

Mapping the landscape of small-sided games in team sports: A bibliometric analysis and literature review

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ABSTRACT

Background Problems: Small-sided games (SSGs) have become a significant focus of research in the context of team sports, and a thorough review and analysis of the existing research landscape is needed to identify trends, gaps, and emerging themes. **Research Objectives:** This study aims to map the research landscape on small-sided games (SSGs) in the context of team sports through a bibliometric approach and a literature review. **Methods:** Literature was drawn from established research sources in the Scopus and Web of Science databases from 2014 to 2023. The final data used for this study consisted of 1012 articles, which were then analysed using a bibliometric approach, and the literature review was limited to 237 articles after grouping ten types of team sports using the ScientoPy tool. **Findings and Results:** The results showed a consistent increase in interest in SSGs, with journals such as “Journal of Strength and Conditioning Research” and “Biology of Sport” playing an important role in expanding understanding of the topic. The analysis also revealed that authors such as Clemente F.M. and Praca G.M. had a significant impact on developing knowledge about SSGs. Although football dominated the related literature, the results also highlighted other sports such as basketball, futsal, and handball. However, there is still a lack of SSG research for sports such as cricket and dodgeball. The benefits of SSGs in team sports include improved technical skills, physical fitness, tactical understanding, and physical performance. **Conclusion:** This study provides insight into the important role of SSGs in athlete development and team sports training and highlights the need for further research to optimise the full potential of this training method.

Keywords: Small-sided games; team sports; bibliometric; literature review

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INTRODUCTION

Small-sided games (SSGs) have become an interesting topic in sports development. Small-sided games are exercises that modify the number of players, the size of the playing area, and the rules of the game according to the objectives of the exercise (Sgrò et al., 2018), while still respecting the main principles of the game

(Clemente et al., 2014b). The players involved range from 1 vs. 1, 2 vs. 2, to 7 vs. 7, with an area smaller than the actual field (Sarmiento et al., 2018). Modifications to the rules can include the number of ball touches for each player (Kusuma, 2018). Thus, SSG requires players to adapt to new game scenarios with different situational contexts (Clemente et al., 2021).

SSGs are popular in team sports and are effective in a variety of sports, including football (Kusuma et al., 2023; Sabah et al., 2023), futsal (Praniata et al., 2019), basketball (Sansone et al., 2019), and handball (Iacono et al., 2018). SSGs not only allow the identification of players' skill levels but also provide a foundation for effective training interventions that are appropriate to the context and situation of the game (González-Villora et al., 2017). Moreover, SSGs have also proven to be beneficial both in initiating new players and in improving the performance of experienced players (Evangelio et al., 2019; Fathi et al., 2019). Nonetheless, due to the special characteristics of SSG, the challenges in training may vary between different sports, especially between invasion and net sports (Memmert et al., 2015).

The effectiveness of SSG in skill development and performance enhancement confirms its importance as an exercise tool in sports training and athlete development programmes (de Oliveira et al., 2022; Sousa, Gouveia, Marques, et al., 2022). SSG provides a motivational strategy and an effective training method to develop skills and physical fitness with optimal intensity (Castro et al., 2022). SSG has been shown to have beneficial effects on physical performance, including the amount of physical activity, activity intensity, energy expenditure, posture, flexibility, gait, and cognition (Halouani et al., 2014). By simulating game situations in a controlled environment, coaches can observe and assess players' decision-making abilities, creativity, and teamwork dynamics.

Despite the recognised benefits and popularity of SSG, in recent years there has been an increase in the number of studies exploring different aspects of SSG, including its physiological demands, its psychological impact, and its long-term effects on player development (Castillo-Rodríguez et al., 2023; Clemente, Silva, et al., 2022). This surge in interest reflects the recognition of SSG's potential as a versatile and effective training method in various sporting contexts. However, although there is a wealth of literature on SSG, there is still a need for a thorough review and analysis of the existing research landscape to identify trends, gaps, and emerging themes. Therefore, this study aimed to conduct a bibliometric analysis and literature review to map the landscape of SSG in team sports.

Research on SSGs in team sports has grown rapidly over the past two decades (Clemente et al., 2021). Although there have been many empirical studies reviewing this phenomenon (Iacono et al., 2018; Sangnier et al., 2019), literature reviews (Fernández-Espínola et al., 2020; Sarmiento et al., 2018), as well as bibliometric mapping analyses (Martínez-Benítez & Becerra-Patiño, 2023), the number of studies specifically investigating this topic is still limited. Currently, we realise that there are only two researchers who have conducted a specific literature review on this subject (Fernández-Espínola et al., 2020; Halouani et al., 2014). However, the integration of bibliometrics with review analysis has not been done to date in this domain. Combining these two methods will provide a more comprehensive picture of research trends as well as their impact on the development of the SSG concept in team sports, which will make an important contribution to the scientific and practical understanding of this field.

This bibliometric analysis and literature review will not only present an overview of recent research developments in the use of SSG in team sports but will also identify potential future research directions. This will provide a solid foundation for further research into understanding and improving the application of SSG as an effective tool in team sport development. As such, this research will make a significant contribution to expanding the understanding of the role of SSG in skill and strategy development in team sports, as well as providing practical guidance for coaches, players, and researchers interested in the use of SSG as an innovative and effective training method.

This study aims to map the research landscape on small-sided games (SSGs) in the context of team sports through a bibliometric approach and a literature review. The research questions to be answered include: **RQ1**. What are the research trends on SSGs in team sports over time? **RQ2**. What types of publications are most common in the literature regarding SSGs in team sports? **RQ3**. Who are the most contributing authors on the topic of SSGs in team sports? **RQ4**. What team sports have been studied in the related literature? **RQ5**. What

are the benefits of SSGs in team sports? Through the fulfilment of these questions and the achievement of the research objectives, it is hoped that this study will provide valuable insights into the current status and future direction of research related to SSGs in the context of team sports.

METHOD

The current study integrates bibliometrics with a literature review analysis of research articles in the field of small-sided games in the context of team sports. Bibliometric analysis aims to facilitate a comprehensive understanding of the research area, mapping of its boundaries, identification of influential authors, and new directions for future research (Donthu et al., 2020; Xue et al., 2018). Meanwhile, literature reviews help researchers effectively and efficiently process large amounts of data, search, classify, and assess their relevance (Ambrosio-Pérez et al., 2023). Literature review can be conducted in various ways, namely, SLR, meta-analysis, framework/model-based, and content analysis (Eroglu & Michel, 2018; Knoll & Matthes, 2017; Rosado-Serrano et al., 2018). We used ScientoPy software for bibliometric analysis.

Search Strategies

The literature was drawn from established research sources in the Scopus and Web of Science databases. Then, we combined both databases (Santamaria-Granados et al., 2021). The keywords used in the form of Boolean expressions (AND, OR) were (“sport” OR “sports” OR “team sport” OR “volleyball” OR “soccer” OR “football” OR “basketball” OR “futsal” OR “handball” OR “rugby” OR “hockey” OR “cricket” OR “softball” OR “baseball”) AND (“conditioned game” OR “conditioned games” OR “drill-based game” OR “drill-based games” OR “play format” OR “play formats” OR “reduced game” OR “reduced games” OR “sided-game” OR “sided-games” OR “small-sided and conditioned game” OR “small-sided game” OR “small-sided"games" OR "modified games” OR “game-based approaches”). These keywords have also been used on the same topic by (Fernández-Espínola et al., 2020; Halouani et al., 2014).

Eligibility Criteria

The eligibility criteria for studies included in this research included studies that explored the concept of small-sided games (SSGs) in team sports. The data considered for this study was collected on January 24, 2024, and analyses were conducted for the period covering the years 2014 to 2023. This timeframe ensures a comprehensive picture of the evolution and trends in the field of SSG research in team sports over the past decade.

