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Efficiency analysis of competitive activity of highly skilled basketball players at the stage of maximum realization of individual potential

Abstract. Purpose: to identify the factors of efficiency of competitive activity of highly skilled basketball players at the stage of maximum realization of individual potential. **Material and Methods:** in order to identify the factors that have supported the performance of Ukraine's male national team in the European Championship, data analysis and generalization of scientific and technical literature and online data, analysis of official protocols of competitive activities, analysis and generalization of best pedagogical practices, pedagogical supervision, methods of mathematical statistics were used. **Results:** the efficiency of competitive activity of basketball players was analyzed using such indicators as team roles, won and lost matches, scored and missed points, technical, tactical and age indicators. **Conclusions:** the factors of efficiency of competitive activity of highly skilled basketball players at the stage of maximum realization of individual potential were identified with regard to age indicators.

Keywords: basketball, championship, victory, competition activity, indexes.

Introduction. Problems of long-term training of highly skilled basketball players and ways of their solutions are found in the center of attention of experts as a result of a continuous increase of competition at the level of leading national and club teams. Experts-specialists and scientists allocate, as one of leaders, a problem of determination of the efficiency of the competitive activity and the analysis of its technical and tactical indicators. It is caused by a considerable influence of the above-mentioned factors on the productivity of the competitive activity and the achievement of high sports results. Definitions and the analysis of indicators of efficiency of the competitive activity of highly skilled basketball players at a stage of the maximum realization of individual opportunities are especially actual. Throughout this stage of long-term training indicators of sports skill and preparedness reach the greatest values that create prerequisites for the achievement of maximum sports results.

The modern views on a periodization of long-term preparation stated by V. Platonov, 2013 [8] allow to note that basketball belongs to a group of sports which differ from others in the existence of a large number of factors which define productivity of the competitive activity. Besides, basketball competitions take a place with high emotionality, application of a wide range of means and methods of preparation that allows for a long time (10-15years old) to have the high level of "sportswear", what close to optimum values, and to provide high sports results [10].

A basis of the theory of long-term training are the special principles formulated by V. Platonov, 2014 [9]: 1) an orientation to the highest achievements; 2) a profound specialization; 3) a unity of the general (fundamental, basic) and special preparation; 4) a continuity of the training process; 5) a unity of a gradual increase in loadings and tendency to maximum loadings; 6) a waviness and variety of loadings; 7) a recurrence of the process of preparation; 8) a unity and an interrelation of the competitive activity and preparedness.

Characterizing the structure of long-term preparation, A. Novikov and co-authors, 2014 [7] allocate the following levels in the system of its management on materials of training of high-class sportsmen:

- the first level displays a target activity of a sportsman in the conditions of competitions which is directed on the achievement of an optimum result. Basic elements of the competitive activity: efficiency and interval of attack actions, "reliability" of protection, variety, technical and tactical actions and others;
- the second level displays the system of models of the competitive activity of the main parties of sports skill: technical, tactical, special physical, psychological and others;
- the third level characterizes functional preparedness of sportsmen which is the necessary prerequisite of effective realization of sports skill in the competitive activity.

The competitive activity in team sports has a difficult multilevel hierarchical structure and has no full analogs in other sports. In researches E. Doroshenko, 2013; 2014 [1; 2] the competitive activity in basketball is considered as a system-created factor which considerably determines the creation of long-term training of highly skilled sportsmen. By the author it is noted that efficiency of the competitive activity in basketball depends on many factors, conducting from which is indicators of technical and tactical skill.

The use of individual approaches is important at a stage of the maximum realization of opportunities in the structure of long-term training of basketball players of high qualification. It concerns features of training taking into account factors of a game role of basketball players, sports experience, a level of the development of special motive abilities, skills, tasks on a concrete game and others. In the monograph of Kozina, 2009 [3] it is noted that the creation of competitive microcycles on the basis of an individualization of training of highly skilled basketball players has a rather high efficiency of technical and tactical actions both in educational training, and in competitive processes. V. Kostyukevich, 2010 [5] notes that it gives the chance of the creation of individual models of the competitive activity of sportsmen of a different game role which are a peculiar reference point at the creation of long-term preparation in general and its concrete stages.

The long-term training of basketball players at different stages of sports improvement, the review of urgent problems and ways of their decision, the experimental check of efficiency of the existing approaches and the principles of its construction are considered in details and fundamental in works of I. Maksimenko, 2009 [6] (on material of young sportsmen) and V. Koryagin, 2010 [4].

