

Coach-athlete relationship and athlete mental health: 30 years of bibliometric mapping using VOSViewer

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ABSTRACT

This study employed a bibliometric analysis to examine and visualize the literature on coach-athlete relationships and athlete mental health from over the past 30 years using VOSViewer Software. The study identified the primary authors and countries/regions that contribute to this literature, with the United States being the leading contributor in research productivity. Scientific collaboration tends to be more prevalent among academics from nations or regions with shared cultures, languages, and histories. Co-citation analysis revealed the intellectual structure of the topic, highlighting major clusters of interrelated journals. There are multiple research topics that are categorized in these groups, such as the coach-athlete relationship and athlete mental health. These findings not only enhance our understanding of the development and effectiveness of the coach-athlete relationship and athlete mental health but also contribute to the advancement of sports science. The results can inform the development of improved training policies, enhanced training methods to support athletes' mental well-being, and innovative evidence-based approaches to mental health management. Therefore, this study is highly beneficial for coaches, sports practitioners, and researchers in optimizing the coach-athlete relationship and athlete psychological well-being.

KEYWORDS

Coach-Athlete Relationship; Sports; Coaches; Athletes; Mental Health

1. INTRODUCTION

Mental health is fundamental for athletes to reach peak performance, which necessitates a balance between physical and mental well-being (Habay et al., 2021; Kröhler & Berti, 2019; Pujalte et al., 2019). Athletes have been reported to experience symptoms of depression, anxiety, and psychological stress, according to research conducted by Beisecker et al. (2024); Geiger et al. (2023);

Lumba-Brown et al. (2023). Mental health difficulties have been a subject of research and discussion in sports psychology for many years (Reardon & Hitchcock, 2024; Walton et al., 2024). Positive mental health in sports has a significant impact on athletic performance, as well as general well-being, job satisfaction, and career longevity (Henriksen et al., 2020; Lundqvist, 2020; Lundqvist & Andersson, 2021; Martín-Rodríguez et al., 2024; Sivaramakrishnan et al., 2024). The significance of mental health for athletes has garnered increasing attention due to the intense competition and rigorous expectations in professional sports. Athletes have become increasingly aware of mental health issues, driven by greater advocacy, media coverage, and institutional support.

It is an increasingly significant subject in the sports science. This emphasises the significance of coaches and team doctors in recognizing and addressing with these concerns to reduce stigma associated with mental health issues and offer athletes accessible and effective mental health support (Baumann et al., 2024; Beisecker et al., 2024).

A positive coach-athlete relationship is essential to align with basic psychological needs, which in turn affects sport performance and personal development (Ai & Wang, 2024; Camiré et al., 2019). Quality of communication, trust, and shared goals are components that create an environment where athletes feel supported and motivated to progress. Good coach-athlete interactions increase athletes' intrinsic motivation and resilience, which results in improved performance and emotional well-being (Chu & Zhang, 2019; Fan et al., 2023).

The interaction between coach and athlete significantly influences the mental health of athletes. The coach-athlete relationship is crucial for the development and achievements of athletes in sports, since athletes depend on their coaches for technical, tactical, and personal support (Shanmuganathan-Felton et al., 2022). Numerous studies have highlighted the benefits of a positive, harmonious, and stable relationship between coaches and athletes, such as enhanced performance in training and competition, increased confidence, motivation, and athlete well-being (Davis et al., 2023; Gabana et al., 2022; Jowett, 2017). Some research has indicated that a negative coach-athlete relationship, characterized conflict and lack of harmony, can affect the mental well-being of athletes (Gu et al., 2023; Thelwell et al., 2017). In line with these findings, this study aims to answer the central question: how has the scientific literature developed regarding the coach-athlete relationship and athlete mental health? Specifically, this study tests the hypothesis that previous scientific studies have demonstrated patterns of association between the theme of the coach-athlete relationship and athlete mental well-being. Employing the Bibliometric analysis using VOSviewer, this study identifies key concepts, publication trends, and the intellectual structure underlying this field. This

study also assess the potential implications on coaching policies and the management of athlete mental health.

Interactions between coaches and athletes can significantly impact the athlete's mental health, either positively or negatively. Conflict, disharmony, and tension in the coach-athlete relationship may negatively influence athletes' mental health, contributing to stress, dissatisfaction, and decreased motivation. Over the past three decades, a number of theoretical frameworks have been developed to describe the dynamics of the coach-athlete relationship and how it affects both psychological health and athletic performance. The most frequently mentioned model is the 3C model (Closeness, Commitment, and Complementarity) created by Jowett (2003). This model highlights the significance of role congruence, emotional intimacy, and sustained dedication. Self-Determination Theory (Ryan & Deci, 2000) is frequently cited as the rationale for the motivational benefits and the overall well-being of athletes whose relationships to others are more autonomous. Numerous studies suggest a change from an authoritative coaching style to a positive coaching style that relies on psychology where the coach functions as a mentor who helps the athlete develop mental and emotional self-regulation and wellness skills alongside teaching technical skills (Gabana et al., 2022). This approach has been criticized because research has indicated that in certain circumstances, using the model too loosely can result in less structure and discipline in training (Thelwell et al., 2017). As a result, this study explores how different theories have impacted athletes' training regimens and approaches to mental health management in addition to concentrating on the quantitative trends identified in the literature.

Coaches help athletes by advising them on how to deal with stress, mental problems, and life circumstances during sports training and competitions. Attention to the mental health of athletes contributes to a better social climate (Wachsmuth et al., 2017). Coaches' behavior, according to (Rocchi & Pelletier, 2018) significantly affects the psychological and social needs of athletes in sports. To make this point, the authors also made an extensive effort to consolidate the various aspects of the coach-athlete relationship and mental health by reviewing the existing literature, and giving the theoretical foundation and structure of the field. These notable contributions include study by (Frost et al., 2024; Srinivasa Gopalan et al., 2024; McShan & Moore, 2023; Shalaby & Agyapong, 2020). A bibliometric review offers a valuable analysis of the intellectual framework of a research issue, including potential future developments in the field (Donthu et al., 2021). Compared to general literature reviews, bibliometric study offers more objective and complete results (Gaviria-Marin, 2021). Bibliometric research has also been applied in the sports domain, as shown by (Kim & Cruz,

2021; González-Serrano et al., 2020; Huertas González-Serrano et al., 2020; Varea-Calero et al., 2025; Hammerschmidt et al., 2024). However, no existing bibliometric study has specifically examined the influence of the coach-athlete relationship on athletes' mental health.

This study uses bibliometric indicators to study the publishing, citation and key authors, research locations, coach-athlete relationship and mental health research. This analysis helps to evaluate the progress of the subject. The literature review comprises basic concepts and typical research questions concerning patterns of scientific partnership. To analyze the progress and problems in this field, one should consider the coach-athlete relationship and athlete mental health. This approach helps to guide the scholarly attention to specific areas, populations and circumstances that need further exploration in policy, research and practice. This study aims to investigate the research on the coach-athlete relationship and mental health from 1993 and 2023, considering its complexity and the different theoretical and contextual perspectives. The study aims to provide new insights into how the relationship between coach and athlete influences athletes' mental well-being. The analysis examines and visually displays literature over the past three decades on the subject's development, effectiveness, and underlying social, intellectual, and philosophical frameworks. This study illustrates the development of research on the coach-athlete relationship and its effect on athlete mental health by examining publication and citation data from 1993 to 2023.

The research presents the study on the most influencing journals and research topics in the field. The work points out the leading authors and countries which are prominent in the process of creation and dissemination of the knowledge related to mental health and well-being among university students, with a particular focus on research productivity. The study outlines a network of scientific collaboration between institutions and researchers, illustrating social structures. It also identifies the academic disciplines that serve as the conceptual foundation for studying mental health and well-being in higher education. Furthermore, the paper examines the primary research themes concerning the relationship between coaches and athletes and the mental health of athletes over the past three decades.

The study aims to comprehensively investigate impact the coach-athlete relationship affects athletes' mental health by analysing performance metric and constructing empirical maps, incorporating both quantitative and qualitative aspects. The study will analyze articles published in journals indexed in Scopus, a widely recognized and comprehensive scientific database (Baas et al., 2020; Zhu & Liu, 2020). The analysis will include the publication variables such year, author, paper title, journal title, author's affiliation, and research country. The reference dataset will cover all works

published between 1993 and 2023 in the Scopus database.

