ACTA GYMNICA, 2025, Volume 55, Article e2025.009
https://doi.org/10.5507/ag.2025.009

OPEN ACCESS

ORIGINAL RESEARCH

Effects of scoring system manipulation on tactical, conditional, and emotional responses in rugby union academy players

Juan Sorreluz-Uria[1,2], Asier Los Arcos[1,3], Jokin Aginaga[4], and Asier Gonzalez-Artetxe[1,3]✉

[1]Department of Physical Education and Sport, Faculty of Education and Sport, University of the Basque Country, UPV/EHU, Vitoria-Gasteiz, Araba, Spain; [2]Zarautz Rugby Team, Zarautz Sporting Club, Zarautz, Gipuzkoa, Spain; [3]Society, Sports, and Physical Exercise Research Group (GIKAFIT), University of the Basque Country, UPV/EHU, Vitoria-Gasteiz, Araba, Spain; and [4]Institute of Smart Cities (ISC), Public University of Navarre, Iruñea – Pamplona, Navarre, Spain

Abstract

Background: Rugby union coaches design small-sided games (SSGs) by altering task conditions to guide players toward the desired objectives. Placing greater value on scoring a try in the centre of the in-goal area may encourage players to play more centrally. **Objective:** To compare the tactical and conditional responses, along with perceptions of enjoyment and competence, of rugby union academy players during regular (SSG_{REG}) and conditioned (SSG_{COND}) SSGs. **Methods:** Sixteen U18 male rugby union players competed in two 4 × 5 min eight-a-side games (219 m^2 per player) with (SSG_{COND}) and without (SSG_{REG}) triple point value in the central part of the in-goal area. Players' tactical (central tendency and approximate entropy measures of surface area, length, width, dyads, and stretch and spatial exploration indices) and conditional (total distance travelled and distances at different speed zones) responses were assessed using GPS data. Players also rated their enjoyment and perceived competence for each SSG. **Results:** Young rugby union players significantly ($p < .05$) occupied less space (surface area: $r = .13$; length: $r = .05$; width: $r = .24$), played closer together (dyads: $r = .16$; stretch index: $r = .14$) and explored less ($r = .63$) in the SSG_{COND} than in the SSG_{REG}, with no differences in entropy measures ($p > .05$) across task conditions. They also ran significantly ($p < .001$) more overall ($d = 1.21$) and at low-to-medium speed ($d = 0.85$) but not at higher speeds ($p > .05$) in the conditioned scenario than in the regular one. Players' perceptions of enjoyment and competence did not differ ($p > .05$) across SSGs. **Conclusions:** Manipulating the scoring system in rugby union SSGs encouraged players to play more compactly and run more, with no changes in distances travelled at highest speeds nor in perceptions of enjoyment and competence. Thus, academy coaches can benefit from the tactical impact of this manipulation without exceeding habitual high-speed running demands or impairing players' subjective experience.

Keywords: team sports, youth sports, coaching, time and motion studies, behaviour, motivation

Introduction

Rugby union is a team sport that is similar to association football or basketball in that it shares several structural features that define the internal logic of these sports (Parlebas, 2013). The presence of teammates and opponents creates social uncertainty, which players must overcome to score more points—whether through goals, baskets, or by crossing the goal line—than the opposing team before time runs out (i.e., interruption mechanism: time limit). Rugby union coaches have indicated that competent players are those who can adapt to this uncertainty and adjust their decisions to each game situation (Morgan et al., 2020; Passos et al., 2008). Decision-making is a key aspect of player performance; players must make accurate and timely decisions based on the behaviours of other players, the position of the ball, and the spatio-temporal context (Morgan et al., 2020; Parlebas, 2013).

