

MODEL PARAMETERS OF TECHNICAL AND TACTICAL ACTIONS IN THE COMPETITIVE ACTIVITIES OF VOLLEYBALL PLAYERS

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Annotation. The application of modeling of technical and tactical actions as one of the leading components of the control system of competitive activities of highly skilled volleyball players. It is shown that the proposed modeling techniques can generate the optimum orientation of the training process with the use of specialized tools at different stages of the annual cycle of training. In a study based on official statistics volleyball tournament World League in 2012 years. It is recommended to be oriented on the followings model indexes of actions of command and sportsmen: general amount of the collected glasses (170 - 190); amount of glasses, collected in an attack (139 - 157); amount of glasses, collected at blocking (12 - 24); amount of glasses, collected from a serve (9 - 17); the middle index of efficiency is protective actions (at the reception of ball from a serve -58,29%). It is shown that the performance of technical and tactical actions can be used as a model in the management of the process of training and competitive volleyball elite athletes.

Keywords: model, evaluation, ranking, technique, tactics, figure, action, activity, performance, result.

Introduction

Detail study of technologies of optimal evaluation and simulation of players' technical-tactic actions in modern volleyball permits to accentuate the researchers' attention at their most important characteristics. They are: determination of individual, group and team effectiveness of technical-tactic actions in the processes of game and training, determination of optimal coefficients of some quantitative technical-tactic actions' indicators and their hierarchic structure, selection of model indicators, their quantitative and qualitative characteristics of volleyball players of different game roles. The complex of such characteristics conditions efficiency of competition activity of highly qualified volleyball players and determines their sportsmanship level.

Estimation of effectiveness and determination of indicators of highly qualified volleyball players' technical-tactic actions still remain an urgent problem of competition activity's perfection with the aim – formation of new, more qualitative methodic approaches to increasing of its efficiency. The problems of selecting of highly-specialized means of different technical-tactic actions' development and improvement, resulted from application of significant by correlation "scope-intensity" loads, are also still urgent, and it dictates the need in applying of highly-specialized training means, which would create the necessary, close to maximal, training effect.

General theoretical approaches to problems of optimal estimation and simulation of technical-tactic actions on examples of different kinds of sport are presented in works by V.N. Platonov [1], L.P. Matveyev [2]. Concerning problems of appraisal of volleyball players' sportsmanship level, there are well known researches by L.R. Ayraptants [3] and A.G. Furmanov [4], Cieślicka M., Dix B., Napierała M., Zukow W.[9], Lobietti R., Coleman S., Pizzichillo E., Merni F. [10]. These researches are oriented on pedagogical analysis of different age and qualification volleyball players' competition activity's parameters, on the base of statistical processing of technical-tactic actions' data during official and control games. Pedagogical analysis of technical-tactic actions' indicators permits to obtain prompt information about effectiveness of competition activity in certain tournament or separate official game, about effectiveness of separate players' and team's technical-tactic actions, quickly respond to game mistakes and correct them both during trainings and directly in official competitions.

In works by Ye.V. Kudriashov [5], close to optimal indicators of motion abilities' level, technical and game preparedness of female volleyball players of different qualification and game roles are experimentally grounded. The author fulfilled comparative analysis of indicators, received as a result of experimental researches, with calculated, received as a result of statistical processing of official data of different volleyball tournaments. This comparison resulted in revelation of interconnection of female volleyball players' different sides of preparedness and their influence on effectiveness of competition activity; the author offered criteria for evaluation of training exercises' intensity and optimal correlation of main and auxiliary exercises in macro-cycle, ensuring general cumulative effect.

I.V. Sinigovets [6] scientifically grounded program of 15-17 years old volleyball players' annual physical training, on the base of differentiation of game roles' characteristics. The author determined model characteristics and evaluation scales of power and speed-power abilities and gave ground to application of training influences in the period of volleyball players' training according to specificity of competition loads and movements.

A.V. Osadchiy [7] studied in detail the problems of perfection of different age volleyball players' technical improvement, determined quantitative characteristics of main system-forming elements of kinematic structure of volleyball players' motion techniques and stated their interaction with other technical elements in competition practice. In the process of researches the author applied methodic of volleyball players' technical improvement, based on physical exercises, which simulate conditions of hyper gravitational load in training process, and proved its efficiency.

