

Influence of the Specific Position on The Final Result of The Match in Professional Basketball

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Abstract

Studies exploring performance indicators in basketball that characterize the result of the match are abundant. However, there are only a limited number of studies that carry out such analysis according to the specific positions of the players. The objective of this work is to characterize the differences by specific position between performance indicators of the matches of the 2017/18 season of the ACB League according to the result of the match. This study is a descriptive and observational research work that adopts a quantitative methodology for analysis. The study sample consists of 337 matches, in which the differences between game indicators were analyzed according to the specific position and the result of the match using the non-parametric tests U of Mann-Whitney and H of Kruskal-Wallis. The results show significant differences in the game indicators according to the specific position. The shots of three scored ($d=.80$) and taken ($d=1.20$), the total rebounds ($d=.95$) and offensive ($d=.82$), the assists ($d=.93$) and the dunks ($d=.86$) have a large effect size. In addition, there are significant differences by specific position in performance indicators based on the outcome of the match. It is concluded the performance indicators of the inside players are different from the outside ones and the players of the winning teams are more effective scorers, develop more assists, receive fewer blocks, dominate rebounds, receive more fouls and perform more dunks. These findings are of great interest to stakeholders in the basketball or sports industry, as they provide highly valuable information on the behavior of athletes in competition according to their specific position and the results of the match.

Keywords: basketball, performance indicators, specific position, match results

Introduction

Basketball is one of the most practiced physical contact sports, in which two teams of 5 players each face each other, with a maximum of 12 interchangeable players. These players are distinguished according to their disposition on the field and the functions they perform during the game as guard, shooting guard, forward, power forward and pivot (Wissel, 2008).

Performance analysis has been used to study a wide variety of aspects in basketball (García-Rubio, Gómez, Cañadas, & Ibáñez, 2015; Gómez-Ruano, Lorenzo, Ortega, & Olmedilla, 2007; Ibáñez, García, Feu, Lorenzo, & Sampaio, 2009). To allow the identification of critical factors of the game, based on spontaneous behaviours in real competition contexts, the right knowledge helps to improve the performance of the players. In basketball, it is necessary to measure, evaluate and analyse the game at a technical-tactical level, in order to obtain quantitative data and objective information that helps coaches and players make decisions regarding performance during competition.

Research studies that analyse the intervention of players based on their playing position have identified the contribution by specific positions is different (García-Rubio, Courel-Ibáñez, Gonzalez-Espinosa, & Ibáñez, 2019; Ibáñez, Mazo, Nascimento, & García-Rubio, 2018; Sampaio, Ibáñez, Gomez, Lorenzo, & Ortega, 2008). Sampaio, Janeira, Ibáñez, and Lorenzo (2006) affirm point guards are players who make the most assists, free throws

scored and three-point throws scored and missed. Forwards are the players with the most minutes on the court, therefore they make more shots from two points scored and missed, managing to make more blocks, defensive rebounds, and steals. Meanwhile, pivots make more fouls, offensive rebounds and missed free throws.

Gómez-Ruano et al. (2007) showed that point guards players are those who enjoy more minutes to lead the team, therefore making more assists. In addition, they are the players who get the most points per minute of play and make the most shots of three scored and missed. Forwards commit more fouls than other specific positions. For their part, the pivots are the players who make the most shots close to the basket by playing in spaces close to it. This causes them to receive more fouls and take more free throws, being the players who block more shots and more offensive and defensive rebounds. These results partially coincide with those found by Sindik and Jukić (2011), who study point guard players make more successful and unsuccessful shots of three points and assists. Forwards recover more offensive rebounds and pivots make more successful and missed shots of two and one points, personal fouls and defensive rebounds.

