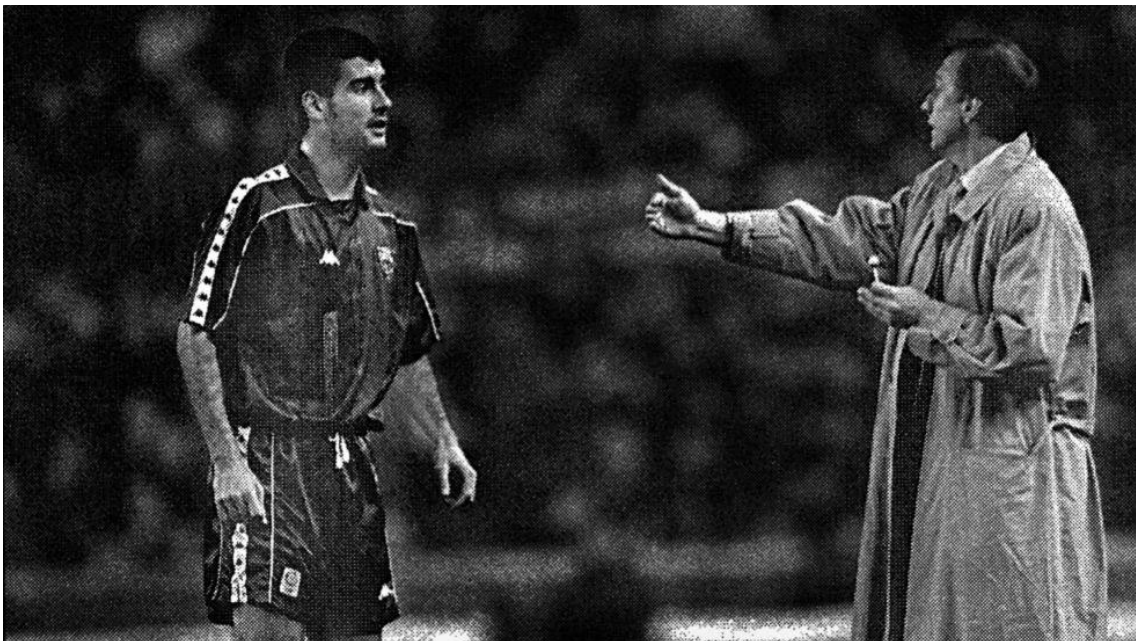


FINAL DEGREE PROJECT

The specificity of 6-a-sided small side games in soccer



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ABSTRACT

The specificity of practice in soccer has been associated with the similarities with the real game, and also these similarities or specificity is known to be the main reason of the training process. Nowadays, coaches tend to use exercises named as small-sided games (SSG), which can differ a lot depending on the general rules of each SSG, rules such as: number of players, field size, specific rules of the game (a maximum number of touches, different kind of goals...), coach encouragement. The main aim of this narrative review is to make a structured current bibliography research to analyze and discuss about the actual scientific literature regarding the 6 a-sided SSG, in order to determine whether 6-a-sided small sided games (SSG) specificity is high or not. Demonstrating, not only the validity and reproducibility of the physiological demands of a 11M SOCCER game on certain size of the field, but also the differences between groups of age and level.

KEY WORDS: Soccer, football, small sided games, technique, tactic.

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INTRODUCTION

Soccer is a really old and probably the most popular sport all around the world (Sawe, 2018). It can be argued that ancient games such as the Greek “*episkyros*”, the Roman “*harpastum*”, the Chinese “*tsu chu*”, the Mesoamerican “*pok-a-tok*”, and the medieval games such as the European “*choule*”, “*calcio*”, “*mob football*”, “*Shrovetide football*”, “*Gaelic football*”, the Japanese “*kemari*”, the Malaysian “*sepak raga*” and the Australian “*marn-grook*” are ancestors or relative types of modern football (soccer) (Giossos, Sotiropoulos, Sioglis & Dafapoulou, 2011). Nevertheless, it was back in 1863 when the Football Association (FA) in England, ruled the game dividing it from his brother sport, actually known as rugby (History of Football - The Origins - FIFA.com, 2020). With just thirteen rules, a new sport was created, a new era, which started to spread all around the world in the coming years (FA Cup history, 2016).