Modern approaches to the creation of long-term preparation in basketball need the correction as a result of essential influence of processes of an individualization of training of high-class sportsmen and professionalizing of an elite sport.

These factors create essential difficulties in processes of training of basketball players and practical realization of the available potential in official international competitions both for sportsmen and coaches of teams, and for specialists of complex scientific groups. The available disproportion between a need of simultaneous (or parallel) improvement of individual and team technical and tactical interactions creates essential difficulties at the creation of concrete microcycles of a certain orientation in the structure of long-term preparation. This problem gains especially powerful value at a stage of the maximum realization of individual opportunities of sportsmen in basketball when influence of processes of professionalizing of an elite sport on long-term preparation reaches the maximum values.

Communication of the research with scientific programs, plans, subjects. The research is a part of the research work of the chair of sports of National university of physical training and sport of Ukraine (Kiev) which is carried out according to the Built plan of the research work in the sphere of physical culture and sport for 2011-2015 of the Ministry of affairs of family, youth and sport in Ukraine, by a subject 1.2. "Modern professional sport and ways of its development in Ukraine" No. of the state registration – is 0111U001715.

The objective of the research: to define factors of efficiency of the competitive activity of highly skilled basketball players at a stage of the maximum realization of individual opportunities.

The object of the research – is the competitive activity of highly skilled basketball players at a stage of the maximum realization of individual opportunities.

The subject of the research – are indicators of technical and tactical actions, aged indicators in the course of preparation and the competitive activity of highly skilled basketball players at a stage of the maximum realization of individual opportunities.

Material and methods of the research. Indicators of the competitive activity of basketball players of a national team of Ukraine are analyzed in games of the European championships during 1995-2013. For the solution of tasks of the research the following methods are used: 1) analysis and synthesis of data of scientifically methodical literature and data of Internet; 2) analysis of official protocols of the competitive activity; 3) analysis and synthesis of the best pedagogical practices; 4) pedagogical supervision; 5) methods mathematical statistics.

Results of the research and their discussion. The European basketball championship is an official tournament among the European national teams which passes every two years under the patronage of the International federation of basketball associations (FIBA). The national teams of Yugoslavia, Russia, Italy, Turkey and Spain dominated for years of independence, since 1991 in the European championships. The men's basketball national team of Ukraine participated in six final parts of the European championships. Since 1997, the national team of Ukraine didn't take a place above the 13th. It was succeeded to the change a condition of events in 2013 when the men's national team of Ukraine took the highest the 6th place in the history, and acquired the right to take part in the final part of the World Cup of 2014 in Spain (tab. 1).

Table 1

Results of performances of a national basketball team of Ukraine in final parts of the European championships during 1997-2013, n=6

Taken places	National teams					
	Final tournament 1997	Final tournament 2001	Final tournament 2003	Final tournament 2005	Final tournament 2011	Final tournament 2013
1	Yugoslavia	Yugoslavia	Lithuania	Greece	Spain	France
2	Italy	Turkey	Spain	Germany	France	Lithuania
3	Russia	Spain	Italy	France	Russia	Spain
6	–	–	–	–	–	Ukraine
13	Ukraine	–	–	Ukraine	–	–
14	–	–	Ukraine	–	–	–
16	–	Ukraine	–	–	–	–
17	–	–	–	–	Ukraine	–

Studying of features of the formation of a quantitative line-up by game roles allowed finding certain differences which testify to taste coaches who headed national teams of Ukraine, to different tactical schemes in the course of the competitive activity and according to the structure of preparation of the team for participation in final tournaments of the European championships (tab. 2).

Table 2

Quantitative structure of a national basketball team of Ukraine in final parts of the European championships during 1997-2013, n=6

Role of players	National teams					
	Final tournament 1997	Final tournament 2001	Final tournament 2003	Final tournament 2005	Final tournament 2011	Final tournament 2013
Point guard	4	3	5	4	5	2
Forward	4	5	3	4	4	6
Center	4	4	4	4	3	4

The pedagogical analysis of the competitive activity of a national team of Ukraine testifies that the most effective is the structure of combined Ukraine of a sample of 2013 under the leadership of the famous American expert – Michael Fratello in which the solution of the main game objectives was necessary on players of attack positions: “easy” and “heavy” forwards and center.

The ratio of won and lost games in final tournaments of the European championships to a certain extent allows estimating the level of preparedness of a national team of Ukraine during the studied period. Results of these researches are presented in tab. 3.