2. METHODS

This study employed a bibliometric technique to analyse the literature on coach-athlete relationships and athlete mental health over the past 30 years by extracting data from Scopus. Scopus is a comprehensive database that contains abstracts and citations from scholarly journals, conference proceedings, and books on a global and regional scale. It offers high-quality bibliometric data for academic research and offers analytical tools comparable to those popular databases like the Web of Science (WoS). Scopus was selected for its broader journal coverage compared to WoS, resulting in access to more journals and references (Sauban Ghani, 2020). Approximately 84% of papers indexed in WoS papers are also available in Scopus. Since WoS has fewer registered journals than Scopus; therefore, opting for Scopus reduces the likelihood of overlooking a document during a literature search (Terán-Yépez et al., 2020). However, some studies suggest that combining multiple databases, such as Scopus and WoS, can enhance the comprehensiveness and accuracy of bibliometric analyses (Pech & Delgado, 2020). In this study, the academic representation of research that may only be available in WoS or other databases could be affected by the limitations of using a single database such as Scopus. VOSviewer and Scopus due to their reliability as tools for bibliometric analysis, data visualization, and citation metrics calculation in academic research (Arif et al., 2024). It is important to acknowledge that the results of this study may not capture the entire research landscape currently available. Future studies should consider integrating multiple databases to improve the validity and reliability of the bibliometric findings

Bibliometric analysis is a valuable method of evaluating scientific literature and identifying the influential works, authors, and institutions (Lazarides et al., 2023). Bibliometric analysis reveals the most important contributors in the publication of a particular area of research, emphasizing the new and growing areas (Donthu et al., 2021). Bibliometric analysis facilitates the identification on new research gaps, the impact of specific scientific contributors, and tracks the evolution of emerging topics in a particular discipline. Initially, terms for bibliographic search, descriptors, and synonyms in English linked to the research topic are identified. In the first category, the main keywords included “coach,” “mentor,” “trainer,” “athlete,” “player,” and “connection,” which resulted in 22,849 documents in the Scopus database. In the second category, the keywords “mental health,” and “emotion” resulted in 1,102,967 documents. To receive more accurate results, the two categories were combined using the Boolean operator AND, which resulted in a total of 1,755 relevant documents. This method ensures that the analysis will only include research related to the coach-

athlete relationship in terms of emotional well-being or mental health.

2.1. Searching Strategy

Two concurrent searches were conducted to compile extensive documents on coach-athlete relationship and mental health. The first search focused on gathering research about the coach-athlete relationship by identifying terms for bibliographic searches, descriptors, and synonyms in English associated to this research topic. The search query used was: [coach] OR [mentor] OR [trainer] AND [athlete*] OR [player] OR [connect*]. The second search aimed to gather research specifically on mental health subjects by identifying relevant phrases for bibliographic searches, descriptors, and synonyms in English relevant to this research area. The search query used was: ["mental health"] OR ["well-being"] OR [emotional]. The "AND" operator is used to search for links where both the first and second words of the keyword are present concurrently. The "OR" operator looks for links where any keywords are present to ensure more relevant clicks. Quotation marks (") are used to search for exact phrases containing two or more words. Furthermore, an asterisk (*) functions as a wildcard to represent variations in keywords, such as irregularity and irregularities.

The initial search method yielded 22,849 documents, while the subsequent search retrieved 1,102,967 documents. The query were then combine to generate the keywords [coach] or [mentor] OR [trainer] AND [athlete*] or [player] OR [connect*]] AND [["mental health"] OR ["well-being"] OR [emotional]] which resulted in a total of 1,755 relevant documents.

The search was limited to journal papers published from 1993 to 2023, yielding 1,726 items. The research was limited to studies published in English, yielding 1,621 items. A total of 1,281 document articles were chosen for study following additional refining. The metadata collected for each identified document, including the paper's title, publication year, journal, citation count, author's name, organization, and country for each document identified in the search. Furthermore, the title, abstract, author keywords, and references are included. The study's methodological approach is illustrated in Figure 1 and detailed in the subsequent paragraphs.

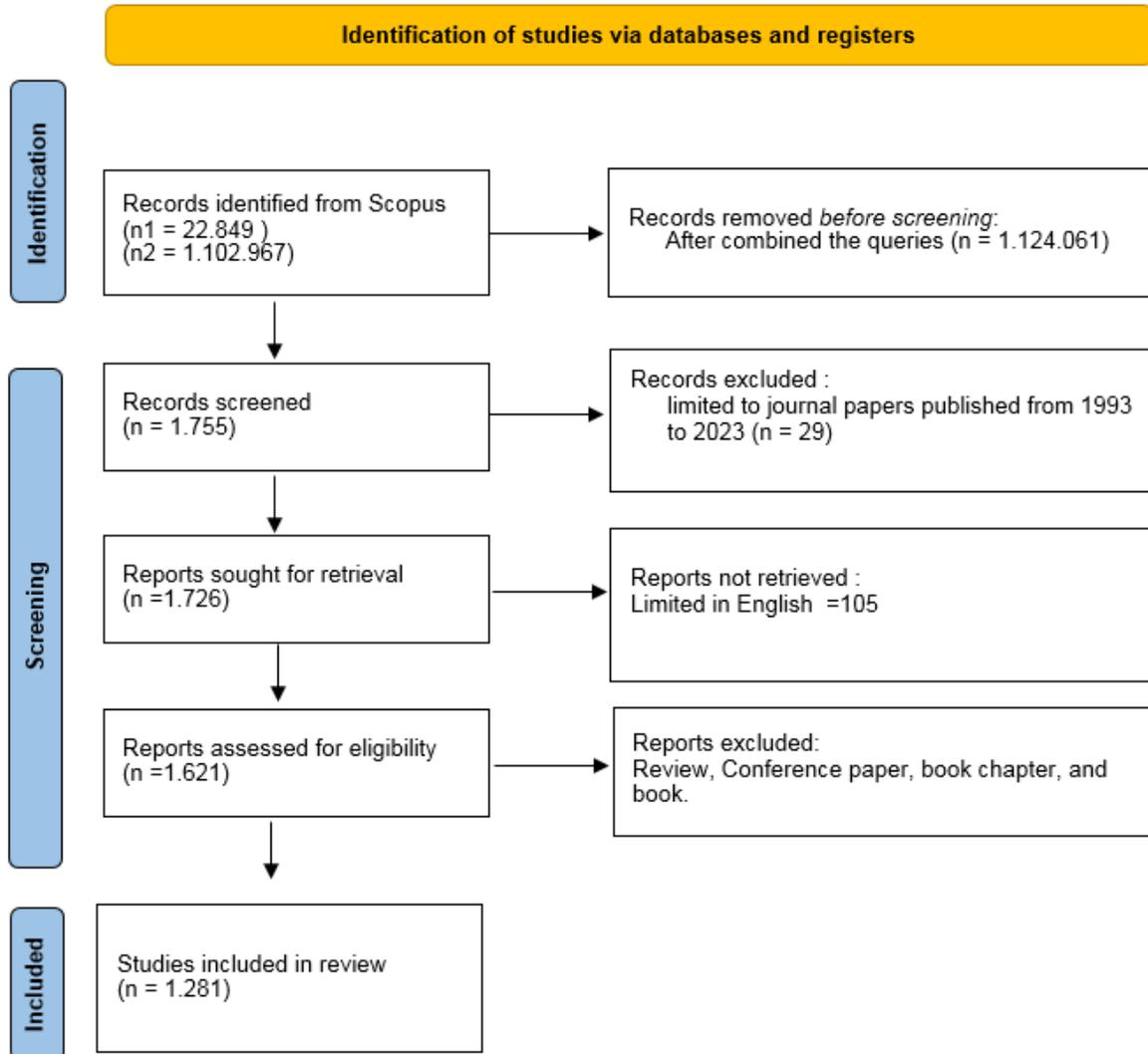


Figure 1. Flow chart following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines

2.2. Data Analysis Procedure

The literature corpus was analyzed using descriptive and bibliometric methods to present a comprehensive overview of research development and the current status of coach-athlete relationship and mental health. Frequency analyses were conducted to show the increasing trend in research on the correlation between athlete coaches and athlete mental health based on the number of publications and citations every year. A ranking table was designed to demonstrate the productivity of research field compared to core journals and academic disciplines. Moreover, it underscores the preeminent scholars and contributing nations propelling this field forward.

An analysis of bibliographic metadata is performed to monitor the development of publications and the growth in citations over time. VOSviewers software was used to analyse CSV bibliographic metadata files obtained from the Scopus database. VOSViewer is a program for evaluation of bibliometric data, offering network representation of selected topics and identifying avenues for additional research (Soegoto et al., 2021). VOSviewer is a proficient instrument for managing and evaluating research data, enhancing the efficiency, precision, and validity of research outcomes (Patty et al., 2024). VOSviewer helps visualize collaboration and research advancement by offering functions like teamwork, joint authoring, bibliographic exploration, and collective analysis (Wijewickrema, 2023). VOSviewer software generates maps like the co-authoring analysis network map and keyword emergence network to illustrate collaboration and research trends (Deveci, 2022; Garg & Tiwari, 2021). The map shows the unit of analysis represented as a circular node, where the size of the node reflects its magnitude, such as the quantity of an author's publications inside the dataset. The node's position indicates its similarity to other nodes, with closer proximity signifying a higher degree of similarity. The lines linking the nodes symbolize their connection, with the thickness reflecting the strength of the association. The color of each node represents the cluster to which it has been assigned.

Several collaborative studies were conducted to investigate the social organization of research on the correlation between athlete coaches and mental health. The analysis focuses on the author and the country/region as the main units of examination. The bibliographic map represents authors or countries/regions as nodes, with lines linking them to illustrate their collaborative relationships. Clusters are networks of scientific collaboration where authors or country consistently collaborate on publications, like research groups formed by writers.

