are further presented with the results of control group.

On the first stage of experiment, the distinctions were revealed in a control group almost on all indexes of the special physical preparedness; only distinctions were not revealed in run and lifting up barbell on a breast for forwards and defenders, and also none of distinctions were observed in squat with a barbell on shoulders for forwards (table. 1).

Table 1

Dynamics of changes of indexes of the special physical preparedness of control and experimental group (n=30) on the first stage of preparation of rugby-players 16-17 of age

Indexes	Lines of players	Control group		Experimental Group		CG-EG	
		\bar{x}	σ	\bar{x}	σ	t	p
30m run with a ball (s)	F	5,06	0,19	4,92	0,15	2,10	<0,05
	D	4,79	0,08	4,70	0,08	3,05	<0,01
5 min run(m)	F	1432,14	54,09	1464,29	79,49	-1,25	>0,1
	D	1528,13	89,38	1525,00	54,77	0,12	>0,5
Shuttle run (s)	F	7,21	0,14	7,07	0,12	2,71	<0,05
	D	6,96	0,17	6,83	0,12	2,43	<0,05
Chin up in hang swing (number of times)	F	6,29	0,61	7,50	0,65	-5,09	<0,01
	D	9,00	0,82	9,81	0,91	-2,66	<0,01
The bench-press of barbell (kg)	F	76,79	3,72	80,71	3,85	-2,74	<0,01
	D	70,00	4,08	73,13	3,09	-2,44	<0,05
Lifting up of barbell on breast (kg)	F	86,79	4,21	86,43	6,02	0,18	>0,5
	D	78,75	6,71	81,25	4,65	-1,22	>0,1
Squat with a barbell on shoulders	F	109,64	6,34	110,00	8,09	-0,13	>0,5
	D	100,00	4,08	103,75	3,87	-2,67	<0,05

*CG are a control group; EG is an experimental group are forwards; D are defenders; t-criterion and p-level of meaningfulness, presented in comparison between control and experimental groups.

On the second stage of experiment, in an experimental group reliable distinctions are obtained on all indexes ($p < 0,01$), except for chin up in hang swing for defenders (table. 2).

Table 2

Dynamics of changes of indexes of the special physical preparedness of control and experimental group (n=30) on the second stage of preparation of rugby-players 16-17 of age

Indexes	Lines of players	Control group		Experimental group		CG-EG	
		\bar{x}	σ	\bar{x}	σ	t	p
30m run with a ball (s)	F	4,89	0,16	4,70	0,12	3,58	<0,01
	D	4,68	0,10	4,49	0,07	5,99	<0,01
5 min run(m)	F	1428,57	110,44	1521,43	54,47	-2,82	<0,01
	D	1496,88	127,11	1568,75	47,87	-2,12	<0,05
Shuttle run (s)	F	7,08	0,19	6,90	0,07	3,27	<0,01
	D	6,81	0,17	6,65	0,06	3,64	<0,01
Chin up in hang swing (number of times)	F	7,14	0,95	7,93	0,73	-2,45	<0,05
	D	10,50	1,32	10,63	0,96	-0,31	>0,5
The bench-press of barbell (kg)	F	77,86	6,42	83,57	3,06	-3,01	<0,01
	D	72,81	5,76	79,69	5,31	-3,51	<0,01
Lifting up of barbell on breast (kg)	F	91,43	4,57	95,36	4,14	-2,38	<0,05
	D	80,00	7,07	87,19	4,46	-3,43	<0,01
Squat with a barbell on shoulders	F	113,21	5,04	117,86	5,08	-2,43	<0,05
	D	104,38	5,74	110,50	4,99	-3,12	<0,01

*CG are a control group; EG is an experimental group; F are forwards; D are defenders; t-criterion and p-level of meaningfulness, presented in comparison between control and experimental groups.

During the second stage of experiment on the special physical preparedness in a control group the most increase of results took place in at shuttle run for forwards, bench-press for defenders, lifting up and squat with a barbell for forwards and defenders ($p < 0,05$) (table. 3).

