Chapter

Methodological Approach in the Development of Specific Games in Elite Soccer

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Abstract

In games such as soccer, where the stability and the possibility of replicating game situations are complex, teams and players continually deal with a highly unstable cooperative and non-cooperative environment. Thus, synchronized cooperation among players during training sessions is a fundamental factor, which many times contributes to a team's success. In this context, there are some specific drills that attempt to challenge and create meaningful contexts in order to simulate match situations as closely as possible. Small-sided games are play-sport situations in which all elements of the game interact together in a flexible manner. However, there are a variety of small-sided games in elite soccer, such as possession games and positional games, which may present specific characteristics and stimulate different physical-physiological demands. An adequate selection and implementation of these games may help coaches to promote positive adaptations and performance improvements. Thus, this chapter provides practical tips to modulate the physical-physiological responses and technical-tactical requirements of the players using a variety of game formats during soccer training sessions.

Keywords: soccer, ball possession, small-side games, possession games, positional games

1. Introduction

Game theory plays a key role in the applied social sciences. Concretely, it has been used in consequence analysis of "decision-making" in the tactical performance of any given individual in team sports, which is a fact to be considered for the players of the same team as for their opponents [1]. In particular, games such as soccer where the stability and the possibility of replicating game situations are complex, teams and players continually deal with a highly unstable cooperative and non-cooperative environment [2]. From this perspective, players and teams are conceptualized as dynamic, intricate systems, interacting in a nonlinear fashion with the environment. Therefore, exposure to challenging and meaningful contexts pushes the exploration and discovery of new synergies, promoting co-adaptive processes between players and transforms sports into dynamic entities [2]. Thus, synchronized cooperation among players is a fundamental

factor, which many times contributes to a team's success. This phenomenon will be substantially more favorable than the fictitious sum of the technical and motor qualities inherent to each player belonging to that team [1]. In this context, there are some specific drills such as "small-sided soccer games" that attempt to challenge and create meaningful contexts in order to simulate match situations as closely as possible.

Small-sided games (SSGs), also referred to in the literature as "game-based training" [3], are play-sport situations [4] in which all elements of the game interact together in a flexible manner [5]. In addition, there are a variety of specific game approaches in elite soccer. The use of such games in professional environments is based on the premise that greater performance improvements are achieved when the specific demands of the sport are transferred [6, 7]. Several studies have shown that the physiological responses of different games can be modified by manipulating variables such as number of players per team [8, 9], modification of certain rules [9], relative area per player [6, 10, 11], comparison with competition [12–14], floaters [15], among others. The authors concluded that these games enable players to get as close as possible to real competitive situations. On account of this, the physical, physiological, technical, and tactical demands of a match can be reproduced to a greater extent.

Moreover, using a weekly pattern with different formats of SSGs in each training session may modulate the player's training load during the micro-cycle [16], which allows a short tapering strategy to face the match with enough energy. Therefore, it might be utilized as a strategy for maintaining or optimizing players' physical performance during the season [17].

As a consequence, coaches and performance staff have made emphasis on and proposed an infinite number of exercises, all of which count with variations in pitch size, number of players in each team, game instructions, and different designs in the shape of the pitch to be used [12, 14]. However, to the best of the author's knowledge, no previous references have been published in order to classify and contrast each kind of game used in elite soccer to train players to reach the physical, technical, and tactical demands of the match. In this context, the present chapter attempts to classify and categorize the different types of specific games and describe their characteristics and the physical-physiological demands.

2. The "Conventional Small-Sided Games"

The SSGs represent one of the most common training elements in soccer at any level and age, as they allow the simultaneous development of technical-tactical contents together with physical goals [18]. In particular, the player's responses during the performance of SSGs have been extensively studied by different authors [12, 19, 20]. In this sense, the advantage of carrying out these games is to replicate real competition situations as closely as possible and thus be able to reproduce very similar physical, physiological, technical, and tactical demands of the game [6, 13]. These types of games can be configured according to a variety of components such as number of players, space orientation, individual interaction space, and balance (whether the teams have the same number of players or are unbalanced by floaters) [12].

The SSGs are collaboration-opposition games [4], which possess a space orientation (one team defending and the other attacking opposite goals), that count with a *"sequence of attacking"* (possession) and *"defending"* (out-of-possession). In this way, two forms of transition are originated: 1) from possession to non-possession of the ball, or 2) from non-possession to possession of the ball [21].

2.1 "Space orientation" and "Ball Possession Sequence"

The orientation of the space in SSGs is defined as the presence or absence of space targets in which a particular aspect that characterizes these types of games is defined [4]. On the one hand, when there are no goals or no scoring zones and the aim is to keep ball possession, it is called *"non-oriented area"* [12]. On the other hand, when there are goals and/or marking zones, but each team attacks and defends them, it is a game with an *"oriented area"* [12]. Likewise, when goals or scoring zones are located in the field, each team knows which one they are defending and which they are attacking. This aspect aligns the game in a way called *"polarized area"* and forges preferential *"paths of action"* [12, 22]. SSG formats with a non-oriented area encourage players to cover longer distances at higher running speeds, whereas SSGs with a polarized area increase the time in which the ball is out of play [23]. In consonance with these fundamentals, Casamichana et al. [24] obtained a greater cardiac response in non-oriented space tasks when 4 vs. 4 formats (100 m^2 per player) with a modification in orientation were compared (**Figure 1**).

2.2 "Relative Playing Area per Player" and "Number of Players": Physiological responses

Relative playing area per player should be calculated by dividing the total play surface of each SSG among all players (m^2 per player) [25]. Some authors have found that SSGs' intensity can be manipulated by modifying the relative playing area per player and the player numbers. For instance, Hill-Hass et al. [26] examined the effect of three formats of player numbers (2 vs. 2, 4 vs. 4, and 6 vs. 6) with the same relative playing area (150 m^2 per player) on physiological patterns and rate of perceived exertion (RPE). As a relative pitch area per player decreased, the overall physiological performance and RPE increased. In fact, for a fixed pitch area, the lower number of players, the higher the RPE was [19, 23, 26]. As a counterpart, Rampinini et al. [27] performed research with a variety of relative playing areas per player, although the number of players was always equal. Thus, it was clearly shown that in the 3 vs. 3 and 6 vs. 6 formats, increase in pitch size led to higher physiological parameters and perceived intensities (heart rate, blood lactate concentration, and RPE).