The journal dataset was analyzed using co-citation to explore the conceptual structure of the topic. The units of analysis in the dataset are the journals, and the co-citation map illustrates the mutual citation interactions between them. If a third journal references both journals, then the two journals are linking them in the citation network. When a journal is often referenced alongside another journal, its co-citation relationship becomes stronger. A journal's co-citation relationship is stronger when it is cited frequently by another journal. When journals are frequently referenced together, they are presumed to share an everyday theoretical and semantic basis. In this study, the cluster of journals frequently referenced together can be seen as the foundational disciplines for studying the coach-athlete relationship and the mental well-being of athletes.

Several measures have been taken to ensure that the study results are valid and to prevent bias

in the selection of studies. First, there may be language bias as the majority of Scopus documents are written in English. As a result, studies written in other languages may not be effectively represented. However, due to the fact that English is the language of science worldwide, the data coverage is still extensive and reflects the worldwide tendencies. Second, the geographic bias is eliminated by not limiting the search to the country or a certain region. Thus, the research could be conducted from different geographic places. Third, although Scopus as a single database has limitations in terms of coverage of specific journals, it has a large number of publications and can be integrated with bibliometric tools such as VOSViewer. Future studies may consider improving academic representation more comprehensively by incorporating databases such as Web of Science.

Table 1. Lay out assignment

| Parameter | Value |
|---|----------------------|
| Normalisation | Association Strength |
| Lay out | |
| Attraction | 2 |
| Repulsion | 1 |
| Random starts | 1 |
| Maximum iterations | 1.000 |
| Initial step size | 1.00 |
| Step size reduction | 0.75 |
| Step size convergence | 0.001 |
| Random seed | 0 |
| Clustering | |
| Resolution parameter (detail of clustering) | 1.00 |
| Minimum cluster size [N] | 1 |
| Random starts | 10 |
| Iteration | 10 |
| Random seed | 0 |
| Visualisation | |
| Scale | 1.00 |
| Weights | Document/Occurrences |
| Labels size | 0.50 |
| Maximum number of lines | 1000 |

3. RESULTS AND DISCUSSION

3.1. Development of Publications and Citations in the Field

Publication and citation patterns are the most effective method for demonstrating the development trajectory of a certain area. The dataset contained 1,281 articles with a total of 13,162 citations, leading to an average of 7.5 citations per article. Figure 2 presents the increasing trend in research publications on the relationship between coaches and athletes and its influence on athlete

mental health from 1993 to 2023. Over the past 30 years, there has been a gradual rise in academic interest toward coach-athlete relationships and athlete mental health, which can be categorised into three distinct stages. The first stage (1993–2003) was the first decade of publications, with 30 papers. During this time, the first advocacy for mental health in sports was initiated based on study findings by Sundgot-Borgen in 1994, published in *Medicine and Science in Sports and Exercise*, which received 386 citations. The second stage (2004–2013), is called the fermenting stage, there was a notable rise in publications, totalling 161 documents. The third stage (2014–2023), saw a significant increase in publishing compared to the emerging stage, the number of records published each year increased by almost 36 times. The rise in citations over the past decade can be attributed to a study conducted by Oosterhoff et al. (2018), which received 476 citations.

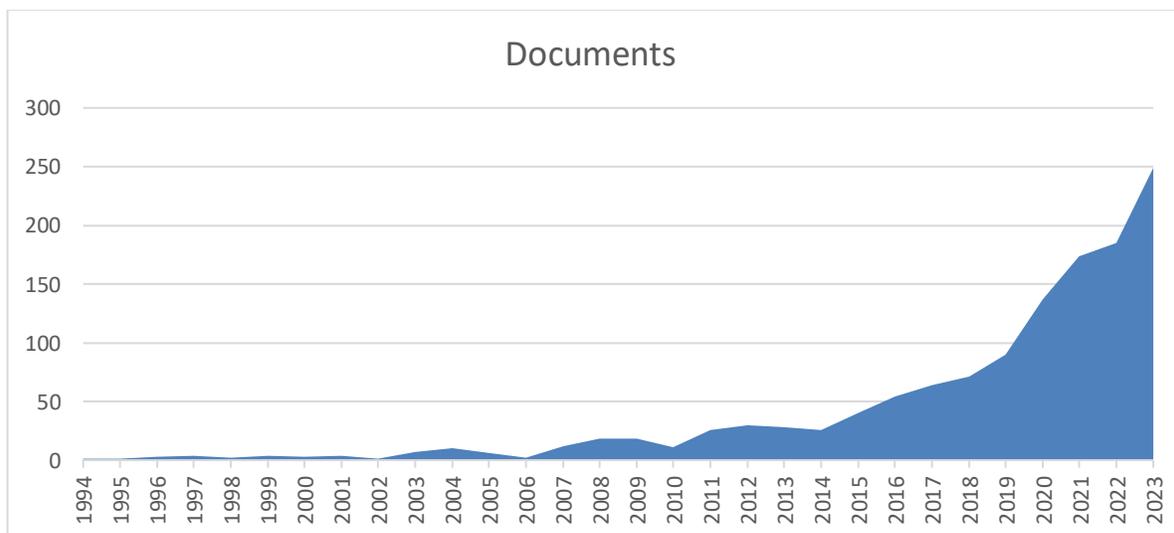


Figure 2. Enhanced emphasis on researching coach-athlete dynamics and athlete psychological well-being (Source: *Scopus*)

3.2. Productivity I: Primary Journals and Field of Study

The analyzed dataset contains 1,281 papers published by 159 journals. Figure 3 shows the five journals with the highest annual publications. Since 2016, *Frontiers in Psychology* has increased rapidly and will peak in 2021. Since 2018, the *International Journal of Environmental Research and Public Health* has seen an increasing publication trend. In 2022, publications will increase sharply. The main journals of this discipline also include *Psychology of Sport and Exercise*, *Journal of Applied Sport Psychology*, and *Journal of Athletic Training*. Before 2019, there were few publications in the area of athlete mental health and coach-athlete relationships, with an average of

only three articles per year. However, this trend has increased in recent years, indicating greater academic attention to this topic.

Figure 3 illustrates a substantial rise in publications relevant to this topic from 2020 to 2023. Research on mental health has surged because of the COVID-19 pandemic, resulting in heightened levels of anxiety, depression, and distress (Aknin et al., 2022). Research indicates that the COVID-19 pandemic has led to a higher occurrence of depression and anxiety disorders (Creese et al., 2021; Santomauro et al., 2021).

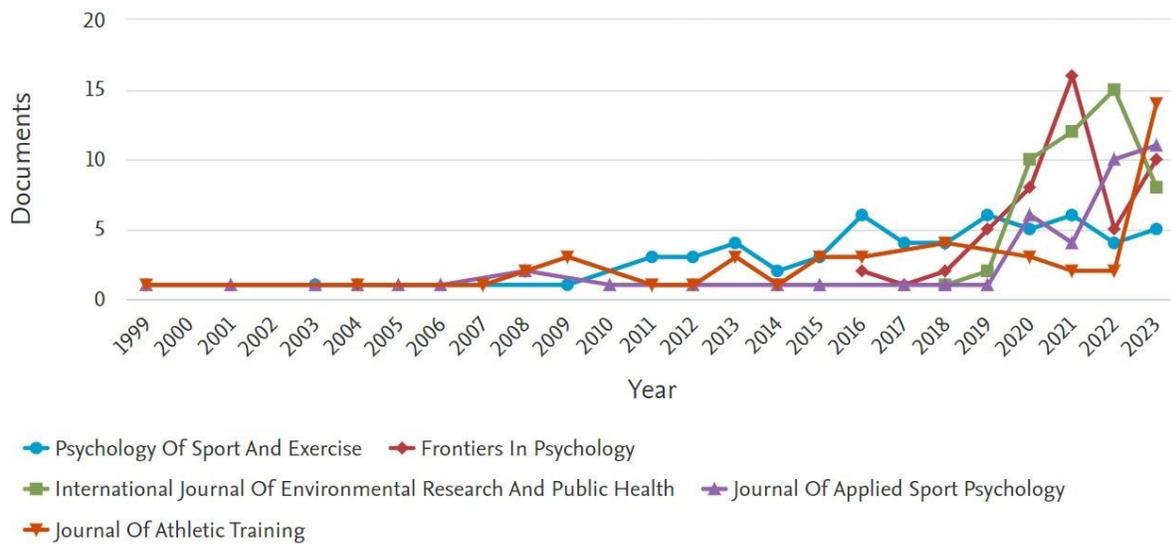


Figure 3. Documents per year by source (Source: *Scopus*)

Approximately half of the dataset entries concentrated on key study areas including coach-athlete relationships and athlete mental health, as featured in psychology and sports journals. Other relevant research areas in this topic encompass health and medicine, such as occupational and environmental medicine, substance abuse, internal medicine, neuroscience, healthcare services, and nursing. The field emerged from publications in social science, family studies, and social work research.

Most research on coach-athlete relationships and athlete mental health is primarily published in psychology and sports science journals, indicating the productivity of this research field. This discovery aligns with a study by Hernández-Torrano et al. (2020) on coach-athlete relationships and athletes' mental health, indicating more research in psychology than other subject fields.

3.3. Productivity II: Famous Authors and their Respective Countries/Territories

The dataset includes 1,281 articles written by 159 researchers from 84 different countries. The top 15 researchers in this field are shown in Figure 4. With 17 publications overall, Sophia Jowett is the most active contributor. A number of other well-known researchers have produced eight to nine publications, including Rosemary Purcell, Nikos Ntoumanis, and Joan L. Duda.

