

Incidence of type of game mode in player participation in minibasket

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INCIDENCE OF TYPE OF GAME MODE IN PLAYER'S PARTICIPATION IN MINIBASKET

KEY WORDS: Basketball, Training, Competition, Game mode.

ABSTRACT: Young basketball players have unique development features that make it necessary to adapt the competition techniques to them. Minibasket competition must provide a high level of participation, many 1-on-1 situations and opportunities to shoot and score. The aim of this research was to compare, in Benjamin minibasket players (aged between 8 and 10 years old) in Extremadura, the competition game mode 4-on-4 with the 3-on-3 game mode and to compare how player's participation is in each game mode. The design of this research is classified as an empirical study with quantitative methodology, with an independent variable and random groups. Results showed that in 3-on-3 game mode, a significantly higher number of possessions and 1-on-1 situations were produced as well as more efficient at the end of possessions than in the 4-on-4 game mode ($p < .05$). Furthermore, weighted average (weighted by the number of players who play for each team) of players' contacts with the ball and players involved in each possession suggested a greater participation in the 3-on-3 game mode. According to these results, it was concluded that the 3-on-3 game mode is more formative and adapted to the features of minibasket players in Benjamin category.

In Spain, the first category in basketball competition is Benjamin category that is played by players with 8 to 10 years old. These players have unique cognitive, motor and social development features. Competition in initiation stage must be adapted to the player's psycho-evolutionary features, it must provide them learning and it must be motivating (Giménez and Sáenz-López, 2003). In order to reach those objectives, it is necessary to change its rules to, this way, *allow learning of sport motor behaviours under real conditions* (Arias, Argudo and Alonso, 2011) and coaches and experts in basketball support the need for these changes in training categories. These adaptations expect to get a higher active participation in players, by getting the ball possession as much as possible (Piñar, 2005). Competition must promote this kind of learning in players (Arias et al., 2011; Piñar, Cárdenas, Alarcón, Escobar and Torre, 2009). 1-on-1 situations develop individual capacity and complete training of players, facilitating making decisions, because 1-on-1 is the most basic real play situation where it is necessary to respond to less stimulus (Arias, 2012; Méndez, 1999; Piñar, 2005)

There is a predominance of training situations reduced in youth basketball practices (Cañadas, Ibáñez, García, Parejo and Feu, 2013). Reduced game mode facilitates more active participation than the 5-on-5 game mode in basketball players in training categories (Klusemann, Pyne, Foster and Drinkwater, 2012; McCormick, et al., 2012; Tallir, Philippaerts, Valcke, Musch and Lenoir, 2012). It is necessary to investigate if these kind of game modes promote more 1-on-1 situations, increasing the attacker's efficiency.

Minibasket was created to adapt the competition to young players but its changes are inadequate for players in this evolutionary stage (Giménez and Sáenz-López, 2003; Piñar and Cárdenas, 2010), and the less modified structural element is the number of players who are playing in the court, in the game mode. Arias et al. (2011) propose a change the minibasket rules in Benjamin category for using the 3-on-3 game mode.

Considering all these reasons and because of the shortage of studies based on the 3-on-3 and 4-on-4 game mode in Benjamin category, the aim of this research is to compare both game modes in order to investigate how the number of players can have an influence in minibasket game. The initial hypothesis was that the 3-on-3 game mode allows a higher number of possessions, a higher number of contacts with the ball per possession, a higher number of passes per possession, a higher number of 1-on-1 situations per possession and also a greater efficacy at the end of possessions than the 4-on-4 game mode.

