SMALL-SIDED GAMES IN RUGBY UNION TRAINING: A NARRATIVE REVIEW

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Review
DOI 10.26582/k.57.2.4

Abstract:

Small-sided games (SSGs) have gained prominence in rugby union training due to their potential to simultaneously develop players' physical, technical, and tactical capacities. However, a comprehensive understanding of how SSGs are structured and applied remains limited. This narrative review aimed to identify and analyze studies that implemented SSGs in rugby union training, focusing on game formats, participant characteristics, and training outcomes. A literature search was conducted in PubMed, Scopus, Web of Science, SPORTDiscus, and SciELO databases up to March 2025. Sixteen studies published between 2012 and 2024 met the inclusion criteria. Data extraction was performed independently by two reviewers using a structured coding framework, and findings were synthesized narratively due to the heterogeneity of studies' designs and outcomes. Results revealed considerable variation in SSG designs regarding the number of players (1v1 to 12v12), pitch dimensions (15×12 m to 100×70 m), and contact rules (touch, tackle, or non-contact). SSGs with fewer players and larger fields were associated with greater physical and perceptual demands. Technical and tactical benefits were also observed, particularly when SSGs were pedagogically adapted to the athletes' experience and developmental level. Nonetheless, most studies involved adult male or elite players, highlighting a gap in research with female and youth categories. Furthermore, few studies examined how contact rules influenced training outcomes. Future investigations should include more diverse populations and explore how constraint manipulations affect game representativeness and skill acquisition in rugby union.

Keywords: *sort, SSG, training*

Introduction

Rugby union is a team invasion sport played by two teams of fifteen players in two 40-minute halves, with a 10-minute interval, on a field measuring approximately 100 × 70 meters. It is characterized by its intermittent nature and the high-intensity physical demands placed on players (Duthie, 2006; Ziv & Lidor, 2016). The performance of a rugby player and/or team is closely linked to the development of technical and tactical skills, as well as to various physical capacities such as strength, power, and endurance (Cunningham, et al., 2018; Duthie, 2006; Gabbett, Kelly, & Pezet, 2007; Hendricks, et al., 2020). In this context, rugby training methods must be dynamic, incorporating variations in physical and technical-tactical stimuli, and including activities that replicate both specific and general game scenarios.

Studies have identified small-sided games (SSGs) as an effective pedagogical tool, widely recognized for their significant impact across various sports, including soccer, basketball, handball, volleyball, and, more recently, rugby union, although still in an incipient stage (Castro, Clemente, Praça, Laporta, & Costa, 2024; Clemente, et al., 2021a, 2021b; Fernández-Espínola, Abad Robles, & Gimenez, 2020; Halouani, Chtourou, Gabbett, Chaouachi, & Chamari, 2014; Hammami, Gabbett, Slimani, & Bouhlel 2018;). Also known as small-area games, conditioned games, or small-group games, SSGs are adapted formats of team sports that, through functional modifications, simultaneously enhance physiological, technical, and tactical capacities in accordance with the specific demands of the sport (Carson, Scott, Campo, & Hamlin, 2023; Clemente et al., 2021a, 2021b; Davids, Araújo,

Correia, & Vilar, 2013; Fernández-Espínola, et al., 2020; Hammami, et al., 2018). To effectively incorporate SSGs into training, it is essential to understand the constraint-led pedagogical approach (Correia, Araujo, Craig, & Passos, 2011; Davids, et al., 2013; Passos, et al., 2008; Renshaw & Chow, 2019; Renshaw, Chow, Davids, & Hammond, 2010). Initially, the objective of the SSGs is defined, and to achieve it, various constraints, such as pitch dimensions, number of players, and game rules, are manipulated (Renshaw & Chow, 2019). The implementation of SSG in training contributes to the learning process of the sport, considering the increased ball contact and higher number of game-related actions performed (Fernandez-Espínola, et al., 2020). However, in rugby union, there is still a lack of robust evidence regarding the investigation of tactical behavior through the manipulation of constraints in SSG (Clemente, et al., 2021a; Zanin, et al., 2021).

