



STUDY OF THE GAME EFFICIENCY OF THE NATIONAL BASKETBALL TEAM MEN DURING QUALIFICATIONS FOR THE EUROPEAN CHAMPIONSHIP

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ABSTRACT

One of the main ways to measure the realization of basketball teams in competitive conditions is to establish the parameters of their game efficiency. The aim of the present study is to optimize the training process of the basketball players of the national team of Bulgaria, through analysis and evaluation of their game efficiency. With the help of 15 game indicators during the qualifying matches for the European Championship the information was collected about the game actions of the competitors. The article includes a desk research of the specialized literature, expert evaluation; monitoring and recording of competitive efficiency. The obtained results from the study are processed mathematically and statistically through alternative analysis, variation analysis and sigma evaluation method. Bulgarian basketball players have achieved in four of the indicators carrying information about the game efficiency, higher than the average level. It is necessary to increase the effectiveness of the fight under the basket in both phases of the game, in the implementation and success of the shooting from the penalty line.

Key words: realization; game preparation; basketball players; indicators

INTRODUCTION

Motor activity in basketball is characterized with high entropy of the game situations and of the actions of the basketball players, as well as with the impossibility to directly measure the magnitude of their sports achievements. This feature of the basketball game sets different requirements in the construction and management of the training and competition processes, and leads to the need to record the quantitative indicators carrying information about the game (competition) events of the teams. The level of competitive achievement determines the realization of athletes.

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In modern sport theory, ever more often the following opinion is advocated – that achieving high and stable sports results can be reached only based on well-developed and well-structured multi-year sports training (1).

A paramount condition for the efficiency of the actions of basketball players during the game, is their ability to maintain the stability of accuracy, which deteriorates during the competition as a result of fatigue (2).

The level of development of the physical capacities of basketball players causes effect on their sports training and their game efficiency. On that matter, studies have been carried out by (3-8).

The study of the game activity in basketball in historical aspect has been carried out through various methods for monitoring and recording of the game activities (9-11).

Nowadays, the information from basketball games in Bulgaria and in Europe is recorded and data gathered using the computer program FIBA Live Stats. The information data package allows for 25 game indicators to be registered. As an advantage of this program we can point out – the information which is presented after each game activity and the registration of the coefficient of value that each player has at any given moment of a game.

METHODOLOGY

The purpose of this study is to optimize the training process of basketball players from the Bulgarian national team, which will be a participant at the European Championship in 2022, by analyzing and evaluating their game efficiency. The study was conducted during the period February 2020 - February 2021.

A sample of 90 basketball players were studied, from the four teams in Group H, participants in the qualifications for the European Championship for men during 2021.

In order to realize the set objectives, we have listed to carry out the following tasks:

1. Exploring the specialized literature on the issue;
2. Expert assessment and monitoring and registering of the game efficiency;

3. Discovering the average values and the variations of the indicators of game efficiency;
4. Assessment of the status of the studied characteristics of the game efficiency;

For the needs of the study, information was collected about the game actions of the players from the national team on 15 game indicators during all 6 matches played. The unit of observation in the study is each separate match. The team’s competitive efficiency is a complex combination of the game actions of all players participating in the respective basketball match, regardless of the time duration they have been in the game.

The achieved results from the study were processed mathematically and statistically through alternative analysis, variational analysis and signal method for assessment.

ANALYSIS OF THE RESULTS

During the studied qualifications, the Bulgarian team has scored on average 71,17 points per match, of which 37,16 were attempts of 2-points shots and 31,83 – attempts of 3-points shots. The number of the preformed penalty shots is 15,83, which is a low number for elite competitive basketball player

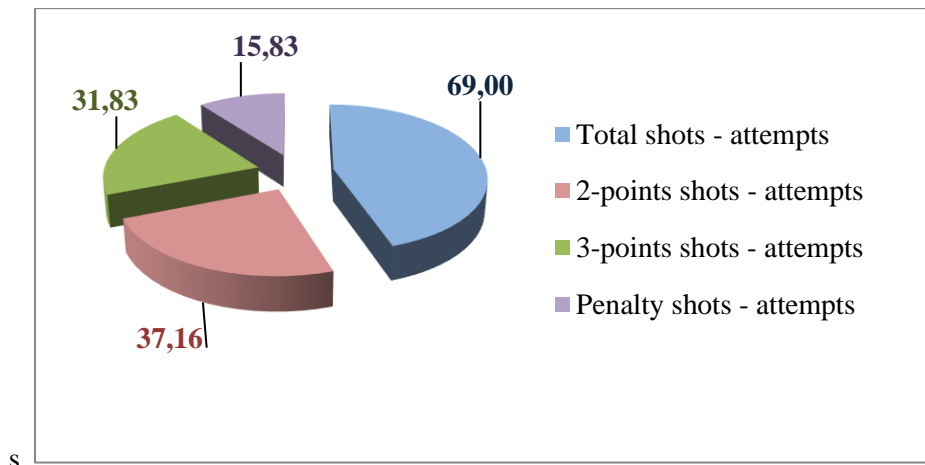


Figure 1. Relative shares of the quantitative parameters for shots at the basket

We can point out that the basketball players have reservations regarding the activity of the game to overcome a defender in "one on one" situations, and the aggression in offense when the team is in

