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# EFFECT OF A TRAINING PROGRAM ON THE IMPROVEMENT OF BASKETBALL PLAYERS' DECISION MAKING

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KEY WORDS: Tactics, teaching, constructivism, decision making.

ABSTRACT: The aim of this study was to analyse whether a tactical training program based on a constructivist model can improve decision making related to keeping control of the ball for a men's senior basketball team composed of ten players. The dependent variables were: player distribution around the ball, and achieving support on both sides of the ball at an effective passing distance. Data collection was made through observational analysis utilizing a previously validated tool. A pretest-posttest design without a control group was used. Results demonstrated an improvement in decision making after the posttest for both the number of support players near the player with the ball, as it increased from 85% in the pretest to 100% in the posttest, and the number of collective or team actions around the player with the ball (from 5% to 76.5%) with highly significant differences. The primary conclusion is that a training program for teaching team tactics based on a constructivist model has a positive influence on players' capability to facilitate the pass to their teammates.

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## Introduction

Hambrick (2003) demonstrated that basketball players with the greatest knowledge of the game before starting a competition made better decisions during it. In team sports this knowledge is related to the internal logic of the game (Grehaigine, Godbout & Bouthier, 1999). Specific rules or principles arise from the application of this logic, such as maintaining the possession of the ball (Bayer, 1992). In order to keep control of the ball, it is necessary to facilitate the action of passing (Cárdenas & Alarcón 2009).

The various teaching models in physical education oriented toward promoting decision making, although utilizing different approaches, are based on theories from the cognitive paradigm (Rink, 2001). The constructivist model is the model that is best adapted to the learning needs of the basketball player, because it uses a reflective intervention that helps the player internalize knowledge related to the internal logic of the game (Grehaigine, Wallian & Godbout, 2005).

Various tools have been designed for the evaluation of the decision-making process in sport, and the most used are those designed by Turner and Martinek (1999) and by Oslin, Mitchell and Griffin (1998). The problem with these proposals is that they do not take into account all the possibilities that the player has in each situation, and they also lack defined criteria to evaluate correct decisions. Both Griffin and Placek (2001) and Tallir, Lenoir and Valcke (2007) proposed some solutions to these problems, noting that the criterion to decide whether or not the player's decision was correct was the application of the principles of the game; however, the analysis of these studies focused on individual situations.

The aim of the present study was to analyse the effect of a training program based on the objectives and principles of the game through a reflective intervention on decision making related to the capacity of facilitating passing during real games of a basketball team.

## Method

The sample consisted of 10 male participants from a senior basketball team of the region of Murcia in Spain, with an average age of 21 years and an average accumulated experience of 8 years. A non-probability or deliberate sample was used. A quasi-experimental pre-post test design without a control group was employed, and the sample was the experimental group (Latorre, Del Rincón & Arnal, 2003).

The dependent variable was defined as the players' actions related to the principle of facilitating passing the ball to a teammate:

*Distribution around the ball.* To evaluate the extent to which the team improved in fulfilling this principle, the quality of the supporting movements made by teammates close to the player with the ball were controlled by assessing the behaviour of these players.

*Achieving support on both sides of the ball at an effective pass distance.* To assess whether the player with the ball had support on both sides, a number of simultaneous team actions were measured.

The independent variable was a 7-month training program to improve the team's collective play. A constructivist methodology was used with a teaching intervention based on Cardenas' proposal (1999) and adapted from Pozo (2005).

An observational tool based on a category system was designed to evaluate

the team’s tactical capacity. The efficacy criterion of each collective action was defined to measure the player’s actions. The validation process was carried out by an expert group composed of PhDs in Physical Education and team sport specialists. The observers were properly trained until they achieved a reliability score of greater than 0.95.

For the statistical procedures, description of the data was done by presenting the results in frequency tables and statistical inference for cross variables was presented

through contingency tables using the Chi-square test and Fisher exact test for both unilateral and bilateral significance. In 2x2 tables the corresponding continuity correction was used.

### Results

It is demonstrated in Table 1 how behaviour related to providing strong support to the player with the ball was very high in both the pretest and posttest. However, the difference between them is

Test		Support players close to the ball		
		-	+	Total
Pretest	Frequency	51	288	339
	% of match	15.0%	85.0%	100.0%
	% of close support players	100.0%	52.7%	56.8%
Posttest	Frequency	0	258	258
	% of match	.0%	100.0%	100.0%
	% of close support players	.0%	47.3%	43.2%
Total	Frequency	51	546	597
	% of match	8.5%	91.5%	100.0%
	% of close support players	100.0%	100.0%	100.0%

Continuity correction for chi-square. Significance:  $p = 0.000$ . Calculated only for one 2x2 table. Risk estimate of 0.852..

Table 1. Effect of the intervention program on the supporting movements close to the player with the ball.

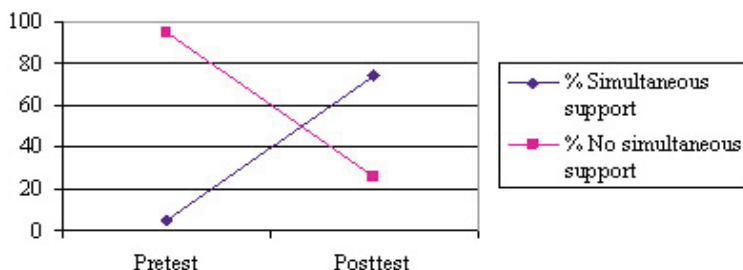


Figure 1. Effect of the intervention program on the support on both sides of the player with the ball.

highly significant, as it changed from 85% in the pretest to 100% in the posttest.

Figure 1 shows that the difference in supporting movements on both sides of the player with the ball between the pre-test and the post-test were highly significant. This indicates that between the pretest and the posttest the number of times that there were two simultaneous team actions in support of the player with the ball increased, which favoured the pass (from 5% to 73.6% of occasions).

## Conclusions

The aim of this study was to evaluate whether after a training program there was an improvement in players' decision making in the action of passing the ball to a teammate. Research studies based on a reflective

approach focused on the constructivist model (Harvey, Bryan, Weigs, González, & Van der Mars, 2006; Iglesias, Sanz, García, Cervelló & Del Villar, 2005; Tallir et al., 2007) have demonstrated similar results to those found in the present study, with significant differences between these models and the more traditional ones. In contrast, other studies that have not focused so much on the logic of the game and that have not used a constructivist methodology (Chirosa, Ponce, & Chiroso, 2003; García & Ruiz, 2003; Wright, McNeill, Fry & Wang, 2005) found no improvement in decision making by the experimental subjects. These results reinforce the initial hypothesis which was that an intervention based on understanding the logic of the game through a constructivist approach improves the player's ability to make decisions related to the capacity to facilitate the pass to a teammate.

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