With respect to the application of SSGs in rugby union training, a systematic review examined the acute responses and chronic adaptations to SSGs in rugby (both rugby union and rugby league). Of the 20 studies analyzed, only five specifically addressed rugby union (Zanin, et al., 2021). Previous studies present a wide variation in formats, pitch dimensions, and rules of rugby union. The formats investigated have ranged from 1 vs 1 to 12 vs 12 (Dudley, et al., 2024; Tang, et al., 2024), while pitch areas have varied from 180 m² (Muñoz-Chavez, Reigal, Hernández-Mendo, & Raimundi, 2015) to 7000 m² (Bicudo, et al., 2024; Tang, et al., 2024; Vaz, Gonçalves, Figueira, & Garcia, 2016). Although the tackle is the main individual defensive action in rugby union, SSGs have often adopted the touch format as a substitute for physical contact (Bicudo, et al., 2024; Zanin, Ranaweera, Darrall-Jones, & Roe, 2024). This approach aims to prevent excessive contact loads during training and to prioritize the development of other physical abilities and technical and tactical skills. Besides the scarcity of research in this branch of the sport, the authors highlighted a predominant focus on physical responses, with limited investigation into the effects of SSGs on technical skills, no studies on tactical behavior, and a lack of information about the pedagogical approaches used in game design.

Given the importance of methodological tools to support coaches, it is relevant to identify different formats of SSGs described in the rugby union literature that analyzes their demands and objectives within the training context. In rugby union, certain specific rules must be adapted for application in SSGs, considering that actions such as set and dynamic formations require a minimum number of players. Consequently, set pieces (scrums and lineouts) are usually replaced by free kicks in SSGs (World Rugby, 2025), and the execution of mauls is generally prohibited in open play (World Rugby, 2025). These adaptations illustrate the need to understand how SSGs are implemented in practice and how they reproduce, or fail to reproduce, the technical, tactical, and physical demands of the formal game.

Accordingly, this narrative review aimed to identify and analyze studies that applied SSGs in rugby union training and to address the following research question: How do different constraint manipulations (e.g., number of players, pitch dimensions, and contact rules) influence the physical, technical, and tactical demands observed in rugby union SSGs?

Methods

The present article is characterized as a narrative review study, aiming to analyze and describe the state of the art from a theoretical or contextual perspective regarding publications on SSGs in rugby union (Rother, 2007).

A literature search was conducted in the PubMed, Scopus, Web of Science, SPORTDiscus, and SciELO databases up to March 12, 2025, without restrictions on language or initial publication date. The search strategy combined the following Boolean terms: ("rugby union" OR "rugby") AND ("small-sided game*" OR "conditioned game*" OR "drill-based game*" OR "reduced game*"), considering both singular and plural forms. The Boolean syntax was adapted to the specific search rules of each database, as shown in Table 1. All retrieved records were imported into the Rayyan® (2025) platform for data deduplication and to assist in the organization, screening, and identification of duplicate articles. Two independent reviewers performed the screening of titles, abstracts, and full texts, with discrepancies resolved through discussion, ensuring reliability in study selection.

The following criteria were established for study inclusion: (a) full-text articles published in peer-reviewed journals up to March 2025; (b) descriptive, experimental, observational, or cross-sectional studies involving rugby union players or practitioners at any competitive level; and (c) studies that implemented or observed SSGs in training contexts. SSGs were defined as modified game formats involving fewer players, altered pitch dimensions, and/or adapted rules, while maintaining the representativeness of the formal game. Both experimental and observational designs were included, provided they reported measurable outcomes related to SSG application. To systematize the analysis, extracted outcomes were grouped into four main domains: internal load (physiological and perceptual indicators), external load (physical and locomotor variables), technical (number of actions, efficiency, and technical learning), and tactical (positioning, decision-making, and collec-