The study of performance indicators that differentiate between winning and losing teams has been widely investigated in the past (García, Ibáñez, Gómez, & Sampaio, 2014; Ibáñez, Sampaio, Sáenz-López, Giménez, & Janeira, 2003; Ibáñez, Feu, García, Parejo, & Cañadas, 2009). These studies show that there are several performance indicators that predict the victory of men's

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teams. Ibáñez et al. (2008) identify performance indicators that distinguish the top-ranked teams from the worst-ranked teams are found in assists, steals, blocks, a greater number of two-shot pitches, and defensive rebounds. Csataljay, O'Donoghue, Hughes, and Dancs (2009) state performance indicators between winners and losers are efficiency in triple shots, free throws and defensive rebounds. For their part, Parejo, García, Antúnez, and Ibáñez (2013) identify that in balanced matches, the two missed shots, the free throws scored, the defensive rebounds, the assists made, the personal fouls and the efficiency coefficients are relevant variables.

Once the literature has been analysed, the large number of studies carried out on the performance indicators that characterize the final result of the match in different circumstances, levels of competition or gender is verified. However, there are only a few studies that carry out such analyses according to the specific position of the players. Therefore, the present investigation seeks to solve this problem. In order to achieve this, the study identifies a number of key objectives, which are as follows: i) to identify the differences by specific position of the performance indicators in the ACB League; ii) analyse the differences by specific position of the performance indicators in the ACB League according to the result of the match.

Method

Design

According to Montero and León (2007), the research methodology is quantitative and more specifically it is a descriptive study through an arbitrary code of natural observation. Furthermore, this work adopts an empirical, nomothetic, longitudinal and multidimensional approach to research (Ato, López-García, & Benavente, 2013).

Participants and sample

The study participants were the basketball players who competed in the ACB League in the 2017/18 season, made up of the best 18 teams in Spain. The matches of the regular phase ($n = 306$) and the play-off phase ($n = 21$) were analysed (i.e., a total of 327 matches). The study sample is made up of 7,122 statistical analysis units, in which the game indicators of the specific positions of the players who participated in the ACB League matches of the 2017/18 season are recorded.

Variables

According to Lago (2009) the variables recorded in this study were situational variables or related to the context of the game, which can influence and condition the game of an athlete or team. Thus, the independent variables were specific position: (point guard, shooting guard, forward, power forward or pivot), as reflected in the official ACB League roster and match result (won or lost).

The dependent variables or game indicators were minutes played (M), points (P), two-point shot scored (2-PSS), two-point shot thrown (2-PST), three-point shot scored (3-

PSS), three-point shot thrown (3-PST), free throw scored (FTS), free throw thrown (FTT), total rebounds (TR), defensive rebounds (DR), offensive rebounds (OR), assists (A), stolen balls (SB), lost balls (LB), blocks in favour (BF), blocks against (BA), dunks (D), fouls received (FR) and fouls committed (FC). The dependent variables were normalized per minute, as it is a basic criterion to analyse the performance of the players in any sport discipline (Hughes & Franks, 2004).

Instrument

The instrument used in the research was an ad hoc observation sheet, tailored for the purposes of the present study as recommended by Anguera and Hernández-Mendo (2016), which has been used for data collection.

Procedure

After a bibliographic review, the problem statement was devised and an ad hoc observation sheet was constructed. Once the variables were identified and defined, the ACB League website (acb.com) was searched for the matches of the 2017/18 season and the number of times each observed variable occurred has been recorded in an Excel sheet.

Statistical analysis

Criteria assumption tests were performed to determine the hypothesis contrast model to be used. It was found that none of the performance indicators recorded meets the normality criteria (Cubo, 2011). Therefore, the hypothesis testing model was non-parametric. The mean and standard deviation were used in order to describe the behaviour of the dependent variables according to the values of the independent variables. An inferential analysis was conducted to analyse the differences between the variables, including the Mann-Whitney U test to compare the players in each specific position when they won or lost the game and the Kruskal-Wallis H test to identify the differences between specific positions. In addition, the Games-Howell post hoc test has been performed, as it is a non-parametric approach that does not assume equal sample sizes and variances. The effect size was also found, that is, the magnitude of the difference between the means of the specific positions and the magnitude of the difference between the means according to the result of the match. From Cohen's d , where an effect size is considered small .20, medium .50 and large .80 (Thalheimer & Cook, 2002). In addition, the potency of the effect was also studied, which allows us to adequately understand the results of the analyses carried out using a test relevant to the validity of the study, where results $>.80$ are considered optimal values (Quezada, 2007). Statistical analyses were performed using the SPSS v.21 software (IBM Corp. 2012. IBM SPSS Statistics for Windows, NY: IBM Corp). Statistical significance was established at $p <.05$.

