

## MODELLING OF TECHNICAL TACTICAL ACTIONS AS THE MANAGEMENT FACTOR COMPETITIVE PROCESS AND PREPARATION OF BASKETBALL PLAYERS OF HIGH QUALIFICATION

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**Annotation.** Application of modelling indicators of technical-tactical actions in a control system of preparation and competitive process of basketball players is considered. In research the official statistical data of the European championship on basketball of 2013 is used. It is shown that modelling indicators of technical-tactical actions allow to form an optimum orientation of training process with application of specialised means at various stages of a year cycle of preparation, to supervise indicators of technical-tactical actions in competitive process. It is recommended as modelling to use following ranges of indicators of technical-tactical activity: (in one game): efficiency of two game point throws (44 - 48 %, throws in game in number 46 - 50); efficiency of three game point throws (35 - 39 %, throws in game in number 15 - 19); efficiency of penal throws (64 - 72 %, throws in game in number 16 - 21); indicators of a parity of the typed and passed points (1,2 - 1,3); ball selections (37 - 40); ball interceptions (6 - 10); goal passes (13 - 16); ball losses (12-14); the block-shot (2,5 - 3,0).

**Keywords:** competition, training, basketball, role, management, model, estimation, technics, tactics, action, efficiency, result.

### Introduction

Theory of sports regards control of competition processes as one of main factors of optimization and perfection of highly qualified sportsmen's technical-tactic activity. Modern basketball makes high demands to training of sportsmen owing to constantly growing competitiveness on the level of national combined teams and best club teams, participating in European cup tournaments. Control of training and competition processes of highly qualified female basketball players is an urgent problem for Ukrainian basketball. In system of Ukrainian basketball highly qualified coaches work, system of junior sportswomen in junior sports schools is functioning, there is experience of successful performances at largest international competitions (European champions of 1995, fourth place at Olympic Games, 1996). In spite of these facts, recent decade girls combined team of Ukraine has been playing unsuccessfully, sometimes, entering final tournaments of European championships. The best club teams also can not show good results at international level. This discrepancy needs profound and comprehensive analysis, one of whose directions is comparison of technical-tactic actions' model indicators of leading European national combined teams with technical-tactic indicators of female basketball players of Ukrainian combined team.

Study, analysis and interpretation of technical-tactic indicators of highly qualified sportsmen, comparing of these indicators with indicators of the best sportsmen (which are taken as individual model characteristics) have been sufficiently elucidated in scientific and methodic literature. In researches by V.N. Platonov [1], L.P. Matveyev [2] technical-tactic indicators of highly qualified sportsmen at official competitions are regarded as a system-formation factor of many-years' training and as one of main elements of competition process's improvement. On examples of highly qualified female basketball players these problems are elucidated in researches by R.A. Sushko [3], [4]. The author marked out main peculiarities of modeling for female basketball players, offered programs of training and corrections of highly qualified female basketball players' of different game roles technical tactic actions, considering model characteristics of the players. As individual model data it was offered to use indicators of some technical-tactic actions of highly qualified female basketball players shown at European or world championships on the base of official rating: "The best by pick ups indicators", "The best by gained scores" and etc. For comparing with model indicators of technical-tactic actions of the best female basketball players of European championship 2009, there were used indicators of female basketball players of national Ukrainian combined team in competition and training processes. Comparative pedagogical analysis was carried out, considering game roles of sportswomen and time, which they spend in directly competition process. For female basketball players of Ukrainian combined team, there were proposed means of technical-tactic actions' correction, which significantly lagging behind model indicators. Besides, there were proposed means of technical-tactic actions' perfection, considering game roles: "starting player", "attacking fullback", "light forward", "heavy forward", "central player".

Researches of S.G. Zashuk [5], [6] are devoted to studying of group technical-tactic action "quick break" indicators of male national Ukrainian combined team in qualifying games of European championship 2003. The author fulfilled comparative analysis of technical-tactic actions' effectiveness by indicators of quick break with indicators of best European and world teams, which he used as model ones. He determined main components, limiting effectiveness of these indicators of Ukrainian national combined team's players – timely and accurate first pass, group speed of players' movements, finalizing phase of attacking ring.