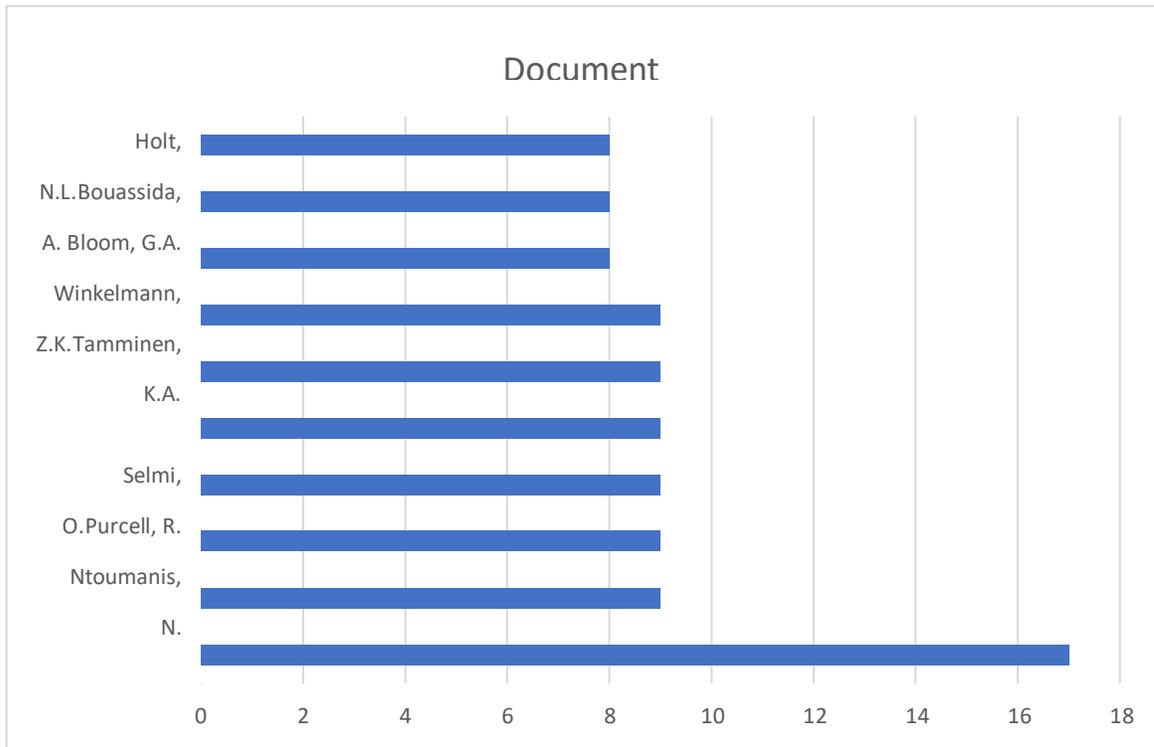


Figure 4. Authors listed by the highest number of recordings (Source: *Scopus*)

Figure 5 illustrates cutting-edge research on coach-athlete relationships and mental health conducted in different countries and regions. The research topic appears global in scope, with 1,281 papers from 84 nations based on the author's country of affiliation. This indicates that there has been a publication in each of these nations. The United States dominates this field by publishing over 37 percent of the records in the data set. British-produced magazines followed, securing second place in the ranking. This is in contrast to (Holmes et al., 2020), who claim that the UK's study on the effects of COVID-19 on mental health is globally outstanding due to interdisciplinary and cross-sector collaborations. Canada ranks third with 152 publications, while Australia ranks fourth with 126 records. Spain ranks fifth in publishing output with 71 records. Research on coach-athlete relationship and athlete mental health is a problem in other regions of the world, to some degree, as indicated by other countries on the list.

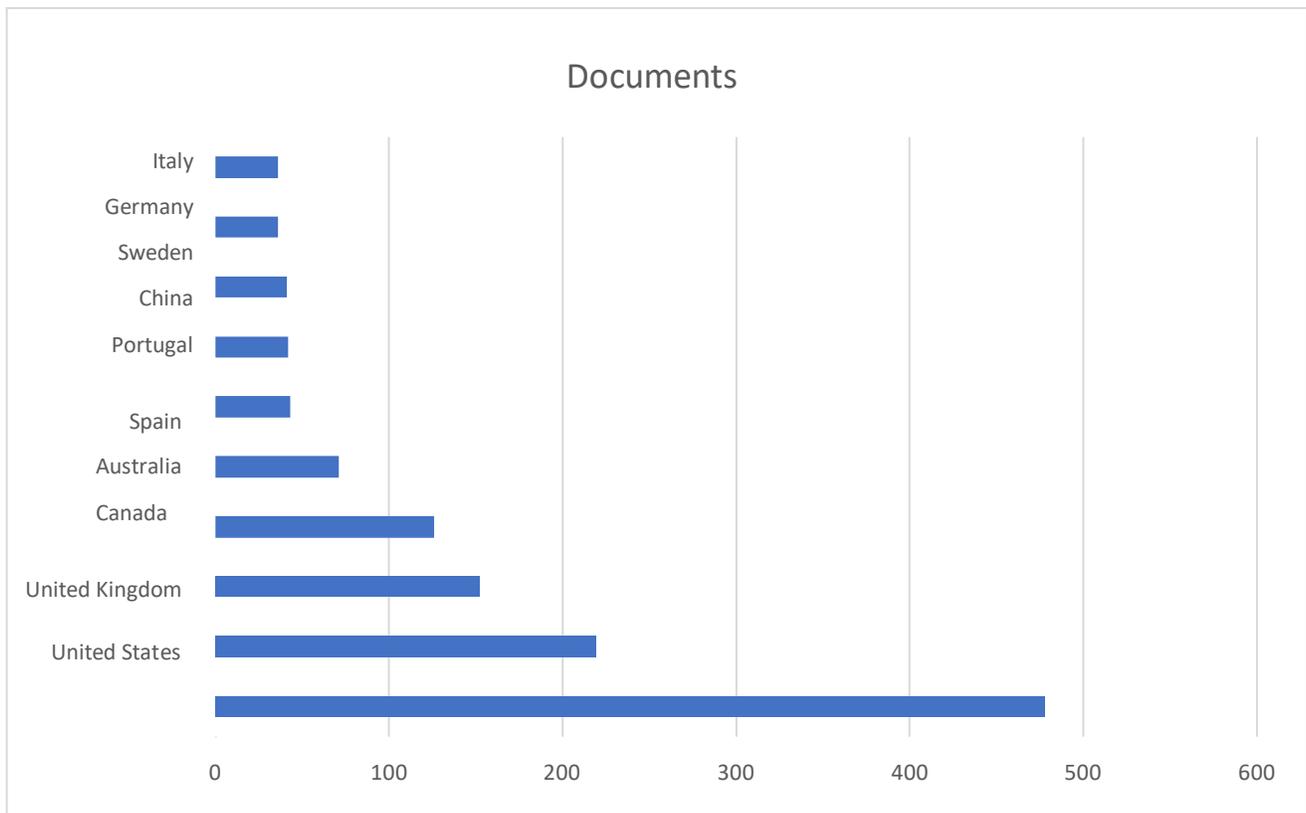


Figure 5. The number of records ranks leading countries/territories

The productivity analysis indicates that research on coach-athlete relationships and mental health is conducted in various areas worldwide, with a significant focus on industrialized countries, particularly the United States. Due to post-Civil War reforms that improved research incentives and resources, academic specialization increased, and research performance improved, US research universities became the dominant force in the globe (MacLeod & Urquiola, 2021).

3.4. Social Structure: Networks of Scientific Collaboration

Global cooperation has significantly escalated and grown swiftly during the past twenty years (Avdeev, 2021). Countries that invest more in research and development tend to have more scientific independence. However, engaging in international collaborations can enhance citation impact. Research indicates that such cooperation improves both the effectiveness of research institutions and their citation impact, particularly for less developed countries (Chinchilla-Rodríguez et al., 2019; Naik et al., 2023). For example, citation gains are higher in countries that invest more than 2% of their GDP in R&D than in others (Chinchilla-Rodríguez et al., 2019). Collaboration on a global scale typically enhances the effectiveness of research institutions, with less developed countries having a

more significant influence than developed regions (Geng et al., 2022). The academic impact of the research outputs depends on the quality of international partners not their quantity, researchers with a diverse background increase the impact of their works (Zhe et al., 2021). There is a statistically significant positive influence of international cooperation on the number of citations in the research articles (Alamah et al., 2023).

The study conducted the co-authorship analysis to examine the scientific collaboration patterns across researchers and countries/regions regarding coach-athlete relationships and athletes' mental health. Santamaría et al., (2021) found that failure in innovation is associated with working with partners who are far away geographically and have high international diversity. On the other hand, success in innovation is linked to collaborating with partners who are close by geographically and have lesser international variety. Culture plays a significant effect in the outcomes of internationalisation (Srivastava et al., 2020).

The bibliographic dataset specifies that the term 'country' is the unit of analysis selected for the 'full counting' calculation method. The maximum number of countries allowed per document is 25, along with a required minimum number of citations. A minimum of one document is necessary for a country to be included in the analysis. Results are manually cleaned before networking, and overlay visualisation is applied for clustering and finding trends related to source and time. To guarantee thorough coverage, the number of selected nations was increased to 103. The total strength of cooperative connections with other countries will be calculated for each of the 103 countries. The countries with the strongest overall relationships will be selected. Figure 6 presents a total of 84 countries with robust cooperative relationships.