Table 1. Search strategy used in each database

Database	Search field / syntax	Date of search
PubMed	(“rugby union”[Title/Abstract] OR rugby[Title/Abstract]) AND (“small-sided game*”[Title/Abstract] OR “conditioned game*”[Title/Abstract] OR “drill-based game*”[Title/Abstract] OR “reduced game*”[Title/Abstract])	March 12, 2025
Scopus	TITLE-ABS-KEY(“rugby union” OR rugby) AND TITLE-ABS-KEY(“small-sided game*” OR “conditioned game*” OR “drill-based game*” OR “reduced game*”)	March 12, 2025
Web of Science	TS=(“rugby union” OR rugby) AND TS=(“small-sided game*” OR “conditioned game*” OR “drill-based game*” OR “reduced game*”)	March 12, 2025
SPORTDiscus	TX(“rugby union” OR rugby) AND TX(“small-sided game*” OR “conditioned game*” OR “drill-based game*” OR “reduced game*”)	March 12, 2025
SciELO	(“rugby union” OR rugby) AND (“small-sided game” OR “conditioned game” OR “drill-based game” OR “reduced game” OR “reduced game”)	March 12, 2025

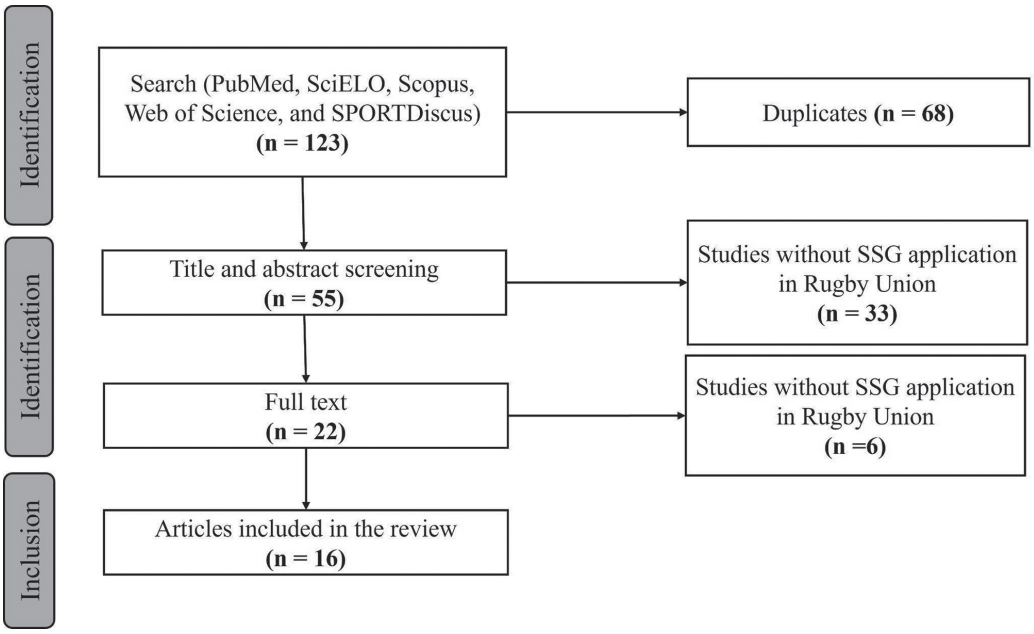

Figure 1. Flowchart of the identification, screening, and inclusion stages of the articles. Note. SSGs = small-sided games. Source: Authors

tive behavior). Systematic reviews, rugby league studies, and training tasks without interactive or game-based dynamics were excluded.

Data extraction was performed independently by two reviewers using a structured coding framework developed *a priori* to ensure consistency. Extracted variables included study characteristics (e.g., sample size, participants’ sex, competitive level), SSG design features (e.g., number of players, field dimensions, game duration, contact rules), and contextual load measures (e.g., heart rate, RPE, GPS-based data, and technical-tactical outcomes). Discrepancies between reviewers were resolved through discussion until consensus was reached.

Data analysis was conducted qualitatively through the description of SSGs in rugby union identified in the selected publications based on the search strategy. The description included information on the first author, year of publication, study sample, general objective, SSGs design (format, dimensions, and rules), and brief conclusions.