One of the biggest challenges for both practitioners and academics is how to foster decision-making in team sport training (Davids et al., 2013; Morgan et al., 2020; Passos et al., 2008; Tee et al., 2018). Passos et al. (2008) suggested identifying the tactical problem, defining multiple ways to address it, and manipulating task conditions within the game environment to encourage players to develop their own functional solutions. Martínez-Santos et al. (2020) highlighted the importance of systematically designing and implementing the training intervention based on the operational concepts of internal logic by manipulating the structural and distinctive features of rugby union (Parlebas, 2013). Small-sided games (SSGs), which involve fewer participants and a reduced playing area, have become a common training tool in rugby union (Morgan et al., 2020; Tee et al., 2018). Coaches design different SSGs by altering task conditions to guide players toward the desired objectives (Davids et al., 2013). For instance, placing greater value on scoring a try in the centre of the in-goal area (which

✉ **Corresponding author:** Asier Gonzalez-Artexte, e-mail asier.gonzalez@ehu.eus, ORCID® record https://orcid.org/0000-0001-5007-4524

Article history: Received September 16 2024, Accepted August 26 2025, Published September 8 2025

facilitates the subsequent conversion) may encourage players to play more centrally.

Assessing rugby union players' performance during a regular SSG (SSG_{REG}) and conditioned SSG (SSG_{COND}) is crucial for reducing the gap between coaches' objectives when implementing task conditions and the players' actual responses (Martínez-Santos et al., 2020). Modern electronic performance and tracking systems enable the objective recording of players' behaviours and the interpretation of their decisions or the outcomes of those decisions (Gonzalez-Artetxe & Los Arcos, 2021; Rico-González et al., 2020). Players' training responses can be evaluated to align the desired game principles for each model (Tee et al., 2018), such as creating and exploiting open spaces to generate scoring opportunities (in attack) and closing spaces and protecting the goal line (in defence), with the learning opportunities provided by game-based tasks. However, unlike other team sports (Coito et al., 2022; Gonzalez-Artetxe & Los Arcos, 2021; Ramos et al., 2020), evaluation of the tactical consequences of introducing different task conditions in rugby union has been largely overlooked (Dudley et al., 2024; Zanin et al., 2021).

SSGs have been proposed as appropriate training activities for fostering players' tactical development while preparing them to meet the physical demands of competition (Hammami et al., 2018; Zanin et al., 2021). In addition, these playing-form activities tend to be engaging and enjoyable for players (Clemente, 2025). Thus, a multidimensional and integrated approach to training evaluation seems necessary (Collinet, 2000). Assessing tactical variables such as surface area or spatial exploration index (SEI) in regular and conditioned training scenarios can account for how different task conditions impact players' collective use of space or their exploratory behaviour (Ramos et al., 2020). Additionally, entropy measures of these variables can offer key insights into players' behavioural regularity (i.e., less entropy means more regularity, and vice versa) in those SSGs (Pincus, 1991). From a conditional perspective, quantifying players' external load based on total distance travelled and distances in different speed zones can help coaches plan training content according to the physical demands of each SSG (Dudley et al., 2024; Vaz et al., 2016). Similarly, asking players about their subjective experience through their perceptions of enjoyment and competence can provide valuable information to plan training considering these key motivational factors (Clemente, 2025; Papaioannou et al., 2006).

Therefore, this study compares the tactical and conditional responses, as well as perceptions of enjoyment and competence, of young male rugby union players during SSG_{REG} and SSG_{COND} that manipulate the point value of the scoring zone.

Methods

Participants

Sixteen U18 male rugby union players (eight forwards and eight backs; age 16.1 ± 0.81 years, height 1.75 ± 0.08 m, body mass 75.4 ± 10.5 kg) from a Basque club participated in the study during the second half of the competitive season. Rugby was their primary sport, and they trained for over 150 min per week and competed in the second autonomous division, which they ended up winning and, therefore, promoted to the highest level for their age group (i.e., first Basque division). So, participants were considered trained/developmental players according to the participant classification framework of McKay et al. (2022). Players, along with their parents/guardians, coaches, and club management, were fully informed of the purpose and procedures of the study before providing written informed consent for the participation of the minors. The study adhered to the ethical principles for medical research involving human subjects outlined by the World Medical Association (Declaration of Helsinki, 2013) and was previously approved by the Ethics Committee for Research involving Human Beings (GIEB in Basque) of the University of the Basque Country UPV/EHU (Code M10_2021_328).