13 rules of 1863

| | |
|---|-----|
| The maximum length of the ground shall be 200 yards, the maximum breadth shall be 100 yards, the length and breadth shall be marked off with flags; and the goals shall be defined by two upright posts, 8 yards apart, without any tape or bar across them | I |
| The winner of the toss shall have the choice of goals. The game shall be commenced by a place kick from the center of the ground by the side losing the toss, the other side shall not approach within 10 yards of the ball until it is kicked off | II |
| After a goal is won the losing side shall kick off and goals shall be changed | III |
| A goal shall be won when the ball passes between the goal posts or over the space between the goal posts (at whatever height), not being thrown, knocked on, or carried. | IV |
| When the ball is in touch the first player who touches it shall throw it from the point on the boundary line where it left the ground, in a direction at right angles with the boundary line and it shall not be in play until it has touched the ground | V |
| When a player has kicked the ball any one of the same side who is nearer to the opponent's goal line is out of play and may not touch the ball himself nor in any way whatever prevent any other player from doing so until the ball has been played; but no player is out of play when the ball is kicked from behind the goal line | VI |
| In case the ball goes behind the goal line, if a player on the side to whom the goal belongs first touches the ball, one of his side shall be entitled to a free kick from the goal line at the point opposite the place where the ball shall be touched. If a player of the opposite side first touches the ball, one of his side shall be entitled to a free kick (but at the goal only) from a | VII |

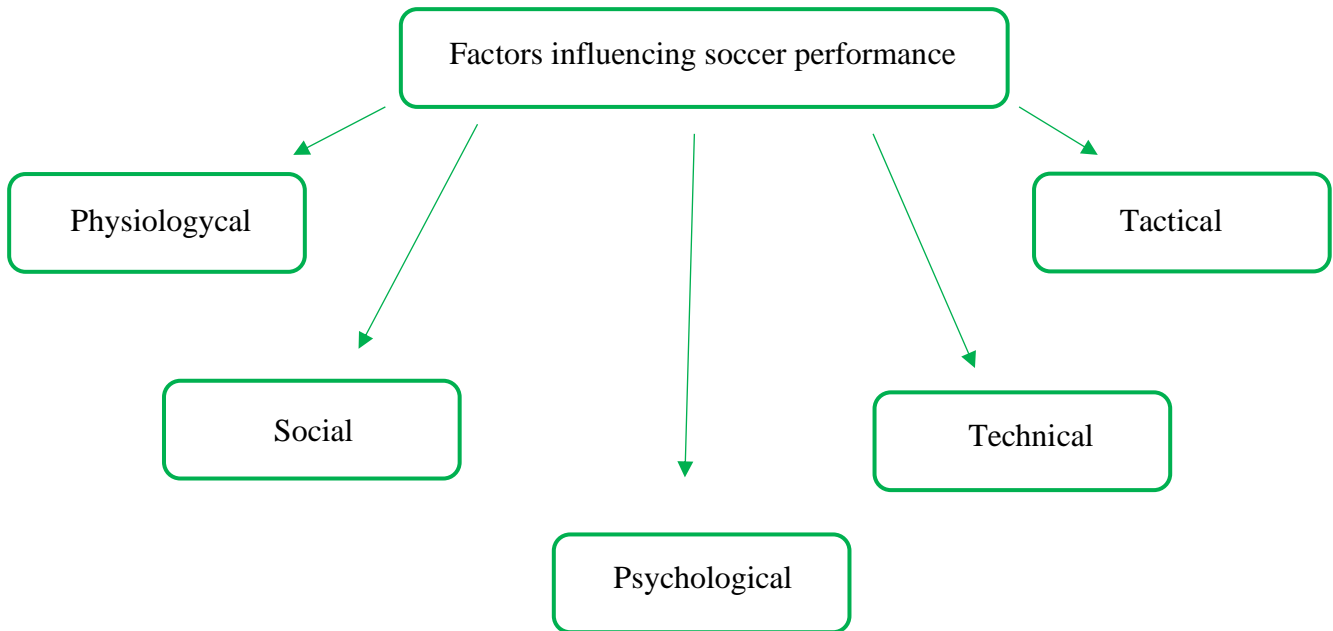
| | |
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| point 15 yards from the goal line opposite the place where the ball is touched. The opposing side shall stand behind their goal line until he has had his kick | |
| If a player makes a fair catch he shall be entitled to a free kick, provided he claims it by making a mark with his heel at once; and in order to take such kick he may go as far back as he pleases, and no player on the opposite side shall advance beyond his mark until he has kicked | VIII |
| No player shall carry the ball | IX |
| Neither tripping nor hacking shall be allowed and no player shall use his hands to hold or push his adversary | X |
| A player shall not throw the ball or pass it to another | XI |
| No player shall take the ball from the ground with his hands while it is in play under any pretense whatever. | XII |
| No player shall wear projecting nails, iron plates, or "gutta percha" on the soles or heels of his boots | XIII |

Recovered from: David Barber. (2016). THE HISTORY OF THE FA CUP. 30 April 2020, from The FA web-site: <http://www.thefa.com/news/2016/nov/02/history-of-the-fa-cup>

Since this moment, the competition among teams and rivalry started to become bigger and bigger, so the teams prepared each game more consciously. Players started to become professionals, although this was not supported by the FA, in any case, there was nothing to do, the sport they created started to become so known, making it impossible for the association to prevent it from professionalism (FA Cup history, 2016). Furthermore, professionalism had a big advantage for the working-class teams, as they could train together starting to think how they would face each rival, creating some tactics that would help them get a good result.

