SPORT AS A SCHOOL FOR LIFE: MAPPING RESEARCH TRENDS ON CHARACTER AND LIFE SKILLS EDUCATION THROUGH TEAM SPORTS (2010–2025)

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ABSTRACT

Character education and life skills are important focuses in shaping a young generation that is socially, emotionally, and morally resilient. Team sports such as soccer, basketball, and volleyball are considered effective vehicles for instilling these values. However, to date, there has been no comprehensive mapping of trends, thematic focuses, and scientific collaborations in global research on the relationship between team sports and character development. This study uses a bibliometric approach with an exploratory descriptive design. Data were collected from the Scopus database using specific search strings to identify relevant articles from 2010 to 2025. A total of 2,590 selected documents were analyzed using VOSviewer and Tableau software to visualize citation networks, author collaborations, and keyword co-occurrence. The analysis was conducted based on Danvila-del-Valle's Bibliometric guidelines. The results show a significant surge in the number of publications since 2019, peaking in 2024. The Journal of Physical Education and Sport is the most productive journal, while Yogyakarta State University is the institution with the highest publication contribution. There are five main thematic clusters in this study: physical performance, athlete health, psychosocial aspects, response to global issues, and integration into the education curriculum. The United States, the United Kingdom, and Indonesia are noted as the main hubs of scientific collaboration. Team sports have been proven to not only play a role in physical development, but also to be effective in instilling social, moral, and emotional values in students. Cross-country collaboration and an interdisciplinary approach are key to the development of this literature. This study recommends strengthening the synergy between physical education and evidence-based character education policies to create adaptive and contextual learning models in the 21st century.

Keywords : *Team Sports, Character Education, Life Skills, Physical Education, Bibliometrics*

INTRODUCTION

The role of sports as a medium for character building and life skills development is increasingly recognized by various international studies. Sports in general can foster positive development in young people, such as physical fitness, social development, and life skills development, as a measure of a country's success with young people as agents of change in the future (Hambali et al., 2022). In the last two decades, the world of education has been faced with a crisis of character and a lack of essential life skills among young people, such as the ability to work together, interpersonal communication, decision making, and leadership. The report (unesco, 2015) states that the formal education system is still not effective in facilitating the development of non-cognitive skills that are important for social and professional life in the 21st century. (world economic forum, 2020) also emphasizes that social-emotional skills are increasingly urgent to instill from school age, given the rapid social and economic changes.

In response to these needs, sports, especially team sports, have emerged as a strategic medium for shaping the character and life skills of the younger generation. Research by (Cope et al., 2013) shows that participation in sports contributes to the social and moral development of students through structured cooperative and competitive experiences. In particular, team sports such as soccer, basketball, volleyball, and rugby provide a natural space for fostering values such as responsibility, empathy, solidarity, and resilience (Camiré et al., 2012; Hidayat et al., 2024; Holt et al., 2020).

Cross-cultural studies also show that involvement in team sports correlates positively with strengthening self-identity, improving problem-solving skills, and developing effective communication. (Fraser-Thomas et al., 2005; Gould & Carson, 2008). Several pedagogical approaches such as Sport-Based Youth Development (SBYD), Teaching Personal and Social Responsibility (TPSR), and integrated life skills education have been widely used in the context of physical education to integrate social learning objectives into physical activities (Danish et al., 2005; Hellison et al., 2011). However, there has not yet been a comprehensive mapping of how global research trends have addressed the relationship between team sports and character and life skills development, in terms of themes, methodological approaches, and application contexts.

Based on this background, this study aims to provide a comprehensive overview of global research trends and tendencies on character education and life skills through team sports during the period 2010 to 2025, by examining the developing thematic focus, methodological approaches used, and the effectiveness of various interventions in the context of formal and non-formal education, in order to support the development of evidence-based and contextually relevant sports education strategies.

METHOD

Design

The methodology used in this study is bibliography, which is descriptive and exploratory in nature (He et al., 2019; Lundberg, 2023) using support applications with software such as VOSviewer (https://www.vosviewer.com/) and Tableau (https://www.tableau.com/) to present data mapping, facilitate graphical representation and visualization of research trends, enabling reverse interpretation of literature relationships and intellectual structures in various fields (Ullah et al., 2023). From this research design, the author intends to discuss bibliometric analysis

techniques as a research instrument to map trends in character education and life skills research through team sports, thereby formulating the following research questions:

Table 1. Research Question

RQ1: Who are the most prolific authors and journals in the literature on character education and life skills through team sports between 2010 and 2025?	Identify leading authors, institutions, and journals that are at the forefront of publications in this field.	Identify leading authors, institutions, and journals that are at the forefront of publications in this field.	Demonstrating scientific leadership and knowledge distribution networks on the topic of character education through team sports.
RQ2: What are the main topics, countries of origin with the most contributions, and keywords that appear most frequently in studies on character education and life skills through team sports?	Analyzing thematic focus, geographic distribution, and frequency of key terms in the literature.	Revealing the research areas that receive the most attention and the dynamics of international cooperation.	Providing an overview of research trends and opportunities for cross-border collaboration.
RQ3: How do bibliometric maps (network maps), graphic and table visualizations, and conceptual, intellectual, and social structures appear in research on character education and life skills through team sports?	Providing citation network analysis, co-citation, bibliographic coupling, and thematic clusters.	Providing a visual and concise representation of the knowledge structure in this field.	Facilitates understanding of the relationships between concepts, research groups, and thematic evolution.
RQ4: Which research works serve as landmarks in character education and life skills through team sports based on a systematic literature review?	Identify seminal studies, methods used, context of application, and key findings.	Understanding the scientific and methodological heritage that shapes the field of study.	Helping researchers and practitioners understand the theoretical foundations and future directions of development.

The recommendation guidelines from (Danvila-del-Valle et al., 2019) were used to generate a map to identify research topics and various structures in the data collection. Figure 1 shows the methodology used in the bibliography.

Document Dataset

Documents that are representative samples of international scientific activities published in scientific journals were analyzed (Velasco et al., 2011). Data were collected from journals indexed in Scopus. This database was selected based on several criteria.

Table 2. Documents Obtained From Searching the Database

Database	Search String	Document Type	Source type	Year	Subject Area	Language	Open Accses	Result
Scopus	(sport OR "team sport" OR basketball OR football OR futsal OR volleyball OR handball) **AND** ("character" OR "value" OR "moral" OR "life skills" OR "social skills" OR "personal development") **AND** ("education" OR "school" OR "youth" OR "adolescen" OR "students" OR "physical education")	Article	Journal	2010-2025	Health Professions, Social Sciences, Psychology, Arts and Humanities	English	All open access	2,590 Documents found

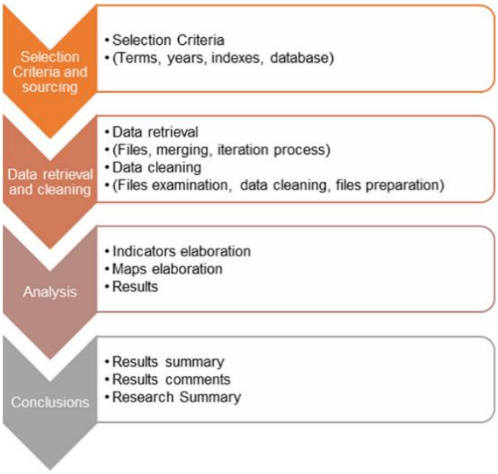


Figure 1. Methodology according to (Danvila-del-Valle et al., 2019)