Study design

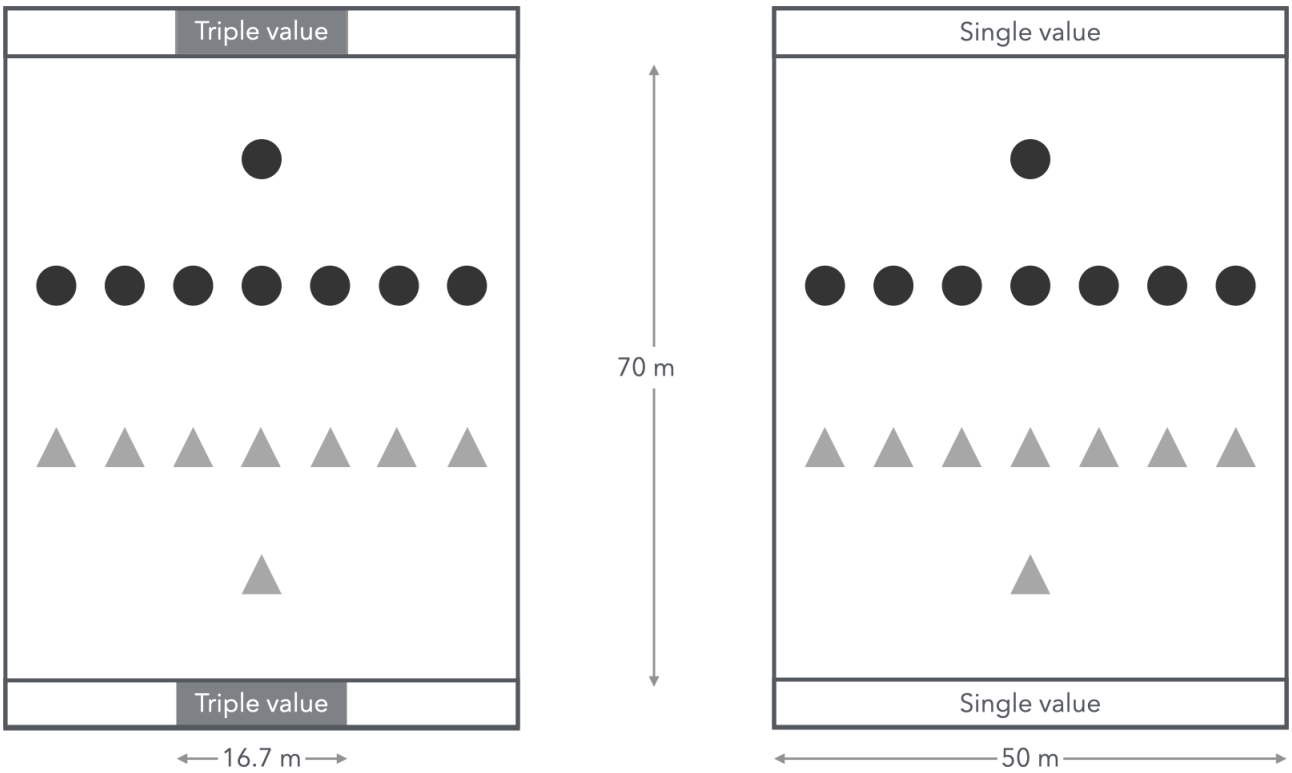
The study involved two 4 × 5 min SSGs, with a 3-min rest between sets, conducted during the first training session of the week (on two consecutive Tuesdays) at the team's usual training time (18:00) on their regular natural grass pitch. The team coach divided the players into two counterbalanced groups based on their level and position (Gonzalez-Artetxe et al., 2022). Both training sessions began with a standard 10-min warm-up, followed by five sets of each eight-a-side game, played on a 70-m-long × 50-m-wide pitch (219 m^2 per player). Continuity of play was maintained by the rule that a player had to wrestle their partner to the ground for 5 s (Gabbett et al., 2012). Rucks and static phases were avoided: players left the ball on the ground, and another player continued the game. If a player broke any rules or the ball went out of play, the opposing team restarted play with their opponents standing at least 5 m away. If a try was scored, the team that scored restarted play in the opposite direction to maintain game flow (Dudley et al., 2024). The team coach acted as referee and ensured the rules were followed, while refraining from providing any feedback to avoid influencing the players' conduct (Gonzalez-Artetxe et al., 2022).