Initially, 123 studies were identified, of which 68 were excluded due to duplication. Subsequently, the titles and abstracts of 55 articles were screened, resulting in the exclusion of 33 for not addressing the application of SSGs in rugby union. During the full-text screening phase, 22 articles were assessed, and six were excluded for not presenting an actual application of SSGs in rugby union, totaling in 16 studies included in the present review (Figure 1).

Results

A total of 16 studies investigating the application of SSGs in rugby union training, published between 2012 and 2024, were analyzed. Table 2 presents information regarding samples of the

Table 2. Summary of the studies included in this narrative review

1st author (year)	Sample	Objective	Small-sided games design	Brief conclusions
Kennet (2012)	Semi-professional male athletes (n = 22)	To examine the influence of the number of players (4 vs 4, 6 vs 6, and 8 vs 8) and field size (small and large) on physiological and perceptual responses, as well as on the time-motion demands of rugby-specific SSGs.	Format: 4 vs 4, 6 vs 6, and 8 vs 8 Dimensions: 32 m x 24 m, and 64 m x 48 m Contact rule: Touch	SSGs with fewer players and larger fields increase physiological, perceptual, and movement demands, while heart rate remains similar across formats.
Vaz (2013)	Experienced and novice male athletes (n = 40)	To compare physical effort and performance indicators during SSGs between experienced and novice Rugby Union players.	Format: 6 vs 6 Dimensions: 60 m x 40 m Contact rule: Tackle	SSGs develop physical conditioning but do not necessarily promote technical-tactical excellence.
Muñoz-Chavez (2015)	Female university athletes (n = 20)	To analyze the effects of different SSGs on RPE, heart rate, and game behaviors in a sample of female rugby players.	Format: 3 vs 3, 4 vs 4, and 5 vs 5 Dimensions: 15 m x 12 m, 16.6 m x 14 m, and 18.75 m x 16 m Contact rule: Tackle	SSGs (3 vs 3) increases heart rate levels, perceived exertion, and game load, although it does not show a linear pattern across formats.
Vaz (2016)	Male elite athletes (n = 40)	To describe the influence of four different SSGs, each lasting 15 minutes, on the physical and physiological demands of rugby union players.	Format: 1 vs 1, 2 vs 1, and 7 vs 7 Dimensions: 30 m x 30 m, 50 m x 35 m, and 100 m x 70 m Contact Rule: Tackle	SSGs focused on evasion skills promote varying levels of physical and technical performance, despite similar heart rate responses across formats.
Navarro-Zurita (2017)	Female university athletes (n = 10)	To compare movement patterns and exercise intensity across sets of SSGs by manipulating pitch size and the presence or absence of contact.	Format: 5 vs 5 Dimensions: 32 m x 24 m and 64 m x 48 m Contact rules: Touch and tackle	SSGs with larger playing areas alter movement patterns, increasing high-speed running with contact, while heart rate remains stable.
Taylor (2020)	University athletes, sex NS (n = 12)	To evaluate the relationships between the integrated ratios of external and internal loads and aerobic fitness across three different training exercise protocols.	Format: 6 vs 6 Dimensions: 51 m x 39 m Contact Rule: Tackle	SSGs and the SIT protocol demonstrate high validity and reliability for assessing submaximal aerobic fitness in rugby players.
Weakley (2020)	Male university athletes (n = 22)	To investigate whether providing GPS feedback to players between SSGs sets can alter locomotor, physiological, and perceptual responses.	Format: 5 vs 5 Dimensions: 40 m x 20 m Contact rule: Touch	SSGs with GPS-based feedback every 4 minutes did not alter the locomotor, physiological, or perceptual responses of rugby players.
Mazzeu (2021)	University non-athletes of both sexes (n = 31)	To investigate passing skill acquisition in rugby based on the practice of different SSGs.	Format: 2 vs 0, 1+1 vs 1, and 2 vs 1 Dimensions: 15 m x 12 m Contact rule: Non-contact	SSGs in the 1+1 vs 1 format facilitated the learning of passing accuracy and direction in rugby.
Peek (2022)	Adult male athletes (n = 42)	To compare peak periods (from 1 to 6 minutes) for three different training methods (GBT; SSGs; and CT) in elite male rugby union players.	Format: NS Dimension: NS Contact rule: Tackle	SSGs produce higher movement intensities during training compared to other methodologies, although no method fully replicates the maximum impacts of the game.
Zanin (2022)	Professional male athletes (n = 21)	To investigate the consistency of offensive tactical and technical behavior, as well as physical characteristics, across multiple series and the variability between days, in a SSGs specifically designed for rugby union forwards.	Format: 6 vs 3 Dimensions: 17.5 m x 15 m Contact rule: Touch	SSGs provides consistent stimuli across sets and days, maintaining stable technical and attacking characteristics, with minimal and insignificant variations in tactical and physical aspects in rugby players.
Zanin (2023)	Male professional athletes (n = 40)	To investigate which external load variables were associated with internal load during three SSGs in professional rugby union players.	Format: 6 vs 3, and 11 vs 8 Dimensions: 17.5 m x 15 m, and 35 m x 30 m Contact rule: Touch	Positional SSGs (SSGs-B and SSGs-F) allow greater exposure to specific physical and technical characteristics, with SSGs-BF standing out in high-speed running and offensive actions; however, consecutive day repetitions may lead to variations due to adaptations or fatigue.
Bicudo (2024)	Professional female athletes (n = 28)	To compare internal and external load variables between blocks of a game-based Rugby Sevens training session.	Format: 7 vs 7 Dimensions: 100 m x 70 m Contact rule: Touch	SSGs promotes a progressive increase in the RPE throughout the session, while internal load decreases as the game volume progresses.