Indicators of penalty throws in competition process of BC "Dnepr" (Dnepropetrovsk) basketball players were analyzed in research by Ye.A. Mitova [7]. As model indicators the author used indicators of best teams of Ukrainian

basketball super-league “Budivelnik” (Kiyev), “Azovmash” (Mariupol). It was noted that effectiveness of penalty throws’ fulfillment by highly qualified basketball players depends on game role and character of game moments. In key and final moments of game indicators of penalty throws’ effectiveness reduce that witnesses about significant psychological tension of players.

Researches of Zh.L. Kozina et al. [8], [9] accentuate attention of scientists at peculiarities of modeling methods’ application in training process. On example of female basketball players of highest sport grades, there was shown need in studying of structure of female basketball players’ preparedness in training and competition periods of annual macro-cycle. The author offered algorithms for determination of female basketball players’ individual game effectiveness. It was proved that application of modeling methods permits to optimize female basketball players’ training, improve competition process, increase individual effectiveness in basketball.

Lopes C.R. et al., [10] regards application of modeling methods as integral component of controlling in process of physical training of junior basketball team (U-19) in annual macro-cycle. In his research he accentuates attention at age specificities of motion abilities’ development of basketball players of that age – period of direct preparation to competitions of adult sportsmen. It was shown that physical condition’s parameters of adult basketball players can be and must be used as model characteristics for junior basketball players. For junior basketball players there was proposed to use stage-by-stage model indicators, considering passport and biological age of sportsman.

Okazaki V.H.A. and Rodacki A.L.F. [11] studied effectiveness of basketball jump throws from different distances with the help of modeling methods. The authors showed that simulation of game situation in the process of improvement of certain technical component renders sufficient effect, if sportsmen mastered this element at the level of technical skill. If skill of this technical action is not formed or formed incompletely, complicating of training task by simulation of game situations (time deficit for technical action’s fulfillment, counteraction of adversary and so on) as a rule worsens effectiveness of jump ball throws.

Modeling, as factor of competition and training processes’ control, has sufficiently elucidated in scientific and methodic literature. On example of technical-tactic actions’ indicators of female basketball players in final tournament of European championship 2013 such research is carried out for the first time. It provides opportunity to specify trends of development of European and Ukrainian female basketball, to make corrections of competition practice of highly qualified female basketball players.

The research has been fulfilled according to plan of scientific-research work of Olympic and professional sports department of Zaporozhye national university and department of theory and methodic of sportsmen’s training and reserves of National University of physical education and sports of Ukraine (Kiyev). Topic of the research corresponds to “Combined plan of scientific-research works in the field of physical culture and sports for 2011-2015” by subject 2.4 “Theoretical-methodic principles of educational-training process’s individualization in game kinds of sports”.

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

*The purpose of the research* is determination of technical tactic actions’ model indicators of highly qualified female basketball players in matches of final tournament of European championship 2013.

*The methods of the research:* 1) analysis and generalization of scientific-methodic literature sources’ data; 2) analysis of official records of competition activity; 3) analysis of advanced pedagogic experience; 4) analysis of sportswomen’s and coaches’ diaries; 5) modeling of technical-tactic Actions; 6) pedagogical observations; 7) methods of mathematical statistics.

**Results of the researches**

Pedagogical analysis of technical-tactic actions' indicators of highly-qualified female basketball players was carried out on the base of official data of final tournament of European championship 2013. As model indicators we used indicators of team-winner (national combined team of Spain) and prize-winners of European championship (national combined team of France – silver prize-winner and national combined team of Turkey – bronze prize-winner). Indicators of highly qualified female basketball players’ technical-tactic actions are presented in tables 1-3.