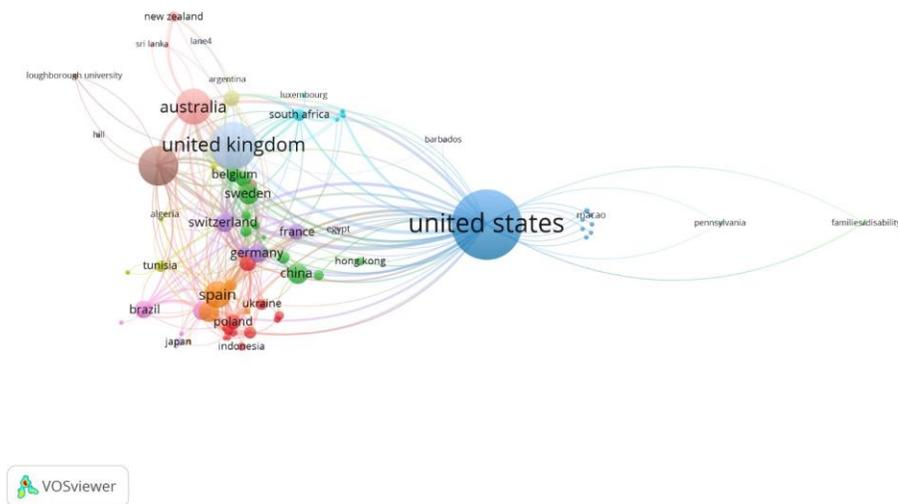


Figure 6. Bibliographic Coupling with Countries as Unit of Analysis (Network Visualization)

Figure 6 presents 15 related country clusters. Each cluster in this nationwide analysis contains a variety of keywords and university names. The United States holds an central position and fosters collaborative partnerships with all other nations/regions, forming a coalition that encompasses Macau, Lebanon, and the Chechen Republic. The research results show that cultural, linguistic, and geographical proximity substantially influence international cooperation in this field. The largest cluster consists of Asian countries such as Malaysia, Indonesia, India, Saudi Arabia, and Kazakhstan, as well as European countries like Hungary, Latvia, Lithuania, Norway, Poland, Romania, Slovakia, and Ukraine. Except for Norway, all these countries were either part of the Eastern Bloc or under Soviet control during the Cold War. Following the collapse of the Soviet Union, they saw substantial political and economic changes.

The top five universities contributing to the 1,281 publications in this dataset are Loughborough University, the University of Toronto, the University of Birmingham, the University of Melbourne, and the University of Alberta. Contrary to journals or publishing countries, the volume of papers published by an organisation appears to be dispersed. Several universities are not predominantly responsible for most publications. Loughborough University secured the top position with 40 publications or 3.12% of the total 1,281 articles. Table 2 enumerates the top 10 organisations that generate the most significant academic publications in the study sector.

Table 2. Publication by Organizations

| R | Organisation | Number | % of 1.281 |
|----------|------------------------------------|---------------|-------------------|
| 1 | Loughborough University | 40 | 3.12 |
| 2 | University of Toronto | 35 | 2.73 |
| 3 | University of Birmingham | 21 | 1.64 |
| 4 | University of Melbourne | 19 | 1.48 |
| 5 | University of Alberta | 18 | 1.41 |
| 6 | The University of Queensland | 17 | 1.33 |
| 7 | The University of British Columbia | 16 | 1.25 |
| 8 | University of Washington | 16 | 1.25 |
| 9 | Universidad de Extremadura | 16 | 1.25 |
| 10 | Deakin University | 16 | 1.25 |

Our research findings indicate that cooperation in coach-athlete relationship and mental health is now uncommon and restricted to specific sectors. The social structure can be compared to a collection of islands, where each group symbolises a research unit with different characteristics and sizes. However, interactions between these groups are restricted, indicating the presence of divisions

within this research community. International collaboration networks seem to primarily originate within national borders, connecting scholars from nearby nations or regions or between countries with shared cultural, linguistic, and historical backgrounds.

The positive relationship between cultural values and mental health problems may be due to the complexity of cultural dynamics, where the struggle between traditional and modern values can contribute to psychological suffering (Heim et al., 2019). International scientific collaborations encounter challenges that include insufficient finance, limitations on material and data exchange, disparities in academic criteria, and favouritism towards developing nations (Matthews et al., 2020). Cheol Shin et al. (2013) discovered that collaboration patterns vary across higher education systems. Educational institutions in developed systems demonstrate greater collaboration than those developing systems. Educational institutions in English-speaking countries do not show higher levels of collaboration than academics in non-English-speaking countries. Academics in European countries cooperate more international collaboration than academics in non-European countries. According to research, connectivity to partners and restricted international options promote successful innovation rather than failure (Santamaría et al., 2021).

3.5. Intellectual Structure: The Disciplines Foundational to the Field

A journal citation analysis was undertaken to study the scientific disciplines that form the basis of research on coach-athlete relationships and athlete mental health. The analysis utilized 'Bibliographic Coupling' with the unit of analysis being 'source,' which is calculated using the 'full count' approach. To be included, the source must have a minimum of five papers and zero citations. Four hundred eighty-five sources were collected, with 47 meeting the criterion. The co-citation network linkages inside and between groups seem sparse based on the map in Figure 7. This suggests that research topics in these domains still offer ample prospects for further investigation.

Figure 7 displays five clusters represented by nodes and colors. The nodes represent journals on the map, with its size reflecting the number of citations they have shared with other journals. Colors symbolize journal groups that combine journals with strong co-citation links and significant semantic relevance. Clusters are categorized by identifying the journals with the highest number of co-cited connections within each cluster using Scopus classification system. Cluster 1, on the left side of the map contains various journals such as BMJ Open Sport And Exercise Medicine, British Journal Of Sports And Medication, Children And Youth Services Review Clinical, Journal Of Sports Medicine International, Journal Of Sports Science And Coaching, Jmir Formative Research,

Journal Of Athletic Training, Journal Of Science And Medicine In Sport, Journal Of Sports Rehabilitation, Journal Of Strength And Conditioning Research, Medicine And Science In Sports And Exercise, Plose One, Scandinavian Journal Of Medicine And Science In Sports, and International Journal Of Sports Physiology And Performance. This group is classified as the sports medicine and sports science cluster.

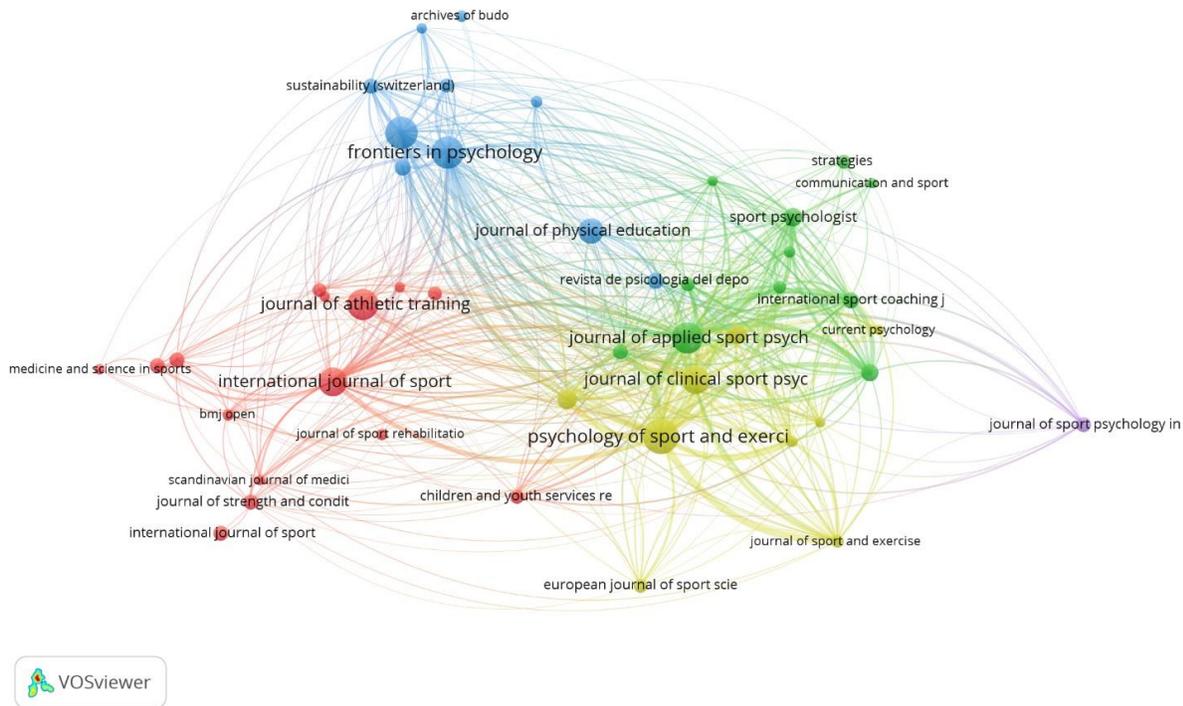


Figure 7. Bibliographic Coupling with Sources as Unit of Analysis (NetworkVisualization)

According to Fig 7, Cluster 2, the green group, comprises groups in sports science and sports coaching, explicitly focusing on Communication and Sports. This cluster includes international Sport Coaching Journal, Journal of Applied Sport Psychology, Journal of Physical Education and Sport, Qualitative Research in Sport Exercise and Health, Research Quarterly for Exercise and Sport, Sport Psychologist, Sport Education and Society, Sport Exercise and Performance Psychology, Sports Coaching Review, and Strategies. These journals in collaboration investigate numerous aspects of coaching methodology, sport psychology, physical education, and qualitative research in sports, focusing on the interaction of coaching practices, psychological approaches, and communication within the sports domain. Blue group in cluster 3, shows a more diverse mix of themes; health, sports psychology, physical exercise, and environmental and sustainability aspect. The journals in this cluster are Archives of Budo, Frontiers in Psychology, Frontiers in Sports and Active Living,

Healthcare Switzerland, International Journal of Environmental Research and Public Health, Journal of Human Sport and Exercise, Journal of Physical Education And Sport, Revista De Psicologia Del Deporte, and Sustainability Switzerland. The topics cover various branches of sports science and are interrelated with health, psychology, and sustainability, reflecting an increasing emphasis on sports' overall impact on human well-being and the environment.