Zanin (2024)	Professional male athletes (n = 40)	To investigate the differences in physical and technical characteristics among three specific Rugby Union SSGs and to examine the variability of these characteristics over three weeks during the preseason of a professional Rugby Union club.	Format: 6 vs 3, and 11 vs 8 Dimensions: 17.5 m x 15 m, and 35 m x 30 m Contact rule: Touch	Specific SSGs (SSGs-B, SSGs-F, and SSGs-BF) show different associations between internal and external loads in professional rugby players, highlighting variations according to format and position.
Tang (2024)	School-aged participants (n = 26)	To compare traditional rugby union games with a modified SSGs, aiming to improve opportunities for physical activity and children's enjoyment.	Format: 7 vs 7, 10 vs 10, and 12 vs 12 Field size: 60 m x 25 m, 90 m x 60 m, and 100 m x 70 m Contact rule: Tackle	Traditional games generated greater physical effort, while SSGs promoted increased participation and technical development, with similar enjoyment and perceived exertion reported in both formats.
Dudley (2024)	Male youth athletes (n = 26)	To quantify the variability of physical, technical, and subjective task load demands in SSGs, and to assess the effect of manipulating pitch size and number of players in SSGs among adolescent rugby union players.	Format: 4 vs 4, 6 vs 6, and 12 vs 12 Pitch Size: 25 m x 30 m, 30 m x 40 m, and 35 m x 50 m Contact rule: Touch	SSGs with fewer players increase physical, technical, and perceptual demands, while enlarging the playing area leads to greater movement without changing technical requirements.
Ren (2024)	Professional male rugby players (n = 40)	To explore the impact of different SSG factors on players' workload, as well as the differences in workload between official matches and SSGs.	Format: 4 vs 4, 4 vs 5, 5 vs 5, 7 vs 7, and 8 vs 8 Pitch Size: 660 m², 900 m², 1080 m², 2500 m², and 2500 m² Contact Rule: Touch	Reducing the number of players and playing area increased physical demands related to acceleration and deceleration, while larger spaces promoted high-speed running.

Note. GBT = game-based training; CT = conditioned training; RPE = rate of perceived exertion; SIT = sprint interval training; NS = not specified; SSGs = small-sided games; SSGs-B = backs small-sided game; SSGs-F = forwards small-sided game; SSGs-BF = backs and forwards small-sided games.;

studies, objectives, SSGs structuring, and a brief conclusion.

