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## **Influencia de la ubicación de las miniporterías y los comodines en la enseñanza del fútbol**

### **Influence of the location of mini-goalposts and floaters players on football teaching**

### **Influência da localização das mini goals e dos jokers no ensino do futebol**

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#### **RESUMEN**

En este estudio se analizó la influencia de la ubicación de los jugadores comodines y de los mini-porterías en el comportamiento técnico-táctico de los jugadores en tareas de entrenamiento en fútbol base. Se analizó el comportamiento táctico de 12 jugadores ( $11.6 \pm .4$  años) pertenecientes a la categoría alevín [U12] de un equipo de LaLiga Santander en 4 tareas (5vs 5 + 2 jugadores comodines) con diferentes condicionantes: i) jugadores comodines y porterías en la zona central, ii) jugadores comodines en la zona central y porterías en la zona lateral, iii) jugadores comodines en la zona lateral y porterías en la zona central y iv) jugadores comodines y porterías en la zona lateral. El análisis de las coordenadas polares mostró diferentes tipos de comportamiento táctico ofensivo y defensivo en las diferentes tareas, destacando el mayor número de acciones en la zona central con jugadores comodines y porterías en la misma zona. Por otro lado, se destacó que cuando las porterías estaban situadas en zonas laterales, a nivel ofensivo el balón tendía a iniciarse en estas zonas, circulando por un mayor número de zonas del campo, a través de un mayor número de pases y teniendo mayor variedad y acierto en la finalización. Esto ayudaría a mejorar el diseño de tareas en relación al tipo de comportamiento deseado durante el entrenamiento.

**Palabras clave:** Entrenamiento; patrones de comportamiento; análisis de coordenadas polares, juegos espacio reducido, constreñimientos.

#### **ABSTRACT**

This study analysed the influence of the location of floaters players and mini-goalposts on the technical-tactical behaviour of players in training tasks in grassroots football. The tactical behaviour of 12 players ( $11.6 \pm .4$  years old) belonging to the *alevín* category [U12] of a La Liga Santander team was analysed in 4 tasks (5vs 5 + 2 floaters players) with different constraints: i) floaters players and goalposts in the central area, ii) floaters players in the central area and goalposts in the side zone, iii) floaters players in the side zone and goalposts in the central area and iv) floaters players and goalposts in the side zone. The polar coordinates analysis showed different types of offensive and defensive tactical behaviour in the different tasks, highlighting the greater number of actions in the

central area with floaters players and goalposts in the same area. On the other hand, it was highlighted that when the goalposts were located in lateral areas, on an offensive level the ball tended to be initiated in these areas, circulating through a greater number of areas of the field, through a greater number of passes and having greater variety and success in finishing. This would help to improve task design in relation to the type of behavior desired during training.

**Keywords:** Training; behaviour patterns; polar coordinates analysis, small sided-games, constrains.

## RESUMO

O presente estudo analisou a influência da localização dos jogadores flutuantes e das mini-balizas no comportamento técnico-tático dos jogadores em tarefas de treino no futebol de base. Analisou-se o comportamento tático de 12 jogadores ( $11.6 \pm .4$  anos) pertencentes ao escalão de alevín [Sub12] de uma equipa da La Liga Santander em 4 tarefas (5vs 5 + 2 jogadores flutuantes) com diferentes constrangimentos: i) jogadores flutuantes e balizas na zona central, ii) jogadores flutuantes na zona central e balizas na zona lateral, iii) jogadores flutuantes na zona lateral e balizas na zona central e iv) jogadores flutuantes e balizas na zona lateral.. A análise das coordenadas polares evidenciou diferentes tipos de comportamentos táticos ofensivos e defensivos nas diferentes tarefas, destacando-se o maior número de acções na zona central com jogadores flutuantes e balizas na mesma zona. Por outro lado, destacou-se que quando os postes de baliza se localizavam em zonas laterais, a nível ofensivo a bola tendia a ser iniciada nessas zonas, circulando por um maior número de zonas do campo, através de um maior número de passes e tendo maior variedade e sucesso na finalização. Isto ajudaria a melhorar a conceção das tarefas em relação ao tipo de comportamento desejado durante o treino.

**Palavras chave:** Treino; padrões de comportamento; análise de coordenadas polares, pequenos jogos espaço reduzido, constrangimentos.

## INTRODUCTION

New trends in football training and teaching focus the design of tasks on the concept of representativeness (Pinder et al., 2011; Chow et al., 2015; Cantos & Moreno, 2019), which tries to replicate contexts similar to the conditions of competition with the aim that the athlete acquires the optimisation of different structures (Pons, et al., 2020). This vision of task design will allow the player, during training, to improve his decision-making in situations of uncertainty, developing his intuitive ability (Conejero et al., 2023; Iglesias et al., 2007; Klatt et al., 2019; Roca et al., 2021). For this purpose, a common strategy in player training programmes is the use of Small Side Games (SSG) (Farhani et al., 2022; Pérez-Muñoz et al., 2024; Pulling et al., 2016), in which the coach can manipulate the conditions of the task, such as the dimensions of the playing spaces (Castellano et al., 2017; Coutinho et al., 2020) or the number of players involved in the action (Machado et al., 2019) in order to enhance offensive and defensive technical-tactical behaviours (Moreira et al., 2020) or by using different constraints in the game (Gonet et al., 2020) which allow introducing role changes or adding a greater competitive factor between players (Navarro-Adelantado, 2002), always depending on the age of the participants (Coutinho et al., 2018). The effect that different variables produce in training tasks can have an important influence on the training process (Ferreira-Ruiz et al., 2022) and therefore on the development and learning of the player.

On the other hand, the research approach regarding the analysis of actions in sport indicates an evolution from static to dynamic, the latter being relatively recent (Pfeiffer & Perl, 2006; Alamar, 2011), and differing from static in the fact that it focuses more on the events leading to the performance of an action rather than focusing on what happened (Prieto et al., 2015). This dynamic approach allows taking into account variables such as the opponent's strategic approach or aspects related to the rules or the scoreboard during the motor situation (Chow et al., 2015) or the variability in the resolution of game situations, an aspect very present in players involved in uncertainty sports (Corrêa et al., 2020). This need to search for dynamic performance indicators (Laporta et al., 2021) and the

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application of the dynamic approach has been applied in different sports such as handball (Flores-Rodríguez & Anguera, 2018; Flores-Rodríguez & Alvite-de-Pablo, 2022), basketball (Morillo-Baro et al., 2021; Pastrana-Brincones et al., 2021) and also in football, being generally applied in competitive matches and with elite players, such as the study by Díaz-Díaz et al. (2019) who analyse the behaviours among players as well as the competition variables in Spanish second division professional football matches, or the study by Castañer et al. (2016) on how the player Lionel Messi uses his motor skills and laterality in individual attacking actions which result in goals.

However, in the analysis of training, there are numerous investigations which approach the study of player behaviour from a more static focus taking into account real game situations (López-Fernández et al., 2020; Silva et al., 2022), and using constraints to modify behaviours through the different variables of the task such as the number of players and their relationship with individual tactical behaviour in small-sided games (Nunes et al., 2020), game formation on collective tactics (Baptista et al., 2020) or the effect of spaces on the tactical behaviour of players (Clemente et al., 2023; Gonçalves et al., 2017). This type of approach does not consider the understanding of how the processes leading a player to solve the situations posed in a training task are, nor does it address how the different constraints affect the player. For this reason, the main objective of this study was to analyse how the placement of floaters players and mini-goalposts influences the technical-tactical behaviour of players in training tasks in grassroots football.