The works by Yu.A. Goncharniuk [8] are devoted to problems of perfection of volleyball players' technical level on the base of bio-mechanical models of jumps and movements (on materials of beach volleyball). The author

developed sportsmen's jumps and movements on sand models in condition of beach volleyball. He developed and grounded methodic, which permits to determine the most effective model and individual techniques of jumps and movements and predict potentials of a sportsman in beach volleyball; besides, on the base of this, he offered methodic of technical training.

At present there are well known and applied different methods of simulation of highly qualified volleyball players' technical-tactic actions, which have a number of disadvantages. Final uncertainty of optimal means of competition activity's evaluation and simulation creates preconditions for improvement of analytical base and experimental testing of its effectiveness. Special attention shall be paid to researches, conducted on materials of greatest international competitions – championships of Europe, world, Olympic Games that permits not only to determine individual model indicators of the strongest volleyball players, but also to reveal the trends of further volleyball's perfection. Just individual indicators of highly qualified volleyball players' technical tactic actions influence on competition results and, to rather large extent, determine effectiveness of competition process.

The presented research has been fulfilled in compliance with plan of scientific & research works of Olympic and professional sports department of Zaporozhye national university and of department of theory and methodic of sportsmen's training and reserves of National university of physical education and sports of Ukraine (Kiev).

Purpose, tasks of the work, material and methods

The purpose of the research is to determine model characteristics of competition activity on the base of individual rating appraisal of technical-tactic actions for optimization of management of highly-qualified volleyball players' trainings.

The methods of the research:

- analysis and generalization of data of scientific-methodic literature sources;
- analysis of competitions' reports;
- pedagogic observations;
- simulation of technical-tactic actions in volleyball;
- methods of mathematical statistics.

Results of the researches

Studies of technical-tactic actions' indicators were carried out on the base of official data of tournament "World League", 2012 [[http://ru.wikipedia.org/wiki/Мировая_лига_2012_\(волейбол\)](http://ru.wikipedia.org/wiki/Мировая_лига_2012_(волейбол))]. In table 1 there are presented technical-tactic actions' indicators of the most efficient volleyball players of the tournament on the base of rating.

Table 1

Technical-tactic actions' indicators of highly qualified volleyball players (quantity of gained points) as per official data of "World League", 2012 [9], m - %

Players, country, place, taken by team in tournament	Scores			
	In attack	In block	In service	total
Tsvetan Sokolov, Bulgaria - 4	191 – 79.58	25 – 10.42	24 – 10.00	240*
Willfredo Leon, Cuba - 3	184 – 80.35	19 – 8.30	26 – 11.35	229*
Vallas, Brazil- 6	170 – 86.73	15 – 7.66	11 – 5.61	196
Gavin Shmitt, Canada - 12	169 – 87.56	11 – 5.70	13 – 6.74	193
Matthew Anderson, USA - 2	156 – 82.11	24 – 12.63	10 – 5.26	190*
Zbignev Bartman, Poland - 1	162 – 89.01	11 – 6.04	9 – 4.95	182*
Mikko Oyvanen, Finland- 13	146 – 86.39	12 – 7.10	11 – 6.51	169
Maxim Mikhaylov, Russia - 8	138 – 82.63	12 – 7.19	17 – 10.18	167
Cleyton Stanly, USA - 2	117 – 75.97	24 – 15.58	13 – 8.45	154*
Kunikihiro Simidzu, Japan- 15	136 – 93.79	4 – 2.76	5 – 3.45	145
Urosh Kovachevich, Serbia- 9	128 – 88.28	14 – .,66	3 – 2.06	145
Dmitriy Muserskiy, - 8	86 – 59.31	46 – 31.72	13 – 8.97	145
Mean quantitative indicator	148.58	18.08	12.92	179,58
Mean percentage indicator	82.64	10.40	6.96	100

Notes: * - players of combined teams from Poland, USA, Cuba and Bulgaria played by two games more (semifinals, match for 3rd place and final).

Analysis of table 1 data permits to state that by quantitative indicators of gained scores in individual rating of twelve best volleyball players there are volleyball players of both: upper part of tournament table (Poland, USA, Cuba, Bulgaria, Brazil – representative of "six" finalists), and lower part – (Russia, Serbia, Canada, Finland, Japan). We also

state that the most efficient players are not always members of teams – prize winners.

