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Changes of the level of high-speed and power abilities of beach handball players of 14-15 years old as a result of the specially selective exercises

Abstract. Purpose of the research – to determine changes of the level of high-speed and power abilities of beach handball players of 14-15 years old under the influence of the specially selective sets of exercises. **Material and methods of the research:** test exercises, one of which is recommended by the training program of CYSS of beach handball, two others were created proceeding from the content of the game activity in beach handball, the analysis of scientific and methodical literature, pedagogical testing, pedagogical experiment, methods of mathematical information processing were used for the definition of the level of development of high-speed and power abilities of beach handball players. **Results:** The analysis of scientific and methodical literature revealed gaps in questions of training of beach handball players, in particular in physical preparation. It moved us making the use of experience of the educational and training work in beach volleyball, to make sets of exercises, which are aimed at the development high-speed and power abilities of beach handball players. **Conclusions:** The positive reliable changes are received ($t=2,19-2,32$ at $p \leq 0,05$) of the level of high-speed and power abilities of players of 14-15 years old under the influence of the sets of exercises which are offered by us, allows us to recommend them for use in the educational and training process of beach handball players.

Keywords: beach handball, high-speed and power abilities, set of exercises.

Introduction. The Association of beach handball of Ukraine (ABHU) was founded on December 12, 2006 in Kiev. Since 2008 the regular championships and Cups of Ukraine have been hold. Beach handball is a surprising sports show in which there is no traditional dribbling, but there are shots on a goal of the rival after jumps with turns on 360 ° and throws with receiving a ball in the air which bring points to a team with more powerful coefficients at taking points of a gate, than usual classical shots on a goal. It should be noted that a beach handball player needs absolutely other level of the development of some physical qualities, than to a classic handball player. An ability to carry out high jumps in many cases determine a choice of more rating and bright ways of a throw of a ball on a gate.

High-speed and power abilities for beach handball players belong to one of the most important qualities which determine the level of the productive mobile activity. Therefore the efficiency of a performance of many techniques in a game depends mainly on their sufficient development.

Practice shows that teams of beach handball are more often formed on the basis of players of the classical option of a game, under time, disregarding features of movements of a sportsman on a powdery surface and the level of his special physical fitness.

The important point for beach handball are properties of a basic surface, a sandy platform. Y.A. Gorchanyuk in the researches of beach volleyball proved that an indispensable condition of the effective implementation of jumps on a sandy platform is a correct pushing away. The author claims that the provision of feet thus has to be accurately horizontal that will allow to distribute evenly effort of pressure upon a sandy surface. Moreover, Y.A. Gorchanyuk notes that the time of a flight of a sportsman and respectively height of a jump significantly decreases at pushing away from a powdery surface [6].

The question of methodical providing of coaches sharply appears which would consider features of a game on a sandy surface of a platform against the growth of the popularity of beach handball in Ukraine. If some scientists and experts deal with an issue of training of sportsmen in classical handball [1, 2, and so forth], the problem of the content of trainings in beach handball remains not enough opened and actual.

Communication of the research with scientific programs, plans, subjects. The research was conducted according to the topic of the plan of the RW of Kharkov state academy of physical culture 2.8. "The improvement of the educational and training process in sports games" (number of the state registration is 0111U003126).

Proceeding from **the purpose** of our research is to determine a change of the level of high-speed and power abilities of beach handball players of 14-15 years old under the influence of the specially selective sets of exercises.

Tasks of the research:

1. To learn information on questions of training of sportsmen in beach game sports on the basis of the analysis of references.

2. To define a condition of high-speed and power preparedness of beach handball players of 14-15 years old.

3. To make sets of exercises, high-speed and power abilities of beach handball players which are aimed at the development, making use of experience of the educational and training work in beach volleyball on a powdery surface of a playground.

4. To analyse the level of changes of high-speed and power abilities of beach handball players of 14-15 years old, under the influence of the specially selective sets of exercises.

Material and methods of the research: analysis of scientifically methodical literature, pedagogical testing, pedagogical experiment, methods of mathematical information processing.

Test exercises were used for the definition of the level of the development of high-speed and power abilities of beach handball players, one of which is recommended by the training program of CYSS on beach handball [3], two others were created proceeding from the content of a game activity in beach handball.

The test tasks "a long jump from a place" and "a jump up from a place" were carried out on a sandy surface by a standard technique.

The test "A jump up from a place with a turn on 180 °" was carried out as follows: on a sandy surface a sportsman became a back to a vertical marking, fingers of the right hand are greased with a chalk. The sportsman's height was noted

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with the raised hands up then the handball player carried out a jump up, making a start feet and with a wave of hands, and did a turn on 180° on the left, noting on a marking the highest point of a jump by a contact. The difference between an initial and final mark in a marking was also a jump height in sm.

Two groups of beach handball players of 14-15 years old of Kharkov took part in the research. The experimental group was made by 10 sportsmen, control – 8 players.

Results of the research and their discussion. The initial indicators of test exercises which indicate the lack of statistically reliable differences between handball players of two groups are given in table 1 ($p > 0,05$).

