

Effect of an Inside Floater on Soccer Players Tactical Behaviour in Small Sided and Conditioned Games

by

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*The aim of this study was to verify the effect of an inside floater on soccer players' tactical behaviour in small-sided and conditioned games (SSCGs). The sample comprised 54 Brazilian top-level academy players. The instrument used to assess players' tactical behaviour was the System of Tactical Assessment in Soccer (FUT-SAT). Tactical behaviour was analysed through the number of tactical actions and the percentage of correct actions regarding the core tactical principles of soccer. Repeated measures test was used to compare tactical behaviour between games (SSCGs) with and without an inside floater. Pearson's *r* was used to verify the effect size of the inside floater on tactical behaviour. As for tactical actions, SSCGs with an inside floater displayed significantly lower means for the tactical principles of penetration (2.76 ± 1.63 ; $p < .001$), delay (6.11 ± 2.68 ; $p < .018$), defensive coverage (1.64 ± 1.14 ; $p < .001$) and significantly higher means for the tactical principle of defensive unity (14.98 ± 4.57 ; $p < .032$). With respect to the percentage of correct actions, SSCGs with an inside floater displayed significantly lower means for all tactical principles, except for offensive coverage (90.5 ± 18.48 ; $p < 1.000$). It was concluded that the inside floater allowed players to modify their behaviour in such a way that they adapted to the constraints imposed by the presence of an inside floater. Furthermore, the inside floater provided more difficulty for players, and thus may be considered an important task constraint to be added in SSCGs.*

Key words: soccer, task constraint, training, youth soccer players, core tactical principles.

Introduction

In a soccer game, numerical superiority promotes the success of offensive and defensive actions of players (Vilar et al., 2013). In order to develop players' successful actions, coaches are instructed to include small sided and conditioned games (SSCGs) in training with the constraint of numerical superiority and inferiority (Davids et al., 2013; Ford et al., 2010; Williams and Hodges, 2005). Small-sided and conditioned games are structured in reduced areas with a lower number of players and manipulation of task constraints (Davids et al., 2013; Stratton et al., 2004). SSCGs provide random conditions and contextual interference that allow

to simulate the complex characteristics of a competitive match (Williams and Hodges, 2005). Performing actions in SSCGs enriches learning and, consequently, the development of soccer players (Ford et al., 2010; Pinder et al., 2011).

An approach to provide numerical superiority and inferiority for players is achieved in training through the utilization of an inside floater in SSCGs (Aguiar et al., 2012; Halouani et al., 2014; Hill-Haas et al., 2011). An inside floater is an extra player who is able to create situations of numerical superiority and inferiority within the field (Hill-Haas et al., 2010). In the offensive phase, the inside floater is a player who is able to increase

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cooperation between players during attack and consequently reduce opposition during defence (Prašć et al., 2017). The utilization of offensive inside floaters can provide numerical offensive superiority and numerical defensive inferiority, as well as numerical inequality during transitions for both teams, so as to allow players to be aware of the various scenarios that are also present in a formal game (e.g., playing with 9 outfield players and counter attack situations) (Hill-Haas et al., 2011; Ric et al., 2015; Sampaio et al. 2014).

Researchers have been using offensive inside floaters in SSCGs to verify their effects on players' performance. Results show that the utilization of inside floaters influence physical (Hill-Haas et al., 2010; Radziminski et al., 2013), technical (Vilar et al., 2014) and collective tactical behaviour indicators (Prašć et al., 2017), with the purpose of providing clues on how to employ the inside floater in training contexts.

However, although effects could be observed, the contextual interference generated by the utilization of the inside floater is also associated to players' individual response that is related to the game's tactical principles, so as to solve problems that are present in training and matches (Serra-Olivares et al., 2016; Teoldo et al., 2015). In order to solve problems generated by numerical superiority and inferiority in training and matches, players manage space in the field of play through the performance of core tactical principles, which are related to their tactical behaviour (Teoldo et al., 2015). Analysis of tactical behaviour shows how players are able to deal with constraints of space, time and task constraints which are present in SSCGs and competitive matches and may be regarded as an important indicator that identifies players' characteristics as well as a parameter to create specific training based on a model of play (Garganta, 2009).

The utilization of an inside floater in SSCGs is considered an important task constraint to soccer players, since in different game scenarios players can explore, through tactical behaviour, new possibilities to attack and defend (Davids et al., 2013). Thus, the assessment of players' tactical behaviour in SSCGs with an inside floater provides information that allows to identify which tactical principles are being performed during numerical offensive superiority and numerical defensive inferiority in order to verify how players

understand the context of task constraints (Serra-Olivares et al., 2016; Williams and Hodges, 2005). In this sense, through these data it is possible to identify which tactical actions are positively or negatively influenced by the inside floater, as well as to understand their importance, to prepare players to be able to play in situations of numerical offensive superiority and numerical defensive inferiority (Serra-Olivares et al., 2016; Teoldo et al., 2015).