Table 3

Comparison of indexes of the special physical preparedness on the preliminary stage of experiment and first stage of experiment of control group (n=30) of rugby-players aged 16-17 years

Indexes	Lines of players	Control group		Control group		CG-CG	
		\bar{x}	σ	\bar{x}	σ	t	p
30m run with a ball (s)	F	5,15	0,28	5,06	0,19	1,02	>0,1
	D	4,89	0,18	4,79	0,08	2,01	>0,5
5 min run(m)	F	1417,86	113,69	1432,14	54,09	-0,43	>0,5
	D	1509,38	106,80	1528,13	89,38	-0,54	>0,5
Shuttle run (s)	F	7,36	0,17	7,21	0,14	2,52	<0,05
	D	7,06	0,17	6,96	0,17	1,65	>0,1
Chin up in hang swing (number of times)	F	5,79	0,80	6,29	0,61	-1,86	>0,01
	D	8,44	1,03	9,00	0,82	-1,71	>0,01
The bench-press of barbell (kg)	F	73,93	4,46	76,79	3,72	-1,84	>0,01
	D	66,88	4,03	70,00	4,08	-2,18	<0,05
Lifting up of barbell on breast (kg)	F	80,71	7,56	86,79	4,21	-2,63	<0,05
	D	73,13	5,44	78,75	6,71	-2,61	<0,05
Squat with a barbell on shoulders	F	103,57	5,69	109,64	6,34	-2,67	<0,05
	D	94,06	4,17	100,00	4,08	-4,07	<0,01

*CG are a control group; F are forwards; D are defenders; t-criterion and p-level of meaningfulness, presented in comparison between control groups.

In an experimental group the computer educational program was used under preparation. Sportsmen had a reliable increase of indexes of the special physical preparedness as compared to a control group (p<0,05), except for 5 min. run (p>0,1). (table. 4).

Table 4

Comparison of indexes of the special physical preparedness on the preliminary stage of experiment and first stage of experiment of experimental group (n=30) of rugby-players aged 16-17 years

Indexes	Lines of players	Experimental group		Experimental group		EG-EG	
		\bar{x}	σ	\bar{x}	σ	t	p
30m run with a ball (s)	F	5,09	0,22	4,92	0,15	2,37	<0,05
	D	4,86	0,15	4,70	0,08	3,89	<0,01
5 min run(m)	F	1414,29	81,87	1464,29	79,49	-1,64	>0,1
	D	1471,88	77,39	1525,00	54,77	-2,24	<0,05
Shuttle run (s)	F	7,36	0,17	7,07	0,12	5,19	<0,01
	D	7,07	0,19	6,83	0,12	4,31	<0,01
Chin up in hang swing (number of times)	F	5,93	0,99	7,50	0,65	-4,94	<0,01
	D	8,00	1,32	9,81	0,91	-4,53	<0,01
The bench-press of barbell (kg)	F	74,29	4,75	80,71	3,85	-3,94	<0,01
	D	66,88	5,73730	73,13	3,09	-3,84	<0,01
Lifting up of barbell on breast (kg)	F	77,14	7,77	86,43	6,02	-3,53	<0,01
	D	73,44	4,73	81,25	4,65	-4,71	<0,01
Squat with a barbell on shoulders	F	102,14	6,42	110,00	8,09	-2,85	<0,01
	D	95,00	4,08	103,75	3,87	-6,22	<0,01

*EG is an experimental group; F are forwards; D are defenders; t-criterion and p-level of meaningfulness, presented in comparison between experimental groups.

In comparing data obtained of the first and second stage of experiment it was revealed, that the increase of statistical meaningfulness took place in a control group (p<0,01) in next indexes: at 30m run with a ball and chin up in hang swing for forwards and defenders, at shuttle run and squat with a barbell on shoulders for defenders, also for forwards at lifting up of barbell on a breast (table 5). In an experimental group reliable distinctions are obtained almost on all indexes except for chin up in hand swing for forwards (p<0,01) (table 6).

Table 5

Dynamics of changes of indexes of the special physical preparedness of the first and second stage of experiment of control group (n=30) of rugby-players aged 16- 17 years

Indexes	Lines of players	Control group		Control group		CG-CG	
		\bar{x}	σ	\bar{x}	σ	t	p
30m run with a ball (s)	F	5,06	0,19	4,89	0,16	2,47	<0,05
	D	4,79	0,08	4,68	0,10	3,50	<0,01
5 min run(m)	F	1432,14	54,09	1428,57	110,44	0,11	>0,5
	D	1528,13	89,38	1496,88	127,11	0,80	>0,1
Shuttle run (s)	F	7,21	0,14	7,08	0,19	1,99	>0,01
	D	6,96	0,17	6,81	0,17	2,43	<0,05
Chin up in hang swing (number of times)	C	6,29	0,61	7,14	0,95	-2,84	<0,01
	D	9,00	0,82	10,50	1,35	-3,87	<0,01
The bench-press of barbell (kg)	F	76,79	3,72	77,86	6,42	-0,54	>0,5
	D	70,00	4,08	72,81	5,76	-1,59	>0,1
Lifting up of barbell on breast (kg)	F	86,79	4,21	91,43	4,57	-2,79	<0,01
	D	78,75	6,71	80,00	7,07	-0,51	>0,5
Squat with a barbell on shoulders	F	109,64	6,34	113,21	5,04	-1,65	>0,1
	D	100,00	4,08	104,38	5,74	-2,49	<0,01

*CG are a control group; F are forwards; D are defenders; t-criterion and p-level of meaningfulness, presented in comparison between control groups.

