THE SUCCESS OF BASKETBALL TEAMS IN THE ENVIROMENT OF STANDARD INDICATORS OF SITUATIONAL EFFICIENCY ON THREE DIFFERENT LEVELS OF COMPETITION

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Abstract
This paper included research on the performance of basketball teams, which compete at three different levels of competition, the ABA , the ABA 2, and the BiH Championship. The research was conducted on a sample of 35 teams that played the BiH Championship (11 teams), ABA 2 (12 teams), and ABA (12 teams) in the 2018/2019 season. A total of 64 matches were played (20 matches of the BiH Championship, 22 matches of the ABA 2 , and 22 matches of the ABA). Matches were analyzed using a standard form (FIBA) to monitor situation indicators with 22 variables, of which 19 were used in this paper. The main goal of this research was to find out whether it is possible to distinguish successful from unsuccessful teams at three different levels of competition based on 19 standard indicators of situational efficiency in basketball. Based on the results obtained by applied statistical methods, ie analysis of variance, the obtained information can be used as a starting point for analyzing the basketball game of one's team and determining future criteria for selection and programming of basketball teams. The obtained results showed that there are statistically significant differences between the winners at all three levels of competition in those statistical parameters that have a defensive character. So success, to a large extent depends on the realization of the phase of the game in transition, which can be the product of good defense and a jump in defense.
Keywords: *standard indicators, analysis of variance, aba league , aba 2 league, BiH championship*

INTRODUCTION

Basketball is one of the most dynamic sports games. It requires players to be able to outplay, speed, explosive power, resourcefulness, agility, jumping, good movement with and without the ball, the precision of throwing the ball into the basket, performing technical and tactical tasks, and above all intelligence. The structure of basketball players' movements, in addition to morphological and motor dimensions, provides exceptional individual possibilities for individuals, as well as the applicability of the game in a high rhythm (Trninić and Dizdar, 1999).

The success of performing tactical tasks also depends on the psychomotor abilities that are perfected by training. In the process of tactical preparations, it is necessary to solve several tasks, among which are (Trninić, 1995):

- rational use of technical elements and their application in tactics depending on specific situations.
- studying the opponent, ie his possibilities as well as the conditions in which a certain match or competition will be played, and
- adoption of tactical elements, combinations, and variants until the habits of the player are formed.

The ever-improving sports results achieved in recent years in various sports, including basketball, have significantly changed the understanding and character of work in sports and set new requirements for solving several current tasks on an integral basis. The driving force of sports development is intelligence and creation, ie intellectual and creative resources, and the development of science that deals with basketball depend on the use of the accumulation of previous knowledge, intellectual and creative potentials (Bosnar and Matković, 1983).

Today, the work in modern top basketball is the training technology itself, directed towards the primary goal that can be explained by two basic tasks: creation, production of top players and creation, production of top sports results (Šeparović, 2007). The realization of these two tasks is quite connected because without top players there is no top result. The process of creating a top result is conditioned by the creation of a quality team, which is again determined by the individual quality of the basketball players (Erčulj, 1997).

Understanding or comprehending knowledge in basketball implies knowledge from the basics of the game, and this knowledge is realized in all phases of the game. For the beginning of this research, we must define basketball correctly, for which the starting point is the opinion of R.A. Auerbach who says that basketball is a simple game where the basics of the game are tested at all times. Continuous improvement of the basics of the game enables successful individual and

team play of basketball players (Trninić et al., 2002).

The success of the team in a basketball game, competition, is reflected in the final result of the game, ie victory or defeat (Lukšić, 2000). However, if we agree that in top basketball the priority goal is to achieve a sports result, then the necessary question arises, what is the internal structure of basketball, or what are the most important factors on which primarily depends on achieving the main goal (sports success, victory).

The result in basketball is reflected in three important indicators (Šeparović and Nuhanović, 2008):

- the first is related to the quality of cyclic - acyclic movements during the basketball game,
- the second is expressed by a numerical interpretation, the final result of the match because the ultimate goal of the game is to score points,
- The third indicator of the result is the level of team reach, the result of the team as a group because basketball is a collective sports game in which the harmonious action of team members is demonstrated and presented by tactical thinking.