Understanding the utilization of an inside floater and their effect on tactical behaviour could encourage coaches to increase the time spent by youth players on this type of activity in training, taking into account that coaches should apply up-to-date scientific knowledge regarding playing form activities, in training sessions (Ford et al., 2010). As a result, this could enhance the development of soccer players (Ward et al., 2007).

Therefore, this study aimed to verify the effect of an inside floater on soccer players' tactical behaviour in SSCGs. We hypothesized that increasing the number of players, through the addition of an inside floater, would decrease the frequency of tactical actions with, and near, the ball (Castelão et al., 2014; Silva et al., 2014a), as well as increase the frequency of tactical actions with the purpose of protecting one's own goal (Silva et al., 2014b). Furthermore, we hypothesized that the inside floater would allow players to increase the amount of successful tactical actions in the offensive phase, due to numerical superiority (Ric et al., 2015), and to decrease the frequency of unsuccessful tactical actions in the defensive phase, due to numerical inferiority.

Methods

Participants

The sample consisted of 54 male top-level academy soccer players from a first division Brazilian club (age: 15.49 ± 2.79 years; time of practice 1268.70 ± 736.17 hours). As sample selection criteria, players had to be engaged in systematic development programs with a minimum of three weekly training sessions, and participate in soccer tournaments at regional and national levels. These players performed 1754 offensive tactical actions and 1887 defensive tactical action in games without an inside floater, and 1696 offensive tactical actions and 1859 defensive tactical actions in games with an inside

floater. The present study was approved by the Research Ethics Committee of the Universidade Federal de Viçosa, under the protocol number (Of. Ref. Nº 363.905/2013/CEP) and the standards of the Declaration of Helsinki (2013) and the National Health Council (CNS 466/2012). This study was conducted with the club's and players tutors' permission, they signed an informed consent form allowing their participation in the study.

Instrument

The instrument used to assess players' tactical behaviour was the System of Tactical Assessment in Soccer - "FUT-SAT" (Teoldo et al., 2011). Recent studies using this system presented values of reliability higher than 0.81 for analysis of tactical actions (Gonçalves et al., 2017; Gonzaga et al., 2014; Padilha et al., 2017). The FUT-SAT comprises two macro-categories, seven categories and seventy six variables according to the kind of information provided by the system (Figure 1). The macro-category "observation" has three categories: 1) tactical principle (ten variables), 2) place of action in the game field (four variables), and 3) action outcome (ten variables). The macro-category "outcome" includes four categories: 1) tactical performance index, 2) tactical actions, 3) percentage of errors (or percentage of correct actions), 4) place of action related to the principle (PARP); all comprise the same thirteen variables. The macro-category "outcome" allows to evaluate soccer players' tactical behaviour through players' tactical actions, with and without the ball, based on the ten core tactical principles of soccer: five for the offensive phase: 1) Penetration, 2) Offensive Coverage, 3) Width and Length, 4) Depth Mobility, 5) Offensive Unity; and five for the defensive phase: 1) Delay, 2) Defensive Coverage, 3) Balance, 4) Concentration, 5) Defensive Unity (Table 1) (Teoldo et al., 2011).

The FUT-SAT's protocol comprises three procedures. The first consists of the analysis of actions performed by players during a game, whereas ball possession is considered as a unit of analysis to distinguish between defensive and offensive phases. The second procedure refers to the assessment, classification and recording of tactical actions based on spatial references of the field. The third and last procedure refers to the calculation of variables within the categories "Tactical Actions" and "Percentage of Correct Actions".

Data Collection Procedures

The FUT-SAT's field test was performed by the players. The test was conducted in an area of 36 meters length by 27 meters wide, during 4 minutes. Thirty seconds were conceded for task familiarization prior to the start of the test. Players were instructed follow official rules of soccer, except for the offside rule. During the test there was no verbal interference by the coaches, nor by the researchers.

The FUT-SAT's field test was performed in small-sided games (SSGs) without a floater and in SSCGs with an inside floater. For the "without floater" SSGs teams were selected by the coaching staff (with the purpose of having teams as balanced as possible) and were organized according to players' positional roles (defender, midfielder and attacker) with the following arrangement: "goalkeeper + 3 vs. 3 + goalkeeper" (Gk + 3 vs. 3 + Gk) (Figure 4). Nine games were played in this configuration.