Table 6

Dynamics of changes of indexes of the special physical preparedness of the first and second stage of experiment of experimental group (n=30) of rugby-players aged 16- 17 years

Indexes	Lines of players	Experimental group		Experimental group		EG-EG	
		\bar{x}	σ	\bar{x}	σ	t	p
30m run with a ball (s)	F	4,92	0,15	4,70	0,12	4,29	<0,01
	D	4,70	0,08	4,49	0,07	7,76	<0,01
5 min run(m)	F	1464,29	79,49	1521,43	54,47	-2,22	<0,05
	D	1525,00	54,77	1568,13	47,87	-2,41	<0,05
Shuttle run (s)	F	7,07	0,12	6,90	0,07	4,64	<0,01
	D	6,83	0,12	6,65	0,06	5,36	<0,01
Chin up in hang swing (number of times)	F	7,50	0,65	7,93	0,73	-1,64	>0,5
	D	9,81	0,91	10,63	0,96	-2,46	<0,05
The bench-press of barbell (kg)	F	80,71	3,85	83,57	3,06	-2,17	<0,05
	D	73,13	3,09	79,69	5,31	-4,27	<0,01
Lifting up of barbell on breast (kg)	F	86,43	6,02	95,36	4,14	-4,57	<0,01
	D	81,25	4,65	87,19	4,46	-3,68	<0,01
Squat with a barbell on shoulders	F	110,00	8,09	117,86	5,08	-3,08	<0,01
	D	103,75	3,87	110,31	5,16	-4,16	<0,01

*EG is an experimental group; F are forwards; D are defenders; t-criterion and p-level of meaningfulness, presented in comparison between experimental groups.

Testing of sportsmen at the end of experiment allowed to establish, that in an experimental group under influence of training with the use of the computer teaching program "Rugby-13" the indexes of the special physical preparedness increased for certain, while the level of physical preparedness of control and experimental group did not have substantial distinctions. It is explained by the fact that with purposeful approach on using the computer technologies sportsmen are able to attain great results.

Conclusions:

1. Rational correlation of the training loading is determined for the special physical preparedness, which is directed to the development of the basic physical skills (capabilities) during preparatory period.

2. Experimental methods, unlikely the methods being applied by the control group, were directed to the increase and retention at one level of speed-power capabilities with predominance of speed capabilities, which are the basic component of the competition activity in Rugby League.

3. The obtained indexes of all investigated parameters of sportsmen of the experimental group revealed the advantages in relation to the same indexes of control group.

Prospects of further researches. As long as our researches were conducted with the use (an account) of experimental methods of preparation and correlation of the training loading for the special physical preparation, then further on we plan to investigate technical preparedness of rugby-players 16-18 of age.

References:

