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Review Article

PEDAGOGICAL INTERVENTION IN TEAM SPORTS: A SYSTEMATIC REVIEW

INTERVENÇÃO PEDAGÓGICA NOS ESPORTIVOS COLETIVOS: UMA REVISÃO SISTEMÁTICA

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ABSTRACT
The production of literature with intervention programs was analyzed, applied to team sports. The databases consulted on the subject, in the last 20 years, were the Web of Science, Scielo and PubMed.The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) guidelines were used with the keywords: team sports and team sports games, associated with the terms: teaching models, sports teaching, teaching-learning-training, pedagogical intervention, tactical-technical performance and cognitive processes, in Portuguese, English and Spanish.After screening with defined criteria, 39 manuscripts were selected to compose the sample. The descriptive analysis showed that the years 2016 and 2018 presented a higher number of publications (17.95% each year); the English language most used in publications (69.24%); football and basketball have comprised the highest number of studies (25.64% and 17.95%, respectively); the teaching programs spanned between 5 and 54 class sessions; the sample of studies with schoolchildren was the most chosen (64.1%); most teaching programs focused on tactics; and the main variables analyzed were tactical knowledge, tactical-technical performance and specific skills.In the production of literature analyzed, there was a tendency in the last 10 years to apply sports teaching programs with tactical approaches and also change and/or add content to these programs, in order to enhance the development of students/athletes. These changes leave open reflections on possible changes in teacher guidance in the praxis in teaching-learning of team sports.
Keywords: Team sports. Systematic review. Pedagogical intervention

RESUMO
Analisou-se a produção da literatura com programas de intervenção, aplicados aos esportes coletivos. As bases de dados consultadas quanto ao tema, nos últimos 20 anos, foram o *Web of Science*, *Scielo* e *PubMed*. Utilizou-se as diretrizes PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-analyses*) com as palavras-chave: jogo coletivo e jogos esportivos coletivos, associados aos termos: modelos de ensino, ensino do esporte, ensino-aprendizagem-treinamento, intervenção pedagógica, desempenho tático-técnico e processos cognitivos, nos idiomas português, inglês e espanhol. Após triagem com critérios definidos, 39 manuscritos foram selecionados para compor a amostra. A análise descritiva apontou que os anos de 2016 e 2018 apresentou maior quantitativo de publicações (17,95% cada ano); a língua inglesa a mais utilizada nas publicações (69,24%); as modalidades futebol e basquetebol compreenderam o maior número de trabalhos (25,64% e 17,95%, respectivamente); os programas de ensino abrangeram entre 5 e 54 sessões de aula; a amostra dos estudos com escolares foi a mais eleita (64,1%); a maioria dos programas de ensino centrou-se na tática; e as principais variáveis analisadas foram conhecimentos táticos, desempenho tático-técnico e habilidades específicas. Na produção de literatura analisada observou-se uma tendência nos últimos 10 anos à aplicação de programas de ensino dos esportes com abordagens táticas e ainda alterar e/ou agregar conteúdos a esses modelos, com o intuito de potencializar o desenvolvimento de alunos/atletas. Essas mudanças deixam abertas as reflexões sobre possíveis alterações de orientação docente na práxis no ensino-aprendizagem dos esportes coletivos.
Palavras-chave: Esportes coletivos. Revisão sistemática. Intervenção pedagógica.

Introduction

Consultation with scientific production is the first step when planning scientific activities and studies that evaluate the bibliometric production on different subjects, so as to point out knowledge gaps and direct further studies.

Regarding the area of Sports Science, some studies have focused on carrying out a bibliometric survey on variables that involved the teaching-learning-training (TLT) of sports, such as small games[1], decision-making[2] and basketball passing[3]. Other studies have analyzed the scientific production with pedagogical intervention on a sport teaching model, such as Sport

Education[4], Teaching Games for Understanding[5] and the combination of sports teaching models, named in the literature as hybrid models[6]. However, no systematic review studies were found with specific pedagogical intervention for team sports, regardless of the teaching model applied.

Currently, the concept of teaching model is used instead of method. This term is characterized by having a theoretical basis for learning that goes beyond teaching methods, strategies and styles, in addition to encompassing other concepts and being engaged to explain the ways of materializing the teaching-learning duality. This results in a global and integrated plan on what is taught and learned and, consequently, it provides the teachers with moments of coherent assessment, and more comprehensive information about the TLT[7] process. Thus, the pedagogical interventions based on teaching models aim at improving the variables that will be stimulated during the teaching program through the structuring and distribution of activities and contents[8].

Due to the variety of their components, team sports are important for the development of competences, capacities and skills of their practitioners. Since the end of last century, there has been a debate about the curricular design in sport teaching, and a shift from traditional teaching, centered on the teacher, to teaching conceptions that emphasize the development of an understanding on the game logic by the practitioners has been evidenced.

In recent years the pedagogical intervention research with team sports has directed its teaching to tactical models[9-11]. Particularly in Brazil, Rufino and Darido[12] stated that the changes in the lines of research referring to sports in the 1970s, 1980s and 1990s were related to the social importance given to this phenomenon, and pointed out that these changes lead the sport teaching to new meanings and implications in schools, clubs and training centers.

The paradigm shift and the complexity involved in teaching team sports demands attention from both, the scientific community and Physical Education teachers to select, plan and apply contents that aim at providing positive experiences for the consolidation of learning.