In the "with floater" SSCGs, the same teams and positional arrangements (defender, midfielder and attacker) were preserved, and the games were played under the same configuration, but this time players were informed about the presence of the inside floater in the offensive phase (Gk + 3 vs. 3 + Gk) + 1 (Figure 5). Nine games were played in this configuration.

Three inside floaters played three games each, and all inside floaters were midfield players. All questions raised by the players regarding the use of the inside floater were answered, and they were all aware that the floaters could only be used during the offensive phase (when the team had ball possession), and that the inside floaters were allowed to score goals. The inside floaters wore a vest of a different colour from both teams. Games were played on the same type of surface (natural grass) and at the same time of day, in order to avoid effects of the circadian cycle (Drust et al., 2005).

Materials

The SSGs and SSCGs were recorded by a SONY videocamera (model HDR-XR100). The video material obtained was introduced, in digital format, into a laptop computer (DELL Inspiron N4030, processor Intel Core™ i3) via a USB cable, and converted to "avi" files through the Format Factory Video Converter. Inc. software. The software Soccer Analyser was used for the

insertion of the spacial references within the video and to enable the rigorous assessment of players's positioning and movement throughout the playing field. All statistical procedures were performed using the SPSS (Statistical Package for Social Sciences) for Windows®, version 22.0.

Statistical Analysis

Descriptive analysis (means and standard deviation) of tactical actions and the percentage of correct actions was performed. Data distribution was tested through the Kolmogorov-Smirnov test. In order to compare the mean frequency of tactical actions, as well as the percentage of correct actions between SSCGs with and without inside floaters, the *t* test for repeated measures and the Wilcoxon test were used. The level of significance was set at $p < 0.05$. In order to verify the effect size of the presence of an inside floater on the frequency of tactical actions and the percentage of correct actions, the following classification - low (0.1 - 0.29), intermediate (0.3 - 0.49) and high (>0.5) - was used for both parametric and non-parametric comparisons (Cohen, 1992; Field, 2009; Fritz et al., 2012).

Reliability was analysed through the test-retest method. Sessions to determine reliability were performed respecting an interval of three weeks, so as to avoid task familiarity issues (Robinson and O'Donoghue 2007). Reliability was calculated through the Cohen's Kappa index, and 820 tactical actions were reassessed, which represented 11.39% of the sample, a superior amount compared to that suggested by the literature (10%). Three trained observers participated in this procedure. The results of the retest displayed intra-observer reliability values in the "without floater" SSGs (Gk + 3 vs. 3 + Gk) between 0.811 (ep = 0.057) and 1.000 (ep = 0.000) and in the SSCGs with an inside floater (Gk + 3 vs. 3 + Gk) + 1 between 0.815 (ep = 0.070) and 1.000 (ep = 0.000). The inter-observer reliability in the SSGs without floater (Gk + 3 vs. 3 + Gk) displayed values between 0.831 (ep = 0.033) and 1.000 (ep = 0.000), while in the SSCGs with an inside floater (GK + 3 vs. 3 + GK) + 1 between 0.815 (ep = 0.070) and 1.000 (ep = 0.000).

Results

Table 1 presents the means and standard deviation of the number of tactical actions and the percentage of correct actions in the SSGs without a

floater (Gk + 3 vs. 3 + Gk) and with an inside floater (Gk + 3 vs. 3 + Gk) + 1.

Tactical Actions

SSCGs with an inside floater displayed significantly lower mean values inside the centre of play, in the offensive phase, for tactical actions that represented the progression of the ball carrier towards the opponents' goal ["penetration" ($t_{(50)} = 5.328$)] and in the defensive phase marking ["delay" ($z_{(54)} = -2.345$)] and defensive support against the ball carrier ["defensive coverage" ($z_{(31)} = -3.848$)] related to SSGs without a floater. A high effect size was observed for the principles of "penetration" and "defensive coverage" and a low effect size was observed for the principle of "delay".

However, outside the centre of play, in the defensive phase, significantly higher mean values were obtained in most tactical actions of marking, between the subsequent sector of the centre of play up to one's own goal ["defensive unity" ($t_{(53)} = -2.197$)] in the game without a floater. The "defensive unity" principle displayed low effect size.

Percentage of correct actions

SSCGs with an inside floater displayed a lower percentage of correct actions inside the centre of play, during the offensive phase, indicating that players made more mistakes when progressing with the ball towards the opponents' goal ["penetration" ($z_{(47)} = -2.066$)] and in actions that generated passing options for the ball carrier ["offensive coverage" ($z_{(52)} = -5.012$)], in comparison to SSGs without an inside floater. As for the defensive phase, percentage values were significantly lower, thus indicating that players committed more errors when trying to prevent opponents' progression across the field ["delay" ($t_{(53)} = 4.975$)], when compared to the SSGs without a floater. The principles of "offensive coverage" and "delay" displayed high effect size, while the principle of "penetration" presented low effect size.