### METHOD

#### *Research design*

In this study, a one-time/nomothetic/multidimensional (P/N/M, for its Spanish initials) observational design was used (Anguera et al., 2011): a) one-time, because the behaviours performed in each of the four types of training tasks were analysed jointly; of an intrasessional follow-up, because the behaviours performed in each task were recorded, from the beginning to the end, which allowed us to know the frequency and frequency of the same; b) nomothetic, because the behaviour of two teams was studied; b); and c) multidimensional, because several levels of response were studied, collected in the observation instrument.

#### *Participants*

Four training tasks of a football team competing in the male's category of alevín [U12] were analysed. The team studied is part of the lower levels of a club whose first team competes in the Santander League, the most important male football competition in Spain. Twelve players with an average age of 11.6 years ( $SD = .4$ ) and four years of experience in federated teams participated. According to the Belmont Report (VVAA, 1978a) and the Standards of Competence (VVAA, 1978b), as the videotapes that were analysed for this study are in the public domain, it is not necessary to obtain informed consent from the participants. The Belmont Report outlines basic ethical principles and guidelines concerning ethical issues in human research. According to the guidelines, images of public behaviour can be used for research without the informed consent of the athletes. This study does not require review by a research ethics committee or written informed consent for the following reasons: (a) it involves observation of people in public places (stadium); (b) the individuals or groups being observed do not have a reasonable expectation of privacy; (c) it does not involve any staged intervention by the researcher or direct interaction with the individuals; (d) it does not involve any direct interaction with the individuals or groups being observed; (e) it does not involve any direct interaction with the individuals or groups being observed; and (f) it does not involve any direct interaction with the individuals or groups being observed.

#### *Instruments*

##### 1. Observation instrument

An observation instrument (table 1) was built *ad hoc* in order to record the most relevant behaviours in relation to the subject matter of the study. A combination of field format and exhaustive and mutually exclusive category systems was chosen. This combination makes it possible to exploit the strengths of both instruments. On the one

hand, the category system offers theoretical consistency, while the field format provides flexibility when it comes to recording the specific behaviours under study in this research (Anguera & Hernández-Mendo, 2013).

**Table 1.** Observation instrument

Criterion	Categories
Goal area (ZPT, for its Spanish initials)	As shown in Table 2, the location of the goalposts was: in the centre aisle (PCT <sup>1</sup> )/ in the side aisles (PLT).
Floater players area (ZCO, for its Spanish initials)	As shown in Table 2, the floaters players were placed in the area: centre aisle (INT)/side aisles (EXT).
Initiation method (INI, for its Spanish initials)	The attack starts: after scoring a goal (GOAL)/ after a goal kick, throw-in or corner kick (FSB)/ after a ball recovery, for instance, when a defender cuts out a pass without the game being stopped (FRB).
Area where the action starts (ZCA, for its Spanish initials)	As shown in Table 2, the attack starts in the: centre aisle (PCN)/ left side aisle (PIZ)/ right side aisle (PDE).
Direction of initiation (DIP, for its Spanish initials)	The first player in possession of the ball: moves forward or passes the ball to a teammate closer to the opponent's goalpost (ADL)/ moves back or passes the ball to a teammate closer to his own goalpost (ATR)/ moves or passes the ball to a teammate who is at the same height, without moving forward or back (LAT).
Defensive position (PDJ, for its Spanish initials)	When the play starts, the defending team has: a majority of players in the centre lane (JCC)/ a majority of players in the side lanes (JCL)/ the players are evenly distributed in the three lanes (JIC).
Number of passes (NPA, for its Spanish initials)	During the attack the following are completed: between zero and two passes (P02)/ three and five passes (P35)/ six and eight passes (P68)/ nine or more passes (P9M).
Number of players involved (NJG, for its Spanish initials)	During the attack the following are completed: between zero and two passes (P02)/ three and five passes (P35)/ six and eight passes (P68)/ nine or more passes (P9M).
Development of the attack (DJU, for its Spanish initials)	From the start to the end of the attack the ball circulated through: only one of the aisles (J1Z)/ through two aisles (J2Z)/ through the three aisles dividing the field of play (J3Z).
Area of completion (ZFN, for its Spanish initials)	The attack ends in: the left side aisle (PLI)/ in the centre aisle (PCE)/ in the right side aisle (PLD).
Mode of Completion (MFN, for its Spanish initials)	The attack ends with: a shot at goal after running with the ball (TCN)/ a shot at a contact (T1C)/ a shot after controlling the ball (TCT)/ in a different way from the previous ones (OTR).
Result of Completion (RFN, for its Spanish initials)	The attack ends in: goal (GOAL)/ shot at goal which does not result in a goal (TPT)/ loss of possession or stoppage of play in the own half (PPO)/ loss of possession or stoppage of play in the opponent's half (PMC).

All attacks, from both teams, which occurred during the development of the tasks were used as observation units. Taking into account Castellano et al. (2016) criteria, it was established that an attack was initiated when one of the following conditions was met: a) a pass was made, or b) the player in possession of the ball touched the ball twice. On the other hand, an attack was considered to have ended when there was: a shot on goal, a loss of the ball or an

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interruption in the development of play. The recording was carried out continuously, in real time, and throughout the entire event, which made it possible to code different behaviors occurring simultaneously. In this way, a multievent data record was obtained.

The design of the observation instrument was developed in three phases. 1) An initial version was built by a UEFA PRO licensed coach with experience in coaching training teams and a graduate in Physical Activity and Sport Sciences with previous experience in observational studies. 2) Subsequently, the instrument was subjected to the precautionary test (Anguera, 2003), which consisted of recording three tasks, not included in the sample, with similar characteristics to those studied later. The precautionary test was used to add, modify and eliminate criteria and categories from the initial version of the instrument. The precautionary test was deemed to have been passed when no new behaviours were detected in any of the criteria. 3) The instrument was judged by five experts, university lecturers and UEFA PRO licensed coaches. The experts filled in a rating template in which they had to mark their agreement or disagreement with each criterion and category. In the end, all criteria and categories of the observation instrument were agreed with 80% or more, i.e. at least four of the five experts gave their approval. The final version of the observation instrument consisted of 12 criteria and 37 categories.

### 2. Recording instruments

The VEO camera in its version Veo Cam 2 - 2862F was used to record the tasks. The recording of the observation units was performed with NacSport software. This software allows data to be exported in a format compatible with the GSEQ 5.1 software (Bakeman & Quera, 2011), which was used to perform the sequential analysis. Once the sequential lag analysis was completed, the results were entered in XLS format into the HOISAN 1.2 software (Hernández-Mendo et al., 2012), which conducted the polar coordinate analysis. Finally, once the polar coordinate analysis was carried out, the significant associations were plotted using Snowflake 0.2.

### Procedure

The study was implemented over six sessions held at the team's regular training place and time. In the main part of each session, the tasks under study were developed (figure 1): i) task 1 was performed with the goalposts and floaters players located in the inner aisle; ii) task 2 was conducted with the goalposts located in the inner aisle and floaters players in the side aisles; iii) task 3 was run with the goalposts located in the side aisles and floaters players in the inner aisle; iv) and, finally, task 4 was developed with the goalposts and floaters players located in the side aisles.