Soccer is defined a duel between two teams (11 players per side), in which the aim is to score more goals than the opposite team, by everyone using the legs to pass and kick the ball except the keeper who can use his hands to save the goal in case the ball is in his goal area (Ruiz, 2009). Bangsbo (1994) stated on his book "*The physiology of soccer*" that 5 factors may influence the performance of soccer players: the physiological, social, psychological, technical and tactical factors. Besides, all of them should be considered by the coaches when trying to develop a player, the exposure to the exercises where all those parameters are included should be continuous to ensure the improvement of the performance of the players (Reilly, 2005). This has been the basic idea wherein coaches and soccer methodologists have created their training methods.

Factors influencing soccer performance



From: Bangsbo, J. (1994). The physiology of soccer with special reference to intense intermittent exercise. *Acta Physiologica Scandinavica*, 619, 1-155.

During the last decades, the methodology of the practice sessions has been accepted as one of the key roles to reach the goals during the season. Nowadays, the similarity of the practice exercises with the game itself, is said to be a key factor to achieve the hypothetical best performance the team could accomplish. According to Hoff, Wisløff, Engen, Kemi and Helgerud (2002), soccer specific physical aspects should be trained with soccer drills instead of the common plain running exercises teams used to do in the recent past, which were not as specific as they should. On the other hand, soccer is an intermittent sport in which many activities of different intensities such as walking, running or sprinting continually occur (Bangsbo, Norregaard, & Thorso, 1991). In fact, there are analysis of soccer matches that show the evidence that during a game, soccer players perform numerous actions of maximum or submaximal intensity, of short duration and with short recovery periods, repeatedly (Spencer, Bishop, Dawson, & Goodman, 2005).

Even more, not only the physical aspect has been transformed to a new dimension, but all of the previously mentioned factors have adapted a new vision on the recent days, trying to include them all together on the same exercise, while the exercise is as specific and as similar as possible to the game.

Over the last few years, the coaches' main goal when it comes to the trainings has been to simulate real game situations so as to train the players in an extremely specific manner by just adapting some characteristics of the game, such as the size of the field and the number of players (Morgans, Orme, Anderson & Drust, 2014). In addition, adapting the aim of the game to be much more specific on certain fields, and adding some other little changes in the characteristics with the purpose of training all those factors mentioned before (physiological, social, psychological, technical and tactical), as specific as possible. The adaptation of the pitch size, reducing the game to small parts, are designated in the actual scientific literature as small-sided games (SSG), (Rampinini, Impellizzeri, Castagna, Abt, Chamari, Sassi & Marcora, 2006). Moreover, many studies suggest that the SSG are really important when trying to make a specific training (Hill-Haas, Dawson, Impellizzeri & Coutts, 2011). Likewise, not only technical, tactical or physiological factors may improve within those specific side games, but also, players are able to fully enjoy the training, what is more, when their motivation and dedication improve the level and the performance of the game are positively affected (Wall & Côté, 2007; Sampaio, Abrantes & Leite, 2009).

When and why are the key questions when thinking about which kind of SSG should be used, which depends on various factors that have not been mentioned before and are related to the teams' context. "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 adequacy 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." (Clemente, Couceiro, M.L. Martins & Mendes, 2012, p.93). All in all, knowing the characteristics really well and how each variable adaptation affects small side games are the key points to decide how and when to adapt the SSG.

There are a lot of variables that could be adapted to create a specific exercise (Michailidis, 2013). Starting with the number of players, in this case, the 6-a-sided SSG will be studied and discussed, while there is also a possibility to use a neutral player, a player who always plays with the owner of the ball possession team, or with the team which tries to recover it, to create an attack or defense superiority, which affects many physiological and performance parameters (Katis & Kellis, 2009; Hill-Haas et al., 2010).

Likewise, the other basic variable is the pitch size, which can be modified making it smaller, the reduction of the dimensions of the SSG has the effect of increasing the frequency of observed tackle, shot (Ispirlidis et al., 2009; Kelly & Drust, 2009), receiving, dribbling (Casamichana & Castellano, 2010), contacts, goals but also the error in small passes (Ispirlidis et al., 2009). The specific study (Goto & King, 2018) argues the main differences about the adjustment of this variable in a 6-a-sided SSG. Another usual variable is the use of goals on the exercises, which may be really different (*e.g. small goals to pass in between them, a goal with a keeper somewhere on the field, an amount of touches, an invisible line that marks the zone that the players have to achieve by passing the ball...*), all those small goals can absolutely change the SSG and its objectives, which would also change the players tasks and mindsets. Moreover, this variable, which offers infinite options, can be really interesting to work some specific parts of the soccer game in the SSG, due to this high amount of options, it is really difficult to study and know how each one affects the players. Furthermore, the external encouragement is also a usual variable that most studies consider (*e.g. Goto & King, 2018; Stevens, Beek, Ruiter & Savelsberg, 2015; Aquino, Victor & Neto Bedo, 2019*), it consists on the coaching staff speaking loudly and following the game, hypothetically, encouraging the players to be more active and focused during the exercise. There are some other variables or rules which are not so typical, such as, all players of the attacking team have to be at the opponent's size when their team achieve a goal (Hill-Haas et al., 2010), the groups have to pressure half switch (Little & Williams, 2006), using defense man to man (Ngo et al., 2012) and playing freely instead of only performing attack or defense (Abrantes et al., 2012), all those are examples of just rules or variables that cause an increase in heart rate. As it is said before, there are lots of variables around the same game, making it challenging to fulfill a research of every SSG. However, it is also true that the 6a-sided SSG hasn't been studied deeply and needs much more investigation if we really want to know how those SSG influence those main factors affecting the performance of players (the physiological, social, psychological, technical and tactical factors) which Bangsbo (1994) stated on his book.