- 1 Martirosian A.A. *Slobozhans'kij naukovno-sportivnij visnik* [Slobozhansky scientific and sport bulletin], 2002, vol.5, pp. 84-87.
- 2 Martirosian A.A. *Slobozhans'kij naukovno-sportivnij visnik* [Slobozhansky scientific and sport bulletin], 2003, vol.6, pp. 80-82.
- 3 Martirosian A.A. *Shvidkismo-silova pidgotovka kvalifikovanikh regbistiv u pidgotovchomu periodi* [Speed-strength training skilled rugby players in the preparatory period], Cand. Diss., Kharkiv, 2006, 20 p.
- 4 Ozolin N.G. *Teoriia i praktika fizicheskoi kul'tury* [Theory and practice of physical culture], 1984, vol.10, pp. 48-50.
- 5 Pas'ko V. V. *Slobozhans'kij naukovno-sportivnij visnik* [Slobozhansky scientific and sport bulletin], 2010, vol.1-2, pp. 151-155.
- 6 Pas'ko V.V. *Primenenie komp'iuternykh tekhnologij v processe razvitiia takticheskogo myshleniia u iunykh sportsmenov v igrovnykh vidakh sporta* [Application of computer technology in the development of tactical thinking in young athletes in team sports]. *Problemy i perspektivy razvitiia sportivnykh igr i edinoborstv v vysshikh uchebnykh zavedeniakh* [Problems and prospects of development of sports and martial arts in higher education], Kharkiv-Belgorod-Krasnoyarsk, 2008, pp. 150-152.
- 7 Pas'ko V. V., Podoliaka O. B., Martirosian A. A. *Slobozhans'kij naukovno-sportivnij visnik* [Slobozhansky scientific and sport bulletin], 2013, № 4, C. 47-55.
- 8 Pas'ko V. V., Podoliaka O. B., Martirosian A. A., Filenko I. Iu. *Slobozhans'kij naukovno-sportivnij visnik* [Slobozhansky scientific and sport bulletin], 2012, № 4, C. 165-168.
- 9 Platonov V.N. *Obshchaia teoriia podgotovki sportsmenov v Olimpijskom sporte* [A general theory of preparation of sportsmen in Olympic sport], Kiev, Olympic Literature, 1997, 584 p.
- 10 Platonov V.N. *Sistema podgotovki sportsmenov v olimpijskom sporte* [The system of preparation of sportsmen in Olympic sport], Kiev, Olympic Literature, 2004, 808 p.
- 11 Platonov V.N., Bulatova M.M. *Fizicheskaia podgotovka sportsmena* [Physical training athlete], Kiev, Olympic Literature, 1995, 320 p.
- 12 Подоляка О. Б. *Pedagogika, psihologia ta mediko-biologicni problemi fizicnogo viovanna i sportu* [Pedagogics, psychology, medical-biological problems of physical training and sports], 2003, vol.10, pp. 56-60.
- 13 Podoliaka O. B. *Osnovni skladovi sistemi modul'nogo navchannia i kontroliu bazovim elementam regbi u vishchomu navchal'nomu zakladi* [The main components of modular training and control basic elements of rugby in high school]. *Problemy i perspektivy razvitiia sportivnykh igr i edinoborstv v vuzakh* [Problems and prospects of development of sports and martial arts in universities], Kharkiv, KSADA, 2006, pp. 114-118.
- 14 Podoliaka O. B., Pas'ko V. V. *Slobozhans'kij naukovno-sportivnij visnik* [Slobozhansky scientific and sport bulletin], 2011, vol.4, pp. 163-168.
- 15 Podoliaka O.B. *Fizicheskoe vospitanie studentov tvorcheskikh special'nostej* [Physical Education of the Students of Creative Profession], 2003, vol.2, pp. 57-61.
- 16 Podoliaka O.B. *Udoskonalennia upravlinnia zmagal'noi diial'nistiu v amerikans'komu futboli na osnovi zastosuvannia informacijnykh tekhnologij* [Improvement of competitive activity in college football through the application of information technology], Cand. Diss., Kharkiv, 2003, 21 p.
- 17 Podoliaka O.B., Martirosian A.A. *Metodicheskie osnovy podgotovki komand po regbi-7 v vuzakh Ukrainy* [Methodical bases of training rugby teams in 7 universities in Ukraine]. *Problemy i perspektivy razvitiia sportivnykh igr i edinoborstv v vuzakh* [Problems and prospects of development of sports and martial arts in universities], Kharkiv, KSADA, 2005, pp. 114-115.
- 18 Podoliaka O. B., Pas'ko V. V. *Docil'nist' vikoristannia komp'iuternykh tekhnologij u regbi* [The feasibility of using computer technology in Rugby], Kiev, 2010, vol.8, pp. 28-29.
- 19 Khajkhem E.S., Khajkhem V.Zh. *Regbi na vysokikh skorostiakh* [Rugby at high speeds], Moscow, Physical Culture and Sport, 1970, 272 p.
- 20 Durcan L., Coole A., McCarthy E., et al. The prevalence of patellar tendinopathy in elite academy rugby: A clinical and imaging study. *Journal of Science and Medicine in Sport*. 2014, vol.17(2), pp. 173-176. doi:10.1016/j.jsams.2013.05.014.
- 21 Lewis R., Carré M.J., Abu Bakar A., Tomlinson S.E. Effect of surface texture, moisture and wear on handling of rugby balls. *Tribology International*. 2013, vol.63, pp. 196-203. doi:10.1016/j.triboint.2012.07.002

Information about the author

Pasko V.V.: ORCID: 0000-0001-8215-9450; vladapas@mail.ru; Kharkiv State Academy of Physical Culture; Klochkovskaya str. 99, Kharkiv, 61058, Ukraine

Cite this article as: Pasko V.V. Perfection of educational-training process on the basis of account of parameters special physical preparedness of rugby-players. *Physical education of students*, 2014, vol.3, pp. 49-55. doi:10.6084/m9.figshare.972852

The electronic version of this article is the complete one and can be found online at: <http://www.sportpedagogy.org.ua/html/arhive-e.html>

This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited (<http://creativecommons.org/licenses/by/3.0/deed.en>).

Received: 13.01.2014
Published: 27.02.2014