Method

The design of this research corresponds to an empirical study with quantitative methodology with an independent variable and random groups (Montero and León). 29 players were analyzed, all of them members of a regional basketball team, they are 9.56 ± 0.44 years old and they have 1.52 ± 0.51 years as federated players. Study participants and their legal representatives signed an informed consent that had information about the research's aim and process and they accepted to participate and to be

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recorded through this consent. 10 games were analyzed, which had the duration of two 8 minute periods. One of these periods was played in the 3-on-3 game mode and the other in the 4-on-4 game mode. 5 games began with one kind of game mode and 5 games with the other. 8 random selected players participated in each game, in the 3-on-3 game mode periods, there were substitutions so all players participated in these periods. Furthermore, all games were played under stipulated rules in an official minibasket court, with a width of 22.5 meters and a length of 12.1 meters in dimension. 413 data were recorded in the 3-on-3 game mode and 421 data in the 4-on-4 game mode ($n = 413$ and $n = 421$).

The game mode used was recorded as an independent variable. The dependent variables were the number of possessions, the contacts with the ball produced by offensive players in each possession, the number of offensive players who got the ball per possession, the passes successful per possession, the 1-on-1 situations per possession and how each possession ended. The last dependent variable had different categories that were regrouped in another variable denominated possession efficacy. In this way, all possessions that ended in shot or rule violation by the defensive team were considered effective and all possessions that ended in turnover or rule violation by the offensive team were considered not effective. The games were filmed and analyzed afterwards.

First, a descriptive analysis was performed, which was used to analyze how dependent variables behaved as a function of the independent variable. The average and standard deviation were calculated for quantitative variables (No. of possessions, No. of contacts with the ball, No. of offensive players who got the ball, No. of successful passes and No. of 1-on-1 situations). For qualitative variables (ending of possession and efficacy of possession), the frequency and percentage were calculated in each category. Later, an inferential analysis was performed for parameter estimation and to test the null hypothesis (Cubo and Luengo, 2011). To identify differences between both game modes studied, the *Wilcoxon Signed Rank* was performed. The analysis was performed with the statistical application SPSS 19.0 (SPSS Inc., Chicago, IL, USA).

Results

In Table 1, descriptive results and differences between groups in variables studied can be observed. On the one hand, in the 3-

on-3 game mode, a higher number of possessions and 1-on-1 situations were produced. Moreover, the efficacy of possessions was greater. On the other hand, in the 4-on-4 game mode, more successful passes per possession were completed and there were more players who participated in each possession.

Discussion

Results show that the ending of possessions is significantly different in both game modes. It could be inferred that the 3-on-3 game mode allows the offensive possessions to be more effective than in 4-on-4. Having this result in mind, the 3-on-3 game mode allows a higher number of effective possessions and, therefore, it makes possible for minibasket players to get a satisfactory experience and to feel a higher competence feeling (Piñar et al., 2007; Piñar et al., 2009). This shooting increase may be possible, as Delextrat and Martínez (2014) noted, due to the fact that the reduced game mode improves the shooting skill of players.

On the other hand, 1-on-1 situations are basic game situations in the first training phase and their use is essential for the basketball player's development (Arias, 2012; Méndez, 1999). In this study, it was found that in the 3-on-3 game mode, there was a higher average of 1-on-1 situations in each possession.

The number of possessions was higher in the reduced game mode. It is logical to assume that a higher number of ball possessions will allow more opportunities to participate in the game. This confirms the initial hypothesis that the 3-on-3 game mode would increase player participation. However, this result alone is not valid to affirm that participation in the 3-on-3 game mode is higher and it is necessary to analyze the other variables.

Contrary to the initial hypothesis, the average of passes produced per possession produced was higher in 4-on-4. This result may be due to the higher number of fast breaks (Piñar et al., 2009) and higher 1-on-1 situations, as it has already been explained, than the 3-on-3 game mode allows. This fact may cause fewer passes for ending possessions in this game mode.