Therefore, the main aim of this review is to make a brief narrative description about the actual 6-a-sided small side games, and discuss about its specificity on the real soccer game. First of all, trying to solve and find which ones are the limiting factors of the performance on soccer, and then comparing the results about those factors on the actual scientific researches to the results on a football match. That is how we will be able to realize if the 6a-sided SSG is a specific training exercise in football.

METHODS AND DATA COLLECTION

Information Sources

This article is a narrative description about the SSG in soccer, being more specific, the 6-a-side SSGs. It was carried out following the PRISMA guidelines (Moher, Liberati, Tetzlaff & Altman, 2009). A structured research was carried out in the different data bases as PubMed, Reasearchgate and Dialnet plus until the 30/04/2020. Sources of high-quality information in the sports science area, thus, to ensure a complete bibliographic support. Search terms included a mix of medical subject headings (MeSH) and free-text words for key concepts related to soccer, football, small-sided games, conditioning, technique, tactic. The following search equation was used to find the relevant articles: ("soccer" [MeSH Terms] OR "football", etc. There were no filters applied to the athlete's physical fitness level, race, or age to increase the power of the analysis. The search for published studies was independently performed by 2 different authors (Mikel G-B and Julio C-G).

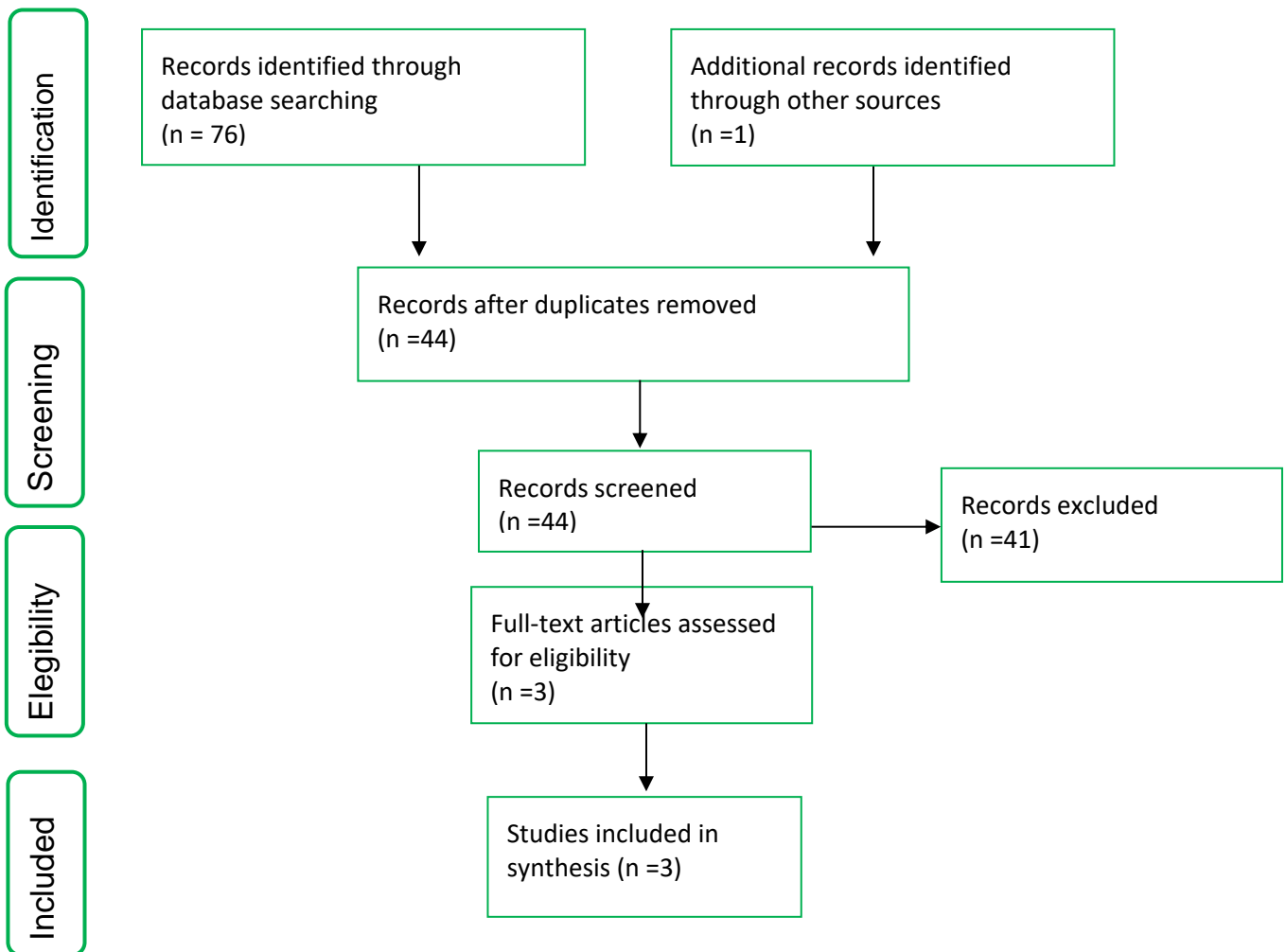
Study Inclusion Criteria

First of all, we obtained the titles and abstracts of all the publications and determined the relevance of the publication for inclusion. Then, we established the inclusion criteria to decide wither a research was useful or not, so an examination to realize if publications satisfied the inclusion criteria was done. Additionally, the reference sections of the articles were used to find other important articles. Finally, for the current review, only studies focusing on 6-a-sided SSG were included. Not any other model of SSG or any comparisons among SSG models were accepted.

Study Exclusion Criteria

Other team sports were not considered and duplicated articles were deleted, as well as other SSG models, or comparisons between SSG models. Elsways, abstracts, non-peer- reviewed papers or book chapters were eliminated.

PRISMA FLOW CHART 6-a-sided SSG



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

RESULTS

The literature search provided a total of 76 articles related to the 6-a-sided SSG, but only 3 articles (Goto & King, 2018; Stevens, Beek, de Ruiter & Savelsberg 2015; Aquino, Melli-Netto, Ferrari, Bedo, Palucci Vieira, Santiago, Goncalves, Oliveira & Puggina, 2019) met all the inclusion/exclusion criteria (Prisma Flow Chart). The number of articles and their exclusion criteria were: 32 papers were removed given that they were duplicated; other 7 studies were removed given that they were narrative or systematic reviews; 13 studies were not specific researches about soccer, studying another team sport, such as: handball, basketball or rugby; 21 papers were removed because they were centered on the 6-a-sided SSG (Flow Chart).