Therefore, in addition to broadening the analyses, this systematic review will allow the updating of scientific knowledge on pedagogical intervention with team sports. This will also help to understand the growth of production, and point out new knowledge gaps for further investigations, which shall contribute to scientific progress in the area. Thus, the present study aimed at systematically assessing the scientific production related to the application of pedagogical interventions with team sports, regardless of the teaching model applied.

Methods

Selection of manuscripts

A systematic review of the literature was performed according to PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)[13]. The electronic databases consulted included the Web of Science, Scielo and PubMed available for the last 20 years. These databases were selected based on their high number of studies with team sports. The search for studies took place between June, 2019, and June, 2020. The publications selected for the sample included studies that applied pedagogical intervention and used the teaching of team sports as content. The research strategies used in the databases embraced the combination of the following terms: ‘team sports’ and ‘sport team games’, associated with ‘teaching models and/or methods’, ‘sport teaching’, ‘teaching-learning-training’ (TLT), ‘pedagogical intervention’, ‘sport teaching program’, ‘tactical-technical performance’ and ‘cognitive processes’ by using the terms ‘and’, ‘or’ and ‘not’, in three languages (Portuguese, English and Spanish).

Inclusion and exclusion criteria

The following inclusion criteria were used for the selection of articles: (1) pedagogical intervention with team sports[14]; (2) pedagogical intervention with teaching models and/or methods; (3) studies published in one of the three languages mentioned above, and (4) research carried out in any context of TLT. The exclusion criteria included (1) duplicate publications; (2) opinion articles, books, chapters of books, conference studies, theses and dissertations; (3) texts not available in full; (4) manuscripts that did not achieve 50% of quality according to STROBE (Strengthening the Reporting of Observational Studies in Epidemiology).

Quality of manuscripts

The methodological quality of the manuscripts included in this systematic review was evaluated by using the STROBE statement (Strengthening the Reporting of Observational Studies in Epidemiology)[15], which has a list of 22 items to check the links between the title of the article and its abstract (item 1), introduction (items 2 and 3), methods (items 4 to 12), results (items 13 to 17), discussion (items 18 to 21) and other relevant information (item 22). The results are shown in table 1.

Each article was classified based on the sum of points scored for all items (one point computed in each item for each criterion met). The result was divided by the total maximum of possible points (22 points). For example, if an article had 11 points, the value scored would be 0.5, that is, the cut-off point for accepting the article in the present study. The items of all articles were independently classified by each evaluator for further analysis of inter-rater reliability. Two researchers inserted in the sport field participated as evaluators, and were instructed on STROBE statement for further analysis of the articles. The Cohen's Kappa Statistics revealed a value of 0.93 (90% CI: 0.90 – 0.96), which showed an excellent agreement among observers[16].

Results

Research, selection and inclusion of manuscripts

The initial search returned 11593 titles in the databases, which were exported to the reference manager software (EndNote X8®), with automatic elimination of duplicates. Out of the 707 manuscripts selected, according to the title and abstract, 567 were eliminated from the database. The full texts of the remaining 140 manuscripts were fully revised, and the other 101 ones were rejected due to non-compliance with the criteria established and mentioned in the methodology. At the end of the screening process, 39 articles received in-depth reading and analysis so as to comprise the systematic review sample (Figure 1).

