Abstract

The research topic is the analysis of basketball games and tactical understanding of the elements, their frequency and efficiency. The problem is statistical analysis of the tactical elements. The main aim is to establish a theoretical model as a guide for technical and tactical preparation that will result in improved efficiency. The task of research is to create a form for the successful monitoring and analysis of a basketball game in tactical terms. Method - variables: lead shot, shot punching, punching add a shot, shoot system, system entry feedback, extracted shot, single entry, system entry, system assists, system pivot, free throw, fine shot, translation, end of the game, jump, contra. The experimental treatment involves the separation of elements by observation of domestic league games, Final Four to the NBA. The method of data processing in SPSS 11.5. Descriptive statistics are processed by the coefficient, the arithmetic mean, average and sum the results. Results: two theoretical models of balance: a balance that shows the spatial distribution of the concepts of attack, whether the attack was completed in the field or directly under the basket and personal team balance that shows the distribution of individual and team attack. Conclusion: the established parameters for analysis. Based on observations at all levels of game it was up to 16 items that are recorded in summary form, and 11 items logged in the application forms for the balance. Based on the established 11 parameters games, appearing in all the matches, formed the model, which indicates the distribution of team work and physical activity.

Key words: basketball, tactics, elements, analysis

Introduction

Basketball will be treated with a similar position as a maze and puzzle, as well as mathematical and logical problems, which require careful observation, classification, analysis and synthesis, finally reaching certain conclusions. What is the purpose of basketball or more precisely, that the goal of players in the game? The goal is to be the shortest possible route, space and energy, came to reaching the basket. People who are not fans of sports, when you watch basketball often comment that the ground there, a chase after the ball. Not distinguish teams or players, let alone realize the technical and tactical elements. Few games are more adept understand the system and provide redundant comments, and often correct. As much as the man was an expert, though not with the naked eye to see all elements of the game and make a valid conclusion. Thanks to modern technology we can later review the match and carefully analyze all the parameters that contribute to success. The question is what are the parameters that should be recorded and analyzed, or in other words, to help our players to beat opponents. How to go through their labyrinth and how to solve the puzzle? As we see and know a lot of elements that are subject to statistical analysis. Existing statistics, which are kept on every game gives us a glimpse on the TV screen for points scored, rebounds in attack and defense, assists, etc... It is important that all this analysis is likely correct, but the parameters that have been proven not only to influence the final result. This shows the correlation, which is never one, but still small, leaving room for further research.

Researches in past show us all problem then we need. Basketball game can be viewed as an ordered sequence of tasks that each player needs to be done according to the place and role within a team concept game (Trninić, 1995). Basically, hierarchical structure of dimensions of athletes, given the success of the sports game (Milanović, 1999), situational efficiency parameters are located on the third level of the pyramid made up yet, the first level, anthropometric characteristics, then the second level of the pyramid are the specific skills and knowledge athletes, while the fourth level is the result of sports. An analysis of basketball players movements in the Slovenian basketball league play-offs using the sagit tracking system (Erčulj & al, 2008).

Subject, problem and aim

The research topic is the analysis of basketball games and tactical understanding of the elements, their frequency and efficiency. The problem is statistical analysis of the tactical elements. The main aim is to establish a theoretical model as a guide for technical and tactical preparation that will result in improved efficiency, ie. existing concept of the game, if you deviate from the theoretical model, verified the correct parameters. Global research task is to create a form for the successful monitoring basketball games, as well as the form for later analysis. Specific objectives are to establish parameters for analysis, establish a theoretical model, compare the American and European concept of the game, compare the teams through the concept of the attack to form a conceptual image of a team attack.
Methods

The sample of variables: single shot, punch shot, add punch shot, system shot, enter feedback system shot, extracted shot, single entry, system entry, system assists, pivot system, free throw, interruption of shot, translation, end of the game, jump, contra. Experimental treatment: separation of the elements described in this paper was done by observing 30 games of all levels of competition from students to the NBA league. It was noted that in all leagues repeat the tactical elements, in this case concepts. Observation is only recorded what was happening on the ground. Technical elements are also shown, but not as a target group but as an asset. When the variables are finally established as a relatively stable, followed by the NBA games, ending the Adriatic League, qualifying and finals Euro Cup in Berlin (Final Four). Instruments used were video game videos and forms. Elements for recording are shot for two points (failure 2 -), shot for three points (failure 3 -), free throws (faux 1,2,3, -), turnovers (t ), etc. for a foul throw (F), a foul up bonus (f), rebound (2, +,-). European games are usually used 11 such forms and the U.S. about 16 games, the quarter three or four. After the match, the results are summarized in aggregate form, which are added all the variations of horizontal and have a complete insight into the flow of the match against the given tactical variants, in each quarter of the total. Tactical elements that were observed in: a player translate the ball over the fields and send a shot without adding (1), sometimes break the first line and then send a shot (2), break the first line and pass the ball to teammate for a shot (to Americans often work without punching - shot after the first pass) (3), when a teammate fails to send a shot after the first addition, but still pass the ball (4), but still listed separately according to input and feedback from system attacks the ball and then usually sends a shot (5), when players in team running out for the attack, send a shot of what may happen (6), the player translate the ball across the pitch and goes to the door and laid the ball (7), systematic variations of the free space to enter any of the players (8) , teams play to the assistance and it is solely the result of teamwork (9), waiting for the completion of system conditions and pivoting (10), free throws (11), after a stoppage of play during the performance of the ball with the free kick is sent (12), when a player translating the ball across the pitch to lose the ball (13), the pressing is not easy to get the ball and set up the game (14), rebound is verified through caught the ball and credit points (15) and at the end of the counter (16). The method of data processing is in SPSS 11.5. Descriptive statistics were processed by the coefficient, the arithmetic mean, average and sum the results.