Table 1

The level of high-speed and power abilities of beach handball players of 14-15 years old before the experiment

Groups	Long jump from a place (sm)	Jump up from a place (sm)	Jump up from a place with a turn on 180° (sm)
	Indicators $\bar{X} \pm m$		
EG (n=10)	186,71±1,96	30,57±0,88	27,62±1,10
CG (n=8)	189,01±1,7	28,35±0,84	25,12±1,25
t	0,89	1,82	1,5
p	>0,05	>0,05	>0,05

Table 2

Set of exercises №1				
№	content of exercises	features of a performance	dose	intervals of rest
1.	Jumps up on a place from two feet with a turn on 90° (serially on the right and on the left)	synchronization of movements of hands and feet at a jump out and a landing. 25 times in 1 series	1 series	without rest before an acceleration
	Acceleration on 16 m	to carry out right after jumps.		rest to a full renewal
2.	Jumps up on a place from two feet with a turn on 180°	synchronization of movements of hands and feet at a jump out and a landing. 15 times in 1 series	2 series	without rest before an acceleration
	Acceleration on 8m	to carry out right after jumps. 1 time in a series		rest 20 s between series
3.	Jumps up on a place from two feet with a turn on 360°	synchronization of movements of hands and feet at a jump out and a landing. 10 times in 1 series	2 series	without rest before an acceleration
	Acceleration on 4m	to carry out right after jumps. 1 time in a series		rest 20 s between series
Set of exercises №2				
1.	Long jumps from a place from two feet	it is obligatory to carry out a move by hands before a jump, to carry out jumps continuously 8 times	2 series	without rest before an acceleration
	Accelerations on 4m	to carry out right after jumps		rest 20 s between series
2.	Long jumps from a place from two feet	it is obligatory to carry out a move by hands before a jump, to carry out jumps continuously 6 times	2 series	without rest before an acceleration
	Accelerations on 8m	to carry out right after jumps		rest 20 s between series
3.	Long jumps from a place from two feet	it is obligatory to carry out a move by hands before a jump, to carry out continuously 4 times	2 series	without rest before an acceleration
	Acceleration on 16 m	to carry out right after jumps		rest to a full renewal

The analysis of the results of test exercises found the insufficient level of high-speed and power abilities of sportsmen at the training stage. So, the average result of a performance to a long jump from a place at sportsmen of EG is smaller on 3,29 sm, and CG is on 0,99 sm, than the minimum requirements of the training program of CYSS is.

It should be noted that the reliability of differences (EG – $t=2,094$, at $p \leq 0,05$, CG – $t=2,14$, at $p \leq 0,05$) was observed between the results of a jump up from a place and a jump up from a place with a turn on 180° which testifies to the essential influence of a performance of a turn on 180° on jump height.

The technique of coaches of the beach volleyball club "Kenguru" in Kharkov laid down for a basis of a technique of the development of high-speed and power abilities of beach handball players [5]. The set of exercises aimed at the development of high-speed and power abilities of handball players of 14-15 years old that considers a loose surface of a platform and features of a performance of some techniques of beach handball is given in table 2.

Complexes were carried out right after a warm-up. When performing jumps the special attention should be paid to the statement of foot at pushing away – it is necessary to come off sand by a heel and a sock at the same time, that is by the whole foot, without allowing a rift from heels on a sock. An optimum angle of bending in knee joints - 130°.

After 2 months of classes, with a load of 18 hours per week [3] during which the given set of exercises No. 1 was used on every 3rd classes, on everyone 5 – the set of exercises No. 2, the repeated testing of a level of the development of high-speed and power abilities of beach handball players of 14-15 years old was held.

Comparing the received data of testings of sportsmen of EG before and after the pedagogical experiment (table 3), it was established, that the use of the developed set of exercises authentically improved indicators of high-speed and power abilities of beach handball players on all indicators which were tested ($p \geq 0,05$).

Table 3

Changes of indicators of high-speed and power abilities of beach handball players of EG under the influence of the offered sets of exercises (n=10)

	Long jump from a place (sm)	Jump up from a place (sm)	Jump up from a place with a turn on 180° (sm)
	Indicators $\bar{X} \pm m$		
The beginning of the experiment	186,71±1,96	30,57±0,88	27,62±1,13
The end of the experiment	195,01±2,99	34,86±1,74	30,56±0,69
<i>t</i>	2,32	2,19	2,22
<i>p</i>	≤0,05	≤0,05	≤0,05

So, the average value of a performance of a long jump from a place grew on average on 8,3 sm, in a jump up from increased on 4,29 sm, in a jump out from a place with a turn on 180° on 2,94 sm.

Indicators of the control group didn't get used the essential changes at the repeated testing ($p \geq 0,05$).

The received data during our research confirm the efficiency of the offered set of exercises, high-speed and power abilities of beach handball players of 14-15 years old aimed at the development that gives the grounds to recommend us it for application in the educational-training process.

Conclusions.

1. The analysis of scientifically-methodical literature on a problem of training of players of beach handball, testifies that this problem remains actual and demands the solution of a number of questions among which the main is the development of the most effective remedies of the development of physical qualities. The careful studying of this question showed that one of the effective means are the specially selective exercises which are borrowed from beach volleyball that meets certain requirements, but the evidence-based system of their use for beach handball players isn't present, that is defined an orientation of researches.

2. The data of primary researches of separate parameters of high-speed and power preparedness allowed establishing that the insufficient level of development of quality is observed at beach handball players of both the experimental, and the control groups. So, indicators of a long jump from a place equaled 186,71±1,96 sm, up from a place – 30,57±0,88 sm, from a place with a turn on 180° up – 27,62±1,13 sm.

3. The application of the developed by us system of specially directed exercises affected authentically in the educational training process ($t=2,19-2,32$ at $p \leq 0,05$) on growth of the level of high-speed and power abilities of beach handball players of 14-15 years old.

The results of players of the control group remained at the level of primary researches.

Prospect of the subsequent researches. Our subsequent researches will be directed on the search of new ways of physical training of players of beach handball and the improvement of an arsenal of techniques.

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