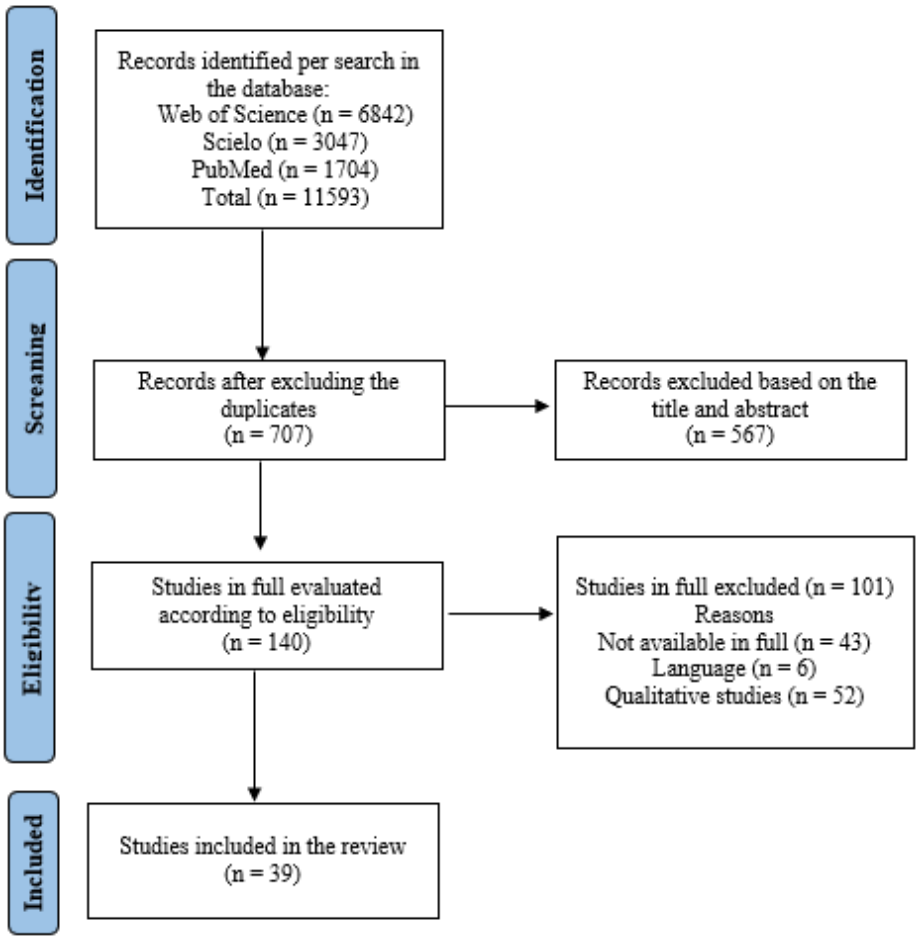

Figure 1. Flowchart with the Systematic Review steps
Source: Authors

Quality of the manuscripts

The quality index (QI) of each study identified in the review is shown in Figure 2. The minimum and maximum scores ranged from 14 to 19 points (16.69 ± 1.5). Out of the 39 studies, 11 were rated between 0.6 and 0.7; 15 of them between 0.71 and 0.80, and 13 studies between 0.81 and 0.9. Regarding the quality of the studies included in the sample, the mean and standard deviation of the analysis, according to STROBE criteria, was 0.77 (± 0.12).

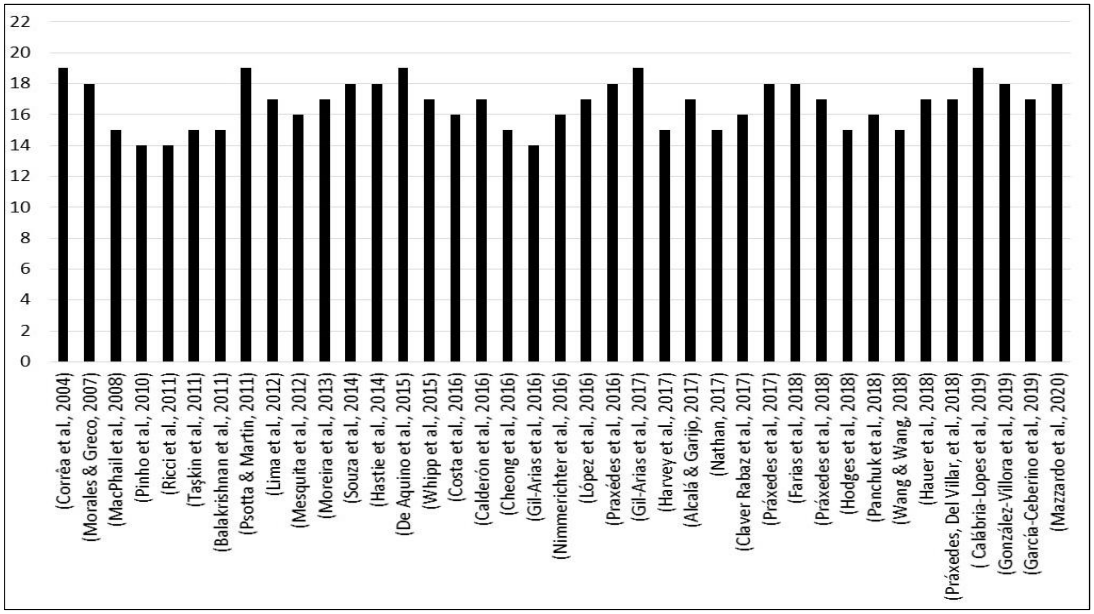

Figure 2. Analysis of the articles according to STROBE Statement
Source: Authors

Analysis of the manuscripts

The relevant information from the articles was evaluated and adapted according to systematic review studies in the area,[1-6] in addition to considering the following: author(s), year and language of publication, sport modality, number of sessions applied, sample level (school, club, university, etc.), age group of the sample in the studies, teaching program (centered on tactics, technique or both), and variables assessed after applying the teaching programs.

The chronological analysis of the articles published until June, 2020, evidenced the growing development in this research area, with more than half of the studies published between 2016 and 2020 (61.54%). In the years of 2016 and 2018 there was a greater number of studies with pedagogical intervention for sport teaching (17.95% each year), followed by the year 2017 (15.39%) (Figure 3).

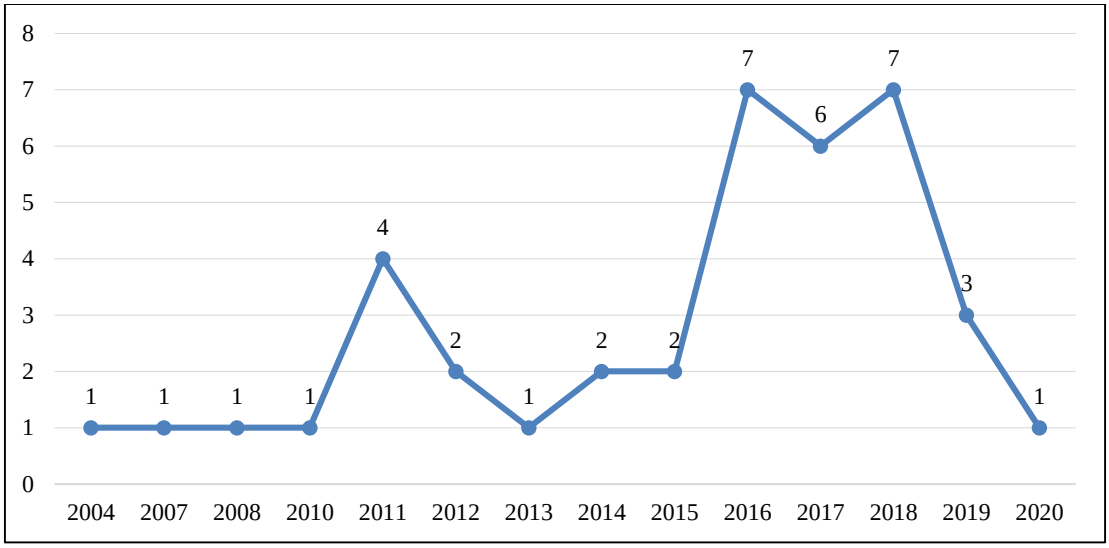

Figure 3. Quantification of the studies based on pedagogical intervention per year of publication
Source: Authors

