ORIGINAL ARTICLE

THE INFLUENCE OF FLOATERS ON PLAYERS' TACTICAL BEHAVIOUR IN SMALL-SIDED AND CONDITIONED SOCCER GAMES

Abstract

This study examined players' tactical behaviours based on core tactical principles during small-sided and conditioned games (SSCG) with and without floaters on the sidelines. A total of 24,068 tactical actions performed by 168 Under-17 academy soccer players were assessed using the System of Tactical Assessment in Soccer (FUT-SAT; Teoldo, Garganta, Mesquita, Maia, & Greco, 2011) across two different SSCGs: "Floaters off" (Gk + 3 vs. 3 + Gk) and "Floaters sidelines" (Gk + 3 vs. 3 + Gk + 2 floaters). Results revealed that players showed different tactical behaviours depending on the SSCG format and playing phase. In “Floaters off” SSCG, players more frequently performed the core tactical principles of *concentration* during the defensive phase and *penetration* for the offensive phase of play creating more opportunities for 1 vs. 1 situations. In contrast, in the "Floaters sidelines" SSCG, players made more effective use of playing space (*width* and *length*) in the opponent's half during the offensive phase; and limited the space for the opponent by compacting the defence in their own half (*defensive unity*) due to numerical disadvantage during defensive phase. Findings suggest that the use of floaters (on the sidelines) encourage players to keep ball possession during offensive organisation, as well as promote the team’s defensive stability by decreasing the spaces between teammates during defensive organisation.

Keywords: Task constraints, Core tactical principles, Coaching, Team sports.

Introduction

For players to attain higher performance levels in soccer (association football), coaches and all those involved in the training process need to ensure that the practice environments promote players´ development for solving tactical challenges that are used during actual performance (Davids, Araújo, Correia, & Vilar, 2013; Ford, Yates, & Williams, 2010; Roca & Williams, 2016; Vilar, Araújo, Davids, & Travassos, 2012). To support such players' development, the training process should be focused on constraints manipulation that simulate performance situations and encourage official-match behaviours (Chow, Davids, Hristovski, Araújo, & Passos, 2011; Pinder, Davids, Renshaw, & Araújo, 2011). Davids, Araújo, Correia, et al. (2013) suggested that the coalition of interacting constraints (individual, environmental, and task) leads players to adjust their tactical behaviours due to perceived information and opportunities for action. Therefore, tasks that represent the constraints of an official-match are thought to promote the transfer of players' action and decision making from the training process to the competitive context (Chow, 2013; Ford et al., 2010).

Among the methods employed by coaches during task design, small-sided and conditioned games (SSCG) enable the modification of task-constraints with respect to the formal and functional structure of soccer (i.e., GK+10 vs. 10+GK) (Davids, Araújo, Correia, et al., 2013; Owen, Twist, & Ford, 2004). SSCG allow coaches to design and manipulate specific task constraints, such as numerical relations, that guide exploration and discovery of solutions by adapting players' behaviours to continuous changing environments (Davids, Araújo, Vilar, Renshaw, & Pinder, 2013). An example of a numerical relations constraint that is widely manipulated by coaches in SSCG is the use of floaters (i.e., players who support both teams in offensive phases of the game) (Castellano, Silva, Usabiaga, & Barreira, 2016; Serra-Olivares, González-Víllora, García-López, & Araújo, 2015).

Researchers have begun to understand the effects exerted by the presence of floaters, acting either on the sidelines or in the playing field, using different performance indicators, such as physical, technical or tactical (Hill-Haas, Coutts, Dawson, & Rowsell, 2010; Travassos, Vilar, Araújo, & McGarry, 2014). Some of these studies have examined the influence of floaters on physiological indicators (e.g., heart rate and blood lactate), as well as rating of perceived exertion and time-motion variables (Hill-Haas et al., 2010). Additionally, the presence of floaters in the playing field has been shown to influence players' tactical distribution on-field, regarding situations of numerical difference (Ric et al., 2016; Travassos et al., 2014). Ric, Hristovski, and Torrents (2015) compared SSCG with and without floaters in situations of numerical difference (i.e., 4 vs. 3; 4 vs. 5). They suggested that the use of on-field floaters increased players' tactical *exploratory efficiency* due to the distribution in breadth on the field. Moreover, on-field floaters might have afforded more opportunities for passing the ball, allowing the team to maintain ball possession (Castellano et al., 2016; Vilar et al., 2014).

Although previous studies have examined the influence of floaters on a wide range of measures regarding tactical behaviour (e.g., *dispersion, relative spaces per player, explore efficiency*) (Castellano et al., 2016; Ric et al., 2016), the analysis of players´ tactical behaviours based on the core tactical principles of soccer may offer a step forward in literature (Teoldo, Garganta, Greco, Mesquita, & Maia, 2011). The core tactical principles are characterised by a set of rules that guide players' behaviour/actions towards intended performance outcomes, relative to each phase of the game. For instance, the core tactical principle of Penetration is expressed by the player´s tactical behaviours for dribbling and progressions with the ball towards the opponent´s area, goal or bottom line. This allows the player to obtain space for performing a pass/assistance to a teammate or a shoot at a goal, as well as potentially creating a