bonus. This would give the opportunity for winning and performing more penalty shots (**Figure 1**).

In basketball game, the efficiency of the shots at basket is of great significance. Analyzing **Figure 2**, we can note that the average efficiency of the

shots from the 2-points zone is 43,49%, and from the 3-points zone it is 31,41%.

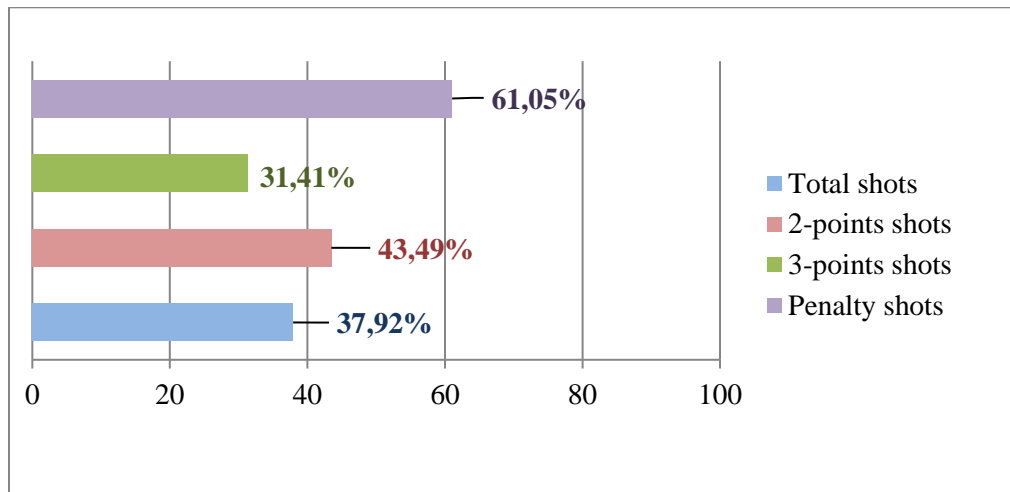


Figure 2. Efficiency of the shots

The total efficiency of shots of the national-team basketballers is 37,92%, which we consider to be too low. We believe that the precision of the 3-points shots is within normal values range. Regarding the 2-points shots, the situation is different. There is more that we can expect when talking about efficiency there. Performing penalty shots is at standard conditions, so this suggests that with more persistent work and training, the players will improve their results in penalty shots, now the efficiency indicator being 61,05%.

Figure 3 shows the average values of the indicators characterizing the efficiency of the rebounds under two baskets (in offense and in defense), in %. In modern days in basketball the opinion which prevails is that these indicators are of great importance. The offensive rebound gives possibilities to score points as a second chance, and also has de-motivating effect on the opponents. The nationals have rebound 22,30% balls under the opponent’s basket (in offense), and 22,03% under their own basket (in defense).

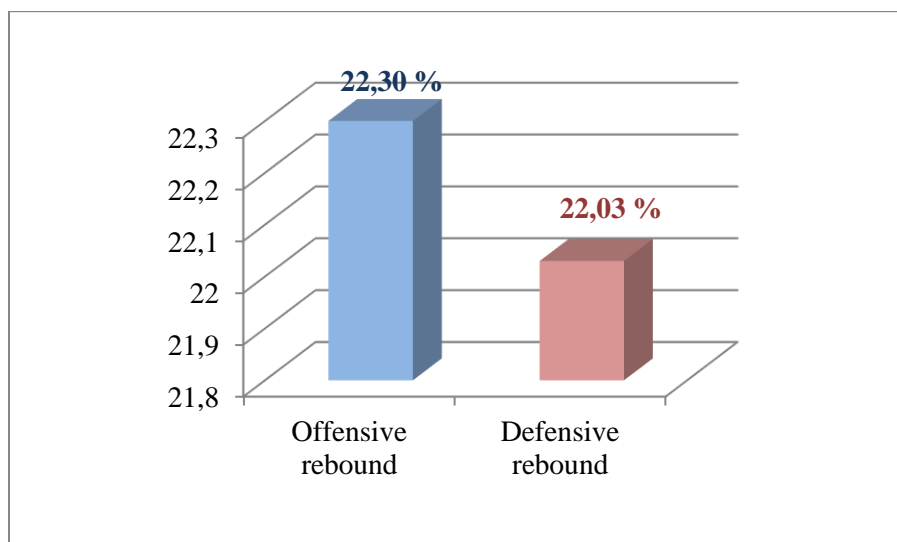


Figure 3. Rebound under basket, in %

Figure 4 brings information about the last group of indicators which are also called additional indicators. The analysis reveals that on average