There was a preponderance of the English language in the publications (69.24%), followed by Portuguese and Spanish (23.07% and 7.69%, respectively). Regarding the team sports involved in the pedagogical interventions, out of the 39 articles, 10 (25.64%) were only related to football; 7 (17.95%) to basketball; 5 (12.82%) to handball; 4 (10.26%) to futsal; 3 (7.69%) to volleyball and other team sports, such as hockey and lacrosse. Seven studies that applied the pedagogical intervention by combining two or more sports (17.95%) (Figure 4) were considered.

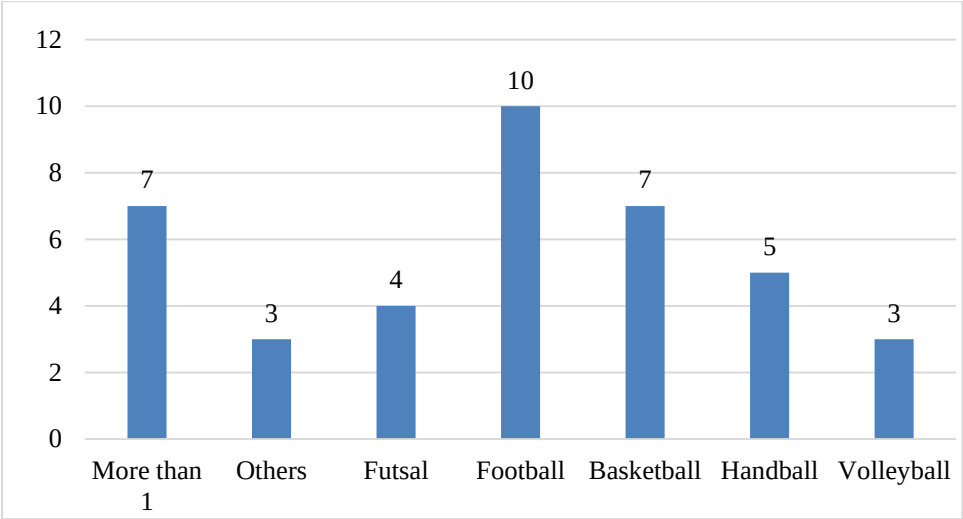

Figure 4. Team sports as teaching content in the studies based on pedagogical intervention
Source: Authors

A great number of classes and/or training sessions applied in the teaching programs was used and comprised between 5 and 54 sessions. Out of the 39 studies, 25 of them included schoolchildren as volunteers in the sample (64.1%); 12 were athletes (30.77%), and 2 studies carried out pedagogical intervention with university students (5.13%). The age group in the studies assessed ranged between 7 and 26 years of age (table 1).

Considering the teaching program applied, 19 studies were carried out with teaching focused only on tactics (48.72%), and only 1 study focused on technique (2.56%). The

comparison of the teaching programs showed that 15 studies compared tactics-centered teaching with technique-centered teaching (38.46%), whereas 4 studies compared two tactics-centered teaching programs (10.26%).

Among the dependent variables analyzed in the studies, the items most evaluated by the researchers included Declarative Tactical Knowledge (DTK), Procedural Tactical Knowledge (PTK), tactical-technical performance, decision-making (DM), and specific skills for each team sport. It was also evidenced that psychological variables were considered after applying the pedagogical intervention, especially when the studies compared different teaching programs (centered on tactics x centered on technique).

Table 1. Identification and description of pedagogical intervention studies in team sports

	Author(s)/ Year	SM	NSs	SL	AG	Intervention program	Variables assessed	Main results
1	Corrêa et al., 2004[17]	FT	12	SC	12.6 (± 1.8)	Four experimental groups: parts, situational, tactical and whole.	Involvement in the game, DM, skill execution, support and overall performance.	Considering futsal learning, the results showed that the female subjects who had learned under the whole method improved in all the variables assessed, and that those who had learned under the part method improved their involvement in the game. The male individuals showed no effect with regard to the different teaching methods.
2	Morales, Greco, 2007[18]	BB	50	ATs	11.14 (± 0.8)	Situational Method (SM)/Global Method (GM); Situational Method /Mixed Method (MM); Analytical Method (AM)	TLT and PTK Processes. SM+GM=18 sessions/ SM+MM=14 sessions/ AM=18 sessions.	Concerning PTK performance level, it was confirmed that the global-situational method (GS) provided an opportunity to improve the parameters of offering and orienting oneself, besides recognizing convergent spaces. It can be said that the GS method positively contributed for the development of the participants' tactical intelligence. In addition, TLT methods based on traditional methodologies (mixed and analytical) are not interesting alternatives for initiation into sports.
3	MacPhail et al., 2008[19]	BB	12	SC	9 to 10	*Tactical Games Model* (TGM) - *Teaching Games for Understanding* (TGfU)	Skills – throwing and passing	The examination of the physical-perceptive and social-interactive dimensions of situational learning through TGM and TGfU showed that two fundamental skills for students in the early stages of learning to play a ball game, that is, throwing and passing, are complex, relational and interdependent.
4	Pinho et al., 2010[20]	HB	18	SC	10 to 12	Situational Method x Traditional Method	PTK	The results confirmed improvement in PTK for the group under situational method, whereas the traditional method group did not show significant improvement in any of the parameters assessed.
5	Ricci et al., 2011[21]	HB	32	SC	11 to 14	Situational Method	Tactical/technical skills	The results showed improvement regarding the players' tactical skill and the maintenance of their technical skill, which shows the effectiveness of the method for the game tactical learning. In addition, it is evident that the situational method enabled the students to learn the game incidentally, without stress to improve technique.
6	Taşkin et al., 2011[22]	+ than 1	6	USs	23.12 (± 1.82)	Conceptual Maps and Traditional Method	Effect of conceptual maps in teaching sport technique.	In the experimental group, the technique was trained by applying the traditional method and conceptual maps; the control group was trained only with the traditional method.