The difference between the two SSGs was in the manipulation of the scoring system (Figure 1). Specifically, in the conditioned task (SSG_{COND}), the in-goal area was divided into three equal parts, each 16.7 m wide, with the central part having triple the point value. In the SSG_{REG}, however, the entire in-goal area had the same point value.

Data collection

Players' tactical and conditional responses were assessed using GPS data collected with a valid and reliable time-motion tracking system (WIMU PRO; RealTrack Systems, Almeria, Spain) at a sampling frequency of 10 Hz (Bastida-Castillo et al., 2018). Tactical performance was assessed using common variables in team sports (Gonzalez-Artetxe & Los Arcos, 2021), including central tendency and approximate entropy (ApEn; Pincus, 1991) measures of surface area (m^2), length (the furthest longitudinal distance

Figure 1 Representation of the small-sided games with triple value on the central part of the in-goal area (left – conditioned small-sided game) and without triple value on the central part of the in-goal area (right – regular small-sided game)



[m] among players), width (the furthest lateral distance [m] among players), interpersonal distances between players (dyads [m]), stretch index (m), and SEI (m). Conditional performance was assessed by total distance travelled (m) and distance (m) at various speed thresholds in accordance with previous research involving young male rugby union players (Taylor et al., 2018): low- to medium-speed running (below 15 km/h), high-speed running (between 15–18 km/h), and very-high-speed running (above 18 km/h). All computations were performed using MATLAB (Version R2020a for Windows; MathWorks, Natick, MA, USA).

Players rated their enjoyment and perceived competence for each SSG using the enjoyment and perceived competence scale, validated by Arias-Estero et al. (2013) for young basketball players. This five-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*), consisting of seven statements, has been used in several youth team sports (Los Arcos, Gonzalez-Artetxe, Bayer-Perez, et al., 2025; Los Arcos, Gonzalez-Artetxe, Lombardero, et al., 2025; Morales-Belando et al., 2023). The averages of the even-numbered statements (2, 4, and 6) and odd-numbered statements (1, 3, 5, and 7) determined enjoyment and perceived competence, respectively. Players completed the response sheet after the final set of each SSG, taking between 3 and 5 min to do so. They did this individually, in silence, and at least 2 m apart to prevent peer influence on their responses.

Statistical analysis

Results are presented as mean ± standard deviation. Central tendency and ApEn measures of surface area, length, width, dyads, and stretch index were compared between the SSGs as 'unrelated' variables because they represent collective variables that pertain to the team rather than to an individual player. Therefore, comparisons were made across the entire dataset for each SSG rather than at specific moments in the game (e.g., the first second of each SSG). By contrast, the SEI and distances travelled, being individual variables, were compared as 'related', meaning the same player was assessed across different SSGs.

Because a violation of the assumption of equal variances was found for all central tendency and ApEn measures of the collective variables (except for $width_{ApEn}$, which was normally distributed), the Mann-Whitney *U* test was used to compare these variables between SSG_{REG} and SSG_{COND}. $Width_{ApEn}$ values between the SSGs were compared using an unpaired *t*-test. The Wilcoxon rank test was used to compare the central tendency and ApEn measures of the SEI because the normality assumption was violated. Because the conditional data and the perceived enjoyment and competence scores were normally distributed and met the assumption of equal variances, a paired *t*-test was employed to compare the players' conditional and perceptual responses between the SSGs. Practical differences were assessed using Cohen's *d* (trivial, < 0.20; small, 0.50; medium, 0.80; and large, ≥ 0.80) and *r* coefficient (trivial, < .10; small, .30; medium, .50; and large, ≥ .50) effect sizes for parametric and non-parametric comparisons, respectively (Cohen, 1988). Statistical significance was set at $p < .05$, and all analyses were conducted using SPSS Statistics (Version 22.0 for Windows; IBM, Armonk, NY, USA).

Results

As shown in Table 1, the central tendency measures for all tactical variables were significantly lower when the scoring system was manipulated (SSG_{COND}) compared with SSG_{REG}, with mainly small effect sizes. There were no significant differences in the ApEn measures between the SSG conditions, with almost all effect sizes being trivial.