Results and discussion

We presented two theoretical models of balance: a balance that shows the spatial distribution of the concepts of attack, whether the attack was completed in the field or directly under the basket and personal team balance that shows the distribution of individual and team attack. Basketball game lasts 10 minutes per quarter or 600 seconds. Team attack allowed 24 seconds which means that during the whole game can be done 100 attacks, or 50 for each team. The most common number of attacks in European games is around 70. In total, the game takes 2400 seconds divided by 140 attacks each team receives an average time of the attack of 17.1 seconds. American basketball is 12 minutes and a total time of the game is 2880 seconds divided by 200 attacks each team receives an average of 14.4 attacks during the second. On the spatial form "balance" the option "t" we see the EU theoretical model 70 variant attacks. From the mentioned 16 separate variants are those that are the result of planning activities, while others are the result of situational moment. Explanation of a given number of attacks by variants in relation to the number of players and the logic of the position: solo shot (3 combinations) belongs to the person who takes the ball across the pitch, so it is logical that it be play, quarterback and possibly wing, punching a shot (5 combinations), is performed when the ball is already in the opponents’ half and can be associated to each player, adding a punch shot (6 combinations), if the centers performed no reason to punch the ball so that it applies to play, and wing-back. Each of them can add the other two, so that the number of combinations are 6, system shot have 25 combination, five players on the five positions of 25 features, the system entry reverse shot have 3 combination, return the ball to return to the field as belonging to the three players, forced a shot (0), is the result of situational moment, not planned activities so that it is not referenced here, but it appears in reality, single input (5 combinations), five players and anyone can enter the system in (5 combinations), also plays for the entry system of each player, assists (6 combinations), assists the usually centers, which means that each of the three players make the ball penetrating the centers, which total 6 pivot system (8 combinations), four players added to the center pivot. Given that the game and the two centers, a total of eight possibilities. Contra (4 combinations) the logic of the four players were able to counter attack. When we add all these variants we get 70 of planning attacks. The blue fields of the attacks from the zone of rubble and there’s 42. The yellow boxes are the attacks that realized under the basket and has them 28. Therefore, this theoretical model and is called the spatial balance and relationship is shown by the coefficient which is 0.67. In the event that has 80 attack of the match ratio remains the same, but the number of varieties changes. In Table 1. personally team balance we see that the prevailing view in the game or team or individual action is balanced by a given theoretical model. The same variants of the attack as the spatial balance, only arranged differently and see that the ratio has a slight deviation (from 0.47 - 0.50), mean 0.48. Spatial balance coefficient was 0.67. Personnel team balance coefficient was 0.48.
Now let’s see specific games: NBA, native and the Adriatic League Final Four and the 2009 year. Spatial balance tells us from which position is carried out the attack. NBA based on 3 games has coefficient 0.76. The ratio of attacks under the basket and from a field of 43:57 According to theoretical model ratio is 40: 60 NLB league and Final four coefficient is 0.94, ie. 33 attacks under the basket, and 37 attacks from the field, which is pretty balanced. According to theoretical model ratio 28:42 Final four in Berlin in 2009, on the basis of three games coefficient is 1:08, ie. 33 attacks under the basket, and 29 from the field, which indicates that they are less kicking and more the racket. Basketball club Partizan run through five games has coefficient 0.93, ie an average of 31 attacks under the basket and 34 attacks from the field. CSK run through five games has coefficient 0.64, ie an average of 22 attacks under the basket and 35 attacks from the field. LA Lakers' run through three games have coefficient 0.94, ie an average of 50 attacks under the basket and 53 from the field. Personnel team balance tells us about the balance of individual and team activities. NBA teams based on 3 games has coefficient 0.32. Ratio of solo and team work is 24:76. According to theoretical model ratio is 32:68, ie. coefficient 0.48. NLB league and the Final four coefficient is 0.21, ie. ratio of solo and team work is 12:58. According to theoretical model ratio 23: 47, ie. coefficient 0.48. Final four in Berlin in 2009, on the basis of three games coefficient is 0.19, i.e.ratio of solo and team works are 11:56, which tells us that the prevailing team action. Partizan run through five games has coefficient 0.18, ratio of solo and team work is 11: 60, which in this case we say that the prevailing team action. CSK run through five games has coefficient 0.15, the ratio of solo and team work is 9:57, which tells us about convincing the prevalence of team action. LA Lakers run through three games have coefficient 0.29. Ratio of solo and team work is 23: 80 by theoretical model is 32:68. Totally for physical balance, which determines the implementation of the attack from the point position on the field, we see that in all leagues similar ratios (about 0.90), compared to the teams, only the approximate CSK theoretical model, while other high coefficients which means that the number of attacks carried out under the basket but the field, seen in relation to theoretical model. The focus in the implementation, was moved to the lead and the system entry, assists, pivoting and conditional counters. Totally for personal team balance, which determines the individual and team commitment, we see that the NBA has a coefficient, and league and team around 0.30, while the European teams have coefficient around 0.20 (CSK 0.15), which means that more Americans take on individual characteristics of players in the motor and especially in the psychological sense, while the European basketball is still under great pressure planned action, without much room for improvisation, which impressively demonstrates the CSK. On Table 3. we see the results match the Lakers - Cleveland 105:88. It is noticed that the Lakers as either (a shot), though they gave the same number of points (49), which is a better percentage terms, meaning that they had fewer misses ie. were effective. The variants (enter) we see a drastic difference in favor of the Lakers, 20 points higher, and in terms of percentages 93 to 56. The leap and counters are similar. The free throw percentage on the side of Cleveland, but in absolute terms this is no big difference, 11 for 6.