Regarding the latter variables, no statistically significant differences were found in the No. of contacts average while the No. of players average was higher in 4-on-4. However, in order to interpret the results obtained, it is necessary to assess the number of players who are in court in both game modes. For this reason, we weighted the average of both variables according to the numbers of players who are playing in match. This way, the

Variables	3-on-3 ($n = 413$)		4-on-4 ($n = 421$)		Wilcoxon Signed Rank <i>p</i>
	<i>X</i>	<i>SD</i>	<i>X</i>	<i>SD</i>	
No. Possessions	43.90	25.771	41.28	23.473	.000
No. Contacts	1.45	.731	1.53	.874	.250
No. Passes	.45	.731	.51	.847	.000
No. 1-on-1	.52	.667	.45	.644	.000
No. Players	1.38	.629	1.44	.723	.001
Efficacy of Possession	<i>n</i>	%	<i>n</i>	%	
Effective	274	66.3	255	60.6	.000
Not Effective	139	33.7	166	39.4	

Table 1. Descriptive results and Wilcoxon Signed Rank and results

weighted average in the No. contacts is 0.48 and 0.38 and in the No. players it is 0.46 and 0.36 for the 3-on-3 game mode and the 4-on-4 game mode, respectively. These weighted averages suggest that player participation with the ball is higher in the reduced game mode and they are in line with the results found by McCormick et al. (2012) and Piñar (2005), whose researches showed higher contacts with the ball and number of participations per offensive play by players, respectively. Higher Contact with the ball by players will increase player participation, allowing higher technical demands used by players (Klusemann et al., 2012), more opportunities for developing skills (McCormick et al., 2012), for *acquiring educative experiences* (Piñar et al., 2009) and for getting more *learning opportunities* (Tallir et al., 2012). In addition, the 3-on-3 game mode contributes to ensure, in this way, more satisfaction in game participants (Piñar et al., 2007) and more auto-efficacy values perceived (Ortega et al., 2009).

Conclusion

The 3-on-3 reduced game mode, given that it allows a higher number of possessions, more 1-on-1 situations, higher efficacy of possessions as well as a higher active participation of the players in court, it can be considered to be more formative and more appropriate than the 4-on-4 game mode. Findings showed by this investigation should be taken into account by basketball federations, when they establish the rules in the Benjamin category; and also in training, basketball coaches can give more importance to the 3-on-3 game mode in their training planning, because this game mode is more formative and also allows the simultaneous practice of 12 players if the coach organizes two training games played in this game mode, this way increasing the useful practice time in trainings.

INCIDENCIA DEL TIPO DE MODALIDAD DE JUEGO EN LA PARTICIPACIÓN DEL JUGADOR EN MINIBASKET

PALABRAS CLAVE: Baloncesto, Formación, Competición, Modalidad de juego.

RESUMEN: Los jugadores jóvenes de baloncesto tienen unas características evolutivas propias que hacen necesario que la competición sea debidamente modificada para ajustarse a las mismas. La competición en minibasket debe proporcionar un alto nivel de participación además de un número elevado de situaciones de 1 contra 1 y de oportunidades de lanzar a canasta y anotar. El propósito del presente estudio fue comparar, en jugadores de minibasket de categoría benjamín (8-10 años), la modalidad de juego de competición de 4 contra 4, con una modalidad de juego más reducida, el 3 contra 3, para estudiar la incidencia que el número de jugadores tiene sobre la participación de estos en el juego. El diseño de esta investigación se clasifica como un estudio empírico con metodología cuantitativa, con una variable independiente y grupos aleatorios. Los resultados mostraron que en la modalidad de 3 contra 3 se produjeron un mayor número de posesiones de los equipos y de situaciones de 1 contra 1 así como una mayor eficacia en la finalización de las posesiones de forma significativa ($p < .05$) respecto a la modalidad de 4 contra 4. Además, las medias ponderadas del número de contactos por posesión y del número de jugadores que entran en contacto con el balón por cada posesión sugieren que hay una mayor participación de los jugadores en la modalidad de 3 contra 3. Sobre la base a estos resultados se concluye que la modalidad de 3 contra 3 es más formativa y adaptada a las características de los jugadores de minibasket en categoría benjamín.

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