HUMAN MOVEMENT (ISSN 1899-1955)
2025; 26(1): 1–14

The enjoyment of small-sided games: a narrative review

review paper
DOI: https://doi.org/10.5114/hm/197230

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ABSTRACT
Small-sided games (SSGs) have become increasingly popular as a training method due to their ability to incorporate game-like, ecological drills that combine technical and tactical development with intense physical and physiological demands. Additionally, SSGs are often favoured in training because they offer engaging and motivating activities for players, closely mimicking the dynamics of actual gameplay. While numerous systematic reviews have examined the acute and chronic effects of SSGs, limited research has explored their impact on player enjoyment. Consequently, the motivational aspects of SSGs are often overlooked in discussions of their benefits. This narrative review aims to address this gap by analysing existing research on the role of enjoyment during SSG implementation. Current evidence suggests that SSGs enhance player enjoyment more effectively than analytical training drills, such as running-based high-intensity interval training, regardless of the sport. While the format of play does not significantly influence enjoyment, preferences for training regimens vary by sex – boys/men often favour continuous training, while girls/women prefer intermittent formats. Coaches' verbal encouragement positively influences enjoyment, but mental fatigue can diminish it. Well-being and recovery status appear to have little effect. Overall, research on enjoyment in SSGs remains limited and often fails to consider important factors, such as motivation and peer interactions. More comprehensive studies are needed to develop a detailed model of enjoyment in SSGs.
Key words: conditioned games, motivation, constrained games, task constraints

Introduction

Small-sided games (SSGs) are modified versions of formal team sports, typically played with fewer players on smaller or altered fields or courts, often incorporating adapted rules [1]. These adaptations may involve changes to the task objectives or adjustments in how teammates coordinate, such as limiting individual actions or defining specific rules for interpersonal interactions [2]. SSGs are designed to maintain the ecological validity of training drills by increasing player involvement, encouraging more frequent decision-making and providing greater opportunities to practice both technical and tactical skills in a game-like environment [3]. These games are widely used in team sports such as soccer [4], basketball [5], handball [6], volleyball [7] and rugby [8] to promote similar dynamics to real match scenarios in more adjusted settings. The aim is to simplify [9] or adapt the game to achieve a specific objective.

SSGs can be an excellent tool for fostering both technical [10] and tactical [11] development, while simultaneously imposing high physiological and physical demands on players [1, 4]. By closely replicating elements of real-game dynamics, SSGs encourage greater player commitment, overcoming the limitations of traditional analytical training drills that often lack the engagement and motivational aspects of actual gameplay [12]. As a result, SSGs play a crucial role in enhancing enjoyment for team sport players due to their dynamic and immersive nature [13]. By reducing the number of players and field size, SSGs facilitate more frequent touches on the ball, higher involvement in the action [14] and increased opportunities for creativity and decision-making [15]. This active engagement promotes intrinsic motivation, as players receive more immediate feedback and satisfaction from their performance [16], leading to higher levels of enjoyment. Unlike more structured, analytical training forms that focus strictly on developing technical, tactical or physi-

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Received: October 24, 2024
Accepted for publication: December 10, 2024

Citation: Clemente FM. The enjoyment of small-sided games: a narrative review. Hum Mov. 2025;26(1):1–14; doi: https://doi.org/10.5114/hm/197230.

cal components, SSGs integrate these elements in a playful, game-like environment that mirrors real match conditions, making the experience more enjoyable and meaningful for participants [17].

The design of SSGs to achieve specific objectives can be guided by Newell's constraints model [18], which involves managing individual, task and environmental constraints to shape performance outcomes. Furthermore, the impact of SSGs on players' motivation and enjoyment can be understood through the lens of Self-Determination Theory (SDT) [19]. This theory offers a framework for explaining why SSGs are often more enjoyable than traditional, analytical training methods, as they fulfil key psychological needs that drive intrinsic motivation [20]. SDT emphasises the importance of satisfying three basic psychological needs: autonomy, competence and relatedness [21]. While SSGs have not been extensively studied within the SDT framework, their use in training serves to replicate dynamic and realistic game scenarios, fostering greater individual participation and commitment to the natural flow of the game. These attributes position SSGs as valuable training drills for enhancing enjoyment and enriching the overall experience of team sport players. SSGs can fulfil these psychological needs by offering players the freedom to make decisions (autonomy), as they frequently encounter diverse scenarios requiring problem-solving based on their interaction with available opportunities [22]. Additionally, SSGs provide challenges that are appropriately matched to players' skill levels (competence), requiring active participation in gameplay [23]. They also promote social interaction and teamwork (relatedness), as players must cooperate and commit to their team's success while facing opponents in a competitive yet collaborative environment [24].