								Considering time, both groups showed significant differences in the variables assessed with the test.
7	Balakrishnan et al., 2011[23]	HB	4 weeks	SC	10	TGfU and Traditional Method	Understanding of the game and DM	The results showed a significant difference between the TGfU group and the group under traditional teaching when considering the time effect, which suggests the importance of TGfU in improving the understanding of the game and DM of beginners in the handball modality.
8	Psotta & Martin, 2011[24]	FB	10	ATs	20.9 (± 0.7)	Tactical Model and Techcnical Model	DM and skill execution	The skill execution index and the DM index resulted in significantly higher values when considering the time effect. The study showed that instructional models with dominant tactical-technical tasks might result in significant improvement of both, DM and skill execution performance in young adult individuals under implicit learning.
9	Lima et al., 2012[25]	VB	30	SC	12 to 14	Situational Method and Traditional Method	DTK and PTK	The study consisted of two groups: one under the situational-traditional method (STG) and another under the traditional method (TG). At the end of 15 sessions, the method was inverted and the same number of sessions was performed. The results showed that the sequence of trainings referring to the STG provided significant improvement regarding the players' intelligence and tactical creativity.
10	Mesquita et al., 2012[26]	FB	22	SC	10 to 12	*Sport Education (SE) and Invasion Games Competence Model* (IGCM)	DM; skill execution and in-game performance	The results showed that teaching a soccer unit with SE, supported by the learning task structure offered by the IGCM, provided improvement in skill execution and DM. In addition, there was a strong impact on student learning, especially for girls and students with low skill.
11	Moreira et al., 2013[27]	FT	18	ATs	7 to 9	Analytical Method and Global Method	TLT and PTK Processes	The results showed that the global method provided improvement in PTK concerning the following parameters: offering, orienting oneself, and recognizing spaces. The analytical method showed improvement only in offering and orienting oneself parameters. The results indicate that training centered on DM, considering the tactical parameter, are indicative for the development of players capable of intelligent and creative autonomous actions. The analytical method did not provide a full development of PTK.
12	Souza et al., 2014[28]	FB	20	ATs	14 to 15	TGfU	PTK	The results showed significant differences in four variables: the tactical principle 'defensive unit', the total of tactical actions performed, the Game Tactical Performance Index,

								and the Percentage of Errors of the tactical principle 'space'. It was concluded that TGfU-based training was effective, especially with regard to increasing the Game Tactical Performance Index.
13	Hastie et al., 2014[29]	HB	12	SC	15.9	*Sport Education*	Motivation	The results showed a consistent perception of the students on the climate domain in all phases of the season, after application of the SE model. The teacher was able to manipulate the predominantly style-based task structure and the formal competition within the SE mode, as well as to promote a mastery climate, with an emphasis on the structures of recognition and assessment based on domain. The latter finding has important instructional implications in the sense of facilitating student motivation when they are taught competitive sports in high school.
14	Aquino et al., 2015[30]	FB	37	SC	10.73 (± 0.46)	Situational Method	PTK	When comparing the mean values of the offensive, defensive and game Tactical Performance Indexes considering the time effect, a significant increase in the variables was seen ($p \leq 0.05$). In view of the above, the systematization of football teaching centered on the use of games, provided a significant development in the tactical learning of the participating players.
15	Whipp et al., 2015[31]	FB	10	SC	12.46 (± 0.59)	Teachers trained under the game-based model and Teachers instructed under the game-based model	Psychosocial, behavioral, pedagogical and learning variables in School Physical Education (SPE)	The study assessed teachers who had had training in the game-based model and other teachers who were only instructed in the same model. The findings showed that teachers who had received training and teaching resources based on tactical games could improve the behavioral, pedagogical and motor performance results of students in Physical Education.
16	Costa et al., 2016[32]	+ than 1	44	SC	11 to 14	Developmental Model and *Sport Education*	Structuring and developing a hybrid intervention program for the teaching of invasive team sports (futsal, basketball and handball) in SPE.	The investigation was important for showing the possibility of implementing teaching models that favor Teaching-Learning processes related to team sports in the school environment. The evidence obtained helps in understanding the complexity of the act of teaching and in overcoming traditional methods of sports teaching, which are used most of the time. The adoption of the hybrid teaching method by combining the DM and SE principles is viable and promising for the reality investigated.

