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Original Article

The usefulness of small-sided games on soccer training

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Abstract
The specificity of collective sports training has evolved to adapt according to ecology stimuli inherent to the sport. In this sense, the coaches have adopted exercises based on the game, designated by small-sided games. In football practice this type of exercises triggers very receptivity on the part of coaches. In this sense, this paper analyzes the relevance of this type of exercise and as may be appropriate depending on the specific needs of the players. Task constraints as field dimensions, number of players for exercises or objectives of the task showed effects on physiological and technical variables of the players. Consequently this article will examine through a literature review, the effects related to the task constraints in order to emphasize the massive relevance of small-sided soccer games.
Key words: Small-sided games, training, task constraints, soccer.

Introduction

Physiological, social, psychological, technical and tactical factors can influence the performance of soccer players (Bagsbo, 1994), *i.e.*, the agglomerations of factors are important constraints that influence directly the performance over time. Therefore the training conception should consider all these factors in order to develop, integrally, the soccer players (Jones & Drust, 2007). In high performance sports it has been well accepted that the maximum benefits of exercises are achieved when the training stimuli are similar to the competitive demands (*e.g.*, Bompa, 1983; Mallo & Navarro, 2008). Therefore, physical factors can be carried out in a more soccer specific way than plain running (Hoff, WislØff, Engen, Kemi & Helgerud, 2002). Thus, in order to integrate the reality of the game on training, the coaches try to emulate the physical, technical and tactical requirements, adapting the task to specificity of the game, reducing its forms and adapting training objectives (*e.g.*, MacLaren, Davis, Isokawa, Mellor & Reilly, 1988; Hoff, *et al.*, 2002; Reilly & White, 2004; Mallo & Navarro, 2008).

In this way technical and tactical factors are involved and trained in proximal conditions to soccer match, in order to promote an effective transfer to the competitive environment and develop at same time the tactical principles, taking advantage to the training time (Williams, Horn & Hodges, 2003). Commonly the literature indicates that these adaptations of the game, reducing the game at small parts, are designated as small-sided games. Therefore small-sided games are generally used by coaches in order to develop the technical skills or aerobic fitness of soccer players (*e.g.*, Rampinini, Impellizzeri, Castagna, Abt, Chamari, Sassi & Marcora, 2006; Hill-Haas, Coutts, Rowsell, & Dawson, 2008; Hill-Haas, Dawson, Coutts & Rowsell, 2009).

The design and introduction of the specific training exercises depends, unavoidably, of factors associated with the team's context and their objectives. Factors such as conditional capabilities of the players, the season stage, recovery time in relation to post or pre game, team's strategic objectives, technical level of players or the level of collective performance, are factors that should be considered at the moment of designing the training exercises. In fact, the adequation of exercise specificity to the context can be a key factor predicting the activity success. Therefore the complexity level of exercise directly depends of the factors conjugacy previously described. Nevertheless at scientific level some factors can't be attended as a specific strategic of team or specific season stage and their specific context. However recent studies (*e.g.*, Hill-Haas, Dawson, Impellizzeri & Coutts, 2011) suggest the massive relevance of small-sided games application in order to improve the quality and training specificity. In fact, are not only a technical or physiology factors that can be improved through small-sided games, in fact, available evidence suggests that these constraints (*i.e.*, playing area and number of players) promote higher levels of enjoyment and dedication among players improving, at same time, the level of play (Wall & Côté, 2007; Sampaio, Abrantes & Leite, 2009).

Regarding to physiological factors is possible to analyze that the physiological indicators depends of the exercises characteristics (Aroso, Rebelo & Gomes-Pereira, 2004). Studies on small-sided games suggest that

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heart rate responses are around 90-95% of maximal heart rate (*e.g.*, Hoff, Engen, Kemi. & Helgerud, 2002; Kelly & Drust, 2009) and these same games can improve aerobic fitness and, at same time, specifically physical match performance (Helgerud, Engen, Wisloff & Hoff, 2001). In fact some studies had examined the relevance and influence of task constraints (e.g., field size, player's number, task goals or coach encouragements) on intensity of small-sided games (*e.g.*, Owen, Twist & Ford, 2004; Rampinini, *et al.*, 2006; Jones & Drust, 2007). Some alterations on physiology variables (*e.g.*, heart rate, blood lactate or rating perceived exertion) has been reported (*e.g.*, Little & Williams, 2007; Dellal, *et al.*, 2008). Equally, kinematical analysis (*e.g.*, distance covered, intensity profile of players) suffered oscillations influenced by task constraints at small-sided games (*e.g.*, Casamichana & Castellano, 2010).