Database Abstraction

During the identification stage, a total of 2314 results were extracted from the databases and sources mentioned above. Then, the researcher filtered the document types, limited to journal articles, book chapters, and conference papers, and restricted the search to English-language documents. Next, 541 duplicate entries were removed, and abstracts and citation information were imported into citation management software (Mendeley). After that, the authors reviewed the titles and abstracts and excluded 220 articles because they were not pertinent to the current research topic. Thus, the final data used for this study consisted of 1012 articles, which were then analysed using a bibliometric approach. The literature review only analysed 237 articles after grouping the ten types of team sports using the ScientoPy tool. **Figure 1** shows the flow of steps involved in the identification and screening of papers.

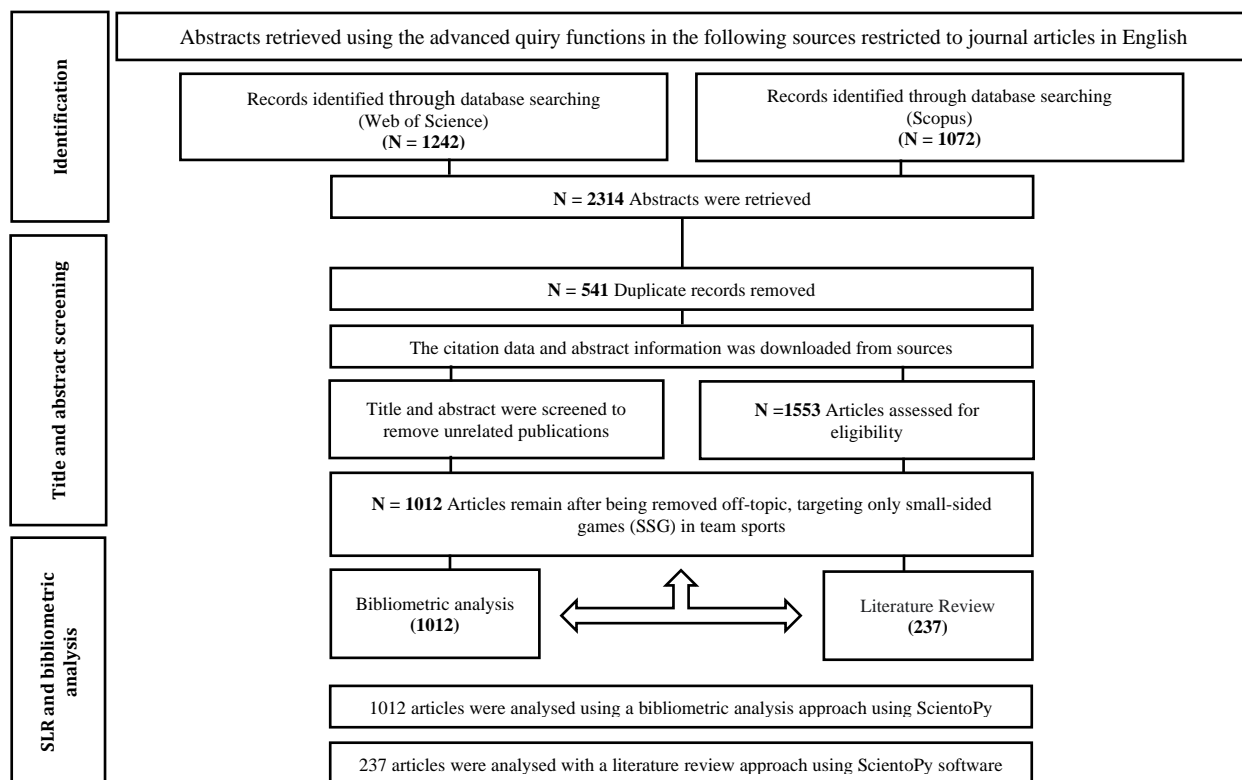


Figure 1. Flowchart of Selected Studies Using PRISMA Guidelines

RESULTS AND DISCUSSION

Results

RQ1. What are the research trends on SSGs in team sports over time?

The first stage in the literature review research was to organise the articles by year of publication. The results of the research trend analysis showed a significant development in research on small-sided games (SSGs) in team sports over time. From 2014 to 2023, there was a consistent increase in the number of articles covering this topic. At the beginning of the period, the number of published articles was stable, ranging from 13 to 17 articles per year. However, over time, there was a significant increase, especially in 2020-2021, where the number of articles peaked at 35 and 39, respectively. Furthermore, although there was a slight decrease in 2022, with only 27 articles published, the number was still quite significant when compared to the initial period of the study. Furthermore, in 2023, although there was a slight decrease compared to the previous year, the number of published articles remained relatively high, reaching 32. Thus, the trend of research on SSGs in team sports shows consistent and increasing growth over time, signalling the continued interest of researchers in exploring this topic as well as the awareness of the importance of SSGs in athlete development and team sports training strategies. The results of these trends can be seen in **Figure 2**.

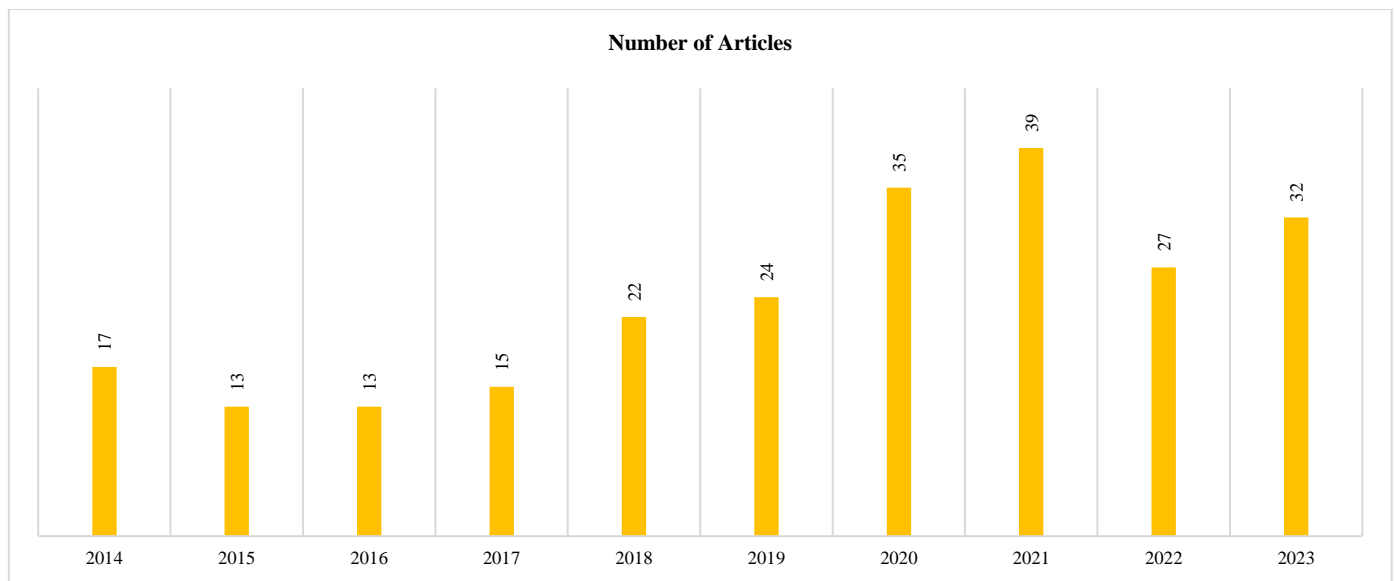


Figure 2. Research Trends on SSGs in Team Sports (2014-2023)

RQ2. What types of publications are most common in the literature regarding SSGs in team sports?

