



## Cooperative Learning in Physical Education: A Research Overview

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### Abstract

The aim of this scientific note was to provide a research overview about cooperative learning in physical education. A literature search was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A total of 46 published articles from *Web of Science (Social Science Citation Index and Science Citation Index Expanded)* were examined. The results reported: (a) most of the articles were published in 2020 (10 articles), 2021 (9), and 2017 (7); (b) the majority of the articles described intervention studies (32); (c) most articles were published in *Journal of Teaching in Physical Education* (6), *European Physical Education Review* (5), and *Physical Education and Sport Pedagogy* (5), all located in quartile-1 in the latest *Journal Citation Reports edition (2020)*; (d) most studies were conducted in Spain (15), UK (8), and USA (8); (e) the top-ten-cited articles received between 172 (1<sup>st</sup>) and 47 (10<sup>th</sup>) citations; (f) only 10 women signed as first authors (21.73%) and only one of them (10%) was among the top-ten-cited articles (10<sup>th</sup> position). In conclusion, evidence showed a growing expansion of research in this area, especially in intervention studies. However, this positive trend is not homogeneous with respect to geographical areas and the participation of women researchers.

**Keywords:** pedagogical models, school, teaching.

### Cover:

A Mexican man in pre-Hispanic Aztec costume eludes the ball during a traditional "Juego de Pelota" (in Spanish, called by the Maya "pok-ta-pok" and by the Aztecs "tlachtli"). Xcaret eco-park, Mexico June 5, 2009  
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## Introduction

High-quality physical education (PE) research has exponentially increased in the last two decades with nearly 2,000 published articles indexed in the *Journal Citation Report* (JCR) ranked in quartiles (Q) 1 and 2 (Iglesias & Fernandez-Rio, 2022). This same trend has also been highlighted in research conducted on pedagogical models in PE (Fernandez-Rio & Iglesias, 2022) as a way of organizing learning and teaching from student-centred approaches. More particularly, research on cooperative learning (CL) in PE has also experienced a remarkable growth in recent years, becoming one of the most popular and expanded instructional framework (Bores-García et al., 2021).

Positive interdependence, individual accountability, group processing, promotive interaction and interpersonal skills have been identified as the five key elements that mediate the effectiveness of this methodological approach (Johnson et al., 2013). Ample evidence supports the efficacy of CL implementations to positively impact students' cognitive, social, physical and affective domains in PE contexts (Bores-García et al., 2021). Moreover, this framework contributes positively to the challenge of building a student-centred quality PE (Casey & Goodyear, 2015). These could be the reasons that have made CL a trendy pedagogical model.

To our knowledge, no previous research has focused on analysing CL in PE from a retrospective overview of the research conducted to date. To bridge this gap, a research overview is presented in this manuscript capturing seven major themes: (1) publication years, (2) Web of Science (WoS) categories, (3) article types, (4) journals and publishers, (5) countries and languages, (6) top-ten-cited articles, and (7) authorship.

## Method

This research overview was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021).

### Information source and search strategy

A literature search was conducted in WoS (*Social Science Citation Index* and *Science Citation Index Expanded*). This database is considered the most complete collection of scholarly publications and research metadata, with a wider coverage of citation information and accuracy in the journal classification system (Ivanović & Ho, 2019).

Searches included article titles, abstracts and keywords following this query string: ["cooperative learning" AND "physical education"]. Further manual searches of reference list citations were conducted to ensure that no studies were missed.

### Eligibility criteria

Studies were included if they met the following criteria: (1) peer-reviewed journal articles published and written in any language, (2) focused on elementary, middle or/and high school students, (3) conducted in PE contexts, and (4) any design: theoretical approach, review, intervention and non-intervention studies. Exclusion criteria were: (1) participants from preschool or university settings, (2) studies focused on teachers, and (3) studies on hybridizations of pedagogical models. Since no previous study addressed a research overview in this area, to obtain a major historic perspective picture on the topic, a review period from inception to April 24, 2022, was selected.