for a game the basketball players have passed 16,16 passes that have lead to completion of shots (assists), which is acceptable value.

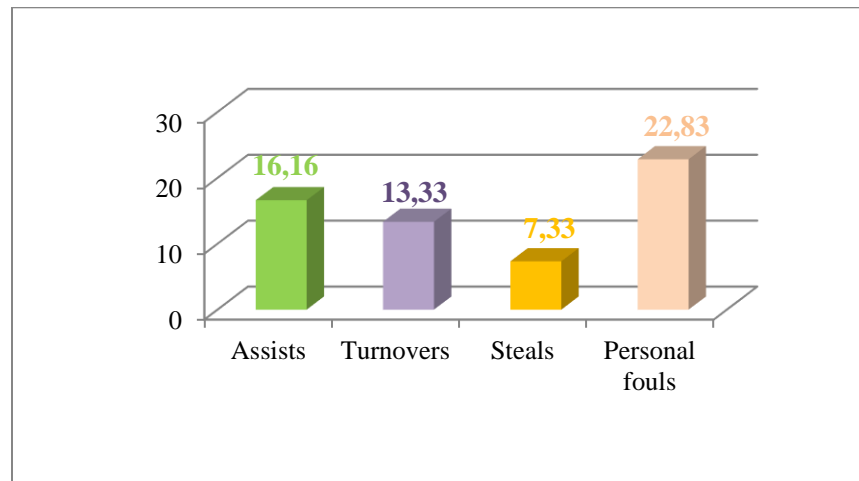


Figure 4. Average levels of additional indicators

In **Table 1** we have presented the average values of the manifestations of the team's competitive efficiency on 15 indicators, for the purposes of our study. The gathered information allows us to make analysis and assessment of the variation of

the indicators. In the studied indicators, we notice that their values of the variation coefficient V are in the range from 10,28% (indicator №14 – Steals) to 64,32% (indicator №9 – Free Throws/Penalty Shots - % successful).

Table 1. Average values and variations of the indicators for the team competitive efficiency

№	Indicators	X	S	V	min	max	As	Ex
1.	Points scored	71,17	21,18	29,76	49	110	1,46	2,56
2.	Shots – all attempts	69,00	8,76	12,65	61	83	0,94	-0,56
3.	Shots – total successful %	26,17	7,05	26,94	18	38	0,91	0,72
4.	2-points shots - attempts	37,17	4,07	10,95	32	43	0,46	-0,86
5.	2-points shots - % success.	16,17	5,78	35,74	10	25	0,72	-0,92
6.	3-points shots - attempts	31,83	7,70	24,19	23	40	0,05	-2,75
7.	3-points shots - % success.	10,00	4,00	40,00	5	14	-0,70	-1,86
8.	Penalty (Free) shots – attempts	15,83	6,85	43,27	9	29	1,80	4,00
9.	Penalty (Free) shots -% success.	9,67	6,22	64,32	4	21	1,47	2,20
10.	Offensive rebound - %	10,33	1,50	14,52	8	12	-0,84	-0,65
11.	Assists	16,17	6,05	37,42	7	26	0,24	2,34
12.	Defensive rebound - %	24,67	3,14	12,73	19	27	-1,51	1,69
13.	Steals	7,33	0,82	11,19	6	8	-0,86	-0,3
14.	Turnovers	13,33	1,37	10,28	11	15	-0,89	1,34
15.	Personal fouls	22,83	5,15	22,56	17	31	0,84	-0,30

In the extreme conditions of the competition and as a result of the high variability of the game activity, when estimating the coefficients of variation with values up to 50%, they are considered stable.

The information collected by us gives us the opportunity to assess the variability of the studied indicators. As we can see in **Figure 5**, in 10 of the studied game indicators the values of the coefficient of variation V range between 10,28% and 29,76%. This means that these indicators are

relatively stable and the studied sample of players is relatively homogeneous in terms of the characteristics of game efficiency for which these indicators provide information. It can be seen

from the figure that the highest coefficient of variation, and therefore the most unstable, is the indicator №9 (Penalty shots - % successful), $V = 64,32\%$.

