

# STUDY OF THE DEFENSIVE PERFORMANCE INDICATORS IN PEAK PERFORMANCE BASKETBALL

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ABSTRACT: The purpose of the present study was to analyze the different defensive performance indicators in basketball, analyzing the difference in relation to success (efficacious or non-efficacious defenses) and the game result (win or loss). All half-court offenses (n=1045) from the quarterfinal, semifinal, consolation game, and final of the 2008 Olympics Games were analyzed. In each defense phase, the following variables were analyzed with regard to the team on defense: (1) Type of defense used, (2) Pressure in offense transition, (3) Defensive switches, (4) Helping on defense, (5) Inside passes, (6) Degree of opposition when shooting, (7) Points allowed, (8) Final result of the game, and (9) Defensive efficacy. The most significant results show that: a) the type of defense that was most used was quarter-court man-on-man (man-on-man at 6.25m), but the one that was most efficacious was the half-court zone defense; b) transition pressure was used in 23.83% of the game phases; c) defensive switches were done in 7.85% of the game phases; d) helping on defense was used in 60% of the game phases; e) inside passes were taken in 30.9% of the game phases; f) 38.9% of the shots were done with high opposition; and g) points were scored in 42.28% of the game phases, such that winning teams allowed the opponent to score in 38.81% of the game phases, and losing teams in 45.77%.

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## Introduction

Within the study of performance indicators in basketball, most papers analyze aspects related to the offensive phase while few studies analyze defense. In the studies that assess defensive actions, the most studied aspect has been the influence of the defensive rebound on the game result, and significant differences are found in favor of the winning teams in relation to the amount of defensive rebounds made (García et al., 2007). To a lesser extent, information has been found that analyzes the different types of defensive systems (man-to-man, zone, mixed, and others), and most of the results find man-on-man defense is what is most often used (Farinha & Tavares, 2007).

Differentiating winning and losing teams, Gómez et al. (2006) found that the former used half-court man-on-man defense more, while the latter used man-on-man pressure and mixed defenses more. In regard to zone defense, these authors did not find differences between the groups. On the other hand, another analyzed defensive variable has been the degree of opposition when shooting. Along these lines, Ortega and Fernández (2007) analyzed three-point shots and observed that winning teams carried out a higher percentage of three-point shots without opposition than losing teams. In another study, Ibáñez et al. (2007) found that the most frequent degree of opposition was submaximal (23.9%) followed closely by opposition that they called medium and high (21.9% and 21.7%, respectively).

With regard to inside passes, Cárdenas et al., (1999) found that the average number of inside passes per offensive phases was only 0.41 and no difference in

the use of inside play was found between winning and losing teams.

In most studies the differences between winning and losing teams are analyzed, although no studies have been found that analyze the degree of efficacy of each defense utilized. The purpose of the study was to analyze the different defensive performance indicators in basketball, studying the differences between winning and losing teams as well as between efficacious and non-efficacious defenses.

## Method

Through observational methodology, all the half-court game phases ( $n = 1045$ ) from the men's quarterfinals, semifinals, consolation game, and final of the 2008 Olympics Games were analyzed. In each game phase were analyzed variables that can be seen in Table 1. The observers obtained a minimum reliability of 0.99 with regard to inter- and intra-observer reliability. The chi-square test was used. A significance level of  $p < 0.05$  was used.

## Results

In table 1, the percentages of use and efficacy of the studied variables are presented.

A relationship was found between final result and type of defense. Both winning and losing teams obtained their maximal efficacy percentage when they used a half-court zone defense, there were no statistically significant differences between type of defense and efficacy. In table 1, it is observed that in only one of four game phases the team on defense pressures the player dribbling the ball from the back court to the front court. Winning teams use pressure almost twice as much as losing

Variable	Category	WINNING		LOSING		TOTAL	
		Use	Efficacy	Use	Efficacy	Use	Efficacy
Type of defense	Half-court Zone	3.05	68.75	20.96	49.54	11.96	52.00
	Quarter-court man-to man	74.29	53.59	66.54	44.80	70.43	49.46
	Half-court man-to man	12.00	39.68	2.50	38.46	7.27	39.47
	Full-court man-to man	8.38	54.55	5.00	46.15	6.70	51.43
	Full-court zone	1.90	40.00	4.62	41.67	3.25	41.18
	Other	0.38	0.00	0.38	100.00	0.38	50.00
Pressure transition	No pressure	68.76	51.80	83.65	45.75	76.17	48.49
	pressure	31.24	52.44	16.35	45.88	23.83	50.20
Defensive switches	No switch	89.52	52.34	94.81	47.06	92.15	49.64
	Position-for-Position	3.62	63.16	2.12	9.09	2.87	43.33
	Inside - outside	6.86	41.67	3.08	31.25	4.98	38.46
Help for player with ball	No help	40.19	48.82	39.81	43.48	40.00	46.17
	Help	59.81	54.14	60.19	47.28	60.00	50.72
Inside passes	None used	73.33	53.51	64.81	49.55	69.09	51.66
	Passes used	26.67	47.86	35.19	38.80	30.91	42.72
Opposition when shooting	Low opp.	27.20	41.02	28.80	36.81	28.00	38.8
	Medium opp.	31.68	52.11	34.28	42.01	32.99	46.7
	High opp.	41.12	46.71	36.92	37.92	38.91	42.5
Points allowed	0	61.19		54.23		57.72	
	1	5.54		3.65		4.60	
	2	21.99		28.65		25.31	
	3-	10.52		13.08		11.79	
	4	0.76		0.38		0.58	
EFFICACY	Efficacy	52.00		45.77		48.90	
	No efficacy	48.00		54.23		51.10	

*Table 1 .- Percentages of use and efficacy of different performance indicators in winning and losing teams*

teams, and this difference was statistically significant ( $\chi^2(1) = 31,920, p < .001$ ).