17	Calderón et al., 2016[33]	+ than 1	10	SC	9.85 (± 1.19)	*Sport Education*	Effect on a psychosocial variable (classroom social climate) over a season of Sport Education	The results of the Classroom Environment Scale (CES) based on the interviews and diaries found that shared teaching and pedagogical intervention based on SE improved the classroom social climate of the groups that experienced it. The use of co-teaching provided the students with involvement and teamwork.
18	Cheong et al., 2016[34]	Others	10	USs	21.56 (± 1.23)	Training Protocol based on traditional games	Skill performance and in-game performance.	The groups improved their dribbling and throwing performance during the acquisition phase when evaluated in a closed environment. Considering the retention phase, there were no differences among the groups. When evaluated in an open-skills environment, all groups improved their percentage of successful executions related to catching and throwing. They also improved both, the total number of attempts and the total number of successful executions for dribbling and throwing. Differences among groups were found with regard to dribbling execution; the game-based group scored a higher number concerning success.
19	Gil-Arias et al., 2016[35]	VB	9	SC	12 to 13	Methodological principles of non-linear pedagogy	Handling different task constraints in DM and effectiveness in attack action.	The study results showed significant improvement of the participants in both, DM and efficacy between pre and post-test measures. In relation to these results, the Physical Education teacher, in order to make students to obtain progress in their tactical competence, must design motor tasks that are representative of the real game and whose tactical complexity adapts to the students' learning level.
20	Nimmerichter et al., 2016[36]	FB	12	ATs	14 to 15	Visual training	DM and reactive agility via video-based visual training	The results showed that video-based visual training improves DM time and reactive agility sprint time, accompanied by an increase in successful decisions.
21	Lopez et al. 2016[37]	BB	9	SC	14 to 15	TGfU and *Direct Instruction*	DTK, PTK and skill execution	The results showed that students in the TGfU group had significantly higher PTK than the Direct Instruction group. Regarding the isolated technical execution, significant differences were found in the two groups in the post-test in the three actions (passing, dribbling and throwing). There were no significant differences in DM or execution in a real game situation in either group.
22	Praxédes et al., 2016[38]	FT	9	SC	12 to 14	TGfU	DM, passing and dribbling	The results showed a significant improvement in the DM with regard to passing in the inexperienced group after the application of the TGfU-based program. However, in the

								experienced group, no differences were found in any of the variables.
23	Gil-Arias et al., 2017[39]	+ than 1	16	SC	15.45 (± 0.41)	TGfU and *Sport Education*	Motivation and perception of competence	The results showed that, regardless of the order of intervention, both groups showed significant improvement in autonomy, competence and fun when they were taught under the hybrid model. Considering other variables, that is, autonomous motivation, relationship and intention to be physically active, there was no significant improvement in any of the groups.
24	Harvey et al., 2017[40]	BB	32	SC	Uninformed	*Tactical Games Model*	Basic Psychological Needs and Motivation	The results revealed a significant main effect for time in meeting the needs of elementary and high school students (low autonomy), and a significant main effect on self-determined motivation only for high school students (the introjected regulation, external regulation and increased motivation).
25	Hortigüela-Alcalá et al. 2017[41]	+ than 1	24	SC	13.32 (± 2.31)	TGfU and Traditional Method	Motivation and performance	The results revealed that the TGfU group showed greater motivation and performance in PE than the traditional group. Significant differences were found in performance. The participants included in the TGfU group were more positive in sports participation. Meanwhile, students who played more extracurricular sports in the traditional group were more actively involved in sports.
26	Nathan, 2017[42]	Others	15	ATs	15 (± 1.03)	TGfU and *Skill Drill Technical (SDT)*	Skill domain (fit and cover) via heart rate	The results showed that there were no significant differences regarding fit between TGfU and SDT in Malaysia and India after the intervention. Considering cover, there was a significant improvement for Malaysian players who used the TGfU model compared to SDT. In contrast, there was no significant difference between models among Indian players after the intervention.
27	Claver Rabaz et al., 2017[43]	VB	34	ATs	17.14 (± 0.67)	*Skill Drill Technical* and questions (TGfU)	Satisfaction, autonomy and competence, motivation, PTK, perceived performance and sport commitment.	The results of the intergroup analysis showed significant differences in the post-test measurement between the experimental group and the control group (in favor of the experimental group) for the following variables: basic psychological need, satisfaction of autonomy and competence, autonomous motivation, procedural knowledge, perception of performance and commitment to the sport.