Participants' characteristics

The samples of the studies included in this review varied in terms of age range, competitive level, and sex of the participants. Regarding age, studies involving school-aged children (Tang, et al., 2024), adolescents (Dudley, et al., 2024), university students (Mazzeu, Bastos, Moreira, & Corrêa, 2021; Muñoz-Chavez, et al., 2015; Navarro-Zurita, Gálvez, López, & Suarez-Arrones, 2017; Taylor, Sanders, Myers, & Akubat, 2020; Weakley, et al., 2020), and adults (Bicudo, et al., 2024; Kennett, Kempton, & Coutts, 2012; Peek, Carey, Middleton, Gastin, & Clarke, 2022; Ren, et al., 2024; Vaz, João, Pinheiro, Alpuin, & Carreras, 2013; Vaz, et al., 2016; Zanin, et al., 2022, 2023, 2024) were identified, demonstrating the applicability of SSGs across different age groups and stages of athletic development.

Regarding participants' sex, there was a predominance of studies involving male athletes, with only three investigations including female participants (Bicudo, et al., 2024; Muñoz-Chavez, et al., 2015; Navarro-Zurita, et al., 2017). Concerning competitive level, the studies ranged from non-practitioners (Mazzeu, et al., 2021) to professional athletes (Zanin, et al., 2022, 2023, 2024), highlighting the versatility of SSGs but also revealing a gap in the literature related to developmental contexts and female athletes.

Design of SSGs

The reviewed articles presented variations in the design of SSGs, particularly regarding the number of players, with formats ranging from 1 vs. 1 to 12 vs. 12 (Figure 2). Among these, the most frequent configurations were 4 vs. 4 (Dudley, et al., 2024; Kennett, et al., 2012; Muñoz-Chavez, et al., 2015; Ren, et al., 2024), 5 vs. 5 (Muñoz-Chavez, et al., 2015; Navarro-Zurita, et al., 2017; Ren, et al., 2024; Weakley, et al., 2020), 6 vs. 6 (Dudley, et al., 2024; Kennett, et al., 2012; Taylor, et al., 2020; Vaz, et al., 2013), and 7 vs. 7 (Bicudo, et al., 2024; Ren, et al., 2024; Tang, et al., 2024; Vaz, et al., 2016), applied in different training contexts to manipulate task complexity and athlete involvement in game actions. Furthermore, some studies structured their SSGs with numerical superiority (Mazzeu, et al., 2021; Vaz, et al., 2016; Zanin, et al., 2022, 2023, 2024).

Regarding the pitch dimensions used in SSGs, significant variations were observed, ranging from 15 m × 12 m (2.5% of the official field size) to 100 m × 70 m (100% of the official field size), the latter being close to the dimensions of the formal game. Additionally, some identical pitch sizes were applied in different studies, such as 32 m × 24 m (11% of the official field size) and 64 m × 48 m (44% of the official field size), used by Kennet et al. (2012) and Navarro-Zurita et al. (2017); 15 m × 12 m by Mazzeu et al. (2021) and Muñoz-Chavez et al. (2015); 100 m × 70 m investigated by Bicudo et al. (2024), Tang et al. (2024), and Vaz et al. (2016), and