Search Strategy

This study was conducted following the guidelines of Danvila del Valle shown in Figure 1. (Danvila-del-Valle et al., 2019) The presence of the appropriate characteristics is sufficient to justify the application of these guidelines (Durán-Sánchez et al., 2018; Kalia et al., 2022). The Scopus database was used to search for articles from indexed scientific journals, in accordance

with the selection criteria listed in Table 2. The search was conducted using the Scopus web-based search engine (https://www.elsevier.com/products/scopus) to identify relevant articles. The search period was set from 2010 to 2025, in line with the scope of the study. The analysis was then conducted using VOSviewer software to construct and visualize bibliographic networks, including co-authorship, co-citation, and keyword co-occurrence. In addition, the Tableau application was also used to present data mapping in the form of interactive graphics and visual dashboards, which helped explain the geographical distribution. This allowed researchers to explore the conceptual, intellectual, and social structures in this field of study, while providing insights into the most influential researchers, leading institutions, and trends in terms and main topics that have developed over the last two decades. Bibliographic data was obtained from the Scopus database, using the search string: (sport OR "team sport" OR basketball OR football OR futsal OR volleyball OR handball) **AND** ("character" OR "value" OR "moral" OR "life skills" OR "social skills" OR "personal development") **AND** ("education" OR "school" OR "youth" OR "adolescence" OR 'students' OR "physical education"). The search focused on English-language articles in the subjects of Health Professions, Social Sciences, Psychology, and Arts and Humanities, with the document type limited to articles, in the title section, to ensure a direct connection to the focus of this study.

Data Analysis Process

The documents analyzed in this study include bibliographic information obtained after manual review of 2,590 documents found in the Scopus database. The source type was limited to journals and restricted to open access documents. A total of 12,852 documents were found and then filtered through a selection process based on year, subject area, document type, source type, language (English), and open access. The data cleaning stage resulted in 2,590 documents that met the criteria obtained from the search in the database that matched the research title.

Summary of search strategy. Note: Article search strategy (Article Identification and Screening)

The following are bibliometric analysis search strategies to guide research:

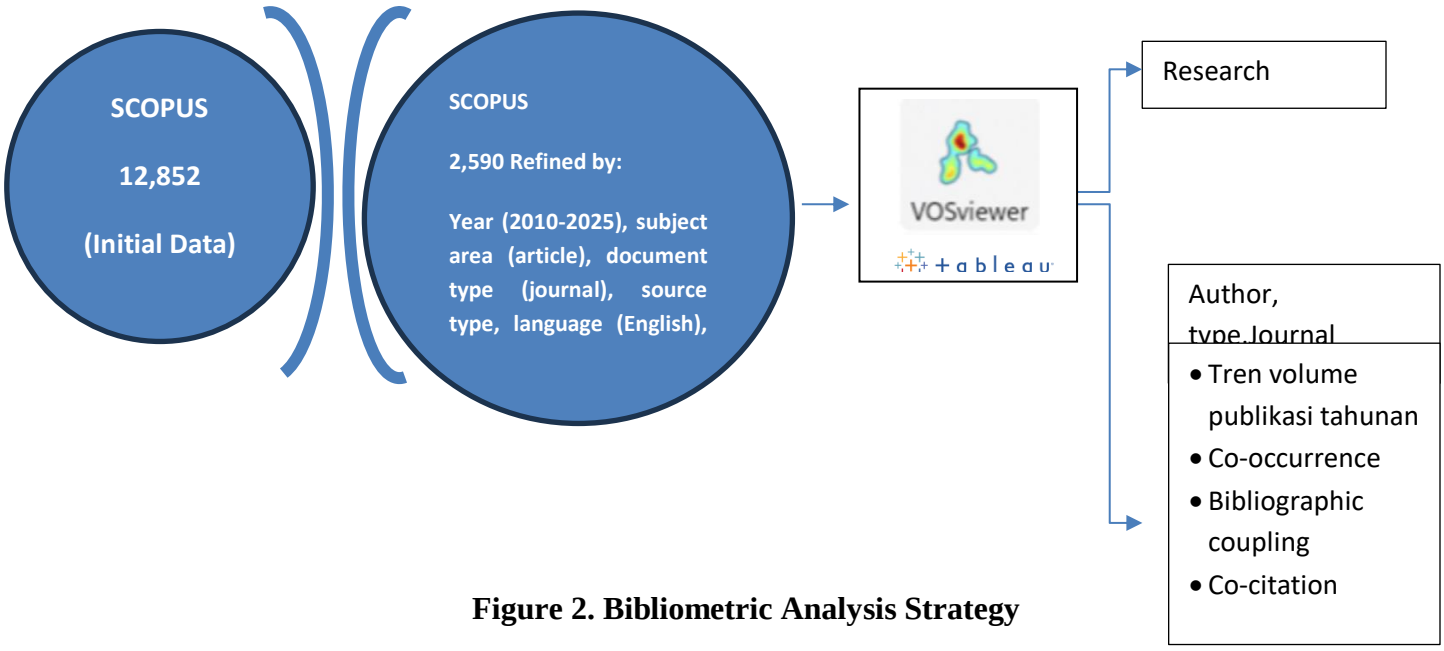


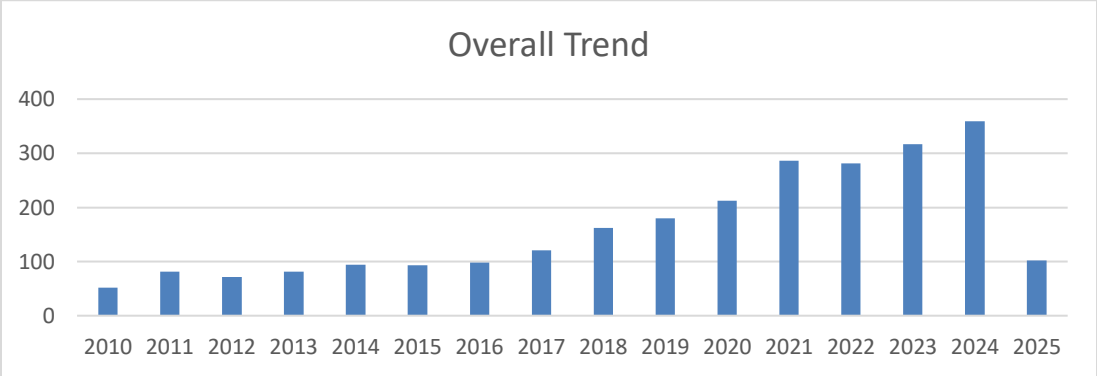
Figure 2. Bibliometric Analysis Strategy

RESULTS AND DISCUSSIONS

Results

In this section, the results and discussion are presented in an integrated manner, as this approach is considered the most effective way to present the analyzed data and provide an interpretation of the findings obtained throughout the research process. The presentation is systematic, beginning with an analysis of general publication trends, followed by the identification of the most productive and most frequently cited authors, and an exploration of keywords that reflect the main themes in the field of study. In addition, a map of document and citation distribution is presented, as well as a collaborative network representing the relationships between authors, countries, and institutions. Each aspect of the findings is discussed directly to provide a comprehensive understanding of the research landscape in character education and life skills through team sports.

Overall Trend



Graph 1. Overall Tren 2010-2025

The number of publications on the topic of character education and life skills through team sports in Grafik 1 shows fluctuating dynamics from year to year. In 2010, there were 50 publications, then increased to 80 in 2011. However, there was a decline in 2012 with only 70 publications, before rising again to 85 in 2013. The trend continued to rise to 95 publications in 2014 and increased slightly again to 90 in 2015, remaining stagnant at the same number in 2016. An increase occurred again in 2017 (120 publications), followed by a significant jump in 2018 with 160 publications. The year 2019 recorded 180 publications, and this trend continued to increase in 2020 with 215 publications. The year 2021 showed a sharp jump to 290 publications, although it declined slightly in 2022 (280 publications). However, the number rose again in 2023 to 320 publications and reached its highest peak in 2024 with 360 publications. Meanwhile, 2025 (until mid-year) shows a significant decline with only 100 publications recorded so far. In line with this trend, Figure 3 shows the distribution of disciplines from all analyzed documents. The three most dominant fields are Health Professions (32.0%), Medicine (26.1%), and Social Sciences (20.0%). The dominance of health and social sciences indicates that issues of character education and life skills in the context of team sports are often studied from the perspectives of public health, psychosocial intervention, and interdisciplinary educational approaches. Contributions from the field of psychology (7.3%) further strengthen the understanding of the affective and behavioral dimensions of participants in these studies.