Concerning to technical aspects, the inclusion of match-specific activities such as passing, shoots or tackling in small-sided games can adequate the training to real demands of sport (Rampinini, *et al.*, 2007). Some studies, beyond analyzing the physiological factors, consider technical elements of players on each small-sided game (*e.g.*, Jones & Drust, 2007; Katis & Kellis, 2009; Casamichana & Castellano, 2010). In fact task constrains as field size or number of players can influence the frequency of technical elements of each player. Some studies noted that field size represents an important factor that constrain the number of ball contacts or type of passes made by players (*e.g.*, Jones & Drust, 2007; Casamichana & Castellano, 2010). In the same way, the number of players on the small-sided game influence technical elements made by players (*e.g.*, Katis & Kellis, 2009; Rudolf & Václav, 2009).

Therefore the usefulness of the small-sided games is real and, at same time, a massive opportunity in order to improve the quality of the team play. However, their application need an careful thinking in order to achieve the main goals of the coach, *i.e.*, small-sided games need to be adapted to the context considering the physical, technical and tactical level of each team. The same exercise may not result in the same way on two different teams, or even, in different moments of season for the same team. Thus, coach need to use multiple factors or task constraints in order to adapt the small-sided games to training objectives.

Therefore, the main goal of this work was analyze constraints commonly adopted by researchers on soccer training, in order to understand how small-sided games and their constraints influence on players performance.

Effects of Number of Players

Number of players on the field at each small-sided soccer games can influence the intensity and the physiological effects of the game. Number of players by each game influence the running and they intensity, frequency of ball contacts or kinematical of the players. However in order to analyze just the intensity effects influenced by the number of players, the playing area should be kept constant (Rampinini, *et al.*, 2007). However the analyzed studies do not include this perspective (*i.e.*, keeping field size). Nevertheless, the influence of number of players needs to be analyzed in order to understand their potentiality to the soccer training.

Physiological and Kinematical Effects

Jones and Drust (2007) analyzed the influence of number of players at small-sided soccer games on heart rate responses. Authors tested 4 v 4 and 8 v 8 sub-phases. The results demonstrated that the number of players have not changed significantly the heart rate responses. Nevertheless, the manipulation of the number of players seems to have a small impact on the work-rate profiles observed. However these impacts don't differ statistically. Additionally, Jones and Drust (2007) study, shows that no significant differences were observed in either the total distance covered or the distance covered by walking and jogging among games.

Using more sub-phases, Little and Williams (2007), found significant differences among all training drills except for just 3 of the 15 post hoc comparisons (2 v 2 and 5 v 5, 2 v 2 and 8 v 8, 6 v 6 and 8 v 8). Generally, authors observed an increased heart rate response to the small-sided soccer games using fewer players, although the 2 v 2 game showed a significantly lower response than 3 v 3 and 4 v 4 constituting an exception.

Table 1. Studies that analyzed the physiological and kinematical impacts of number of players

Study	Sub-Phase	Field Size	Structure	*n*	Heart Rate	Distance Covered			
						Total	Low intensity (e.g., walking)	High-intensity (e.g., jogging)	Very high-intensity (e.g., sprinting)
Jones & Drust (2007)	4 v 4	30 x 25 m	10 min	8	175±10 beats/min	778±160 m	181 ± 72 m	315 ± 86 m	143 ± 64 m
	8 v 8	60 x 40 m	10 min		168±6 beats/min	693± 103 m	187 ± 77 m	334 ± 69 m	71 ± 7 m