Results

Table 1 shows the normalized descriptive results and the differences found between specific positions in the performance indicators.

Table 1
Differences between specific positions with respect to performance indicators

Variables	Point guard		Shooting guard		Forward		Power forward		Pivot		Total			Post hoc
	̄	DT	̄	DT	̄	DT	̄	DT	̄	DT	p	d	η ²	
M	18.78	7.54	19.14	7.50	18.04	8.00	19.57	7.12	17.03	7.27	.00	.23	.01	2,3,4,5,7,8,9,10
P/M	.37	.26	.42	.29	.37	.21	.37	.28	.39	.27	.00	.15	.00	1,5,6
2-PSS/M	.08	.08	.08	.08	.08	.10	.10	.10	.15	.12	.00	.54	.06	3,4,6,7,8,9,10
2-PST/M	.16	.13	.17	.22	.16	.17	.20	.37	.27	.25	.00	.58	.07	3,4,7,8,9,10
3-PSS/M	.05	.06	.06	.06	.05	.06	.04	.05	.01	.03	.00	.81	.13	1,3,4,5,6,7,8,9,10
3-PST/M	.15	.13	.17	.13	.15	.23	.12	.16	.02	.06	.00	1.20	.26	1,3,4,5,6,7,8,9,10
FTS/M	.07	.10	.08	.15	.06	.09	.06	.09	.08	.11	.00	.12	.00	5,6,9,10
FTT/M	.09	.12	.09	.16	.08	.12	.09	.11	.12	.15	.00	.21	.01	4,7,9,10
TR/M	.10	.09	.11	.09	.14	.11	.20	.16	.24	.15	.00	.95	.18	2,3,4,5,6,7,8,9,10
DR/M	.08	.08	.08	.07	.10	.09	.14	.14	.16	.11	.00	.64	.09	2,3,4,5,6,7,8,9,10
OR/M	.02	.05	.02	.05	.04	.05	.06	.07	.09	.09	.00	.82	.14	2,3,4,5,6,7,8,9,10
A/M	.15	.12	.08	.08	.06	.07	.05	.08	.04	.06	.00	.93	.17	1,2,3,4,5,6,7,9,10
SB/M	.04	.05	.03	.05	.03	.05	.03	.05	.02	.04	.00	.20	.01	1,2,3,4,7,9,10
LB/M	.08	.08	.06	.07	.06	.07	.05	.08	.07	.09	.00	.30	.02	1,2,3,4,5,6,9,10
BF/M	.00	.02	.00	.02	.01	.03	.02	.04	.03	.06	.00	.71	.11	1,2,3,4,5,6,7,9,10
BA/M	.01	.03	.01	.03	.01	.04	.01	.03	.02	.04	.00	.09	.00	3,4,7,9,10
D/M	.00	.01	.00	.01	.01	.07	.01	.03	.04	.06	.00	.86	.15	2,3,4,5,6,7,9,10
FR/M	.11	.10	.10	.12	.11	.10	.12	.12	.15	.13	.00	.30	.02	3,4,6,7,8,9,10
FC/M	.10	.08	.10	.10	.09	.09	.09	.08	.12	.11	.00	.26	.01	2,3,4,5,6,7,9,10

p<.05; 1(Diff. P.G.-S.G.); 2(Diff. P.G.-F.); 3(Diff. P.G.-P.F.); 4(Diff. P.G.-P.); 5(Diff. S.G.-F.); 6(Diff. S.G.-P.F.); 7(Diff. S.G.-P.); 8(Diff. F.-P.F.); 9(Diff. F.-P.); 10(Diff. P.F.-P.)