77 situation of 1 vs. 0 in which the player in possession "attacks" the space towards the
78 opponent's goal (Teoldo, Guilherme, & Garganta, 2015). Such tactical principles have
79 been assessed through the System of Tactical Assessment in Soccer (FUT-SAT;Teoldo,
80 Garganta, Greco, Mesquita, et al., 2011), allowing to evaluate the quality and frequency
81 of each core tactical principle performed by players, as well as the field place where the
82 core tactical principles occur according to the task constraints, such as field dimensions
83 (Teoldo, Garganta, Greco, Mesquisa, & Muller, 2011) and numerical relations
84 (Castelão, Garganta, Santos, & Teoldo, 2014; B. Silva, Garganta, Santos, & Teoldo,
85 2014). In this sense, Castelão et al. (2014) mentioned the importance of better
86 understanding how the use of floaters on the sidelines may influence players' tactical
87 behaviours with regards to the analysis of the core tactical principles.
88 In this study, we examined the players' tactical behaviours based on core tactical
89 principles during SSCG, with and without floater players on the sidelines. We hypothesised
90 that the absence of floaters will promote more 1 vs. 1 situations due to the reduced number of
91 players involved and the numerical equality in the SSCG (Castelão et al., 2014). Furthermore,
92 we predicted that the presence of floaters on the sidelines will allow more opportunities for
93 players to perform behaviours aimed at increasing the use and effectiveness of playing space
94 during the offensive phase of play, encouraging players to keep ball possession (B.
95 Gonçalves, Marcelino, Torres-Ronda, Torrents, & Sampaio, 2016; Ric et al., 2016). During
96 the defensive phase of play, when facing numerical disadvantage, players will tend to reduce
97 their distances to other teammates and to their own goal as to prevent goal scoring
98 opportunities for the attacking team (Ric et al., 2016).
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100
101

Methods

Participants

Participants comprised of 168 U-17 male youth outfield soccer players (Age = 16.61 ± 0.56) pertaining to ten youth academy Brazilian clubs, from national and regional levels. All the participants were enrolled in regular practice at least three times a week, playing at regional level championships affiliated with their respective state soccer federations. All procedures were conducted according to the ethical guidelines of the lead institution (ethics approval number 133/2012) and conformed to the Declaration of Helsinki and Resolution of the Brazilian National Health Council (466/2012) for research with human beings.

Instrument

The instrument used was the System of Tactical Assessment in Soccer (FUT-SAT), developed by Teoldo, Garganta, Greco, Mesquita, et al. (2011). This system has been consistently used in previous studies, which reported reliability values over .79 in the analysis of actions (E. Gonçalves et al., 2017; Gonzaga, Albuquerque, Malloy-Diniz, Greco, & Teoldo, 2014; Santos, Padilha, & Teoldo, 2014).

FUT-SAT considers two Macro-categories, seven categories and 76 variables that dealt with by the system (see Figure 1). The Macro-category Observation comprises three categories: i) Core Tactical Principles; ii) Place of Action in the Game Field; and iii) Action Outcomes. The Macro-Category Outcome comprised four categories: i) Tactical Performance Index; ii) Tactical Actions; iii) Percentage of Errors; and iv) Place of Action Related to the Principles. This last category enables to identify the tactical actions performed in the opposite field (i.e., offensive actions performed in the defensive field). This Macro-category has this designation due to its variables being dependent on the information pertaining to the variables that make up the Macro Category Observation. It encompasses thirteen variables (ten core

tactical principles, two game phases, and the game overall) for each one of the categories, which are defined from the analysis and identification of the players' efficiency in performing (Macro-category Observation) the core tactical principles during the game (Teoldo et al., 2015). Thus, this system enables the accurate verification of players' position and movement according to spatial references, as well as the analysis and categorisation of the tactical behaviour/ actions (Teoldo, Garganta, Greco, Mesquita, et al., 2011).

The system's protocol includes three procedures. The first procedure consists of analysing the actions performed by the players during the match, with ball possession being the analysis unit. The second procedure refers to the assessment, classification and recording of the tactical actions within the categories Core Tactical Principles, Place of Action in the Game Field and Action Outcomes (see Table 1). The third procedure involves the calculation of the variables included in the categories Tactical Performance Index, Tactical Actions, Percentage of Errors and Place of Action Related to the Principles (see Figure 1) (Teoldo, Garganta, Greco, Mesquita, et al., 2011).

Insert Table 1 here

Insert Figure 1 here

Procedure and Apparatus

Two different SSCG were designed using the presence and absence of "Floaters" as key task constraints: "Floaters off" (Gk + 3 vs. 3 + Gk) and "Floaters sidelines" (Gk + 3 vs. 3 + Gk + 2 floaters). In both situations tests were conducted on a field of 36 meters long by 27 meters wide. The field area was determined by calculating the game space ratio used by soccer players according to the maximum length and width dimensions, established by the International Football Association Board for international games (Teoldo et al., 2011). In the

"Floaters off" SSCG, players performed the test without the support of floaters' and under all the official rules of the game, except for the offside rule (see Figure 2). In the "Floaters sidelines" SSCG, players received the same instructions as in the first SSCG, but were informed about the presence of two floaters on each sideline of the field. Floater players were only allowed to perform offensive actions and were free to cooperate with both teams (as long as the team being supported was in possession) (see Figure 2). All participants played once to each situation, first "Floaters off" followed by "Floaters sidelines" with five minutes of rest between SSCG. The players performed 24,068 tactical actions (11,401 offensive and 12,667 defensive actions) during both (27 "Floater off" and 27 "Floater sidelines") SSCG, encompassing a total of 54 SSCG analysed.

Insert Figure 2 here

Floaters played with free touches and their actions were limited to the space within two areas of 27 meters long by 2 meters wide, parallel to each sideline (see Figure 2). A throw-in was conceded after the ball crosses the sideline delimited by floaters' area. During the test, players were asked not to go inside floaters' area. In both conditions ("Floaters off" and "Floaters sidelines") the test had the duration of four minutes, and a 30-second familiarisation period was provided to the players prior to the start of the test. The actions performed by goalkeepers were not assessed. Coaches and experimenters did not provide any verbal feedback during the SSCG.