Table 2 compares the conditional performance of young male rugby union players between the two SSG conditions. Players covered significantly greater total and low- to medium-speed distances during SSG_{COND} than during SSG_{REG}, with a large effect size. However, no significant differences were observed at higher speeds, with a small effect size for high-speed running and a trivial effect size for very high-speed running.

Players' perceptions of enjoyment (p = .06; Cohen's d = 0.62, medium) and competence (p = .41; Cohen's d = 0.17, trivial) were not significantly different between SSG_{REG} (enjoyment: 4.21 ± 0.73, competence: 3.44 ± 0.86) and SSG_{COND} (enjoyment: 4.58 ± 0.42, competence: 3.57 ± 0.63).

Discussion

The purpose of this study was to determine the effect of placing greater emphasis on scoring a try in the centre of the in-goal area on the tactical, conditional, and emotional responses of young male rugby union players. This research showed that manipulating the scoring system led players to 1) occupy less space, play more closely together, and explore less compared to SSG_{REG}, with similar entropy values (i.e., indicators of behavioural regularity) for both task conditions; and 2) run more than in regular conditions, but not at higher speeds; 3) while enjoying both SSGs similarly and perceiving themselves as equally competent.

As advocated by Passos et al. (2008) and Davids et al. (2013), manipulating task conditions appears to be an effective training strategy for modulating players' tactical responses. Rugby union academy players occupied less space, played more tightly together, and explored less when manipulating the scoring system in SSGs. However, the practical differences were small, except for the SEI (r = .63, large). Despite the small practical differences in collective behaviour, the modification achieved the expected outcome: players played more compactly. On the other hand, quantifying entropy can account for players' behavioural regularity in SSGs with different task conditions: more entropy reflects a more unpredictable, less regular playing behaviour (Pincus, 1991). As no differences in entropy measures were found between the SSG conditions, it can be assumed that manipulating the scoring system encourages players to achieve the desired training goal (i.e., playing more centrally) without affecting behavioural regularity.

Players ran significantly more, particularly at low to medium speeds, when the value of scoring in the centre of the in-goal area was tripled. Existing studies primarily examine the consequences of changing the number of players or pitch size (Dudley et al., 2024; Ren et al., 2024; Vaz et al., 2016). Studies conducted in professional settings have shown that adding players in larger playing areas, from

Table 1 U18 male rugby union players' tactical performance (mean ± standard deviation) and effect sizes for pairwise comparisons playing regular (SSG_{REG}) and conditioned (SSG_{COND}) small-sided games

Parameter	SSG_{REG}	SSG_{COND}	p	Effect size
Surface area (m^2)	380 ± 157	352 ± 145	< .001	.13, small
Approximate entropy (au)	0.108 ± 0.044	0.115 ± 0.056	.79	.00, trivial
Length (m)	14.9 ± 2.40	14.3 ± 2.40	< .001	.05, trivial
Approximate entropy (au)	0.114 ± 0.053	0.112 ± 0.041	.85	.00, trivial
Width (m)	16.2 ± 7.50	15.3 ± 6.01	< .001	.24, small
Approximate entropy (au)	0.149 ± 0.068	0.139 ± 0.052	.57	0.17, trivial
Dyads (m)	34.7 ± 2.90	33.1 ± 3.33	< .001	.16, small
Approximate entropy (au)	0.102 ± 0.042	0.103 ± 0.046	.95	.00, trivial
Stretch index (m)	10.5 ± 1.84	10.0 ± 1.89	< .001	.14, small
Approximate entropy (au)	0.103 ± 0.041	0.101 ± 0.042	.79	.00, trivial
Spatial exploration index (m)	19.0 ± 1.07	18.6 ± 1.03	.011	.63, large
Approximate entropy (au)	0.063 ± 0.006	0.063 ± 0.004	.64	.12, small

Note. au = arbitrary units. The effect size is presented as the r coefficient, except for the approximate entropy of Width where Cohen's d is used. All effect sizes are presented as positive values to show the magnitude of differences in pairwise comparisons.