Task one. Goalposts and floaters players in the centre aisle



Task two. Goalposts in the centre aisle and floaters players in the side aisles



Task three. Goalposts in the side aisles and floaters players in the centre aisle

Task four. Goalposts and floaters players in the side aisles



*Note. The yellow triangles delimit the field of play where the task took place; the blue triangles delimit the aisles; the red triangles represent the goalposts; the light blue circles are the floaters players; the white circles represent the players of team A and the orange circles represent the players of team B.*

Two matches were played per session, resulting in a total of 12 matches in the bulk of the research. Table 2 details the distribution of the tasks throughout the research. Each task lasted 10 minutes, with a two and a half minute break in between. The period of duration was 6 training sessions on mid-week days distributed over 2 weeks.

**Table 3.** Distribution of tasks throughout the research

	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
Task 1	X		X		X	
Task 2		X		X		X
Task 3		X	X			X
Task 4	X			X	X	

The four tasks were carried out in a space measuring 33.3 m. x 37.1 m. The side aisles, which were delimited with cones, were 33.3 m. long and 8.1 m. wide. The centre aisle, on the other hand, was 33.3 m long and 20.8 m wide. These dimensions were used by adjusting the dimensions of the side and central aisles of a football pitch to a small side game. The goalposts used were 1.8 m wide and 1.2 m high. The balls used were official balls of the Royal Andalusian Football Federation (RFAF) of size 4, as well as the bibs to distinguish the teams and the floaters players.

In terms of team organisation, the players were randomly divided into two teams of five players, team A and team B, which did not change throughout the study. Being an elite club team, the level of the players was homogeneous, therefore, no level criteria were taken into account to constitute the teams. In addition, two players always acted as floaters players. The tasks were conducted by the team coaches, both of whom are UEFA PRO licensed. During the tasks, the coaches did not give any tactical or strategic indications which could condition the actions performed by the players.

The recording and coding of the actions was conducted by two observers, both graduates in Physical Activity and Sport Sciences and football coaches. In order to optimise the reliability of the observations, the observers participated in a training process in which tasks not included in the sample were recorded. The training process concluded when intraobserver and interobserver agreement levels were obtained above 0.80 in Cohen's Kappa statistic for all criteria in the same session. For the intra-observer calculation, the observer recorded the same task at two different times (after 26 days). For the inter-observer agreement calculation, the same session was recorded by both observers. Once the training phase was over, a recording and coding of the behaviours performed in each of

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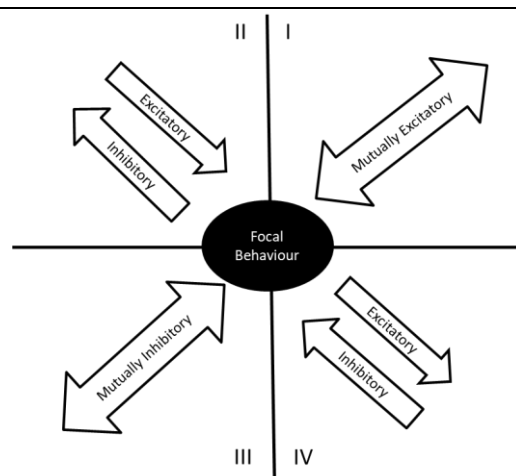
the tasks in the study sample was carried out. The levels of intraobserver and interobserver agreement were calculated, obtaining in both cases a Cohen's Kappa index above 0.95 in all criteria. According to Landis & Koch (1977), the level of agreement shown in both tests can be considered almost perfect.

Polar coordinate analysis is a methodology that has been previously endorsed by several research studies in the field of football and other sports disciplines (Hernández-Mendo & Anguera, 1999; Castellano & Hernández-Mendo, 2003; Reigal et al., 2024). This technique, originally introduced by Sackett (1980), is based on a data reduction that uses vectors to represent the relationships between different observed categories, relying on the Zsum statistic developed by Cochran (1954). Subsequently, Anguera (1997) adapted this procedure by incorporating authentic retrospection, which made it possible to integrate both prospective and retrospective approaches. Through this analysis it is possible to detect activation or inhibition relationships between a central behaviour and other associated behaviours, making use of lag matrices (Egaña & Argilaga, 2000; Hernández-Mendo & Anguera, 1999; Castellano & Hernández-Mendo, 2003).

As a prerequisite for its calculation, it is necessary to undertake the sequential analysis of prospective and retrospective lags (Sackett, 1980). For this purpose, the same number of lags is considered in both perspectives, from 1 to 5 for the prospective one and from -1 to -5 for the retrospective one. The prospective perspective reports the conditioned behaviours which are activated or inhibited once the focal behaviour is performed. The retrospective perspective reports the conditioned behaviours which activated or inhibited the occurrence of the focal behaviour (Anguera et al., 2011).

Once the prospective and retrospective sequential analyses have been performed, the polar coordinate analysis integrates the two by applying the Zsum statistic (Sackett, 1980), a powerful data reduction technique. Each prospective and retrospective Zsum can have a positive or negative sign. Thus, the combination of the signs will determine in which of the four possible quadrants (I, II, III, IV) the significant associations obtained between the focal behaviour and the conditioned ones will be located. Quadrant I indicates a relationship of mutual activation between the focal behaviour and the conditioned behaviour; quadrant IV indicates that the focal behaviour activates the performance of the conditioned behaviour, while it is inhibited by it; quadrant III indicates a relationship of mutual inhibition between both behaviours; and finally, quadrant II indicates that the focal behaviour inhibits the performance of the conditioned behaviour, while the conditioned behaviour activates the occurrence of the focal behaviour (Anguera et al., 2011).

**Figure 1.** Graphical representation of the associations in the polar coordinate analysis



## RESULT

After applying the polar coordinate technique, the significant associations, those with a radius greater than 1.96 ( $p < 0.05$ ), found in quadrant I, are displayed below. The location in quadrant I indicates a mutual activation relationship between the focal behaviour and the conditioned behaviours. The categories reporting the placement of the goalposts and the location of the floater's players acted as focal behaviours. Thus, it was possible to determine the influence exerted by the four types of task applied: in task 1 the goalposts and floaters players were located in the centre aisle; in task 2 the goalposts were located in the centre aisle and the floaters players in the side aisles; in task 3 the goalposts were located in the side aisles and the floaters players in the centre aisle; and finally, in task 4 the goalposts and the floaters players were located in the side aisles. In order to facilitate the understanding of the results, they are presented in four subsections, one for each task performed. Each subsection contains a figure showing the results of team A (left column) and team B (right column).