28	Práxedes et al., 2017[44]	FB	22	ATs	10.5 (± 0.5)	TGfU	DM and skill execution	The results showed a significant improvement in two skills, that is, DM and execution after intervention, but not after the first 11 sessions. In addition, differences were found between the two game actions (passing and dribbling). These findings highlight the need to know what type of action will be trained (more tactical or technical) to adapt the methodology of the training session.
29	Farias et al., 2018[45]	+ than 1	54	SC	12.3 (± 1.3)	*Sport Education*	Performance and game involvement	Significant pre-to-post-test improvement was found in Performance and Involvement in the Game in the second and third seasons, handball and soccer, respectively, but not in the first season (basketball). Handball and soccer game performance and involvement scores were significantly higher than their scores when playing basketball.
30	Práxedes et al. 2018[46]	FB	14	ATs	10 to 12	Small games with varying opposition levels	DM and skill execution	The medium skill group showed significant differences after the first intervention in DM and passing execution, but not after the second intervention. Considering the low skill group, significant differences were seen only in the passing execution between the first and the last phase. These results seem to indicate that, for groups with a medium level of experience, training with numerical superiority in attack gives players more time to make better decisions and execute better quality actions. However, for lower-level groups, programs may take longer to facilitate improvement. The numerical equality did not result in improvement for any of the groups.
31	Hodges et al. 2018[47]	+ than 1	10	SC	Uninformed	*Tactical Games Model* (TGM)	Physical activity level and game performance	Three SPE teachers were trained under TGM and they implemented 10 lessons of the 'Tactical Games Approach' textbook for high school students. The results showed a significant difference between the average number of steps that students took in all classes, according to Teacher 1 and 2, whereas for Teacher 3 it was not significantly different. The analysis between sexes, in step counting considering the time effect, showed that the girls had, on average, significantly higher steps than boys. All pre-post-game performance measures were significantly different and indicated a significant improvement in this parameter.

32	Panchuk et al., 2018[48]	BB	12	ATs	17 (± 0.6)	Visual training with small games	DM	After application of visual training, the male experimental group had a large but not significant improvement regarding the scores of immersive test and small game compared to the male control group. Both the female control group and the experimental group had great improvement in the immersive training test, whereas only the female control group improved their performance in the small games.
33	Wang et al. 2018[49]	BB	12	SC	Uninformed	TGfU and Traditional Method	Physical activity levels and students' perception.	The results showed that the TGfU group and the traditional group had significantly improved levels of Moderate-to-Vigorous Physical Activity (MVPA) in the intervention phase. During the intervention period, the MVPA time of the TGfU group was significantly longer than that of the traditional group. No significant differences were found between the MVPA levels of high-low-skilled students. Data collected through interviews suggested that the nature of the games, the small team, freedom and fun experienced by the students during the games may explain the high levels of MVPA observed in the TGfU group. The TGfU intervention can potentially be used to promote physical activity and achieve the recommended MVPA time in PE classes (50% class time).
34	Hauer et al., 2018[50]	Others	8	ATs	25.8 (± 5.5)	Small games	Physiological, perceptual and technical parameters	The players were divided into two groups: 3 x 3 intermittent or continuous. Both small-game distributions showed improvement; a medium to too large effect size was seen regarding the total distance covered in pre-post-intervention. The higher maximum values of % heart rate with large effect sizes were seen for the continuous group. No differences were found between the distributions for any of the technical actions assessed, as well as for perceived exertion and for the physical activity pleasure scale.
35	Práxedes et al. 2018[9]	FB	14	ATs	9 to 13	Games modified in numerical superiority	DM and game performance	The results showed significant differences in favor of the experimental group (with numerical superiority) in DM and in the execution of passes after the intervention. However, such differences were not found for dribbling.
36	Calábria-Lopes et al. 2019[10]	BB	5	SC	10.89 (± 1.02)	TGfU	DTK and specific skills	The results showed no correlation among the dependent variables (passing, throwing and DTK), after the TGfU teaching program. Significant differences were found between pre and post-test only for passing and shooting in game context, and DTK in shooting and passing skills. No

								differences were found for the product-oriented assessment in the isolated shooting and passing skills.
37	González-Víllora et al. 2019[11]	FT	12	SC	9.35 (± 1.76)	TGfU and *Contextualized Sport Alphabetization Model* (CSAM)	Physical and physiological performance	The results showed that both physical performance (e.g. cover by distance) and physiological performance (e.g. Edwards' TRIMP) were significantly higher during CSAM compared to TGfU.
38	García-Ceberino et al. 2019[51]	FB	12	SC	10 to 11	*Direct Instruction (DI)* and *Tactical Games Approach* (TGA)	Pedagogical variables and variables external to the training load	There were no significant differences between the two programs, that is, DI and TGA, considering the following variables: game phase and specific content. These results showed that the design of tasks for each program was similar, although based on different methodologies. Regarding the training load variable, the results showed significant differences between DI and TGA programs in relation to the variables: degree of opposition, task density, competitive load and cognitive implication. These variables show that the training load quantification is higher in TGA and lower in DI intervention programs.
39	Mazzardo et al. 2020[52]	HB	20	SC	14.3 (± 0.46)	TGfU	Tactical-technical performance	After the intervention, the male individuals showed improvement in both groups (with and without motor coordination work) in game performance. A large effect size (ES) was seen for those with coordination work (0.610), and mean ES for the ones without coordination work (0.487) inserted in the TGfU pedagogical cycle. Considering the analysis between the groups, no statistical difference was found after the intervention for any of the study variables.

Note. Subtitles: Sport Modalities (SM) (BB – basketball; HB – handball; FT – futsal; VB – volleyball; FB – football; + than 1 – more than one modality taught; Number of Sessions (NSs)/ Sample level (SL) (ATs-athletes/SC-schoolchildren/USs-university students); Age group (AG); Variables assessed: DM – decision-making/ DTK – declarative tactical knowledge /PTK – procedural tactical knowledge

Source: Authors

Discussion

Considering a period when bibliometric indicators are used with greater frequency and intensity for the assessment of individual, institutional and national performance[53,54], research on pedagogical intervention with team sports deserves a broad and systematic review, since it is a multidisciplinary field with growing scientific interest. The present study systematically included the analysis on knowledge production in the literature concerning the application of intervention programs in team sports, regardless of the teaching model.