Cluster 4 represented by yellow group majors in sports psychology, management, and science. It is concentrated on the athlete performance, psychological therapies, and the organizational aspects of sports corporation. Cluster 5 of the article is marked purple, contains only one journal, the Journal of Sport Psychology in Action. This journal focuses solely on applied sports psychology, emphasizing practical interventions, athlete mental preparation, and performance enhancement tactics. This study's findings suggest that the research on coach-athlete relationships and athlete mental health is interdisciplinary. The map illustrates that research on coach-athlete relationships and athlete mental health is developed by combining knowledge from three interconnected scientific disciplines: sports medicine and health, sports science, and sports psychology.

This multicontextual perspective emphasizes the nuanced and multifaceted nature of coach-athlete relationships, stressing its significance not only for performance enhancement, but also for psychological well-being and injury prevention in sport settings. These results underline the critical role of psychology in developing research on athletes' and coaches' mental health. These areas of applied sport psychology are interconnected and accent the importance of psychological elements in athlete performance, well-being, and coach-athlete relationships. Additional research in sports medicine, rehabilitation, and sport is required to address the intricacies of athletes' psychological problems. High-performance athletes work in a constantly changing psychological environment. This research pays attention to the applied sport psychology in order to gain a better understanding of the coach-athlete relationship and its impact on athlete's psychological well-being. This underlines the significance of an interdisciplinary approach to the theory and practice.

The journals in psychology, medicine, and sports science form the hubs of each cluster and serve as the links among the disciplines via cross-discipline co-citations. The cross-related articles play an essential role in the co-citation network that promotes the interdisciplinary communication and knowledge integration of this cluster. Integrated nature of the periodicals is emphasized by their crucial role in advancing the research on the coach-athlete connection and athlete mental health, and establishing the framework for the investigation of the psychological, physiological, and performance-related aspects of sport. The integration of disciplines in these magazines allows for the

comprehensive studies that increase the knowledge of the complex relationships among coaching, athlete well-being, and sport performance.

3.6. Conceptual Framework: Main Topics Explored in the Literature in the Past 30 Years

The focus of the research into coach-athlete relationships and athlete mental well-being from 1993 to October 2023 is presented in Figure 8. The map shows the co-occurrence analysis of author keywords in all publications within the dataset. Bibliographic coupling is used as the analysis method, co-occurrence is used as the kind of analysis, and all keywords are used as the unit of analysis with the full counting approach. Keywords must be cited at least five times and sources must have at least zero citations. A total of 5,286 keywords were extracted, with 577 keywords remaining after the inclusion criteria were applied. The size of each node in the map corresponds to the author keyword's frequency in the dataset, and the width of the line between two keywords is proportional to the strength of co-occurrence. This figure provides an overview of the key research themes and connections in the field and an insight into the evolution of research in coach-athlete relationships and athlete mental health.

Overall, eight main themes or clusters outline the specific areas of interest in coach-athlete relationships and athlete mental health over the last 30 years. A notable focus is positive coach-athlete relationships, particularly within the fields of psychology, medicine, education, and social sciences. This is indicated by the presence of such key terms as mental disease, mental disorders, psychological health, and psychological resilience in the red group. The appearance of the terms related to psychological health in this group indicates the interdisciplinary character of the research. It is also possible to observe how sport psychology, health sciences, and education can contribute to the better understanding of the athletes' well-being and the role of a coach in creating psychological resilience.

The literature also includes sports science, health, and sports performance. It deals with the most important keywords including physical performance, training, athletic performance, rehabilitation, and injury (green cluster). In general, it is worth mentioning that this cluster emphasizes the physiological and conditioning aspects that are important for optimizing athlete health and performance. The third color, dark blue, represents the psychological and behavioral elements, especially concerning youth, sports, and well-being. The theme also explores the motivational, cognitive, and emotional factors that are critical for influence athlete development and success. The yellow keywords of the fourth theme are about sports, well-being, and accident

4. LIMITATIONS

Multiple limitations exist in this investigation. The publications were solely sourced from the Scopus database, limiting the generalizability of the findings. According to Mongeon & Paul-Hu (2016) the Scopus database has insufficient coverage in the Social Sciences and Arts and Humanities sectors. This explains the small number of papers in these two fields. Only journal articles were examined, excluding important literature like reviews, book chapters, and conference proceedings. Future research could enhance the robustness of findings by incorporating alternative databases such as Web of Science (WoS) and PubMed, or by using a multi-database approach with diverse search filters, allowing for broader scholarly perspectives on the topic. Despite these limitations, the bibliometric approach utilized in this study provides fresh perspectives on the development and current status of this subject, uncovering obstacles that are impeding its advancement.

5. CONCLUSIONS

Analysing publication and citation trends over the past 30 years can provide insights into the development patterns in the interactions between coaches and athletes and their mental health. Scientific interest in this area has gradually increased, with study concentrated in three key stages. Stage 1 (1993–2003) is the raising phase. The raising stage is marked with early advocacy for mental health in sports. It paved the way for the first study of its type to focus on psychological well-being and the resilience of athletes. Stage 2 (2004–2013): Brewing phase. The publications during this phase increased significantly, illustrating that mental health problems, performance anxiety, and the influence of coaching psychology are now seen as relevant to athlete development. Stage 3 (2014–2023) is the expansion phase. This phase identified a rapid increase in research output due to multiplier effects via interdisciplinary efforts across sports science, psychology, medicine, and growing global ambitions to confront mental health challenges among competitive athletes, particularly during the COVID-19 pandemic.

Most of this research is published in psychology and sports journals, according to journal productivity indicating the interdisciplinary nature of the field. The United States leads with the most publications, with followed by the United Kingdom, Canada, and Australia. Common international collaboration take place between countries or regions that share cultural and linguistic ties. The interdisciplinary research focuses mainly on sports medicine, health, science, and psychology. The primary journals in each category significantly enhanced knowledge of the coach-

athlete relationship, contributing to the development of evidence-based practices that enhance both mental health support and performance outcomes in sports.

Conceptual analysis revealed eight that captured the core domains of inquiry over the past three decades. These topics cover psychological and behavioral factors, sports science and health, the repercussions of the COVID-19 pandemic, and changes in the academic setting. The fact that this research advances the existing knowledge on the coach-athlete relationship and athlete mental health is a sign of many years, with helpful contribution from other fields.

However, this study also pinpointed certain obstacles that could impede the progress of research on coach-athlete relationship and mental health. The trail of existing research predominantly features of theoretical and disciplinary perspectives from affluent nations, which limits the global inclusivity of the research. Further research from many regions worldwide is necessary to offer a more thorough understanding and guarantee equitable inclusion of the numerous viewpoints on the subject. Research collaboration on this topic is primarily domestic and regional, which indicating limited international cooperation. National and international research collaborations and promoting knowledge-sharing between different locations is necessary. Special issues in leading academic journals that emphasize cross-cultural studies can facilitate research collaboration across different areas and stimulate study in underrepresented nations. More research in the social sciences and humanities is necessary to investigate how social, economic, cultural, and educational components impact coach-athlete relationship and mental health.