The results show significant differences in all the performance indicators between the specific positions. The shots of three scored and thrown, the total and offensive rebounds, the assists and the dunks present a large effect size (>.80). However, the statistical power of the variables shows low values (<.80). In addition, the average number of minutes played is higher in power forwards, while points per minute and

shots of three scored and thrown are higher in shooting guards. The point guards make more assists and stolen and lost balls and the pivots make more shots of two scored and thrown, free throws scored and thrown, total rebounds, defensive and offensive, blocks for and against, dunks and fouls received and committed. Table 2 shows the results of the differences between each specific position in the performance indicators according to the result of the match.

Table 2
Differences between specific positions in performance indicators according to match result

Variables	Point guard (W) Point guard (L)			Shooting guard (W) Shooting guard (L)			Forward (W) Forward (L)			Power forward (W) Power forward (L)			Total Pivot (W) Pivot (L) Total		
	̄	̄	p d η ²	̄	̄	p d η ²	̄	̄	p d η ²	̄	̄	p d η ²	̄	̄	p d η ²
M	18.77	18.79	.72.01.00	18.90	19.39	.14.14.00	17.85	18.23	.41.04.00	19.72	19.43	.71.02.00	17.02	17.04	.68.02.00
P/M	.39	.34	.00.21.01	.46	.38	.00.28.02	.40	.34	.00.16.00	.40	.33	.00.31.02	.41	.37	.01.13.00
2-PSS/M	.89	.07	.00.15.00	.09	.07	.03.12.00	.09	.07	.06.09.00	.11	.89	.00.23.01	.15	.14	.03.12.00
2-PST/M	.16	.16	.78.01.00	.18	.16	.91.23.01	.16	.15	.94.00.00	.21	.19	.23.06.00	.28	.26	.91.00.00
3-PSS/M	.05	.04	.03.10.00	.07	.05	.00.25.01	.05	.05	.26.05.00	.04	.03	.01.12.00	.01	.01	.22.03.00
3-PST/M	.15	.16	.35.04.00	.17	.17	.23.16.00	.15	.16	.31.05.00	.11	.12	.82.01.00	.03	.02	.10.06.00
FTS/M	.07	.07	.03.10.00	.08	.07	.54.20.01	.07	.06	.02.10.00	.07	.06	.05.10.00	.08	.08	.45.03.00
FTT/M	.09	.09	.11.07.00	.10	.09	.97.24.01	.09	.08	.07.08.00	.09	.08	.11.08.00	.12	.12	.57.03.00
TR/M	.10	.09	.01.12.00	.11	.10	.09.13.00	.15	.13	.00.15.00	.21	.19	.00.19.01	.26	.22	.00.27.01
DR/M	.08	.07	.01.13.00	.08	.08	.04.11.00	.11	.09	.00.19.01	.15	.13	.00.23.01	.17	.14	.00.31.02
OR/M	.02	.02	.84.00.00	.02	.02	.85.23.01	.03	.04	.69.01.00	.06	.06	.65.02.00	.09	.08	.72.01.00
A/M	.16	.14	.00.21.01	.09	.08	.01.14.00	.06	.05	.01.11.00	.05	.05	.03.03.00	.05	.03	.00.24.01
SB/M	.04	.04	.93.00.00	.03	.03	.68.21.01	.03	.03	.42.04.00	.03	.03	.18.07.00	.03	.02	.11.07.00
LB/M	.08	.08	.22.06.00	.06	.07	.10.13.00	.05	.06	.42.03.00	.05	.05	.19.06.00	.07	.06	.28.05.00
BF/M	.00	.00	.23.03.00	.00	.00	.00.07.00	.01	.01	.14.04.00	.02	.02	.81.01.00	.04	.03	.01.12.00
BA/M	.02	.01	.05.06.00	.01	.01	.11.17.00	.01	.01	.02.07.00	.01	.01	.78.01.00	.01	.02	.00.12.00
D/M	.00	.00	.60.00.00	.00	.00	.87.24.01	.01	.01	.00.08.00	.01	.01	.03.08.00	.05	.03	.00.18.00
FR/M	.11	.11	.67.02.00	.10	.11	.03.12.00	.11	.11	.48.03.00	.12	.13	.03.11.00	.16	.14	.04.11.00
FC/M	.10	.10	.97.02.00	.11	.10	.82.23.01	.09	.09	.80.01.00	.09	.09	.17.07.00	.13	.12	.18.07.00