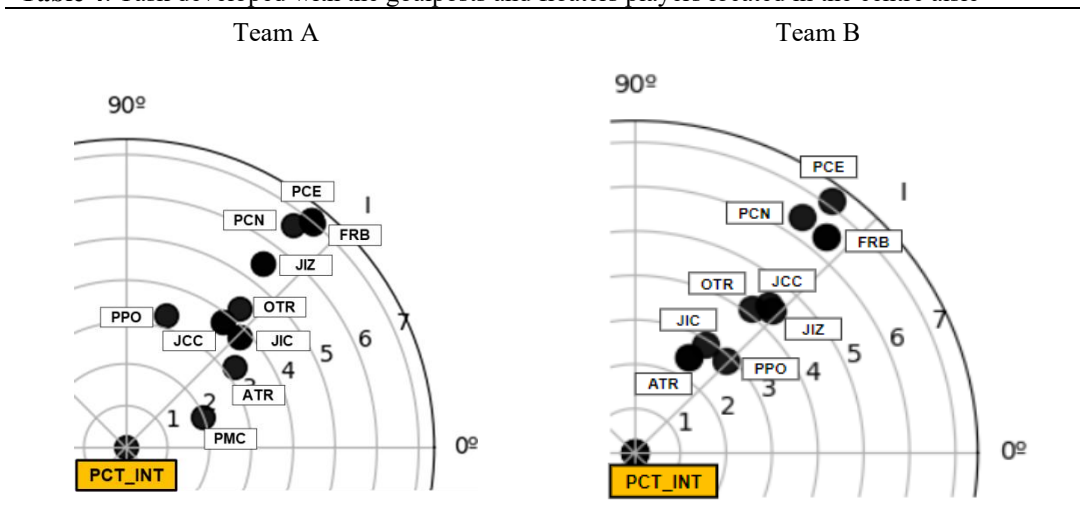
### Task 1. Goalposts and floaters players located in the centre aisle.

In order to identify the behaviours which were activated during task 1, the focal behavioural role was assumed by the combination of the categories PCT and INT (PCT\_INT), goalposts and floaters players located in the centre aisle.

In team A, in the categories related to the start of attacks, the conditioned behaviors that were placed in quadrant I were: initiation after a steal (FRB); initiation in the centre aisle (PCN); the first player who has possession of the ball moves back or passes the ball to a teammate who is closer to the own goalpost (ATR). Regarding the development and completion of attacks, the conditioned behaviors that were categorized in quadrant I included: completion with a loss of possession or interruption in play, either in one's own half (PPO) or in the opponent's half (PMC); attacks not ending with a shot at goal (OTR); completion of the attack in the centre aisle (PCE); the play has been performed, from its start to its completion, in one area of the field (JIZ). Regarding the location of the players of the defending team, the presence of the goalposts and the floaters players in the centre aisle triggered the occurrence of attacks where most of the defenders were in the centre (JCC) and also the presence of attacks where the defenders were evenly distributed in the three aisles (JIC).

In terms of the behaviours activated in team B, although with different radius and angle, practically the same behaviours were positioned in quadrant I, with the exception of PMC (attacks ending in a loss of the ball in the opponent's half).

**Table 4.** Task developed with the goalposts and floaters players located in the centre aisle



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Category	Quadrant	Radius	Angle	Category	Quadrant	Radius	Angle
FRB	I	7.00	50.21	FRB	I	6.42	49.59
PCN	I	6.65	53.11	PCN	I	6.43	55.56
ATR	I	3.23	36.94	ATR	I	2.47	61.65
JCC	I	3.80	52.64	JCC	I	4.42	48.78
JIC	I	3.79	44.21	JIC	I	2.89	58.26
J1Z	I	5.49	53.52	J1Z	I	4.38	47.15
PCE	I	7.02	50.76	PCE	I	7.13	52.80
OTR	I	4.28	50.85	OTR	I	4.12	51.85
PMC	I	1.98	22.22	PPO	I	2.89	46.26
PPO	I	3.29	73.21				

Task 2. Goalposts in the centre aisle and floaters players in the side aisles.

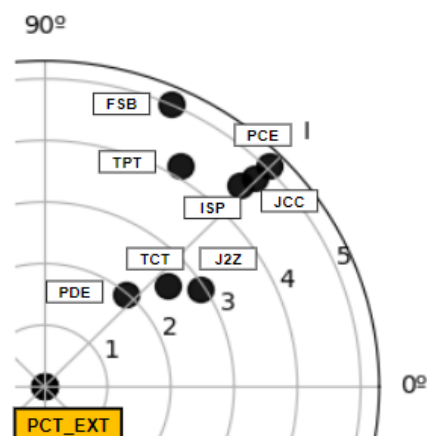
Task 2 was developed with the goalposts located in the centre aisle and with the floater's players in the side aisles, therefore, the combination of the categories PCT and EXT (PCT\_EXT) acted as focal behaviour.

In team A, regarding the categories reporting the initiation of attacks, the conditioned behaviors observed in quadrant I were: initiation after throw-in or interruption in play (FSB) and initiation of attacks in the right-side aisle (PDE). Concerning the development of attacks, attacks where the ball was in two areas (J2Z) were activated. In reference to the completion of the attacks, a relationship of activation was observed with attacks ending with: shot at goal which does not end in a goal (TPT), shot at goal after a control (TCT) and with attacks ending in a stoppage of play, without there being a change in possession of the ball (ISP). Regarding the location of the players of the defending team, the occurrence of attacks where most of the defenders were located in the centre aisle (JCC) was activated.

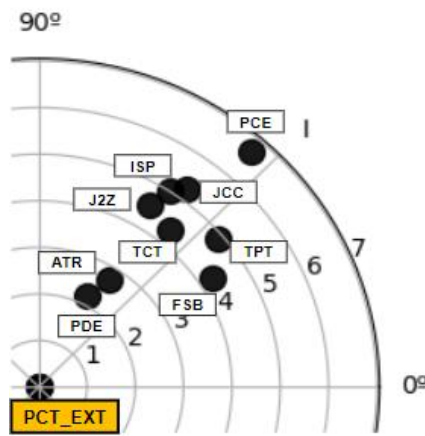
The behaviours activated in team B coincide with those of team A, with only one difference: in team B attacks were activated where the first player in possession of the ball moves back or passes the ball to a teammate who is closer to his own goalpost (ATR).

**Table 5.** Task developed with the goalposts in the centre aisle and floaters players in the side aisles

Team A



Team B



Category	Quadrant	Radius	Angle	Category	Quadrant	Radius	Angle
FSB	I	5.02	66.46	FSB	I	4.29	33.13
PDE	I	1.98	49.18	PDE	I	2.19	62.62
JCC	I	4.76	45.56	ATR	I	2.73	57.38
J2Z	I	2.93	32.83	JCC	I	5.23	54.41
PCE	I	5.04	45.43	J2Z	I	4.52	59.70
TCT	I	2.55	40.19	PCE	I	6.72	49.02
ISP	I	4.51	46.47	TCT	I	4.34	51.45
TPT	I	4.20	59.07	ISP	I	5.02	57.19
				TPT	I	4.89	40.80

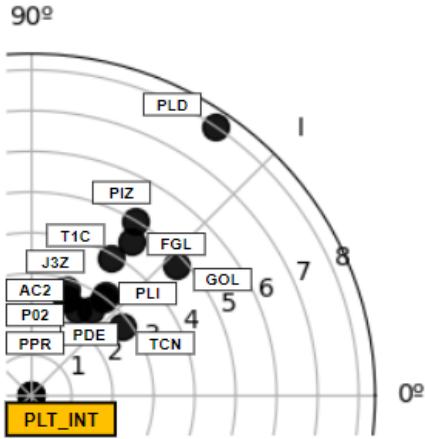
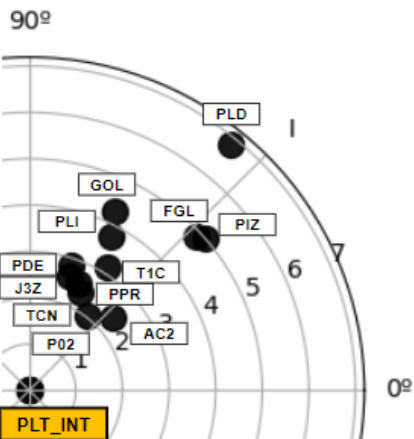
Task 3. Goalposts located in the side aisles and floaters players in the centre aisle.