Other researchers compared conventional formats (4 vs. 4, 6 vs. 6, 8 vs. 8, from 71 to 106 m^2 per player) with 10 vs. 10 small game (311 m^2 per player) and competitive matches (1-4-3-3 formation), concluding that only the 10 vs. 10 format allowed players to

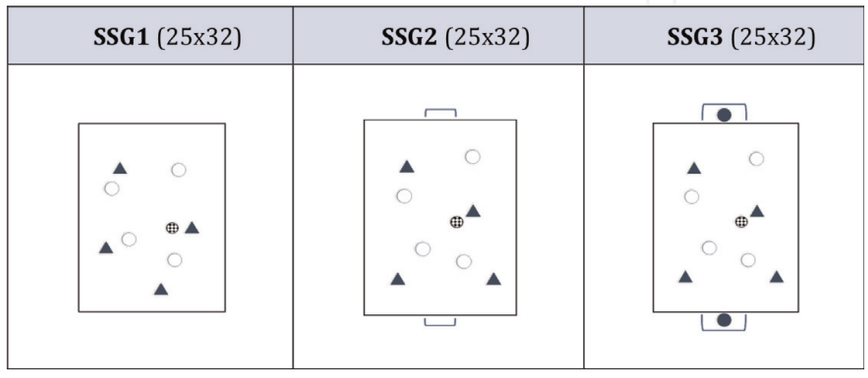

Figure 1.
SSG formats of 4 vs. 4. SSG1: Non-oriented space. SSG2: Oriented space without goalkeepers and with small goals. SSG3: Oriented space with goalkeepers and official goals (extracted with permission from Casamichana & Castellano [10]). In brackets, the width and length of the pitch used in each design (in meters).

reach similar intensities and distances to those obtained during matches, whereas the 4 vs. 4 format exhibited the greatest difference in mechanical work and the least difference on distance above 14.4 km/h [28]. Previous studies conclude that increasing the number of players (and concomitantly relative playing area per player) increases total and high-speed distance (>14.4 km/h) during SSGs [29–31]. Owen et al. [32] also reported that these formats do not induce high-speed movements compared with the ones with larger relative playing area per player and therefore more players (9 vs. 9 to 11 vs. 11).

2.3 Floater players during small-sided games

The *"floater"* is a special player who belongs to the team in possession of the ball during the development of the SSGs, allowing teams to obtain a numerical superiority [33]. The load imposed on regular players when performing SSGs with different numbers and distributions of floaters has been studied in other studies [34, 35]. Sánchez-Sánchez et al. [34] observed that the introduction of interior and exterior floaters reduces the RPE, the heart rate response, and the number of dribbles with respect to the control situation, without the presence of floating players. Regarding floater's performance, Lozano et al. [35] compared 4 vs. 4 + 2 format with 8 vs. 8 + 1 (area: 44–75 m^2 per player) and official matches, reporting that total distance, high-intensity distance (>14.4 km/h), sprint distance (>21 km/h), accelerations (>2 m/seg^2), and decelerations (< −2 m/seg^2) were lower in the floaters compared with regular players. In this way, Rábano-Muñoz et al. [36] showed that floaters registered lower external training loads in comparison to regular players with respect to peak velocity and maximum heart rate.

2.4 Technical-tactical outcomes

Regarding rules inherent to tactical or strategic outcomes, there are studies with special considerations. For example, Fradua et al. [37] extrapolated SSGs' sizes from the actual pitch (11 vs. 11) to investigate parameters related to tactics in the game and concluded that pitch size is a variable that influences ball possession. Thus, the variation in pitch size can create favorable (and unfavorable) conditions for attack and defense [38, 39]. Other authors concluded that SSGs with 9 vs. 9 to 11 vs. 11 (218–336 m^2 per player) are also more suitable to simulate most of the specific technical profile (passing actions, such as long-distance and penetrative passes), while 4 vs. 4 format (94 m^2 per player) makes more emphasis on more short distance passes during the activity [32]. In addition, Casamichana & Castellano [10] examined physical, physiological, and motor responses and RPE during different SSGs (∼75–275 m^2) while the number of players per team was kept constant: 5 vs. 5 plus goalkeepers (the participants were 10 male youth soccer players). When the individual playing area was larger, the effective playing time and the physical-physiological patterns were higher, while certain motor behaviors were observed less frequently (interception, control and dribble, control and shoot, clearance, and putting the ball in play). The authors concluded that the size of the pitch should be taken into consideration when planning training drills, as it influences the intensity of the task and the motor response of players.

Furthermore, different functional movement behaviors emerged as a consequence of the manipulation of the environmental situation. For instance, Gonçalves et al. [40] compared the players' positioning dynamics, manipulating the number of opponents and teammates (numerical inequality) during professional and amateur SSGs. The participants played 4 vs. 3, 4 vs. 5 and 4 vs. 7 games (109–171 m^2), where one team was confronted with low-superiority, low- and high-inferiority situations, and their

opponents with low, medium, and high-cooperation situations. The conclusions revealed that the increasing number of opponents was effective to overemphasize the need to use local information when deciding a position making process in professional players (they presented higher regularity in movement behavior as the number of opponents increased). Conversely, amateur players still rely on external informational feedback (when cooperation was increased, more spatial organization was obtained and players' local perceptions were emphasized).

In this context, *"conventional SSGs"* could facilitate the development of a core tactical concept with an appropriate game context, although this will depend on its design [19]. For our methodology proposal, this new line of analysis leads to another approach in specific soccer games: the *"Possession Games."*

3. The possession games

Not only are the SSGs' traditional approaches commonly used in the soccer world [9, 20], but other games are also practiced with the main goal of progressing with the possession of the ball by the attacking team. Among them, we can find possession games (POGs), which are relatively similar to *"conventional SSGs,"* yet nonetheless, have a number of different characteristics. During SSGs, the aim of the task is to maintain ball possession, but the disposition of the players is not preset and the occupation of the spaces is not predetermined, while in POGs, the same spaces are intelligently covered [14]. In the latter, the players who maintain possession of the ball are positioned in such a way that the interrelation among them and the space is as efficient as possible, stimulating the development of individual and collective concepts for the understanding of the game (**Figure 2**).

Effectively, the fundamental objective of this type of exercise is to generate free spaces by means of individual and collective movements, which allow the game to

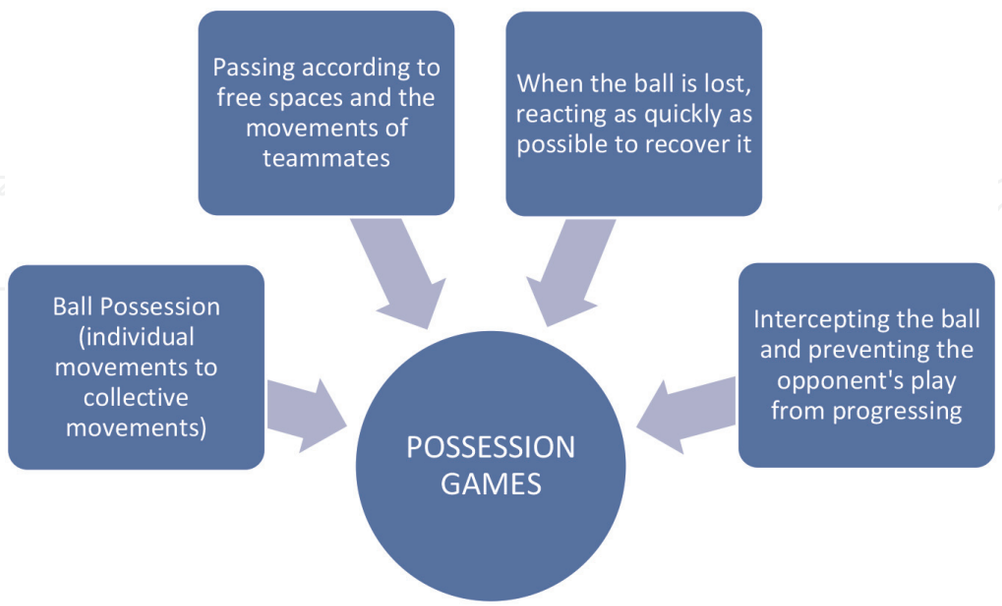

Figure 2.
Basic principles of the possession games: a) ball possession by means of individual movements toward collective movements (e.g., deep movements, diagonal movements, etc.), b) passing, depending on the free space and the different movements (e.g., lateral pass looking for width, vertical pass looking to progress, deep pass between lines, etc.), c) ball recovery, which aims to go to the opposing player in possession of the ball, and finally, d) intercepting and thus preventing the opponent from progressing in the attack, Vilamitjana et al. [41].

