

## COMPARATIVE CHARACTERISTICS OF THE PHYSICAL AND TECHNICAL PREPAREDNESS OF THE WOMEN'S NATIONAL TEAM OF UKRAINE AND LITHUANIA BASKETBALL (HEARING IMPAIRED) BEFORE AND AFTER TRAINING TO DEAFLYMPIC GAMES

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**Annotation.** *Purpose:* to compare the physical and technical readiness women basketball teams of Ukraine and Lithuania. *Material:* participated in the study of female athletes team of Ukraine and Lithuania (n = 24). Athletes age - 25-30 years. Teacher testing was conducted physical and technical readiness. Ukrainian team trained by the author's method with the use of innovative technologies. Included the use of technology in the training process of copyright video tutorials with animated illustrations and LED linear luminaire. *Results:* the results indicated significant improvement of athletes Ukrainian team in the tests: a standing jump, cross 2000 meters, throwing a medicine ball with a running start, lifting the trunk in 30 seconds from a prone position, speed equipment, three points shots, special endurance. The proposed new management training process helped increase mobility, intensity and complexity of team training in Ukraine. *Conclusions:* It is recommended to use a program of technical and tactical training with the use of innovative technologies in the training process basketball players are hearing impaired.

**Keywords:** basketball, athletes, hearing impairment, physical, technical, preparedness.

### Introduction

Among numerous kinds of sports, which exist in physical education system of Ukraine women basketball takes one of leading places [1, 3, 4, 5]. Competition and training functioning of every team have own specificities [6, 7, 10, 12, 13, 15], that require special researches and pedagogic observations [17, 18, 19, 20, 21, 22]. To day the problem of working out of women sport for disabled is especially acute [2, 9, 11, 19, 20], that requires creative cooperation of coaches, scientists, medical workers in order to form and permanently perfect scientifically grounded system of sport training of female basketball players with hearing problems.

The research has been carried out in compliance with "Combined plan of scientific-research works in field of physical culture and sports for 2011-2015" as per topic 2.4 "Theoretical-methodic principles of individualization in physical education and sports"(state registration № 0112U002001) and in compliance with scientific-research work, which is financed by Ministry of education and science of Ukraine for 2013-2014 "Theoretical-methodic principles of information, pedagogic and medical-biological technologies for formation of healthy life style" (state registration № 0113U002003).

### Purpose, tasks of the work, materials and methods

*The purpose of the research* is to compare physical and technical fitness of women (with hearing problems) basketball combined teams of Ukraine and Lithuania before and after Deaflympic games.

In our research 12 sportswomen of women with hearing problems basketball combined team of Ukraine; from them – 10 international masters of sports; 2 – masters of sports; female basketball players with hearing problems, members of Lithuanian combined team – 12 persons. Before research age of sportswomen was within 25-30 years old. Ukrainian basketball players made up experimental group; they were trained by the author's methodic with application of innovative technology. The worked out technology included application of author's video-aid with animation illustration [7, 8, 14] and LED linear lighter in training process. Control group consisted of Lithuanian female basketball players (12 persons), who trained the same scope of time as per training program of Lithuanian female basketball player and coach Rasa Kreyvite [1]. She is a doctor of sciences and multiple participant of international competition as a member of basketball combined Lithuanian team, also she is champion of Europe of 1997.

Both teams passed primary testing in September 2012, secondary – at the end of June, 2013; one month before Deaflympic games. Pedagogic testing of physical and technical fitness was carried out with tests, applied in combined teams of Ukraine. In every test 3 attempts were permitted; the best result was registered. The tests were carried out during 3 trainings.

### Results of the research

Results of comparative analysis of control and experimental groups' basketball players showed that before experiment combined team of Ukraine confidently was behind combined team of Lithuania by some indicators (see table 1). In tests "Jumps with skipping rope during 1 minute, q-ty of times" (by 7.58 times,  $p < 0.05$ ), "Shuttle run 2x28 m, sec." (by 0.67 sec.,  $p < 0.01$ ), "Speed springiness for 20 sec., q-ty of times" (by 4.49 times,  $p < 0.01$ ), "20 meters' run, sec" (by 0.34 sec.,  $p < 0.01$ ).