Task 3 was developed with the goalposts located in the side aisles (PLT) and with the floaters players in the centre aisle (INT), therefore, the focal behaviour was the combination of the PLT and INT categories (PLT\_INT).

The associations found in quadrant I for both teams were identical, differing only in radius and angle. In relation to the start of the attacks, the initiation after scoring a goal (FGL) and the initiation from the side aisles, left (PIZ) and right (PDE), were activated. Regarding the development of attacks, the conditioned behaviors classified in quadrant I were: between 0 and 2 passes were completed (P02); two players intervene (AC2); the ball circulates through the three attacking areas (J3Z). Finally, in terms of the completion of the attacks, the completions in the lateral aisles, both on the left (PLI) and on the right (PLD), were activated. In addition, a relationship of activation was detected with attacks ending with a shot at goal, after running with the ball (TCN) and a shot at first contact (T1C). As for the result, the endings resulting in a goal (GOAL) were activated.

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**Table 6.** Task developed with the goalposts located in the side aisles and floaters players in the centre aisle

Team A				Team B			
							
Category	Quadrant	Radius	Angle	Category	Quadrant	Radius	Angle
FGL	I	4.54	56.95	FGL	I	4.88	42.93
PIZ	I	4.99	59.43	PIZ	I	5.02	41.01
PDE	I	2.56	55.27	PDE	I	2.60	70.97
P02	I	2.41	61.83	P02	I	2.05	52.67
AC2	I	2.55	70.17	AC2	I	2.40	41.14
J3Z	I	2.98	53.02	J3Z	I	2.55	65.40
PLI	I	3.09	53.55	PLI	I	3.75	62.43
PLD	I	8.00	55.90	PLD	I	6.85	51.03
TCN	I	2.80	37.19	TCN	I	2.38	63.17
T1C	I	3.89	60.21	T1C	I	3.13	57.99
PPR	I	2.77	71.59	PPR	I	2.83	71.67
GOL	I	4.80	42.17	GOL	I	4.30	64.67

Task 4. Goalposts and floaters players located in the side aisles.

Task 4 was developed with the goalposts (PLT) and the floaters players located in the side aisles (EXT), so that the focal behaviour was the combination of the categories PLT and EXT (PLT\_EXT).

Regarding the initiation of attacks, these were activated in both teams in the left side aisle (PIZ). It was also found that the direction at the start of the action was forwards (ADL). Regarding the development of the attack, in both teams activation was found with attacks where nine or more passes were completed (P9M). However, only in team B activation was found with attacks in which between six and eight passes were completed (P68). Furthermore, in both teams it was found that the ball circulated in all three areas of the attack (J3Z). Regarding the completion of the attacks, the completion on the right lateral aisle (PLD) was activated. Attacks ending with a loss of the ball or interruption in the opponent's half were also activated (PMC). Finally, regarding the positioning of the defenders, the JCL category was activated, with the majority of defenders being in the central lane.

**Table 7.** Task developed with the goalposts and floaters players located in the side aisles

Team A				Team B			
Category	Quadrant	Radius	Angle	Category	Quadrant	Radius	Angle
PIZ	I	3.93	60.64	PIZ	I	4.13	41.83
ADL	I	4.64	42.11	ADL	I	5.14	47.44
JCL	I	9.48	47.23	JCL	I	10.24	51.53
P9M	I	3.41	64.69	P68	I	3.04	63.26
J3Z	I	4.49	52.43	P9M	I	4.13	46.56
PLD	I	4.63	52.43	J3Z	I	4.56	50.63
PMC	I	2.60	65.53	PLD	I	3.57	47.97
				PMC	I	2.82	52.10

## DISCUSSION

The aim of this study was to analyse the influence of the location of floaters players and mini-goalposts on the technical-tactical behaviour of players in training tasks in grassroots football. As indicated by Orth et al. (2017), the manipulation of the different elements of a task can facilitate behaviours to the detriment of others. The results showed, firstly, regarding the use of floaters players and central goalposts, the players showed a greater number of behaviours in the centre aisle, highlighting three behaviours: i) initiation of the play in the centre aisle, ii) development of the play through an area and iii) completion of the attack in the centre aisle without finishing the plays. In addition, this type of attack encouraged a defence which was focused in the centre aisle and balanced in all 3 aisles. This type of results could have an interesting transfer to the reality of the game, since in football the goalpost is located in the central area of the field, an aspect which coincides with the study by Moniz et al. (2020) who point out that the players increased the number of defensive tactical actions with the aim of defending the goalpost, when these were located in the centre aisle. The dominance of this central area has a great impact on the game, facilitating high levels of efficiency in the objectives of the game at a defensive and offensive level (Castelo, 1999), therefore, the use of floaters players on the inside and of goalposts in the centre aisle can help coaches to design tasks which lead the player to acquire skills to dominate these areas of the field, both offensively and defensively.

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Comparing this first task with the one that used floaters players in the side aisle, but with goalposts in the centre aisle, the latter highlighted the start of the play in the side aisle, the attacks where the ball circulated in two areas and the shots at goals which did not end in a goal. According to the research by Clemente et al. (2014) in small-sided games that use goalposts in the centre lane, the plays tend to be carried out in the centre lane, a fact which contrasts with the results of this research. Furthermore, this type of constraint encouraged a defence focused on the centre aisle. The use of goalposts in central areas of the game space would help coaches to design tasks to encourage ball circulation in central areas of the field. Regarding goal success and finishing, the presence or not of goalkeepers (Mallo & Navarro, 2008) and the size of the goalposts condition the possibilities and form of finishing, with smaller goalposts tending to lead to fewer and less successful finishes (Clemente et al., 2014; Ometto et al., 2018). As a consequence of this, the coach could design tasks where tactical principles other than finishing, such as progression or ball possession, can be enhanced.

Secondly, when the task constraints placed the goalposts in the side aisles and floaters players in the centre aisle, the following behaviours were encouraged i) the initiations of the game were in the side aisles, ii) the ball circulates through three areas with two players intervening, iii) completions in side aisles, greater variety in the types of finishes (after running with the ball and after the first touch) and with greater success. The latter coincides with the study by Travassos et al. (2014) where the success and number of finishes increased when the goalposts were placed in the side aisles. This fact may be due to the division of attention by the defending players, leading to the defending team having to position themselves to defend in wider spaces (Castellano et al., 2016; Moniz et al., 2020). This fact can help coaches in the design of tasks to encourage defensive behaviours such as defensive tilting or defensive unity (Moniz et al., 2020).

However, when constraints of the task placed the goalposts and the floaters players in the side aisles, it resulted in i) initiations from a side aisle and forwards, with most of the defenders located in the centre aisle, ii) attack with a high number of passes (9 or more), iii) circulation through the 3 areas, iii) finishing in the side aisle and with a loss of the ball.