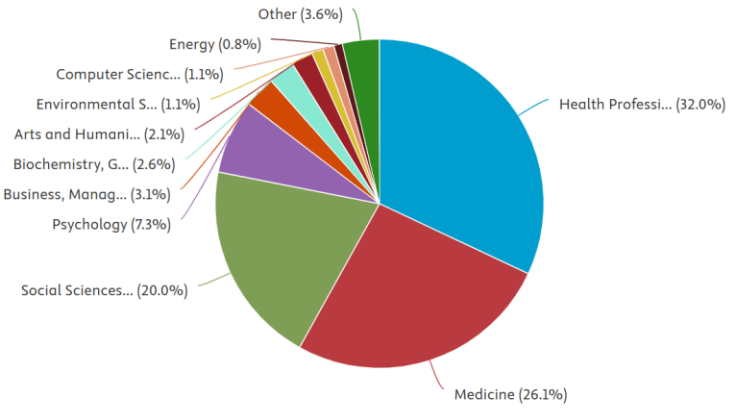


Figure 3: Displaying 11 Trending Topics Based on the Author's Keywords.

Temporal evolution of trends based on the 10 most cited journals from 2010-2025.



Graph 2 . Overall Journal Publication Trends 2010-2025

Based on the graph showing the number of publications from the top ten journals from 2010 to 2025, it can be seen that the Journal of Physical Education and Sport is the most productive journal with a total of 200 publications. This reflects the high level of interest and academic contribution to issues of physical education and sports during that period. This is followed by the Journal of Strength and Conditioning Research with 140 publications, which shows the dominance of topics related to physical strengthening and fitness training in the field of sports research. Next, the Journal of Human Sport and Exercise recorded 86 publications, demonstrating the important role of this journal in developing discourse on sports and human activities. Meanwhile, Frontiers in Psychology contributed 78 publications, indicating that the involvement of psychological perspectives in examining aspects of sports and physical activity is becoming increasingly relevant and developed.

The Retos Journal also made a significant contribution with 70 publications, which likely highlighted innovations in sports pedagogy and new approaches to physical education. Medicine and Science in Sports and Exercise recorded 64 publications that emphasized the role of sports science and medicine in improving athlete performance and health. The International Journal of Human Movement and Sports Sciences produced 49 publications focusing on human movement studies and educational approaches in sports. Frontiers in Sports and Active Living, with 47 publications, shows the integration of a multidisciplinary approach in understanding active living and sports in general. Meanwhile, the Journal of Athletic Training recorded 44 publications, highlighting the importance of athlete training and recovery.

Finally, Sustainability Switzerland made it into the top ten with 43 publications, signaling a new interest in the connection between sports, physical activity, and environmental sustainability issues. Overall, this data shows that scientific publication trends in the field of sports are becoming more diverse and encompassing interdisciplinary perspectives, from education and psychology to applied science and sustainability

Table 3. 10 Authors With The Most Publications Dokumen, Citations And Total Link Strength

No	Author	Documents	Citations	Total Link Strength
1	romanova, elena	20	52	20.00
2	kolokoltsev, mikhail	19	58	19.00
3	vorozheikin, anton	19	43	19.00
4	côté, jean	17	1309	16.00
5	tyupa, pavel	14	15	14.00
6	kavussanu, maria	13	284	10.00
7	till, kevin	11	304	10.00
8	eason, christianne m.	11	119	11.00
9	guryanov, maxim	11	30	11.00
10	popovych, ihor	10	295	8.00

The table shows the ten authors with the highest number of publications, along with the number of citations and total link strength in the field studied. Romanova, Elena ranks first with 20 publications and the highest link strength of 20, despite a relatively low number of citations (52). Kolokoltsev, Mikhail and Vorozheikin, Anton follow with 19 publications and a total link strength of 19 each, also with relatively low numbers of citations (58 and 43). On the other hand, Côté, Jean, despite having fewer publications (17), stands out significantly with the highest number of citations, namely 1,309, indicating that his work has a large academic influence. A similar situation occurs with Till, Kevin (304 citations) and Popovych, Ihor (295 citations), who have fewer documents but significantly higher citation counts compared to other authors with the same or more publications.

Meanwhile, Guryanov, Maxim and Tyupa, Pavel contributed a considerable number of documents, but with low citations (30 and 15), indicating that their academic influence is still limited. Authors such as Eason, Christianne M. and Kavussanu, Maria also have a moderate contribution in terms of number of documents and a fairly strong influence through citations and

links. Overall, this table illustrates that the quantity of publications is not always directly proportional to the level of academic influence (as seen from citations), and the total link strength represents the interconnectedness or collaboration within the wider network of authors.

