

## EFFECT OF PSYCHOPHYSICAL STATE ON DIFFERENT QUALIFICATION'S HANDBALL PLAYERS ON THEIR PREPAREDNESS

Frolova L.S., Glazirin I.D., Petrenko Y.O., Suprunovich V.O., Menshikh E.E., Kharchenko I.A., Pivnenko A.O.  
Cherkassk national university, named after Bogdan Khmelnytsky

**Annotation.** Studied features a selection of handball players of various skill levels through interdependence parameters psychophysical condition. The study involved 243 handball players of various skill levels. Conducted anthropometric measurements, physical fitness testing, to determine the state of psycho-physiological functions, the calculation of the success of competitive activities. Found that for every subsequent stage of preparing young handball players are selected with certain anthropometric parameters. The selection of qualified athletes indicate a significant advantage of psychophysiological indicators. At the middle level of general physical preparedness depending on the length and circumference of the lower limbs in the making of sportsmanship. Middle and high dependence on the success of competitive activity indicators of spatial perception, logical and spatial thinking is installed in a group of skilled athletes. Identifying additional parameters for the selection of the stages of many years of sports training handball.

**Keywords:** handball, state, selection, anthropometric, physiological.

### Introduction

Selection in sports always was considered as dynamic system with its complex structure of interconnected parameters [5]. It is considered that determination of different factors' influence on mastering sports qualification permits to optimize the process of selection, especially on the stages of young sportsmen preparation [1,5]. In handball it is often recommended one and the same complex of parameters for the sportsmen of different qualification [6], that, in our opinion, is wrong. The researches of recent years point at the necessity of differentiated approach to choosing of selection criteria for every stage of multi-year perfection [7], especially it concerns psycho-physical criteria, which, in the opinion of G.V. Korobeynikov [3], D. Navarecki [9] et al., are the reflection of conditioned behavioral motion activity, and from the point of view of P. Luig, C. Manchado-Lopez, M. Kristan [8], M. Spieler [10], they are determining factor of competition activity's successfulness in handball.

The work has been fulfilled as per plan of scientific & research works of Cherkassk national university, named after Bogdan Khmelnytsky.

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

*The purpose of the research* is to find out the peculiarities of selection of different qualification female handballers through interconnection of psycho-physical state parameters.

*The methods and organization of the researches.* In the researches 243 female handballers took part: 58 sportswomen of initial training stage (9-11 years old without any grade); 52 sportswomen of preliminary stage of basic preparation (12-14 years old, having youth grades); 74 sportswomen of specialized basic stage (15-16 years old, I-II grade); 27 sportswomen of the stage, training for higher achievements (17-19 years old, CMS); 32 sportswomen of the stage of maximal realization of individual abilities (20-34 years old, MS, IMS). The name of stages and distribution of handballers was taken in accordance with modern strategy of multi-year sports preparation [4].

There were anthropologic measurements conducted, testing of physical preparedness, determination of psycho-physiological functions with the help of computer-aided method "Intest" [2], calculation of competition activity's successfulness by the data of official games. The materials were processed with the help of mathematical statistics methods.

### Results of the researches

The results, obtained in the course of the researches, say that there are confidential difference in psychophysical state of female handballers of different qualification, which witness about selection of the sportswomen with different motion experience and natural abilities for every stage of multi-year sports training. In this connection it was important to determine, which indicators can influence both on formation of sportsmanship and on successfulness of competition activity for us to mark them out as additional selection parameters.

So, on the stages of preliminary and basic preparation there was conducted a correlation of anthropometric parameters and psycho-physiological abilities with general physical level in order to determine those indicators, which would ensure successful realization of these stages' tasks, which imply creation of physical and tactic-technique basis of handballers' sportsmanship.

The analysis of the data, obtained at preliminary basic preparation showed that the length of shin and foot  $r=0,53$ ;  $r=0,41$ , influence on speed-power indicators, while at the stage of specialized basic preparation we can notice dependence of physical qualities on the circumference of hip and shin (on speed parameters on the level of  $r=-0,54$ ;  $r=-0,42$ ; on speed-power parameters – on the level of  $r=0,41$ ;  $r=0,59$ ; on general endurance – on the level of  $r=0,56$ ;  $r=0,59$  see table 1). Interdependence of other factors have not been found.

Table 1

*Dependent samples on preparation stages of young female handballers*  
(r)

	Speed	Speed-power qualities	General endurance
Preliminary stage			
Shin length		0,53*	
Foot length		0,41*	
Specialized basic stage of preparation			
Hip circumference	-0,54*	0,41*	0,56*
Shin circumference	-0,42*	0,59*	0,59*

Note: \* - the level of probability 95%.

The main task of preparation stages for higher achievements and maximal realization of individual abilities, in contrast to previous stages, is competition result. Considering the influence of factors on the prospects of handballers' competition activity, it was found out, that the quantity of interdependent samples is increasing with rising of sportsmanship.

At the stage of preparation to higher achievements indicators of movement speed ( $r=-0,45$ ), dexterity ( $r=-0,54$ ) and plain hear response ( $r=-0,35$ ), influence on reliability of play in defense, while attack's efficiency in game is influenced by dexterity indicators ( $r=-0,57$ ) (see Table 2).

Table 2

*Dependent samples on preparation stages of qualified female handballers*  
(r)

	Attack's efficiency in game	Defensive reliability in game
Stage of preparation to higher achievements		
Speed of movement		-0,45
Dexterity	-0,57	-0,54
Plain hear response		-0,35
Stage of maximal realization of individual abilities		
Plain vision	-0,44	-0,51
Space sense	-0,46	-0,67
Logical thinking	0,78	0,54
Operational thinking	0,51	0,83
Space thinking	0,72	0,88

Note: \* - the level of probability 95%.