It has been observed in the comparisons made between the different tasks of this research that when the goalposts are in side aisles, there is a tendency to develop the play in two or more lanes. In the study by Ometto et al. (2018) on the manipulation of goalposts in Small Side Games in football, they had very similar results when they increased the number of goalposts and these were placed in the lateral areas of the playing surface, concluding that the ball spent more time in lateral lanes than in central lanes. Nevertheless, studies such as Figueiredo et al. (2016) indicated that increasing the number of goalposts (3 goalposts compared to 1) in small side games did not cause significant differences in the time the ball spent in the different aisles. This analysis can help the coach to use goalposts in the side aisles to enhance ball circulation behaviours in a greater number of areas of the field, on the contrary, the goalposts located in the central lane decreases the ball circulation in the different lanes of the field.

In all the training tasks designed, the results showed that individual actions were not activated due to the use of floaters players and therefore the numerical superiority of the team in possession of the ball, as corroborated by the research carried out in youth teams by Vilar et al. (2014) and Praça et al. (2017). This has an interesting transfer to training, as this type of constraint would make it easier for coaches to design tasks where collective behaviours emerge.

As Davids et al. (2013) point out, the situations triggered by the different task constraints (number and location of floaters players and goalposts) can help to improve tactical intelligence due to the need to adapt to new alternatives and ways of solving problems (Aguar et al., 2012). Therefore, and according to Serra-Olivares et al. (2016), the design of appropriate activities can improve the development of players' performance, considering that each task format has its own characteristics (Pinder et al., 2011) and therefore exerts a direct influence on the tactical behaviours to be experienced during training.

The results mentioned in this study should be considered with great care, as they were produced in a specific context and sample, as this research was conducted with players of a very specific age and level of play and, thirdly, due to the tactical culture of the participants. These variables are important to consider, bearing in mind that if the context were different, the results could also be different, which also means that this research has some limitations. It would be interesting for future research to be able to extrapolate the limitations of these tasks to other types of contexts, with players of different levels, ages or tactical culture.

## CONCLUSIONS

This research showed how the use of goals and floating players in the central area favoured offensive and defensive tactical actions in this area. On the other hand, when the goals were placed in lateral corridors, offensively the ball tended to start in these corridors, circulating through a greater number of areas of the pitch, through a greater number of passes and achieving a greater variety and greater success in finishing.

Finally, it was shown how the use of constraints in some of the elements of a training task can trigger tactical behaviours in players without the need for direct intervention of the coach on the player.

## REFERENCES

1. Aguiar, M., Botelho, G., Lago, C., Maças, V., & Sampaio, J. (2012). A review on the effects of soccer small-sided games. *Journal of human kinetics*, 33, 103–113. <https://doi.org/10.2478/v10078-012-0049-x>
2. Alamar, B. (2011). The Next Step. *J Quantitative Anal Sports*; 7(4): 1-4.
3. Prieto, J., Gómez, M.A., & Sampaio, J. (2015). From a static to a dynamic perspective in handball match analysis: A systematic review. *The Open Sport Science Journal*, 8(1), 25-34. <https://doi.org/10.2174/1875399x01508010025>
4. Anguera, M.T. (1997). From prospective patterns in behavior to joint analysis with a retrospective perspective. En Colloque sur invitation «Méthologie d'analyse des interactions sociales». Paris: Université de la Sorbonne.
5. Anguera, M.T. (2003). La observación. En C. Moreno Rosset (Ed.), *Evaluación psicológica. Concepto, proceso y aplicación en las áreas del desarrollo y de la inteligencia* (pp. 271-308). Sanz y Torres.
6. Anguera, M. T., Blanco-Villaseñor, A., Hernández-Mendo, A., Losada, J. L. (2011). Diseños observacionales: Ajuste y aplicación en psicología del deporte. *Cuadernos de Psicología del deporte*, 11(2), 63-76.
7. Anguera, M. T., y Hernández-Mendo, A. (2013). La metodología observacional en el ámbito del deporte. *E-Balonmano.com: Revista de Ciencias del Deporte*, 9(3), 135-160.
8. Bakeman, R., y Quera, V. (2011). *Sequential analysis and observational methods for the behavioral sciences*. Cambridge University Press. <https://doi.org/10.1017/CBO9781139017343>
9. Baptista, J., Travassos, B., Gonçalves, B., Mourão, P., Viana, J. L., & Sampaio, J. (2020). Exploring the Effects of Playing Formations on Tactical Behavior and External Workload During Football Small-Sided Games. *Journal of strength and conditioning research*, 34(7), 2024–2030. <https://doi.org/10.1519/JSC.0000000000002445>
10. Cantos, J., & Moreno, F. J. (2019). Non-linear pedagogy as a method of teaching tactical behaviors in team sports, rugby application. *Retos*, 35, 402–406. <https://doi.org/10.47197/retos.v0i35.63508>

## Influence mini-goalposts and floaters players on football

11. Castañer, M., Barreira, D., Camerino, O., Anguera, M. T., Canton, A., & Hilen, R. (2016). Goal Scoring in Soccer: A Polar Coordinate Analysis of Motor Skills Used by Lionel Messi. *Frontiers in psychology*, 7, 806. <https://doi.org/10.3389/fpsyg.2016.00806>
12. Castelo, J. (1999). *Fútbol. Estructura y dinámica del juego*. Editorial INDE. Barcelona. España.
13. Castellano, J., & Hernández-Mendo, A. (2003). El análisis de coordenadas polares para la estimación de relaciones en la interacción motriz en fútbol. *Psicothema*, 15(4), 569-574.
14. Castellano, J., Silva, P., Usabiaga, O., & Barreira, D. (2016). The influence of scoring targets and outer-floaters on attacking and defending team dispersion, shape and creation of space during small-sided soccer games. *Journal of Human Kinetics*, 50(2), 153–163. <https://doi.org/10.1515/hukin-2015-0178>
15. Castellano, J., Fernández, E., Echeazarra, I., Barreira, D., & Garganta, J. (2017). Influencia de la longitud del campo en los comportamientos inter e intra - equipo en jóvenes jugadores de fútbol. *Annals of Psychology*, 33(3), 486– 496. <https://doi.org/10.6018/analesps.33.3.271051>
16. Chow, J. Y., Davids, K., Button, C., & Renshaw, I. (2015). *Nonlinear pedagogy in skill acquisition* Routledge. London. <https://doi.org/10.4324/9781315813042>.
17. Clemente, F. M., Wong, D.P., Martins, F. M., y Mendes, R.S. (2014). Acute effects of the number of players and scoring method on physiological, physical, and technical performance in small-sided soccer games. *Research in Sports Medicine*, 22(4), 380–397. <https://doi.org/10.1080/15438627.2014.951761>
18. Clemente, F. M., Praça, G. M., Aquino, R., Castillo, D., Raya-González, J., Rico-González, M., Afonso, J., Sarmiento, H., Silva, A. F., Silva, R., & Ramirez-Campillo, R. (2023). Effects of pitch size on soccer players' physiological, physical, technical, and tactical responses during small-sided games: a meta-analytical comparison. *Biology of sport*, 40(1), 111–147. <https://doi.org/10.5114/biolsport.2023.110748>
19. Cochran, W. G. (1954). Some methods for strengthening the common test. *Biometrics*, 10, 417-451. <https://doi.org/10.2307/3001616>.
20. Conejero, M., Serenini, A.L, Claver, F. y Moreno, M.P. (2023). ¿Qué variables predicen el conocimiento táctico de jugadores de voleibol? *Revista de Psicología Aplicada al Deporte y al Ejercicio Físico*, 8(1). <https://doi.org/10.5093/rpadef2023a5>
21. Corrêa, U. C., Bastos, F. H., Silva, S. L., Clavijo, F. A. R., & Torriani-Pasin, C. (2020). Higher variability in dyadic interaction plays a positive role in the decision making of futsal passing. *Kinesiology*, 52(2), 290–298. <https://doi.org/10.26582/k.52.2.17>
22. Laporta, L., Medeiros, A. I. A., Vargas, N., Castro, H. O., Bessa, C., João, P. V., Costa, G. C. T., & Afonso, J. (2021). Coexistence of Distinct Performance Models in High-Level Women's Volleyball. *Journal of human kinetics*, 78, 161–173. <https://doi.org/10.2478/hukin-2021-0048>
23. Coutinho, D., Santos, S., Gonçalves, B., Travassos, B., Wong, D. P., Schöllhorn, W. I., & Sampaio, J. (2018). The effects of an enrichment training program for youth football attackers. *PLOS ONE*, 13(6), 1-18. <https://doi.org/10.1371/journal.pone.0199008>
24. Coutinho, D., Gonçalves, B., Travassos, B., Folgado, H., Figueira, B., & Sampaio, J. (2020). Different marks in the pitch constraint youth players' performances during football small-sided games. *Research Quarterly for Exercise and Sport*, 91(1), 15-23. <https://doi.org/10.1080/02701367.2019.1645938>
25. Díaz-Díaz, R, Ramos-Verde, EJ, García-Manso, JM, Valverde-Esteve, T, & Arriaza-Ardiles, E. (2019). The use of Polar Coordinates in the analysis of motor interaction in football according to the result. *Cuadernos de Psicología del Deporte*, 19(1), 60-75. <https://doi.org/10.6018/cpd.338871>
26. Egaña, G. G., & Argilaga, M. T. A. (2000). Modificación de la técnica clásica de coordenadas polares mediante un desarrollo distinto de la retrospectividad: aplicación al tenis. *Psicothema*, 279-282.