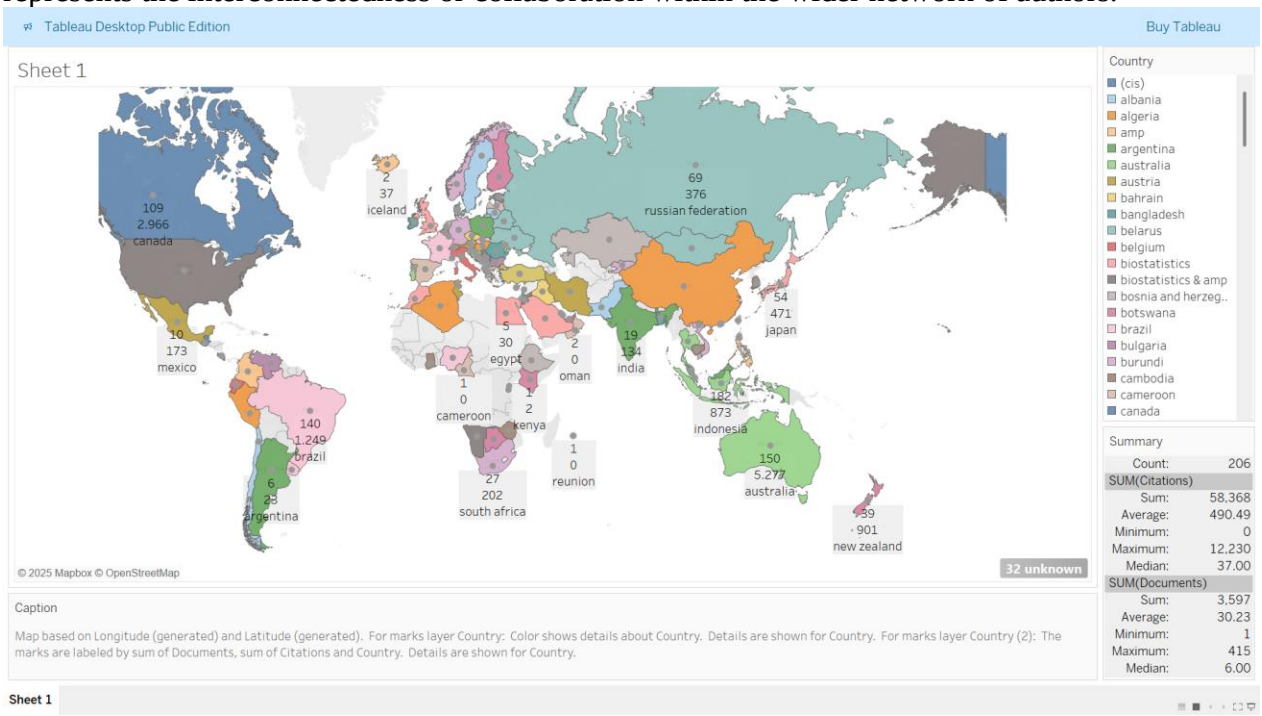


Figure 4: Map Of Countries Based On The Number Of Publications And Citations

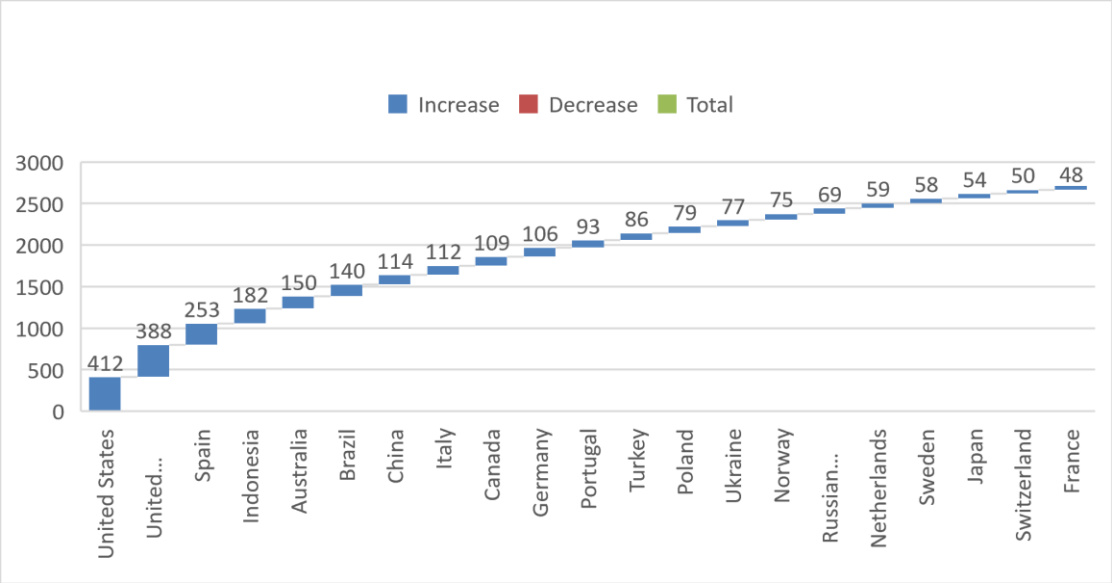
Map based on Longitude (generated) and Latitude (generated). For the Country marker layer: Colors indicate details about the country. **For the Country marker layer** (2): Markers are labeled based on country, number of documents, and number of citations. Details are displayed for the country. View filtered by Latitude (generated) and Longitude (generated). The Latitude filter (generated) only retains values other than Null. The Longitude filter (generated) only retains values other than Null. **Distribution of Publications by Country and Affiliation Based on the Highest Number of Documents**

Based on the geographical distribution map visualized through Tableau, it appears that publications related to research on sport as a school for life in team sports are spread globally, with the highest concentration in certain countries. Indonesia emerges as the country with the highest number of publications, namely 182 documents with 5,277 citations, placing it as the main center of research on this topic. It is followed by Australia with 150 documents and 5,273 citations, and Canada with 109 documents and 2,966 citations, indicating the active involvement and significant contribution of countries in the southern and northern hemispheres. The United States, which usually dominates in many academic fields, is not explicitly recorded in this visual data, or is possibly included in the "unknown" category along with 32 other entities that are not identified in the country mapping. This is an important note that a number of contributions may come from affiliations that have not been classified geographically.

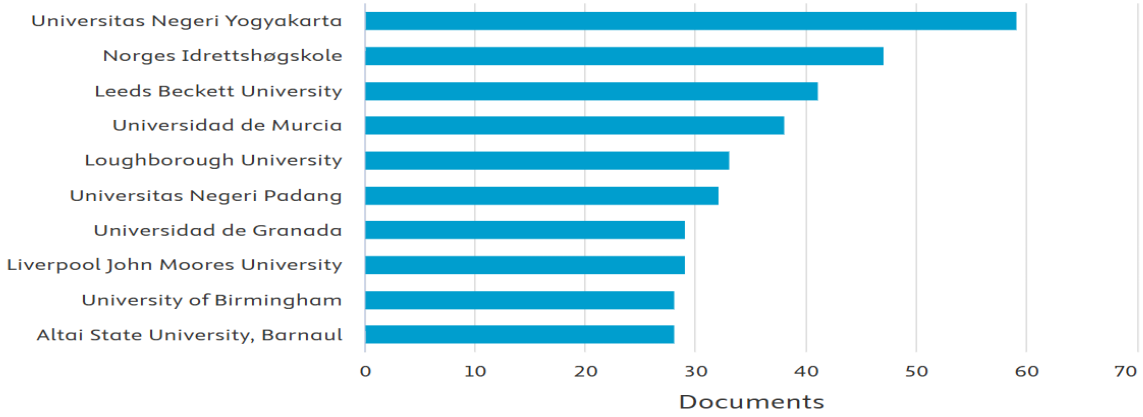
Countries such as Brazil and India also showed considerable involvement. Brazil has 140 documents with 1,249 citations, while India has 19 documents and 134 citations. However, contributions from European countries such as the Russian Federation (69 documents, 376

citations) and Japan (54 documents, 471 citations) also play an important role in expanding the network and wealth of global literature on this topic. South Africa, as a representative of the African region, contributed 27 documents with 202 citations, reflecting moderate but potential involvement in the development of sports psychology research. Several countries such as Iceland (2 documents, 37 citations), Oman and Kenya (2 documents each), and Cameroon and Reunion (1 document each) show more limited participation.

Overall, a total of 206 countries or entities contributed 3,597 documents and 58,368 citations in total. The average number of publications per country is around 30 documents, with an average of 490.49 citations. This shows that despite significant differences in publication volume between countries, many countries have a substantial academic impact through high citations. From this perspective, the map confirms that research on sport as a school for life in team sports has become a global topic studied across countries, with contributions predominantly coming from Southeast Asia (particularly Indonesia), Australia, and several countries in Europe and North America. This distribution indicates a pattern of widespread collaboration and expertise, while highlighting the potential for greater international cooperation in the future.