"progress" with greater fluidity in a particular direction (**Figure 2**). This means that the creation of movements to generate free spaces will be useful to make passes toward the mentioned spaces in order to generate collective movements. In relation to this concept, in his book *"Me gusta el Fútbol"* [41], Johan Cruyff synthesizes the game of soccer with this following phrase: *"Don't run too much since soccer is played with the brain. You have to be in the right place at the right time, not before or after."* This principle gives rise to factors inherent to strategy and tactics, which have a greater transfer toward specific match situations [14]. In this line, the practice of POGs will be most effective in pitches designed with different shapes and spaces (**Figure 3**).

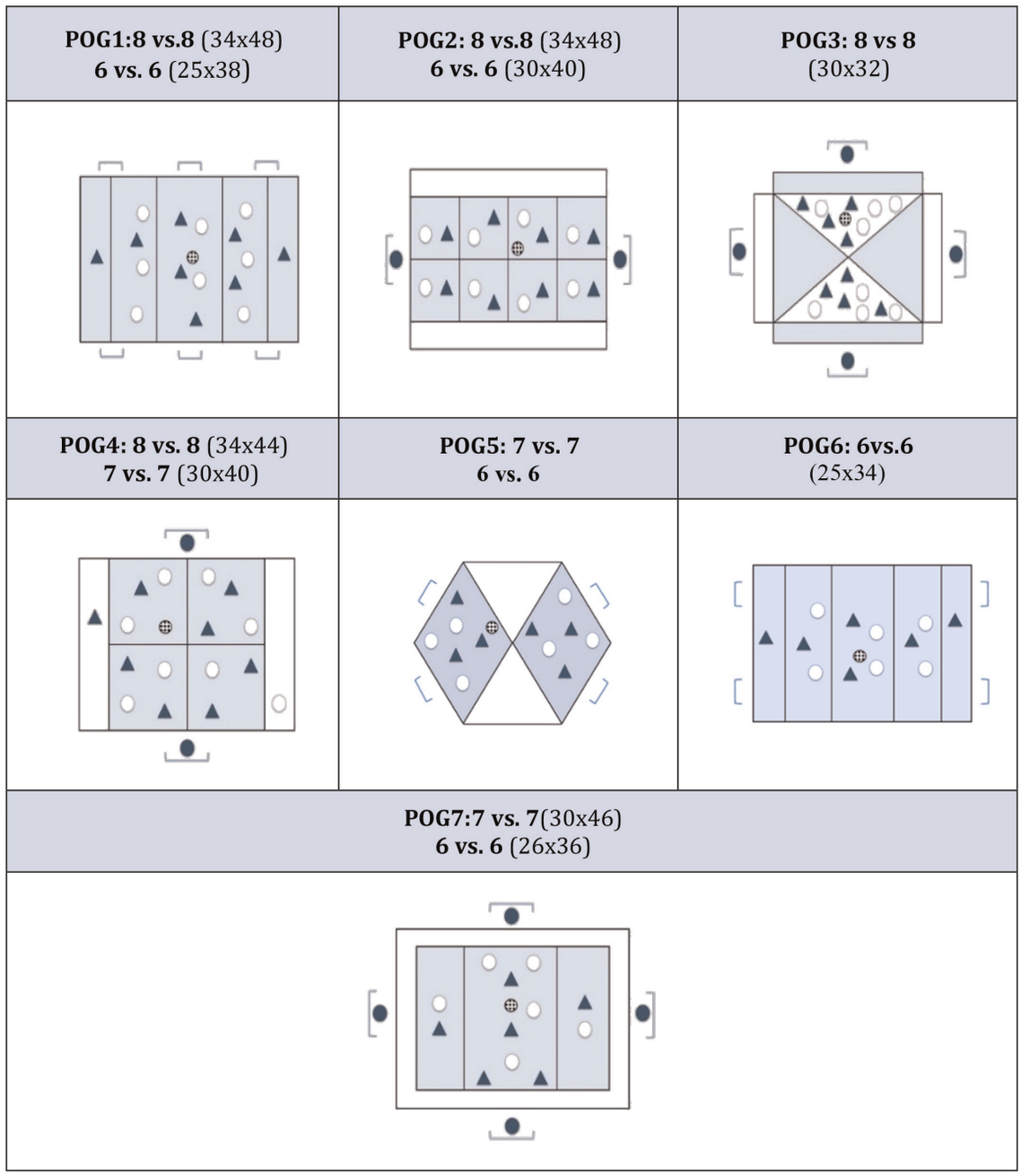

Figure 3.
POG designs for the three formats (6 vs. 6, 7 vs. 7 and 8 vs. 8) studied by Vilamitjana et al. [14]. In brackets, the width and length of the pitch used in each design (in meters).

3.1 Possession games´ comparison with small-sided games and competition: Physiological responses

There are studies using POGs with different designs and player numbers in comparison with official games. For instance, Vilamitjana et al. [14] compared three POGs formats (65–110 m^2 per player) with official matches (1-4-2-1-3 and 1-3-4-3), and then differentiated the final performance according to the positions occupied by the players on the field (**Figure 3**). They concluded that the cardiovascular response in 6 vs. 6 and 7 vs. 7 was match-compatible and related to cardiovascular performance, the mean values in POGs were no different from the matches, with the exception of 8 vs. 8 formats. In relation to the high-intensity running and sprinting work rate, the authors found low percentages in both patterns when compared with competition.

In Ref. [31], the authors compared SSGs with POGs in three different formats. They concluded that both formats with a smaller number of players (5 vs. 5, 7 vs. 7; 73 and 98 m^2 per player, respectively) do not induce high-speed movement compared with the ones with larger pitches and more players (10 vs. 10; 135 m^2 per player). This effect was due to a larger pitch area and less pressure received from opponents, with a greater number of options for passing the ball among players. The main task during both games was that players could not progress with more than two touches (no difference in the designs for each format were detailed, as the only difference described was that POGs were played in a "non-oriented area" and the SSGs were played with goalkeepers and goalposts). The results determined that very high-intensity distance (19.8–25.2 km/h) covered was higher in SSGs in relation to POGs (no significant difference was found at >14.4 km/h), with a larger number of high-intensity accelerations (> 3.0 m/sec^2) and decelerations (< −3.0 m/sec^2) in favor of SSGs when compared with POGs for the format 5 vs. 5.