In addition, outside the centre of play, mean values were significantly lower in the offensive phase, indicating that players made more mistakes when attempting to increase length and width ["length and width" ($z_{(54)} = -5.875$)], as well as depth relative to the last defensive line ["depth mobility" ($z_{(19)} = -3.247$)], and unity among players behind the ball line ["offensive unity" ($z_{(50)} = -4.316$)]. In the defensive phase, significantly lower

values indicated that players made more mistakes in actions of defensive reinforcement in front of the centre of play [“concentration” ($z_{(48)} = -4.844$)], as well as in actions seeking numerical stability when opponents created passing lanes in depth and amplitude [“balance” ($z_{(53)} = -4.408$)], besides actions of marking between subsequent sectors of the centre of play and their own goal [“defensive

unity” ($z_{(54)} = -2.262$)], compared to SSGs without a floater. The principles of “width and length” displayed high effect size. The principles of “depth mobility”, “offensive unity”, “balance” and “concentration” displayed intermediate effect size, while the principle of “defensive unity” displayed low effect size.

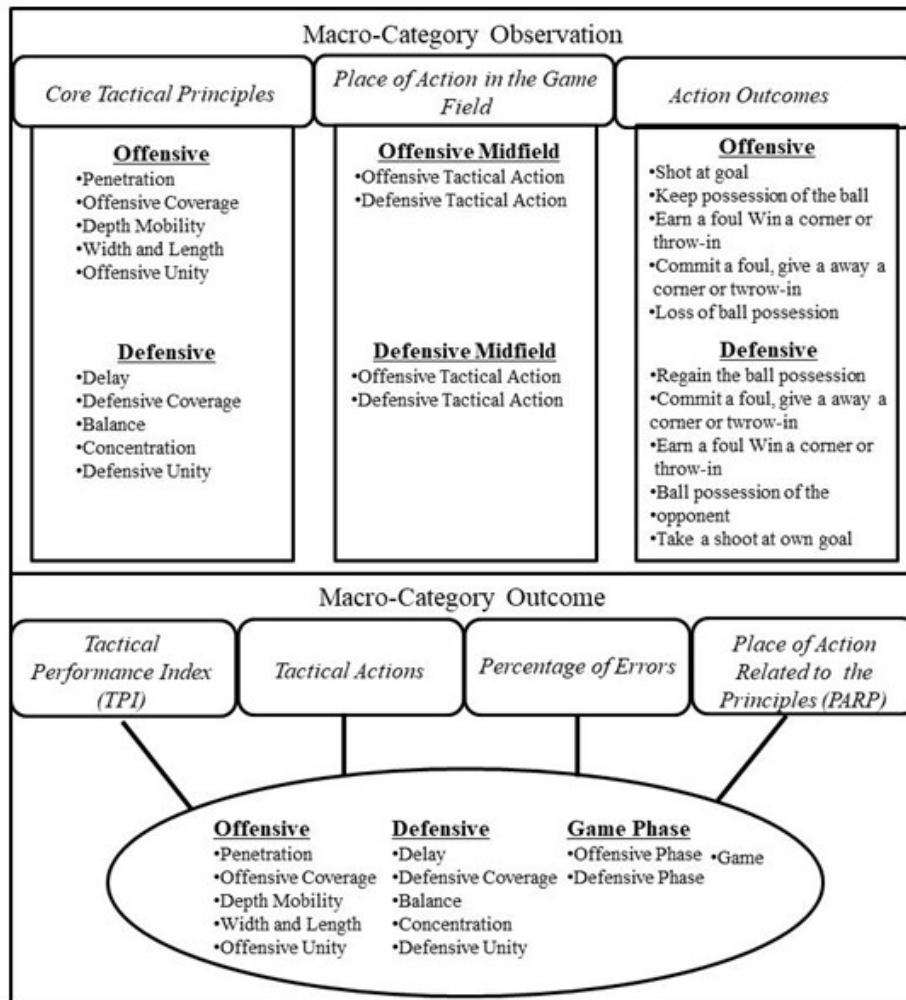


Figure 1

Variables of the System of assessment

Table 1

Definitions, categories and subcategories of variables assessed by the FUT-SAT (Teoldo et al., 2011, 2015)

Categories	Sub-Categories	Variables	Definitions
Tactical Principles	Offensive	Penetration	Movement of a player with the ball towards the goal line.
		Offensive Coverage	Offensive support to the player with the ball.
		Depth Mobility	Movement of players between the last defender and the 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, 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 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.