Graph 3. Distribution of Publications by Country



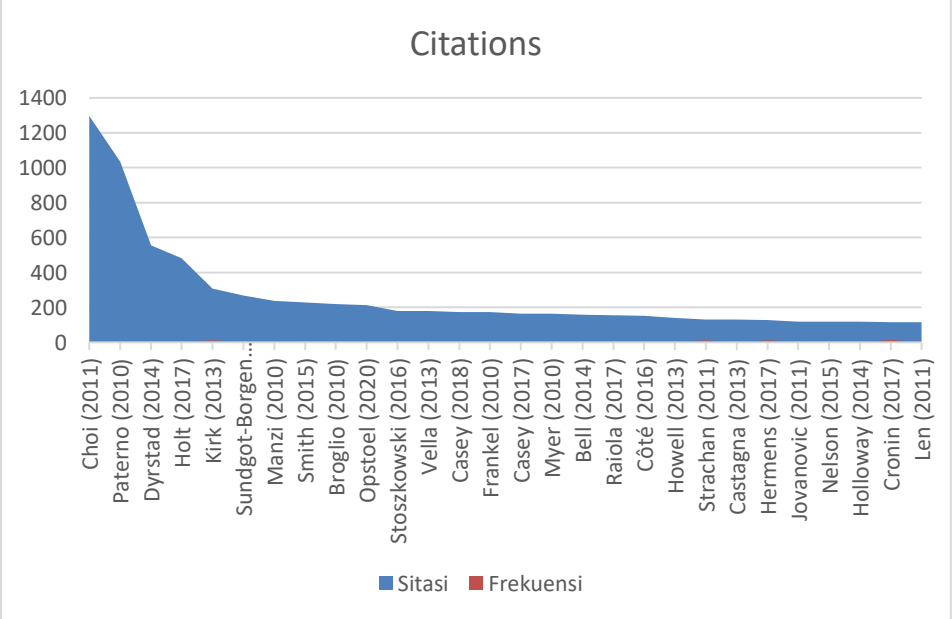
Graph 4. Affiliations Based On The Most Documents

Most Documents by Affiliation

The table above shows the distribution of scientific documents originating from the top ten higher education institutions contributing to related fields of study. Based on the graph, Universitas Negeri Yogyakarta ranks first as the institution with the highest number of documents, reaching nearly 60 documents. This figure shows that Yogyakarta State University has high productivity in producing scientific works, particularly in the fields of physical education, sports, and life skills development. Second place is occupied by Norges Idrettshøgskole (Norwegian School of Sport Sciences) with around 47 documents, followed by Leeds Beckett University, which produced around 41 documents. Meanwhile, the University of Murcia is in fourth place with 39 documents, and Loughborough University follows in fifth place with around 35 documents.

In sixth place, Universitas Negeri Padang demonstrates a significant contribution with approximately 33 documents, indicating that this institution is also active in research relevant to the studied topic. Furthermore, Universidad de Granada, Liverpool John Moores University, University of Birmingham, and Altai State University, Barnaul each contribute within the range of 28 to 30 documents. Overall, this data shows that scientific publications in the studied field are not only dominated by institutions from Western Europe but also involve important contributions from Indonesian universities such as Universitas Negeri Yogyakarta and Universitas Negeri Padang. This reflects the active engagement and strong academic awareness of Indonesian institutions in advancing scientific knowledge at the international level.

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Graph 5. Most Cited Documents Globally

Table 5 shows a list of authors whose scientific works are most influential based on two main indicators, namely the number of citations and frequency of appearance in the analyzed documents. The data shows that (Choi, 2011) is the author with the highest number of citations, namely 1,297 citations, and appears in five documents that are part of this study. This shows that Choi's work not only has a major academic influence at the global level, but is also relevant in the context of the study conducted.

Meanwhile, (Kirk, 2013) stands out with the highest frequency of appearance, appearing in 12 documents, although the number of citations (309) is not as high as Choi. This indicates that Kirk's work is widely referenced in the analyzed studies, particularly because it likely focuses on themes that are highly relevant to the study topic, such as physical education or life skills development. (Hermens et al., 2017) and (Cronin & Allen, 2017) also have high frequencies of appearance, 13 and 14 respectively, although their citations are lower than other authors such as Paterno or Dyrstad. This may indicate that although their works have not been published for very long, they have been widely used in recent research documents. Several other authors, such as, also show a balanced combination of citation counts and frequency of appearance, reflecting their important contributions to the development of theory and practice in the field under study (Manzi et al., 2010; Opstoel et al., 2020; Raiola1, 2017) . On the other hand, there are also a number of authors with a high number of citations but who do not appear in many documents, such as (Dyrstad et al., 2014; Paterno et al., 2010), which may be due to contextual incompatibility or different study focuses.

In general, this data shows that the influence of a work is not only determined by the number of citations it receives, but also by its thematic relevance to a particular field or topic of study. Works that appear frequently in research documents demonstrate their actual significance in the development of scientific discourse, while works that are highly cited but rarely appear are likely to be more general in nature or global in scale. The combination of frequency and citations is an important indicator in understanding the author's contribution to the field of study as a whole.

Results Of Bibliometric Analysis

Activity Indicators

Based on the overall trends shown, there has been a significant increase in the number of publications discussing character education and life skills through team sports during the period from 2010 to early 2025. The most notable surge in publications began in 2019, indicating increased attention to the contribution of team sports in shaping life values. In 2020, the number of publications reached around 210, then increased sharply to nearly 290 in 2021, remained stable in 2022, and rose again in 2023 to peak in 2024 with more than 360 publications. Although the data for 2025 only covers up to February, the number of publications has already exceeded 100, indicating a trend that is likely to continue.

The year 2024 was recorded as the most productive period in the last decade, demonstrating a high level of academic interest in the role of sports as a vehicle for teaching values. More than 20 journals actively published at least five articles related to this theme. This reinforces the argument that team sports are not only important in the context of physical performance, but also as a strategic medium for character building and strengthening soft skills. In general, this trend shows that team sports have evolved into a powerful arena for social learning. Increasing research confirms that sports are not merely physical activities, but can also serve as an effective “school of life” for instilling values, building character, and fostering essential life skills for the younger generation.

Co-citation analysis

A bibliometric analysis was conducted on 2,590 documents obtained from the Scopus database, focusing on the topics of character education and life skills through team sports. From a total of 12,852 initial documents, 127 articles were identified as highly relevant and were used as the basis for citation analysis. Based on co-citation mapping and citation density using VOSviewer software, the three most frequently cited articles that hold a central position in the literature network are (Kee & John Wang, 2008; Opstoel et al., 2020; Schunk, 1995), occupying the core of

citations due to its contribution to motivation theory in the context of sports psychology. Of the 3,109 journal sources reviewed, 26 journals recorded more than 40 related publications. The five journals with the highest number of citations are the Journal of Applied Sport Psychology (260 citations), European Physical Education Review (176 citations), Psychology of Sport and Exercise (171 citations), Journal of Business Ethics (142 citations), and Journal of Sport and Exercise Psychology (140 citations). This indicates that publications on psychological strategies in sports are highly concentrated in journals oriented toward sports psychology and management.

Of the 5,702 authors cited in this study, only 26 authors had more than 10 citations. Seven of them had high connection intensity and relevance in the collaborative network. The authors who made the most notable contributions in terms of number of publications, citations, and network strength include Hardy, Lew (150 documents, 8,002 citations), Theodorakis, Yannis (136 documents, 3,427 citations), and Swann, Christian (105 documents, 3,488 citations). These findings reinforce their role as central figures in the development of sports psychology and character education discourse through team activities.

