

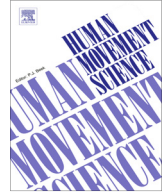


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How perceiving additional targets modifies teams' tactical behavior during football small-sided games



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ABSTRACT

This study aimed to measure how the change on targets information modifies teams' tactical behavior during football small-sided games. 20 male senior professional players divided in 4 teams of 5 players participated in the study. Each team played two small-sided games, one with 2 official targets with goalkeeper and one with 6 small targets. Positional data of each player were recorded using a 15 Hz portable GPS. The distance between the centers of gravity (CG) of both team, the stretch index and the relative stretch index were measured and differences accessed via standardized differences, coefficient intervals and meta-analysis procedures. A moderate increase on the distance between the CG of each team and a small decrease on the stretch index and on the relative stretch index from 2 targets to the 6 targets games was observed. It was also identified that pitch location affected the interaction between teams. When the game was played in lateral corridors or defensive sectors, the differences between game conditions increased. Emphasizing the information for attacking team to shoot at goal, by manipulating the number of targets constrained tactical behavior of teams. The amplification of specific information on small-sided games can help coaches to promote players and teams' emergent adapted behaviors.

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1. Introduction

The use of small-sided games (SSGs) is very popular for association football training in young and adult professional players (Fenoglio, 2003; Katis & Kellis, 2009; Rampinini et al., 2007). Coaches are using SSGs on the assumption that it replicates the cinematic, physiological, technical and tactical demands of the game (Gabbett, Jenkins, & Abernethy, 2009; Hill-Haas, Dawson, Impellizzeri, & Coutts, 2011; Katis & Kellis, 2009).

One of the most important issues on SSGs is the design and the manipulation of the practice tasks according to the learning aims (Davids, Araújo, Correia, & Vilar, 2013; Tessitore, Meeusen, Piacentini, Demarie, & Capranica, 2006). In fact, the improvement of each physical, technical or tactical aim is dependent on task design and there is a need to better understand the effect of the manipulation of each constraint on players and teams behavior (Aguiar, Botelho, Lago, Maças, & Sampaio, 2012). Despite increasing the amount of research conducted into SSGs in Association Football, there is little information regarding the effects of the manipulations of SSGs on tactical skills of players and teams (Hill-Haas et al., 2011). Over the last years, there were some attempts to improve the understanding of the tactical aspects of the football game and practice tasks by considering the interactions between opposing players and/or teams (see some examples in Travassos, Davids, Araujo, & Esteves, 2013). Based on ecological dynamics approaches (Araújo, Davids, & Hristovski, 2006), team sports can be viewed as super-organisms in which the ongoing spatial-temporal interactions between players is a consequence from the constant information exchanges between teammates and opponents, either from a local (player-player) and from a global (team-team) levels of organization (Duarte, Araújo, Correia, & Davids, 2012). Accordingly, the analysis of tactical behavior requires to account for the emergence/dissolution of coordination patterns, considering the dynamics of players' distribution on the pitch always in interaction with the ball kinematics and the scoring targets location (McGarry, 2009). For instance, the creation of local numerical superiority and spatial-temporal advantage near the ball allow to create some instabilities and transitions on patterns of play on attackers (when searching for the optimal pitch position to shot at the goal) and defenders (when protecting the scoring goal and recover the ball possession) (Vilar, Araújo, Davids, & Bar-Yam, 2013).

Tactical behavior in team sports has been evaluated in previous research by tracking the movement behaviors of players on the pitch. Afterwards, players positioning on the pitch were converted on variables that allow capturing the patterns of coordination between players and teams. For example, measuring the oscillation between the centers of gravity of teams (CG) it was possible to better understand the balance between teams on the field, the variation on the flow of the game and the level of coupling between teams (Frencken, Lemmink, Delleman, & Visscher, 2011; Lames, Erdmann, & Walter, 2010; Sampaio & Maças, 2012). The variation on the distance between CG of both teams also revealed interesting issues related with the emergence of goal scoring opportunities and assistant passes for shooting at goal (Duarte et al., 2012; Lames et al., 2010). Also, the covered areas, the stretch index and the relative stretch index provide accurate information about how attacking and defending teams expand and contract relative to one another over the game, allowing to understand the emergence of goal scoring opportunities or assistant passes for shooting situations (Duarte et al., 2012; Frencken et al., 2011; Lames et al., 2010).

Available research have highlighted relevant tactical team behaviors that coaches need to attend in order to improve players and teams' performance or to implement effective pedagogical strategies in SSGs (Davids et al., 2013; Travassos et al., 2013). Indeed, to optimize game adapted behaviors, coaches need to manipulate task constraints that highlight the information that sustain the emergence of functional patterns of coordination, such as the numerical relation between players, the number and size of the scoring targets or even its location.

However, only a few studies have measured how manipulating task constraints in SSGs changes tactical behavior of players and teams. The first one, measured the effects of the manipulation of the number of players (3 vs 3 and 4 vs 4) and their age (U9, U11 and U13) on interpersonal relation between teams (Folgado, Lemmink, Frencken, & Sampaio, 2012). The second, measured how the manipulation of the defensive playing method (zone or man-to-man defence) influenced the collective synchrony of football players during a 6 vs 6 SSG (Duarte, Travassos, Araújo, & Richardson, 2013). The third, measured the effect of changing game pace (slow, normal or fast), status (winning and losing)

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