Table 1

*Indicators of technical-tactic actions of female basketball players of combined team of Spain at final tournaments of European championship 2013*

Initials.	M	Min	2-sc. thr.		3- sc. thr.		Penalty thr.		Pick ups			RP	L	TO	BS	F		Scores
			A/Thr	%	A/Thr	%	A/Thr	%	A	D	T					Pl.	ON	
<u>L.S.</u>	9	274	70/142	49.3	2/5	40.0	20/32	62.5	22	78	100	14	17	26	12	18	29	166
<u>T.A.</u>	9	255	34/83	41.0	15/37	40.5	33/39	84.6	6	23	29	16	18	14	2	11	40	146
<u>X.M.</u>	9	250	21/44	47.7	9/22	40.9	15/17	88.2	17	13	30	25	11	8	3	21	20	84
<u>V.A.</u>	9	140	19/44	43.2	6/24	25.0	5/6	83.3	7	10	17	12	10	7	1	12	9	61
<u>D.S.</u>	9	150	11/26	42.3	4/10	40.0	7/8	87.5	0	11	11	14	12	3	0	16	15	41
<u>A.E.</u>	7	63	3/4	75.0	9/20	45.0	0/0	0.	1	5	6	10	0	1	0	2	0	33
<u>N.L.</u>	9	125	10/25	40.0	0/0	0.0	11/16	68.8	7	13	20	5	8	3	1	16	18	31
<u>P.L.</u>	9	168	8/21	38.1	3/11	27.3	5/6	83.3	3	15	18	31	12	9	2	21	12	30

<u>L.C.</u>	9	146	9/16	56.3	0/0	0.0	6/13	46.2	20	15	35	3	6	6	3	20	12	24
<u>O.C.</u>	5	53	5/10	50.0	3/4	75.0	0/1	0.0	3	5	8	7	2	2	0	5	4	19
<u>G.L.</u>	9	144	7/24	29.2	0/1	0.0	4/8	50.0	17	21	38	3	11	9	2	13	13	18
<u>C.Q.</u>	5	32	3/7	42.9	0/0	0.0	2/6	33.3	1	4	5	2	1	1	0	3	5	8
<b>Σ</b>	9		200/446	44.8	51/134	38.1	108/152	71.1	118	236	354	142	111	89	26	158	177	661

Notes: M- matches; Min. – minutes; 2-sc.thr – 2 scores throws; 3 sc.thr. – 3 scores throws; Penalty thr. – penalty throws; A/Thr. Accurate throws; A-attack; D- defense; T – total; RP – passes with results;; L- losses; TO- takeovers; BS – block-shots; F- fouls; PI – player; ON – on player.

Table 2

Indicators of technical-tactic actions of female basketball players of combined team of France at final tournaments of European championship 2013

Initials.	M	Min	2-sc. thr.		3- sc. thr.		Penalty thr.		Pick ups			RP ON	L	TO	BS	F		Scores
			A/Thr	%	A/Thr	%	A/Thr	%	A	D	PI.					PI.	ON	
<u>G.S.</u>	9	250	45/93	48.4	0/0	0.0	18/32	56.3	23	29	52	11	7	11	5	11	30	108
<u>Y.I.</u>	9	139	38/55	69.1	0/0	0.0	24/40	60.0	12	37	49	2	17	12	3	15	33	100
<u>L.-W.E.</u>	9	161	15/33	45.5	7/18	38.9	20/23	87.0	4	18	22	30	10	2	0	14	23	71
<u>D.C.</u>	9	210	10/33	30.3	11/27	40.7	8/12	66.7	7	20	27	24	9	6	0	17	22	61
<u>G.E.</u>	9	191	22/45	48.9	1/7	14.3	10/13	76.9	6	17	23	17	10	5	0	5	20	57
<u>M.E.</u>	9	162	19/55	34.5	0/2	0.0	15/18	83.3	14	18	32	10	6	3	5	9	14	53
<u>N.E.</u>	9	160	19/29	65.5	0/0	0.0	7/13	53.8	7	25	32	9	11	7	4	17	22	45
<u>T.D.</u>	9	165	18/42	42.9	0/1	0.0	7/15	46.7	14	14	28	9	11	6	4	14	14	43
<u>S.G.</u>	9	159	10/20	50.0	5/14	35.7	3/4	75.0	4	19	23	14	9	2	1	8	5	38
<u>A.V.</u>	8	64	8/13	61.5	2/4	50.0	3/7	42.9	2	10	12	2	6	1	1	10	5	25
<u>A.M.</u>	6	63	6/13	46.2	0/0	0.0	3/6	50.0	4	6	10	2	5	1	1	8	7	15
<u>L.A.</u>	8	73	5/15	33.3	1/3	33.3	1/2	50.0	2	10	12	6	4	1	0	4	4	14
<b>Σ</b>	9		215/446	48.2	27/76	35.5	119/185	64.3	110	244	354	136	114	57	24	132	199	630

Notes: M- matches; Min. – minutes; 2-sc.thr – 2 scores throws; 3 sc.thr. – 3 scores throws; Penalty thr. – penalty throws; A/Thr. Accurate throws; A-attack; D- defense; T – total; RP – passes with results;; L- losses; TO- takeovers; BS – block-shots; F- fouls; PI – player; ON – on player.