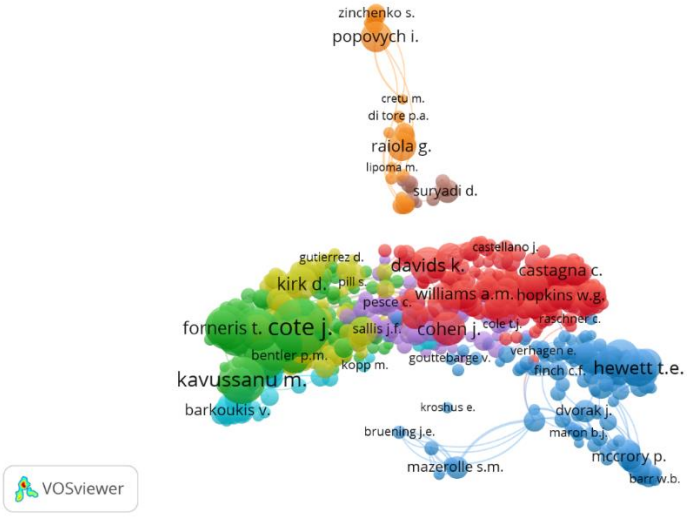


Figure 5. CO-citations_cited authors

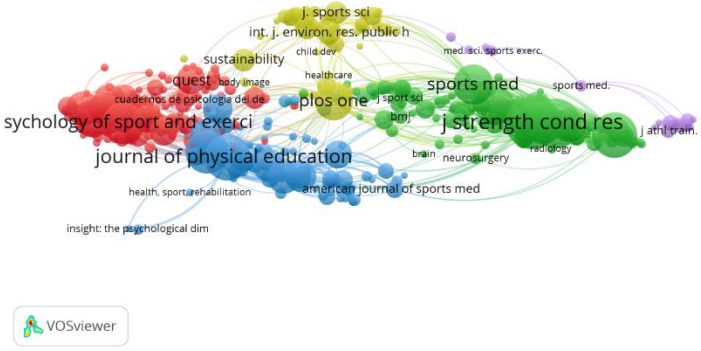


Figure 6. CO-citations_cited sources

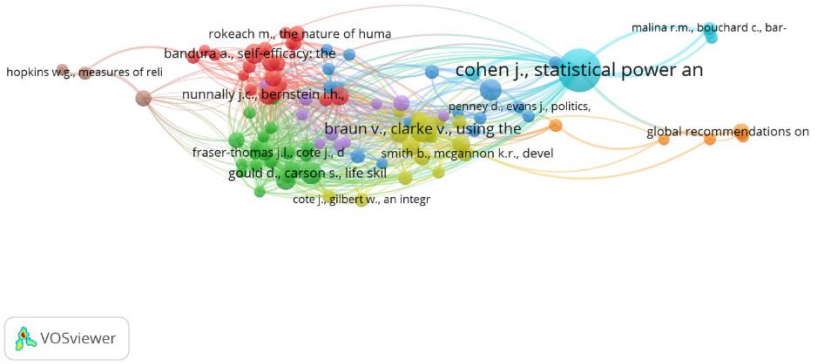


Figure 7. CO-citations_refreensis

Bibliographic coupling

We conducted a bibliographic coupling analysis of 2,590 documents with similar references, with the aim of identifying conceptual structures and interrelationships between literature in the study of character education and life skills through team sports. The visualization produced using VOSviewer software shows interconnected bibliographic networks, indicating strong relationships between articles, which form a solid and well-organized knowledge structure.

In this visualization, the Journal of Physical Education and Sport emerges as the dominant node with the highest number of publications (200 articles), demonstrating its central role in the dissemination and development of academic discourse on this topic. Other journals are divided into various thematic clusters, including clusters that emphasize physical strengthening, psychosocial interventions, and interdisciplinary educational approaches.

The cluster structure that has been formed shows that character education through sports does not stand alone, but intersects with the fields of psychology, health sciences, and other social sciences. This reflects the integration of a multidisciplinary scientific approach in understanding behavioral dynamics, value formation, and the development of students' social skills in the context of team sports activities.

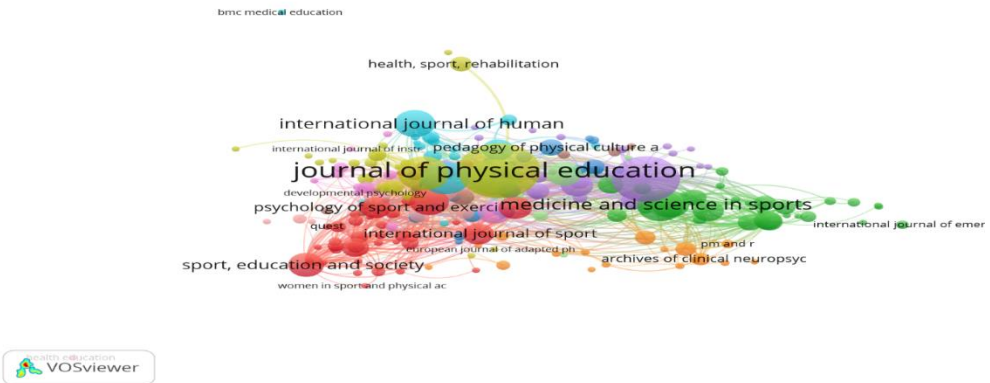


Figure 8. Bibliographic coupling_source

Keywords analysis

Keyword analysis is performed by extracting all keywords from the collection of documents being analyzed. This process includes removing duplicates, standardizing spelling, and selecting keywords that appear at least four times. Of the total 1,057 keywords identified, 32 keywords met the criteria and were further analyzed using VOSviewer software, as visualized in Figure 8.

The visualization displays a map of keyword co-existence in the form of a network divided into several clusters based on their relevance. These clusters are marked with different colors that reflect the dominant themes in scientific studies:

- **The red cluster** focuses on keywords such as football, performance, strength, heart rate, and assessment, reflecting studies related to physical performance, fitness measurement, and high-intensity training in team sports.
- **The green cluster** groups topics such as athletes, adolescents, return to sport, knee, hip, and fatigue, indicating a focus on health, rehabilitation, and the impact of sports on adolescents.
- **The blue cluster** covers the themes of mental health, stress, morality, social class, and diversity, emphasizing psychosocial dimensions and values in character education through sports.
- **The purple cluster** represents areas such as the COVID-19 pandemic, young people, sustainability, and lifestyle, which show contextual responses to global issues and sustainable development.
- **The yellow cluster** displays keywords such as curriculum, high school, support, and enjoyment, which are closely related to physical education in formal institutions and enjoyable learning experiences.

The most dominant keywords in terms of frequency include physical education, sport, football, performance, and mental health. The relationship between keywords shows that research in this domain consistently associates sports not only as physical activity, but also as a medium for character building, improving mental health, and strengthening social values in children and adolescents. The structure of this keyword network shows that this field of study has a strong interdisciplinary approach, with close connections between physiological, psychological, social, and pedagogical aspects, reflecting the complexity and relevance of character education through sports in an ever-evolving global context.

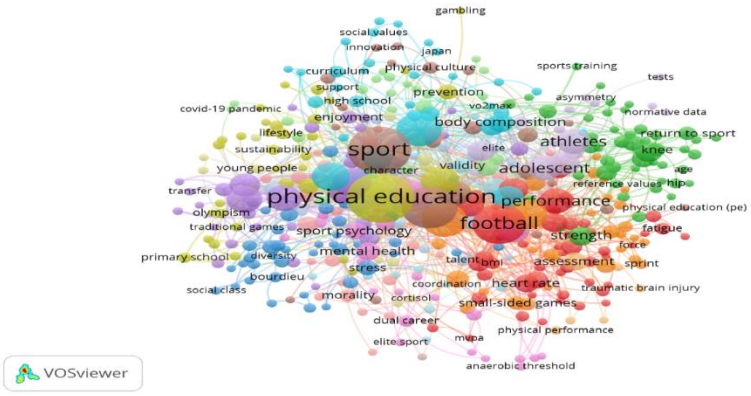


Figure 9.Co-occurrence_author keyword_Network Visualization

Productivity mapping of items by country

Geographically, the United States is the country with the highest number of publications in this study, with 130 documents and 2,828 citations, making it the main center of this study. The United Kingdom ranks second with 82 documents and 2,731 citations, demonstrating significant academic impact. Australia and Canada also contributed significantly with 36 and 33 publications and 871 and 862 citations, respectively. Although their number of publications is smaller than that of the United States and the United Kingdom, their academic influence remains high. On the other hand, countries such as Greece and Spain have lower productivity, with 11 and 15 documents, respectively, but still make important contributions to this study. In terms of academic collaboration, the United States and the United Kingdom have strong cooperation networks with a total link strength of 123 and 121, respectively, while Brazil, Mexico, and Portugal have more limited involvement in global research on sport as a school for life in team sports.