Table 2

Average and standard deviation in the number of actions and the percentage of correct actions in SSCGs without a floater (Gk + 3 vs. 3 + Gk) and with an inside floater (Gk + 3 vs. 3 + Gk) + 1.

Tactical Principles	Number of Actions				Percentage of correct actions			
	Gk + 3 vs. 3 + Gk	(Gk + 3 vs. 3 + Gk) + 1	p	r	Gk + 3 vs. 3 + Gk	(Gk + 3 vs. 3 + Gk) + 1	p	r
<i>Offensive</i>								
Penetration	4.33 ± 2.07	2.76 ± 1.63	.001**	.602	86.48 ± 19.97	78.23 ± 23.97	.039*	.205
Offensive coverage	8.48 ± 3.71	8.24 ± 3.77	.886	-	97.26 ± 6.14	79.45 ± 18.96	.001**	.765
Depth Mobility	2.18 ± 1.07	2.79 ± 2.09	.406	-	94.64 ± 15.15	53.78 ± 31.56	.001**	.399
Length and Width	12.27 ± 5.54	12.4 ± 4.41	.872	-	96.58 ± 4.92	71.38 ± 19.83	.001**	.565
Offensive Unity	5.86 ± 3.15	6.13 ± 3.18	.691	-	98.33 ± 4.78	80.71 ± 23.09	.001**	.483
<i>Defensive</i>								
Delay	7.42 ± 3.23	6.11 ± 2.68	.018*	.226	71.86 ± 21.65	52.73 ± 23.75	.001**	.564
Defensive Coverage	2.69 ± 1.68	1.64 ± 1.14	.001**	.659	86.38 ± 19.54	90.5 ± 18.48	1,000	-
Balance	7.37 ± 3.03	7.92 ± 3	.201	-	79.82 ± 17.66	58.85 ± 20.2	.001**	.426
Concentration	5.07 ± 2.73	4.63 ± 2.22	.382	-	97 ± 8.79	79.98 ± 22.31	.001**	.479
Defensive Unity	13.05 ± 4	14.98 ± 4.57	.032*	.289	86.43 ± 14.24	80.2 ± 18.59	.024*	.217

$p < 0.05$

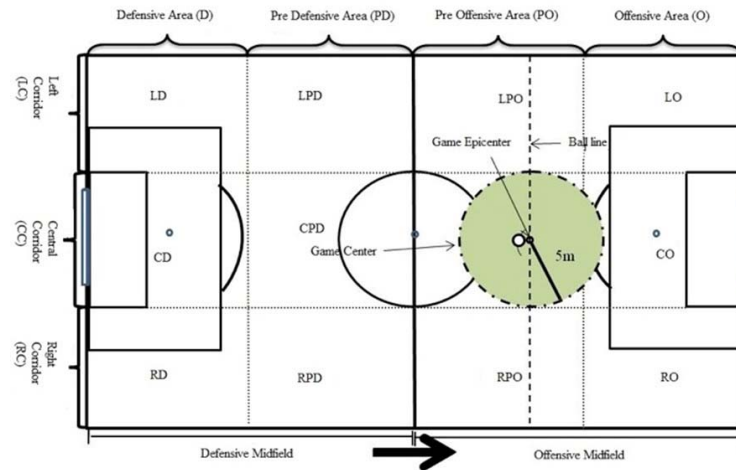


Figure 2

Spatial references used in the FUT-SAT's field test (Teoldo et al., 2011)

Discussion

The aim of this study was to verify the effect of an inside floater on soccer players' tactical behaviour in small-sided and conditioned games (SSCGs). This study was carried out in order to identify tactical demands of SSCGs with an offensive inside floater in order to ascertain which kind of players this activity is suited to (Garganta, 2009). Assessment of players' tactical behaviour in SSCGs is important for practice, since according to our findings, it is possible to design activities that enable players to develop their performance (Serra-Olivares et al., 2016).

The results confirmed the hypothesis that in SSCGs with an inside floater player performed less offensive tactical actions with the ball (Penetration) and less defensive actions near the ball inside the centre of play (Delay and Defensive

coverage), while more defensive tactical actions, distant from the ball carrier, outside the centre of play (Defensive Unity). These findings indicate that the number of individual tactical actions of progression across the field with the ball (Penetration) decreased, along with the amount of marking the ball carrier inside the centre of play (Delay and Defensive Coverage). On the other hand, there was an increase in the number of tactical actions outside the centre of play with the purpose of protecting the goal and preserving team unity (Defensive Unity). Among these actions, the ones that were more affected were those related to the progression with the ball (Penetration) and marking the ball carrier (Defensive Coverage).