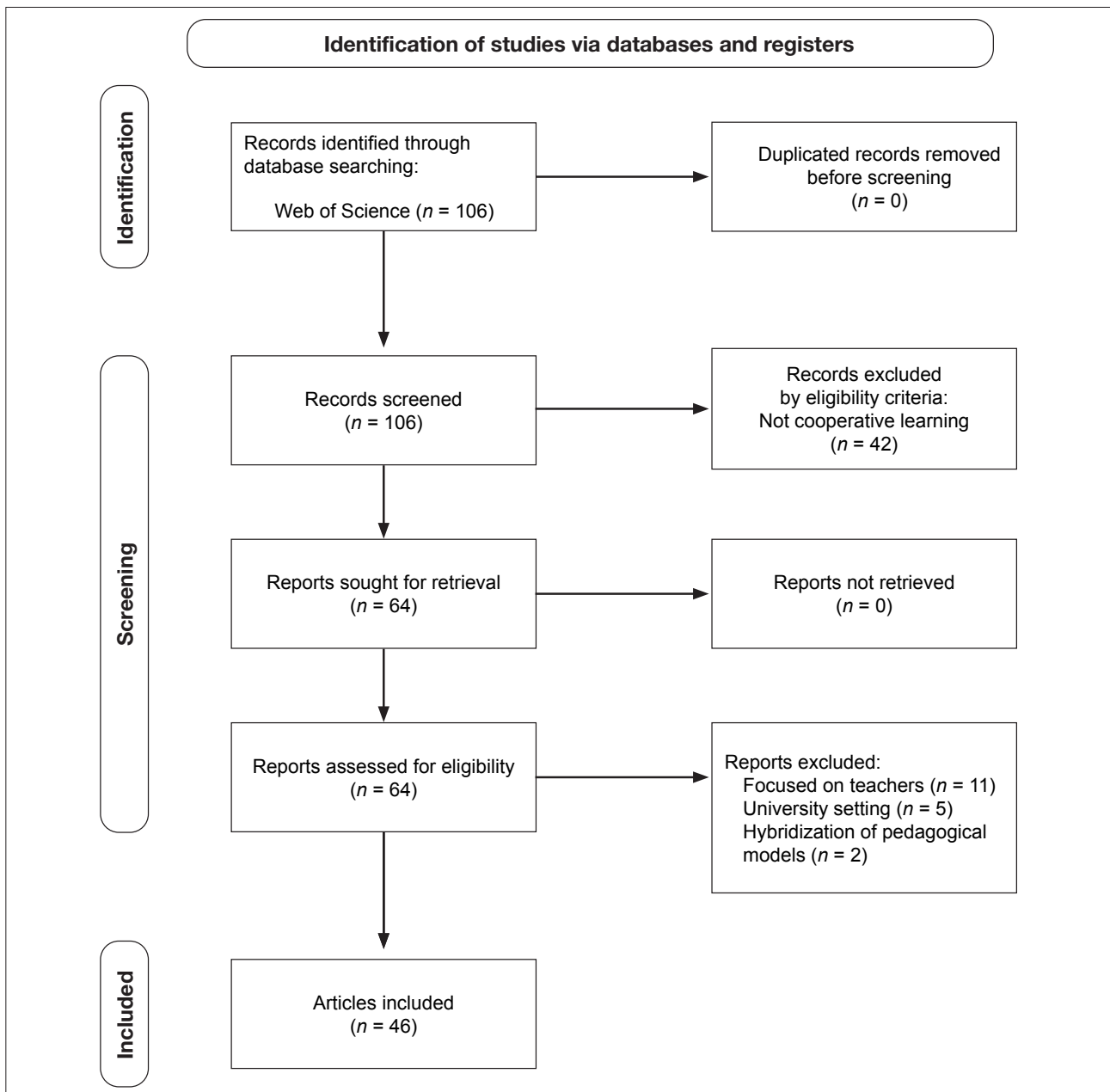
### Data extraction

The potentially eligible studies were initially screened by two independent researchers, who read titles and abstracts following the stipulated criteria prepared in advance and included in the search protocol. In studies with unclear abstracts and/or titles, peer review was conducted, resolving discrepancies through discussion and consensus. In a second phase, the same two reviewers, independently, read the full text of the studies preselected, creating the final list of potentially eligible studies. A third investigator participated when no consensus was reached regarding acceptability or not of a study. Finally, the full texts of the screened articles were carefully examined.