Based on the analysis results, the most common publication type in the literature regarding small-sided games (SSGs) in team sports was the “Journal of Strength and Conditioning Research,” with a total of 74 articles related to this topic. This was followed by “Biology of Sport” with 47 articles, and “International Journal of Sports Physiology and Performance” and “Journal of Human Kinetics” each had 44 articles related to SSGs in team sports. In addition, there are several other journals that also significantly contribute to the literature on SSGs, such as “Journal of Sports Sciences” with 43 articles, “International Journal of Environmental Research and Public Health” with 37 articles, and “PLOS One” with 36 articles. Other journals, such as “International Journal of Performance Analysis in Sport,” “Science and Medicine in Football,” and “Sports,” also featured a number of relevant publications, each with 28 articles related to SSGs in team sports. The findings also show that SSGs have been at the centre of attention in various disciplines, including fields such as sports medicine, sports psychology, and sports training science. Thus, the diversity of publication types involved confirms the complexity and relevance of the topic of SSGs in the team sport context, as well as emphasising the importance of interdisciplinary research in understanding and optimising its benefits for athletes and team sport training. These results can be seen in **Table 1**, which displays the distribution of the number of publications in the relevant journals.

Table 1. Distribution of Publications on Small-Sided Games (SSGs) in Team Sports

Source Title	Total	AGR	ADY	PDLY	hIndex
Journal of Strength and Conditioning Research	74	-2.5	4.5	12.2	26
Biology of Sport	47	1	8	34	18
International Journal of Sports Physiology and Performance	44	-1.5	1.5	6.8	25
Journal of Human Kinetics	44	1	5	22.7	20
Journal of Sports Sciences	43	0.5	2	9.3	26
International Journal of Environmental Research and Public Health	37	-4	4.5	24.3	12
PLOS One	36	-0.5	6	33.3	17
International Journal of Performance Analysis in Sport	28	0.5	2	14.3	12
Science and Medicine in Football	28	-0.5	5	35.7	10
Sports	28	-1	2.5	17.9	10

RQ3. Who are the most contributing authors on the topic of SSGs in team sports?

An analysis of the authors' contributions to the topic of small-sided games (SSGs) in team sports shows that Clemente F.M. is the most influential author, with a total of 50 articles related to this topic, which have been cited 656 times. Followed by Praca G.M. with 29 articles that have been cited 248 times, and Travassos

B. with 14 articles that have been cited 167 times. Furthermore, some other authors who also have significant contributions in the literature on SSGs are Goncalves B. with 11 articles that have been cited 126 times, and Krustrup P. and Sampaio J. with 9 articles that have been cited 80 and 95 times, respectively. This suggests that these authors have had a major impact on the development and dissemination of knowledge about SSGs in team sports, as well as reinforcing their role as opinion leaders in this field. These results can be seen in **Figure 3**.

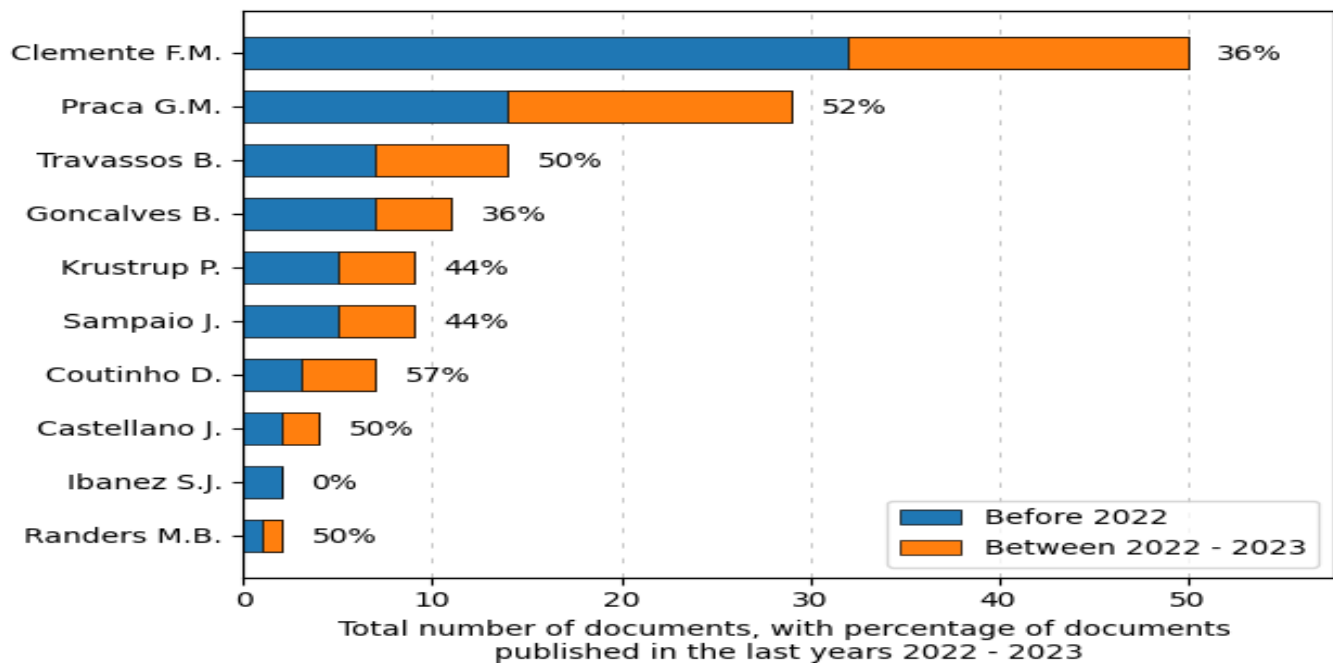


Figure 3. Contribution of Authors to the Topic of Small-Sided Games (SSGs) in Team Sports

RQ4. What team sports have been studied in the relevant literature?

The literature analysis showed that most of the research related to small-sided games (SSGs) in team sports focused on football, with a total of 370 published articles (e.g., Clemente et al., 2014a; Jastrzebski & Radziminski, 2017; Reche-Soto et al., 2019). This reflects the dominance of football as the most researched team sport in the context of SSGs. Football is indeed the main subject of this research due to its widespread popularity worldwide as well as its complexity, which allows a wide variety of SSGs to be applied in athlete training and development (Sarmiento et al., 2018). In addition, several other team sports have also been studied in the literature related to SSGs, albeit in much smaller proportions. Basketball is the second most researched sport, with 19 published articles. Futsal, handball, rugby, hockey, and volleyball are also included in the list of team sports that have been the subject of SSG-related research, albeit with a smaller number of articles. Overall, this literature analysis shows that SSGs have become a popular research topic in the context of various team sports, with football being the main focus of such research.

The literature analysis showed that sports such as cricket, dodgeball, and softball were not the focus of much small-sided game research in the literature analysed. In this context, it shows that there are no published articles that specifically discuss the application of SSGs in these sports. The possible reasons for the lack of research on SSGs in sports such as cricket, dodgeball, and softball may vary. One may be that they are not as popular as sports such as football or basketball, so research interest in the context of SSGs is not as strong as for more mainstream sports. Nevertheless, this lack of research on the application of SSGs in sports can also be considered an opportunity for further research. By applying the SSGs approach to these less popular sports, researchers can explore the potential of using this method to improve athletes' skills, fitness, and performance in more specific and perhaps less scientifically explored contexts. As such, there is room for further research

to expand our understanding of the effectiveness of SSGs in various team sport contexts. To complement this literature analysis, **Table 2** is presented below to provide a clearer picture.