At the same time, on the stage of maximal realization of individual abilities there were found out five parameters, which influence on the success of competition activity. Both: attack's efficiency and defense reliability are substantially influenced by the indicators of vision response, sense of space, logical, operational and space thinking; the difference lie only in the extent of dependence. We also have revealed noticeable connection of defense reliability and sense of space ( $r=-0,67$ ), as well as strong connection between operational ( $r=0,83$ ) and space thinking ( $r=0,88$ ). Also, strong connection of attacking play with logical ( $r=0,78$ ) and space ( $r=0,72$ ) thinking was established.

### Summary

1. Basing on correlation of psycho-physical indicators it has been established that on the stages of preliminary and specialized basic preparation of 12-16 years old handballers (female) the growth of general preparedness level is substantially influenced by anthropometric parameters. The successfulness of competition activity of qualified handballers (female) significantly depends on both: their physical preparedness and the activeness of some psycho-physiological functions.

2. Apart from body length, consisting of lower limbs' length and circumference, additional parameters of selection on different stages of sportsmanship formation have been marked; for qualified sportswomen – apart from indicators of space sense and space thinking.

*The prospects of further researches* are directed to revelation of factors, which influence on sportsmanship formation of young female handballers on different stages of multi-year sports preparation.

### References

- 1 Bulgakova N.Zh. *Teoriia i praktika fizicheskoi kul'tury* [Theory and practice of physical culture], 2009, vol. 9, pp. 45-51.
- 2 Kozak L.M., Elizarov V.A., Antomonov M.Iu., Razumnyj A.G. *Ukrayins'kij zhurnal medicins'koi tekhniki i tekhnologii* [Ukrainian journal of medical technique and technology], 1995, vol. 3, pp. 59-66.
- 3 Korobejnikov G.V. *Psikhofiziologija deiatel'nosti cheloveka* [Psycho-physiology of human activity], Saarbrücken, LAP Lambert Academic Publ., 2011, 26 p.
- 4 Platonov V., Sakhnovskij K., Ozimek M. *Nauka v olimpijskom sporte* [Science in Olympic Sport], 2003, vol. 1, pp. 3-13.

- 5 Shinkaruk O.A. *Pedagogika, psihologia ta mediko-biologicni problemi fizicnogo viovanna i sportu* [Pedagogics, psychology, medical-biological problems of physical training and sports], 2012, vol. 12, pp. 144-148.
- 6 Acsinte A. Alexandru E. Physical condition in high performance team handball, *EHF web Periodical*, 2007, 200 p.
- 7 Chaouachi A., Brughelli M., Levin G., Boudhina N., Cronin J., K. Chamari Anthropometric, physiological and performance characteristics of elite team-handball players. *Sportscience*, 2009, vol. 27 (2), pp. 151-157.
- 8 Luig P. Manchado-Lopez C., Kristan M. *Motion characteristics according to playing position in international men's team handball: 13th Annual Congress of the European College of Sports Science, Portugal, Estoril, 2008*, 255 p.
- 9 Nawarecki D., Harchenko D., Tatarych R., Serhiyenko I. Psychological grounds of properties of individuality and also possibility of their correction [Psychofizjologiczne podstawy cech osobowości oraz możliwości ich korygowania]. *Annales Universitatis Mariae Curie, Sklodowska, Sectio D Medicina*, vol. LX, Suppl. XVI, Lublin, 2005, vol.2, pp.67 – 71.
- 2 Spieler M., Czech D. R., Barry Joyner A., Munkasy Barry, Gentner Noah, J. Long, Predicting Athletic Success: Factors Contributing to the Success of NCAA Division I AA Collegiate Football Players. *Athletic Insight, The Online Journal of Sport Psychology*, 2007, vol. 9(2), pp. 30-35.

---

**Information about the authors**

**Frolova L.S.:** a-f@ukr.net; Cherkasy National University; Shevchenko Boulevard 81, Cherkassy, 18031, Ukraine.

**Glazirin I.D.:** a-f@ukr.net; Cherkasy National University; Shevchenko Boulevard 81, Cherkassy, 18031, Ukraine.

**Petrenko Y.O.:** petrenko62@gmail.com; Cherkasy National University; Shevchenko Boulevard 81, Cherkassy, 18031, Ukraine.

**Suprunovich V.O.:** ViktoryS1987@ukr.net; Cherkasy National University; Shevchenko Boulevard 81, Cherkassy, 18031, Ukraine.

**Menshikh E.E.:** a-f@ukr.net; Cherkasy National University; Shevchenko Boulevard 81, Cherkassy, 18031, Ukraine.

**Harchenko Y.A.:** yakormc93@mail.ru; Cherkasy National University; Shevchenko Boulevard 81, Cherkassy, 18031, Ukraine.

**Pivnenko A.O.:** anastasia1505vol@mail.ru; Cherkasy National University; Shevchenko Boulevard 81, Cherkassy, 18031, Ukraine.

---

**Cite this article as:** Frolova L.S., Glazirin I.D., Petrenko Y.O., Suprunovich V.O., Menshikh E.E., Kharchenko I.A., Pivnenko A.O. Effect of psychophysical state on different qualification's handball players on their preparedness. *Physical education of students*, 2013, vol.3, pp. 72-74. doi:10.6084/m9.figshare.663630

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: 07.03.2013

Published: 23.04.2013