Performance indicators in the basketball game are functionally irresistibly linked. In the interpretation of standard indicators, the area of game strategy and game tactics is included (Klasić, 2000). When and which jobs - tasks in the game affect the game and how much they contribute to the final result is a very important part of the interpretation of statistical indicators of basketball because the very concept of the game is objectified by statistical indicators (Pleslić, 1994). The actual quality of a basketball team primarily depends on the selection of players, because their actual quality depends on the selection and training technology, the choice of the game concept, and the level of possible coordination and cohesiveness of the team (Trninić, 1995). The overall performance of basketball teams can be assessed based on the opinions of basketball experts, but situational efficiency is analyzed based on statistical records from the game, which is the subject of this research.
Situational efficiency, therefore, represents only a part of the overall performance that is measurable by the "statistical" record from the matches.

RESEARCH METHODOLOGY

Entity sample

The research was conducted on a sample of 35 teams that played the BiH Championship (11 teams), ABA 2 (12 teams), and ABA (12 teams) in the 2018/2019 season. A total of 64 matches were played in the regular part of the season (10 matches of the BiH Championship, 22 matches of the ABA 2 , and 22 matches of the ABA).
The outcome of the match was used as a selector variable of team success: victory - defeat. In this paper, the differences between the teams that achieved victories in their championships were determined, ie the differences between the winners at three different levels of competition were tested.The data collected according to the stated statistical parameters represent the official statistics kept at each match, which are prescribed by the FIBA technical commission. FIBA standardized 22 situational efficiency indicators, 19 of which were used in this study:

FT - free throws
2P - shot for two points
3P - shot for three points
A - attempts
M - inserted
% - percentage
REB - jumps
O - offensive jumps
D - defensive jumps
TOT - total jumps
AS - assists
PF - personal mistakes
CM - personal mistakes made
RV - received personal errors
TO - lost balls
ST - stolen balls
BS - shot block
FV - received blocks
AG - against

Data registration was performed by official statisticians (licensed by the umbrella basketball federations) specially trained for the job on computer programs for keeping statistics on basketball games.

Data processing methods

One-factor analysis of variance (ANOVA) was used to determine the differences between the arithmetic means between the winners for all three levels of competition (BiH Championship, ABA 2 , ABA).

RESULTS AND DISCUSSION

The obtained results are presented in a logical order, ie by the design of the study, which refers to determining the differences between the

winners at three different levels of competition: BiH Championship, ABA 2 , and ABA . The Shapiro-Wilk test was used to assess the normality of the distribution. Considering the obtained values, it is possible to state that the results on almost all dependent variables for all three groups are normally distributed (p> 0.05). Analysis of variance in the space of standard indicators of situational efficiency of basketball players, (Tables 1 and 2), obtained a statistically significant (p≤0.05) difference between groups in 13 of the 19 indicators used between winners coming from three different levels of competition: FG2-M - shot for two points successful (.000), FG2-A - attempt to shoot for two points (.001), FG2-% - the percentage of shot for two points (.002), FG3-A - attempt to shoot for three points (. 026), FT-M - free throw shot successful (.000), FT-A - free throw shot attempt (.000), SK-OD - jump in defense (.000), SK-NA - jump in attack. 000), SK-UK - total rebounds (.000), ASIS - assists (.034), B2O-FV - received shot blocks (.000), B2O-AV - given shot blocks (.000), FA-CM - personal mistakes made (.000), and FA-RE - received personal mistakes (.000).

Tables 1 and 2. Results of one-factor analysis of variance between winning teams at all three levels of competition