The chronological analysis of the studies confirmed the growing scientific interest in understanding, in practice, the impact of pedagogical interventions in the teaching of sports on tactical, technical, psychological and physiological variables. Knowing the effects provided after a teaching program helps teachers/coaches in planning, organizing, conducting and controlling the teaching-learning-training process in sports[26,54], which makes it an essential component for the performance of these professionals.

Considering the language, the studies were published, there was a predominance of the English language, which is mandatory in most high-impact journals, in addition to being the hegemonic language in the scientific field in contemporary society. The findings described corroborate other review studies that have shown most publications in English[1-6].

Football is considered the most popular sport worldwide. This is reflected in the interest of researchers in both, training and high performance, as seen in the results of the present research, whose papers assessed included football in the largest number of studies. In Brazil, this scenario is not different. A survey carried out by the Brazilian Institute of Geography and Statistics (IBGE) in partnership with the Ministry of Sport, on the Practice of Sport and Physical Activity, from the National Household Sample Survey (PNAD), 2015, revealed that football represented 39.3% out of the 38.8 million practitioners of some sport in the country[55]. The other modalities mentioned by sports practitioners, such as volleyball, handball and basketball represented only 2.9% of the results. However, looking at the last two years of publications, table 1, one can see the interest of research in other sports, such as basketball, handball and futsal.

Regarding the number of sessions applied in the pedagogical interventions, it was found that over the years there was an increase in the number of sessions assessed in the teaching of team sports. In the systematic review of game-centered approaches, Miller[8] identified that to obtain positive and significant results in the variables of decision-making and skill execution in a game situation, the intervention period must be longer than eight hours or 10 class sessions/training. This evidence corroborates the literature, which points out that the complexity involved in teaching team sports directly affects student/athlete learning, a fact that must be considered in long-term planning[35] and in the form of evaluation, which must be adapted for the audience to be evaluated.

Concerning the sample, it was found that there was no standardization with regard to its classification in the studies assessed. Some researches referred to the sample according to age group; others to children, adolescents, adults, or even between beginners and professionals. Despite the variety of nomenclatures used, the subjects of intervention studies carried out in school Physical Education classes were considered as ‘schoolchildren’, an environment with the highest number of studies. This characteristic shows the attempt to bring the scientific field closer to formal educational practice with the purpose of improving knowledge to intervene in a productive way in the TLT process regarding team sports at school.

With the evolution of sports, there was a trend of the studies in applying interventions with teaching programs focused on tactical learning. Out of the 39 studies assessed, 19 (48.72%)

used only a tactical teaching model in structuring the teaching program; 4 (10.26%) studies compared teaching models centered on tactics (for example, the study by Mesquita et al[26]); thus, it is a total of 23 studies (58.97%), as shown in table 1.

This fact may be related to the rupture of the idea of teaching the game in an analytical way, through the application of techniques in isolation, outside the game context. Teaching centered on tactical learning places the students at the center of the learning process and as the builders of their own experiences, with the aim of stimulating cognitive processes, such as perception and decision-making, supported by the process of understanding the game logic via game fun. Teaching programs for understanding, by directing learning in the context of the game, provide the student/athlete with opportunities to solve tactical problems, and challenge the understanding of the tactical logic inherent to the situations. Thus, pedagogical teaching interventions centered on tactics emphasize cognitive learning combined with motor performance[56-58].

However, until the last decade, in Brazil, investigations found that the TLT process of team sports showed a predominance for applying traditional models, which relegates the development of tactical skill to a second moment, and aims to teach the execution of the motor gesture outside the game context. This was shown in the studies by Morales and Greco[18] in basketball, Pinho et al.[20] in handball, Lima et al.[25] in volleyball, and Moreira et al.[7] in futsal. Such studies also aimed at comparing teaching models. In recent years, research has been concerned with showing the advantages of each model in order to see how each model can help in the development of the student/athlete, but the comparison between them is increasingly less carried out.

Regarding the variables assessed, the most recent studies point to a tendency to analyze the tactical-technical variables based on a sport teaching model (table 1), which aims at investigating how much it can contribute to the improvement of skills, abilities and competences of students/athletes. Since the teaching of sport is directly related to the development of different capacities (physical, tactical, technical, social, among others), the use of different methodologies encourages each one or several of them. Therefore, the teaching models have specificities for certain learning gains, and when combined they can optimize the students' potential, configuring themselves as a means of helping teachers in the class content planning.

Cognitive processes are linked in the development of tactical and technical skills with one’s knowledge level, depending on the methodologies used in the process of training students to high performance. Its evaluation is an essential component to contribute to the planning and application of teachers and/or coaches in the following processes: selection, classification, motivation, learning, guidance, awarding of grades, vocational suitability, program evaluation, personal evaluation, public relations and research[10,23,37,44].

Conclusions

The total number of articles included in the sample of the present study shows an increasing interest of the scientific community in assessing the benefits of teaching programs for the learning of team sports. It was also seen that there is currently a tendency to change and/or add content and variables in teaching programs, since the results reveal that teaching reflects the advantages that each model has to promote the teaching and learning of tactical, technical, and socio-emotional components, and so on, which involve team sports.

In addition, further studies are needed in other databases so as to expand the real state of the art in relation to the application of pedagogical interventions in the teaching of team sports. Furthermore, the present systematic review allowed us to analyze the studies of pedagogical intervention with team sports and observe new directions of research, such as the application of teaching programs in different modalities since the initiation phase to high performance.

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