6. REFERENCES

1. Ai, L., & Wang, Y. (2024). Perceived Coach Social Support and Coach-Athlete Relationship: A Moderated Mediation Model of Coach-Athlete Attachment and Proactive Personality. *Scientific and Social Research*, 6(10), 97–107. <https://doi.org/10.26689/ssr.v6i10.8499>
2. Aknin, L. B., De Neve, J. E., Dunn, E. W., Fancourt, D. E., Goldberg, E., Helliwell, J. F., Jones, S. P., Karam, E., Layard, R., Lyubomirsky, S., Rzepa, A., Saxena, S., Thornton, E. M., VanderWeele, T. J., Whillans, A. V., Zaki, J., Karadag, O., & Ben Amor, Y. (2022). Mental Health During the First Year of the COVID-19 Pandemic: A Review and Recommendations for Moving Forward. *Perspectives on Psychological Science*, 17(4), 915–936. <https://doi.org/10.1177/17456916211029964>
3. Alamah, Z., AlSoussy, I., & Fakh, A. (2023). The Role of International Research Collaboration and Faculty Related Factors in Publication Citations: Evidence from Lebanon. *Economies*, 11(3), 1-24. <https://doi.org/10.3390/economies11030090>
4. Arif, Z., Abdul Rahman, A. L., Mohamad Tanuri, Z. A., Moh. Safii, Moh. S., Ishak, W. I., & Mohamed Sawal, M. Z. H. (2024). A Bibliometric Study of Social Media Use Performance. *Journal of Library & Information Technology*, 44(4), 222–233. <https://doi.org/10.14429/djlit.44.4.19558>

5. Avdeev, S. (2021). International collaboration in higher education research: A gravity model approach. *Scientometrics*, *126*(7), 5569–5588. <https://doi.org/10.1007/s11192-021-04008-8>
6. Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, *1*(1), 377–386. https://doi.org/10.1162/qss_a_00019
7. Baumann, L., Schneeberger, A. R., Currie, A., Iff, S., Seifritz, E., & Claussen, M. C. (2024). Mental Health in Elite Coaches. *Sports Health: A Multidisciplinary Approach*, *16*(6), 1050–1057. <https://doi.org/10.1177/19417381231223472>
8. Beisecker, L., Harrison, P., Josephson, M., & DeFreese, J. D. (2024). Depression, anxiety and stress among female student-athletes: a systematic review and meta-analysis. *British Journal of Sports Medicine*, *58*(5), 278–285. <https://doi.org/10.1136/bjsports-2023-107328>
9. Camiré, M., Rathwell, S., Turgeon, S., & Kendellen, K. (2019). Coach–athlete relationships, basic psychological needs satisfaction and thwarting, and the teaching of life skills in Canadian high school sport. *International Journal of Sports Science & Coaching*, *14*(5), 591–606. <https://doi.org/10.1177/1747954119869542>
10. Cheol Shin, J., Jeung Lee, S., & Kim, Y. (2013). Research collaboration across higher education systems: maturity, language use, and regional differences. *Studies in Higher Education*, *38*(3), 425–440. <https://doi.org/10.1080/03075079.2013.774585>
11. Chinchilla-Rodríguez, Z., Sugimoto, C. R., & Larivière, V. (2019). Follow the leader: On the relationship between leadership and scholarly impact in international collaborations. *PLOS ONE*, *14*(6), 1-18. <https://doi.org/10.1371/journal.pone.0218309>
12. Chu, T. L. (Alan), & Zhang, T. (2019). The roles of coaches, peers, and parents in athletes' basic psychological needs: A mixed-studies review. *International Journal of Sports Science & Coaching*, *14*(4), 569–588. <https://doi.org/10.1177/1747954119858458>
13. Creese, B., Khan, Z., Henley, W., O'Dwyer, S., Corbett, A., Vasconcelos Da Silva, M., Mills, K., Wright, N., Testad, I., Aarstrand, D., & Ballard, C. (2021). Loneliness, physical activity, and mental health during COVID-19: a longitudinal analysis of depression and anxiety in adults over the age of 50 between 2015 and 2020. *International Psychogeriatrics*, *33*(5), 505–514. <https://doi.org/10.1017/S1041610220004135>
14. Davis, L., Jowett, S., & Sörman, D. (2023). The Importance of Positive Relationships for Coaches' Effectiveness and Well-Being. *International Sport Coaching Journal*, *10*(2), 254–265. <https://doi.org/10.1123/iscj.2021-0065>
15. Deveci, I. (2022). Review of Entrepreneurship Education Literature in Educational Contexts: Bibliometric Analysis. *Participatory Educational Research*, *9*(1), 214–232. <https://doi.org/10.17275/per.22.12.9.1>
16. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
17. Fan, F., Chen, J., Chen, Y., Li, B., Guo, L., Shi, Y., Yang, F., Yang, Q., Yang, L., Ding, C., & Shi, H. (2023). How relationship-maintenance strategies influence athlete burnout: Mediating roles of coach–athlete relationship and basic psychological needs satisfaction. *Frontiers in Psychology*, *13*, 1-12. <https://doi.org/10.3389/fpsyg.2022.1104143>
18. Frost, J., Walton, C. C., Purcell, R., Fisher, K., Gwyther, K., Kocherginsky, M., & Rice, S. M. (2024). The Mental Health of Elite-Level Coaches: A Systematic Scoping Review. In *Sports Medicine - Open* (Vol. 10, Issue 1). Springer Science and Business Media Deutschland GmbH. <https://doi.org/10.1186/s40798-023-00655-8>
19. Gabana, N. T., Wong, Y. J., D'Addario, A., & Chow, G. M. (2022). The Athlete Gratitude Group (TAGG): Effects of coach participation in a positive psychology intervention with youth athletes.

- Journal of Applied Sport Psychology*, 34(2), 229–250. <https://doi.org/10.1080/10413200.2020.1809551>
20. Garg, D., & Tiwari, P. (2021). Impact of social media sentiments in stock market predictions: A bibliometric analysis. *Business Information Review*, 38(4), 170–182. <https://doi.org/10.1177/02663821211058666>
 21. Gaviria-Marin, M. (2021). Bibliometrics and business. A challenge for researchers. *Inquietud Empresarial*, 21(1), 1-3. <https://doi.org/10.19053/01211048.12931>
 22. Geiger, S., Jahre, L. M., Aufderlandwehr, J., Krakowczyk, J. B., Esser, A. J., Mühlbauer, T., Skoda, E. M., Teufel, M., & Bäuerle, A. (2023). Mental health symptoms in German elite athletes: a network analysis. *Frontiers in Psychology*, 14, 1-11. <https://doi.org/10.3389/fpsyg.2023.1243804>
 23. Geng, H., Wu, Y., & Shi, X. (2022). International Collaboration and Research Organization Performance: Evidence from China. *Asian Economic Papers*, 21(3), 60–77. https://doi.org/10.1162/asep_a_00856
 24. González-Serrano, M. H., Añó Sanz, V., & González-García, R. J. (2020). Sustainable Sport Entrepreneurship and Innovation: A Bibliometric Analysis of This Emerging Field of Research. *Sustainability*, 12(12), 1-26. <https://doi.org/10.3390/su12125209>
 25. Gu, S., Peng, W., Du, F., Fang, X., Guan, Z., He, X., & Jiang, X. (2023). Association between coach-athlete relationship and athlete engagement in Chinese team sports: The mediating effect of thriving. *PLOS ONE*, 18(8), 1-18. <https://doi.org/10.1371/journal.pone.0289979>
 26. Habay, J., Van Cutsem, J., Verschueren, J., De Bock, S., Proost, M., De Wachter, J., Tassignon, B., Meeusen, R., & Roelands, B. (2021). Mental Fatigue and Sport-Specific Psychomotor Performance: A Systematic Review. *Sports Medicine*, 51(7), 1527–1548. <https://doi.org/10.1007/s40279-021-01429-6>
 27. Hammerschmidt, J., Calabuig, F., Kraus, S., & Uhrich, S. (2024). Tracing the state of sport management research: a bibliometric analysis. *Management Review Quarterly*, 74(2), 1185–1208. <https://doi.org/10.1007/s11301-023-00331-x>
 28. Heim, E., Maercker, A., & Boer, D. (2019). Value Orientations and Mental Health: A Theoretical Review. *Transcultural Psychiatry*, 56(3), 449–470. <https://doi.org/10.1177/1363461519832472>
 29. Henriksen, K., Schinke, R., Moesch, K., McCann, S., Parham, W. D., Larsen, C. H., & Terry, P. (2020). Consensus statement on improving the mental health of high performance athletes. In *International Journal of Sport and Exercise Psychology* (Vol. 18, Issue 5, pp. 553–560). Bellwether Publishing, Ltd. <https://doi.org/10.1080/1612197X.2019.1570473>
 30. Hernández-Torrano, D., Ibrayeva, L., Sparks, J., Lim, N., Clementi, A., Almukhambetova, A., Nurtayev, Y., & Muratkyzy, A. (2020). Mental Health and Well-Being of University Students: A Bibliometric Mapping of the Literature. *Frontiers in Psychology*, 11, 1-16. <https://doi.org/10.3389/fpsyg.2020.01226>
 31. Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., Ballard, C., Christensen, H., Cohen Silver, R., Everall, I., Ford, T., John, A., Kabir, T., King, K., Madan, I., Michie, S., Przybylski, A. K., Shafran, R., Sweeney, A., ... Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry*, 7(6), 547–560. [https://doi.org/10.1016/S2215-0366\(20\)30168-1](https://doi.org/10.1016/S2215-0366(20)30168-1)
 32. Huertas González-Serrano, M., Jones, P., & Llanos-Contrera, O. (2020). An overview of sport entrepreneurship field: a bibliometric analysis of the articles published in the Web of Science. *Sport in Society*, 23(2), 296–314. <https://doi.org/10.1080/17430437.2019.1607307>
 33. Jowett, S. (2003). When the “Honeymoon” Is Over: A Case Study of a Coach-Athlete Dyad in Crisis. *The Sport Psychologist*, 17(4), 444–460. <https://doi.org/10.1123/tsp.17.4.444>