In contrast, highly analytical training drills may be effective for developing specific skills or conditioning, but they often feel repetitive and less engaging due to their lack of creativity, freedom and social interaction [25], which are key features of SSGs. As a result, SSGs not only offer a more holistic approach to sports training but also align with the principles of SDT, which fosters motivation and enjoyment in team sport players [12]. In this context, enjoyment can be defined as a positive emotional response to exercise, encompassing several interrelated aspects [26]. These may include the affective response, referring to the emotional reactions experienced during and after exercise, such as pleasure, satisfaction and happiness [27]. Additionally, enjoyment drives individuals to engage in activities for their inherent satisfaction rather than for external rewards [28]. Some research within the SDT framework highlights that athletes who derive enjoyment from their sport through feelings of autonomy, competence and relatedness are more likely to exhibit intrinsic motivation, leading to improved performance, greater persistence and enhanced overall well-being in the athletic context [29].

Enjoyment in sports exercise is often assessed through self-report questionnaires that aim to quantify the affective experience associated with exercise. One of the most widely used tools is the Physical Activity Enjoyment Scale (PACES), developed by Kendzierski and DeCarlo [30]. The original PACES consists of 18 items that assess the positive and negative emotions individuals experience during physical activity. It is designed to capture a range of affective states related to exercise, including feelings of pleasure, satisfaction and motivation [31]. The PACES is used to investigate the relationship between enjoyment and exercise adherence, as well as to explore how enjoyment can mediate the effects of exercise interventions on physical and mental health outcomes [32, 33]. Higher levels of enjoyment are linked to an increased likelihood of participation and persistence in physical activities [34], and enjoyment is also influenced by social and contextual factors [35]. By integrating these elements, SSGs can foster a more enjoyable and motivating experience for participants, ultimately enhancing their overall engagement in sports.

Although player enjoyment during SSGs has been increasingly researched [36], studies have approached the topic from different perspectives and methodologies, and no comprehensive review has yet synthesised the main findings. A narrative review would be an effective way to present this evidence, allowing for a flexible synthesis of diverse studies, exploring different contexts, methodologies and subjective experiences, while identifying key themes and gaps in the literature [37]. This is particularly significant, as previous research on youth soccer players [38] has shown that athletes often experience heightened pressure during transitions, which can negatively impact enjoyment. It has been suggested that coaches focus on fostering players' expectations of success, personal growth and skill development, while also cultivating a team culture that emphasises camaraderie and passion for the sport [38].

The objective of this narrative review is to synthesise available evidence on the enjoyment experienced by team sport players during SSGs, examining factors such as game format, player engagement and social dynamics, and comparing these with other training modalities. Ultimately, the review aims to provide a comprehensive understanding of key themes, methodologi-

cal approaches and gaps in the current literature, offering valuable insights for future research and practical applications in team sport settings.

A non-systematic research approach was used for this narrative review. A refined search strategy ensured the inclusion of representative studies. A search on PubMed was conducted on 1 November 2024 using the query: ("small-sided games"[Title/Abstract] OR "SSG"[Title/Abstract]) AND (enjoyment*[Title/Abstract] OR PACES[Title/Abstract]). This search retrieved 28 results, which were filtered to include studies that met the eligibility criteria: interventions with team sport players using SSGs, comparisons of different SSGs, traditional games or other training methods and outcomes related to enjoyment. No restrictions were placed on the study design. Manual searches were also conducted on Google Scholar using the same query.

SSGs vs. analytical drills: how enjoyment varies depending on the training approach

Although SSGs are used for various purposes, a significant portion of scientific research focuses on the physiological and physical demands they entail. Such research often compares SSGs with analytical training drills, such as running-based high-intensity interval training (HIIT), which are commonly used to improve player conditioning. From an acute perspective, since both SSGs (especially in smaller formats) and HIIT emphasise intense efforts, a combination of exertion and enjoyment is expected, particularly when exercises are more analytical and less motivating.

Using the PACES, a study [12] tested acute responses in a counterbalanced design with youth football players. The study [12] revealed that PACES scores were significantly higher for SSGs (85 vs. 53 A.U.) in a 4v4 format, compared to HIIT in a short format. However, no significant differences were found between the two training modalities in terms of heart rate (HR) responses, blood lactate concentrations or rate of perceived exertion (RPE) [12].