Both winning and losing team obtained their maximum efficacy percentage when they pressured the player that dribbled the ball from the back court to the front court ( $\chi^2(2) = 10,351, p < .01$ ). Winning teams obtained their maximum efficacy percentage using defenses in which they do position-for-position defensive switches, followed by defenses where they do not use switches, and defenses with inside-outside defensive switches ( $\chi^2(2) = 2,510, p = .285$ ). On the contrary, losing teams obtained their maximum efficacy percentage using defenses where there were no switches, and a statistically significant relationship was found between defensive switches and efficacy ( $\chi^2(2) = 7,651, p < .05$ ). On the other hand, helping on defense was done in more than half of the game phases. No differences were found between winning and losing teams ( $\chi^2(1) = .016, p = .900$ ). Both winning and losing teams obtained their highest efficacy percentages when using defensive help. No statistically significant relationships were found between helping on defense and efficacy. Similarly, in table 1 it is demonstrated that in almost one out of three phases of offense, the defensive team allowed inside passes. Specifically, winning teams allowed inside passes in fewer game phases than losing teams, and statistically significant differences were found ( $\chi^2(1) = 8,892, p < .01$ ). Both winning and losing teams obtained their maximum efficacy percentage when preventing inside passes. No statistically significant relationships were found between type of defense and efficacy for winning teams ( $\chi^2(1) = 1,313, p = .252$ ), but significant differences were found for losing teams ( $\chi^2(1) = 5,529, p < .05$ ). Winning teams utilized defenses where they obligated their opponent to take a higher number of shots with high opposition than losing teams ( $\chi^2(2) = .865, p$

$= .649$ ). Both winning and losing teams obtained their maximum efficacy percentage using a medium degree of shooting opposition, followed by high and low.

## Discussion

The results of this study demonstrate that the man-to-man defenses are more often used by both winning and losing teams, with quarter-court man-to-man (man-to-man at 6.25m) being the most common. However, losing teams use zone defenses a lot and further, they alternate more between the different defenses due, possibly, to the fact that since they are coming from behind, they use all possible resources to catch up. Other studies have found similar results in other contexts, and man-to-man defenses are the most used defenses (Farinha & Tavares, 2007; Gómez et al. 2006). With regard to efficacy, it should be pointed out that in all types of defense, winning teams had a higher efficacy percentage than losing teams. In fact, only winning teams, when defending in half-court zone, quarter-court man-to-man, and full-court man-to-man defenses, obtain efficacy percentages that are greater than 50%. Losing teams do not obtain efficacy percentages that are greater than 50% in any defense. With regard to pressure in transition, this defensive factor was used much more by losing teams than by winning teams. This action allows a team on defense to stall the initial organization of the opponent's offensive phase, leaving less time for the opponent.

As a result of the tactical offensive actions, the defenders can be required to switch their opponents. This is not very desirable for the defending teams, since it is assumed that players were assigned most suitably to a specific opponent player to begin with. The results of this study indicate that this defensive

factor is not used much (mostly by losing teams), though there were no differences between winning and losing teams.

One of the aspects that the bibliography states as a defensive key is the use of helping on defense. In the present study, it was observed that 60% of the game phases that were analyzed used defensive help, though there were no differences between winning and losing teams. Another aspect that is not studied much is the use of inside passes. From the results of the present study, it is seen that in peak-performance basketball, it is not used or permitted much. Still, winning teams permit the use of the inside pass much less than losing teams; further, losing teams significantly decrease their defensive efficacy when the opponent makes an inside pass. These data indicate the tremendous importance of the defense of inside passes and are not in agreement with the data registered by Cárdenas et al. (1999) who, when analyzing games from the Spanish first division (ACB league), did not find differences in the use of the inside game

between winning and losing teams. In the present study, it can be confirmed that losing teams allow more inside passes and defend worse against them than winning teams. With regard to the degree of opposition, high opposition is the most utilized and low opposition was the degree of opposition that had the worst efficacy percentage (Ibáñez et al., 2007; Ortega & Fernández, 2007).

The winning teams should achieve approximately 60% of defensive phases in which they do not allow points. Similarly, if efficacy is defined as scoring and/or obtaining a personal foul, winning teams should achieve approximately 52% of defensive phases in which they do not allow points or personal fouls. All these data should serve as references for professional basketball coaches, such that they can be utilized both for practices as well as for monitoring competition (Ortega, Giménez & Olmedilla, 2008).

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