CONTACT PSYCHOPHYSIOLOGICAL AND NEURAL FUNCTIONS WITH TECHNICAL AND TACTICAL READINESS VOLLEYBALL
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Annotation. Set the level of neural development, psycho-physiological functions in highly skilled volleyball players. Defined technical and tactical preparedness highly skilled volleyball players in the competitive period of the annual cycle of training. The study involved six masters of sport and 8 candidates for the master of sports. That the quality of play activities and the successful execution of technical elements depend on functional mobility, strength and reactivity of nerve processes, associative thinking, memory and attention. The results, which may have a prognostic value. It is shown that the neurodynamic functions are genetically determined. It is recommended to use them for the initial recruitment and selection stages for sports improvement. The necessity influence the types of thinking, memory and attention in the training process of volleyball players.

Keywords: physiological, neural, functions, thinking, memory, attention, technique, tactics, volleyball.

Introduction
At present time volleyball has significantly changed. Not only its technical side has changed: reduction of ball’s size and, correspondingly, its technical characteristics; rules of game also have changed: innovations in game permitted to change the “picture” of the game, i.e. tactics, because teams started to play with one connecting player and, correspondingly, the quantity of attacking players increased. Besides, contemporary rules permit to use the player of defender plan, “libero”, and it influenced the quality both of team’s and individual’s actions. Basing on researches of Yu. N. Kleshev we can affirm that nowadays sports, volleyball including, has reached so high level of development that physical, technical and tactic preparedness of the world scale strongest sportsmen are approximately on the same level. That is why in modern volleyball tactic preparation is of special significance as well as psycho-physiological state and intellectual functions.

In modern scientific literature there are many materials that witness about influence of certain psycho-physiological and neuro-dynamic functions on successfulness of sports activity. In scientific works by Zh.L. Kozina, G.V. Korbeynikov, L.S. Frolova, I.D. Glazyrina it is noted that mastering of technical-tactic techniques of outdoor games depends on development of psycho-physiological functions.

At the same time G.S. Orlov defines physiological, motion and psychological components as the most expressed component of mobilizing readiness of a sportsman. Exactly their characteristics have been being widely studied recent years both in complex way and separately, though, in most researches scientists prove significant influence of the functions on quality of game activity. With it, G.S. Orlov, notes high integrity of motion, intellectual and motivational components, S.I. Kramskiy speaks about psychic reliability, steadness and compatibility as an indicators of mobilizing readiness and L.S. Frolova, I.D. Glazyrin, V.O. Suprunovych mark out tactic thinking from cognitive component as basic element of successfulness of game activity in outdoor games.

Alongside with it, in the work by A.Yu. Melnik it is noted that reaching of high physical, technical and tactic preparedness as well as successful participation in competitions are impossible without high indicators of certain psychological and moral qualities of volleyball players.

At the same time it should be noted that the problem of connection of these factors and quality of certain technical-tactic techniques of game in competition period of annual cycle. Considering the fact that peculiarities of neuro-dynamic, sensorimotor and psychic functions are basic in formation of behavior responses, in successfulness of training, obtaining of professional skills and effective using of them in learning, labor and, especially, in sports activity, it would be purposeful to study the connection of neuro-dynamic and psycho-physiological functions not only with quality of highly qualified volleyball players’ game activity, but also with successfulness of separate technical-tactic techniques’ execution. Our work is devoted to solution of exactly is problem.

The purpose, tasks of the work, material and methods

The purpose of the work is establishing of connection between psycho-physiological, neuro-dynamic functions with technical-tactic preparedness of highly qualified volleyball players in competition period of annual cycle of training.

The tasks:
1. Determine the level of development of neuro-dynamic and psycho-physiological functions of highly qualified volleyball players.
2. Determine technical-tactic preparedness of highly qualified volleyball players in competition period of annual cycle of training.

3. Carry out correlation analysis between the studied functions and technical-tactic preparedness of highly qualified volleyball players.

**Organization and methodic of the research.**

The research was carried out on the base of SVC “Impexargo Sports Cherkassy” in Cherkassy in the period from September 2010 to May 2012. During this period the team reached final part of Championship of Ukraine and became prize winner of Cup of Ukraine twice, while by results of regular Championship of Ukraine 2010-2011 it became bronze prize winner of Ukraine. As on the time of research SVC “Impexargo Sports Cherkassy” included 6 masters of sports and 8 candidates master of sports. For evaluation of development levels of latent periods of simple visual-motor response (SVMR) and complex visual-motor response (CVMR) to one or two irritators (PB1-3), (PB2-3), of indicators of functional mobility of nervous processes (FMNP) we used computer program “Diagnost 1” developed by M.V. Makarenko, B.S. Lizogub [M.V. Makarenko, B.S. Lizogub, D.M. Kharchenko, Yu.O. Petenko, V.O. Pustovalov, M.Ye. Yakovlev Patent for invention “Methods of determination of functional mobility’s level” 15.08.2005]. The level of development of sportsmen’s psycho-physiological functions was evaluated with the help of computer program “Intest”, L.M.Kozak, V.A. Yelizarov [6] and with the help of methodic of “searching figure with Shulte’s changeover”, while quality of technical-tactic techniques was determined with the help of computer programa Data Volley [2].