Once, the entire searching process following the PRISMA guidelines was made (Moher, Liberati, Tetzlaff & Altman, 2009), having checked the actual scientific data bases, we were now able to make a narrative description about the SSG in soccer, being more specific, the 6-a-side SSGs, including the 3 specific researches as mentioned before on the Prisma Flow chart, which just study the 6-a-sided SSG on an isolated way.

First of all, the first study entitled “*High-intensity demands of 6-a-side small-sided games and 11-a-side matches in youth soccer players*” (Goto & King, 2018), a really current research made 2 years ago, were 11 players (16.3 ± 0.6 years) who competed in regional level competitions, tested not only in three different pitch sizes of SSG, small SSG (SSGS), medium SSG (SSGM) and, large SSG (SSGL), but also in a 11-a-side match. Demonstrating that on the one hand, 6-a-side SSGs can replicate the high-intensity demands of 11M in youth soccer players when the area per player of the SSGs is approximately half of 11M.

Furthermore, there is “*Validity and reliability of 6-a-side small-sided game locomotor performance in assessing physical fitness in football players*” (Stevens, Beek, de Ruiter & Savelsberg, 2015), a study made on December of 2015, where measurements were performed with professional and amateur soccer players (26 professional seniors, 19 professional youth. 52 amateurs and 16 professionals’ women, of which, 56,03% professionals and 43,98% amateur) as a part of their regular training and testing program. Concluding that normalize (medium sized) SSGs locomotor execution cannot be used as a valid and reliable fitness barometer for individual players.

Finally, the article entitled “*Validity and reliability of a 6-a-side small-sided game as an indicator of match-related physical performance in elite youth Brazilian soccer players*” (Aquino, Melli-Netto, Ferrari, Bedo, Palucci Vieira, Santiago, Goncalves, Oliveira & Puggina, 2019), is a research which made a year since it was published on May of 2019, a really new and specific research, where a total of 51 Brazilian youth soccer players (16=U-12; 10=U-13; 9=U-15; 8=U-17; 8=U-20), participated in this study, all measurements were performed in-season as part of the regular testing program of the teams analyzed. Thus, the main aim of the study was to realize whether the use of the 6-a-sided SSG internal and external load could serve as an indicator of match related physical performance for youth soccer players, they demonstrated that the data was sensible, valid and reliable enough to indicate match related performance in elite youth Brazilian soccer players.