Table 3

Indicator of a ratio of “victories-defeats” of a national team of Ukraine of basketball in final parts of the European championships of 1997-2013, n=6

Results of a game	Final tournaments of the European basketball championships					
	1997	2001	2003	2005	2011	2013
Victories	3	2	0	3	2	6
Defeats	2	4	6	6	3	5
Correlation	+1,5	-0,5	0	-0,5	-0,67	+1,2

It is well-known that efficiency of the competitive activity of highly skilled basketball players is estimated also by means of definition of a ratio of points gathered and passed by the team. Similar information allows forming an expert assessment concerning training of players and with rather high degree of reliability to define strong and weaknesses attack and protective actions of the team (tab. 4).

Table 4

Indicator of the gathered and passed points of a national team of Ukraine of basketball in final parts of the European championships of 1997-2013, n=6

Points	Final tournaments of the European basketball championships					
	1997	2001	2003	2005	2011	2013
Gathered	194	214	213	194	322	378
Passed	224	256	249	269	327	352
Difference	-42	-42	-36	-75	-5	+26
Correlation	≈0,87	≈0,84	≈0,86	≈0,72	≈0,98	≈1,07

The data presented in tab. 4 testify that the positive difference and a ratio of the gathered and passed points is a powerful factor of efficiency of the competitive activity. It is one of the main components which allowed a national team of Ukraine to take the sixth place in the European championship on basketball in 2013. And though in the research of indicators of the competitive activity there are no minor factors, after all everyone definitely determines a concrete contribution to the received result, quantitative and qualitative parameters of separate factors and their total contribution to final competitive result can differ considerably depending on specific technical and tactical actions and a concrete competitive situation. The vast majority of experts-specialists and scientists adhere to thought that the highest level of skill of certain basketball players and teams in general, the more significant role especially in the achievement of positive result can play a concrete factor of the competitive activity. The final result of the competitive activity of highly skilled basketball players during final tournaments in decisive games often is defined by minor factors. At the high level of sports qualification and equal indicators of technical and tactical skill overwhelming are individual qualities and “firm” skills of highly skilled sportsmen. In tab. 5 quantitative indices of individual efficiency of the competitive activity of highly skilled basketball players (players of a national team of Ukraine) are given in final tournaments of the European championships of 1997-2013.

Average indicators of individual technical and tactical actions of highly skilled basketball players in final parts of the European championships of 1997-2013 are presented in tab. 6. The pedagogical analysis of average indicators of the competitive activity gives the grounds for the formation of model characteristics. Researchers of this perspective allocate five main directions of the formation of model characteristics of highly skilled sportsmen at stages of long-term preparation:

- by maximum indicators;
- by minimum indicators;
- by average indicators;
- by ranges or intervals of indicators (the minimum – the maximum indicators);
- by the principle of existence of the leading qualities of a player at minimum sufficient indicators of other (minor) qualities. This direction is used when forming models of the strongest sportsmen of a certain game role.

The pedagogical analysis of the indicators presented in tab. 6 allows to claim that quantitative and quality indicators of performance of throws from the game (separately 2, 3-point and penal), picking up in attack and defense, assists, interceptions, block shots and losses of a ball are the most informative and significant in the course of the special analysis of indicators of the competitive activity of highly skilled basketball players. The informational content of the indicators which are taken out for discussion is proved by their use in formation of statistical material by rules of competitions under the auspices of FIBA (The international federation of basketball associations) and FBU (Federation of Basketball of Ukraine). The aged indicators of highly skilled basketball players who as a part of a national team of Ukraine took part in games of

Table 5

Indicators of efficiency of the competitive activity of a national basketball team of Ukraine in final parts of the European championships of 1997-2013, n=6

Indicators of the competitive activity	Final tournaments of the European basketball championships					
	1997	2001	2003	2005	2011	2013
2-point throws, n_1 / n_2	99/193	60/127	60/143	61/135	80/167	183/401
Effectiveness, %	51,3	47,2	42	45,2	47,9	45,6
3-point throws, n_1 / n_2	19/77	14/38	16/51	11/53	33/91	90/258
Effectiveness, %	24,7	36,8	31,4	20,8	36,3	34,9
Free throws, n_1 / n_2	118/167	52/74	45/66	39/62	61/101	139/209
Effectiveness, %	70,7	70,3	68,2	62,9	60,4	66,5
Assists, n_1	38	30	42	30	65	137
Interceptions, n_1	66	22	20	12	26	57
Block shots, n_1	-	4	11	5	15	36
Losses, n_1	122	55	58	71	109	214
Picking up in attack, n_1	32	22	24	42	35	121
Picking up in defense, n_1	65	55	63	64	120	267
Amount of picking ups, n_1	97	77	87	106	155	388

Note. n – a number of final tournaments; n_1 – a total of technical and tactical actions; n_2 – a number of effective technical and tactical actions.