Behavioural characteristics displayed by players in SSCGs with an inside floater may be

related to the creation, by an extra player, of offensive numerical superiority and defensive numerical inferiority. As for offensive numerical superiority, generated through the utilization of an inside floater in SSCGs, Vilar et al. (2014) and Praça et al. (2017) reported that youth players performed more passes that caused individual actions with the ball to decrease. SSCGs with an inside floater generate new passing options, which enable passes in depth and width, in the defence-attack transition, as well as increased ball circulation in the development of ball possession (Barreira et al., 2014). With respect to numerical inferiority in SSCGs, Sampaio et al. (2014), Silva et al. (2014b) and Travassos et al. (2014) observed, during the defensive phase, an increase in the distance from players to their opponents, when performing actions closer to their own goal. The numerical inequality created by the inside floater induced players to back off defensively, in order to compensate for the absence of one player.

The results of this study confirmed the hypothesis of the decrease in the percentage of correct actions during the defensive phase in SSCGs with an inside floater. The most affected actions in this game were those related to marking the ball carrier (Delay), and in the surroundings of the centre of play in width (Balance) and depth (Concentration). During the defensive phase, in 1 vs. 1 situations, dealing with and anticipating movements from attacking players determine the success of defending players when performing defensive actions (Duarte et al., 2012). However, performing defensive actions in relation to an attacking player with the ball when in defensive numerical inferiority may generate empty spaces for the opposing team to progress and receive the ball near the goal (Silva et al., 2014b). Findings indicate that playing against a team with an inside floater hampers defending players dealing with opponents, especially when performing defensive tactical actions related to pressuring or leading the opponent to less risky areas in relation to one's own goal. The actions to preserve the team's unity (Defensive Unity) were less affected. Silva et al. (2014b) verified that national youth level players, during defensive numerical inferiority, moved in unity when defending the opponent. Thus, it can be observed that movements to preserve unity between players allow compensation for the absence of a player which does not affect

movements to protect the goal.

However, the hypothesis of the increase in the percentage of correct actions in the offensive phase was not confirmed. Decreases in the percentage of correct actions were observed when players tried to support the ball carrier (Offensive Coverage), as well as when moving in depth towards the opposite goal (Depth Mobility), increasing space in length and width (Width and Length) and preserving team unity (Offensive Unity), whereas the least affected was the principle related to progression across the field by the ball carrier (Penetration). Players reduce surface area when in offensive numerical superiority, allegedly with the purpose of creating instability for their opponents in their defensive actions (Travassos et al., 2014). However, this reduction can increase difficulty for teammates because SSCGs with less players involved (e.g., 4 vs. 3) make movement and positioning more unpredictable (Aguiar et al., 2015; Gonçalves et al., 2016). Thus, in this study, playing with an inside floater did not improve performance of offensive tactical actions, although apparently the inside floater generated difficulties for players to perform offensive tactical actions.

SSCGs with an inside floater provided a new scenario that allowed youth players to perform tactical actions according to the possibilities that were offered to them. This demonstrates that the addition of an inside floater can support youth players to manage their behaviour in an autonomous way, one that promotes a greater understanding of the context in which they are playing (Davids et al., 2013). Difficulties generated in SSCGs with an inside floater can stimulate other youth players to create new alternatives and organize themselves on the field in such a way that improves the quality of tactical actions performed and increase the ability to manage playing space in both defensive and offensive phases (Williams and Hodges, 2005). Hence, the inside floater can be employed in training to generate complexity for youth players with high levels of offensive and defensive tactical performance, also being effective to teaching tactics in small-sided and conditioned games as it requires from teammates, regardless of the position, performance of specific actions that are necessary during the emergence of numerical superiority and inferiority (Aguiar et al., 2012; Serra-Olivares et al., 2016).

Practical implications

With the use of an inside floater in Gk + 3 vs. 3 + Gk configuration, all players from both teams (six players) have the possibility to play in offensive numerical superiority and defensive numerical inferiority. The characteristics of the inside floater allow a higher number of players to change their behaviour to play in scenarios of numerical advantage and disadvantage, when compared to SSCGs of fixed numerical inequality in which the configuration of the teams remains the same in both phases of play (e.g. Gk + 4 x 3 + Gk).

Players who carry the ball too much and those who perform direct marking on players in possession may be more frequently included in Gk + 3 vs. 3 + Gk with an inside floater, in order to perform tactical actions without the ball in the offensive phase, as well as defensive tactical actions that allow the occupation of spaces outside the centre of play. Furthermore, players that display superior tactical performance should also be included in SSCGs with inside floaters, as the difficulty imposed could induce them to find other ways to solve problems in situations of numerical superiority or inferiority.