A digital video camera (SONY HDR-XR100, Tokyo, Japan) was positioned on the diagonal side of field to record the tests (see Figure 2). Video footage was uploaded into a laptop and the software Soccer Analyser® was used for video edition and analysis. This system enables analysis and categorisation of the tactical actions that are going to be assessed,

as well as to evaluate the accurate verification of the position and movement of players according with spatial references (Teoldo et. al., 2011).

Reliability analysis

Test-retest reliability for the observations comprised of a 20-day interval for reanalysis to avoid any potential familiarity effects with the task (Robinson & O'Donoghue, 2007). Reliability calculation was performed using the Cohen's Kappa test. Three observers were involved in this procedure. Reliability was verified through the reassessment of a number of actions that was superior to the percentage (10%) indicated by literature (Tabachnick & Fidell, 2007).

An intra-observer reliability analysis regarding the "Floaters off" situation presented values between 0.888 (SE = 0.007) and 0.985 (SE = 0.003) while inter-observer reliability values were between 0.810 (SE = 0.024) and 0.989 (SE = 0.011). The intra-observer reliability analysis regarding the "Floaters sidelines" situation presented values between 0.847 (SE = 0.006) and 0.962 (SE = 0.005) while inter-observer reliability values were between 0.819 (SE = 0.013) and 0.963 (SE = 0.012).

Statistical analysis

Descriptive analysis were performed including the absolute and relative frequencies, as well as means and standard deviation. In order to compare the frequencies of the variables between the categories *Core Tactical Principles*, *Place of Action*, and *Action Outcome* the Chi-square (χ^2) test was performed.

To compare the means regarding the dependent variables *Percentage of Errors* and *Place of Action According to the Principles* across both SSCG, a two-sample *t*-test was used for parametric data (variables with normality values above .05) and the Wilcoxon test for non-

parametric data (variables with normality values under .05). Effect sizes were categorised as small (0-.19), medium (.20-.49) and large (>.5) (Cohen, 1988; Fritz, Morris, & Richler, 2012). Significance level was set at $P < .05$.

Results

Table 2 show the frequencies of the *Core Tactical Principles* (players´ tactical behaviour) and the *Place of Action* (field places where players performed the principles), as well as the *Action Outcome* relative to the teams.

Core Tactical Principles

Differences were found for the “Offensive Core Tactical Principles” when comparing the SSCG with and without the floaters (see Table1). Players showed a higher frequency of actions related to the offensive progression by player in possession towards opponent's goal (Penetration) in the “Floaters off” SSCG. Nevertheless, in the "Floaters sidelines" SSCG, players without possession performed more behaviours aiming to explore positions to increase effective playing space, besides performing behaviours with the ball towards their own goal-line or sideline to restart offensive build-up (Width and Length). Moreover, in the "Floaters sidelines" players in the last defensive line attempted more often to progress towards midfield, enabling the team to play a more compact style in order to support offensive actions of the teammates (Offensive Unity).

For the “Defensive Core Tactical Principles”, results showed that players made more attempts to prevent the ball from being played forward quickly by the opponent team (Delay) in “Floaters off” SSCG. During the “Floaters sidelines” SSCG, players performed more behaviours that enabled an increased number of players inside high-risk zones in relation to the ball line and the goal (Concentration). They also performed more behaviours that reduced

effective playing space for the opponents, promoting defensive team play in unity (Defensive Unity).

Place of Action

The players' actions performed in the Offensive Midfield, indicated that a higher frequency of "Offensive tactical actions" were performed during the "Floaters sidelines" SSCG. Also, with respect to the actions performed by the players in the "Defensive Midfield", results showed differences for "Offensive tactical actions" and "Defensive tactical actions" with more actions for both phases of play performed during "Floaters sidelines" SSCG (see Table 1).

Action Outcome

Results revealed differences for the comparison of Action Outcome between "Floaters off" and "Floaters sidelines" SSCG. In the offensive phase players performed more the action "Shoot at goal", "Earn a foul, win a corner or throw-in" and "Loss of ball possession" during "Floaters off" SSCG. Yet, in "Floaters sidelines" SSCG differences were found for the Action Outcome "Keep the possession of the ball". Furthermore, differences were found in the defensive phase, as higher frequencies of "Regain the ball possession", "Commit a foul, give away a corner or throw-in" and "Take a shot at own goal" were observed in the "Floaters off" SSCG. Furthermore, results showed higher frequencies for the "Action Outcome" of "Ball possession of the opponent", and for "All Actions" in "Floaters sidelines" SSCG (see Table 1).