Table 2 U18 male rugby union players' conditional performance (mean ± standard deviation) and effect sizes for pairwise comparisons playing regular (SSG_{REG}) and conditioned (SSG_{COND}) small-sided games

Distance travelled (m)	SSG_{REG}	SSG_{COND}	p	Cohen's d
Total	1780 ± 186	1900 ± 142	< .001	1.21, large
At low to medium speed (< 15 km/h)	1530 ± 155	1640 ± 98.0	< .001	0.85, large
At high speed (15–18 km/h)	124 ± 38.2	137 ± 45.4	.22	0.31, small
At very high speed (> 18 km/h)	126 ± 65.3	118 ± 57.0	.53	0.13, trivial

Note. All effect sizes are presented as positive values to show the magnitude of differences in pairwise comparisons.

four-a-side (82.5 m^2 per player) to eight-a-side (156 m^2 per player) games (Ren et al., 2024), or increasing the pitch dimensions while maintaining the same number of players, from 125 m^2 to 500 m^2 per player in seven-a-side games (Vaz et al., 2016), increases the total distance travelled and the distances travelled at low and high speeds. Dudley et al. (2024) also found that reducing the number of players on the same pitch (from 12 vs. 12 to 4 vs. 4) or increasing the pitch size (from 73 m^2 to 130 m^2 per player in six-a-side games) raises the high-intensity demands of training games in rugby union academies. In the current study, increasing emphasis on scoring centrally led to more overall running and low- to medium-speed running, but not more high-speed running. This may have occurred because players played more compactly and explored less in the conditioned scenario. Thus, coaches may use this modification to achieve tactical objectives without increasing the players' high-speed running load.

Paying attention to players' perceptions is essential for empowering them and enhancing both their sporting and personal development (Paul et al., 2023), especially in youth sports settings such as rugby academies. Enjoyment and perceived competence of rugby union academy players did not vary with the manipulation of the scoring system. Unfortunately, research on subjective training experience in rugby union remains limited, as does such research in other team sports. Previous studies of young association football (Los Arcos, Gonzalez-Artetxe, Bayer-Perez, et al., 2025; Los Arcos, Gonzalez-Artetxe, Lombardero, et al., 2025) and basketball (Arias-Estero et al., 2013; Morales-Belando et al., 2023) players reported average enjoyment and competence scores of above 4 and 3 out of 5, respectively. Similarly, the young rugby union players in this study reported average scores superior to 4 for enjoyment and 3 for competence in both SSGs. No significant differences between the SSGs were found in players' perceptions, which aligns with findings from association football studies comparing SSG_{REG} to SSG with pitch obstacles (Los Arcos, Gonzalez-Artetxe, Bayer-Perez, et al., 2025) or altered player relationships (Los Arcos, Gonzalez-Artetxe, Lombardero, et al., 2025). The high levels of enjoyment and perceived competence across both task conditions suggest that coaches can focus on tactical or conditional objectives.

This study evaluates the consequences of manipulating the scoring system in rugby union SSGs using a multidimensional approach that accounts for players' tactical, conditional, and perceptual responses. However, the findings must be interpreted cautiously due to the small sample and the lack of comparable studies. Further studies with players of different ages and competitive levels are necessary for more robust interpretations. Additional research that introduces different task conditions will also be essential to develop a full picture of the consequences of altering the relevant features of rugby's internal logic on players' tactical and conditional performance, along with their perceptions of implemented manipulations.

Conclusions

Placing greater value on scoring in the centre of the in-goal area in rugby union SSGs encouraged players to play more compactly and run more, with no changes in distances travelled at highest speeds nor in perceptions of enjoyment and competence. Thus, academy coaches can benefit from the tactical impact of this manipulation without exceeding habitual high-speed running demands or impairing players' subjective experience.

Acknowledgments

The authors would like to thank the players and coaches of Zarautz Rugby Team for their selfless participation in and cooperation with this study.

Conflict of interest

The authors report no conflict of interest.