Variables	Competition	Number of entities	Mean	ANOVA Sig.
FG2-M	BiH	110	23.7	.000
	ABA 2 *	132	21.3	
	ABA #	132	20.6	
FG2-A	BiH	110	39.9	.001
	ABA 2 *	132	36.9	
	ABA #	132	37.2	
FG2-%	BiH	110	59.4	.002
	ABA 2	132	57.8	
	ABA *	132	55.6	
FG3-M	BiH	110	8.9	.124
	ABA 2	132	9.7	
	ABA	132	9.3	
FG3-A	BiH	110	25.0	.026
	ABA 2	132	26.2	
	ABA #	132	24.5	
FG3-%	BiH	110	35.4	.096
	ABA 2	132	37.2	
	ABA	132	38.2	
FT-M	BiH	110	13.0	.000
	ABA 2	132	13.4	
	ABA *#	132	17.3	
FT-A	BiH	110	18.3	.000
	ABA 2	132	18.1	
	ABA *#	132	23.4	
FT-%	BiH	110	71.7	.189
	ABA 2	132	74.2	
	ABA	132	74.0	
SK-OD	BiH	110	27.5	.000
	ABA 2 *	132	24.1	
	ABA *	132	24.56	
SK-NA	BiH	110	10.5	.001
	ABA 2 *	132	8.8	
	ABA	132	9.4	
SK-UK	BiH	110	38.1	.000
	ABA 2 *	132	32.9	
	ABA *	132	33.9	
ASIS	BiH	110	18.6	.034
	ABA 2 *	132	20.2	
	ABA	132	18.9	
ST	BiH	110	8.2	.081
	ABA 2	132	7.6	
	ABA	132	7.4	
TO	BiH	110	12.2	.039
	ABA 2	132	12.1	
	ABA	132	13.1	
B2O-FV	BiH	110	1.9	.000
	ABA 2	132	2.1	
	ABA *#	132	3.0	
B2O-AV	BiH	110	1.5	.000
	ABA 2	132	1.5	
	ABA *#	132	2.4	
FA-CM	BiH	110	20.1	.000
	ABA 2	132	20.8	
	ABA *#	132	23.5	
FA-RE	BiH	110	19.4	.000
	ABA 2	132	20.5	
	ABA *#	132	24.0	

The obtained results of multiple comparisons (Bonferroni), (Tables 1 and 2) tell us that a statistically significant difference in the variable FG2-M - shot for two points successful, exists between the winner of the BiH (AS = 23.71) and the winner of the ABA 2 (AS = 21.31) in favor of the winner of the BiH . Also, a significant difference was obtained between the winners of the BiH (AS = 23.71) and the winners of the ABA (AS = 20.61) in favor of the winners of the BiH .

A statistically significant difference in the variable FG2-A - and attempt to shoot for two points, exists between the winner of the BiH (AS = 39.95) and the winner of the ABA 2 (AS = 36.94) in favor of the winner of the BiH . There was also a significant difference between the winners of the BiH (AS = 39.95) and the winners of the ABA (AS = 37.23) in favor of the winners of the BiH . No significant difference was obtained between the ABA 2 and ABA winners in this statistical parameter.

The mean value of the winners of the BiH (AS = 59.49) differs statistically significantly from the mean value of the winners of the ABA (AS = 55.64) in the variable FG2-% - the percentage of shots for two points, in favor of the winners of the BiH . There is no difference between the winners of the BiH and the ABA 2 , nor between the winners of the ABA 2 and the ABA .

The obtained statistically significant difference in the variable FG3-A - and attempt to shoot for three points, exists between the winner of the ABA 2 (AS = 26.22) and the winner of the ABA (AS = 24.53) in favor of the winner of the ABA 2 . No significant difference was obtained between the other groups.

In the variable FT-M - free throw shot successful, there is a statistically significant difference between the winner of the BiH (AS = 13.05) and the winner of the ABA (AS = 17.33) in favor of the winner of the ABA .
Also, a significant difference was obtained between the winners of the ABA 2 (AS = 13.45) and the winners of the ABA (AS = 17.33) in favor of the winners of the ABA .

A statistically significant difference between the groups was obtained in the variable FT-A - free throw attempt. The results of multiple comparisons tell us that the mean value of the winners of the BiH (AS = 18.34) is statistically significantly different from the winners of the ABA (AS = 23.42) in favor of the winners of the ABA . Also, there is a difference between the winners of the ABA 2 (AS = 18.19) and the winners of the ABA (AS = 23.42) in favor of the winners of the ABA . No significant difference was obtained between the winners of the BiH and the ABA 2 .

When it comes to a statistically significant difference in the variable SK-OD - jump in defense, based on the values of arithmetic means, it exists between the winners of the BiH (AS = 27.55) and the winners of the ABA 2 (24.11) in favor of the winners of the BiH , as well between the winner of the BiH (AS = 24.55) and the winner of the ABA (24.56) in favor of the winner of the BiH . No significant difference was obtained between ABA 2 and ABA individuals in this statistical parameter. In the variable SK-NA - jump in attack, a significant difference was obtained in favor of the winners of the BiH (AS = 10.55) about the winners of the ABA 2 (AS = 8.81). There are no statistically significant differences between the winners of the ABA 2 and ABA s as well as the winners of the BiH and the ABA .
The obtained statistically significant difference in the variable SK-UK - total rebounds, exists between the winners of the BiH (AS = 38.10) and the winners of the ABA 2 (AS = 32.92) in favor of the winners of the BiH . Also, a significant difference was obtained between the winners of the BiH (AS = 38.10) and the winners of the ABA (AS = 33.92) which goes in favor of the winners of the BiH . When it comes to assists - ASIS, a statistically significant difference was obtained between the winners of the BiH (AS = 18.65) and the winners of the ABA 2 (AS = 20.20) in favor of the winners of the ABA 2 . No significant difference was obtained between the other groups.