Table 2. Team Sports Studied in the Literature Related to Small-Sided Games (SSGs)

Team Sports	Total	AGR	ADY	PDLY	hIndex
Football	370	1.5	56.0	30.3	37
Basketball	19	-1.5	1.5	15.8	9
Futsal	11	2.0	2.0	36.4	6
Handball	7	0.0	0.5	14.3	3
Rugby	5	-0.5	0.0	0.0	5
Volleyball	5	-0.5	0.0	0	3
Hockey	2	-0.5	0.5	50.0	0
Cricket	0	0.0	0.0	0	0
Dodgeball	0	0.0	0.0	0	0
Softball	0	0.0	0.0	0	0

RQ5. How do SSGs benefit team sports?

An analysis of the literature on the benefits of small-sided games in team sports shows that there are various advantages that can be gained through the application of this training method. Some of the key benefits of SSGs include improved technical skills, increased physical fitness, and improved tactical understanding of athletes.

Technical skill improvement

SSGs have been shown to be effective in improving athletes' technical skills in various aspects of the game, such as football passing, shooting, dribbling, and ball control (Arslan et al., 2020; Sørensen et al., 2021). In SSG practice, players are exposed to realistic and dynamic game situations where they have to make quick decisions and perform technical actions with precision (Clemente et al., 2019). This allows players to continuously practice and improve their skills in game situations similar to real matches (Sousa, Gouveia, Sarmiento, et al., 2022). In addition, research by Cañadas et al. (2015) also supported these findings by highlighting the benefits of SSGs in improving technical skills in basketball. In their study, the researchers found that SSG drills can provide valuable opportunities for basketball players to practice dribbling, passing, and shooting in competitive game situations. Through constant and repetitive practice, players can improve their technique and develop their sensitivity to effective game tactics. Thus, SSGs not only help improve individual technical skills but also strengthen coordination skills and overall game understanding (Miftachurochmah et al., 2023; Silva et al., 2015).

Improved physical fitness

SSGs also provide an effective stimulus to improve athletes' physical fitness. Through these exercises, athletes engage in aerobic and anaerobic activities that improve cardiorespiratory capacity, muscular strength, speed, and endurance (Clemente, Soylu, et al., 2022; Nayiroğlu et al., 2022; Paul et al., 2019). Through active participation in SSGs' high-intensity training, players are exposed to challenging physical conditions, thus stimulating positive physiological adaptations (Castillo et al., 2021; Randers et al., 2018). In addition, Nayiroğlu et al. (2022) also found that SSGs can help in weight management and body composition improvement in athletes, thus contributing to improved performance and overall health. Other studies have also confirmed the benefits of SSGs in improving athletes' physiological responses and physical performance (Cihan, 2015; Clemente, Silva, et al., 2022; Soylu & Arslan, 2021; Stojanović et al., 2021a). In this study, the researchers found that SSG training provided an intense and varied stimulus, which stimulated the development of the players' aerobic and anaerobic capacities. Furthermore, participation in SSGs also proved effective in improving the players' movement quality, speed, and endurance. These findings confirm the importance of SSGs as an integral part of training programmes to improve the physical fitness of athletes.

Improved tactical understanding

SSGs enable the development of better tactical understanding among athletes. As conducted by Machado et al. (2022) and Praça et al. (2018), they highlighted the importance of small-sided games (SSGs) in improving the tactical understanding of football players. The research found that variations in field size in SSGs can affect players' tactical performance and game understanding. The results showed that when players engaged in SSGs with smaller field sizes, they tended to develop a better understanding of the tactics of the game, including patterns of play and team strategy. This study emphasises the importance of varied training contexts to develop a deep tactical understanding among athletes. In addition, research by Cañadas et al. (2015) also highlighted the benefits of SSGs in improving tactical understanding in the sport of basketball. In this study, the researchers found that SSGs provided opportunities for players to practice making quick decisions and applying tactical strategies in realistic game situations. By continuously engaging in tactically demanding SSG practices, players can improve their ability to read game situations, anticipate opponents' moves, and adjust team strategies according to game conditions (Práxedes et al., 2022). The results of this study confirm the importance of SSGs as an effective training tool in the development of tactical understanding and team performance in the sport of basketball.

Discussion

This study aims to map the research landscape on small-sided games (SSGs) in the context of team sports through a bibliometric approach and a literature review. In this study, several important aspects related to small-sided games (SSGs) in team sports were highlighted based on five research questions (RQs).

Research trends for SSGs in the context of team sports from 2014 to 2023

Small-Sided Games (SSGs) research trends in the context of team sports from 2014 to 2023 show a significant increase in the number of articles published over time. This indicates researchers' continued interest in exploring this topic, as well as an awareness of the importance of SSGs in athlete development and team sport training strategies. The continued research on SSGs reflects the need for a better understanding of this training method and its impact on athlete performance. As such, the increase in the number of published articles can be seen as a response to the growing demand for knowledge in this field.

The increased interest in SSG research can also be attributed to the development of technologies and research methodologies that allow for more in-depth analyses of the effectiveness of SSGs in the context of team sports. Research conducted in this period has utilised advanced technologies such as video analysis (Ciocca et al., 2022) and the application of GPS/GNSS technology to evaluate the impact of SSGs on various aspects of athlete performance (Asín-Izquierdo et al., 2023). In addition, the increase in published articles may also reflect the wider adoption of SSG approaches by coaches, sports federations, and research institutions in the development of training programmes and the improvement of athlete performance. Thus, the research trend of SSGs in team sports indicates a positive and continuous development in our understanding of the benefits and applications of this training method in sport contexts.

The most common types of publications in the literature on SSGs in team sports

In the literature on small-sided games (SSGs) in team sports, various scientific journals have played a significant role in developing an understanding of this topic. One of them is the "Journal of Strength and Conditioning Research," which has been one of the main contributors with the publication of a large number of SSG-related articles. This journal shows a strong focus on exploring the benefits and applications of this training method in the context of physical fitness and athlete performance. For example, research in this journal investigated the impact of SSG training on the physical and technical performance parameters of soccer players, providing valuable insights into the potential of these exercises to improve athlete performance (Gonçalves et al., 2017; Joo et al., 2016; Olthof et al., 2019).

In addition, the journal "Biology of Sport" has also significantly contributed to the literature on SSGs. In this journal, research by Riboli et al. (2022) explored the area per player in small or large-sided games to replicate the demands of official matches for elite youth football players. In a further example, Halouani et al.

(2023) evaluated the effects of two different small-sided game formats (SSGs; 2 vs. 2 and 3 vs. 3) on the physiological parameters of adolescent volleyball players. Their findings provided an in-depth understanding of the factors that influence the effectiveness of SSG training in a specific team sport context. The diversity of this type of publication confirms the importance of an interdisciplinary approach to understanding and optimising the benefits of SSGs for athlete development and team sport training strategies.

The most contributing authors on SSGs in team sports

An analysis of the authors' contributions to the literature on small-sided games (SSGs) in team sports highlights the important role of several researchers who have made a significant impact in the development and dissemination of knowledge on SSGs. One author that stands out is Clemente F.M., who has been one of the main contributors with a total of 50 articles related to this topic. His presence in this literature reflects his dedication and consistent contribution to expanding the understanding of SSGs in the context of team sports. In addition, Praca G.M. is also one of the most influential authors in the literature on SSGs, with 29 related articles that have made significant contributions to the field. These two authors are proof that the success and growth of knowledge on SSGs in team sports are inseparable from the contributions of researchers who have a strong commitment to exploring this topic (Clemente et al., 2015, 2020).