Insert table 2 here

252 Table 3 presents the *Percentage of Errors* (efficiency related to the tactical principles
253 performed by players) and *Place of Action According to the Principles* accomplished perform
254 by players in the opposite field.
255
256 *Percentage of Errors*
257 Results revealed differences for the “Percentage of Errors” performed in both SSCG.
258 Players made mistakes more frequently when trying to decrease effective playing space and to
259 organise themselves defensively after losing ball possession (Defensive Unity) during the
260 “Floaters sidelines” when compared with “Floaters off” SSCG (see Table 2).
261
262 *Place of Action According to the Principles*
263 Differences were found for "Floaters off" in comparison with “Floaters sidelines” for
264 actions of offensive breakthroughs performed by the player in possession within the defensive
265 half (Penetration). Also, results showed a higher frequency of actions performed by players
266 seeking better positions and actions that increase effective playing space in defensive half
267 (Width and Length) in "Floaters sidelines" SSCG.
268 For the “Defensive Core Tactical Principles”, "Floaters off" SSCG allowed players to
269 perform behaviours that exerted pressure up the offensive field, slowing down the opponent in
270 possession of the ball (Delay) attempting to move forward offensively in "Floaters off"
271 SSCG. For "Floaters sidelines" SSCG, players performed more behaviours to stabilise
272 defensive organisation with regards to the opponent team by seeking the numerical stability or
273 superiority in offensive side corridors (Balance) in "Floaters sidelines" SSCG. For “Game
274 Phases”, results revealed that more actions of the “Offensive Phase” and “Game” were
275 observed in "Floaters sidelines" when compared with “Floaters off” SSCG (see Table 2).
276 Insert table 3 here

Discussion

This study we examined players' tactical behaviour based on core tactical principles during SSCG, with and without floaters on the sidelines. Findings supported our initial hypothesis that the absence of floaters ("Floaters off") in SSCG would influence players' individual tactical behaviours by performing more frequently the Concentration and Penetration core tactical principles, thus creating more opportunities for 1 vs. 1 situations. Moreover, results confirmed our prediction that the use of floaters as a key task constraint, would influence tactical behaviours with players seeking to increase the effective use of playing space thus affording more opportunities to maintain ball possession (Ric et al., 2016).

Core Tactical Principles

Concerning the frequency of Core Tactical Principles, the "Floaters off" SSCG encouraged players to frequently perform Penetration which is, also, characterised by dribbling the ball towards the opponents' half (Teoldo et al., 2015). Furthermore, the absence of floaters favoured the players' attempts to regain ball possession in the defensive phase. Therefore, performing the Delay core tactical principle allows to hamper opponent's attempts of offensive progress through the playing field resulting in recovery of ball possession more easily (Leser et al., 2015). On the other hand, Duarte et al. (2012) suggested that the use of task constraints that provide players with 1 vs. 1 situations during practice tasks (i.e., SSCG) may improve players' tactical behaviours. In fact, in our study, the manipulation of "Floaters off" SSCG promoted the emergence of 1 vs. 1 situations thus enabling the attacking players to perform more dribbling actions (i.e., Penetration) towards the opposite target, whilst the defending players attempted to regain ball possession (i.e., Delay). Despite the fact that our study used a different design and measures compared to Duarte et al. (2012) study, results

show that SSCG without floaters and a small number of players (e.g., Gk+3 vs. 3+Gk) is suggested to promote the emergence of 1 vs. 1 situations.

The “Floaters sidelines” SSCG displayed an increase in the frequency of offensive core tactical principles, which resulted in an increase of the effective use of playing space, as well as the distribution of players on-field (Width and Length) (Castellano et al., 2016). Beyond, players displayed a higher frequency of Offensive Unity, by performing tactical behaviours coherent with a more compact style of play, thus leading players to reduce their on-field interpersonal distances for the sequence of play. Such behaviours displayed by core tactical principle of Offensive Unity allowed to: i) better positioning within the field for supporting teammates along team’s progress, and ii) to occupy the offensive half (Teoldo et al., 2015). With respect to the players’ progress observed in this study, Olthof, Frencken, and Lemmink (2015) previously indicated that such variability of movements allows players to position further ahead to search for better free spaces between opponents' defensive lines, thus generating more goal-scoring opportunities.

The absence of floaters during the defensive phase encouraged players to perform more behaviours associated to seeking the reduction of distance between themselves as it allows team play as a unity in the defensive phase, thus hindering opponents’ actions due to the decrease of space (Concentration and Defensive Unity) (Ric et al., 2015). Similar collective´ defensive behaviours were observed in previous studies (e.g., B. Gonçalves et al. (2016), in which players’ positioning dynamics were investigated by manipulating the number of players in SSCG (i.e., 4 vs. 3, 4 vs. 5, 4 vs. 7). Nonetheless previous research has utilised different designs of SSCG in comparison with the present study, suggesting that a higher numerical inferiority may be correlated with the improvement of defensive positioning, by attempts to decrease the distance between teammates and their own goal due to numerical disadvantage (Sampaio, Lago, Gonçalves, Maçãs, & Leite, 2014).

Place of Action

According to results observed in Place of action, by not using floaters has promoted fewer actions on-field, most likely as a result of some individual tactical behaviours observed in this study (i.e., Penetration). Alternatively, adding floaters encouraged players to more frequently perform offensive behaviours in the offensive and defensive midfield and a higher amount of defensive behaviours in the defensive midfield. These findings corroborated previous studies, such as P. Silva et al. (2014), who have showed that the increase of the number of players in SSCG provides a reorganisation of players, allowing them to perform more actions within the field of play.

However, the aforementioned researchers increased the number of players by maintaining numerical equality instead of resorting to the use of floaters. Thus, the addition of floaters to SSCG in this study appeared to stimulate players to search for better space occupation, by increasing the effective use of playing space in the offensive phase of the play, whilst in the defensive phase players tended to display defensive organisation in their defensive midfield (P. Silva et al., 2015; Vilar et al., 2014).

Action Outcomes

Regarding the action outcomes, in the “Floaters off” SSCG behaviours performed by players favoured a higher frequency of Shoot at goal, Earn a foul and, Win a corner or throw-in, when compared to “Floaters sidelines” SSCG, thus providing the teams with a greater dynamic game flow (loss and regain of ball possession). Whilst the presence of floaters allowed more outcomes of "Keep ball possession" during offensive phase, it also made "Regain the ball possession" more difficult for the opponents in the defensive phase.