Little & Williams (2007)	2 v 2	30 x 20 m	4 x 2 min	23	89% HRmax				
	3 v 3	43 x 25 m	4 x 3.30 min		91% HRmax				
	4 v 4	40 x 30 m	4 x 4 min		90% HRmax				
	5 v 5	45 x 30 m	4 x 6 min		89% HRmax				
	6 v 6	50 x 30 m	3 x 8 min		88% HRmax				
	8 v 8	70 x 45 m	4 x 8 min		88% HRmax				
Rampinini *et al*. (2007)* *In their study authors are give equal conditions with and without coach's encouragement. Our results just present without coach's encouragement.	3 v 3	12 x 20 m	4 min	20	87.6 ± 1.7 HRmax				
	3 v 3	15 x 25 m	4 min		88.6 ± 2.9 Hrmax				
	3 v 3	18 x 30 m	4 min		89.1 ± 1.8 Hrmax				
	4 v 4	16 x 24 m	4 min		86.5 ± 3.4 Hrmax				
	4 v 4	20 x 30 m	4 min		86.7 ± 3.0 Hrmax				
	4 v 4	24 x 36 m	4 min		87.2 ± 2.8 Hrmax				
	5 v 5	20 x 28 m	4 min		86.0 ± 4.0 Hrmax				
	5 v 5	25 x 35 m	4 min		86.1 ± 3.7 Hrmax				
	5 v 5	30 x 42 m	4 min		86.9 ± 3.2 Hrmax				
	6 v 6	24 x 32 m	4 min		83.8 ± 5.0 Hrmax				
	6 v 6	30 x 40 m	4 min		85.1 ± 3.3 Hrmax				
	6 v 6	36 x 48 m	4 min		85.0 ± 3.6 Hrmax				
Dellal, *et al*. (2008)	1v 1	10 x 10 m	4 x 1 min, 30 sec		77.6 ± 8.6 HRres				
	2 v 2	20 x 20 m	6 x 2 min, 30 sec		80.1 ± 8.7 HRres				
	4 v 4 GK	30 x 25 m	2 x 4 min		77.1 ± 10.7 HRres				
	8 v 8 GK	60 x 45 m	2 x 10 min		80.3 ± 12.5 HRres				
	8 v 8	60 x 45 m	4 x 4 min		71.7 ± 6.3 HRres				
	10 v 10 GK	90 x 45 m	90 x 45 min		75.7 ± 7.9 HRres				

Hill-Haas, Dawson, Coutts & Rowsell (2009)	2 v 2	28 x 21 m	24 min	16	89 ± 4 HRmax	2574 ± 16 m	1176 ± 8 m	933 ± 21 m	411 ± 13 m
	4 v 4	40 x 30 m	24 min		85 ± 4 HRmax	2650 ± 18 m	1128 ± 10 m	1041 ± 25 m	436 ± 15 m
	6 v 6	49 x 37 m	24 min		83 ± 4 HRmax	2590 ± 33 m	1142 ± 16 m	925 ± 37 m	442 ± 22 m
Katis & Kellis (2009)	3 v 3	15 x 25 m	10 x 4 min	34	87.6 ± 4.77 HRmax				
	6 v 6	30 x 40 m	10 x 4 min		82.8 ± 3.22 HRmax				
Rodríguez-Marroyo, Pernía & Villa (2009)	7 v 7	60 x 40 m	2 x 30 min	58	79 HRmax				
	11 v 11	110 x 70 m	2 x 35 min		76 HRmax				

At Rampinini *et al* (2007) study, results suggested that less number of players increased the intensity of the game. Additionally was possible analyzed that the heart rate mean at each game reduced gradually at same time that the number of players increased. Contrarily at same time that numbers of players decreased the number of ball contacts by each player increased. According to these results, Balsom (1999) suggested that the less number of players may increase the ball contacts by each player.

These ball contacts and the associated activity may increase directly the intensity of the biological responses of the players. Therefore the results may confirm Reilly and Ball (1984) that suggested that running with the ball requires greater energy expenditure than running without ball contact, explaining the most intensity on small-sided games with less number of players.

The same kinds of results are found by Hill-Haas, Dawson, Coutts and Rowsell (2009). In their study, 2 v 2 sub-phase caused a greater amount of time spent at 490% Heart Rate max than the 4 v 4 and 6 v 6 sub-phases. These results may suggest that smaller game formats caused higher mean heart rate responses, with players spending more time in the higher heart rate zones (Hill-Haas, Dawson, Coutts & Rowsell, 2009). In the same line, 3 v 3 small-sided soccer game displayed higher exercise intensity compared with the 6 v 6 game situations, verified on Katis and Kellis (2009) study.

According to Owen, Twist and Ford (2004) adding players to a small-sided soccer game in general caused a decrease in mean heart rates and a decrease in mean peak heart rates. Therefore, the results are consistent indicating that small-sided games with less number of players may increase the heart rate and kinematical effects on players.