Analysis of Tables 1-3 data witnesses that main game load at matches of final tournament of European championship 2013 of teams – winner and prize-winners lied on 9 sportswomen, which directly participated in match for about 100 minutes and more (in nine matches). This fact permits to say that high level of competitiveness in modern basketball, presence of certain tactical schemas of matches in arsenal of advanced teams, duration of tournament, traumatism of players and other factors imply very qualified team staff. It concerns both: players of “starting” fifth and utility players with a duel with certain adversary.

Table 3

Indicators of technical-tactic actions of female basketball players of combined team of Turkey at final tournaments of European championship 2013

Initials.	M	Min	2-sc. thr.		3- sc. thr.		Penalty thr.		Pick ups			RP	L	TO	BS	F		Scores
			A/Thr	%	A/Thr	%	A/Thr	%	A	D	T					PI.	ON	
<u>Y.N.</u>	9	199	41/92	44.6	2/6	33.3	4/8	50.0	9	28	37	8	21	9	2	11	11	92
<u>H.Q.</u>	9	216	33/74	44.6	0/0	0.0	15/25	60.0	17	51	68	1	20	2	1	25	33	81
<u>T.E.</u>	9	191	18/39	46.2	8/19	42.1	18/22	81.8	2	18	20	13	10	11	0	15	26	78
<u>A.I.</u>	9	186	21/45	46.7	4/7	57.1	8/12	66.7	9	28	37	31	7	17	0	16	22	62
<u>V.B.</u>	9	192	14/28	50.0	10/22	45.5	0/0	0.0	13	23	36	38	13	9	0	14	4	58
<u>P.T.</u>	9	189	8/22	36.4	10/31	32.3	11/12	91.7	0	8	8	15	12	7	0	12	9	57
<u>C.B.</u>	9	184	21/57	36.8	0/0	0.0	10/13	76.9	16	32	48	5	10	2	3	12	13	52

<u>I.S.</u>	9	195	9/21	42.9	6/25	24.0	4/6	66.7	3	15	18	11	7	8	1	14	5	40
<u>D.Y.</u>	8	114	8/11	72.7	7/14	50.0	1/2	50.0	1	10	11	4	4	4	0	11	3	38
<u>C.T.</u>	9	91	12/16	75.0	1/2	50.0	1/3	33.3	10	16	26	5	3	2	0	8	4	28
<u>C.N.</u>	5	28	2/7	28.6	0/2	0.0	0/0	0.0	2	2	4	1	1	1	0	5	0	4
<u>G.A.</u>	6	16	1/3	33.3	0/1	0.0	0/0	0.0	0	0	0	2	6	0	0	4	1	2
$\Sigma$	9		188/415	45.3	48/129	37.2	72/103	69.9	95	256	351	134	121	72	7	147	131	592

Notes: M- matches; Min. – minutes; 2-sc.thr – 2 scores throws; 3 sc.thr. – 3 scores throws; Penalty thr. – penalty throws; A/Thr. Accurate throws; A-attack; D- defense; T – total; RP – passes with results;; L- losses; TO- takeovers; BS – block-shots; F- fouls; Pl – player; ON – on player.

Indicators of technical tactic actions of female basketball players of combined Ukrainian team are presented in table 4. Quantitative analysis of game time of national Ukrainian combined team’s female basketball players correspond to indicators of advanced teams of European championship 2013: nine sportswomen endured main load for 30 minutes and more. Analysis of game time of national Ukrainian combined team was carried out on the base of three matches, because in further matches Ukrainian combined team did not participate as per sport principle. Combined team of Ukraine lost three games of group tournament and did not enter the next stage of competitions: combined team of Ukraine – combined team of Turkey – 52-78; combined team of Ukraine – combined team of Slovakia – 68-75; combined team of Ukraine – combined team of Montenegro – 60-72.