The obtained data can be used as model ones when determining effectiveness of highly qualified volleyball players' technical-tactic actions in competition process by quantitative and qualitative indicators of gained scores. Considering the factor that indicators of the strongest volleyball players in competition process can be applied as individual model characteristics, we offer to use as averaged indicators the following:

- total quantity of gained scores: average quantitative indicator – 179.58; interval– 170 - 190; minimal indicator– 145;
- quantity of scores, gained in attack: mean quantitative indicators - 148.58; interval – 139 - 157; minimal indicator– 117;
- quantity of scores, won in blocks: mean quantitative indicator – 18.08; interval – 12 - 24; minimal indicator– 11;
- quantity of scores, won in service: mean quantitative indicator – 12.92; interval – 9 - 17; minimal indicator– 5.

Quantitative indicators of technical-tactic actions' effectiveness do not always give objective picture, because qualitative component (percent correlation of efficient attacks with total quantity; percent correlation of quantity of gained by a player scores with total quantity of scores, won by team and etc.) is not taken in consideration. That is why in our research we analyzed qualitative data of effectiveness of highly qualified volleyball players' attacks in competition process (see table 2).

Table 2
Effectiveness indicators of highly-qualified volleyball players technical-tactic actions in attacks as per official data of "World League", 2012 [9], m - %

Players, country, place, taken by team in tournament	Effectiveness of technical-tactic actions in attacks
Kunikhiro Simidzu, Japan- 15	56.43
Zbignev Bartman, Poland - 1	53.47
Henry Bell, Cuba - 3	53.21
Willfredo Leon, Cuba - 3	52.42
Vallas, Brazil- 6	50.45
Mean indicator	≈ 53.20

Pedagogical analysis of Table 2 data witnesses that the strongest volleyball players of "World League", 2012 tournament, showed effectiveness of attacks, which reached 50% and higher. These indicators also are necessary to be used as model characteristics in competition and training processes' management.

Indicators of effectiveness of defensive highly-qualified technical-tactic actions are given in table 3.

Таблица 3
Indicators of effectiveness of defensive highly qualified volleyball players' technical-tactic actions (receiving of ball from service) as per official data of "World League", 2012 [9], - %

Players, country, place, taken by team in tournament	Effectiveness of technical-tactic actions in defense
Yr.O. Khen (Republic of Korea - 14	63.04
Murilo, Brazil– 6	61.72
Ervin Ngane, France - 7	56.96
Sergio, Brazil - 6	56.09
Kshishtof Ignachak, Poland - 1	53.63
Mean indicator	≈ 58.29

Analysis of table 3 data permits to state that the strongest volleyball players of "World League", 2012 also have indicators, exceeding 50% by indicators of defensive technical-tactic actions (receiving of ball form service).

On the base of above said we recommend the following schema of highly-qualified volleyball players training's management (see fig.1).