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| TITLE | YEAR | AUTHOR/S | N | LEVEL | METHOD | VARIABLES | CONCLUSIONS |
|--|---------------|--|--|--------------------------------------|--|----------------------------------|--|
| High-Intensity Demands of 6-a-Side Small-Sided Games and 11-a-Side Matches in Youth Soccer Players | 2018 | Heita Goto, JA King | 11, Age = 16.3 ± 0.6 years- | Amateur (regional level) | SSG with three pitch sizes (small SSG (SSGS), medium SSG (SSGM) and large SSG (SSGL)) and 11M. A Global Positioning 8 System (15 Hz) was employed | TD, TS, TdMP | TD 11M = SSGL > SSGM > SSGS TS: SSGL>11M>SSGM>SSGS MP: SSGL>11M>SSGM>SSGS |
| Validity and reliability of 6-a-side small-sided game locomotor performance in assessing physical fitness in football players | December 2015 | Tom Stevens, Peter J Beek, Cornelis J. De Ruiter,Greet J Savelsberg | 141, 26 seniors prof., 19 yotuh prof. 52 amateurs, 16 woman prof | 56,03% profession al, 43,98% amateur | 4 × 7 min 6v6-SSG (pitch size = 40 × 34 m) with 2 min of passive rest between bouts. Five minutes after the last bout of the SSG, perceived exertion scores (RPE; CR10) were obtained from the players asking “How hard was the SSG?”. Also, Yo-Yo IR2 tests were done. To compare both the SSG and the Yo-Yo IR2. | TD, MP, HS, HA, HP, VHP, HR, RPE | Yo-YoIR2 Prof > Amateur > Women 6v6SSG: TD, MP Prof > Amateur > HS, HP, VHP Prof > Amateur> Women RPE, HR Women > All subgroups 6v6SSG vs. Yo-YoIR2 similar: TD MP, HP Yo-YoIR2 lower:HS,HA,VHP |
| Validity and reliability of a 6-a-side small-sided game as an indicator of match related physical performance in elite youth Brazilian soccer player | April 2019 | Rodrigo Aquino, Joao Victor, Bruno Melli Neto, Bruno Luiz Souza Bedo | 16=U12, 10=U13, 9=U15, 8=U17, 8=U20 | Brazilian youth soccer players | Three experiments were conducted. First, all 51 players were submitted to 6-a-side small-sided games (6v6-SSG). In this step, we compared external and internal load parameters between U11 to U20 age-groups. Second, thirty-two players were randomized to play official matches according to the official rules of their category. Finally, thirty-five youth players (U11: n = 16; U13: n = 10; U15: n = 9) played the 6v6-SSG twice to test and retest (i.e., after seven days) the reliability analysis. | TD, DAChI,, DDecHI, HIR, HRMEAN | A) Internal/external load: U11 < U13 < U15 < U17 < U20 B) Correlation 6v6SSG v 11M: TD, DAChI, DDecHI,HIR likely-almost certain. HRmean unclear. C) Reliability 6v6-SSG: TD and HRMEAN good reproducibility. DAChI, DDecHI, and HIR greater. 6v6-SSG presented sensitivity, validity, and reliability to indicate match-related physical |

Notes: TD= total distance; TS=total speed; TdMP= Total distance covered at metabolic power of > 20W.kg/m MP= estimated metabolic power; HS = high speed (>14.4 km · h⁻¹); HA = high acceleration (>2 m · s⁻²); HP = high power (>20 W · kg⁻¹); VHP = very high power (>35 W · kg⁻¹); HR = heart rate (average); RPE = rate of perceived exertion. Note that for heart rate variables the number of players (N) is 31, 28, 61 and 16 respectively; DAChI = Distance covered at High-Intensity Accelerations (≥ 2 m.s²); DDecHI = Distance covered at High-Intensity Deceleration (≥ -2 m.s²); HIR = Distance covered at High-Intensity Running (60.1 to 100% of maximum running speed); HRMEAN = Mean Heart Rate

DISCUSSION

This narrative review about 6-a-sided SSG had the aim to analyze the current scientific research in that field. As said previously, only 3 studies were found regarding this kind of model, Goto and King (2018), Stevens, Beek, de Ruiter and Savelsberg (2015) and Aquino, Melli-Netto, Ferrari, Bedo, Palucci Vieira, Santiago, Goncalves, Oliveira and Puggina, (2019), all of them being actual and complete researches. The first research, concluded that 6-a-side SSGs can replicate the high-intensity demands of the game in youth soccer players when the area covered per each player is the half of the area covered in a match. On the other hand, the study made on 2015, found out that the high-intensity 6v6-SSG time-motion variables were higher for Prof Senior compared to Amateur and Women. Lastly, the third study published by Aquino, Melli-Netto, Ferrari, Bedo, Palucci Vieira, Santiago, Goncalves, Oliveira, Puggina, 2019, demonstrated that the 6 a-sided SGG presented sensitivity, validity, and reliability to reveal physical performance in soccer game with elite youth Brazilian soccer players.