While the previous findings [12] were observed in acute responses among trained youth football players, it is important to consider the potential influence of sport-specific experience and intrinsic motivation. In another study [39] that examined the effects of repeated sprint sessions versus SSGs in an untrained youth population, no significant differences in PACES scores were detected between the two training modalities. Both groups recorded relatively low enjoyment scores of 48–49 A.U., suggesting a general lack of enjoyment. This could be attributed to the participants' lack of familiarity with or engagement in the sport, as intrinsic motivation and prior experience have been shown to significantly impact enjoyment and RPE in physical activity [40]. The absence of sport-specific interest likely diminished their intrinsic motivation, leading to reduced enjoyment [41], despite the similar physiological demands of the training modalities.

While enjoyment can vary in the short term, it is important to consider how long-term adaptation to a specific exercise or training drill may also affect players' enjoyment levels. Recognising this possibility, some studies [17, 25, 42, 43] have utilised experimental designs to monitor these effects longitudinally over the course of intervention programmes, aiming to investigate whether enjoyment differs between various training modalities. Comparing SSG with HIIT in youth football players, two studies [17, 25] have shown that enjoyment, as measured by the PACES, was significantly greater in the SSG group than in the HIIT group. In the study by Los Arcos et al. [17], HIIT scored 15.6 A.U., while SSG scored 28.4 A.U. Similarly, in the study by Ouertatani et al. [25], HIIT had a PACES score of 59.3 A.U. compared to 88.7 A.U. for SSG. Both interventions showed that enjoyment remained higher for SSG over the weeks. This trend observed in SSG within football was also noted in an intervention study comparing SSG and HIIT in young male basketball players, which revealed that PACES scores for SSG were significantly higher than those for HIIT (28.8 vs. 22.9 A.U.) [43]. In young female basketball players, a study [44] observed that, over 4 weeks of training, the PACES scores were significantly higher in the SSG group compared to the HIIT group. The PACES scores for SSG ranged from 22 to 25 A.U., while HIIT scores ranged from 16 to 19 A.U. [44].

In summary, SSGs consistently generate higher levels of enjoyment compared to HIIT. This highlights a significant psychological advantage that complements the physical demands of these exercises. The enjoyment derived from these activities can be influenced by participants' sport-specific experience and intrinsic motivation, suggesting that familiarity with the sport enhances overall satisfaction during the exercise. Furthermore, SSGs not only maintain enjoyment over time but can also enhance it compared to HIIT. This highlights the importance of incorporating enjoyable training modalities to sustain engagement and motivation in youth athletes. Additionally, previous reviews suggest that the differences between SSGs and HIIT regarding their effects on acute physiological responses and long-term adaptations in endurance capacity are minimal [45].

Manipulating task constraints in SSG design and reflecting on variations in enjoyment

SSGs are often designed with specific objectives in mind, tailored to the context in which they are implemented. Managing task constraints is one way to influence players' performance during SSGs. In addition to regular adjustments in technical, tactical, physiological and physical demands, modifications in task objectives and constraints may also play a role in enhancing enjoyment.

How changing the format of play in SSGs may influence players' levels of enjoyment

It is well known that modifying the formats of play influences the performance outcomes of players during SSGs. Smaller formats (e.g., 1v1, 2v2 or 3v3) are typically more demanding in terms of HR, RPE and blood lactate responses [1, 4]. In contrast, larger formats tend to facilitate more demanding locomotor responses due to the increased pitch dimensions [46]. Additionally, smaller formats encourage significantly greater individual participation in technical actions with the ball, thereby increasing players' involvement in the dynamics of the game [10]. As a result, one might expect to see differences in enjoyment levels, as individual participation can vary between formats.

A study comparing 2v2, 3v3 and 4v4 SSGs among young female basketball players [47] found that the 3v3 format resulted in significantly higher PACES scores compared to the other formats, with scores of 27.1 A.U. versus 22.7 A.U. for 2v2 and 23.8 A.U. for 4v4. Interestingly, the study also found that participants in the 3v3 format reported significantly higher levels of happiness compared to those in the 2v2 and 4v4 formats [47]. In contrast, a study [48] comparing traditional rugby union games (10v10 and 12v12) with SSGs (7v7) in children revealed similar high PACES scores of 61 A.U. for rugby and 64 A.U. for SSGs, with no significant differences between them. Similarly, a study [49] comparing 3v3 and 4v4 SSGs in football among young semi-professional adults found comparable levels of enjoyment. While the training regimen (continuous vs. intermittent) significantly influenced the enjoyment reported by PACES, the format of play had no evident effect [49].