## Results

### Study identification and selection

A total of 106 records were identified. A total of 60 articles were excluded attending to the eligibility criteria. Reasons for exclusion were: (a) not about CL in PE ( $n = 42$ ), (b) focused on teachers ( $n = 11$ ), (c) conducted in university setting ( $n = 5$ ), and (d) hybridization of pedagogical models (2). Finally, 46 studies fulfilled the inclusion criteria and were selected for further analysis (Figure 1).



**Figure 1**  
PRISMA flow diagram of studies assessed for eligibility and included for further analysis.

### Publication years

Most of the articles were published in 2020 (10), 2021 (9), and 2017 (7). In 2015, three articles were published, while two articles were published in each of these years: 2019, 2018, 2014, 2010, and 2009. Finally, the remaining articles were published in the following years (one per year): 2022, 2018, 2013, 2011, 2011, 2005, 2005, 2004, 2002, and 2001.

### Web of Science categories

Most of the articles were indexed in the subject categories: “*Education & Educational Research*” (26) and “*Sport Sciences*” (15).

### Article types

The majority of the selected articles described intervention studies (32). A smaller number were cross-sectional (7), review studies (4), and theoretical approaches (3).

### Journals and publishers

The journals with the highest number of published articles were the following: *Journal of Teaching in Physical Education* (6), *European Physical Education Review* (5), and *Physical Education and Sport Pedagogy* (5). All of them ranked Q1 in the last JCR edition (2020).

**Table 1**  
Top-ten-cited studies about cooperative learning in physical education.

Author(s), year and country	Title	Journal (rank*)	Type	Citations	
				Total	Average per year
Dyson et al. 2004 USA	Sport education, tactical games, and cooperative learning: Theoretical and pedagogical considerations	<i>Quest</i> (JCR-Q2)	Theoretical approach	172	9.11
Casey & Goodyear 2015 England	Can cooperative learning achieve the four learning outcomes of physical education? A review of literature	<i>Quest</i> (JCR-Q2)	Review study	100	12.5
Dyson 2002 USA	The implementation of cooperative learning in an elementary physical education program	<i>Journal of Teaching in Physical Education</i> (JCR-Q1)	Intervention study	99	4.71
Dyson 2001 USA	Cooperative learning in an elementary physical education program	<i>Journal of Teaching in Physical Education</i> (JCR-Q1)	Intervention study	93	4.23
Dyson et al. 2010 USA	The ecology of cooperative learning in elementary physical education classes	<i>Journal of Teaching in Physical Education</i> (JCR-Q1)	Intervention study	65	5
Casey & Dyson 2009 England	The implementation of models-based practice in physical education through action research	<i>European Physical Education Review</i> (JCR-Q1)	Intervention study	62	10.33
Fernandez-Rio et al. 2017 Spain	Impact of a sustained cooperative learning intervention on student motivation	<i>Physical Education and Sport Pedagogy</i> (JCR-Q1)	Intervention study	61	4.43
Barret 2005 USA	Effects of cooperative learning on the performance of sixth-grade physical education students	<i>Journal of Teaching in Physical Education</i> (JCR-Q1)	Intervention study	56	3.11
Goudas & Magotsiou 2009 Greece	The effects of a cooperative physical education program on students' social skills	<i>Journal of Applied Sport Psychology</i> (JCR-Q1)	Intervention study	54	3.86
Bodsworth & Goodyear 2017 England	Barriers and facilitators to using digital technologies in the cooperative learning model in physical education	<i>Physical Education and Sport Pedagogy</i> (JCR-Q1)	Intervention study	47	8

Note: \*Rank quartile (Q) at Journal Citation Reports (JCR) last edition (2020).