When it comes to the field size effect, most of the researches pointed that when the amplitude of the field raises the heart rate (HR) increases (Owen et al., 2004; Casamichana & Castellano, 2010). Besides, not only the HR is altered, total speed (TS) and total power (TP) increment per player is increased too (Gaudino, Iaia, Alberti, Hawkins, Strudwik & Gregson, 2014). In addition, for total distance (TD) covered, there is also a previous study of 15-year-old boys during 6-a-side SSGs where it is shown that this variable also increases together with the field's size (Casamichana & Castellano, 2010). Correspondingly, in the study made by Goto and King (2018), the current findings demonstrated that 6-a-side SSGs can replicate the high-intensity demands of 11M in youth soccer players when the area per player of the SSGs is approximately half of 11M. This is not observed the majority used sizes of SSGs, where the area per player is less than half for each one compared with the area they have to cover during a 11M, decreasing the high intensity demands of the previous variables (TD, TP, TS). This may be due to the fact that in larger fields players are forced to cover greater distances to help their teams. A potential argument, which is supported by findings, shows that with the increase of the field the blood lactate concentration increases (Rampinini et al., 2007). This observation indicates that in larger fields, the anaerobic mechanism is activated given that players perform more intense tries and for longer distances (Casamichana & Castellano, 2010). Nevertheless, on the last-mentioned study, the results of the TS do not show any difference between medium sized SSGs and large sized SGG. This could have happened due to the fact that the pitch size ratio between

medium and large SSG was smaller (1: 1.5) compared to the specialized research in the study of the 6 a sided SGG which has been using a bigger pitch size ratio (1: 2). According to Casamichana, Castellano and Castagna, (2012) the high physical demands of 6-a-side SSGs and 11M in semi-professional soccer players wrapping up that SSGs are played at a higher intensity than 11M when area per player of SSGs was two-thirds of 11M, which makes sense in contrast with the results gotten by Got and King (2018), although those investigations should not be compared because of the semi professionalism of the participants in one of them. By this analysis, it has been concluded that more studies are needed to analyze the variations of the demands related to soccer performance when this size effect happens, although we can guess that the bigger the field size ratio, the higher the high intensity physiological demands, owing to the results acquired on the mentioned findings.

As mentioned before, the level of the participants from which the results are taken must always be contemplated, as experts consider that participants' level is a factor that may alter the results, differing if the participants involved can be either professionals, seniors or youth, or amateur players (Da Silva et al., 2011; Owen et al., 2011). For instance, an amateur player usually requires a higher amount of ball touches per individual possession compared to a professional player (Dellal, Chamari, Wong, Ahmaidi, Keller, Barros, Bisciotti & Carling, 2011; Dellal, Wong Moalla & Chemari, 2011). Therefore, it would be interesting to analyze if this level of play difference also exists during the 6a-sided SSGs, and consequently, which are the differences on physiological, tactical and technical responses between amateurs and professionals during SSGs (Dellal, Hill Haas, Lago Penas & Chemari, 2011). Besides, the study made by Stevens, Beek, de Rooter and Savelsberg (2015), showed in particular, that the high-intensity 6v6-SSG time-motion variables were higher for Prof Senior compared to Amateur and Women; anyhow, no disparities were present in 6v6-SGG time-motion variables between senior and young professionals. This differences among levels were also concluded before, when Dellal, Hill-Haas, Lago-Penas, and Chamari (2011) stated, that the main purpose of the research was to obtain different physiological, technical, time motion characteristics and perceptual responses in amateur and professional soccer players on SSG, even though those SSG were not 6 a sided but 2 vs. 2, 3vs. 3, and 4 vs.4,

and were studied under some specific rules. Moreover, the total distances covered in high intensity and in sprinting were larger for professionals without regards to the number of ball touches rule implementation in SSGs (Dellal, Hill Haas, Lago Penas & Chemari, 2011), this is not always the case in 11M (Dellal, Chamari, Wong, Ahmaidi,

Keller, Barros, Bisciotti & Carling, 2011), where it has been previously shown, that the HR responses, expressed as either %HRmax or %HRreserve, were similar between amateurs and professionals (Stolen, Chamari, Castagna & Wisloff, 2005). However, it is clearly shown in all the studies mentioned before, that the difference between the amateur and professional groups exist in most of the analyzed variables, such as in high intensity efforts (Kaplan, Ekman & Taskin, 2009). Likewise, this can be explained because elite players need to be used not only to complete intermittent repeated sprints with incomplete recovery, but also to complete all the high-intensity actions required during the match, including duels and all kind of directional changes.

All of those, need to be performed with a maximal physical and technical accuracy in spite of the accumulated fatigue (Dellal, Hill-Haas, Lago-Penas & Chamari, 2011).