In non-sporting athletes [50], particularly among untrained individuals, the use of different SSG formats in football (4v4 and 6v6) did not result in significant differences in PACES scores (53–54 A.U.). Additionally, no differences in intensity were observed through HR and RPE measures [50]. While modifications to the formats of SSGs are generally expected to influence players' performance outcomes, findings from the studies mentioned above [48–50] suggest that the differences in enjoyment between formats are not as pronounced as anticipated. The consistent reporting of similar PACES scores across formats suggests that unexamined factors – such as technical participation, accuracy, intrinsic motivation or individual preferences – may mitigate the impact of format changes on perceived enjoyment. Enjoyment can be shaped by a combination of competency, recognition, competitive excitement and affiliation with peers, which may remain relatively stable regardless of the specific format of play used [51]. Consequently, the lack of significant differences in enjoyment levels between various SSG formats may reflect the complexity of these underlying psychological factors rather than the formats themselves. This highlights the need for more robust research to identify the factors that influence enjoyment across different SSGs.

How changing the training regimen in SSGs can impact players' levels of enjoyment

Although most SSGs elicit very high-intensity physiological responses due to their intermittent training regimens, some formats – specifically medium or larger ones – can also be structured as continuous regimens [52, 53].

A study [49] comparing continuous regimens (1 × 12 min) with intermittent regimens (2 × 6 min and 3 × 4 min) in both 3v3 and 4v4 football SSG formats revealed that the continuous regimen resulted in significantly higher PACES scores for both formats. Additionally, there was a decline in enjoyment as the regimen became more fragmented, particularly with the 3 × 4-min intervals [49]. Interestingly, in another study [13] comparing continuous regimens (1 × 12 min) with intermittent regimens (2 × 6 min and 3 × 4 min) among young adult football players in the 4v4 format, the results were surprising. Male participants reported significantly higher PACES scores during the continuous regimen, with scores progressively declining as the regimen became more fragmented [13]. In contrast, female players exhibited the opposite trend, showing significantly lower PACES scores in the continuous regimen compared to the two intermittent formats [13].

Although the previous two studies [13, 49] revealed significant differences in enjoyment levels between training regimens during SSGs, the overall evidence is not consistent. For instance, a study [54] involving

elite male lacrosse players compared an intermittent regimen of 4 × 4 min with 3 min of rest to a continuous regimen of 25 min over a 4-week period. This study found no significant differences in PACES scores, with values recorded at 96.0 A.U. for the intermittent regimen and 90.5 A.U. for the continuous regimen. Moreover, in untrained children participating in football SSGs [55], a comparison between a continuous regimen of 16 min and an intermittent regimen of 4 × 4 min with 2 min of rest revealed no significant differences in PACES scores, recorded at 33.7 and 33.2 A.U., respectively. Finally, a study [56] conducted on basketball compared two intermittent training regimens: one consisting of three 4-min sessions with 2 min of rest, and the other consisting of six 2-min sessions with 1 min of rest. The study [56] found that PACES scores were similar between the two regimens, with scores of 48–50 A.U. in the offensive 3v3 tactical drill and 38–43 A.U. in the defensive 3v3 tactical drill.

The available evidence regarding the effects of continuous and intermittent training regimens on participant enjoyment levels in SSGs is conflicting. While studies have shown that continuous regimens generally yield higher PACES scores for men [13, 49], women tend to prefer intermittent formats [13]. Additionally, no significant differences in enjoyment were reported among children [55] or elite players [54]. This discrepancy may be explained by factors such as sex differences, participant skill levels, psychological perceptions of effort and social dynamics during training. The authors [13] also suggested that a possible explanation could be linked to the effectiveness of tactical-technical actions, with women excelling in specific intermittent formats and men performing better in continuous bouts.

Can coaching verbalisation and feedback influence players' levels of enjoyment during SSGs?

Verbal encouragement has been utilised as a coaching task constraint, showing effects on the physiological intensification of SSGs, with some studies supporting this evidence [57, 58]. However, it is also expected that verbal encouragement and instruction can significantly influence the enjoyment levels experienced by players during SSGs.

Reports on the use of simple verbal encouragement, such as "good job", "come on", or "excellent", are more common in football [59–61]. Evidence suggests that such verbal encouragement tends to increase the enjoyment levels expressed by players during SSGs. For example, in a study [59] involving youth male football players participating in a 4v4 format, the condition with verbal encouragement resulted in significantly higher PACES scores (~45 A.U.) compared to the condition without verbal encouragement (~40 A.U.). In a similar format and approach, a study by the same authors [61] revealed comparable findings, showing significantly higher PACES scores in the verbal encouragement condition compared to the non-verbal condition. In physical education students participating in football SSGs [60], specifically the 4v4 format, similar results were observed, with students reporting significantly higher PACES scores of approximately 98 A.U. in the verbal encouragement condition compared to 91 A.U. in the non-verbal condition.