Besides Clemente F.M. and Praca G.M., several other authors have also made noteworthy contributions to the literature on SSGs. For example, research by Travassos B. has provided valuable insights into the application of SSGs in the context of various team sports, while Goncalves B. has produced significant research in this field focusing on the technical and tactical aspects of SSGs training (Baptista et al., 2020; Coutinho et al., 2017; Travassos et al., 2014, 2018). Together, they have been instrumental in steering the direction and development of knowledge about SSGs in team sports. With the continued contributions of these researchers, it is hoped that the understanding of the benefits and applications of SSGs will continue to grow, bringing positive impacts to athlete development and team sport training strategies as a whole.

Team sports that have been studied in the literature related to SSGs

Analysis of the literature showed that the majority of research related to small-sided games (SSGs) in team sports focused on football, with a total of 370 published articles. This reflects the dominance of football as the most researched team sport in the context of SSGs. Football is indeed the main subject of this research due to its wide popularity worldwide, as well as many coaches using SSGs in the training process to train the physical, technical, tactical, and psychological aspects of the game, allowing the development of tactical principles and physical abilities (Alves et al., 2017). In addition, several other team sports have also been studied in the literature related to SSGs, albeit in a much smaller proportion. Basketball is the second most researched sport, with 19 published articles. Futsal, handball, rugby, hockey, and volleyball are also included in the list of team sports that have been the subject of SSG-related research, albeit with a smaller number of articles.

Overall, this literature analysis shows that SSGs have been a popular research topic in the context of various team sports, with football being the main focus of such research (Barnabé et al., 2016; Clemente & Sarmiento, 2021; Randers et al., 2014; Santos et al., 2020). Although most SSGs research is related to popular sports such as football and basketball, there is still potential for further research in sports that have not been widely researched in the context of SSGs. For example, sports such as cricket and dodgeball have not been the focus of much SSG-related research in the analysed literature. This suggests that there are opportunities for further research in this area. This potential could be utilised to explore the effectiveness of SSGs in improving athletes' skills, fitness, and performance in less common sports, such as cricket and dodgeball. By expanding SSG research into diverse sports, we can gain a more comprehensive understanding of the potential and application of this training method in various team sport contexts.

Benefits of SSGs in team sports

An analysis of the literature shows that SSGs provide a range of significant benefits to athletes in team sports. One of the main benefits is the improvement of athletes' technical skills in various aspects of the game, such as passing, shooting, dribbling, and ball control. Studies by Arslan et al. (2020) and Sørensen et al. (2021)

show that SSG practice provides an opportunity for players to continuously practice their technical skills in realistic and dynamic game situations. This allows the players to make quick decisions and execute technical actions with precision, which in turn improves their overall quality of play. In addition, SSGs have also been shown to be effective in improving the physical fitness of athletes (Clemente, Soylu, et al., 2022). Through these exercises, athletes engage in aerobic and anaerobic activities that stimulate the development of cardiorespiratory capacity, muscular strength, speed, and endurance (Bahtra et al., 2023; Massamba et al., 2021; Praça et al., 2019). Research by Stojanovic et al. (2021a) showed that participation in high-intensity SSG training stimulated positive physiological adaptations in players, which contributed to improved performance and overall health. As such, SSGs not only improve individual technical skills but also strengthen athletes' physical fitness, making them an essential component of training programmes in team sports.

CONCLUSION

From the analysis of research trends, common publication types, influential authors, team sports studied, and the benefits of SSGs in the context of team sports, it can be concluded that small-sided games (SSGs) have become a significant subject of research in the world of sport. Research trends show a consistent increase over time, reflecting researchers' continued interest in understanding and optimising the role of SSGs. Journals such as "Journal of Strength and Conditioning Research" and "Biology of Sport" have significantly contributed to expanding the understanding of SSGs, emphasising the importance of an interdisciplinary approach in exploring their benefits for athletes and team sports training. The role of authors such as Clemente F.M. and Praca G.M. has been influential in developing knowledge about SSGs, reinforcing their role as opinion leaders in this field.

Although football dominates the literature on SSGs, the research focus has expanded to other sports such as basketball, futsal, and handball. However, there are limitations in SSG research for sports such as cricket and dodgeball, indicating the need for further research in this area. Therefore, it is recommended that future research further expand the scope of SSGs to underrepresented sports in order to gain a more holistic understanding of the effectiveness of this training method. The benefits of SSGs in team sports include improvements in athletes' technical skills, physical fitness, tactical understanding, and physical performance. The findings provide a strong basis for the use of SSGs as an effective training tool for athlete development and team performance improvement. This study provides an in-depth contribution on the important role of SSGs in team sports and highlights the importance of continued research to continue optimising the potential of this training method in supporting athlete development and overall team sport training strategies.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- Alves, G., Clemente, F. M., Sousa, P. M., Pinheiro, V., & Dos Santos, F. J. L. (2017). How and Why do Soccer Coaches use Small-Sided Games in the Training Process? *Human Movement*, 18(5), 117–124. <https://doi.org/10.5114/hm.2017.73624>
- Ambrosio-Pérez, M., Cabanillas-Carbonell, M., & Iparraguirre-Villanueva, O. (2023). Analysis of the Impact of the Pandemic on the Growth, Use, and Development of E-Business: A Systematic Review of the Literature. *Economies*, 11(4), 1–21. <https://doi.org/10.3390/economies11040122>

- Arslan, E., Orer, G. E., & Clemente, F. M. (2020). Running-Based High-Intensity Interval Training vs. Small-Sided Game Training Programs: Effects on the Physical Performance, Psychophysiological Responses and Technical Skills in Young Soccer Players. *Biology of Sport*, 37(2), 165–173. <https://doi.org/10.5114/biolSport.2020.94237>
- Asín-Izquierdo, I., Gutiérrez-García, L., & Galiano, C. (2023). Application of Technology for the Analysis of Small-Sided Games in Football. From Complexity to Chaos in Training Design: Reference to Number of Players, Playing Space, Orientation, Time Distribution, Directionality with Goalkeepers, and Feedback. *Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology*. <https://doi.org/10.1177/17543371231175946>
- Bahtra, R., Tohidin, D., Andria, Y., Dinata, W. W., & Susanto, N. (2023). Small-Side Games 5V5: Improving Aerobic Endurance of Youth Football Players. *Physical Education Theory and Methodology*, 23(5), 739–746. <https://doi.org/10.17309/tmfv.2023.5.12>
- Baptista, J., Travassos, B., Gonçalves, B., Mourão, P., Viana, J. L., & Sampaio, J. (2020). Exploring the Effects of Playing Formations on Tactical Behavior and External Workload during Football Small-Sided Games. *Journal of Strength and Conditioning Research*, 34(7), 2024–2030. <https://doi.org/10.1519/JSC.0000000000002445>
- Barnabé, L., Volossovitch, A., Duarte, R., Ferreira, A. P., & Davids, K. (2016). Age-Related Effects of Practice Experience on Collective Behaviours of Football Players in Small-Sided Games. *Human Movement Science*, 48, 74–81. <https://doi.org/10.1016/j.humov.2016.04.007>
- Bawack, R. E., Wamba, S. F., Carillo, K. D. A., & Akter, S. (2022). Artificial Intelligence in E-Commerce: a Bibliometric Study and Literature Review. *Electronic Markets*, 32(1), 297–338. <https://doi.org/10.1007/s12525-022-00537-z>
- Cañadas, M., Ibáñez, S. J., & Leite, N. (2015). A Novice Coach's Planning of the Technical and Tactical Content of Youth Basketball Training: a Case Study. *International Journal of Performance Analysis in Sport*, 15(2), 572–587. <https://doi.org/10.1080/24748668.2015.11868815>
- Castillo-Rodríguez, A., Durán-Salas, Á., Giménez, J. V., Onetti-Onetti, W., & Suárez-Arrones, L. (2023). The Influence of Pitch Dimensions during Small-Sided Games to Reach Match Physical and Physiological Demands on the Youth Soccer Players. *Sensors*, 23, 1–10. <https://doi.org/10.3390/s23031299>
- Castillo, D., Rodríguez-Fernández, A., Nakamura, F. Y., Sanchez-Sanchez, J., Ramirez-Campillo, R., Yanci, J., Zubillaga, A., & Raya-González, J. (2021). Influence of Different Small-Sided Game Formats on Physical and Physiological Demands and Physical Performance in Young Soccer Players. *Journal of Strength and Conditioning Research*, 35(8), 2287–2293. <https://doi.org/10.1519/jsc.0000000000003114>
- Castro, H. de O., Laporta, L., Lima, R. F., Clemente, F. M., Afonso, J., Aguiar, S. da S., Ribeiro, A. L. de A., & Gustavo, D. C. T. C. (2022). Small-Sided Games in Volleyball: a Systematic Review of the State of the Art. *Biology of Sport*, 39(4), 995–1010. <https://doi.org/10.5114/biolSport.2022.109960>
- Cihan, H. (2015). The Effect of Defensive Strategies on the Physiological Responses and Time-Motion Characteristics in Small-Sided Games. *Kinesiology*, 47(2), 179–187. <https://hrcak.srce.hr/file/221523>
- Ciocca, G., Tessitore, A., Mandorino, M., & Tschann, H. (2022). A Video-Based Tactical Task Does not Elicit Mental Fatigue and Does not Impair Soccer Performance in a Subsequent Small-Sided Game. *Sports*, 10(3), 1-11. <https://doi.org/10.3390/sports10030031>
- Clemente, F. M., Afonso, J., Castillo, D., Arcos, A. L., Silva, A. F., & Sarmento, H. (2020). The Effects of Small-Sided Soccer Games on Tactical Behavior and Collective Dynamics: a Systematic Review. *Chaos, Solitons and Fractals*, 134. <https://doi.org/10.1016/j.chaos.2020.109710>