Our findings contrasted with those of Vilar et al. (2014), since in our study opportunities for shooting at goal decreased when there was the presence of floaters in SSCG. A possible reason for these differences may be due to the use of floater positioned on the sidelines in our study. Even though floaters positioning has maintained the teams numerical equality within the field, this SSCG design (Gk + 3 vs. 3 + Gk + 2 floaters) provided more possibilities for passing exchanges in the width of the field, thus encouraging players to perform defensive behaviours towards their own goal (Travassos et al., 2012). Previously, although P. Silva et al. (2015) have not evaluated core tactical principles, the authors reported that playing with more players possibly provides more opportunities for maintaining ball possession, as well as under numerical inferiority afforded players to display more compact defensive blocks.

Previous research has suggested that numerical superiority, by adding floater players during the offensive phase, is a key task constraint that affords more opportunities for teams to maintain and/or increase ball possession in order to find ways to exploit space (Castellano et al., 2016; B. Gonçalves et al., 2016). Our findings indicate the importance of using floaters on the sidelines during SSCGs as a key task constraint which impacts on players' tactical behaviours. This seems particular relevant when designing SSCG with a focus on ball possession behaviours with the main aim to get players using the width of the pitch (e.g., switch play) to unbalance the opposition team.

Percentage of Errors

Referring to the Percentage of Errors for the dynamics of the game, in "Floaters off" SSCG players exhibited some difficulty when performing the core tactical principle of Defensive Unity that is characterised by behaviours to reduce the effective playing space and to allow team play as a unity. Consequently, the absence of floaters on the sideline seems to

have provided the opponents with potential spaces in the playing field for offensive build-ups, as well as the occurrence of actions closer to the goal, an indication of higher risks for taking shots, once the ball position influenced the distance between teams (Folgado, Lemmink, Frencken, & Sampaio, 2014; Headrick et al., 2011; Olthof et al., 2015).

Place of Action According to the Principles

When observing the Place of Action According to the Principles, the absence of floaters enabled players to perform defensive behaviours, particularly performing the core tactical principle of Delay in the opponent's half, as well as to exert pressure up the offensive field by aiming to avoid the player in possession´ offensive progress (Teoldo, Garganta, Greco, Mesquisa, et al., 2011). Nonetheless the fact that previous studies have manipulated numerical relations without regarding floater players as key task constraints, such findings are in line with our study. In fact, numerical disadvantaged in SSCG encourage players to perform tactical behaviours in defensive half of the field (P. Silva et al., 2015; Travassos et al., 2012). Thereby, the numerical equality on "Floaters off" SSCG may have allowed the players in the defensive phase to perform behaviours of opposition to the player in possession, aiming to hamper opponent’s actions. Such defensive behaviours (due to the increased free space) seem to have led players to make more mistakes and destabilise the team’s organisation, thus providing opportunities for opponents to create goal-scoring chances (Vilar et al., 2012).

Nevertheless, we would like to highlight that some of the research used in our study to discuss our results involves individual and/or collective measures utilised for capturing group tactical behaviours during performance (Araújo, Silva, & Davids, 2015). These measures might collaborate with the core tactical principles of soccer in the sense that, the principles manifested by players (individually) during competitive performance, consist of a set of game

rules that guides players' behaviours towards achievement of intended team performance outcomes (Teoldo et al., 2015). In summary, our findings confirm the suggestions of Ric et al. (2016) and P. Silva et al. (2015) that the manipulation of number of players (e.g., adding floaters on the sidelines) seemed to induce a reorganisation of the players due to the core tactical principles performed. Moreover, these results suggest that increasing distances between players on the field, might have enabled better passing options when in ball possession (Castellano et al., 2016, Vilar et al., 2014). Similarly, the presence of floaters affected the defensive behaviours by focusing on the protection of the teams' own goal through decreasing the distance amongst defensive players (P. Silva et al., 2015; Travassos, Araújo, Vilar, & McGarry, 2011).

Further research is needed to explore tactical behaviour based on the core tactical principles of soccer. It would be important to better understand how players of varying skill levels display their tactical behaviours based on core tactical principles in SSCG. Moreover, it would be interesting to examine if the use of floaters on the sideline would promote variations in players' quality of tactical behaviours based on core tactical principles across different young age groups as observed by Teoldo et al. (2010) for SSCG without floaters (i.e.. Gk + 3 vs. 3 + Gk).

Conclusion

In conclusion, we have showed that the use of floaters on the sidelines influenced players' tactical behaviours in SSCG during both offensive and defensive phases of play. Specifically, in "Floaters off" SSCG, players more frequently performed the core tactical principles of Concentration during the defensive phase of play and Penetration for the offensive phase, thus creating more opportunities for 1 vs. 1 situations. In contrast, in the "Floaters sidelines" SSCG players made more effective use of playing space (Width and

Length) in the opponent's half during the offensive phase. In addition, during the defensive phase, players limited the space for the opponent by compacting the defence in their own half (Defensive Unity) due to numerical disadvantage. The use of floaters allows coaches to design SSCG that induce players to keep ball possession, thus focusing on the increase of effective use of the playing space and offensive numerical superiority. In defensive organisation, it encourages players to pack in their own half due to numerical disadvantage. Such information may support the transfer of tactical behaviours performed in training to the actual match, by encouraging players to keep ball possession during offensive organisation, and to promote teams' defensive stability by decreasing the spaces between players during defensive organisation.