**Results of the researches**

The carried out correlation analysis showed that quality of game activity depends on functional mobility of nervous processes (FMNP) \( r = -0.66 \) (\( p<0.01 \)). Besides, we established connection of nearly the same level with associative thinking \( r = 0.57 \) (\( p<0.02 \)) and with distribution and re-switching of attention \( r = -0.52 \) (\( p<0.05 \)). Basing on the obtained results of neuro-dynamic and psycho-physiological functions, it is possible to use FMNP data with primary selection on stages of sports perfection as far as functional mobility of nervous processes is highly-genetically determined indicator, [M.V. Makarenko, B.S. Lizogub, D.M. Kharchenko, Yu.O. Petenko, V.O. Pustovalov, M.Ye. Yakovlev Patent for invention “Methods of determination of functional mobility’s level” 15.08.2005]. The data of connection of game activity’s quality with associative thinking and distribution and re-switching of attention show at necessity to use the methods of their improvement in training process and it can serve as a factor of rising of their efficiency (see fig.1).

![Fig.1 Connection of neuro-dynamic and psycho-physiological functions with quality of game activity](image)

Alongside with it, materials of researches of A.V. Beliayev [1] witness that in modern volleyball important place is taken by service and receiving of ball after serves on reception, that is why we carried out correlation analysis between the studied functions and successfullness of execution of separate technical elements of game and established that quality of attacking blow depends on development of associative thinking \( r = 0.61 \) (\( p<0.02 \)), abstract thinking \( r = 0.5 \) (\( p<0.05 \)) and memory \( r = 0.55 \) (\( p<0.05 \)). The quality of service depends on memory \( r = 0.52 \) (\( p<0.05 \)).

Execution of block depends on operation thinking \( r = 0.58 \) (\( p<0.05 \)), and quality of second pass and game on reception depend on abstract thinking \( r = 0.56 \) (\( p<0.05 \)) and memory \( r = 0.57 \) (\( p<0.05 \)) (see fig.2). The established connections of psycho-physiological functions are explained be necessity to keep in memory coach’s instructions, own
tactic schemas and calculate possible variants of adversary’s behavior, that put special requirements to development of kinds of thinking and memory and prove the necessity of influence on these psycho-physiological functions in training process in order to improve game’s efficiency.

The data, presented in (fig.3) witness that quality of service depends on complex visual motor response of selection of two irritators from three (PB2-3) \( [r = -0.61 \, (p<0.02)] \) and age \( [r = 0.49 \, (p<0.05)] \), while quality of receiving and successfulness of block depend on simple visual motor response (SVMR) \( [r = -0.49 \, (p<0.05)] \), that is explained by the necessity to quickly, practically respond to power. Services and quick movements of attacking adversary with fulfillment of block; age aspect witnesses about presence or absence of game experience and it naturally influences on service’s quality in difficult, decisive moments of game with high emotional loads.

**Fig.2 Connection of technical-tactic preparedness with psycho-physiological functions**
Summary

1. Analysis of scientific literature witnessed the importance of such components as: neuro-dynamic, psychophysiological and intellectual functions and tactic preparedness in game quality of highly-qualified sportsmen of outdoor games’ sports.

2. Quality of game activity of highly qualified volleyball players depends most of all on functional mobility of nervous processes (FMNP) -0.66 (p<0.01), associative thinking 0.57 (p<0.02) and attention -0.52 (p<0.05).

3. Successful fulfillment of attacking blow depends on development of associative thinking 0.61 (p<0.02), abstract thinking 0.5 (p<0.05) and memory 0.55 (p<0.05); fulfillment of block – on operational thinking 0.58 (p<0.02); quality of second pass and receiving game depend on abstract thinking 0.56 (p<0.05) and memory 0.57 (p<0.05).

4. Quality of service depends on complex visual motor response to selection of two irritators from three (PB2-3) – on response quickness of nervous processes -0.61 (p<0.02) and age 0.49 (p<0.05). Quality of receiving, fulfillment of block depends on simple visual motor response (SVMR) -0.49 (p<0.05).

4. The obtained results can be of prognostication value because neuro-dynamic functions are highly-genetically determined and these results can be used for primary selection on the stages of sports perfection. Correlation connections of psycho-physiological functions permit to speak about necessity to influence on different kinds of thinking, memory and attention in volleyball players’ training process on different stages of sport perfection in order to improve their game activity’s effectiveness.

The prospects of further researches imply revelation of other factors, which can influence on the quality of game activity in professional volleyball. In particular, these factors can be physical level, peculiarities of somatic type, coordination abilities, tactic and moral-will preparedness, etc.

References:


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