- Clemente, F. M., Afonso, J., & Sarmiento, H. (2021). Small-Sided Games: an Umbrella Review of Systematic Reviews and Meta-Analyses. *PLoS ONE*, *16*(2), 1–22. <https://doi.org/10.1371/journal.pone.0247067>
- Clemente, F. M., Martins, F. M. L., & Mendes, R. S. (2014a). Developing Aerobic and Anaerobic Fitness using Small-Sided Soccer Games: Methodological Proposals. *Strength and Conditioning Journal*, *36*(3), 76–87. <https://doi.org/10.1519/ssc.0000000000000063>
- Clemente, F. M., Martins, F. M. L., & Mendes, R. S. (2014b). Periodization Based on Small-Sided Soccer Games: Theoretical Considerations. *Strength and Conditioning Journal*, *36*(5), 34–43. <https://doi.org/10.1519/ssc.0000000000000067>
- Clemente, F. M., Martins, F. M. L., & Mendes, R. S. (2015). How Coaches use Their Knowledge to Develop Small-Sided Soccer Games: A Case Study. *South African Journal for Research in Sport, Physical Education and Recreation*, *37*(1), 1–11.
- Clemente, F. M., & Sarmiento, H. (2021). Combining Small-Sided Soccer Games and Running-Based Methods: a Systematic Review. *Biology of Sport*, *38*(4), 617–627. <https://doi.org/10.5114/biolSport.2021.102932>
- Clemente, F. M., Sarmiento, H., Costa, I. T., Enes, A. R., & Lima, R. (2019). Variability of Technical Actions during Small-Sided Games in Young Soccer Players. *Journal of Human Kinetics*, *69*(1), 201–212. <https://doi.org/10.2478/hukin-2019-0013>
- Clemente, F. M., Silva, A. F., Kawczyński, A., Yıldız, M., Chen, Y. S., Birlik, S., Nobari, H., & Akyildiz, Z. (2022). Physiological and Locomotor Demands during Small-Sided Games are Related to Match Demands and Physical Fitness? a Study Conducted on Youth Soccer Players. *BMC Sports Science, Medicine and Rehabilitation*, *14*(1), 1–10. <https://doi.org/10.1186/s13102-022-00535-w>
- Clemente, F. M., Soylu, Y., Arslan, E., Kilit, B., Garrett, J., van den Hoek, D., Badicu, G., & Silva, A. F. (2022). Can High-Intensity Interval Training and Small-Sided Games be Effective for Improving Physical Fitness after Detraining? a Parallel Study Design in Youth Male Soccer Players. *PeerJ*, *10*. <https://doi.org/10.7717/peerj.13514>
- Coutinho, D., Gonçalves, B., Travassos, B., Wong, D. P., Coutts, A. J., & Sampaio, J. E. (2017). Mental Fatigue and Spatial References Impair Soccer Players' Physical and Tactical Performances. *Frontiers in Psychology*, *8*(SEP). <https://doi.org/10.3389/fpsyg.2017.01645>
- de Oliveira, J., Hofman, N. B., Pasquarelli, B. N., & Leonardi, T. J. (2022). Proposals and Effects of Training using Small-Sided Games for Young Soccer Players: a Narrative Review. *Motriz. Revista de Educacao Fisica*, *28*, 5–8. <https://doi.org/10.1590/s1980-657420220006022>
- Donthu, N., Kumar, S., & Pattnaik, D. (2020). Forty-Five Years of Journal of Business Research: a Bibliometric Analysis. *Journal of Business Research*, *109*, 1–14. <https://doi.org/10.1016/j.jbusres.2019.10.039>
- Eroglu, S., & Michel, G. (2018). The Dark Side of Place Attachment: Why do Customers Avoid their Treasured Stores? *Journal of Business Research*, *85*, 258–270. <https://doi.org/10.1016/j.jbusres.2018.01.009>
- Evangelio, C., Sierra-Díaz, M. J., González-Víllora, S., & Clemente, F. M. (2019). “Four Goals for Three Players”: using 3 vs. 3 Small-Sided Games at School. *Human Movement*, *20*(4), 68–78. <https://doi.org/10.5114/hm.2019.85096>
- Fathi, A., Hammami, R., Moran, J., Borji, R., Sahli, S., & Rebai, H. (2019). Effect of a 16-Week Combined Strength and Plyometric Training Program Followed by a Detraining Period on Athletic Performance in Pubertal Volleyball Players. *Journal of Strength and Conditioning Research*, *33*(8), 2117–2127. <https://doi.org/10.1519/JSC.00000000000002461>