Lastly, coaches relying on research data indicated that to maximize the performance, the training stimulus should have similar characteristics to the game, trying to implement training exercises related to the soccer match (Bompa, 1983; Mallo & Navarro, 2008). In this context, SSGs are often being used in the belief that they concurrently develop the key qualities of a soccer athlete (Dellal, Chamari, Pintus, Girard, Kotte & Keller, 2008; Impellizzeri, Rampinini, Coutts, Sassi & Marcora, 2004; Jones & Drust, 2007), while the difference among small-sided games and the traditional approach resides in executing skills as they appear in real competitions (Davids, Araújo, Correia & Vilar, 2013 ; Mallo & Navarro, 2008) in other words, looking for the specificity of the game, simulating the real 11 match as much as possible. Thus, following our 3rd study (Aquino, Melli-Netto, Ferrari, Bedo, Palucci Vieira, Santiago, Goncalves, Oliveira & Puggina, 2019), where the overall aim was to determine whether the use of the 6v6-SSG internal and external load could serve as an indicator of match-related physical performance for youth soccer players, demonstrating that the 6v6-SSG presented sensitivity, validity, and reliability to indicate match-related physical performance in elite youth Brazilian soccer players. Likewise, in Goto and Kings (2018) study the 6-a-side SSGs replicability on high-intensity demands of 11M in youth soccer players was shown. Specificity can also be seen in the results of other type of small side games (mostly, 2 vs. 2, 3 vs. 3, 4 vs 4 and 5 vs 5.), where a lot of studies have discussed and shown the specificity of different SSGs. For example, Bujalance Moreno, García and Latorre (2018), concluded that SSG training is found to be effective to improve specific performance of football players. Notwithstanding, in 6-a-sided SSG just two studies (Goto & Kings, 2018; Aquino, Melli-Netto, Ferrari, Bedo, Palucci Vieira, Santiago, Goncalves, Oliveira &

Puggina, 2019) cover the discussion of the specificity of SSG, that means more studies are needed to contrast those two which concretely agree on the specificity of the 6-a-sided SSG compared to a 11M.

CONCLUSION

Based on the researches that have been mentioned in this review, the validity and reproducibility of the physiological demands of a 11M football game on certain size of the field have been demonstrated.

Study Limitations

Even though the specificity of the 6-a-sided SSG is shown on the previously mentioned studies, it is also important to mention that much more researches are needed in this field. Since just 3 studies complete the total amount of actual scientific investigations where this type of SSG was tested, that is why these studies should be complemented with more researches so as to complete the actual knowledge about the matter by basing more studies on professionals and amateurs', both men and women. Not only this, but also different physiological tests should be done, such as, blood lactate tests and VO_{2max} . Finally, there is also a need to complete the knowledge with studies that not only consider the physiological parameters, but also the tactical, technical and psychological tests.

Practical application

Coaches should carefully decide which exercises they are going to use as the main objective set. Moreover, it is also known that soccer specific physical aspects should be trained with specific soccer drills, so SSG trainings are an interesting option if the coaches want to make the trainings similar to the real game. This narrative description of the 6-a-sided SGG has displayed that this type of the SSG can also be specific in comparison to the 11M, depending on the chosen pitch size, as it is physiologically harder for the players if the game is played in a larger field size and it is easier if the pitch is smaller. Besides, coaches should use the actual scientific knowledge to create the right training program depending on the context of the team, however, always searching for the specificity of the game.

Future Investigation lines

Clearly, physiological variables are quite deeply studied on the 6-a-sided SSGs. Additionally, it is known that there are 3 other factors which directly influence the soccer performance; technical, tactical and psychological. If someone tries to search for studies in which those factors are analyzed, not in the case of 6-a-sided SSGs, there are a few examples that examine technical and tactical variables in other type of SSG, such as, ball touches, amount of touches per action, pass accuracy, differences between each leg accuracy for technical analysis, initial formation, formation changes during the game, heat map to know the movement of each player, the most used passes, the passes on each side of the field, and in every measurable variable which considers a tactical aspect of the game. Apart from that, investigating those factors or variables in the 6vs.6 SSG would also be interesting, to compare them to a common game and analyze how similar or specific is the realized work on those SSG trainings. Lastly, there is a need to measure the psychological variables that are related to the performance on football. Due to the fact that no article analyzes this important side of the game that directly affects the performance of it. It is true that some of the articles mentioned in this narrative research, talk and consider the importance of the coaches' direct action to talk and motivate the players during the game. Accordingly, variables such as anxiety and aggression which are demonstrated to have a negative impact on soccer performance, or motivation and self-concept which are also positively related to the performance on soccer, are not variables mentioned in any of the SSG analysis. Thus, it would be really interesting to find new ways to investigate those aspects on each player so as to get closer to the specificity of the psychological variables during the SSG compared to the 11M, knowing that this aspect of the game as Bangsbo (1994) stated is totally connected to the performance in soccer.

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