A statistically significant difference between the groups was obtained with the variables B2O-FV - received shot blockade and B2O-AV - given shot blockade. In the first, it goes in favor of the winners of the ABA (AS = 3.02) about the winners of the BiH (AS = 1.95), or favor of the winners of the ABA (AS = 3.02) about the winners of the ABA 2 (AS = 2.16). There were no significant differences between the winners of BiH and the ABA 2 .

In the second variable, the same result was obtained. Namely, the obtained significant difference goes in favor of the winners of the ABA (AS = 2.41) about the winners of the BiH (AS = 1.51) and the winners of the ABA 2 (AS = 1.56). There are no significant differences in this statistical parameter between BiH and the ABA 2 .

The mean value of the winners of the BiH (AS = 20.16) in the variable FA-CM - personal mistakes made differs significantly from the obtained mean value of the winners of the ABA (AS = 23.51) and it goes in favor of the winners of the ABA . Also, a significant difference was obtained between the winners of the ABA 2 (AS = 20.83) and the winners of the ABA (AS = 23.51) in favor of the winners of the ABA .
In the variable FA-RE - received personal errors, a statistically significant difference was obtained between the winners of the BiH (AS = 19.44) and the winners of the ABA (AS = 24.00) in favor of the winners of the ABA , as well as between the winners of the ABA 2 (AS = 20.51) and the winner of the ABA (AS = 24.00) which goes in favor of the winner of the ABA . No significant difference was obtained between the winners of the ABA 2 and the BiH .

Playing on the verge of personal error (ABA) results in differentiating the winners in the variable free throws successfully FT-M, as a result of performing a large number of free throws. The table shows the ratio of attempts to throw from the free-throw line as well as the percentage of

shots from the free-throw line for all three levels of competition.

The higher level of basketball quality in the ABA does not have the consequence that the teams in the finals of the championship about the teams from weaker competitions (BiH championship) have a more successful realization of shots from the free-throw line. This is partly due to a large number of attempts, but also due to the value of each throw-in and the psychological pressure on players that the importance of throw-in prevents them from always having a high percentage of realizations.
ABA matches (most of them) ended with very close results, the average difference between winners and losers is 7.39 points and this data suggests that the realization itself, the success of the shooting was under greater psychological pressure.

A large number of variables that significantly contribute to the separation of winners and losers can be interpreted that within the treated sample of matches, however, clearly separated teams into two quality groups that are so differentiated quality that this difference is reflected in a large number of indicators to assess situational efficiency.

The obtained data, the strength of individual variables, and their contribution to the differentiation of winning and defeated teams indicate that the differentiation was achieved in the elements that detect the strength and quality of the defensive segment of the game. A jump in defense and a high level of pressure on the player with the ball cause a high correlation in the variables of the lost ball and a shot for two points unsuccessful, in defeated teams.

In addition to the level of defense quality, the variables that present the accuracy of shooting also contribute highly to the separation of the winning from the defeated teams (FG2-M and FT-M). The high contribution to separating the winners from the losers is also visible in the variable assists - ASIS. The consequences of quality defense are a large number of lost team balls in attack as well as inaccurate shots (pressure shot) which still allow a well-organized defense to make a large number of jumps in defense - SK-OD, and then a larger number of counterattacks with a numerical advantage. is also an assistant at the end of such an attack. Assistance in positional play also ensures a greater number of clear situations for the shot, so the winning teams differ from the losers in this variable, and it significantly contributes to the very distinction of winners at all three levels of competition.

CONCLUSION

Based on the obtained data from monitoring situational indicators, the tactical concept of one's team can be prepared much better, but also creates a basis for timely adjustment of the training process content to perceived situations and shortcomings in one's own game and concept, as well as more precise analysis of opponent's quality capacities.

After the obtained results, it can be stated that in senior basketball for selection at the top level it is necessary to take into account the individual qualities of basketball players who can meet the criteria of fast play, counterattack and that after a well-selected team focus should be based on a high level of tactical principles. , primarily in defense.