- Fernández-Espínola, C., Robles, M. T. A., & Fuentes-Guerra, F. J. G. (2020). Small-Sided Games as a Methodological Resource for Team Sports Teaching: a Systematic Review. *International Journal of Environmental Research and Public Health*, 17(6), 1–21. <https://doi.org/10.3390/ijerph17061884>
- Gonçalves, B., Esteves, P., Folgado, H., Ric, A., Torrents, C., & Sampaio, J. (2017). Effects of Pitch Area Restrictions on Tactical Behavior, Physical, and Physiological Performances in Soccer Large-Sided Games. *Journal of Strength and Conditioning Research*, 31(9), 2398–2408. <https://doi.org/10.1519/jsc.0000000000001700>
- González-Víllora, S., Manuel Clemente, F., Martins, F. M. L., & Pastor-Vicedo, J. C. (2017). Effects of Regular and Conditioned Small-Sided Games on Young Football Players' Heart Rate Responses, Technical Performance, and Network Structure. *Human Movement*, 18(5), 135–145. <https://doi.org/10.5114/hm.2017.73618>
- Halouani, J., Chtouro, H., Gabbett, T., Chaouachi, A., & Chamari, K. (2014). Small-Sided Games in Team Sports Training: a Brief Review. *Journal Of Strength and Conditioning Research*, 28(12), 3594–3618. <https://doi.org/10.1519/jsc.0000000000000564>
- Halouani, J., H'Mida, C., Trabelsi, K., Clark, C. C. T., Glenn, J. M., & Chtourou, H. (2023). Physiological Responses of Small-Sided vs. Regular Games in Youth Volleyball Players. *Biology of Sport*, 40(1), 303–309. <https://doi.org/10.5114/biol sport.2023.114291>
- Iacono, A. Dello, Martone, D., Zagatto, A. M., Meckel, Y., Sindiani, M., Milic, M., & Padulo, J. (2018). Effect of Contact and No-Contact Small-Sided Games on Elite Handball Players. *Journal of Sports Sciences*, 36(1), 14–22. <https://doi.org/10.1080/02640414.2016.1276296>
- Jastrzebski, Z., & Radziminski, L. (2017). Default and Individual Comparison of Physiological Responses and Time-Motion Analysis in Male and Female Soccer Players during Small-Sided Games. *Journal of Human Sport and Exercise*, 12(4), 1176–1185. <https://doi.org/10.14198/jhse.2017.124.04>
- Joo, C. H., Hwang-Bo, K., & Jee, H. (2016). Technical and Physical Activities of Small-Sided Games in Young Korean Soccer Players. *Journal of Strength and Conditioning Research*, 30(8), 2164–2173. <https://doi.org/10.1519/jsc.0000000000001319>
- Knoll, J., & Matthes, J. (2017). The Effectiveness of Celebrity Endorsements: a Meta-Analysis. *Journal of the Academy of Marketing Science*, 45(1), 55–75. <https://doi.org/10.1007/s11747-016-0503-8>
- Kusuma, K. C. A., Artanayasa, I. W., Sudiana, I. K., & Yudi, A. A. (2023). Enhancing Anaerobic Endurance in Football Players: A Comparative Study of 3-A-Side and 5-A-Side Small-Sided Games. *Journal Sport Area*, 8(3), 318–327. [https://doi.org/10.25299/sportarea.2023.vol8\(3\).13150](https://doi.org/10.25299/sportarea.2023.vol8(3).13150)
- Kusuma, K. C. A. (2018). The Effect of Touch of the Ball in Small Side Games on the Improvement VO₂max Amateur Football Players. *ACTIVE: Journal of Physical Education, Sport, Health and Recreation*, 7(3), 129. <https://doi.org/10.15294/active.v7i3.26496>
- Machado, J. C., Góes, A., Aquino, R., Bedo, B. L. S., Viana, R., Rossato, M., Scaglia, A., & Ibáñez, S. J. (2022). Applying Different Strategies of Task Constraint Manipulation in Small-Sided and Conditioned Games: How do They Impact Physical and Tactical Demands? *Sensors*, 22(12). <https://doi.org/10.3390/s22124435>
- Martínez-Benítez, C. F., & Becerra-Patiño, B. (2023). A Comprehensive Bibliometric Analysis of Small-Sided Games in Soccer: 20 Years (2003–2023) of Scientific Exploration. *Journal of Physical Education and Sport*, 23(10), 2620–2631. <https://doi.org/10.7752/jpes.2023.10300>

- Massamba, A., Dufour, S. P., Favret, F., & Hureau, T. J. (2021). Small-Sided Games are Not as Effective as Intermittent Running to Stimulate Aerobic Metabolism in Prepubertal Soccer Players. *International Journal of Sports Physiology and Performance*, 16(2), 273–279. <https://doi.org/10.1123/IJSP.2019-0966>
- Memmert, D., Hillmann, W., Huttermann, S., Klein-Soetebier, T., König, S., Nopp, S., Rathsclag, M., Schul, K., Schwab, S., Thorpe, R., Furley, P., Almond, L., Bunker, D., Butler, J., Fasold, F., & Griffin, L. (2015). Top 10 Research Questions Related to Teaching Games for Understanding. *Research Quarterly for Exercise and Sport*, 86(4), 347–359. <https://doi.org/10.1080/02701367.2015.1087294>
- Miftachurochmah, Y., Sukanti, E. R., Budiarti, R., Nurfadhila, R., Delano, E. H., & Amalia, I. G. (2023). The Effect of Small Side Games and Coordination Trainings on the Aerobic Endurance Ability of Male Futsal Athletes. *International Journal of Human Movement and Sports Sciences*, 11(3), 517–526. <https://doi.org/10.13189/saj.2023.110302>
- Nayıroğlu, S., Yılmaz, A. K., Silva, A. F., Silva, R., Nobari, H., & Clemente, F. M. (2022). Effects of Small-Sided Games and Running-Based High-Intensity Interval Training on Body Composition and Physical Fitness in Under-19 Female Soccer Players. *BMC Sports Science, Medicine and Rehabilitation*, 14(1). <https://doi.org/10.1186/s13102-022-00516-z>
- Olthof, S. B. H., Frencken, W. G. P., & Lemmink, K. A. P. M. (2019). A Match-Derived Relative Pitch Area Facilitates the Tactical Representativeness of Small-Sided Games for The Official Soccer Match. *Journal of Strength and Conditioning Research*, 33(2), 523–530. <https://doi.org/10.1519/jsc.0000000000002978>
- Paul, D. J., Marques, J. B., & Nassis, G. P. (2019). The Effect of a Concentrated Period of Soccer-Specific Fitness Training with Small-Sided Games on Physical Fitness in Youth Players. *Journal of Sports Medicine and Physical Fitness*, 59(6), 962–968. <https://doi.org/10.23736/S0022-4707.18.08547-X>
- Praça, G. M., E Sousa, R. B., Bredt, S. G. T., Clemente, F. M., Teoldo, I., Castro, H. O., Costa, G. C. T., & Moreira, P. E. D. (2018). Defensive Interactions in Soccer Small-Sided Games: An Integrated Approach Between the Fundamental Tactical Principles and the Social Network Analysis. *Revista Brasileira de Cineantropometria e Desempenho Humano*, 20(5), 422–431. <https://doi.org/10.5007/1980-0037.2018v20n5p422>
- Praça, G. M., Sousa, R. B. E., & Greco, P. J. (2019). Influence of Aerobic Power on Youth Players' Tactical Behavior and Network Properties during Football Small-Sided Games. *Sports*, 7(3). <https://doi.org/10.3390/sports7030073>
- Praniata, A. R., Kridasuwarsa, B., & Puspitorini, W. (2019). Training Model of Futsal Passing Based Small Sided Games for Senior High School Students. *Journal Sport Area*, 4(1), 191–197. [https://doi.org/10.25299/sportarea.2019.vol4\(1\).2364](https://doi.org/10.25299/sportarea.2019.vol4(1).2364)
- Práxedes, A., Pizarro, D., Travassos, B., Domínguez, M., & Moreno, A. (2022). Level of Opposition Constrains Offensive Performance in Consecutive Game Situations. An Analysis According to Game Principles. *Physical Education and Sport Pedagogy*, 27(3), 291–303. <https://doi.org/10.1080/17408989.2021.1877269>
- Randers, M. B., Nielsen, J. J., Bangsbo, J., & Krstrup, P. (2014). Physiological Response and Activity Profile in Recreational Small-Sided Football: No Effect of the Number of Players. *Scandinavian Journal of Medicine and Science in Sports*, 24(SUPPL.1), 130–137. <https://doi.org/10.1111/sms.12232>
- Randers, M. B., Ørntoft, C., Hagman, M., Nielsen, J. J., & Krstrup, P. (2018). Movement Pattern and Physiological Response in Recreational Small-Sided Football—Effect of Number of Players with a Fixed Pitch Size. *Journal of Sports Sciences*, 36(13), 1549–1556. <https://doi.org/10.1080/02640414.2017.1402552>