27. Farhani, Z., Hammami, R., Gene-Morales, J., Chortane, S. G., Bouassida, A., Juesas, A., & Colado, J. C. (2022). Bout duration and number of players of soccer small-sided games affect perceived enjoyment, physiological responses, and technical-tactical performance. *Science & medicine in football*, 6(4), 503–510. <https://doi.org/10.1080/24733938.2021.2009123>
28. Ferreira-Ruiz, Á., García-Banderas, F., & Martín-Tamayo, I. (2022). Systematic Review: Technical-Tactical Behaviour in Small-Sided Games in Men's Football. *Apunts Educación Física y Deportes*, 148, 42-61. [https://doi.org/10.5672/apunts.2014-0983.es.\(2022/2\).148.06](https://doi.org/10.5672/apunts.2014-0983.es.(2022/2).148.06)
29. Figueiredo, D. H., Figueiredo, D. H., Rodrigues, A. B., & Matta, M. de O. (2016). Analysis of targets settings changes in the tactical behavior in a smaller and conditioned field. *RBFF - Brazilian Journal of Futsal and Football*, 8(28), 77-82.
30. Flores Rodríguez, J., & Anguera, M. T. (2018). Game Pattern in Handball According to the Player who Occupies the Centre Back Position. *Apunts. Educación Física y Deportes*, 134, 110-123. [https://doi.org/10.5672/apunts.2014-0983.es.\(2018/4\).134.08](https://doi.org/10.5672/apunts.2014-0983.es.(2018/4).134.08)
31. Flores-Rodríguez, J. & Alvite-de-Pablo, J. R. (2022). Variability in performance indicators of the netherlands women's national handball team at the 2019 world championship. *Kinesiology* 54, 2, 238-248. <https://doi.org/10.26582/k.54.2.5>
32. Gonçalves, B., Esteves, P., Folgado, H., Ric, A., Torrents, C., & Sampaio, J. (2017). Effects of Pitch Area-Restrictions on Tactical Behavior, Physical, and Physiological Performances in Soccer Large-Sided Games. *Journal of strength and conditioning research*, 31(9), 2398–2408. <https://doi.org/10.1519/JSC.0000000000001700>
33. Gonet, D. T., Bezerra, L. O., dos Reis, M. A. M., & Vasconcellos, F. V.do A. (2020). Effect of small-sided games with manipulation of small targets on the perceived exertion and tactical and technical performance of college soccer players. *Revista Brasileira de Cineantropometria & Desempenho Humano*, 22 <https://doi.org/10.1590/1980-0037.2020v22e57958>
34. Hernández Mendo, A. y Anguera, M.T. (1999). Aportaciones de análisis de coordenadas polares a los deportes de equipo. En Félix Guillén García, *La Psicología del Deporte en España al final del Milenio* (pp. 169-175). Las Palmas de Gran Canaria: Servicio de Publicaciones y Producción Documental de la Universidad de Las Palmas de Gran Canaria.
35. Hernández-Mendo, A., López, J. A., Castellano, J., Morales, V., & Pastrana, J. L. (2012). HOISAN 1.2: Programa informático para uso en Metodología Observacional. *Cuadernos de Psicología del Deporte*. 12(1), 55-78. <https://doi.org/10.4321/S157884232012000100006>
36. Iglesias, D., Cárdenas, D. & Alarcón, F. (2007). La comunicación durante la intervención didáctica del entrenador. Consideraciones para el desarrollo del conocimiento táctico y la mejora en la toma de decisiones en baloncesto. *Ciencia, Cultura y Deporte*, 3 (7), 43-50. <https://doi.org/10.12800/ccd.v3i7.153>
37. Klatt, S., Noël, B., Musculus, L., Werner, K., Laborde, S., Lopes, M. C., Greco, P. J., Memmert, D., & Raab, M. (2019). Creative and Intuitive Decision-Making Processes: A Comparison of Brazilian and German Soccer Coaches and Players. *Research quarterly for exercise and sport*, 90(4), 651–665. <https://doi.org/10.1080/02701367.2019.1642994>
38. Landis, J. R., y Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33, 159–174. <https://doi.org/10.2307/2529310>
39. López-Fernández, J., Sánchez-Sánchez, J., García-Unanue, J., Hernando, E., & Gallardo, L. (2020). Physical and Physiological Responses of U-14, U-16, and U-18 Soccer Players on Different Small-Sided Games. *Sports*, 8(5), 66. <https://doi.org/10.3390/sports8050066>