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Figure and Table Captions

Figure 1. Variables concerning System of tactical assessment in Soccer, FUT-SAT (Teoldo et al., 2011; Teoldo et al., 2015).

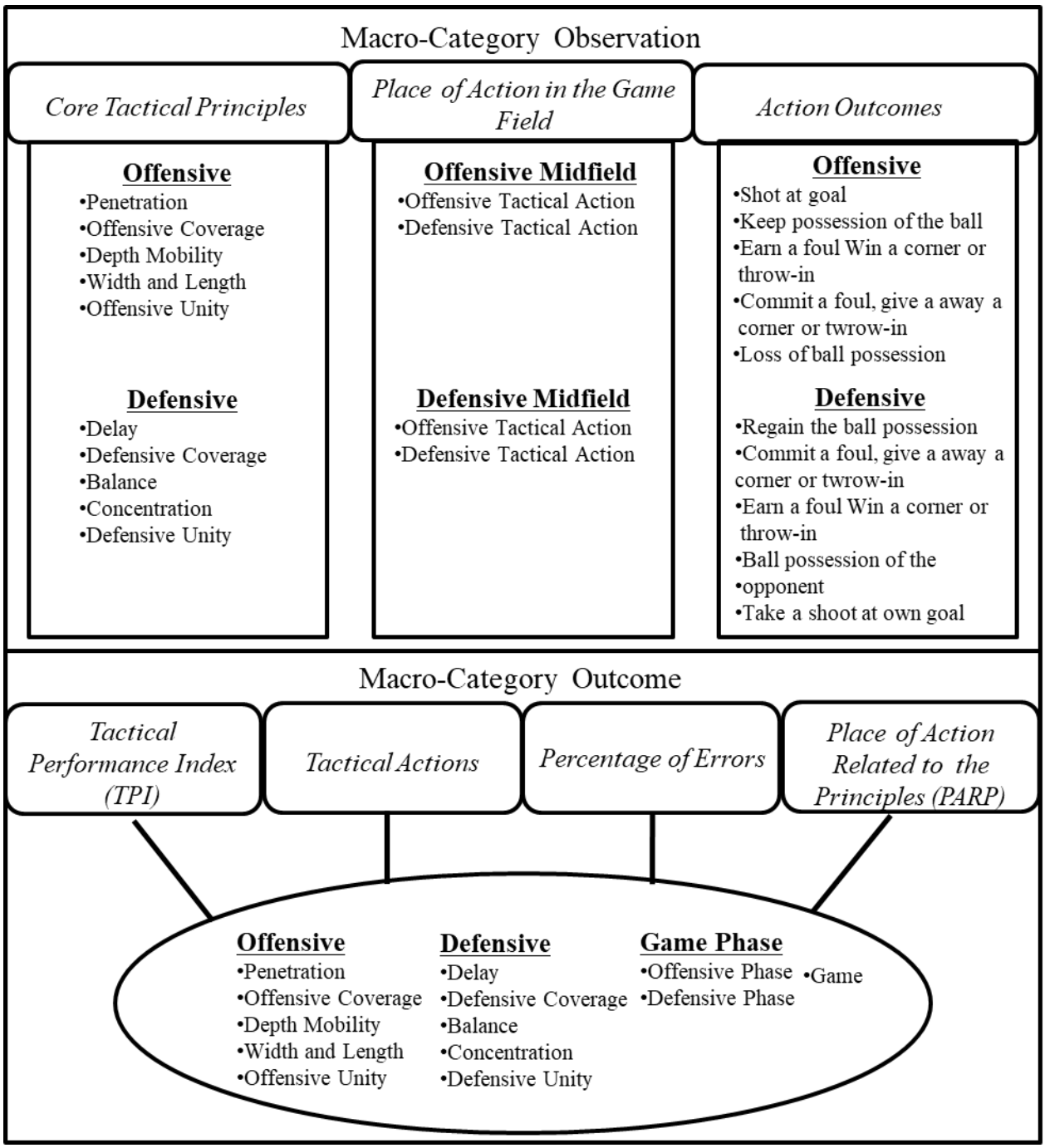
Figure 2. Representation of the SSCG "Floaters off"(Gk + 3 vs. 3 + Gk) and "Floaters sidelines" (Gk + 3 vs. 3 + Gk + 2 Floaters).

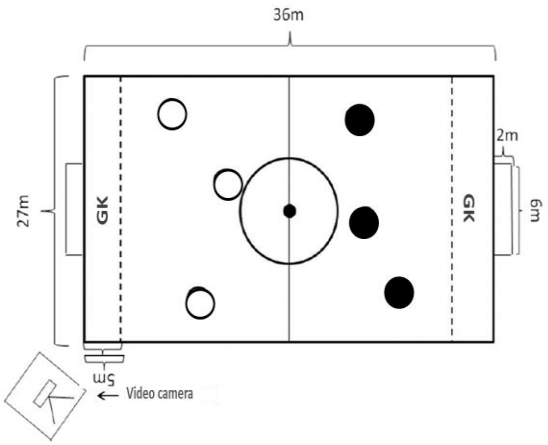
Table 1: Definitions, categories and sub-categories of variables assessed by FUT-SAT (Teoldo et al., 2011; Teoldo et al., 2015).

Table 2. Absolute and relative frequencies of the variables related to "*Tactical Principles*", "*Place of Action in the Playing Field*" and "*Action Outcome*" in "Floaters off" and "Floaters sidelines" SSCG.

Table 3. Means and standard deviations of the variables *Percentage of Errors* and *Place of Action Related to the Principles*, in the "Floaters off" and "Floaters sidelines".