## Countries and languages

Most of the studies were conducted in Spain, UK and USA, with a total of 15, 8 and 8 articles, respectively. The rest were conducted in China (4), France (4), New Zealand (4), Taiwan (3), Ireland (2), Norway (2), Turkey (2), Greece (1), Poland (1), South Korea (1), Sweden (1), and Tunisia (1). The vast majority of articles were written in English (43 articles). The rest in Spanish (2) and Turkish (1).

## Top-ten-cited articles

To date (Table 1), the most cited article (172 citations) was Dyson et al. (2004), published in the *Quest* journal (JCR-Q2), focused on theoretical and pedagogical considerations of CL in PE. The second most cited article (100 citations) was the systematic review conducted by Casey & Goodyear (2015), also published in the *Quest* journal. The remaining 8 articles corresponding to the top-ten-cited articles described intervention studies that received between 99 and 47 citations and were published in the following journals (JCR-Q1): *Journal of Teaching in Physical Education* (4), *Physical Education and Sport Pedagogy* (2), *European Physical Education Review* (1), and *Journal of Applied Sport Psychology* (1).

## Authorship

The author with the largest number of published articles (8) is Ben Dyson (University of North Carolina, USA), including 5 in the top-ten-cited articles. The second author with the most published articles (7) is Javier Fernandez-Rio (University of Oviedo, Spain), including 1 in the top-ten cited articles. Regarding the gender of the first author, only 10 women held first authorship (21.73%). Finally, only one article (10%) was signed by a female as first author in the top-ten-cited articles (10<sup>th</sup> position).

## Discussion

The aim of this scientific note was to provide a research overview on CL in PE. The results showed a notable increase in published articles in recent years, in line with the general evolution of pedagogical models in PE (Fernandez-Rio & Iglesias, 2022; Valero-Valenzuela et al., 2020). Most of the articles described intervention studies that made high-quality contributions in this area. The most cited articles were published in journals indexed in JCR-Q1-Q2. Unfortunately, its geographic distribution has not been uniform. Countries such as Spain, UK and USA concentrate most of the research. Therefore, CL implementation beyond these countries is suggested, considering the positive effects found in the literature (Bores-García et al., 2021; Casey & Goodyear, 2015).

A low representation of women signatories as first authors was also observed, being even more pronounced in the most cited articles. These findings are in line with previous studies on gender gaps in PE research (Iglesias & Fernandez-Rio, 2022).

Finally, to carry out this research overview, only the WoS database was used because of its high consideration among the scientific community and the study focused on high-quality research based on prevalent metrics. However, this could also be considered a limitation. Future studies should expand the search strategy to include more databases (e. g. Scopus, ERIC). On the other hand, the inclusion/exclusion criteria left out studies conducted in other populations and contexts, including hybridizations. New studies should cover these needs observed in the literature.

## Conclusions

Based on findings from this research overview, we can draw the following conclusions:

1. The number of published articles on CL in PE at JCR journals has increased in recent years, indicating an expanding research topic.
2. Most of the studies conducted included intervention programs and the journals with the highest number of published articles are indexed at JCR-Q1.
3. Spain, England and the USA were the countries where CL in PE was more frequently implemented. So, an expansion to the rest of the world is suggested.
4. The top-ten-cited articles have received between 172 (1<sup>st</sup>) and 47 (10<sup>th</sup>) citations.
5. Women scholars are underrepresented as first authors and in the top-ten-cited articles.

Finally, evidence showed a growing expansion of research in this area, especially in intervention studies. However, this positive trend is not homogeneous with respect to geographical areas and the participation of women researchers.

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