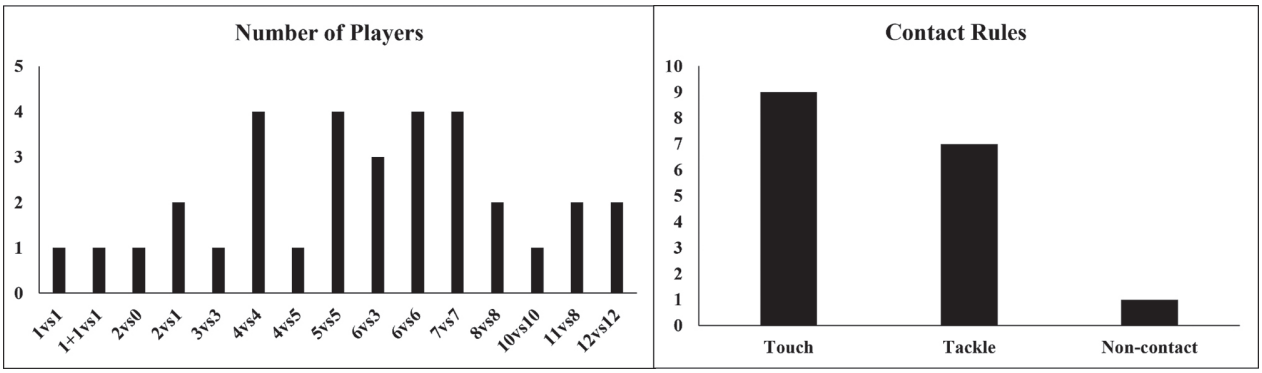

Figure 2. Frequency of the number of participants and contact rules found in the articles. Source: Authors

17 m × 15 m (3.6% of the official field size) applied in three studies (Zanin, et al., 2022, 2023, 2024).

Moreover, the analyzed studies utilized three main forms of contact rules: tackle (direct contact), touch (controlled touch), and no contact (Figure 2). The touch rule was the most recurrent (Bicudo, et al., 2024; Dudley, et al., 2024; Kennett, et al., 2012; Navarro-Zurita, et al., 2017; Ren, et al., 2024; Weakley, et al., 2020; Zanin, et al., 2022, 2023, 2024), especially in studies aimed at analyzing variables such as heart rate, perceived exertion, and time-motion variables. Few studies have conducted direct comparisons between tackle and touch formats, limiting the extrapolation of findings to formal game conditions.

Despite the diversity of formats and dimensions, methodological heterogeneity was observed, particularly regarding session duration, recovery intervals, and contextual objectives, which may affect the comparability of the results.

Effects of SSGs on training

The studies included in this review indicated that by altering the functional structures of SSGs, such as the number of players and pitch dimensions, the physical demands on athletes can be influenced. From this perspective, SSGs designed with fewer participants and larger pitch dimensions tend to increase the number of accelerations, decelerations, and high-speed movements, thereby intensifying players' physical effort during practice (Kennett, et al., 2012; Ren, et al., 2024). Furthermore, some studies demonstrated consistency in physical stimuli (both external and internal load) throughout series and training sessions (Zanin, et al., 2022, 2024).

Regarding physiological and perceived exertion responses, most studies (n = 10) monitored variables such as heart rate and/or rating of perceived exertion (RPE) (Bicudo, et al., 2024; Dudley, et al., 2024; Kennett, et al., 2012; Muñoz-Chavez, et al., 2015; Navarro-Zurita, et al., 2017; Tang, et al., 2024; Taylor, et al., 2020; Vaz, et al., 2013, 2016; Weakley, et al., 2020). In this regard, Muñoz-Chavez et al. (2015) found elevated heart rate and RPE values in higher-intensity SSGs. Additionally, Bicudo et al. (2024) observed a progressive increase in RPE throughout the SSGs session, despite a reduction in game volume (displacement variables), which may indicate accumulated fatigue or possible alterations in the participants' psychophysiological state.

Moreover, SSGs also enhanced technical development, improving pass accuracy and direction (Mazzeu, et al., 2021), and promoted greater involvement in technical actions, particularly in smaller or intentionally manipulated formats (Dudley, et al., 2024; Tang, et al., 2024). However, less experienced players do not achieve technical proficiency solely through SSG participation (Vaz, et al., 2013). Regarding positional roles, backs performed a higher number of line breaks, whereas forwards were more frequently involved in contact situations and rucks (Zanin, et al., 2023).

Overall, the most robust evidence supports the physical effects of SSGs (heart rate, RPE, and movement), while technical and tactical effects remain less consistent due to the small number of studies, limited sample sizes, and methodological heterogeneity.

Discussion and conclusions

This review identified that, in rugby union, manipulating the functional structures of SSGs, such as the number of players, pitch dimensions, and contact rules, allows for regulation of game complexity and consequently impacts variables such as movement patterns, perceived effort, technical actions, and tactical behavior. These findings align with those of studies in other team sports, which demonstrate SSGs as a training tool capable of simultaneously promoting physical, technical, and tactical development of participants (Clemente, et al., 2021a, 2021b; Fernández-Espínola, et al., 2020; Hammami, et al., 2018).