References

Arias-Estero, J. L., Alonso, J. I., & Yuste, J. L. (2013). Psychometric properties and results of enjoyment and perceived competence scale in youth basketball. *Universitas Psychologica, 12*(3), 945–956. https://doi.org/10.11144/Javeriana.UPSY12-3.ppra

Bastida-Castillo, A., Gómez-Carmona, C. D., de la Cruz-Sánchez, E., & Pino-Ortega, J. (2018). Accuracy, intra- and inter-unit reliability, and comparison between GPS and UWB-based position-tracking systems used for time–motion analyses in soccer. *European Journal of Sport Science, 18*(4), 450–457. https://doi.org/10.1080/17461391.2018.1427796

Clemente, F. M. (2025). The enjoyment of small-sided games: A narrative review. *Human Movement, 26*(1), 1–14. https://doi.org/10.5114/hm/197230

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates. https://doi.org/10.4324/9780203771587

Coito, N., Davids, K., Folgado, H., Bento, T., & Travassos, B. (2022). Capturing and quantifying tactical behaviors in small-sided and conditioned games in soccer: A systematic review. *Research Quarterly for Exercise and Sport, 93*(1), 189–203. https://doi.org/10.1080/02701367.2020.1823307

Collinet, C. (2000). Intérêts et limites des concepts liés au corps dans trois conceptions de l'Éducation physique des années soixante-dix [Interest and limits of concepts linked to body in three conceptions of P.E. during the seventies]. *Corps et Culture, 5,* 1–11.

Davids, K., Araújo, D., Correia, V., & Vilar, L. (2013). How small-sided and conditioned games enhance acquisition of movement and decision-making skills. *Exercise and Sport Sciences Reviews, 41*(3), 154–161. https://doi.org/10.1097/JES.0b013e318292f3ec

Dudley, C., Johnston, R., Jones, B., Hacking, T., McCafferty, R., & Weakley, J. (2024). An investigation into the variability of rugby union small-sided game demands and the effect of pitch size and player number manipulation. *International Journal of Sports Science & Coaching, 19*(4), 1546–1559. https://doi.org/10.1177/17479541231220288

Gabbett, T. J., Jenkins, D. G., & Abernethy, B. (2012). Influence of wrestling on the physiological and skill demands of small-sided games. *Journal of Strength and Conditioning Research, 26*(1), 113–120. https://doi.org/10.1519/JSC.0B013E31821D97F4

Gonzalez-Artetxe, A., & Los Arcos, A. (2021). Collective tactical variables. In M. Rico-González & J. Pino-Ortega (Eds.), *The use of applied technology in team sport* (pp. 131–145). Routledge. https://doi.org/10.4324/9781003157007-13

Gonzalez-Artetxe, A., Pino-Ortega, J., Rico-González, M., & Los Arcos, A. (2022). Training effects of artificial rules on youth soccer team tactical behavior. *Physical Education and Sport Pedagogy, 27*(5), 467–482. https://doi.org/10.1080/17408989.2021.1903411

Hammami, A., Gabbett, T. J., Slimani, M., & Bouhlel, E. (2018). Does small-sided games training improve physical fitness and team-sport-specific skills? A systematic review and meta-analysis. *Journal of Sports Medicine and Physical Fitness, 58*(10), 1446–1455. https://doi.org/10.23736/S0022-4707.17.07420-5

Los Arcos, A., Gonzalez-Artetxe, A., Bayer-Perez, U., & Folgado, H. (2025). Consequences of field obstacles on tactical, conditional, and emotional dimensions in young female soccer players during small-sided games. *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology, 239*(1), 70–77. https://doi.org/10.1177/17543371231191845

Los Arcos, A., Gonzalez-Artetxe, A., Lombardero, S., Esnal-Arrizabalaga, O., & Aginaga, J. (2025). Exploring the impact of social relationship modification on

young female soccer players' performance in small-sided games. *Journal of Human Kinetics, 95,* 227–241. https://doi.org/10.5114/jhk/189425

Martínez-Santos, R., Founaud, M. P., Aracama, A., & Oiarbide, A. (2020). Sports teaching, traditional games, and understanding in physical education: A tale of two stories. *Frontiers in Psychology, 11,* Article 581721. https://doi.org/10.3389/fpsyg.2020.581721

McKay, A. K. A., Stellingwerff, T., Smith, E. S., Martin, D. T., Mujika, I., Gooseyy-Tolfrey, V. L., Sheppard, J., & Burke, L. M. (2022). Defining training and performance caliber: A participant classification framework. *International Journal of Sports Physiology and Performance, 17*(2), 317–331. https://doi.org/10.1123/IJSPP.2021-0451