As a counterpart of this, a descriptive study was made with typical POGs training sessions (oriented area games) and conventional SSGs designs (**Figure 4**), 5 vs. 5

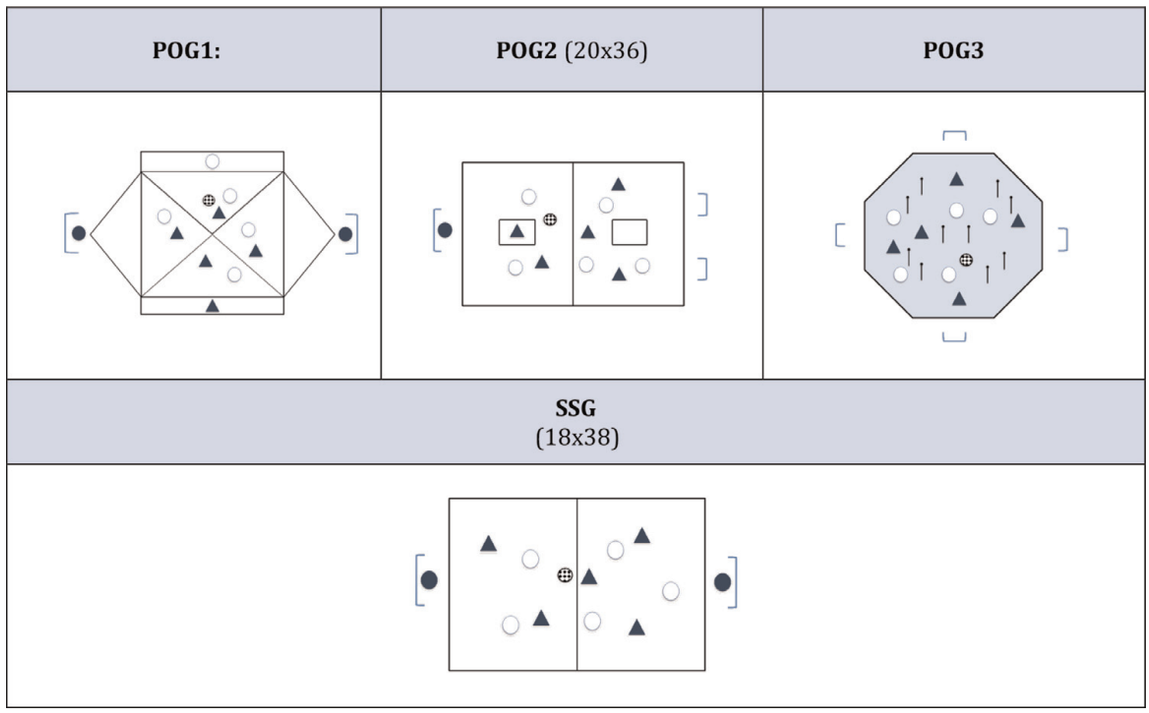

Figure 4.
Possession games and conventional small-sided game designs and diagram representation for 5 vs. 5 formats studied by Vilamitjana et al. [42]. In brackets, the width and length of the pitch used in each design (in meters).

formats (70 m^2), in comparison with official matches (1-3-4-3 and 1-4-2-1-3) [42]. The analysis of the data described higher performance in POGs during seven of the forehead nine study variables (total distance, player-load, high-intensity work rate, high-speed intensity work rate, number of runs in high-intensity running, and high-speed running and maximal speed) except in high-intensity accelerations (> 3.5 m/seg^2) where the SSGs values were higher than POGs, while in high-intensity decelerations (< −3.5 m/seg^2), no significant differences were obtained. When the data were discriminated by field position, central defenders and midfielders obtained similar values to competition situation in the variables of high-intensity work rate (> 14.9 km/h) and very-high-intensity work rates (> 19.9 km/h). The current findings suggest that POGs are a very interesting tool to stimulate the physical demands to which players will be exposed to during matches. Moreover, SSGs could be utilized as an exercise with greater intentionality when it involves stimulating the accelerations that the player performs during a specific execution time [42].

3.2 Floating players during possession games

There are not many studies performing POGs with different numbers of floaters. Asian-Clemente et al. [43] compared two formats (non-oriented area), with two floaters (both exercises were designed with the same relative area per player; 81 m^2 per player) and official matches (**Figure 5**). In both formats, players were divided into three teams. The POGs were classified on whether they exhibited a change of play area (POGca) or if there was no change of play area (POGnc). In both cases, floaters always have an offensive role, playing with teams in possession of the ball. During POGca, two teams played in a certain area (5 vs. 5 + 2) and when the attacking team scored 7 passes or the defensive team recovered the ball, they had to perform a pass to another zone where the third team was waiting the pressure of one of them. In POGnc, two teams played against one team (10 vs. 5 + 2). The aim of both games was to maintain ball possession until another team intercepted the ball or kicked it outside the pitch. Next, they had to exchange roles with the other team of five players (**Figure 5**). The authors concluded that POGca performed higher values regarding a greater total distance, high-speed, peak speed, and number of accelerations (> 3 m/seg^2) and decelerations (< −3 m/seg^2) than POGnc. Comparing both exercises with match situation, POGs showed a significantly higher speed and an increased number of accelerations-decelerations [43].

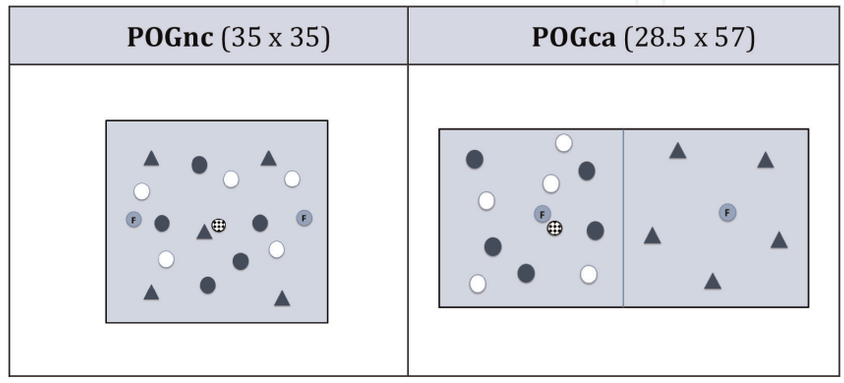

Figure 5.
Possession games designs with 5 vs 5 + 5 plus 2 floaters (extracted with permission from Asian-Clemente et al., 2021). In brackets, the width and length of the pitch used in each design (in meters).