Under the perspective of the constraint-led approach, the observed effects of SSGs can be interpreted as the result of the interaction among task, environmental, and performer constraints, which

collectively promote physical, technical, and tactical adaptations in players (Correia, et al., 2011; Davids, et al., 2013; Passos, et al., 2008; Renshaw & Chow, 2019; Renshaw, et al., 2010). In this sense, performance emerges from the dynamic interplay among these constraints, allowing coaches to modulate the intensity and complexity of training by manipulating factors such as the number of players, pitch dimensions, contact rules, prior experience, and playing position.

Specifically, task constraints, such as reducing the number of players or increasing the field size, intensify physical demands, including accelerations, decelerations, and high-speed movements, while also increasing perceived exertion (Kennett, et al., 2012; Ren, et al., 2024). Purposeful manipulations of task constraints have also been shown to enhance the frequency and quality of technical actions, particularly among younger or less experienced athletes (Dudley, et al., 2024; Tang, et al., 2024).

Regarding environmental constraints, including contact rules and playing space, these directly affect technical patterns and physical demands. The predominance of touch SSGs suggests an intentional strategy to control intensity and reduce the injury risk, although the scarcity of direct comparisons with tackle formats limits conclusions about representativeness relative to formal match conditions (Bicudo, et al., 2024; Zanin, et al., 2022, 2023, 2024).

Additionally, performer constraints, such as skill level, prior experience, and playing position, modulate individual responses to SSGs. More experienced players tend to exhibit greater technical and tactical efficiency, whereas novice or less experienced players may achieve physical benefits without reaching technical proficiency (Tang, et al., 2024; Vaz, et al., 2013). Positional differences consistently emerge: backs tend to engage in fast, strategic actions characteristic of their role (e.g., line breaks), while forwards are predominantly involved in contact situations and ball contests (Zanin, et al., 2023).

Despite diversity of SSG formats identified in this review, conclusions regarding their technical and tactical effects are largely based on heterogeneous studies with small sample sizes, warranting caution when generalizing findings. The predominance of investigations led by a single research group (e.g., Zanin, et al.) and the limited number of comparisons between touch and tackle formats restrict the representativeness of the available evidence. Furthermore, there remains a notable gap regarding the implementation of SSGs among female athletes and in youth development contexts. Given these limitations, future studies should: (a) evaluate the effects of contact rules (touch vs. tackle) across different skill levels and playing positions, considering representativeness of the formal game; (b) investigate the application of SSGs in female athletes at distinct stages of development to enhance the external validity of findings; (c) explore the manipulation of task, environmental, and performer constraints across developmental trajectories, accounting for positional profiles and physical, technical, and tactical adaptations; and (d) incorporate acute:chronic workload ratios and recovery strategies in high-intensity SSGs to ensure both safety and training efficiency.

Overall, SSGs appear to be a promising and flexible tool with the potential to concurrently develop physical, technical, and tactical capacities in rugby. The strongest evidence supports their use to modulate physical intensity and replicate locomotor demands of the formal game through the manipulation of constraints such as the number of players, field dimensions, and contact rules. However, findings regarding technical and tactical outcomes remain less conclusive, largely due to methodological heterogeneity, small sample sizes, and the limited representativeness of contact conditions (e.g., touch vs. tackle formats).

In youth and developmental contexts, SSGs can serve as valuable environments for promoting active learning of game principles, provided they are designed with clear pedagogical intent and aligned with the players' developmental stages. Nonetheless, coaches and practitioners should interpret current evidence with caution, as the strength of available findings varies across performance domains and depends on contextual factors such as athletes' experience, sex, and competitive level. Future studies with more robust and diverse designs are needed to confirm these benefits and refine evidence-based applications of SSGs in rugby training.

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Submitted: July 25, 2025
Accepted: November 5, 2025
Published Online First: December 18, 2025

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