Table 1

*Physical fitness indicators of control (n=12) and experimental (n=12) groups' female basketball players before experiment*

Registered indicators	Group	Statistic data				
		$\bar{x}$	S	m	t	p
Skipping for 1 min., q-ty of times	Ukraine	136.08	11.77	3.40	-2.00	<0.05
	Lithuania	143.66	5.78	1.67		
Jump from the spot, cm	Ukraine	191.08	14.49	4.18	-0.29	>0.05
	Lithuania	192.42	7.23	2.09		
Jump from the spot, cm	Ukraine	30.83	6.26	1.81	-0.96	>0.05
	Lithuania	32.92	4.19	1.21		
Shuttle run 2x28 m, sec.	Ukraine	10.07	0.77	0.22	2.97	<0.01
	Lithuania	9.4	0.07	0.02		
6 meters' run, sec.	Ukraine	1.19	0.06	0.02	0.55	>0.05
	Lithuania	1.17	0.06	0.02		
Cross-country 2000 meters, min.	Ukraine	9.59	0.89	0.26	-1.21	>0.05
	Lithuania	9.96	0.55	0.16		
Throwing of filled ball from the spot, cm.	Ukraine	6.09	0.75	0.22	-0.11	>0.05
	Lithuania	6.12	0.63	0.18		
Throwing of filled ball from run, cm.	Ukraine	8.23	1.01	0.29	-0.08	>0.05
	Lithuania	8.26	0.86	0.25		
Flexibility, cm.	Ukraine	13.25	1.19	3.52	-0.04	>0.05
	Lithuania	13.42	7.65	2.21		
Pressing ups for 30 sec., q-ty of times	Ukraine	28.17	5.89	1.70	-1.70	>0.05
	Lithuania	31.58	3.70	1.07		
Torso rising from sitting position for 30 sec., q-ty of times	Ukraine	26.17	5.94	1.71	-0.99	>0.05
	Lithuania	28.17	3.76	1.09		
Speed springiness for 20 sec., q-ty of times	Ukraine	27.92	5.02	1.45	-2.82	<0.01
	Lithuania	32.41	2.31	0.66		
20 meters' run	Ukraine	3.17	0.31	0.09	2.52	<0.01
	Lithuania	2.83	0.33	0.10		

Comparative analysis of technical fitness of control and experimental groups' basketball players before experiment (see table 2) permitted to find out negative indicators of our combined team in tests "2 scores' throws, q-ty of hits from 21 throws (by 2.42 times,  $p<0.05$ ), "Speed of defensive travelling, sec." (by 1.11 sec.,  $p<0.01$ ), "Middle distance throws, q0ty of hits for 40 sec." (by 1.25 times,  $p<0.01$ ) in comparison with Lithuanian combined team.

Table 2

*Technical fitness indicators of control (n=12) and experimental (n=12) groups' female basketball players before experiment*