Table 1. Personal and spatial balance

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<th>TEAM</th>
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<th>Spatial balance</th>
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<tr>
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<tr>
<td>BERLIN F</td>
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<td>EU</td>
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Table 2. Solo/team balance
The Lakers have had fewer misses and turnovers in 47 to 56, and the activity had about the same 99 and 100, which resulted in the same proportion. Release the accuracy and efficiency in the Lakers' side, 48/40 and 106/88. The Lakers are 47.5 threw the ball through the basket, and the 40. Cleveland personal team balance by theoretical model and the Lakers coefficient 0.34, indicating that they had prevailed on team actions, viewed in relation to theoretical model. Cleveland is closer to the theoretical model and physical balance, while the Lakers to move coefficient 1.04 tactical variants with shot variants position under the basket (pivoting, the system entry, etc.). The Lakers have played a tactical attacks through the team's options (enter), and Cleveland although with a fairly balanced game, fell short in accuracy and concentration. They have a large percentage of turnovers and mistakes.

On the basis of six NBA teams (Table 4.) shows that the ratio of team balance personal 0.32, and spatial balance of 0.76. In relation to the theoretical model we see deviation and dominance, team activities, and variants of attacks that are based on area under the basket. However, when you look at European teams, we see that they are even more moved to a team activity, and variants of the attack.

In a relative comparison, we see that the U.S. basketball more than the European, oriented to quality and intraindividual expression are distributed in the area of the field so that again closer theoretical model of the European, which means that more attention to rubble, while the European teams pay more attention combinatorics under the basket.
Conclusion

Established the parameters for analysis. Based on observations at all levels of game it was up to 16 items that are recorded in summary form, and 11 items logged in the application forms for the balance. Based on the established parameters, appearing in all leagues, formed the theoretical model, which indicates the distribution of team work and physical activity.

Based on average results of coefficients of balance, compared to American and European concept of the game, showing us the differences in approach to tactical action. American basketball is faster than Europe for 3 to 4 seconds, looking at the average time of the attack, which is reflected in the coefficient personal team balance, which is 0.32 in the NBA and in Europe 0.2. On the basis of comparative form, where the statistical parameters from the combined and balancing form, it is possible to realize the essential characteristics of the team and compare the winner and loser. On the soles of tracking multiple games can gain insight into the concept of a team attack. Do you prefer more team or individual activities, and speaking through a balanced form, it can be determined by the average value per item. How one team has a pivoting attacks, assists, antagonism, etc. Based on the monitoring of a team it is possible that are weak or good by the attack and subsequently corrected by training and tactical tasks.

Literature


STATISTIČKA ANALIZA TAKTIČKIH ELEMENATA U KOŠARKAŠKOJ IGRI

Sažetak


Ključne riječi: košarka, taktika, elementi, analiza

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