Categories	Sub-Categories	Variables	Definitions
Tactical Principles	Offensive	Penetration	Movement of player with the ball towards the goal line.
		Offensive Coverage	Offensive supports to the player with the ball.
		Depth Mobility	Movement of players between the last defender and goal line.
		Width and Length	Movement of players to extend and use the effective play-space.
		Offensive Unity	Movement of the last line of defenders towards the offensive midfield, in order to support offensive actions of the teammates.
	Defensive	Delay	Actions to slow down the opponent's attempt to move forward with the ball.
		Defensive Coverage	Positioning of off-ball defenders behind the "delay" player, providing defensive support.
		Balance	Positioning of off-ball defenders in reaction to movements of attackers, trying to achieve the numerical stability or superiority in the opposition relationship.
		Concentration	Positioning of off-ball defenders to occupy vital spaces and protect the scoring area.
		Defensive Unity	Positioning of off-ball defenders to reduce the effective play-space of the opponents.
Place of Action	Offensive Midfield	Offensive Actions	Offensive actions performed in the offensive midfield.
		Defensive Actions	Defensive actions performed in the offensive midfield.
	Defensive Midfield	Offensive Actions	Offensive actions performed in the defensive midfield.
		Defensive Actions	Defensive actions performed in the defensive midfield.
Action Outcome	Offensive	Shoot at goal	When a player shoots at goal, and (a) scores a goal, (b) the goalkeeper makes a save, (c) the ball touches one of the goalposts or the crossbar.
		Keep possession of the ball	When team players execute passes to each other and keep up with the ball.
		Earn a foul, win a corner or throw-in	When the match is stopped due to a foul, corner or throw-in; the team that was attacking KEEPS possession of the ball.
		Commit a foul, give away a corner or throw in	When the match is stopped due to a foul, corner or throw-in; the possession of the ball CHANGES to the team that was in defence.
		Loss of ball possession	When the attacking team loses the ball possession.
	Defensive	Regain the ball possession	When the defensive players regain the ball possession.
		Earn a foul, win a corner or throw-in	When the match is stopped due to a foul, corner or throw-in and the possession of the ball CHANGES to the team that was in defence.
		Commit a foul, give away a corner or throw in	When the match is stopped due to a foul, corner or throw-in; the team that was attacking KEEPS possession of the ball.
		Ball possession of the opponent	When the defensive players do not regain the ball possession.
		Take a shot at own goal	When the defensive team takes a shot at their own goal, and (a) takes a goal, (b) the goalkeeper makes a save, (c) the ball touches one of the goalposts or the crossbar.


Macro-Category Observation
Core Tactical Principles
Place of Action in the Game Field
Action Outcomes
Offensive
•Penetration
•Offensive Coverage
•Depth Mobility
•Width and Length
•Offensive Unity
Defensive
•Delay
•Defensive Coverage
•Balance
•Concentration
•Defensive Unity
Offensive Midfield
•Offensive Tactical Action
•Defensive Tactical Action
Defensive Midfield
•Offensive Tactical Action
•Defensive Tactical Action
Offensive
•Shot at goal
•Keep possession of the ball
•Earn a foul Win a corner or throw-in
•Commit a foul, give a away a corner or twrow-in
•Loss of ball possession
Defensive
•Regain the ball possession
•Commit a foul, give a away a corner or twrow-in
•Earn a foul Win a corner or throw-in
•Ball possession of the
•opponent
•Take a shoot at own goal
Macro-Category Outcome
Tactical Performance Index (TPI)
Tactical Actions
Percentage of Errors
Place of Action Related to the Principles (PARP)
Offensive
•Penetration
•Offensive Coverage
•Depth Mobility
•Width and Length
•Offensive Unity
Defensive
•Delay
•Defensive Coverage
•Balance
•Concentration
•Defensive Unity
Game Phase
•Offensive Phase
•Defensive Phase
•Game


36m
27m
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GK
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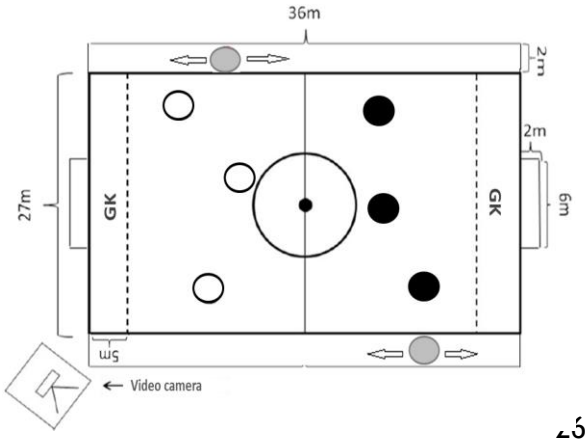
Video camera


36m
27m
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GK
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2m
6m
5m
Video camera