Registered indicators	Group	Statistic data				
		$\bar{x}$	S	m	t	p
Speed technique, sec.,	Ukraine	35.00	2.04	0.59	2,00	>0,05
	Lithuania	33.61	1.27	0.37		
2 scores' throes, q-ty of hits from 21 throws	Ukraine	11.41	2.94	0.85	-2,4	<0,05
	Lithuania	13.83	1.85	0.53		
Speed of defensive travelling, sec.	Ukraine	24.59	0.73	0.21	2,74	<0,01
	Lithuania	23.48	0.51	0.15		
Penalty throws, q-ty of hits, from 21 throws	Ukraine	12.08	2.43	0.70	-1,29	>0,05
	Lithuania	13.33	2.31	0.67		
3 scores' throes, q-ty of hits from 21 throws	Ukraine	5.58	2.81	0,81	-0,70	>0,05
	Lithuania	6.25	1,71	0,49		
Middle distance throws, q-ty of throws for 40 sec.	Ukraine	7.33	0.78	0,22	-0,84	>0,05
	Lithuania	7.58	0.67	0,19		
Middle distance throws, q-ty of hits for 40 sec.	Ukraine	2.67	1.37	0,40	-2,73	<0,01
	Lithuania	3.92	0.79	0,23		
Special endurance, q-ty of throws for 5 min.	Ukraine	81.50	5.02	1,45	-0,85	>0,05
	Lithuania	83.17	4.61	1,33		
Special endurance, q-ty of hits for 5 min.	Ukraine	32.42	6.86	1,98	-1,08	>0,05
	Lithuania	35.08	5.11	1,47		
Middle distance throws, q-ty of hits for 40 sec.	Ukraine	18.92	4.03	1,16	-0,18	>0,05
	Lithuania	19.17	2.69	0,78		

After application of the worked out system for increasing of technical-tactic training's effectiveness with the help of innovative technologies in training process of women with hearing problems combined basketball team of Ukraine, indicators of physical fitness significantly improved (see table 3) in tests "Jump from the spot, cm (by 8.67 cm,  $p < 0.05$ ), "Cross country 2000 meters, min." (by 0.44 sec.,  $p < 0.01$ ), «Throwing of filled ball from run, cm" (by 45 cm,  $p < 0.05$ ), "Rising of torso from lying position, q-ty of times) (by 2.5 times,  $p < 0.05$ ).

Table 3

*Physical fitness indicators of control (n=12) and experimental (n=12) groups' female basketball players after experiment*

Registered indicators	Group	Statistic data				
		$\bar{x}$	S	m	t	p
Skipping for 1 min., q-ty of times	Ukraine	149.83	10.44	3.01	0.79	>0.05
	Lithuania	146.75	8.61	2.49		
Jump from the spot, cm	Ukraine	198.75	12.99	3.75	2.1	<0.05
	Lithuania	190.08	5.83	1.68		
Jump from the spot, cm	Ukraine	35,75	4.09	1.18	0.96	>0.05
	Lithuania	34.17	4.00	1.15		

Registered indicators	Group	Statistic data				
		$\bar{x}$	S	m	t	p
Shuttle run 2x28 m, sec.	Ukraine	9.54	0.40	0.12	1.82	>0.05
	Lithuania	9.43	0.08	0.02		
6 meters' run, sec.	Ukraine	1.14	0.07	0.02	-0.94	>0.05
	Lithuania	1.20	0.20	0.06		
Cross-country 2000 meters, min.	Ukraine	9.11	0.55	0.16	-2.5	<0.01
	Lithuania	9.55	0.46	0.13		
Throwing of filled ball from the spot, cm.	Ukraine	639	0.62	0.18	0.32	>0.05
	Lithuania	631	0.64	0,9		
Throwing of filled ball from run, cm.	Ukraine	879	0.52	0.15	2.03	<0.05
	Lithuania	834	0.54	0.15		
Flexibility, cm.	Ukraine	14.08	12.69	3.66	0.06	>0.05
	Lithuania	13.83	7.23	2.09		
Pressing ups for 30 sec., q-ty of times	Ukraine	33.67	3.20	0.92	1.15	>0.05
	Lithuania	32.25	2.83	0.82		
Torso rising from sitting position for 30 sec., q-ty of times	Ukraine	34.17	3.19	0.92	1.96	<0.05
	Lithuania	31.67	3.06	0.88		
Speed springiness for 20 sec., q-ty of times	Ukraine	32.00	4.61	1.33	-1.16	>0.05
	Lithuania	33.83	2.94	0.85		
20 meters' run	Ukraine	2.55	0.27	0.08	0.71	>0.05
	Lithuania	2.48	0.21	0.06		

The offered by us new methods of management of training process helped to increase mobility, intensity and load of trainings of Ukrainian combined team. Comparative analysis of technical fitness of control and experimental groups' basketball players after experiment points at great changes in favor of our team (see table 4) in tests "Speed technique, sec." (by 2.09 sec.,  $p < 0.01$ ), "3 scores' throes, q-ty of hits from 21 throws" (by 1.25 times,  $p < 0.05$ ), "Special endurance, q-ty of throws for 5 min.", (by 4.92 times,  $p < 0.01$ ), "Middle distance throws, q-ty of hits for 40 sec." (by 2.33 times,  $p < 0.05$ ).