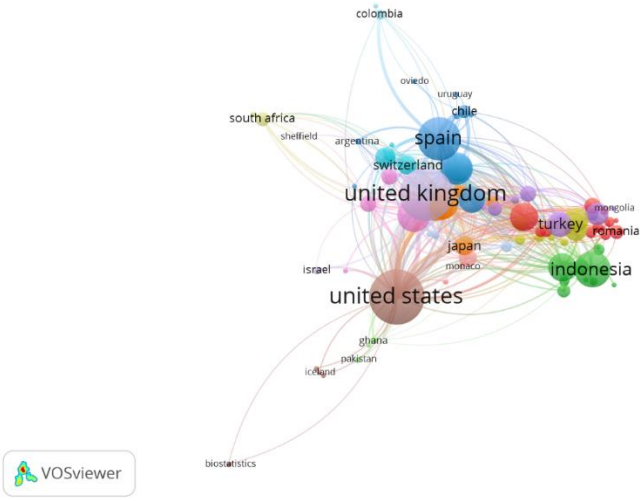


Figure 10. Co-Author_Country_Network Visualitation

Mapping of inter-country collaboration

Analysis of International Collaboration by Country

The visualization image generated using **VOSviewer** software shows a map of international collaboration networks in scientific publications discussing character education and life skills through team sports. Each node (circle) represents a country, where the size of the circle reflects the number of publications, while the lines connecting the nodes indicate the intensity of scientific collaboration between countries.

Key Findings:

- **The United States** emerged as the largest node, indicating that this country is a dominant contributor to global literature and has an extensive network of collaborations with various countries on all continents. Collaborative relationships appear to be particularly strong with the **United Kingdom, Japan, Turkey, Indonesia, and Spain.**
- **The United Kingdom** is also a major hub with an important role in connecting collaboration between Western Europe (such as Switzerland and Spain) with Asia and Oceania.
- **Spain, Turkey, and Japan** occupy central positions in their respective clusters, with active involvement in global networks. Spain, in particular, appears to be a focal point for

collaboration in Southern Europe and Latin America (for example, with Chile, Uruguay, and Argentina).

- **Indonesia** has emerged as one of the Southeast Asian countries making a significant contribution, as seen from the size of its nodes and the number of connections with countries such as Turkey, Japan, and the United States. This indicates promising growth in research capacity and international collaboration.
- Countries such as **Switzerland, South Africa, Colombia, and Ghana** are also part of the network despite being in smaller collaboration circles, demonstrating widespread internationalization of research efforts across geographical areas.

Table 4. Cluster

Cluster Color	Region/Country	Main Characteristics
Red	Romania, Mongolia, Turkey (Eastern Europe and Central Asia)	Cross-border transition collaboration with a focus on social and cultural integration
Green	Indonesia, Malaysia, the Philippines, Vietnam (Southeast Asia) and several developing countries	Focus on the implementation of character education in the context of the school curriculum
Blue	Spain, Italy, France, Brazil, Argentina (Western Europe & Latin America)	Culturally-based pedagogical approach and life skills in team sports
Brown	The United States and its global collaborators across continents	The dominance of conceptual research and evidence-based intervention models

Discussion

Most Productive Authors and Journals in Character Education and Life Skills Studies through Team Sports (2010–2025)

Between 2010 and 2025, scientific literature on character education and life skills through team sports showed very dynamic development. Through a bibliometric approach conducted on 2,590 documents obtained from the Scopus database, it is clear that there are several key actors who play a significant role in generating and disseminating knowledge in this field, both in terms of individual authors and academic publication channels.

In terms of publication channels, the Journal of Physical Education and Sport ranks first as the most productive journal in publishing articles related to this theme. With a total of 200 publications during that period, this journal is not only a primary source of academic reference, but also a strategic platform for researchers from various countries to publish their studies on the integration of values education through team sports activities. This journal shows a consistent focus on the development of physical learning and the role of sports in shaping the moral, social, and psychological aspects of students.

In addition, journals such as the Journal of Strength and Conditioning Research, Journal of Human Sport and Exercise, and Frontiers in Psychology also rank high in terms of publication productivity. For example, the Journal of Strength and Conditioning Research recorded 140 publications, showing that issues related to physical strengthening and sports training programs are also often linked to the character development of students. Meanwhile, Frontiers in

Psychology, with 78 articles, confirms that the psychological aspects of team sports such as building self-confidence, empathy, and cooperation—also receive considerable attention in the global scientific community. This indicates that the issue of character education and life skills through sports is not only studied from a pedagogical perspective but also involves interdisciplinary approaches such as psychology, sociology, and health sciences.

From an individual researcher perspective, Elena Romanova emerged as the most prolific author with a total of 20 publications. She was followed by Mikhail Kolokoltsev and Anton Vorozheikin, who each contributed 19 publications. All three seem to have a fairly intense research focus on the theme of character development through the context of team sports. However, when viewed from the perspective of academic influence through the number of citations, Jean Côté stands out significantly despite having written only 17 documents. His work has received more than 1,300 citations, making him a central figure whose contributions are highly recognized in the development of both the theory and practice of character education through sports.

A similar pattern can be seen in names such as Kevin Till and Ihor Popovych, who, despite having fewer publications than other authors, have a high number of citations. This shows that in this field, the quantity of publications is not always the main measure of scientific influence. Instead, thematic relevance, novelty of approach, and the applicability of research are more decisive in determining the extent to which a work becomes a key reference in global academic literature.

From the perspective of collaborative networks and institutional affiliations, Universitas Negeri Yogyakarta (UNY) in Indonesia has emerged as the institution with the highest publication contribution. Its dominant position among international institutions such as the Norwegian School of Sport Sciences and Leeds Beckett University demonstrates Indonesia's active involvement and increasing academic visibility in the global discourse on character education through sports. This fact reinforces the assumption that this topic is not only the domain of Western countries, but is also developing rapidly in developing countries that are strengthening their value-based education systems.

By combining productivity data from both individuals and journals, as well as its scientific influence in the academic community, it can be concluded that research on character education and life skills through team sports has formed a rich and diverse scientific network. The most active authors and leading journals mentioned above, together with their home institutions, play an important role in shaping a global discourse that is not only theoretical but also practical and relevant to the educational needs of the 21st century.

Main Focus in Character Education and Life Skills Studies Through Team Sports

Research on character education and life skills through team sports has grown rapidly in the last two decades, along with increasing attention to the importance of values education outside the formal classroom. Through a bibliometric analysis of 2,590 documents curated from the Scopus database, this study reveals three important aspects that shape the global literature landscape in this field, namely the main themes raised in publications, the countries with the most publication contributions, and the keywords most frequently used by authors.

Thematic analysis of the literature reveals a diversity of issues grouped into five main clusters. First, the cluster focusing on physical performance and fitness measurement, such as football, performance, strength, and assessment, shows that the physical aspects of sport remain the starting point for character building, particularly in relation to discipline, perseverance, and individual responsibility. Second, the cluster centered on issues of athlete health and recovery,

including keywords such as adolescent, return to sport, and fatigue, indicates a high level of concern for the sustainability of sports participation as part of a healthy lifestyle that shapes character.

The third topic that emerged strongly was character education in the psychosocial realm, with keywords such as mental health, morality, social class, and diversity dominating. This cluster shows that team sports not only shape personal values but also open up space for dialogue about social justice, inclusion, and identity development. Fourth, the emergence of clusters related to global issues and responses to crises, such as the COVID-19 pandemic, sustainability, and young people, demonstrates the adaptability of the educational approach through sports to contemporary challenges. Fifth, clusters that raise issues of curriculum and learning in formal institutions, such as curriculum, high school, and support, prove that the integration of life values into physical education has become an important agenda in 21st-century school education.