Table 4  
*Indicators of technical-tactic actions of female basketball players of combined team of Ukraine at final tournaments of European championship 2013*

Initials.	M	Min	2-sc. thr.		3- sc. thr.		Penalty thr.		Pick ups			RP	L	TO	BS	F		Score s
			A/Thr	%	A/Thr	%	A/Thr	%	A	D	T					Pl.	ON	
<u>I.A.</u>	3	98	11/23	47.8	5/19	26.3	7/14	50,0	1	11	12	5	14	3	2	5	14	44
<u>M.V.</u>	3	81	9/24	37.5	0/4	0.0	4/6	66,7	8	10	18	4	6	2	0	6	6	22
<u>Z.G.</u>	3	59	2/6	33.3	4/12	33.3	1/1	100,0	3	9	12	0	7	2	0	9	2	17
<u>O.O.</u>	3	60	3/8	37.5	2/6	33.3	4/4	100,0	3	10	13	4	5	1	0	8	5	16
<u>D.O.</u>	3	65	4/9	44.4	1/4	25.0	1/2	50,0	4	0	4	9	7	3	0	7	3	12
<u>M.K.</u>	3	32	4/6	66.7	1/1	100.0	0/0	0,0	1	3	4	1	1	2	0	6	1	11
<u>D.K.</u>	3	34	3/5	60.0	1/3	33.3	2/2	100,0	3	2	5	0	1	1	0	2	4	11
<u>K.I.</u>	3	51	1/5	20.0	1/1	100.0	0/0	0,0	3	2	5	9	6	0	0	4	2	5
<u>A.L.</u>	2	14	2/7	28.6	0/0	0.0	0/2	0,0	4	3	7	0	1	0	0	1	2	4
<u>K.O.</u>	1	11	2/5	40.0	0/0	0.0	0/2	0,0	2	3	5	1	1	0	1	0	2	4
<u>S.O.</u>	2	12	0/0	0.0	0/0	0.0	0/0	0,0	1	1	2	0	2	1	0	2	1	0
$\Sigma$	3		56/124	45.2	16/57	28.1	20/36	55,6	47	64	111	39	61	17	4	59	47	180

Notes: M- matches; Min. – minutes; 2-sc.thr – 2 scores throws; 3 sc.thr. – 3 scores throws; Penalty thr. – penalty throws; A/Thr. Accurate throws; A-attack; D- defense; T – total; RP – passes with results;; L- losses; TO- takeovers; BS – block-shots; F- fouls; Pl – player; ON – on player.

Indicators of technical-tactic actions in basketball, which mostly determine successfulness of competition process, include quantity of gained scores and effectiveness of throws. Comparative analysis of throws’ effectiveness of Ukrainian national combined team’s female basketball players and advanced teams of European championship 2013 permits to state that indicators of 2 scores throws’ effectiveness are in the range 44-48%: Ukrainian combined team – 45.2%, combined team of Spain – 44.8%, combined team of France – 48.2%, combined team of Turkey – 45.3%. By this indicator combined team of Ukraine practically does not yield to advanced European teams. We accentuate attention at one more connected with previous indicator – quantity of 2-scores throws in match: this indicator of championship winner and prize-winners is significantly higher. Analysis of 3 scores throws’ effectiveness witnesses that indicators of Ukrainian combined team’s female basketball players are much lower: combined team of Ukraine – 28.1% with quantity of throws in match – 19; combined team of Spain – 38.1% with quantity of throws – 14.89; combined team of France – 35.5%, with quantity of throws – 8.44; combined team of Turkey – 37.2% with quantity of throws – 14.33. Quantity of throws of Ukrainian female basketball players is higher and it is probably explained by tactic specificities of playing, but low percentage of their realization did not permit for our team to create domination in this indicator. Indicators of penalty throws’ effectiveness witness about lagging of our basketball players in this

