

Registration of rebound possession zones in basketball.

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Abstract

The aim of this project was to register the rebound possession zones in Basketball and the frequency of their occurrence in a sum of Basketball games, so as to determine the probable direction of the ball after unsuccessful shots. To achieve this one hundred and thirty (n=130) games of Men's teams organized by FIBA in various Leagues during the periods 1999 – 2002 were recorded. Sixty games (n=60) of National teams and seventy (n=70) of club level were analysed by the computer program Sportscout. The defense area was divided into five zones and the direction of the ball after unsuccessful attempts were recorded. For the statistic analysis of the data the command Crosstabs and χ^2 (Chi-square) test and the correspondences and classification (cluster) were employed. The results suggested that a) the ball after unsuccessful shots from zones 1 or 5 is headed in the vast majority (69% – 79%) to zones 1 or 5 and in half the cases to the zone across where the shot was taken, b) the ball after successful shots from zones 2 or 4 in 70% of the cases is headed after bouncing to zones 2 and 4, and c) 85% of unsuccessful shots from zone 3 returns to zone 3. These results determine the probable directions of the ball after bouncing and offer important information to Coaches.

Key words: Basketball, rebound, videoanalysis, Computer.

1 Introduction

Nowadays the most common statistic element in Basketball after successful points and successful or unsuccessful attempts are the defensive and offensive rebounds. Osterman (1993), in his evaluation of his players adds both defensive and offensive rebounds to the positive elements of their play and sets possession of 58% of the rebounds as his goal. If we observe the statistics of big games, about 45 – 55% of 2 and 3 point-shots and 70% of the free throws are unsuccessful. That is why the rebound is a vital element in the statistics of a game as well as an important and fundamental skill at any level of the game.

According to Beard, Popowitz and Samson, (1985) the defensive rebounds are of great value if we consider that the majority of baskets are achieved after a gained defensive rebound. As the defensive rebounds are the result of the defensive

effectiveness of the players, it is profound that the teams that cannot control them have fewer chances of winning the game. Every time they fail to get a defensive rebound, they offer the offense one more opportunity for a shot and fail to create an offensive for themselves (Keating, 1989). Bellotti, (1988/89) claims that the defensive rebound and stealing are statistically of the same value as they lead to ball possession.

Regarding the offensive rebound, it is the start of new possession, which gives the offense an advantage, as the ball is already in the offensive court, the chances of fastbreak are increased and the likelihood of scoring rather high. (Trupin & Cuzens, 1989). According to the philosophy of Coaches, for the total of the rebounds is that the team that wins them is in control of the game (Gianchontov, 1989, Neumann 1987, Wissel 1994, Wooden 1992.)

The results of the task of Tsamourtzis, Salonikidis, Taxildaris Mavromatis, 2002,) fully agree with the above theory regarding rebounds and showed that the winners won most defensive rebounds with statistically remarkable differences, after which they displayed more attacks with primary fastbreak and organized attacks (set plays) than the losers. One study examining rebounding and winning over a 10-year period found that teams that out-rebounded their opponents won 80% of the time (Krause, 1991).

For rebound possession players must mainly have the following skills: a) height, b) vault, c) experience, d) fighting spirit and mainly e) timing and perception. (Tsitskaris & Catziathanasiou, 1992). Perception is necessary so that players read quickly, immediately after the shot, the probable position of the ball, and timing to position themselves on time to catch the ball. Raveling, (1990) believes that rebounding comes down to two things: "positioning and desire". He also reports: Anticipation of the missed shot. The first thing that the rebounder must observe is observe the angle on the floor which the shot was taken. Was the shot taken a) from the side, b) 45° angle or c) from the top of the circle?

The old saying that certain players have a "nose for the ball" may be true. Some rebounders just seem to be in the right place for a rebound on every missed shot. Part of their success may be due to some kind of rebounding instinct. More likely, however, is that these apparently instinctive rebounders have studied where shots taken from various places on the court are likely to go when they are off the mark. Help your players develop a rebounding instinct by pointing out the rebounding distribution. Note that shots taken from the side of the court are much more likely (70%-75% of the time) to rebound to the opposite side. Players should learn to take a position on the opposite side of the basket from where the shot was taken (known as the weak-side or help-side position). On the other hand, they should be told that shots taken from the middle of the court more often tend to rebound to an area in the middle of the lane. Also, make sure players know that shots taken from close range will rebound closer to the basket than shots launched from long distances. Finally, players should be aware that some rims tend to make the ball rebound further away from the basket, whereas others seem to cushion the impact of shots and produce much shorter rebounds. Have players test the bounce of the rims during warm-up to find out whether they are likely to produce short or long rebounds (Krause, 1991).

The additional speculation that arose and caused the goal for this task was to record the zones of possession of rebounds in Basketball and the frequency of the occurrence of these zones in aggregate of games of Basketball so as to determine the possible directions of the ball after unsuccessful shots.

2 Method

Sample: The samples were taken from one hundred and thirty (n=130) games of Men's Teams [sixty (n=60) National teams and seventy (n=70) Club teams] in the various Leagues organised by FIBA. The video recording took place during the 1999 – 2002 periods.