The conclusion we came to suggests that the competition system in the BiH Championship, that in the first phase of the competition a large number of matches are played without result uncertainty, therefore, teams differ significantly in quality which results in polarization into two very clearly quality divided groups, and the consequence is that this inequality of quality is manifested in the difference in a large number of variables or indicators of the situational efficiency of basketball teams.

Achieving a high level of technical characteristics (criterion of application of technical elements in high speed) and highly trained principles of defense creates conditions for the progress of the attacking game, especially in the positional phase of the game, which is a prerequisite for setting a higher result goal. to the ABA 2 or from the ABA to the Euro.

REFERENCES

1. Ćeremidžić, D., Delić, D. (2016). Differences in situational efficiency between NLB and NBA teams in the regular season. Faculty of Physical Education and Sports, Pale Sport and Health XI (2016) 2: 16-21.
2. Csataljay, G., James, N., Hughes, M., Dancs, H. (2012). Performance differences between winning and losing basketball teams during close, balanced and unbalanced quarters. Journal of Human Sport and Exercise 7(2). Volume 7 | Issue 2 |356.

3. Csataljay, G., O'Donoghue, P., Hughes, M., Dancs, H. (2009). Performance indicators that distinguish winning and losing teams in basketball. International Journal of Performance Analysis in Sport 9(1):60-66.
4. Dežman, B., Erčulj, F. I G. Vučković (2002). Differences between winning and losing basketball teams in play efficiency. Acta Kinesiological, 7 (Suppl.), 71 – 74.
5. Lorenzo, A., Gómez, A., Ortega, E., Ibáñez, S., Sampaio, J. Game related statistics which discriminate between winning and losing under-16 male basketball games. J Sports Sci Med 2010 1;9(4):664-8.
6. Milanović, D., Štefan, L., Sporiš, G., Vuleta, D., Selmanović, A. (2016) Effects of Situational Efficiency Indicators on Final Outcome Among Male Basketball Teams on the Olympic Games in London 2012. Acta Kinesiologica 10 (2016) 1: 78-84.
7. 6. Luksic, E. (2000). The difference between winning and losing top European and American universities and professional basketball clubs in the playoff finals. Master's thesis, Faculty of Physical Education, University of Zagreb.
8. Parejo, I., Garcia, A., Antúnez, A., Ibáñez, S. (2013). Differences in performance indicators among winners and losers of group a of the spanish basketball amateur (EBA). Revista de Psicologia del Deporte 22(1):257-261.
9. 10. Pleslic, D. (1994). The influence of some basketball elements on the final result of the game. Graduation thesis, Zagreb: Faculty of Physical Education.
10. Pojskić, H., Šeparović, V., Užičanin, E. (2009). Differences Between Successful and unsuccessful Basketball Teams on The Final Olympic Tournament. Acta Kinesiologica 3 (2009) 2: 110-114.
11. 12. Rubin, P. (2013). The difference in certain characteristics of the basketball game in the final games in the relationship: Winner / Loser. Faculty of Sports and Tourism, Novi Sad, TIMS Acta 7, 67-76.
12. 13. Separovic, V. (2007). The success of basketball teams in the space of situational indicators of the primary transition and position attack. Doctoral dissertation, Faculty of Physical Education and Sports, University of Tuzla.
13. 14. Šeparović, V., Užičanin, E., Pojskić, H. (2010). Influence of standard indicators of situational efficiency on the final result of basketball matches of the European Championship for cadets of Division B. III International Symposium "SPORT AND HEALTH" Faculty of Physical Education and Sport, University of Tuzla.
14. 15. Trninić, S. (1995). Structural analysis of knowledge in the basketball game. Doctoral dissertation, Zagreb: Faculty of Physical Education, University of Zagreb.
15. 16. Trninić, S. and D. Dizdar (1999). Youth and top sport: differences between top European clubs and American university teams. Progress, 140 (3), 341-348.
16. Trninić, S., Dizdar, D. I E. Lukšić (2002). Winning and defeated top European basketball teams differentiated by game statistics indicators. U D. Milanović I F. Prot (ur.), kinesiology – New perspectives: Proceedings of the 3 rd International Scientific Conference on Kinesiology, Opatija, September 25 – 29, 2002. Zagreb.
17. Trninić, S., Dizdarand, D., Lukčić, E. (2002). Differences Between Winning and Defeated Top Quality Basketball Teams in Final Tournaments of European Club Championship. Scientific research, NauCollegium anthropological 26(2):521-31.

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