Table 4

*Technical fitness indicators of control (n=12) and experimental (n=12) groups' female basketball players after experiment*

Registered indicators	Group	Statistic data				
		$\bar{x}$	S	m	t	p
Speed technique, sec.,	Ukraine	32.42	1.16	0.33	-3.48	<0.01
	Lithuania	34.51	1.22	0.35		
2 scores' throes, q-ty of hits from 21 throws	Ukraine	14.17	2.37	0.68	0.17	>0.05
	Lithuania	14.00	2.41	0.70		
Speed of defensive travelling, sec.	Ukraine	24.37	0.62	0.18	2.43	<0.05
	Lithuania	23.53	0.49	0.14		
Penalty throws, q-ty of hits, from	Ukraine	15.92	2.11	0.61	1.69	>0.05

Registered indicators	Group	Statistic data				
		$\bar{x}$	S	m	t	p
21 throws	Lithuania	14.42	2.23	0.65		
3 scores' throes, q-ty of hits from 21 throws	Ukraine	8.33	1.50	0.43	2.00	<0.05
	Lithuania	7.08	1.56	0.45		
Middle distance throws, q-ty of throws for 40 sec.	Ukraine	8.42	0.67	0.19	0.81	>0.05
	Lithuania	8.17	0.83	0.24		
Middle distance throws, q-ty of hits for 40 sec.	Ukraine	4.92	0.79	0.23	1.03	>0.05
	Lithuania	4.58	0,79	0.23		
Special endurance, q-ty of throws for 5 min.	Ukraine	88.50	3.21	0.93	3.05	<0.01
	Lithuania	83.58	4.56	1.31		
Special endurance, q-ty of hits for 5 min.	Ukraine	44.17	6.48	1.87	1.87	>0.05
	Lithuania	39.83	4.73	1.36		
Middle distance throws, q-ty of hits for 40 sec.	Ukraine	23.00	2.73	0.79	2.42	<0.05
	Lithuania	20.67	1.92	0.56		

### Conclusions:

Thus, with the help of offered technical-tactic training system with using of innovative technologies in training of female basketball players, who have hearing problems, - members of Ukrainian combined team we managed to significantly increase indicators of sportswomen's physical and technical fitness.

In the future we are going to perfect system of innovative technologies for application in training process of female basketball players with hearing problems.

