ANALYSIS OF CRITICAL MOMENTS IN THE LEAGUE ACB 2007-08

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KEY WORDS: analysis of the game, critical moments, basketball.

ABSTRACT: The aim of this paper was to identify the variables that determine winning or losing in the critical moments of the basketball games. A total of forty one critical moments were analyzed, corresponding to 30 games of the regular season from the Spanish Professional League (ACB, season 2007-2008). Games were selected according to the definition of critical moments (described in the available literature), which corresponded to overtime and the last 5 minutes of games with score differences equal or below to six points. The results revealed better values in the winners in defensive rebounds and successful free-throws.

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Introduction

The moments that contribute more decisively to winning or losing the basketball games are called critical moments (Sampaio, Ferreira, Ibáñez, & Ribeiro, 2004). There are two major topics of study when approaching the critical moments (Ferreira, 2006), the first is focused in the psychological subjects (Bar - Eli & Tractinsky, 2000) and the second is focused on the study of the game (Kózar et al., 1994; Kaminsky, 1990). Analyzing the last five minutes of the game, researchers have been identifying the most influential variables in the final result, such as successful free-throws (e.g., Lorenzo et al., 2005; Kaminsky, 1990; Kózar et al., 1994), defensive rebounds (e.g., Ribeiro & Sampaio, 2003) and unsuccessful 3 point field goals (Kaminsky, 1990). Thus, the object of this study was to identify the variables that discriminate between the winners and the losers during the critical moments.

Method

The sample was composed of 41 critical moments, selected randomly from 118 possible belonging to 306 games of the Spanish Professional League (ACB, season 2007-2008). It was considered a critical moment, the game overtime and the last 5 minutes (Bar- Eli & Tracktinsky, 2000; Kaminsky, 1990; Kozar et al., 1994; Pereira, 2006) of selected games with a scoreboard difference of 6 points (Ferreira, 2006).

The variables examined were: successful and unsuccessful 1, 2 and 3 points shooting, offensive and defensive rebounds, assists, personal fouls, turnovers, steals and blocks. All variables were normalized to game ball possessions (e.g., Sampaio & Janeira, 2003). To calculate the ball possessions (BP) it has been used the equation defined by Oliver (2004): (BP = Field goal attempted – Offensive rebounds + Turnovers - $0.4 \times$ Free-throws attempted).

An independent samples student t-test and a discriminant analysis were used with the aim of identifying the variables that better discriminate the winners from losers. It was considered relevant to the interpretation of the linear vectors the structure coefficients above or equal to 0.30 (Tabachnick & Fidell, 1996). Statistical significance was set to 5%.

Results

Student t-test results are shown in table 1, there were differences between winning and losing teams in successful free-throws (p=0,002), defensive rebounds (p=0,000) and unsuccessful 3 point field goals (p=0,043).

Discriminant analysis identified free-throws and defensive rebounds (table 2) as the most powerful variables to separate winning and losing teams. The winning teams had higher number of defensive rebounds and successful free throws.

Discussion

The defensive rebounds were associated with winners. This action generates more fast-break offences (Sampaio and Janeira, 2003; Sporiš, Sango, Vucetić & Masina, 2006) and it is a measure of team defensive success, because it may be captured after a bad shot selection from the opponents (Fierro, 2002). Also, it reduces the opponents possession options, diminishing their success

Variables Estadísticas	Ganador	Perdedor
Tiro 2anotado	0,14	0,14
Tiro 3anotado	0,13	0,13
Tiro libre anotado	0,00*	0,00*
Rebote defensivo	0,00*	0,00*
Rebote ofensivo	0,81	0,81
Asistencia	0,07	0,07
Balón robado	0,11	0,11
Perdida balón	0,12	0,12
Tapón favor	0,1	0,1
Falta cometida	0,26	0,26
Tiro 2fallado	0,55	0,55
Tiro 3fallado	0,04*	0,04*
Tiro libre fallado	0,3	0,3

* p ≤.05

Table 1: T test for independent samples

Game-related statistics	ACB LEAGUE
Successful 2 point field-goals	0,18
Unsuccessful 2 point field-goals	-0,24
Successful 3 point field-goals	0,19
Unsuccessful 3 point field-goals	-0,25
Successful free-throws	0,39*
Unsuccessful free-throws	0,12
Ofensive rebounds	0,02
Deffensive rebounds	0,49*
Assists	0,22
Fouls	-0,14
Steals	0,19
Turnovers	-0,19
Blocks	0,2
Eigen value	0.79
Wilks' Lambda	0,55
Canonical Correlation	0,66
Chi-squared	43.25
Significance	<.005
Reclassification	85.4%

Table 2. Discriminant Analysis Structure Coefficients (SC) and tests of statisticall significance from game related statistics in ACB League.

percentages (Gómez, 2007). The second variable associated with winners were the successful free throws, as confirmed in earlier studies (e.g., Lorenzo et al., 2005; Kaminsky, 1990; Kózar et al., 1994). Kozar et al, (1994) found that in the last 5 minutes of close games (differences in the scoreboard lower than 9 points), the free-throws were 48 % of the scored points, and 69% in the last minute. This circumstance raises the importance of having in the court the best free-throw shooters in the final minutes (Kaminsky, 1990) and, with the present rules, to be aware of the opponents' worst shooter from this distance, in case of necessity to make fouls.

Our results also have revealed significant differences unsuccessful 3 point field goals variable. The importance of this variable is understood as a complement of the 2 points throws, since it can be used in 20% of the team action, besides it demands a good selection of shot of the teams , allowing high percentages of success and a better defensive transition (Trniniç et al., 2002). It can be estimated the importance of the unsuccessful 3 points

throwing in the balanced games and that the winning teams select better their 3 points throws (Gómez, 2007).

The stress the player reaches in the last 5 minutes of game, in which the critical moments are detected in close games (Bar- Eli & Tracktinsky, 2000; Kaminsky, 1990; Kozar et al., 1994; Ferreira, 2006), as a result of the psico-physiological alterations that arise from the competitive requirements, can unleash in a " state of psychological crisis" (Bar-Eli & Tractinsky, 2000). The above mentioned state is characterized by the decrease on the performance of the player. This alteration can determine the efficiency in the free-throw and throwing of 3 points, and the concentration that makes the obtaining of the rebound possible. Bar-Eli y Tractinsky, (2000) consider working with the players imagining hypothetical stages, which are alike real situations of the competition; in such a way that the players are capable of self-manage their stress and lower the effect of a "psychological crisis ".

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