- Reche-Soto, P., Cardona, D., Díaz, A., Gómez-Carmona, C. D., & Pinoortega, J. (2019). Tactical Demands of Small-Sided Games in Football: Influence of Tracking Technology. *Revista Internacional de Medicina y Ciencias de La Actividad Fisica y Del Deporte*, 19(76), 729–744. <https://doi.org/10.15366/rimcafd2019.76.011>
- Riboli, A., Olthof, S. B. H., Esposito, F., & Coratella, G. (2022). Training Elite Youth Soccer Players: Area Per Player in Small-Sided Games to Replicate the Match Demands. *Biology of Sport*, 39(3), 579–598. <https://doi.org/10.5114/biol sport.2022.106388>
- Rojas-Sánchez, M. A., Palos-Sánchez, P. R., & Folgado-Fernández, J. A. (2023). Systematic Literature Review and Bibliometric Analysis on Virtual Reality and Education. In *Education and Information Technologies*, 28(1), 155-192. <https://doi.org/10.1007/s10639-022-11167-5>
- Rosado-Serrano, A., Paul, J., & Dikova, D. (2018). International Franchising: A Literature Review and Research Agenda. *Journal of Business Research*, 85, 238–257. <https://doi.org/10.1016/j.jbusres.2017.12.049>
- Sabah, D. M. J., Yilmaz, C., & Bostanci, Ö. (2023). Effect of Small-Sided Games on Technical Skills and Physical Characteristics of Young Football Players: (Palestine Example). *Gümüşhane University Journal of Health Sciences*, 12(2), 547–555. <https://doi.org/10.37989/gumussagbil.1181113>
- Sangnier, S., Cotte, T., Brachet, O., Coquart, J., & Tourny, C. (2019). Planning Training Workload in Football using Small-Sided Games' density. *Journal Of Strength and Conditioning Research*, 33(10), 2801–2811. <https://doi.org/10.1519/JSC.0000000000002598>
- Sansone, P., Tessitore, A., Paulauskas, H., Lukonaitiene, I., Tschan, H., Pliauga, V., & Conte, D. (2019). Physical and Physiological Demands and Hormonal Responses in Basketball Small-Sided Games with Different Tactical Tasks and Training Regimes. *Journal of Science and Medicine in Sport*, 22(5), 602–606. <https://doi.org/10.1016/j.jsams.2018.11.017>
- Santamaria-Granados, L., Mendoza-Moreno, J. F., & Ramirez-Gonzalez, G. (2021). Tourist Recommender Systems Based on Emotion Recognition—A Scientometric Review. *Future Internet*, 13(1), 1–38. <https://doi.org/10.3390/fi13010002>
- Santos, S., Coutinho, D., Gonçalves, B., Abade, E., Pasquarelli, B., & Sampaio, J. (2020). Effects of Manipulating Ball Type on Youth Footballers' Performance during Small-Sided Games. *International Journal of Sports Science and Coaching*, 15(2), 170–183. <https://doi.org/10.1177/1747954120908003>
- Sarmiento, H., Clemente, F. M., Harper, L. D., Costa, I. T. da, Owen, A., & Figueiredo, A. J. (2018). Small Sided Games in Soccer—A Systematic Review. *International Journal of Performance Analysis in Sport*, 18(5), 693–749. <https://doi.org/10.1080/24748668.2018.1517288>
- Sgrò, F., Bracco, S., Pignato, S., & Lipoma, M. (2018). Small-Sided Games and Technical Skills in Soccer Training: Systematic Review and Implications for Sport and Physical Education Practitioners. *Journal of Sports Science*, 6(1), 9–19. <https://doi.org/10.17265/2332-7839/2018.01.002>
- Silva, P., Esteves, P., Correia, V., Davids, K., Araújo, D., & Garganta, J. (2015). Effects of Manipulations of Player Numbers vs. Field Dimensions on Inter-Individual Coordination during Small-Sided Games in Youth Football. *International Journal of Performance Analysis in Sport*, 15(2), 641–659. <https://doi.org/10.1080/24748668.2015.11868821>
- Sørensen, A., Sørensen, V., & Dalen, T. (2021). A Novel Approach for Comparison of Reception Performance in a Technique Test and Small-Sided Games. *Sports*, 9(5). <https://doi.org/10.3390/sports9050066>
- Sousa, H., Gouveia, É. R., Marques, A., Sarmiento, H., Pestana, M., Quintal, T., Lopes, H., & Ihle, A. (2022). The Influence of Small-Sided Football Games with Numerical Variability in External Training Load. *Sustainability (Switzerland)*, 14(2), 1–10. <https://doi.org/10.3390/su14021000>

- Sousa, H., Gouveia, É. R., Sarmiento, H., Caldeira, R., Marques, A., Lopes, H., & Ihle, A. (2022). The Influence of Numerical Variability in Small-Sided Games on Youth Football Goalkeepers' Tactical-Technical Behaviour. *Human Movement*, 23(4), 34–43. <https://doi.org/10.5114/hm.2022.110125>
- Soylu, Y., & Arslan, E. (2021). Effects of Mental Fatigue on Psychophysiological, Cognitive Responses, and Technical Skills in Small-Sided Soccer Games in Amateur Players. *Baltic Journal of Health and Physical Activity*, 13(7), 43–50. <https://doi.org/10.29359/bjhpa.2021.suppl.2.05>
- Stojanović, E., Stojiljković, N., Stanković, R., Scanlan, A. T., Dalbo, V. J., & Milanović, Z. (2021a). Game Format Alters the Physiological and Activity Demands Encountered during Small-Sided Football Games in Recreational Players. *Journal of Exercise Science and Fitness*, 19(1), 40–46. <https://doi.org/10.1016/j.jesf.2020.05.001>
- Stojanović, E., Stojiljković, N., Stanković, R., Scanlan, A. T., Dalbo, V. J., & Milanović, Z. (2021b). Recreational Basketball Small-Sided Games Elicit High-Intensity Exercise with Low Perceptual Demand. *Journal of Strength and Conditioning Research*, 35(11), 3151–3157. <https://doi.org/10.1519/jsc.0000000000003306>
- Travassos, B., Coutinho, D., Gonçalves, B., Pedroso, P., & Sampaio, J. (2018). Effects of Manipulating the Number of Targets in U9, U11, U15 and U17 Futsal Players' Tactical Behaviour. *Human Movement Science*, 61, 19–26. <https://doi.org/10.1016/j.humov.2018.06.017>
- Travassos, B., Gonçalves, B., Marcelino, R., Monteiro, R., & Sampaio, J. (2014). How Perceiving Additional Targets Modifies Teams' Tactical Behavior during Football Small-Sided Games. *Human Movement Science*, 38, 241–250. <https://doi.org/10.1016/j.humov.2014.10.005>
- Xue, X., Wang, L., & Yang, R. J. (2018). Exploring the Science of Resilience: Critical Review and Bibliometric Analysis. *Natural Hazards*, 90(1), 477–510. <https://doi.org/10.1007/s11069-017-3040-y>
- Zupic, I., & Čater, T. (2015). Bibliometric Methods in Management and Organization. *Organizational Research Methods*, 18(3), 429–472. <https://doi.org/10.1177/1094428114562629>