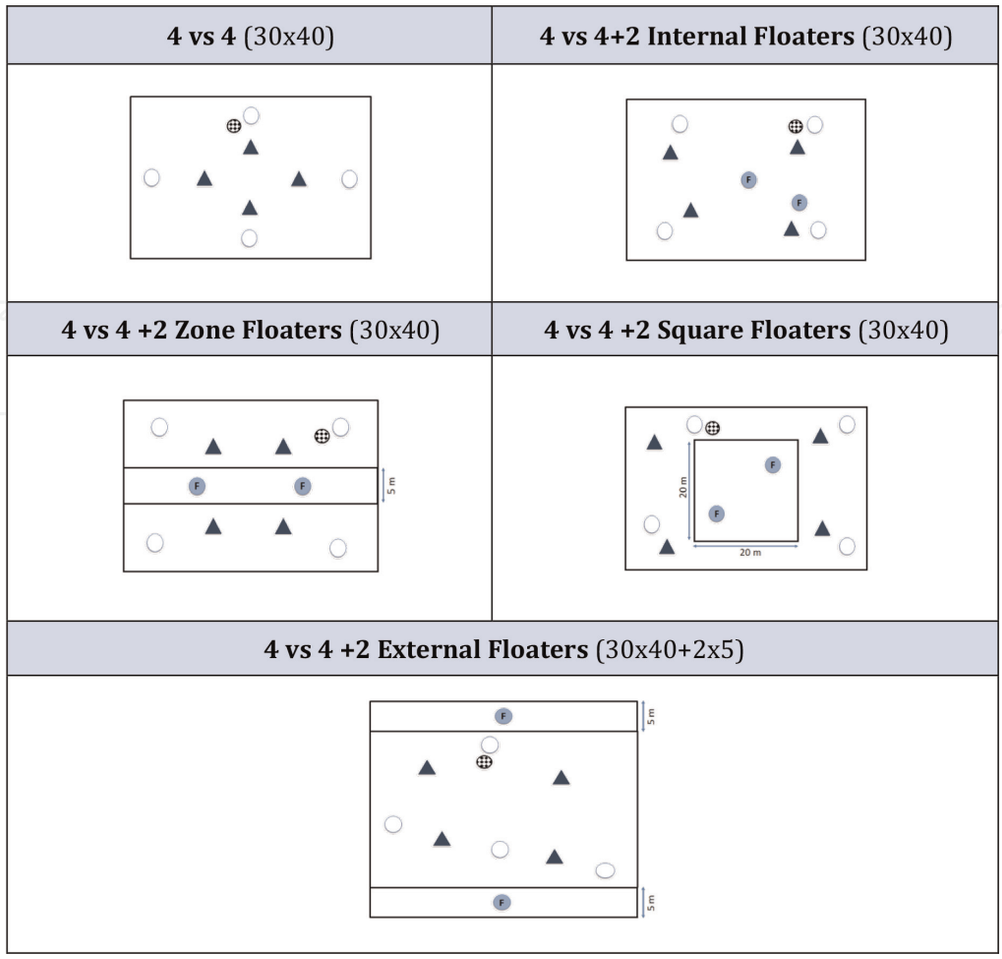

Figure 6.
Possession game designs with 4 vs 4 and 4 vs 4 plus 2 floaters formats (extracted with permission from Asian-Clemente et al., 2022). In brackets, the width and length of the pitch used in each design (in meters).

In another research, Lacome et al. [33] performed a study comparing POGs vs. SSGs with one floater (61–120 m^2 per player). The authors reported that total distance, high-intensity distance (> 14.4 km/h), accelerations (>2 m/seg^2), decelerations (<−2 m/seg^2), and changes of direction were lower in the floaters compared with regular players independently of SSGs or POGs designs.

Another relevant information was recently obtained by the same authors utilizing 4 vs. 4 format (non-oriented area) with the incorporation of two floaters (∼120–150 m^2 per player), who always assumed an offensive role during ball possession tasks [44]. They demonstrated that regular players completed a greater total distance and distance covered between 14 and 17.9 km/h than without floaters (**Figure 6**).

Regarding technical profiles during these exercises, studies from Mallo and Navarro [45] found that the introduction of wildcards in 3 vs. 3 formats (where the objective was to maintain possession of the ball) significantly reduced the number of contacts with the ball. Additionally, they found that error percentage in passes performed by the players retained no modification in heart rate response or locomotor activity.

3.3 Technical-tactical outcomes

Concerning inherent factors related to tactical and technical skills, there are some authors who studied the specific actions associated with each match effort during

"ball possession" and *"out-of-possession"* [46]. As previously described, the POGs' principles give rise to factors as *"concepts"* related to strategy and tactics, which have a greater transfer capacity toward specific match situations (**Figure 2**). The different variety of shapes and spaces facilitate the implementation of specific movement patterns. For instance, in *"the hexagon shape"* (**Figure 4**, POG#1), the attackers carry out actions of overlapping (player runs from behind to in front of or parallel to the player on the ball) to progress the collective movements and perform depth passes to opposite box to break into the adversary team lines. Meanwhile, defenders cover the spaces, closing down the opponent players, trying to cut out passes from them. In other designs of POG, *"the double diamond shape"* (**Figure 3**, POG#5) contemplates the attackers' actions of movements with depth (diagonal and vertical movements), swiftly enabling different sides profiles, with visual optimization and technical skill. Finally, the players must find a suitable pass to the opposite side considering always viewing the space beyond their immediate area. Moreover, the defensive team has specifics tasks, as a main one recovery of the ball by running in a collective way toward opponent players, attempting to intercept the ball and change spaces immediately to another triangle or diamond; in this manner, a possession sequence begins. There is a relevant concept to be considered when the team loses the ball: the team has no other choice but to reorganize and jump in to put pressure into recovering the ball as quickly as possible (**Figure 2**).

A new tactical dimension starts when players take up specific role positions, trying to have a gravitational effect on their opponent by superiority, when a new approach of specific games is proposed: the "Positional Games."

4. The positional games

The positional games (PGs) are performed with the objective of team ball possession in which the players have priority action areas based on their position in competition, where playing space is adapted to the player's usual context in matches, but without restricting the players' spatial exploration during the tasks [15]. These positional games require selected roles to position themselves intelligently (this design usually uses vertical and horizontal lines on the pitch, with each player assigned to a zone), and the team works dynamically and collectively in accordance (**Figure 7**).

Ball possession takes on a more tactical sense in the PGs: they attract the opponent to press in such a way that they must press on the offensive (persuading action), demonstrating at some point certain vulnerability on the defensive side. This will be the moment to act speedily to confront the opponent's moves and thus, finally, break the defense originated by opposing team (**Figure 7**). Therefore, ball possession is a constructed phenomenon, because it is a possession that aims to destabilize the opponent, eliminate rivals, and condition their defensive balance, forcing them to adjust constantly to these elements and thus play at their mercy rather than play as the rival would wish to do so.

In general, PGs are utilized with *"floating players,"* who encourage ball retention and generate numerical superiority for the team during ball possession [15]. The floaters intervene only on the offensive side, placing themselves in intelligent positions (most appropriate positioning for tactical resolution), thus favoring ball possession and attacking progression (**Figure 7**) [15].