On the other hand, a study [62] conducted in a 4v4 basketball format with youth male players found no significant difference in enjoyment, as measured by PACES, between conditions with and without verbal encouragement. However, significant variations were observed between repeated sessions for the same condition [62], suggesting that enjoyment may be influenced by contextual factors (e.g., winning, mood) that are often not analysed.

Can individual constraints influence players' levels of enjoyment during SSGs?

While a coach can influence player performance by manipulating task constraints during the design of SSGs, overall performance is also shaped by the ongoing interaction between individual and environmental constraints [18]. These factors, often beyond the coach's control, can impact both performance and the enjoyment experienced by players. Individual constraints encompass a range of biological, physical, psychological and social characteristics that affect how each player engages with the game. Understanding these dynamics is important for creating an optimal training environment that supports both skill development and player satisfaction.

The impact of fatigue and well-being on levels of enjoyment

A study [63] examined the effects of induced mental fatigue on young male football players participating in 2v2, 3v3 and 4v4 formats. Using a counterbalanced design, the same players were tested under both mental fatigue and non-fatigue conditions before engaging in the different formats [63]. The results revealed that enjoyment, measured by PACES, was significantly higher

in the non-fatigue condition across all formats, with scores of 28.8, 28.7 and 29.0 A.U. for the 2v2, 3v3 and 4v4 formats, respectively [63]. In contrast, the mental fatigue condition resulted in lower scores of 26.9, 26.3 and 26.5 A.U. for the same formats [63].

Beyond fatigue, the influence of participants' well-being on enjoyment levels has also been explored, though reports on this topic are limited. In one study [64] involving youth male football players, the correlation between enjoyment levels during 4v4 games and factors such as sleep quality, stress, fatigue, muscle soreness and the Hooper index was investigated. The results showed no significant correlation between these factors and enjoyment levels, suggesting that variations in well-being indices may not significantly influence the enjoyment experienced by players. Similarly, a study [65] involving professional adult male football players in a 5v5 format found that enjoyment levels were not notably affected by variations in recovery state, sleep quality, fatigue, stress or delayed onset muscle soreness. These findings imply that enjoyment may be less dependent on these contextual factors and more influenced by motivational factors [65].

Can physical fitness and maturation impact levels of enjoyment?

A study [55] compared continuous and intermittent regimens of 3v3 football SSGs in untrained children, examining the relationship between enjoyment levels and various anthropometric and physical fitness measurements. Interestingly, body mass, height, waist circumference and body mass index were significantly and inversely correlated with enjoyment levels reported on the PACES scale, with a very large magnitude of correlation [55]. However, physical fitness parameters such as countermovement jump height, horizontal jump distance, distance covered in the Yo-Yo Intermittent Recovery Test Level 1 and change of direction performance in the *T*-test showed no significant correlation with enjoyment levels [55]. This suggests that, in untrained child populations, those with less favourable anthropometric conditions (such as higher body mass index and waist circumference) may not enjoy SSGs as much as those with more favourable anthropometric profiles.

Summary of the main findings

Table 1 presents a qualitative synthesis of the main findings across studies on SSGs that included enjoyment as a measure. Among the studies reviewed, football was the most commonly researched team sport (n = 14), followed by basketball (n = 5), while rugby union and lacrosse each had only one study. The sample sizes ranged from a minimum of 12 to a maximum of 41 participants, with an average of 19.4 participants per study. A strong tendency was observed to focus primarily on boys/men (n = 17), with only two studies focusing exclusively on girls/women. The weighted average age of participants across all studies was 17.1 ± 3.4 years. Moreover, only six studies focused on adults, while the remaining 15 focused on players under the age of 18. Regarding study designs, five studies used experimental parallel designs, while the remaining studies employed counterbalanced designs (to explore acute effects) or cross-sectional designs.

Practical implications

The findings highlight several important practical implications for designing and implementing SSGs in team sports training. First, SSGs appear to be an effective tool for enhancing player enjoyment, which is a crucial factor in maintaining motivation and engagement in sports training. By integrating technical and tactical elements with game-like scenarios, SSGs provide a dynamic and immersive experience that traditional analytical drills often lack. Coaches can enhance this effect by prioritising SSGs over purely analytical drills, especially when the goal is to foster intrinsic motivation and promote long-term adherence to training programmes. Additionally, the ability of SSGs to replicate real-game dynamics while encouraging frequent decision-making and creativity is valuable for the holistic development of players, making SSGs an essential component of both youth and professional sports training regimens.