Geographically, the distribution map of publications shows that contributions to this study are global in nature, with a dominance from several major countries. **Indonesia** is recorded as the country with the highest publication contribution, namely 182 documents and more than 5,200 citations, reflecting the high level of academic interest and participation in the development of character education through sports, especially in the Southeast Asian region. This contribution is reinforced by institutions such as Universitas Negeri Yogyakarta and Universitas Negeri Padang, which consistently publish scientific works in this field. Next in line are **Australia** and **Canada**, which contributed 150 and 109 publications, respectively, demonstrating academic leadership in the Oceania and North America regions.

Other countries that consistently engage in publishing include **Brazil**, **India**, **the Russian Federation**, and **Japan**. Their contributions are not only evident in the volume of publications, but also in citation impact, reflecting that research results from these countries are important references in the global academic community. Conversely, although countries such as the United States are generally very dominant in the academic field, in the context of this study, their contributions are not always explicitly recorded in the geographical visualization most likely categorized as “unknown” due to institutional affiliations that are not classified geographically.

The author's keyword analysis reinforces the identification of the main themes in this study. Keywords such as physical education, sport, football, performance, and mental health appear as the most frequently used terms, indicating a direct link between team sports and affective and social learning oriented towards character building. The coexistence of these keywords forms an interconnected thematic structure, indicating a synergy between pedagogical, psychological, and physiological approaches in shaping resilient, collaborative, and responsible student profiles.

The findings from this analysis overall show that character education through team sports has become a field of study that is thematically rich, geographically broad, and methodologically complex. The main topics raised reflect the need for values education that is relevant to the challenges of the times, while the involvement of various countries, particularly from Southeast Asia and Europe, shows that universal educational values such as empathy, cooperation, and leadership can be built through cross-cultural team sports experiences. With an increasingly interdisciplinary approach, research in this field not only enriches physical education theory but also strengthens the foundation for social transformation through contextual and applicable values education.

Bibliometric Mapping in Character Education and Life Skills Research through Team Sports

In an effort to map and understand the scientific landscape of character education and life skills through team sports, the bibliometric approach provides a powerful analytical tool. Using tools such as VOSviewer and Tableau, this study successfully visualized the conceptual structure, intellectual networks, and social collaborations that shaped and developed this study globally between 2010 and 2025.

Structure: Thematic Clusters and Keyword Relationships

Keyword analysis of 2,590 documents revealed five main clusters reflecting the conceptual structure of the literature. Each cluster was identified through keyword co-occurrence, which formed a semantic network and described the interrelationships between dominant ideas in this study.

- **The red cluster** contains themes related to physical performance such as football, strength, heart rate, and assessment. This shows that team sports are not only valued for their social aspects, but also as a context for developing physical qualities that support character building, such as endurance and discipline.
- **The blue cluster** addresses affective and social issues such as mental health, morality, diversity, and social class. This illustrates the psychosocial dimension of character education namely, the importance of inclusion, social awareness, and empathy in team-based learning.
- **The green cluster** focuses on athlete and youth health issues (adolescent, return to sport, fatigue), which highlights the correlation between physical endurance and character building, especially during growth.
- **The purple cluster** emerged as a response to contemporary global issues, such as the Covid-19 pandemic, sustainability, and lifestyle, indicating that this literature is also responsive to the challenges of the times.
- **The yellow cluster** displays the themes of curriculum, high school, and support, indicating that team sports have been integrated into the context of formal education as a value learning strategy.

Overall, this concept map shows that an interdisciplinary approach dominates the conceptual structure of this field. Research combines physiological, psychological, social, and pedagogical elements to form a solid theoretical foundation for physical activity-based character education.

Intellectual Structure: Co-citation and Bibliographic Coupling

The intellectual structure of this field is analyzed through co-citation and bibliographic coupling techniques, which allow the identification of seminal works and inter-author linkages of thought.

- **Co-citation** analysis shows that articles such as (Kee & John Wang, 2008; Opstoel et al., 2020; Schunk, 1995) are central to citations, indicating that motivation theory, sport pedagogy, and educational psychology approaches are the intellectual pillars of the field. These articles are consistently cited in various studies for their contributions to understanding the role of sport in personal and social development.
- **Bibliographic coupling** reveals relationships between documents that share similar references. Visualizations from VOSviewer show clusters of closely related articles, with the Journal of Physical Education and Sport as the dominant node. These clusters indicate a focus on three

broad domains: improving fitness and athletic performance, social-emotional interventions in education, and integrating life skills curricula into physical education.

Jaringan ini menggarisbawahi pentingnya teori pedagogi olahraga berbasis karakter seperti Teaching Personal and Social Responsibility (TPSR) dan Sport-Based Youth Development (SBYD) sebagai kerangka kerja konseptual yang digunakan luas dalam studi-studi global.

Social Structure: Collaboration between Authors and Countries

The social structure in this study is visualized through an analysis of author collaborations and inter-country networks. The co-author country map shows that the United States, the United Kingdom, and Indonesia are the most active collaborative nodes, with numerous connections to other countries.

- **The United States** emerges as the largest node, not only in terms of the number of publications but also in terms of the intensity of collaboration, with close links to Japan, Turkey, and Indonesia.
- **The United Kingdom** serves as a key link between Europe and Asia, while Indonesia shows significant collaborative growth in Southeast Asia, confirming its position as an increasingly active academic actor in this field.
- The colors and shapes in the network indicate geographic clusters such as Europe–Central Asia, Southeast Asia, and Latin America, each forming a regional collaborative group that mutually reinforces global contributions.

This collaboration is crucial for strengthening scientific networks and exchanging contextual approaches, particularly in the implementation of sports-based character education across cultures and educational systems. Bibliometric maps and thematic visualizations demonstrate that the field of character education and life skills through team sports has evolved into a multidimensional field of study. Its conceptual structure is divided into several clusters emphasizing performance, psychosocial issues, curriculum, and responses to global issues. Its intellectual structure rests on motivational theory, social pedagogical approaches, and the integration of values through sports practices. Meanwhile, its social structure demonstrates a strong global collaborative network, with centers of scientific activity spread across various continents.

Thus, research in this area not only addresses the need for character education theoretically, but also strengthens the international collaborative infrastructure to encourage the implementation of adaptive, contextual, and evidence-based values education.

CONCLUSIONS

This study provides a comprehensive overview of global trends in the study of character education and life skills through team sports from 2010 to 2025. Using a bibliometric approach to 2,590 documents from the Scopus database, it was found that this topic has experienced a significant increase in the number of publications and multidisciplinary coverage, particularly since 2019. Key findings indicate that team sports have developed into a strategic medium for learning life values such as empathy, responsibility, cooperation, and resilience. This is reflected in the emergence of five main thematic clusters: physical performance, adolescent health and rehabilitation, psychosocial issues, responses to global issues (e.g., the COVID-19 pandemic and sustainability), and integration into formal education curricula. Geographically, Indonesia, Australia, and Canada lead the way in contributing publications, with Yogyakarta State University

being the most productive institution. Strong global collaborative networks, particularly between the United States, the United Kingdom, and Asian countries, strengthen the social foundation of this field.

An analysis of intellectual structures identifies seminal works such as as pillars of motivational theory and pedagogy in sports education. Meanwhile, the Journal of Physical Education and Sport is the most dominant publication channel for disseminating research findings in this field (Opstoel et al., 2020; Schunk, 1995). By combining physiological, psychological, social, and pedagogical perspectives, this study confirms that team sports are not merely physical activities but also effective and adaptive vehicles for character education to meet the challenges of the 21st century. This study also recommends strengthening evidence-based approaches and international collaboration as strategies for developing more inclusive, contextual, and sustainable character education policies and practices through sports.

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