Head coach and former player Gabriel Heinze considers PGs as *"A style of play, a team identity, a way of perceive training and competition, all of which require conviction on*

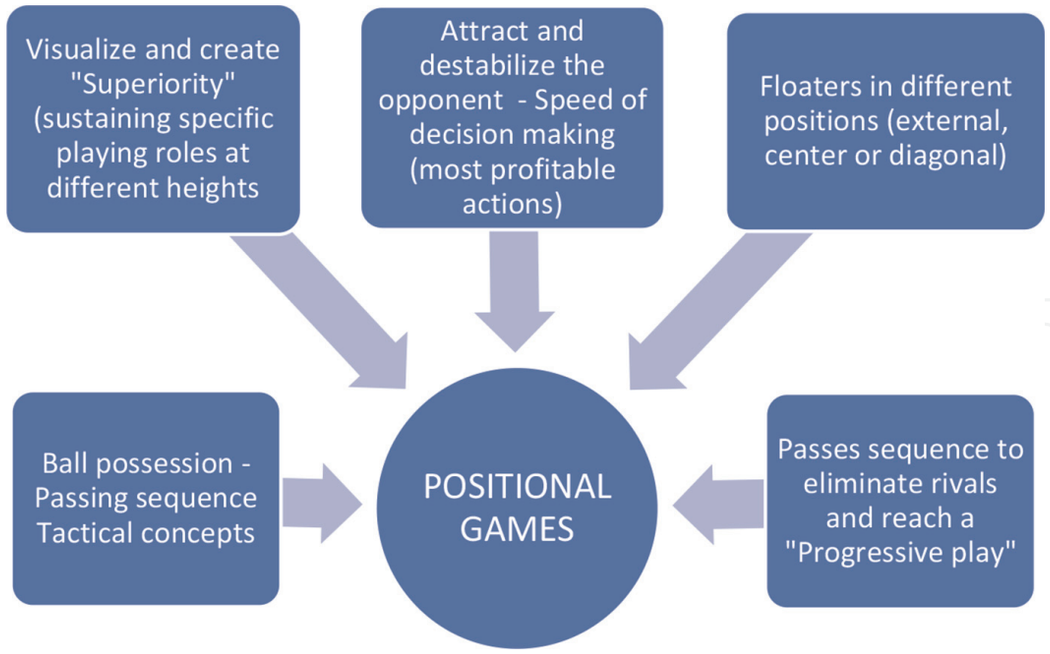

Figure 7.
Basic principles of the positional games. a) Ball possession by means of individual movements toward collective movements, b) visualize the playing context, retaining the ball and generating superiority in small spaces, c) attract the opponent and persuade them to press, d) the most appropriate floaters positioning for tactical resolutions during the attack, and e) passing sequence with other teammates or, alternatively, the possibility of ball conduction and progression in the game (Vilamitjana, J. & Heinze, G.).

the part of the coach." At the same time, they also require faith and trust from the players; otherwise, these types of games will be difficult to implement.

4.1 Relative playing area per player and player numbers: Physiological responses

To the best of the author's knowledge, no previous references have been published in order to contrast PGs data with the other games. In one practical experience, a comparison of three formats of PGs (68–81.6 m^2 per player, polarized area, 1–2 floaters) with official matches was carried out (**Figure 8**). On the one hand, the findings revealed that some metrics decreased progressively from PG1 to PG3 (PG1 > PG2 > PG3): 9.2–4.9% in meters per minute, 8.8–7.7% in player-load, and 4–3.2% in mean heart rate (171.8–164.8–159.6 beats per min), respectively. On the other hand, high-intensity patterns increased progressively from PG1 to PG3 (PG3 > PG2 > PG1): distance above 19.9 km/h (4.7–9.2%), and maximal speed (3.2–5.6%).

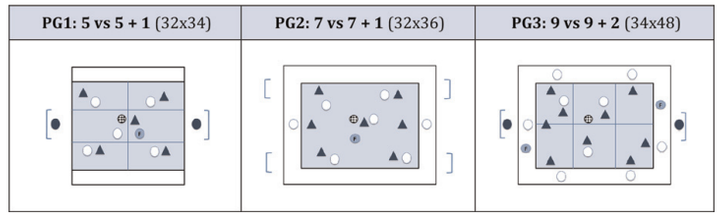

Figure 8.
Positional game designs with floaters format studied by Vilamitjana, J., & Heinze, G. (under revision). In brackets, the width and length of the pitch used in each design (in meters).

When PGs were compared with match situation, obtaining lower values of work rate profiles for each format on which the study was undertaken. Only parameters such as sprints, accelerations, and decelerations were higher in all formats compared with official matches. Finally, the conclusion was similar to those determined with SSGs: increasing the number of players and relative playing area per player would induce high-speed patterns, and it seems that when smaller games are compared with larger ones, with a higher number of players, these did not reach similar intensities and distances to those obtained during matches. In this context, it should be made clear that physical performance is important, but the tactical-cognitive conception that the players carry is what prevails the most in this type of game.

4.2 Technical-tactical outcomes

Beyond the physical and physiological performance, in order to achieve the principles described above, PGs have a high level of cognitive and technical skill requirements (**Figure** 7). To begin with, every player has a direct (with the ball) or indirect (without the ball) responsibility in relation to a defined tactical concept for each playing position. On the one hand, players without the ball must occupy certain spaces to provoke a determined, sought-after behavior in the opponents (attract the opponent and persuade them to press), either by jumping in to pressure the ball carrier or by maintaining proximity to their teammate with their mark. This facilitates the passing sequence with other teammates or, alternatively, the possibility of ball conduction and reach a *"progressive play."* On the other hand, the player with the ball has the intention of attracting the opponent's pressure to find free players located at different heights of the field (**Figure** 7).

Another relevant concept to be considered in PGs is "superiority" (numerical, qualitative, and positional) [47]. Numerical superiority is a team with possession overload in any area of the pitch (floaters help the team to generate this aspect). Qualitative superiority is when a player who is superior to their direct opponent isolates them in a 1 vs. 1 or 2 vs. 2 situations (it is relevant the movements from players without ball). Positional superiority involves getting players into positions between or behind the opposition lines, where they are most likely to have time and space relative to the ball. Consequently, the aforementioned superiority is more likely to affect the game (trying to find the free man directly or indirectly). Any player in a team using positional play can achieve one of these types of superiority, but everyone must sustain his or her specific playing role during the game (**Figure** 7). It is essential that this tactical concept is built from the back (first tactical line). For this reason, a fundamental principle of its idea of play is that the ball comes out cleanly from the defenders: From the first line, the different game positions will try to retain the ball generating superiority in small spaces (progress the ball forward through the creation of triangles or diamonds that give the ball-carrier space and several passing options at any given time). For instance, center-backs moving wide, trying to provoke that the forward of the opposing team jump in to press, which in turn creates a passing lane into the midfielders (in a higher position). Players need to be ready to move based on the movement of a teammate. This creates constant rotations that aim to disrupt the opposition.