## Influence mini-goalposts and floaters players on football

40. Machado J.C., Ribeiro J., Palheta C., Alcântara C., Barreira D., Guilherme J., Garganta J., & Scaglia A. (2019) Changing Rules and Configurations During Soccer Small-Sided and Conditioned Games. How Does It Impact Teams' Tactical Behavior? *Front. Psychol.* 10:1554. <https://doi.org/10.3389/fpsyg.2019.01554>
41. Mallo, J., & Navarro, E. (2008). Physical load imposed on soccer players during small-sided training games. *The Journal of sports medicine and physical fitness*, 48(2), 166–171.
42. Moniz, F., Scaglia, A., Sarmento, H., Garcia-Calvo, T., & Teoldo, I. (2020). Effect of an inside floater on soccer players tactical behaviour in small sided and conditioned games. *Journal of Human Kinetics*, 71, 167–177. <https://doi.org/10.2478/hukin-2019-0080>
43. Moreira, P. E. D., Barbosa, G. F., Murta, C. D. C. F., Pérez Morales, J. C., Bredt, S.T., Praça, G. M., & Greco, P. J. (2020). Network analysis and tactical behaviour in soccer small-sided and conditioned games: influence of absolute and relative playing areas on different age categories. *International Journal of Performance Analysis in Sport*, 20(1), 64–77. <https://doi.org/10.1080/24748668.2019.1705642>
44. Morillo-Baro, J. P., Troyano-Gallegos, B., Pastrana-Brincones, J. L., Vázquez-Diz, J. A., Reigal, R. E., Quiñones-Rodríguez, Y., Hernández-Mendo, A., Falcó, C., & Morales-Sánchez, V. (2021). Data Mining and Polar Coordinates in the Analysis by Gender of Finishing Behaviors in Professional Basketball Pick and Roll. *Frontiers in sports and active living*, 3, 742609. <https://doi.org/10.3389/fspor.2021.742609>
45. Navarro-Adelantado, V. (2002). *El afán de jugar: teoría y práctica de los juegos motores* (Vol. 24). INDE.
46. Nunes, N. A., Gonçalves, B., Coutinho, D., & Travassos, B. (2020). How Numerical Unbalance Constraints Physical and Tactical Individual Demands of Ball Possession Small-Sided Soccer Games. *Frontiers in psychology*, 11, 1464. <https://doi.org/10.3389/fpsyg.2020.01464>
47. Ometto, L., Nunes, R., Praca, G., & Vasconcellos, F. (2018). What are the most important field zones when goalposts are manipulated in soccer?. *Human Movement Special Issues*, 106-113. <https://doi.org/10.5114/hm.2018.81015>
48. Orth, D., van der Kamp, J., Memmert, D., & Savelsbergh, G. (2017). Creative motor actions as emerging from movement variability. *Frontiers in Psychology*, 8, 1903. <https://doi.org/10.3389/fpsyg.2017.01903>
49. Pastrana-Brincones JL, Troyano-Gallegos B, Morillo-Baro JP, López de Vinuesa-Piote R, Vázquez-Diz JA, Reigal-Garrido RE, Hernández-Mendo A, Morales-Sánchez V. (2021). Mixed Methods in Tactical Analysis Through Polar Coordinates and Function Estimation: The Transition Play in ACB Basketball. *Front Sports Act Living*. 23;3:739308. <https://doi.org/10.3389/fspor.2021.739308>
50. Pérez-Muñoz, S., Hernández, F., Fernández-Guerrero, M., y Rodríguez-Cayetano, A. (2024). Effect of small-sided games on coordination, CODA, goal-shooting speed and declarative knowledge in U-12 football players. *E-balonmano com Journal Sports Science*, 20(3), 281–296. <https://doi.org/10.17398/1885-7019.20.281>
51. Pfeiffer M., & Perl J. (2006). Analysis of tactical structures in team handball by means of artificial neural networks. *Int J Comput Sci Sport*, 5(1): 4-14
52. Pinder, R. A., Davids, K. W., Renshaw, I., & Araújo, D. (2011). Representative learning design and functionality of research and practice in sport. *Journal of Sport and Exercise Psychology*, 33(1), 146-155. <https://doi.org/10.1123/jsep.33.1.146>
53. Pons, E., Martín-García, A., Guitart, M., Guerrero, I., Tarragó, J.R., Seirul-lo, F., Cos, F. (2020). Training in Team Sports: Optimising Training at FCB. *Apunts Educación Física y Deportes*, 142, 55-66. [https://doi.org/10.5672/apunts.2014-0983.es.\(2020/4\).142.07](https://doi.org/10.5672/apunts.2014-0983.es.(2020/4).142.07)

54. Praça, G., Clemente, F. M., Pereira de Andrade, A. G., Perez Morales, J. C., & Greco, P. J. (2017). Network analysis in small-sided and conditioned soccer games: the influence of additional players and playing position. *Kinesiology*, 49(2), 185–193. <https://doi.org/10.26582/k.49.2.8>
55. Pulling, C., Twitchen, A., & Pettefer, C. (2016). Goal Format in Small-Sided Soccer Games: Technical Actions and Offensive Scenarios of Prepubescent Players. *Sports*, 4(4), 53. <https://doi.org/10.3390/sports4040053>
56. Roca, A., Ford, P. R., & Memmert, D. (2021). Perceptual-cognitive processes underlying creative expert performance in soccer. *Psychological research*, 85(3), 1146–1155. <https://doi.org/10.1007/s00426-020-01320-5>
57. Reigal, R. E., Morillo-Baro, J. P., Mackintosh-Muñoz, G., Vázquez-Diz, J. A., Hernández-Mendo, A., & Morales-Sánchez, V. (2024). Comportamientos de ataque exitosos de los equipos finalistas de la UEFA Champions League 2020-2021: Análisis mediante Coordenadas Polares. *Retos*, 55, 922–930. <https://doi.org/10.47197/retos.v55.104787>
58. Sackett, G. P. (1980). Lag Sequential Analysis as a data reduction technique in social interaction research. En D. B. Sawin, R. C. Hawkins, L. O. Walker, and J. H. Penticuff (Eds.), *Exceptional infant. Psychosocial risks in infant- environment transactions* (pp. 300-340). Mazel.
59. Serra-Olivares, J., Clemente, F. M., & González-Víllora, S. (2016). Tactical expertise assessment in youth football using representative tasks. *SpringerPlus*, 5(1), 1301. <https://doi.org/10.1186/s40064-016-2955-1>
60. Silva, A. F., González-Fernández, F. T., Aquino, R., Akyildiz, Z., Vieira, L. P., Yıldız, M., Birlik, S., Nobari, H., Praça, G., & Clemente, F. M. (2022). Analyzing the within and between Players Variability of Heart Rate and Locomotor Responses in Small-Sided Soccer Games Performed Repeatedly over a Week. *Healthcare*, 10(8), 1412. <https://doi.org/10.3390/healthcare10081412>
61. Travassos, B., Gonçalves, B., Marcelino, R., Monteiro, R., & Sampaio, J. (2014). How perceiving additional targets modifies teams' tactical behavior during football small-sided games. *Human movement science*, 38, 241–250. <https://doi.org/10.1016/j.humov.2014.10.005>
62. Vilar, L., Esteves, P. T., Travassos, B., Passos, P., Lago-Peñas, C., & Davids, K. (2014). Varying Numbers of Players in Small-Sided Soccer Games Modifies Action Opportunities during Training. *International Journal of Sports Science & Coaching*, 9(5), 1007–1018. <https://doi.org/10.1260/1747-9541.9.5.1007>
63. VVAA. (1978a). *Informe Belmont*, EE.UU., DHEW.
64. VVAA. (1978b). *Comisión Nacional para la Protección de los Sujetos Humanos de la Investigación Biomédica y del Comportamiento. Informe Belmont: Ethical Principles and Guidelines for the Protection of Human Subjects Research* (DHEW publication no. (05) 78-0012). Washington, DC: U.S. Government Printing Office.