Morales-Belando, M. T., Côté, J., & Arias-Estero, J. L. (2023). A longitudinal examination of the influence of winning or losing with motivational climate as a mediator on enjoyment, perceived competence, and intention to be physically active in youth basketball. *Physical Education and Sport Pedagogy, 28*(5), 568–581. https://doi.org/10.1080/17408989.2021.2006620

Morgan, K., Mouchet, A., & Thomas, G. (2020). Coaches' perceptions of decision making in rugby union. *Physical Education and Sport Pedagogy, 25*(4), 394–409. https://doi.org/10.1080/17408989.2020.1725458

Papaioannou, A., Bebetsos, E., Theodorakis, Y., Christodoulidis, T., & Kouli, O. (2006). Causal relationships of sport and exercise involvement with goal orientations, perceived competence and intrinsic motivation in physical education: A longitudinal study. *Journal of Sports Sciences, 24*(4), 367–382. https://doi.org/10.1080/02640410400022060

Parlebas, P. (2013). Motor praxeology: A new scientific paradigm. In M. Vaczi (Ed.), *Playing fields: Power, practice, and passion in sport* (pp. 127–144). Center for Basque Studies.

Passos, P., Araújo, D., Davids, K., & Shuttleworth, R. (2008). Manipulating constraints to train decision making in rugby union. *International Journal of Sports Science & Coaching, 3*(1), 125–140. https://doi.org/10.1260/174795408784089432

Paul, L., Davidow, D., Stodter, A., Till, K., Dane, K., Jones, B., & Hendricks, S. (2023). More than rugby: A scoping review of coaches in rugby. *International Journal of Sports Science & Coaching, 18*(6), 2277–2291. https://doi.org/10.1177/17479541231185558

Pincus, S. M. (1991). Approximate entropy as a measure of system complexity. *Proceedings of the National Academy of Sciences of the United States of America, 88*(6), 2297–2301. https://doi.org/10.1073/pnas.88.6.2297

Ramos, A., Coutinho, P., Leitão, J. C., Cortinhas, A., Davids, K., & Mesquita, I. (2020). The constraint-led approach to enhancing team synergies in sport – What do we currently know and how can we move forward? A systematic review and meta-analyses. *Psychology of Sport and Exercise, 50,* Article 101754. https://doi.org/10.1016/j.psychsport.2020.101754

Ren, X., Henry, M., Boisbluche, S., Philippe, K., Demy, M., Ding, S., & Prioux, J. (2024). Optimization of training for professional rugby union players: Investigating the impact of different small-sided games models on GPS-derived performance metrics. *Frontiers in Physiology, 15,* Article 1339137. https://doi.org/10.3389/fphys.2024.1339137

Rico-González, M., Pino-Ortega, J., Nakamura, F. Y., Arruda Moura, F., Rojas-Valverde, D., & Los Arcos, A. (2020). Past, present, and future of the technological tracking methods to assess tactical variables in team sports: A systematic review. *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology, 234*(4), 281–290. https://doi.org/10.1177/1754337120932023

Taylor, R. J., Sanders, D., Myers, T., Abt, G., Taylor, C. A., & Akubat, I. (2018). The dose-response relationship between training load and aerobic fitness in academy rugby union players. *International Journal of Sports Physiology and Performance, 13*(2), 163–169. https://doi.org/10.1123/IJSPP.2017-0121

Tee, J. C., Ashford, M., & Piggott, D. (2018). A tactical periodization approach for rugby union. *Strength and Conditioning Journal, 40*(5), 1–13. https://doi.org/10.1519/SSC.0000000000000390

Vaz, L. M. T., Gonçalves, B. S. V., Figueira, B. E. N., & Garcia, G. C. (2016). Influence of different small-sided games on physical and physiological demands in rugby union players. *International Journal of Sports Science & Coaching, 11*(1), 78–84. https://doi.org/10.1177/1747954115624823

Zanin, M., Ranaweera, J., Darrall-Jones, J., Weaving, D., Till, K., & Roe, G. (2021). A systematic review of small sided games within rugby: Acute and chronic effects of constraints manipulation. *Journal of Sports Sciences, 39*(14), 1633–1660. https://doi.org/10.1080/02640414.2021.1891723