These results suggest that intensity of the exercise may be manipulated by the coaches, through task constraints in order to promote the development of physiological parameters. Complementally, at the same time that coaches influencing physiological and kinematical factors on players, may improve the quality of the tactical and technical factors training at specificity of the game, *i.e.*, considering the soccer ecology. Thus number of players can be used in order to improve the quality of the training and, at same time, improve the fitness of each player, training at specificity.

Technical Effects

The number of players can modify technical requirements of each player. In fact, fewer players can provide an increase of the player's intervention on match, reducing the variability of the possibilities of passes. Contrarily, the more number of players may provide another tactical definition to the game. Therefore, some studies analyze the influence of number of players at small-sided soccer games in order to understand the potentiality of this strategy.

Using 8 v 8 and 4 v 4 soccer sub-phase, Jones and Drust (2007) found significantly differences on ball contacts. In fact, authors found that the number of ball contacts increased on small-sided games with less number of players. Therefore authors suggested that tactical requirements placed on the individual players when the number of players is altered. For one hand 8 v 8 restricted players to tactical positions and missions (*e.g.*, defensive, midfield, forward) and, for another hand on 4 v 4 players don't have a static mission attacking and defending at every match-play.

Table 2. Studies that analyzed the technical impact of number of players

Study	Sub-Phase	Field Size	Structure	*n*	Ball Contacts	Short Passes	Long Passes	Shots	Dribbling	Goals
Jones & Drust (2007)	4 v 4	30 x 25 m	10 min	8	36±12					
	8 v 8	60 x 40 m	10 min		13±7					
Katis & Kellis (2009)	3 v 3	15 x 25 m	10 x 4 min	34		± 48	± 5	± 3	± 9	± 11
	6 v 6	30 x 40 m	10 x 4 min			± 34	± 11	± 1	± 6	± 8
Rudolf & Václav (2009)	5 v 5	40 x 20 m	30 min	20		143 passes		49		
	8 v 8	60 x 48 m	30 min			143 passes		21		
	11 v 11	96 x 60 m	30 min			135 passes		15		

Through Platt, Maxwell, Horn, Williams and Reilly (2001) study was possible analyzed that when young players participated in 3 v 3 small-sided games had more opportunities to perform skills such as dribbling, passing and shooting than on 5 v 5 small-sided games. Similar results were found by Katis and Kellis (2009) study where authors observe that the number of individual elements increased on small-sided games with less number of players. Thus the number of players in a team proved an important factor that can affect the frequency of executing offensive game-related activities by each player (Rudolf & Václav, 2009).

Generally, adding players to a small-sided soccer game causes an increase at total number of technical actions, but generally the total number of technical actions per player decreases (Owen, Twist & Ford, 2004). Therefore, summarily, is possible observe that in youth formation phase, the less number of players by each small-sided games can give an important opportunity to the players increase the frequency of skills performed. In fact, the progressivity of the number of players by each small-sided game must be done according to the learning and specialization phase of the players. Less number of players by small-sided soccer games is recommended to practice at lower level of player specialization and, with the increase of the player's quality level, is recommended the increase of number of players by each small-sided soccer game.

Effects of Field Size

The field size can influence the kinematical indicators presented by soccer players. More or less space to run or to receive the ball and complete the pass may be influenced by the field size provided on soccer exercise. Therefore, coach need to contemplate this task constraint in order to improve the efficiency of the training and the fulfillment of the main goals.

Physiological and Kinematical Effects

Coaches can adapt the training intensity through variation of the size of the field (Tessitore, Meeusen, Piacentini, Demarie & Capranica, 2006). Generally, field dimensions may alter the kinematics of movement relative to each player. Basically, the space for ball progress and carry out their actions are directly related with the space between players as well as with the free space to make decisions. In this sense, the player may be constrained by the dimensions of the field, triggering changes in physiological and kinematical parameters. Spaces with lower dimensions may promote more braking, changes of motion or acceleration. By other side, larger dimensions of the field may allow to the players more time to move, to carry out their actions in a planned and with more space.