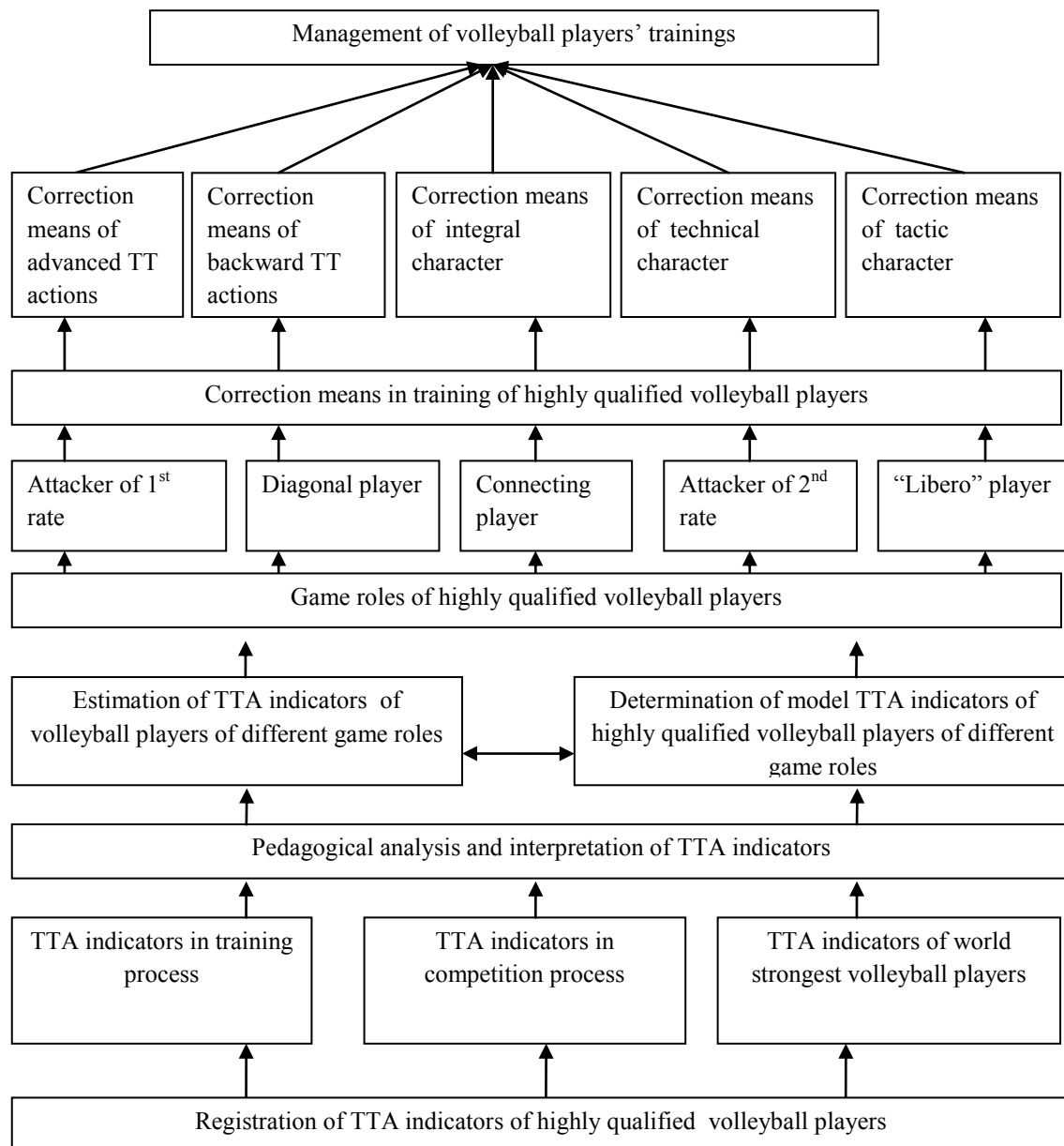


Fig. 1. Schema of training's management on the base of appraisal and simulation of technical-tactic actions of highly qualified volleyball players of different game roles

Conclusions:

Analysis of scientific-methodic literature data and results of our researches permit to formulate the following:

1. Technical-tactic actions' indicators of the strongest volleyball players in competition process are a system-forming factor in training. Appraisal, interpretation and simulation of of these indicators permit to improve training and competition processes in the base of application of highly specialized correction means of technical-tactic actions of different trends.

2. Official statistic data of tournament "World League", 2012 permit to determine the following model indicators of highly qualified volleyball players' technical-tactic actions, videlicet:

- total quantity of won scores: mean quantitative indicator – 179.58; interval– 170 - 190; minimal indicators– 145;
- quantity of scores, gained in attack: mean quantitative indicator – 148.58; interval – 139 - 157; minimal indicators – 117; mean indicators of attacks' effectiveness - \approx 53.20%;
- quantity of scores, gained in blocks: mean quantitative indicator – 18.08; interval – 12 - 24; minimal indicators – 11;
- quantity of scores, gained in service : mean quantitative indicator – 12.92; interval – 9 - 17; minimal indicators – 5;
- mean indicator of defensive actions' effectiveness (receiving of ball from service) \approx 58,29%.

The prospects of further researches in this direction are based on demand in determination of model characteristics of other technical-tactic actions of the strongest European and world volleyball players at official competitions: quantitative and qualitative characteristics of blocking, efficiency of connecting player's passes,

efficiency of “libero” player’s techniques and other elements of volleyball, which compose the structure of competition activity.

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