	Floaters off		Floaters sidelines	
	N	%	N	%
CORE TACTICAL PRINCIPLES				
Offensive				
Penetration**	512	4.41	368	2.96
Offensive Coverage	1475	12.69	1520	12.21
Depth Mobility	278	2.39	286	2.3
Width and Length**	2161	18.6	2501	20.09
Offensive Unity**	1053	9.06	1247	10.02
Defensive				
Delay*	1146	9.86	1002	8.05
Defensive Coverage	402	3.46	416	3.34
Balance	1506	12.96	1484	11.92
Concentration**	840	7.23	1073	8.62
Defensive Unity**	2246	19.33	2552	20.5
PLACE OF ACTION				
Offensive Midfield				
Offensive Actions**	2303	19.82	2584	20.76
Defensive Actions	2764	23.79	2674	21.48
Defensive Midfield				
Offensive Actions*	3179	27.36	3339	26.82
Defensive Actions**	3373	29.03	3852	30.94
ACTION OUTCOME				
Offensive				
Shot at goal*	494	4.25	397	3.19
Keep possession of the ball**	4032	34.7	4738	38.06
Earn a foul, win a corner or throw-in**	264	2.27	151	1.21
Commit a foul, give away a corner or throw-in	223	1.92	224	1.8
Loss of ball possession*	475	4.09	415	3.33
Defensive				
Regain ball possession*	508	4.37	441	3.54
Earn a foul, win a corner or throw-in	218	1.88	226	1.82
Commit a foul, give away a corner or throw-in**	270	2.32	158	1.27
Ball possession of the opponent**	4563	39.27	5213	41.87
Take a shot at own goal*	572	4.92	486	3.9
Total Action**	11619		12449	

Statistically significant differences: * ($P< .05$);**($P< .001$): **CORE TACTICAL PRINCIPLES:** Penetration ($\chi^{2(1)}=23.564$; $\omega=.164$; $p<0.001$), Width and Length ($\chi^{2(1)}=24.796$; $\omega=.073$; $p<0.001$), Offensive Unity ($\chi^{2(1)}=16.363$; $\omega=.084$; $p<0.001$), Delay ($\chi^{2(1)}=9.654$; $\omega=.067$; $p=0.002$), Concentration ($\chi^{2(1)}=28.379$; $\omega=.122$; $p<0.001$), Defensive Unity ($\chi^{2(1)}=19.516$; $\omega=.064$; $p<0.001$). **PLACE OF ACTION IN THE GAME FIELD: Offensive midfield**: Offensive tactical actions ($\chi^{2(1)}=16.157$; $\omega=.057$; $p<0.001$). **Defensive midfield**: Offensive tactical actions ($\chi^{2(1)}=3.928$; $\omega=.025$; $p=0.048$), Defensive tactical actions ($\chi^{2(1)}=31.757$; $\omega=.066$; $p<0.001$). **ACTION OUTCOME**: **Offensive:** Shoot at goal ($\chi^{2(1)}=10.560$; $\omega=.109$; $p=0.001$), Keep the possession of the ball ($\chi^{2(1)}=56.834$; $\omega=.081$; $p<0.001$), Earn a foul. win a corner or throw-in ($\chi^{2(1)}=30.769$; $\omega=.272$; $p<0.001$), Loss of ball possession ($\chi^{2(1)}=4.045$; $\omega=.067$; $p=0.044$). **Defensive:** Regain the ball possession ($\chi^{2(1)}=4.730$; $\omega=.071$; $p=0.030$), Commit a foul, give away a corner or throw-in ($\chi^{2(1)}=29.308$; $\omega=.262$; $p<0.001$), Ball possession of the opponent ($\chi^{2(1)}=43.218$; $\omega=.066$; $p<0.001$), Take a shot at own goal ($\chi^{2(1)}=6.991$; $\omega=.081$; $p=0.008$). All Actions: $\chi^{2(1)}=28.623$; $p<0.001$.

	Percentage of Errors		Place of Action Related to the Principles	
	Floaters off	**Floaters sidelines**	**Floaters off**	**Floaters sidelines**
Offensive				
Penetration	20.65 ± 29.57	17.76 ± 28.36	1.61 ± 1.28	1.26 ± 1.11*
Offensive Coverage	11.13 ± 12.67	11.14 ± 13.29	3.52 ± 2.51	3.50 ± 2.66
Depth Mobility	33.31 ± 39.00	32.95 ± 40.05	1.31 ± 1.50	1.53 ± 1.90
Width and Length	16.18 ± 15.47	13.66 ± 13.92	3.96 ± 2.96	6.01 ± 4.50**
Offensive Unity	21.34 ± 26.28	19.13 ± 23.99	3.29 ± 2.93	3.07 ± 2.66
Defensive				
Delay	42.80 ± 27.40	44.19 ± 27.02	3.41 ± 2.34	2.88 ± 2.12*
Defensive Coverage	31.66 ± 34.03	32.86 ± 35.19	0.99 ± 1.29	0.98 ± 1.37
Balance	36.33 ± 21.67	33.79 ± 21.54	4.05 ± 2.90	3.49 ± 2.91*
Concentration	13.89 ± 21.88	14.04 ± 19.25	3.07 ± 2.36	3.05 ± 2.37
Defensive Unity	27.03 ± 20.09	22.83 ± 20.95*	4.91 ± 3.13	5.51 ± 3.76
Game Phases				
Offensive Phase	17.57 ± 11.51	15.98 ± 11.74	13.70 ± 5.49	15.37 ± 7.81*
Defensive Phase	30.24 ± 13.96	27.75 ± 13.40	16.43 ± 6.13	15.91 ± 7.24
Game	23.90 ± 10.60	21.86 ± 9.88	30.13 ± 8.53	31.28 ± 11.64**

Statistically significant differences: *(*P*<.05); **(*P*<.001: **PERCENTAGE OF ERRORS:** Defensive Unity (Z=-2.188; r=-.12; *p*=0.029). **PLACE OF ACTION RELATED TO THE PRINCIPLES**: Penetration (Z=-2.835; r=-.15; *p*=0.005), Width and Length (Z=-4.880; r=-.27; *p*<0.001), Delay (Z=-2.284; r=-.12; *p*=0.022), Balance (Z=-2.151; r=-.12; p=0.032). **GAME PHASES: Offensive phase** (Z=-2.055; r=-.11; *P*=.040)