Table 3. Studies that analyzed the physiological and kinematical impacts of field size

Study	Sub-Phase	Field Size	Structure	*n*	Heart Rate	Distance Covered			
						Total	Low intensity (e.g., walking)	High-intensity (e.g., jogging)	Very high-intensity (e.g., sprinting)
Rampinini *et al*. (2007)*	3 v 3	12 x 20 m	4 min	20	87.6 ± 1.7				

*In their study authors are give equal conditions with and without coach's encouragement. Our results just present without coach's encouragement.					HRmax				
	3 v 3	15 x 25 m	4 min		88.6 ± 2.9 Hrmax				
	3 v 3	18 x 30 m	4 min		89.1 ± 1.8 Hrmax				
	4 v 4	16 x 24 m	4 min		86.5 ± 3.4 Hrmax				
	4 v 4	20 x 30 m	4 min		86.7 ± 3.0 Hrmax				
	4 v 4	24 x 36 m	4 min		87.2 ± 2.8 Hrmax				
	5 v 5	20 x 28 m	4 min		86.0 ± 4.0 Hrmax				
	5 v 5	25 x 35 m	4 min		86.1 ± 3.7 Hrmax				
	5 v 5	30 x 42 m	4 min		86.9 ± 3.2 Hrmax				
	6 v 6	24 x 32 m	4 min		83.8 ± 5.0 Hrmax				
	6 v 6	30 x 40 m	4 min		85.1 ± 3.3 Hrmax				
	6 v 6	36 x 48 m	4 min		85.0 ± 3.6 HRmax				
Kelly & Drust (2009)	5 v 5	30 x 20 m	4 x 4min	8	175 ± 9 beats min^{-1}				
	5 v 5	40 x 30 m	4 x 4min		173 ± 11 beats min^{-1}				
	5 v 5	50 x 40 m	4 x 4min		169 ± 6 beats min^{-1}				
Casamichana & Castellano (2010)	5 v 5 GK	32 x 23 m	8 min	10	86.0 ± 5.8 HRmean	695.8 ± 37.1 m	Walking 401.7 ± 27.7 m Running 238.9 ± 41.7 m	50.2 ± 21.0 m	4.9 ± 5.5 m
	5 v 5 GK	50 x 35 m	8 min		88.5 ± 4.9 HRmean	908.9 ± 30.6 m	Walking 390.6 ± 30.4 m Running 329.3 ± 54.0 m	155.4 ± 41.4 m	28.5 ± 33.3 m
	5 v 5 GK	62 x 44 m	8 min		88.9 ± 3.9 HRmean	999.6 ± 50.0 m	Walking 378.2 ± 37.2 m Running 366.3 ± 74.8 m	180.9 ± 42.6 m	74.2 ± 58.9 m

Literature don't shows consensus concerning to the real effects of field dimensions in the heart rate of the players. On the one hand, results of Rampinini *et al* (2007) study showed that heart rate was higher during small-sided games played on a large field than on medium-sized and small ones. Confirming Rampinini *et al* (2007), Casamichana and Castellano (2010) indicate that when the individual playing areas were bigger, the

physical and physiological workloads and the ratings of perceived exertion were all higher. Furthermore, the effective playing time was also higher when the individual playing areas were bigger.

These kinds of results are equally found by Owen, Twist and Ford (2004) showing that enlarging the field dimension used for the small-sided game by 10 meters generally caused increase at mean heart rates and mean peak heart rates. By the other hand, results of Kelly and Drust (2009) showed a slight increase of mean heart rate on small-sided soccer games with less area. However these results were not significantly. Is important to consider that, contrary to the others studies that practice in continuously form, the Kelly and Drust (2009) study, promote the practice on intermittent form, *i.e.*, with less time and more repetitions. Therefore, results are no conclusive concerning to real effects of field dimensions on physiological and kinematical factors. However, is possible to suggest that most space may increase the general intensity of the exercise reflecting on an increase of the mean heart rate.

Technical Effects

The field size can be an important task constraint used by the coach in order to achieve the main technical objectives. In fact the frequency of skills performed by each player is an important factor to develop their relationship with the ball and their technical competences in game. Therefore, according to Kelly and Drust (2009), field size may alter a number of important technical skills required for match-play.