Equipment: The method of indirect observation was employed (Bountolos, 1990) and the following equipment were used:

- Video for the recording of the games by the TV channels showing the games.
- Video card for digitalisation of the games.
- Computer (P/C).
- “Sportscout” program for the analysis of the digital video.

Process: The defense area was divided in five sections and the direction of the ball after unsuccessful shots was recorded. (Figure 1.)

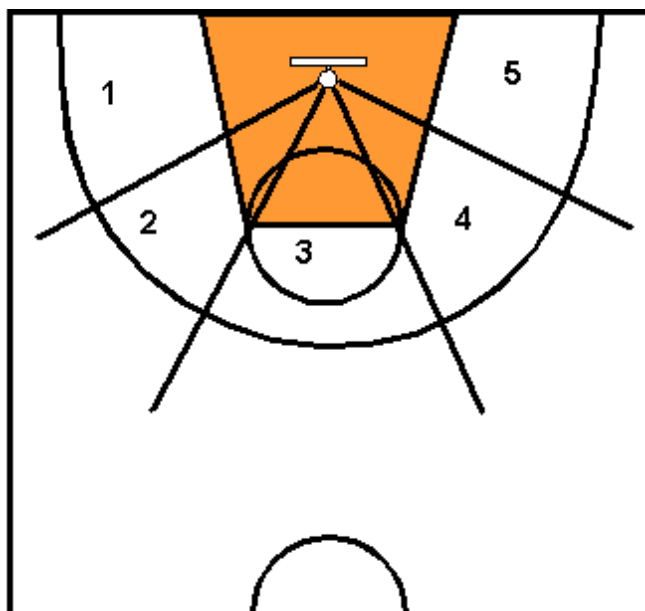


Fig. 1. The five sectors of the defense area.

Data analysis: The statistic analysis package SPAD-N was used for the statistic analysis of the data, analysis of the correspondents and classification (cluster) and statistic package SPSS, Crosstabs command and χ^2 (Chi-square) test.

3 Results

Table 1 shows that the highest percentage of the rebounds is won in zone 3, whereas there are no significant differences in zones 1, 2, 4, and 5.

From the significance check we see that there is a significant difference between the zones where the rebounds are won and the zones the shots are attempted. [$\chi^2=3735.4>26.3$, $p<.05$].

Table 1: Percentage of possession zones in relation to the shooting zones.

Shooting Zones	Rebound Zones					Allocation of Shooting Zones
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	
Zone 1	36.5%	7.7%	11.5%	1.9%	42.3%	12.1%
Zone 2	4.1%	41.8%	18.9%	27.9%	7.4%	14.2%
Zone 3	2.9%	3.9%	85.3%	5.0%	2.9%	44.1%
Zone 4	7.5%	33.8%	18.1%	36.3%	4.4%	18.6%
Zone 5	33.7%	1.5%	19.0%	10.5%	35.3%	11.0%
Allocation of Rebound zones	11.4%	14.9%	47.3%	14.3%	12.2%	100%

The grouping of the phases of the shooting and rebound zones resulted in the creation of the following five classes:

- Class 1 Shooting from zone 1 and rebounds mainly in zones 1 and 5 (12.1%)
- Class 2 Shooting from zone 2 and rebounds mainly in zones 2 and 4 (14.2%)
- Class 3 Shooting from zone 3 and rebounds mainly in zone 3 (44.1%)
- Class 4 Shooting from zone 4 and rebounds mainly in zones 2 and 4 (18.6%)
- Class 5 Shooting from zone 5 and rebounds mainly in zones 1 and 5. (11.0%)

4 Discussion and conclusions

From the analysis of the results for the zones of possession of rebounds it is concluded that the most frequent zone of possession of rebounds was zone 3 by 47%. As regards the rest of the zones, no significant differences in rebound possession were found.

The analysis of the shooting zones in relation with the zones of rebound possession showed that the ball after bouncing following unsuccessful shots from zone 1 in 79% of the cases heads for zones 1 (36.5%) and 5 (opposite zone where the shot was taken from, 42.3%).; The respective applies after unsuccessful shots from zone 5 and 69% of rebound possession to zones 1 (35.3%) and 5 (33.7%). These results agree in general with Raveling, (1990) who recorded that 9 out of every 10 shots from side the ball either rebounded straight back out in the direction of the shooter or the ball will rebounded out to the opposite side along the baseline.

In 70% of the cases the ball, after an unsuccessful from zones 2 or 4 goes to the direction 2 and 4 after bouncing. Raveling, (1990) equally reports for 8 for every 10 shots from 45° angle. In 85,3 % of the cases the ball after unsuccessful shooting from zone 3 is rebounded to zone 3. This result is in accordance with Krause (1991) who reports that shots taken from the middle of the court more often tend to rebound to an

area in the middle of the lane and Raveling (1990) who recorded that 9 of every 10 shots from the top of the circle directly back out of the shooter.

The study of the parameters checked showed that the knowledge of the above facts determinative in challenging the rebound. It also gives the Coach the ability to direct his players with clear and founded instructions to achieve specific objectives.

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