### References:

1. Antanas Chizhauskas, Rasa Krejvite, Mindaugas Bal'chiunas. *Podgotovitel'nye uprazhneniia dlia basketbola* [Preparatory exercises for basketball], 2012, 128 p.
2. Briskin Iu.A., Perederij A.V., Slisenko O.O. *Pedagogika, psihologia ta mediko-biologicni problemi fizichnogo vihovanna i sportu* [Pedagogics, psychology, medical-biological problems of physical training and sports], 2008, vol.1, pp. 10-18.
3. Zavorotna O. A. *Pedagogika, psihologia ta mediko-biologicni problemi fizichnogo vihovanna i sportu* [Pedagogics, psychology, medical-biological problems of physical training and sports], 2008, vol.4, pp. 146 p.
4. Doroshenko Eduard. *Teoriia i metodika fizichnogo vikhovannia i sportu* [Theory and methods of physical education and sport], 2008, vol.2, pp. 23-30.
5. Kozina Zh. L. *Sportivnaia medicina* [Sports Medicine], 2012, vol.1, pp. 18-22.
6. Kozina Zh. L., Zashchuk S. G., Sliusarev V. F. *Fiziceskoe vospitanie studentov* [Physical Education of Students], 2009, vol.3, pp. 34-40.
7. Kozina Zh. L. *Fiziceskoe vospitanie studentov tvorceskih special'nostej* [Physical Education of the Students of Creative Profession], 2009, vol.2, pp. 34-47.
8. Kozina Zh. L., Bojko Ia.S., Grin' L.V. Modelirovanie takticheskikh vzaimodejstvij v basketbole s pomoshch'iu FLASH – tekhnologij [Modeling tactical interactions in basketball using FLASH – technology]. *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], Belgorod-Kharkov, 2010, pp. 75-78.
9. Kozina Zh. L. *Teoriia ta metodika fizichnogo vikhovannia* [Theory and methods of physical education], 2009, vol.7, pp. 23-30.
10. Kozina Zh. L., Sobko I.N., Klimenko A.I., Sak N.N. *Pedagogika, psihologia ta mediko-biologicni problemi fizichnogo vihovanna i sportu* [Pedagogics, psychology, medical-biological problems of physical training and sports], 2013, vol.7, pp. 28-33. doi:10.6084/m9.figshare.735962
11. Korobejnikov G.V. *Psikhofiziologicheskaia organizaciia deiatel'nosti cheloveka* [Psychophysiological organization of human activities], White Church, 2008, 128 p.
12. Linec' M.N., Zubric'kij Ia. Ia., Vojtovich I. P. *Visnik Chernigivs'kogo derzhavnogo pedagogichnogo universitetu* [Bulletin of the Chernihiv State Pedagogical University], 2012, vol.64, pp. 100-108.
13. Malinauskas R.K., Brusokas A.R. *Teoriia i praktika fizicheskoj kul'tury* [Theory and practice of physical culture], 2013, vol.3, pp. 27-29.

14. Maksimenko I. G. *Visnik Chernigivs'kogo derzhavnogo pedagogichnogo universitetu* [Bulletin of the Chernihiv State Pedagogical University], 2011, vol.91, pp. 120-125.
15. Nosko N.A., Maslov V.N., Zhula L.V. *Fiziceskoe vospitanie studentov tvorceskih special'nostej* [Physical Education of the Students of Creative Profession], 2002, vol.6, pp. 3-8.
16. Pavlenko Iu.O. *Aktual'nye problemy fizicheskoy kul'tury i sporta* [Actual problems of physical culture and sports], 2007, vol.13, pp. 20-25.
17. Sobko I.N., Kudelko V.E., Shevchenko O.A. *Fiziceskoe vospitanie studentov* [Physical Education of Students], 2012, vol.1, pp. 105 - 107.
18. Sobko I.N. *Fiziceskoe vospitanie studentov* [Physical Education of Students], 2013, vol.4, pp. 82-86. doi:10.6084/m9.figshare.663626
19. Sabonis A. *Takoj komandy bol'she ne budet. Nigde i nikogda* [This team is no more. Nowhere and never], Sport-Express, 2008, July 11, p. 16.
20. Shamardina Galina, El'fimova Ol'ga. *Nauka v olimpijskom sporte* [Science in Olympic Sport], 2006, vol.4, pp. 188-194.
21. Shakhlina L. G. *Sportivnaia medicina* [Sports Medicine], 2012, vol.1, pp. 116-120.
22. Martens R. *Coaches guide to sport psychology*. Vilnius: LISC. 1999, 172 p.

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**Cite this article as:** Sobko I.N., Kozina Zh.L., Iermakov S.S., Muszkietka Radosław, Prusik Krzysztof, Cieślicka Mirosława, Stankiewicz Błażej. Comparative characteristics of the physical and technical preparedness of the women's national team of Ukraine and Lithuania basketball (hearing impaired) before and after training to Deaflympic Games. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2014, vol.10, pp. 45-51. doi:10.5281/zenodo.10490

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Received: 13.04.2014  
Published: 05.05.2014