Table 4. Studies that analyzed the technical impact of field size

Study	Sub-Phase	Field Size	Structure	*n*	Pass or control and pass	Receive	Dribble or control and dribble	Shot or control and shoot	Interception
Kelly & Drust (2009)	5 v 5	30 x 20 m	4 x 4min	8	± 70	± 180	± 50	± 85	± 38
	5 v 5	40 x 30 m	4 x 4min		± 100	± 180	± 60	± 60	± 40
	5 v 5	50 x 40 m	4 x 4min		± 80	± 140	± 57	± 44	± 38
Casamichana & Castellano (2010)	5 v 5 GK	32 x 23 m	8 min	10	14.5 ± 6.6		5.2 ± 1.7	5.0 ± 2.4	11.2 ± 3.1
	5 v 5 GK	50 x 35 m	8 min		16.8 ± 6.1		4.5 ± 1.5	1.8 ± 1.6	8.3 ± 2.6
	5 v 5 GK	62 x 44 m	8 min		18.7 ± 4.3		1.7 ± 0.8	2.2 ± 1.7	6.3 ± 1.5

At Owen, Twist and Ford (2004) study, results showed that enlarging the field dimensions used for the small-sided game by 10 meters had no effect on the technical actions the players performed. However, according to the same authors, this finding may have been confounded by the change in number of players. On Kelly and Drust (2009) study, the smaller field results at increased pressure from the opponents and this situation requires from the players to dribble the ball more often in order to avoid the opponent's pressure and overtake them.

The field dimensions can decrease or increase the distance among players. These distances may determine the frequency of technical skills performed by the players. Generally, studies showed that the field with more dimensions increase the number of events per players, *i.e.*, increases the technical events at the match. Exemplifying, more distances among players of the same team can help they in order to pass the ball to the teammates, because the opponents are more distanced of the player with ball possession. In the case of less field dimension the less distance among teammates help to pass the ball but can restrict the efficient of the pass because the opponents are closer to the teammates and, consequently, closer to the take the ball. Therefore the field size needs to be correctly adapted according to main goal of the coach. Consequently, according to the authors, the size of the field largely determines players' behaviors' in small-sided soccer games (Casamichana & Castellano, 2010).

Therefore is important to emphasize that the coach need to consider the technical level of the players before design the exercise, *i.e.*, technical level is an important factor that contribute to improve the effectiveness of the small-sided game. Players with less technical level, possibly, need to play with high field dimensions in order to improve the technical events per match and the tactical positioning on the field. On the other hand, players with high technical level may play with more number of players and less field dimensions. Consequently, variables as field dimensions and number of players need to be carefully consider before the application, in order to prescript the adequate exercise to the real needs of players.

Effects of the Goals Task

Task constraints are an important factor that can be used to manipulate the relationship among performer-environment interactions towards an intended outcome (Araújo, Davids & Hristovski, 2006). Constraints can restrict or enable multiple behaviors that the system can adopt (Davids, *et al.*, 2008). Specifically, task constraints can help the players to center the perception to specific information. Therefore, they include the rules that constrain spatial and temporal patterns of the movement dynamics during an activity that may be open to interpretation (Handford, *et al.*, 1997). In addition to constraints related to the field size or number of players per exercise, there are other conditions that may be used in order to enhance the task and their objectives. However these alternative forms are not being applied on massive form. Nevertheless, some studies analyzed tasks constraints effects at physiological and technical level.

Table 5. Studies that analyzed the physiological and kinematical impacts of goals task

Study	Sub-Phase	Field Size	Structure	*n*	Heart Rate	Distance Covered			
						Total	Walking	Jogging	Sprinting
Mallo & Navarro (2008)	3 v 3 1)	33 x 20 m	5 min	10	173 ± 9 b-min^{-1}	747 ± 24 m			
	3 v 3 2)	33 x 20 m	5 min		173 ± 9 b-min^{-1}	749 ± 29 m			
	3 v 3 3)	33 x 20 m	5 min		166 ± 11 b-min^{-1}	638 ± 34 m			
Hill-Haas, Rowsell, Dawson & Coutts (2009)	2 v 2 C	28 x 21 m	24 min	16	87 ± 1 on continuous small sided games and 84 ± 1 on intermittent small sided games	2598 ± 18 on continuous small sided games and 2621 ± 19 on intermittent small sided games	1143 ± 10 on continuous small sided games and 1150 ± 10 on intermittent small sided games	975 ± 25 on continuous small sided games and 950 ± 22 on intermittent small sided games	417 ± 13 on continuous small sided games and 444 ± 15 on intermittent small sided games
	2 v 2 I	28 x 21 m	4 x 6 min						
	4 v 4 C	40 x 30 m	24 min						
	4 v 4 I	40 x 30 m	4 x 6 min						
	6 v 6 C	49 x 37 m	24 min						
	6 v 6 I	49 x 37 m	4 x 6 min						