component of technical-tactic activity: combined team of Ukraine – 55.6% with quantity of throws – 12; combined team of Spain – 71.1%, with quantity of throws – 16.89; combined team of France – 64.3% with quantity of throws 20.56; combined team of Turkey – 69.9% with quantity of throws – 11.44. Besides, important element of pedagogical analysis of competition process of highly qualified female basketball players are indicators of correlation of gained and lost scores in a match: combined team of Ukraine – 60.0/75.0; combined team of Spain – 73.4/57.56; combined team of France – 64.3% with quantity of throws 20.56;  $\approx 1.28$ ; combined team of France – 70.0/54/33  $\approx 1.29$ ; combined team of Turkey – 65.8 / 53.78  $\approx 1.22$ . Indicators of correlation of gained and lost scores in one match of combined teams of Spain, France and Turkey are in the range 1.2 – 1.3.

Besides mentioned above, in the process of pedagogical analysis auxiliary indicators technical tactic activity of highly qualified basketball players are widely used. They, in particular, include: resulting passes, block-shots, pick ups, and ball turnovers (see table 5).

Table 5

*Mean indicators of technical-tactic actions of female basketball players in matches of final tournament of European championship 2013*

Teams	2-sc. thr.		3- sc. thr.		Penalty thr.		Pick ups			RP	L	TO	BS	F		Scores
	A/Thr	%	A/Thr	%	A/Thr	%	A	D	T					PI	ON	
ESP	22,2/49,6	44.8	5.7/14,9	38.1	12.0/16.9	71.1	13.1	26.2	39.3	15.8	12.3	9.9	2.9	17.6	19.7	73,4
FRA	23,9/49,6	48.2	3.0/8,4	35.5	13.2/20.6	64.3	12.2	27.1	39.3	15.1	12.7	6.3	2.7	14.7	22.1	70,0
TUR	20,9/46,1	45.3	5.3/14,3	37.2	8.0/11.4	69.9	10.6	28.4	39.0	14.9	13.4	8.0	0.8	16.3	14.6	65,8
UKR*	18,7/41,3	45.2	5.3/19,0	28.1	6.7/12.0	55.6	15.7	21.3	37.0	13.0	20.3	5.7	1.3	19.7	15.7	60,0

Notes: M- matches; Min. – minutes; 2-sc.thr – 2 scores throws; 3 sc.thr. – 3 scores throws; Penalty thr. – penalty throws; A/Thr. Accurate throws; A-attack; D- defense; T – total; RP – passes with results;; L- losses; TO- takeovers; BSA – block-shots; F- fouls; PI – player; ON – on player; ESP – combined team of Spain; FRA – combined team of France; TUR – combined team of Turkey; UKR – combined team of Ukraine; \* - mean indicators in three matches. .

Comparative analysis of highly qualified female basketball players' technical-tactic activity (table 5) permits to state that the lowest characteristics of Ukrainian combined team's female basketball players were registered by indicators of ball losses – 20.3 in one match. Indicators of advanced teams of European championship were in the range of 12-13.5 ball losses per one match.

#### Conclusions:

1. Registration and analysis of technical-tactic activity of highly qualified female basketball players at official international competitions (world and European championships, Olympic Games) permit to use these indicators as model characteristics of technical-tactic activity in training and competition processes.

2. On the base of official data of European championship 2013 we recommend to use as model characteristics the following ranges of technical-tactic indicators of highly qualified female basketball players' actions (in one match):

a) effectiveness of 2 scores throws: 44 – 48% with quantity of throws in one match - 46 – 50; b) effectiveness of 3 scores throws: 35 – 39% with quantity of throws in one match - 15 – 19; c) effectiveness of penalty throws - 64 – 72% with quantity of throws in one match 16 – 21; d) indicators of correlation of gained and lost scores: 1.2 – 1.3; e) pick ups: 37 – 40; f) turnovers of ball: 6 – 10; g) resulting passes: 13 – 16; losses of ball: 12 -14; block shots: 2,5 – 3,0.

The prospects of further researches in this direction are based on further detail studying of technical-tactic indicators of leading players. Actually, indicators of technical-tactic actions of the strongest players are individual models. Practice of greatest international competitions witnesses that the most success is achieved by teams, which include individually strong players, who are able in difficult moments of game demonstrate highly effective technical-tactic activity.

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