Limitations

This study demonstrates that the addition of an inside floater can generate changes in players' tactical behaviour. However, our findings do not allow to tell whether this change will occur

in different SSCGs configurations, for instance (GK + 4 vs. 4 + GK) + 1; (GK + 5 vs. 5 + GK) + 1. Therefore, for future studies we suggest increasing the number of players involved, as well as the number of inside floaters in SSCGs, as the increase in the number of players in SSCGs provides opportunity to improve tactical behaviour (Gonçalves et al., 2016; Praça et al., 2016). Moreover, our findings do not allow to indicate use of an inside floater from other positional roles (e.g. defenders and attackers). Thus, for futures studies we suggest using defenders and attackers as inside floaters in Gk + 3 vs. Gk + 3.

Conclusion

We verified that the inside floater influenced soccer players' tactical behaviour. Hence, the use of an inside floater may be regarded as an alternative for coaches to induce players of both teams to perform core tactical principles in different contexts of numerical offensive superiority and numerical defensive inferiority. These contexts must be included in SSCGs with the purpose of preparing players to adjust their tactical behaviour, in order to improve their ability to play under such circumstances in competitive matches. Also, it is relevant to design SSCGs with modifications in the number of participants, with the purpose of enhancing players' development with respect to their tactical skills.

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References

- Aguiar M, Botelho G, Lago C, Maças V, Sampaio J. A Review on the Effects of Soccer Small-Sided Games. *J Hum Kinet*, 2012; 33(1): 103–13
- Aguiar M, Goncalves B, Botelho G, Lemmink K, Sampaio J. Footballers' movement behaviour during 2-, 3-, 4- and 5-a-side small-sided games. *J Sports Sci*, 2015; 33(12): 1259–66
- Barreira D, Garganta J, Guimaraes P, Machado J, Anguera MT. Ball recovery patterns as a performance indicator in elite soccer. *Proc Inst Mech Eng Part P J Sport Eng Technol*, 2014; 228(1): 61–72
- Castelão D, Garganta J, Santos R, Teoldo I. Comparison of tactical behaviour and performance of youth soccer players in 3v3 and 5v5 small-sided games. *Int J Perform Anal Sport*, 2014; 14(3): 801–13

- Cohen J. A power primer. *Psychol Bull*, 1992; 112(1): 155–9
- Dauids K, Araújo D, Correia V, Vilar L. How Small-Sided and Conditioned Games Enhance Acquisition of Movement and Decision-Making Skills. *Exerc Sport Sci Rev*, 2013; 41(3): 154–61.
- Drust B, Waterhouse J, Atkinson G, Edwards B, Reilly T. Circadian Rhythms in Sports Performance—an Update. *Chronobiol Int*, 2005; 22(1): 21–44
- Duarte R, Araújo D, Dauids K, Travassos B, Gazimba V, Sampaio J. Interpersonal coordination tendencies shape 1-vs-1 sub-phase performance outcomes in youth soccer. *J Sports Sci*, 2012; 30(9): 871–7
- Field A. Discovering statistics using SPSS. *Discovering statistics using SPSS*, London; 2009
- Ford PR, Yates I, Williams AM. An analysis of practice activities and instructional behaviours used by youth soccer coaches during practice: exploring the link between science and application. *J Sports Sci*, 2010; 28(5): 483–95
- Fritz CO, Morris PE, Richler JJ. Effect size estimates: Current use, calculations, and interpretation. *J Exp Psychol Gen*, 2012; 141(1): 2–18
- Garganta J. Trends of tactical performance analysis in team sports: bridging the gap between research, training and competition. *Rev Port Ciências do Desporto*, 2009; 9(1): 81–9
- Gonçalves B, Marcelino R, Torres-Ronda L, Torrents C, Sampaio J. Effects of emphasising opposition and cooperation on collective movement behaviour during football small-sided games. *J Sports Sci*, 2016; 34(14): 1346–54
- Gonçalves E, Noce F, Barbosa MAM, Figueiredo AJ, Hackfort D, Teoldo I. Correlation of the peripheral perception with the maturation and the effect of the peripheral perception on the tactical behaviour of soccer players. *Int J Sport Exerc Psychol*, 2017; (July):1–13
- Gonzaga ADS, Albuquerque MR, Malloy-Diniz LF, Greco PJ, Teoldo I. Affective decision-making and tactical behavior of under-15 soccer players. *PLoS One*, 2014; 9(6): 1–6
- Halouani J, Chtourou H, Gabbett T, Chaouachi A, Chamari K. Small-sided games in team sports training: a brief review. *J Strength Cond Res*, 2014; 28(12): 3594–618
- Hill-Haas SV, Coutts AJ, Dawson B, Rowsell G. Time-Motion Characteristics and physiological responses of Small-Sided Games in Elite Youth Players: Influence of Player Number and Rule Changes. *J Strength Cond Res*. 2010;24(8):2149–56
- Hill-Haas SV, Dawson B, Impellizzeri FM, Coutts AJ. Physiology of small-sided games training in football: A systematic review. *Sport Med*, 2011; 41(3): 199–220
- Padilha MB, Guilherme J, Serra-olivares J, Roca A, Teoldo I. The influence of floaters on players ' tactical behaviour in small-sided and conditioned soccer games The influence of floaters on players ' tactical behaviour in small-sided and conditioned soccer. *Int J Perform Anal Sport*, 2017; (November): 1–16
- Pinder RA, Dauids K, Renshaw I, Araújo D. Representative Learning Design and Functionality of Research and Practice in Sport. *J Sport Exerc Psychol*, 2011; 33(33): 146–55
- Praça GM, Clemente FM, Andrade AGP De, Morales JCP, Greco PJ. Network Analysis in Small-Sided and Conditioned Soccer Games: the Influence of Additional Players and Playing Position. *Kinesiol Int J Fundam Appl Kinesiol*, 2017; 49(2): 185-197
- Praça GM, Folgado H, Ribeiro-Silva PC, Greco PJ. Influence of additional players on collective tactical behaviour in small-sided soccer games. *Rev Bras Cineantropometria e Desempenho Hum*, 2016; 18(5): 602–10
- Radziminski L, Rompa P, Barnat W, Dargiewicz R, Jastrzebski Z. A comparison of the physiological and technical effects of high-intensity running and small-sided games in young soccer players. *Int J Sports Sci Coach*, 2013; 8(3): 455–65
- Ric A, Hristovski R, Torrents C. Can joker players favor the exploratory behaviour in football small-sided games? *Res Phys Educ Sport Heal*, 2015; 4(2): 35–9
- Robinson G, O'Donoghue P. A weighted kappa statistic for reliability testing in performance analysis of sport. *Int J Perform Anal Sport*, 2007; 7(1): 12–9
- Sampaio JE, Lago C, Gonçalves B, Maças VM, Leite N. Effects of pacing, status and unbalance in time motion variables, heart rate and tactical behaviour when playing 5-a-side football small-sided games. *J Sci Med*