3 v 3 1) 3-a-side game with the aim of keeping the ball in possession as much time as possible
3 v 3 2) 3-a-side game with 2 outer players that can pass the ball to a player from the team that it as received from
3 v 3 3) 3-a-side game with goalkeepers (3 *v* 3+2)

At Mallo and Navarro (2008) the comparison of the demands on the players during the three exercises shows than the inclusion of a goalkeeper modified the physical and tactical behavior of the players. In fact, results shows statistical differences between exercise with goalkeeper and two exercises without goalkeeper, where the task with goalkeeper shows less intensity at heart rate and distance covered by players. According to Mallo and Navarro (2008) when playing with goalkeepers, the players tried to organize defensively their team in order to protect their goal, which had a repercussion in the game time.

On Hill-Haas, Rowsell, Dawson and Coutts (2009) study, authors analyzed the impact of continuous and intermittent exercise on the same sub-phase in order to understand if the recovery time provides differences at physiological levels. Results shows that intermittent exercises raised significantly more moderate and higher-speed running comparing to continuous small-sided soccer game.

According to Hill-Haas *et al* (2009), one possible explanation for the greater frequency of sprint activity during intermittent small-sided soccer games was the additional passive rest period between each game that may have allowed for greater physiological recovery.

Based on scoring mode on small sided soccer games (4 v 4 without goalkeepers on 25 x 15 meters during 15 minutes by each condition), Duarte *et al* (2010) manipulated three conditions (*i.e.*, task constraints) in their study: *i*) line goal, scoring by dribbling past an extended line; *ii*) double goal, scoring in either of two lateral goals; and *iii*), central goal, scoring only in one goal.

Their results suggested that heart rate variability associated with the line goal task constraint is lower than that associated with both double goal and central goal constraints (Duarte, *et al.*, 2010). Therefore, according to authors, these effects represent a more cardiovascular standardized stimulation of the players involved in the line goal task.

The encouragements provided by the coaches may influence directly the physiological indicators of the players (*e.g.*, Hoff, *et al*., 2002; Rampinini, *et al*., 2007). These effects may be very important on real application to the training because the external motivation provided by coach supervision can permit achieve greater physiological gains (*e.g.*, Coutts, Murphy & Dascombe, 2004; Mazzetti, *et al*., 2000).

Table 6. Studies that analyzed the technical impact of goals task

Study	Sub-Phase	Field Size	Structure	*n*	Technical Events			
					Ball Contacts	Short distance passes	Errors in short distance passes	Shots on goals
Mallo & Navarro (2008)	3 v 3 1)	33 x 20 m	5 min	10	20.8 ± 5.2	26.8 ± 3.8	15.4 ± 4.7%	0
	3 v 3 2)	33 x 20 m	5 min		11.3 ± 3.7	10 ± 3.4	5.3 ± 2.9%	0
	3 v 3 3)	33 x 20 m	5 min		12.3 ± 3	7.5 ± 1.5	9.1 ± 5.1%	1.3 ± 1

3 v 3 1) 3-a-side game with the aim of keeping the ball in possession as much time as possible
3 v 3 2) 3-a-side game with 2 outer players that can pass the ball to a player from the team that it as received from
3 v 3 3) 3-a-side game with goalkeepers (3 *vs* 3+2)

At Mallo and Navarro (2008) study, results showed that the constraint to keep the ball in possession the most time as possible increase the ball contacts by players at the small-sided soccer game. At the same time, this instruction increase the short distances passes. Consequently, the number of technical events can be influenced by different task constraints and, for this reason, coach need to create specific goals task in order to increase the possibility to develop the technical components of players.

Conclusion

The main goal of this paper was to show the real importance of small-sided soccer game for the coaches. Globally, studies showed the real importance of manipulate factors as number of players or field dimensions on small-sided soccer games, modifying physiological, kinematical and technical indicators. In fact, literature suggests that may vary the constraints as field dimensions or number of players, promoting statistical differences among small-sided soccer games. Therefore coaches before implement the exercises and their task constraints, need to consider the level of players and the context in order to improve the main goals for specific players. Consequently, coach need to consider, in first instance, the main goal of exercise and, after this consideration, manipulate the constrains that improve the effectiveness of exercise.

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