Second, manipulating task constraints in SSG design offers a strategic way to tailor training to specific objectives while influencing enjoyment levels. For instance, adjusting the format of play (e.g., 2v2, 3v3 or 4v4) can impact player involvement and physiological responses, with smaller formats often leading to greater individual participation and creativity. Similarly, the choice of training regimen – continuous or intermittent – can influence player preferences and needs. By recognising these preferences, coaches can create more tailored training experiences that optimise both performance outcomes and enjoyment, thus fostering a more positive training environment.

Finally, individual constraints, such as physical fitness, well-being and fatigue, should be considered when implementing SSGs. While factors such as sleep qual-

Table 1. Summary of key methodological aspects and findings from studies on enjoyment in small-sided games

Study	Sport	*N*	Sex	Age (years) mean ± *SD*	Design	Comparisons or relationships	Measures	Main findings
SMALL-SIDED GAMES VS. ANALYTICAL DRILLS								
Selmi et al. [12]	soccer	16	boys	17.5 ± 0.6	counterbalanced design	SSG (4v4) vs. HIIT	PACES	SSG exhibited significantly higher PACES scores than HIIT ($p < 0.001$).
Hammami et al. [39]	soccer	12	boys	15.8 ± 0.6	counterbalanced design	SSG (3v3) vs. RST	PACES	No significant differences in PACES scores were observed between SSG and HIIT ($p = 0.092$).
Los Arcos et al. [17]	soccer	17	boys	15.5 ± 0.6	randomised parallel study	SSG (3v3 to 4v4) vs. HIIT	PACES	SSG exhibited significantly higher PACES scores than HIIT ($p = 0.006$).
Ouertatani et al. [25]	soccer	24	boys	16.7± 0.9	randomised parallel study	SSG (4v4) vs. HIIT	PACES	SSG exhibited significantly higher PACES scores than HIIT ($p < 0.001$).
Arslan et al. [43]	basketball	32	boys	14.5 ± 0.5	randomised parallel study	SSG (2v2) vs. HIIT	PACES	SSG exhibited significantly higher PACES scores than HIIT ($p < 0.005$).
Zeng et al. [44]	basketball	19	women	20.0 ± 1.3	randomised parallel study	SSG (2v2) vs. HIIT	PACES	SSG exhibited significantly higher PACES scores than HIIT ($p < 0.050$) across the four weeks.
CHANGING FORMATS OF PLAY								
Gok et al. [47]	basketball	18	girls	15.6 ± 0.7	counterbalanced design	2v2 vs. 3v3 vs. 4v4	PACES	The 3v3 format showed significantly higher PACES scores than both 2v2 ($p = 0.025$) and 4v4 ($p = 0.025$).
Tang et al. [48]	rugby union	26	boys and girls	10.6 ± 0.6	counterbalanced design	7v7 vs. 10v10 to 12v12	PACES	7v7 exhibited significantly higher PACES scores than traditional games (10v10 to 12v12) ($p = 0.007$).
Ferhani et al. [49]	soccer	16	men	20.7 ± 0.7	counterbalanced design	3v3 vs. 4v4	PACES	No significant differences in PACES scores were found between the formats ($p > 0.050$).
Hammami et al. [50]	soccer	41	boys	15.9 ± 0.6	randomised parallel study	4v4 vs. 6v6	PACES	No significant differences in PACES scores were found between the formats ($p > 0.050$).
CHANGING TRAINING REGIMEN								
Ferhani et al. [49]	soccer	16	men	20.7 ± 0.7	counterbalanced design	1 × 12 vs. 2 × 6 vs. 3 × 4 min (3v3 and 4v4)	PACES	The more fractionated regimen (3 × 4 min) yielded significantly lower enjoyment scores ($p < 0.05$) than the 1 × 12 min and 2 × 6 min regimens across both formats (3v3 and 4v4).
Farhani et al. [13]	soccer	32	women and men	20.1 ± 0.5	counterbalanced design	1 × 12 vs. 2 × 6 vs. 3 × 4 min (4v4)	PACES	In men, the 1 × 12 min regimen had significantly higher PACES scores than both the 2 × 6 min and 3 × 4 min regimens ($p < 0.05$). Additionally, the 3 × 4 min regimen had significantly lower PACES scores than the 2 × 6 min regimen ($p < 0.05$). In women, the 1 × 12 min regimen showed significantly lower PACES scores than both the 2 × 6 min and 3 × 4 min regimens ($p < 0.05$).
Hauer et al. [54]	lacrosse	12	men	25.8 ± 5.5	counterbalanced design	4 × 4 vs. 1 × 25 min (3v3)	PACES	No significant differences in PACES scores were observed between the training regimens ($p = 0.568$).
Sansone et al. [56]	basketball	12	men	21 ± 2	counterbalanced design	3 × 4 vs. 2 × 6 min (3v3)	enjoyment using visual analogue scale	No significant differences in reported enjoyment were found between the two regimens ($p = 0.978$).