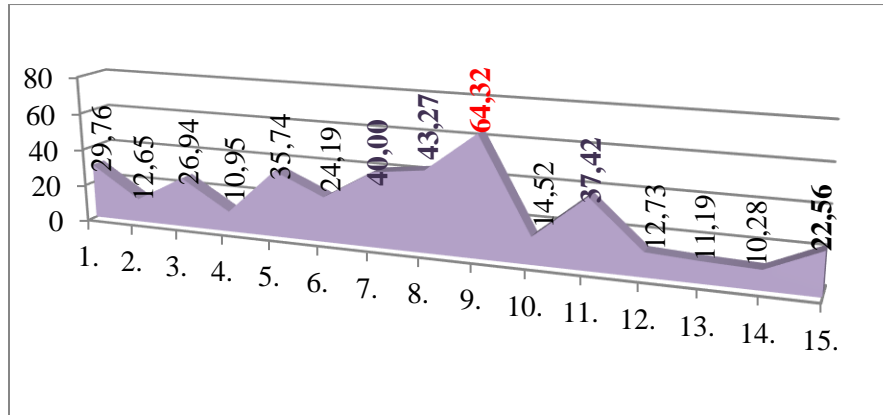


Figure 5. Dispersion of the indicators of competitive efficiency of the men's national team

To achieve the goal and to carry out the tasks of our study, we have made comparison and assessment of the results of our Bulgarian basketball players, based on the existing

normative table of the competitive efficiency of elite basketball teams. Figure 6 presents the scores of the indicators in P%. They have been measured using the 50-point assessment system.

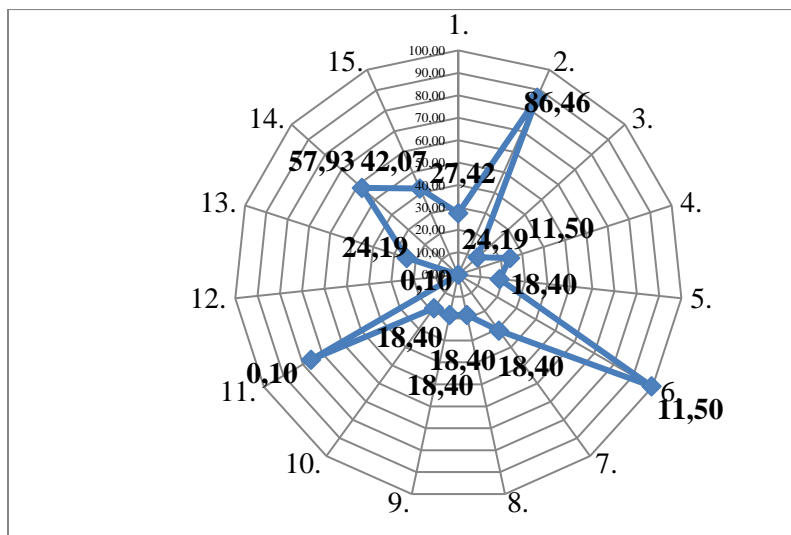


Figure 6. Assessment of the competitive efficiency of the Bulgarian national team

At 4 of the studied indicators, the values of the scores T are higher than 25 (P=50%) – they are in the value range between 57,93% and 99,38%. Here we must stress that at indicator №6 (3-points shots - attempts), the maximum score is 30,50, and the basketball players have achieved 31,83. This is thanks to the new trends in basketball game, namely – the faster basketball and the ability and skill of all team players to shoot from

longer range (behind the 3-points line). The analysis shows that in 11 of the studied indicators, the T scores are lower than the average level (below 25 points). This means that Bulgarian basketball players – men have some issues regarding those indicators. The lowest value we can notice in the indicator №3 (Total shots % successful, $T_3=11,50$) and indicator №12 (Defensive rebound %, $T_{12}=0,10$).

CONCLUSION

Based on the analyzes of the processed results, we can summarize that the game activity of basketball players is characterized by good activity, but relatively low efficiency of shooting in the basket during the game. Players have demonstrated inability to use penalty shots as an easier way to increase their scores results.

The accents in the future training work for the Bulgarian team before the upcoming European Championship should be targeted at increasing the efficiency of the rebound under both baskets – in defense and in offense. Our national athletes must also increase their shooting activity from the penalty line. It is also important for the basketball players to increase their aggression and their skills in the defensive game, which will help the rebound and the steals of more balls from the opponent. In order to create conditions for more successful performance of our national team at the finals of the European Championship, it will be necessary to attract a successful team player (a foreigner) at position № 5, and our basketball does not have such a player at the moment.

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