- Sport*, 2014; 17(2): 229–33.
- Serra-Olivares J, Clemente FM, González-Víllora S. Tactical expertise assessment in youth football using representative tasks. *Springerplus*, 2016; 5(1): 1301
- Silva B, Garganta J, Santos R, Teoldo I. Comparing Tactical Behaviour of Soccer Players in 3 vs. 3 and 6 vs. 6 Small-Sided Games. *J Hum Kinet*, 2014a; 41(1): 191–202
- Silva P, Travassos B, Vilar L, Aguiar P, Davids K, Araújo D, et al. Numerical Relations and Skill Level Constrain Co- Adaptive Behaviors of Agents in Sports Teams. *PlosOne*, 2014b; 9(9): 1–12
- Stratton G, Williams AM, Reilly T, Richardson D. Acquiring soccer skills: effective practice and instructions. *Acquiring soccer skills: effective practice and instructions*. In: Youth Soccer: From Science to Performance, 122-36; 2004
- Teoldo I, Garganta J, Greco PJ, Mesquita I, Maia J. System of tactical assessment in Soccer (FUT-SAT): Development and preliminary validation. *Motricidade*, 2011; 7: 69–84
- Teoldo I, Guilherme J, Garganta J. Training football for smart playing: On tactical performance of teams and players. *Training football for smart playing: On tactical performance of teams and players*, Curitiba: Appris; 2015
- Travassos B, Vilar L, Araújo D, McGarry T. Tactical performance changes with equal vs unequal numbers of players in small-sided football games. *Int J Perform Anal Sport*, 2014; 14(2): 594–605
- Vilar L, Araújo D, Davids K, Bar-Yam Y. Science of winning soccer: Emergent pattern-forming dynamics in association football. *J Syst Sci Complex*, 2013; 26(1): 73–84
- Vilar L, Esteves PT, Travassos B, Passos P, Lago-peñas C, Davids K. Varying Numbers of Players in Small-Sided Soccer Games Modifies Action Opportunities During Training. *Int J Sport Sci Coach*, 2014; 9(5): 1007–18
- Ward P, Hodges NJ, Starkes JL, Williams MA. The road to excellence: deliberate practice and the development of expertise. *High Abil Stud*, 2007; 18(2): 119–53
- Williams AM, Hodges NJ. Practice, instruction and skill acquisition in soccer: Challenging tradition. *J Sports Sci*, 2005; 23(6): 637–50

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