Gómez-Álvarez et al. [55]	soccer	12	boys	11.5 ± 1.3	counterbalanced design	1 × 16 vs. 4 × 4 min (3v3)	PACES	No significant differences in reported enjoyment were found between the two regimens (p = 0.078).
COACHING VERBALISATION AND FEEDBACK								
Selmi et al. [59]	soccer	16	boys	17.2 ± 0.4	counterbalanced design	verbal encouragement vs. no verbal encouragement (4v4)	PACES	The SSG with verbal encouragement resulted in significantly higher PACES scores than the SSG without verbal encouragement (p < 0.001).
Selmi et al. [61]	soccer	14	boys	15.7 ± 0.7	counterbalanced design	verbal encouragement vs. no verbal encouragement (4v4)	PACES	The SSG with verbal encouragement resulted in significantly higher PACES scores than the SSG without verbal encouragement (p < 0.001).
Sahli et al. [60]	soccer	16	boys	17.4 ± 0.5	counterbalanced design	verbal encouragement vs. no verbal encouragement (4v4)	PACES	The SSG with verbal encouragement resulted in significantly higher PACES scores than the SSG without verbal encouragement (p < 0.001).
Khayati et al. [62]	basketball	16	boys	16.9 ± 0.4	counterbalanced design	verbal encouragement vs. no verbal encouragement (4v4)	PACES	No significant differences (p > 0.05) in PACES scores were found between verbal and non-verbal encouragement across different sessions.
INDIVIDUAL CONSTRAINTS								
Soylu et al. [63]	soccer	24	boys	15.9 ± 1.0	counterbalanced design	mental fatigue vs. no mental fatigue (2v2, 3v3 and 4v4)	PACES	The PACES scores were significantly higher (p < 0.05) in the absence of mental fatigue across all three formats tested: 2v2, 3v3 and 4v4.
Selmi et al. [64]	soccer	16	boys	16.5 ± 0.6	counterbalanced design	test correlations between PACES and well-being in 4v4	PACES	None of the ratings for sleep, stress, fatigue, muscle soreness or the Hooper index were significantly (p > 0.05) correlated with PACES scores.
Selmi et al. [65]	soccer	16	men	25 ± 0.8	counterbalanced design	test correlations between PACES and well-being and recovery status in 5v5	PACES	None of the total quality recovery ratings, nor those for sleep, stress, fatigue, muscle soreness or the Hooper index, were significantly correlated with PACES scores (p > 0.05).
Gómez-Álvarez et al. [55]	soccer	12	boys	11.5 ± 1.3	counterbalanced design	test correlations between PACES and anthropometric and physical fitness in 5v5	PACES	Body mass, height, body mass index and waist circumference were significantly and inversely correlated with PACES scores (p < 0.05), with a very large magnitude.

PACES – Physical Activity Enjoyment Scale, SSG – small-sided games, HIIT – running-based high-intensity interval training, RST – repeated sprint training

ity or muscle soreness do not seem to affect enjoyment significantly, mental fatigue and unfavourable individual characteristics can constrain players' positive experiences. Coaches can address this by monitoring player readiness and adjusting the intensity or format of SSGs accordingly. Furthermore, the role of verbal encouragement and positive feedback in enhancing enjoyment cannot be overstated. Simple affirmations and motivational cues can significantly boost player satisfaction, particularly during demanding training sessions. By incorporating these elements into their coaching strategies, practitioners can ensure that SSGs not only serve as effective training tools but also contribute to a supportive and enjoyable environment that promotes sustained participation and development in team sports.