The *"out-of-possession"* is a very important phase inside PGs, because on account that the team has to reorganize and jump in rapidly to put pressure on the opponent (in coordination with all lines of tactical positioning). It is considered a

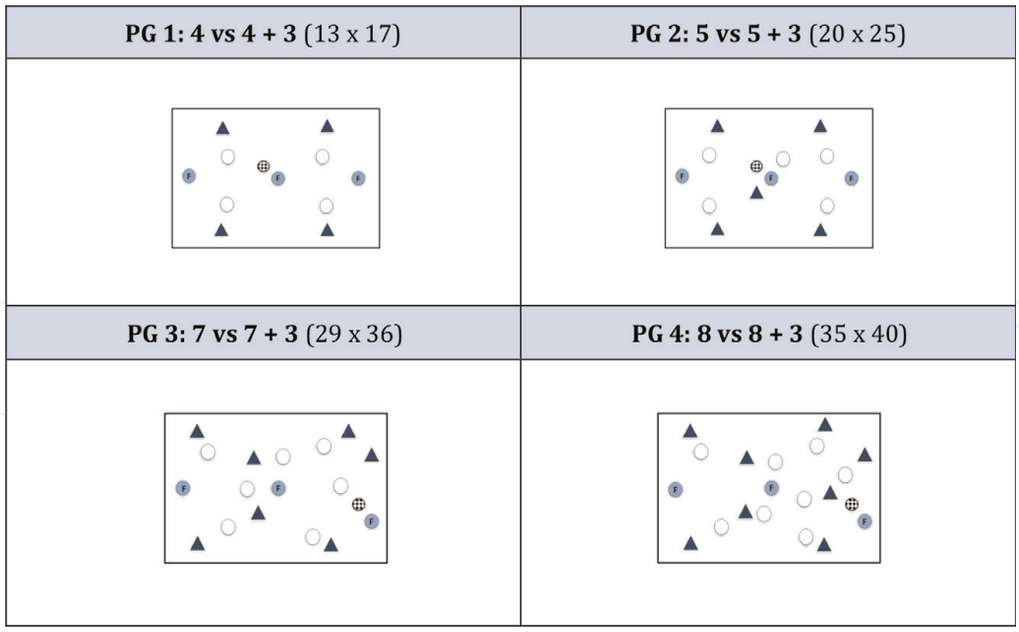

Figure 9.
Positional game designs with floaters format (extracted with permission from Casamichana et al., 2018). In brackets, the width and length of the pitch used in each design (in meters).

similar concept to the one described previously in POGs, even though there exist specific out-of-possession strategies employed by the teams using this style of game.

4.3 Floater players during positional games

The implementation of floaters during PGs facilitates ball possession and consequently, generates numerical superiority for the team retaining the ball [48]. Casamichana et al. [15] studied the kinematic demands imposed on floaters and regular players in addition to comparing the demand imposed on wildcards in different PGs formats (~20–74 m^2 per player respectively) (**Figure 9**). The main conclusion that resulted was that floaters imposed lower intensities than regular players in high metabolic distance (> 25.5 W.kg), but this difference was smaller in PG1 and larger in PG4 format. Moreover, the demand imposed on floater players in PGs that were studied also revealed the following differences: there were a greater number of accelerations and decelerations in the smaller format (PG1) compared with the larger formats (PG3-PG4), while total distance covered and high metabolic distance were greater in the larger formats (PG3-PG4) compared with the smaller ones (PG1-PG2) (**Figure 9**).

5. Conclusions

There are a considerable number of designs within the three types of games described in this chapter to be taken advantage of. During these specific types of exercise, "*ball possession sequence*" is a typical common denominator to be considered. In particular, SSGs appear to be a basic concept in which all the game's elements interact in a flexible way: the aim of the task is to maintain ball possession, but the disposition of the players is not preset, and the occupation of the spaces is not predetermined. In another approach, there are POGs where the players who maintain

possession of the ball are positioned in such a way that the interrelation among them and the space is as efficient as possible. Hence, free spaces are generated by individual and collective movements, which make the ball possession *"progress"* with greater fluidity, with a particular direction and purpose. Finally, we have PGs that count with a higher level of cognitive and technical skill requirements. In these games, ball possession takes on a more tactical sense, in which the players have priority action areas based on their position in competition.

5.1 Practical applications

- This chapter reveals that coaching staff may modulate the physical-physiological responses and technical-tactical requirements of the players, using a variety of game formats during soccer training sessions.

- The manipulation of different variables in each game (number of players, balance, relative playing area per player, space orientation, among others) may influence the players´ responses.

- The "conventional SSGs" could be an exercise, which could be practiced with greater intentionality, especially when desired result is to stimulate the number of accelerations. The POGs are actually, for all intents and purposes, an exceptional approach to stimulate most of the physical demands that players are subjected to during competition, and at the same time, PGs apply tactical concepts with the intervention of different physical patterns.

- In this context, the manner in which soccer coaches and physical trainers prescribe training definitely has a key role in helping players' development for successful performance. As a consequence, an adequate selection and implementation of these games may help coaches to promote positive adaptations and performance improvements.

5.2 Future research lines

Factors inherent to certain conditioning components such as the associations that have the origins during POGs together with their transfer to match situations should be further investigated in an empirically way. Likewise, PGs have been designed for the development of tactical concepts, but more scientific data on the physiological response to this physical load and technical requirements are still needed. Moreover, the cited studies in this chapter were mainly performed with professional or elite soccer players, and as a result, future research is warranted to likewise understand how youth players are coping with different games.

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References

[1] Sindik JI, Vidak N. Application of game theory in describing efficacy of decision making in Sportsman's tactical performance in team sports. Interdisciplinary Description of Complex Systems. 2008;**6**(1):53-66

[2] Pol R, Balagué N, Ric A, et al. Training or synergizing? complex systems principles change the understanding of sport processes. Sports Medicine. 2020;**6**:28

[3] Gabbett T, Jenkins D, Abernethy B. Game-based training for improving skill and physical fitness in team sport athletes. International Journal of Sports Science and Coaching. 2009;**4**(2):273-283

[4] Parlebas P. Juegos, deporte y sociedad. Léxico de praxiología motriz. Barcelona: Paidotribo; 2001

[5] Wein H. Fútbol a la medida del niño. Vol. 1. Madrid: Gymnos; 1995

[6] Dellal A, Chamari K, Owen A, Wong D, Lago-Penas C, Hill-Haas S. Influence of the technical instructions on the physiological and physical demands within small-sided soccer games. European Journal of Sport Science. 2011; **11**:353-359

[7] Little T. Optimizing the use of soccer drills for physiological development. Strength and Conditioning Journal. 2009;**31**(3):67-74

[8] Brandes M, Heitmann A, Müller L. Physical responses of different small-sided game formats in elite youth soccer players. Journal of Strength and Conditioning Research. 2012;**26**(5):1353-1360

[9] Hill-Haas S, Dawson B, Coutts A, Rowsell G. Physiological responses and time-motion characteristics of various small-sided soccer games in youth players. Journal of Sports Sciences. 2009; **27**(1):1-8

[10] Casamichana D, Castellano J. Time–motion, heart rate, perceptual and motor behaviour demands in small-sides soccer games: Effects of pitch size. Journal of Sports Sciences. 2010;**28**(14):1615-1623

[11] Porres D, Paz Fernández J, Fernandez Gonzalo R, Cervera J, Yagüe CJ. Variabilidad de la carga fisiológica en los pequeños juegos de fútbol en función del espacio. Apunts Educación Física y Deportes. 2010;**102**:70-77

[12] Casamichana D, San Roman J, Calleja J, Castellano J. Cuantificación de las cargas durante los juegos reducidos. Los juegos reducidos en el entrenamiento del fútbol. 1st ed. España, Barcelona: Fútbol de Libro; 2015

[13] Dellal A, Owen A, Wong D, Krustrup P, Van Exsel M, Mallo J. Technical and physical demands of small vs. large-sided games in relation to playing position in elite soccer. Human Movement Science. 2012;**31**:957-969

[14] Vilamitjana J, Heinze G, Verde P, Calleja-González J. Comparison of physical performance between possession games and matches in professional football. Apunts. Educación Física y Deportes. 2020;**141**:75-86