p<.05; W= winner; L = loser

The results show that there are significant differences in the performance indicators, points per minute, free throws, two and three points scored, assists, total and defensive rebounds and blocks against the point guard's players according to the result of the game. In the shooting guard players, there are differences in points per minute, two- and three-point shots scored, defensive rebounds, assists, blocks in favour and fouls received. Forwards have a different behaviour in the game in points per minute, two-point shots scored, free throws scored and thrown, total and defensive rebounds, assists, blocks against and dunks. Power forwards present differences in points per minute, free throws, two and three points scored, total and defensive rebounds, assists, dunks and fouls received. Finally, the pivots show differences in points per minute, shots of two scored, total and defensive rebounds, assists, blocks for and against, dunks and fouls received.

It should be noted that the differences between the specific positions in the performance indicators according to the match result do not show a large effect size ($<.80$) and that the statistical power of the variables shows low values ($<.80$).

Discussion

The objective of the work was to verify the differences existing by specific position in the performance indicators of the matches of the ACB League season 2017/18. It has been found that there are significant differences by specific position between the performance indicators in the parties analysed. This agrees with the statements made by Sampaio et al. (2008), Gómez-Ruano et al. (2007) and Sampaio et al. (2006) in their studies, where it is stated that professional basketball players perform different functions during competition according to their specific position. For this reason, coaches must work differently depending on the specific position of their players.

The point guards provide more assists than the rest of specific positions. This statement coincides with the conclusions that Gómez Ruano et al. (2007); Sampaio et al. (2008) and Sindik and Jukić (2011) make in their studies, where they state that point guards are the players who provide the most assists. Thus, coaches must work in greater depth on the development of specific tasks that aim to improve assist situations with these types of players. In addition, the point guards present a greater number of stolen and lost balls. However, Gómez Ruano et al. (2007) state that the pivots are the players who lose the most balls, while Sampaio et al. (2006) conclude that the forwards are the ones who steal the most balls. The point guards are the players in charge of directing, organizing and controlling the rhythm of the game, so it is understood that they lose a greater number of balls than the rest of the players.

The shooting guards are the players with the highest number of points per minute and shots of three scored and thrown. Various previous works Gómez Ruano et al. (2007); Sampaio et al. (2008); Sindik and Jukić (2011) differentiate the specific positions of the players according

to pivots, point guards and forwards only, including the shooting guards in the group of point guards. That is why these studies conclude that the point guards are the ones who score the most points per minute and the most shots of three thrown and scored. For this reason, shooting guards must train more in-depth shots of three in order to equalize the average number of shots of three thrown and scored.

The pivots are the players who make the most two-point shots scored and thrown, free throws scored and thrown, total rebounds, defensive and offensive, blocks for and against, dunks and fouls received and committed. This is understandable, since the pivots are the tallest and most corpulent players on the team and they usually play close to the basket (Wissel, 2008). The studies by Ibáñez et al. (2) and Ibáñez, Feu, et al. (2009) demonstrate that the pivots make a greater number of free throws and two points scored and thrown, rebounds, blocks and fouls, so these results are in line with those obtained in the present investigation. Thus, the pivots must train the shots close to the basket to a greater extent in order to attempt to have the greatest number of shots. In addition, they must train rebounds, blocks, dunks and strengthen the upper body.

Power forwards have a similar function to pivots, although they tend to have greater coordination and agility than the latter (Wissel, 2008). For this reason, the pivots are the players who make the most two-point shots thrown and scored, total rebounds, defensive and offensive and fouls received. Therefore, they must carry out a similar training to the pivots.