Research gaps and directions for future studies

To explore the factors influencing enjoyment levels in SSGs, we must expand on initial considerations, in-

tegrating insights from SDT with empirical research focused on the psychological and social dynamics of gameplay. Enjoyment can be influenced by a variety of factors, and while few studies have explored its relationship with well-being – often without clear evidence of an effect on enjoyment – further research is needed to understand the underlying mechanisms. For example, aspects such as motivation, motivational climate during SSGs [16, 23], perceived competence, task orientation, emotional responses [47] and mood status [60, 62] have been analysed in some studies, but their correlations with enjoyment levels have not been thoroughly examined. It is essential to go beyond merely comparing task constraints and identify the mechanisms and factors that explain enjoyment.

Motivation may play a significant role in enjoyment during SSGs. Research in other contexts suggests that a supportive, motivational climate – characterised by encouragement, collaboration and a focus on personal improvement – can enhance enjoyment [66]. In this context, examining how intrinsic motivation (engaging in an activity for its own sake) contrasts with extrinsic motivation (participation driven by external rewards) can provide insight into players' enjoyment levels. Investigating the impact of these motivational types on players' experiences during SSGs may reveal correlations between motivational sources and reported enjoyment.

Additionally, the relationships between perceived competence and task orientation are another pivotal area of research [67]. Players who feel competent in their skills are more likely to experience enjoyment [68]. Task-oriented individuals, who focus on mastering their skills and improving performance, may derive more enjoyment than ego-oriented individuals, who prioritise outperforming others [69].

Emotional responses during SSGs can also play a crucial role in understanding enjoyment. Positive emotions such as excitement and joy may enhance players' experiences, while negative emotions could detract from enjoyment [70]. Furthermore, a player's mood status before engaging in SSGs can shape their emotional responses during the game [27]. Investigating how mood fluctuates in response to different game dynamics and outcomes could provide valuable insights into the emotional underpinnings of enjoyment.

The situational context of SSGs is another interesting aspect to explore in relation to enjoyment levels. Various situational factors during SSGs, such as technical actions (i.e., individual participation) and accuracy (i.e., quality of individual participation), may be correlated with the overall game experience. Sociometric analysis could be employed to investigate whether interactions with teammates and opponents influence enjoyment. The quality of social interactions – such as cooperation, communication and camaraderie – may impact players' enjoyment [71]. Moreover, the competitive nature of the game, including the experience of winning or losing, may play a role in determining enjoyment levels [72]. Understanding how competitive dynamics interact with social factors will be crucial in building a comprehensive framework for enjoyment in SSGs.

A key consideration for future research is whether enjoyment is primarily influenced by the characteristics of the game itself or by individual psychological and social factors. Comparative studies examining different SSG formats – such as variations in team sizes, rule modifications or game objectives – could help identify which aspects of gameplay are most conducive to enjoyment. Simultaneously, exploring individual differences, such as personality traits, prior experiences and social motivations, could shed light on how personal characteristics interact with game dynamics to influence enjoyment.

Moreover, most studies on enjoyment in SSGs have focused primarily on children and young athletes, with limited attention given to elite or adult players. This creates a significant gap in understanding how enjoyment is experienced by players at higher competitive levels, as the factors that contribute to enjoyment may differ based on age, skill level and expertise. Therefore, further research is needed to examine how enjoyment is influenced by competitive level, expertise, and other contextual factors among elite and adult athletes, as their experiences may differ from those of younger or less experienced participants.

Conclusions

The current research on enjoyment in SSGs, though limited, suggests that SSGs tend to be significantly more effective than analytical drills, such as HIIT, in enhancing players' enjoyment, regardless of the specific team sport involved. Regarding the influence of task constraints set by coaches on enjoyment, evidence suggests that the format of play does not significantly affect enjoyment levels. However, the impact of training regimens is conflicting: some players, particularly males, seem to prefer continuous training, while others, especially females, favour intermittent training. In untrained populations, training regimens appear to have little effect on enjoyment levels. Coaches' verbal encouragement, however, seems to significantly enhance players' reported enjoyment. On the other hand, although

mental fatigue may reduce enjoyment during SSGs, well-being and recovery status do not appear to influence enjoyment levels. Despite these findings, the existing research remains scarce and heterogeneous, largely overlooking underlying factors that could influence enjoyment, such as motivation, motivational climate, mood or peer interactions. To develop a more comprehensive model that explains the experience of enjoyment in SSGs, further research is required in the near future.

Ethical approval

The conducted research is not related to either human or animal use.

Informed consent

Informed consent has been obtained from all individuals included in this study.

Conflict of interest

The authors state no conflict of interest.

Disclosure statement

No author has any financial interest or received any financial benefit from this research.

Funding

This research received no external funding.

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