[15] Casamichana Gómez D, Gómez Díaz A, Cos Morera F, Martín GA. Wildcard players during positional games. Educación Física y Deportes. 2018;**133**:85-97

[16] Marqués-Jiménez D, Sampaio J, Calleja-González J, Echeazarra I. How different are soccer training sessions

based on small-sided games? A cluster analysis to explore perceived exertion and training load. Acta Gymnica. 2022; **52**:e2022.005

[17] Guridi Lopategui I, Castellano Paulis J, Echeazarra EI. Physical demands and internal response in football sessions according to tactical periodization. International Journal of Sports Physiology and Performance. 2021;**16**(6):858-864

[18] Halouani J, Chtourou H, Gabbett T, Chaouachi A, Chamari K. Small-sided games in team sports training: A brief review. Journal of Strength and Conditioning Research. 2012;**28**(12): 3594-3618

[19] Hill-Haas S, Dawson B, Impellizzeri F. Coutts, A. physiology of small-sided games training in football: A systematic review. Sports Medicine. 2011;**41**(3):199-200

[20] Casamichana D, Castellano J, Calleja-González J, San Román J, Castagna J. Relationship between indicators of training load in soccer players. Journal of Strength and Conditioning Research. 2013;**27**:369-374

[21] Orta A, Pino J, Moreno I. Propuesta de un método de entrenamiento universal para deportes de equipo basándose en el análisis observacional de la competición. Lecturas: EF y Deportes; 2000

[22] Castellano J. Confección de tareas de entrenamiento en fútbol. Español: El Entrenador; 2005

[23] Köklü Y, Sert Ö, Alemdaroğlu U, Arslan Y. Comparison of the physiological responses and time-motion characteristics of young soccer players in small-sided games: The effect of goalkeeper. Journal of Strength and Conditioning Research. 2015;**29**(4): 964-969

[24] Casamichana D, Castellano J, González-Morán A, García-Cueto H, García-López J. Demanda fisiológica en juegos reducidos de fútbol con diferente orientación del espacio. Revista Internacional de Ciencias del Deporte. 2011;**23**(7):141-154

[25] Parlebas P. Elements of Sociology in Sport. Málaga: Unisport Andalucía; 1988

[26] Hill-Haas S, Rowsell G, Dawson B, Coutts A. Acute physiological responses and time-motion characteristics of two small-sided training regimes in youth soccer players. Journal of Strength and Conditioning Research. 2009;**23**(1): 111-115

[27] Rampinini E, Impellizzeri F, Castagna C, Abt G, Chamari K, Sassi A, et al. Factors influencing physiological responses to small-sided soccer games. Journal of Sports Sciences. 2007;**25**: 659-666

[28] Lacome M, Simpson B, Cholley Y, Lambert P, Buchheit M. Small-sided games in elite soccer: Does one size fits all? International Journal of Sports Medicine. 2017;**17**:1-24

[29] Castellano J, Casamichana D, Dellal A. Influence of game format and number of players on heart rate responses and physical demands in small-sided soccer games. Journal of Strength and Conditioning Research. 2012;**27**(5):1295-1303

[30] Clemente F, Martins F, Mendes R. 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. 2012;**22**(4):380-397

[31] Gaudino P, Alberti G, Iaia F. Estimated metabolic and mechanical demands during different small-sided games in elite soccer players. Human Movement Science. 2014;**36**:123-133

[32] Owen A, Wong D, Paul D, Dellal A. Physical and technical comparisons between various sided games within professional soccer. International Journal of Sports Medicine. 2014;**35**:286-292

[33] Lacome M, Simpson B, Cholley Y, Buchheit M. Locomotor and heart rate responses of floaters during small-sided games in elite soccer players: Effect of pitch size and inclusion of goalkeepers. International Journal of Sports Physiology and Performance. 2108;**13**: 668-671

[34] Sanchez-Sanchez J, Hernández D, Casamichana D, Martínez-Salazar C, Ramirez-Campillo R, Sampaio J. Heart rate, technical performance, and session-RPE in elite youth soccer small-sided games played with wildcard players. The Journal of Strength and Conditioning Research. 2017;**31**(10): 2678-2685

[35] Lozano D, Lampre M, Díez A, Gonzalo-Skok O, Jaén-Carrillo D, Castillo D, et al. Global positioning system analysis of physical demands in small and large-sided games with floaters and official matches in the process of return to play in high level soccer players. Sensors. 2020;**20**:6605

[36] Rábano-Muñoz A, Asian-Clemente J, Sáez de Villarreal E, Nayler J, Requena B. Age-related di erences in the physical and physiological demands during small-sided games with floaters. Sports. 2019;**7**:79

[37] Fradua L, Zubillaga A, Caro O, Fernández-García A, Ruiz-Ruiz C, Tenga A. Designing small-sided games for training tactical aspects in soccer: Extrapolating pitch sizes from full-size professional matches. Journal of Sports Sciences. 2013;**31**(6):573-581

[38] Silva P, Vilar L, Davids K, Araújo D, Garganta J. Sports teams as complex adaptive systems: Manipulating player numbers shapes behaviors during football small-sided games. Springerplus. 2016;**5**:191

[39] Vilar L, Duarte R, Silva P, Chow J, Davids K. The influence of pitch dimensions on performance during small-sided and conditioned soccer games. Journal of Sports Science. 2014; **32**(19):1751-1759

[40] Gonçalves B, Marcelino R, Torres-Ronda L, Torrents C, Sampaio J. Effects of emphasizing opposition and cooperation on collective movement behavior during football small-sided games. Journal of Sports Sciences. 2016; **34**(14):1346-1354

[41] Cruyff J. Me gusta el Fútbol. 1st ed. Barcelona: RBA Libros; 2002

[42] Vilamitjana J, Heinze G, Verde P, Calleja-González J. Comparison of high-intensity patterns between possession games and small-sided games in professional soccer. Acta Gymnica

[43] Asian-Clemente J, Rábano-Muñoz A, Muñoz B, Franco J, Suarez-Arrones L. Can small-side games provide adequate high-speed training in professional soccer? International Journal of Sports Medicine. 2021;**42**(6):523-528

[44] Asian-Clemente A, Rábano-Muñoz A, Requena A, Santalla A, Suarez-Arrones L. The influence of the floater position on the load of soccer players during a 4 vs 4 + 2 game. Kinesiology. 2022;**1**:82-91

[45] Mallo J, Navarro E. Physical load imposed on soccer players during small-sided training games. Journal of Sports Medicine and Physical Fitness. 2008; **48**(2):166

[46] Ade J, Fitzpatrick J, Bradley P. High-intensity efforts in elite soccer matches and associated movement patterns, technical skills and tactical actions. Information for position-specific training drills. Journal of Sports Sciences. 2016;**34**(24):2205-2214

[47] Seirul lo F. El entrenamiento en los deportes de equipo. España: Esteban Sanz; 2017

[48] Hill-Haas S, Coutts A, Dawson B, Rowsell G. Time-motion characteristics and physiological responses of small-sided games in elite youth players: The influence of player number and rule changes. The Journal of Strength and Conditioning Research. 2010;**24**(8): 2149-2156