Forwards are the largest outdoor players (Wissel, 2008), therefore they make a large number of three-point shots scored and thrown, although to a lesser extent than point guards and shooting guards. Gómez Ruano et al. (2007) affirm that the forwards execute a large percentage of hits in the three-point throws. On the other hand, they tend to be good penetrators and in specific plays, they play in interior positions (Wissel, 2008), and for this reason they tend to have many totals, defensive and offensive rebounds and fouls, although less than pivots and power forward. Sindik and Jukić (2011) and Gómez-Ruano et al. (2007) conclude in their work that forwards make a large number of personal fouls and offensive and defensive rebounds. For all these reasons, the training of forward players must be in line with both the specific training of the point guard and shooting guard players as well as the specific training of the pivot or power forward players.

This study aims to verify the differences existing by specific position in the performance indicators of the matches of the 2017/18 season of the ACB League according to the result of the match. From there, it has been found that there are significant differences by specific position depending on the result of the match.

The players of the teams that win the games are more effective (points per match), developing a better collective game (assists), being very consistent in defence (rebounds) and dominating the game in both baskets (total rebounds).

Various authors conclude in their studies that basketball

teams that win the games perform more assists and rebounds than teams that lose (García et al., 2014; Ibáñez et al., 2008). These game indicators become performance indicators, as they are the ones that directly affect the outcome of the match.

Scoring efficiency is one of the differences between players on winning and losing teams. For this reason, this game action must be worked specifically for each of the specific positions, seeking its specificity. Ibáñez et al. (2008) conclude that the teams that win are the ones that make more shots than two scored, while Csataljay et al. (2009) state that winners are more effective on triple throws and free throws. For their part, Parejo et al. (2013) conclude that in balanced matches the number of free throws scored is of great importance. Research reveals the relative value of each of the throws depends on the time of the competition and the type of match. Therefore, it is necessary to train the throws properly to be effective at every moment of the game.

The point guards who win in games receive fewer blocks against than those who lose, as do the forwards. For their part, the shooting guards and pivots that win make more blocks in favour and have fewer blocks against. Ibáñez et al. (2008) demonstrate that the performance indicator “blocks” differentiated the teams that won the matches. The block is a game indicator that reflects defensive pressure and intensity. The teams that obtain the victories are those that manage to increase their defensive pressure, while attacking and shooting to the basket in better positions, reducing the blocks received.

The dunks are an indicator of performance in the pivot, power forward and forward players, since the players who successfully perform the dunks win the games. This game action reflects the depth and forcefulness of the winning teams' offensive play. They use a type of throw very close to the basket, effective and intimidating. The construction of effective collective offensive actions should trigger occasions that favour the approach of the players to the rim of the opposing team, to use this type of throwing. Finally, Parejo et al. (2013) identify that personal foul are relevant in balanced matches. The results of this work

show that the fouls received are common in the pivot, power forwards and shooting guards players who win the games. The incisive play of the winning teams favours the achievement of a basket or the reception of fouls to neutralize their actions. For this reason, game dynamics should be favoured in which the players are aggressive and attack the opposing ring.

Conclusions

Professional basketball players perform various actions during the competition, which are different depending on their specific position and the result of the match. Dunks, fouls, blocks, rebounds, free throws and two points are more frequent in players inside or close to the basket, while three-point field goal, assists and lost or stolen balls are more frequent in athletes than they play in outdoor areas. On the other hand, the players of the teams that obtain the victory are more effective in scoring, develop more assists, are consistent in the game close to the basket, receive fewer blocks and dominate rebounds, receive more fouls and perform more dunks.

This new information is of great interest to the field of sports sciences and more specifically to basketball as it helps to evaluate the technical-tactical behaviour of athletes in a real game environment and to know the effect that situational variables have according to the specific position and result of the match.

In the prospective future, studies should be carried out to verify the behaviours of athletes in matches of different levels. Likewise, it will be necessary to study these trends in the competition according to gender and identify the differences between men and women players.

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