Table 6

Average indicators of the competitive activity of a national team of basketball Ukraine in final parts of the European championships of 1997-2013, n=6

Indicators of the competitive activity	Final tournaments of the European basketball championships					
	1997	2001	2003	2005	2011	2013
2-point throws, n_1 / n_2	19,8/38,6	20,0/42,3	20,0/47,7	20,3/45,0	16,0/33,4	16,6/36,5
3-point throws, n_1 / n_2	3,8/15,4	4,7/12,7	5,3/17,0	3,7/17,7	6,6/18,2	8,2/23,5
Free throws, n_1 / n_2	23,6/33,4	17,3/24,7	15,0/22,0	13,0/20,7	12,6/20,2	12,6/19,0
Assists, n_1	7,6	10,0	14,0	10,0	13,0	12,5
Interceptions, n_1	13,2	7,3	6,7	4,0	5,2	5,2
Block shots, n_1	-	1,3	3,7	1,7	3,0	3,3
Losses, n_1	15,8	18,7	11,0	15,0	16,0	12,6
Picking up in attack, n_1	6,4	9,0	8,0	14,0	7,0	11,0
Picking up in defense, n_1	13,0	18,3	21,0	21,3	24,0	24,3
Amount of picking ups, n_1	19,4	27,3	29,0	35,3	31,0	35,3

Note. n – a number of final tournaments; n_1 – a total of technical and tactical actions; n_2 – a number of effective technical and tactical actions.

final tournaments of the European championships of 1997-2013 are presented in tab. 7.

The analysis of data which are presented in tab. 7, allows claiming, what average age of highly skilled basketball players who participated as a part of a national team of Ukraine in final tournaments of the European championships of 1997-2013, is in range ~24–27 years old. The minimum and maximum aged values make respectively 19 and 34 years old. These indicators can be considered a certain reference point of the aged indicators of basketball players of high qualification who are at a stage of the maximum realization of individual opportunities in the structure of long-term preparation. Complexity of the structure of the competitive activity and long-term preparation in basketball allows noting that reference of a concrete sportsman to a stage of long-term preparation, being guided only by the aged indicators is rather difficult task as a result of influence of a wide range of factors which determine the efficiency and the productivity of the competitive activity.

Conclusions

1. The major factors of efficiency of the competitive activity of highly skilled basketball players at a stage of the maximum realization of individual opportunities are indicators of technical and tactical actions in the competitive process (official games of national superiority, European championships, the world, League of Europe, but other). The most informative and significant in the course of the special analysis of indicators of the competitive activity of highly skilled basketball players are quantitative and quality indicators of performance of throws from a game, picking up in attack and protection, assists, interceptions, block shots and losses of a ball.

2. The approximate aged indicators of highly skilled basketball players of a stage of the maximum realization of individual opportunities in the structure of long-term preparation by the results of our research can be considered the

Table 7

The aged indicators of basketball players of a national team of Ukraine in final parts of the European championships of 1997-2013, n=6

Number of a player on official protocol	The aged indicators of basketball players in final parts of the European championships, years					
	1997	2001	2003	2005	2011	2013
№ 4	28	22	24	26	24	26
№ 5	23	32	27	24	22	30
№ 6	27	22	24	26	27	21
№ 7	26	22	23	26	23	25
№ 8	23	27	28	27	20	25
№ 9	24	19	24	26	27	22
№ 10	28	22	32	29	34	23
№ 11	24	30	29	27	26	29
№ 12	26	25	30	23	29	26
№ 13	28	24	28	20	29	24
№ 14	32	25	27	30	25	21
№ 15	27	24	25	26	24	26
\bar{X}	26,33	24,50	26,75	25,83	25,83	24,83
S	2,61	3,68	2,80	2,62	3,74	2,86

following: average indicators – about 24-27 years old; aged ranges – 19–34 years old.

Prospects of the subsequent investigations in this direction is based on the specification of indicators of efficiency of the competitive activity in the aspect of sexual dimorphism on materials of official games of the women's national team of Ukraine in the European championships and the specification of the aged indicators of highly skilled basketball players at a stage of the maximum realization of individual opportunities.

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