34. Jowett, S. (2017). Coaching effectiveness: the coach–athlete relationship at its heart. In *Current Opinion in Psychology*. Elsevier B.V.
35. Kim, H. D., & Cruz, A. B. (2021). Psychological Influence of Self-Management on Exercise Self-Confidence, Satisfaction, and Commitment of Martial Arts Practitioners in Korea: A Meta-Analytic Approach. *Frontiers in psychology*, *12*, 1-12. <https://doi.org/10.3389/fpsyg.2021.691974>
36. Kröhler, A., & Berti, S. (2019). Taking Action or Thinking About It? State Orientation and Rumination Are Correlated in Athletes. *Frontiers in Psychology*, *10*, 1-9. <https://doi.org/10.3389/fpsyg.2019.00576>
37. Lazarides, M. K., Lazaridou, I.-Z., & Papanas, N. (2023). Bibliometric Analysis: Bridging Informatics With Science. *The International Journal of Lower Extremity Wounds*, *24*(3), 1-14. <https://doi.org/10.1177/15347346231153538>
38. Lumba-Brown, A., Teramoto, M., Zhang, R., Aukerman, D. F., Bohr, A. D., Harmon, K., Petron, D. J., Romano, R., Poddar, S. K., & Ghajar, J. (2023). Multicentre evaluation of anxiety and mood among collegiate student athletes with concussion. *BMJ Open Sport & Exercise Medicine*, *9*(1), 1-12. <https://doi.org/10.1136/bmjsem-2022-001446>
39. Lundqvist, C. (2020). Ending an Elite Sports Career: Case Report of Behavioral Activation Applied as an Evidence-Based Intervention with a Former Olympic Athlete Developing Depression. *The Sport Psychologist*, *34*(4), 329–336. <https://doi.org/10.1123/tsp.2019-0152>
40. Lundqvist, C., & Andersson, G. (2021). Let’s Talk About Mental Health and Mental Disorders in Elite Sports: A Narrative Review of Theoretical Perspectives. *Frontiers in Psychology*, *12*, 1-9. <https://doi.org/10.3389/fpsyg.2021.700829>
41. MacLeod, W. B., & Urquiola, M. (2021). Why Does the United States Have the Best Research Universities? Incentives, Resources, and Virtuous Circles. *Journal of Economic Perspectives*, *35*(1), 185–206. <https://doi.org/10.1257/jep.35.1.185>
42. Martín-Rodríguez, A., Gostian-Ropotin, L. A., Beltrán-Velasco, A. I., Belando-Pedreño, N., Simón, J. A., López-Mora, C., Navarro-Jiménez, E., Tornero-Aguilera, J. F., & Clemente-Suárez, V. J. (2024). Sporting Mind: The Interplay of Physical Activity and Psychological Health. *Sports*, *12*(1), 1-41. <https://doi.org/10.3390/sports12010037>
43. Matthews, K. R. W., Yang, E., Lewis, S. W., Vaidyanathan, B. R., & Gorman, M. (2020). International scientific collaborative activities and barriers to them in eight societies. *Accountability in Research*, *27*(8), 477–495. <https://doi.org/10.1080/08989621.2020.1774373>
44. McShan, K., & Moore, E. W. G. (2023). Systematic Review of the Coach–Athlete Relationship from the Coaches’ Perspective. *Kinesiology Review*, *12*(2), 158–173. <https://doi.org/10.1123/kr.2022-0006>
45. Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics*, *106*(1), 213–228. <https://doi.org/10.1007/s11192-015-1765-5>
46. Naik, C., Sugimoto, C. R., Larivière, V., Leng, C., & Guo, W. (2023). Impact of geographic diversity on citation of collaborative research. *Quantitative Science Studies*, *4*(2), 442–465. https://doi.org/10.1162/qss_a_00248
47. Patty, E. N. S., Yorman, Miswaty, T. C., Syahid, A., & Muti’ah. (2024). Bibliometric analysis of the use of VOSviewer in educational research: Trends and implications. *Cypriot Journal of Educational Sciences*, *19*(1), 61–76. <https://doi.org/10.18844/cjes.v19i1.9376>
48. Pech, G., & Delgado, C. (2020). Percentile and stochastic-based approach to the comparison of the number of citations of articles indexed in different bibliographic databases. *Scientometrics*, *123*(1), 223–252. <https://doi.org/10.1007/s11192-020-03386-9>
49. Pujalte, G. G. A., Maynard, J. R., Thurston, M. J., Taylor, W. C., & Chauhan, M. (2019). Considerations in the Care of Athletes with Attention Deficit Hyperactivity Disorder. *Clinical Journal of Sport Medicine*, *29*(3), 245–256. <https://doi.org/10.1097/JSM.0000000000000508>

50. Reardon, C. L., & Hitchcock, M. (2024). Mental health in individual versus team sports. *International Review of Psychiatry*, 36(3), 284–295. <https://doi.org/10.1080/09540261.2024.2349079>
51. Rocchi, M., & Pelletier, L. (2018). How does coaches' reported interpersonal behavior align with athletes' perceptions? Consequences for female athletes' psychological needs in sport. *Sport, Exercise, and Performance Psychology*, 7(2), 141–154. <https://doi.org/10.1037/spy0000116>
52. Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
53. Santamaría, L., Nieto, M. J., & Rodríguez, A. (2021). Failed and successful innovations: The role of geographic proximity and international diversity of partners in technological collaboration. *Technological Forecasting and Social Change*, 166, 1–12. <https://doi.org/10.1016/j.techfore.2021.120575>
54. Santomauro, D. F., Mantilla Herrera, A. M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D. M., Abbafati, C., Adolph, C., Amlag, J. O., Aravkin, A. Y., Bang-Jensen, B. L., Bertolacci, G. J., Bloom, S. S., Castellano, R., Castro, E., Chakrabarti, S., Chattopadhyay, J., Cogen, R. M., Collins, J. K., ... Ferrari, A. J. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*, 398(10312), 1700–1712. [https://doi.org/10.1016/S0140-6736\(21\)02143-7](https://doi.org/10.1016/S0140-6736(21)02143-7)
55. Sauban Ghani, S. (2020). A comprehensive review of database resources in chemistry. *Eclética Química Journal*, 45(3), 57–68. <https://doi.org/10.26850/1678-4618eqj.v45.3.2020.p57-68>
56. Shalaby, R. A. H., & Agyapong, V. I. O. (2020). Peer Support in Mental Health: Literature Review. *JMIR Mental Health*, 7(6), 1–7. <https://doi.org/10.2196/15572>
57. Sivaramakrishnan, H., Spray, C., Fletcher, D., & Ntoumanis, N. (2024). John Henryism and fear of failure in competitive sport: predicting competitive standard and mental well-being. *International Journal of Sport and Exercise Psychology*, 22(1), 273–289. <https://doi.org/10.1080/1612197X.2022.2139854>
58. Soegoto, H., Soegoto, E. S., Luckyardi, S., & Rafdhi, A. A. (2021). A Bibliometric Analysis of Management Bioenergy Research Using Vosviewer Application. *Indonesian Journal of Science and Technology*, 7(1), 89–104. <https://doi.org/10.17509/ijost.v7i1.43328>
59. Srinivasa Gopalan, S., Liu, S., Mann, C., & Buckler, E. J. (2024). Examining the coach–athlete relationship for facilitators and barriers to healthy sport participation for cyclically menstruating athletes: A systematic review. *International Journal of Sports Science & Coaching*, 19(4), 1785–1800. <https://doi.org/10.1177/17479541241239925>
60. Srivastava, S., Singh, S., & Dhir, S. (2020). Culture and International business research: A review and research agenda. *International Business Review*, 29(4), 1–10. <https://doi.org/10.1016/j.ibusrev.2020.101709>
61. Sundgot-Borgen, J. (1994). Risk and trigger factors for the development of eating disorders in female elite athletes. *Medicine & Science in Sports & Exercise*, 26(4), 414–419. <https://doi.org/10.1249/00005768-199404000-00003>
62. Terán-Yépez, E., Marín-Carrillo, G. M., Casado-Belmonte, M. del P., & Capobianco-Uriarte, M. de las M. (2020). Sustainable entrepreneurship: Review of its evolution and new trends. *Journal of Cleaner Production*, 252, 1–16. <https://doi.org/10.1016/j.jclepro.2019.119742>
63. Thelwell, R. C., Wagstaff, C. R. D., Chapman, M. T., & Kenttä, G. (2017). Examining coaches' perceptions of how their stress influences the coach–athlete relationship. *Journal of Sports Sciences*, 35(19), 1928–1939. <https://doi.org/10.1080/02640414.2016.1241422>
64. Varea-Calero, A. D., Rejón-Guardia, F., Ramírez-Hurtado, J. M., & Berbel-Pineda, J. M. (2025). Impact and development of sport sponsorship: a three-decade bibliometric analysis (1993–2024).

- Sport, Business and Management: An International Journal*, 15(2), 176-203. <https://doi.org/10.1108/SBM-09-2024-0134>
65. Walton, C. C., Purcell, R., Henderson, J. L., Kim, J., Kerr, G., Frost, J., Gwyther, K., Pilkington, V., Rice, S., & Tamminen, K. A. (2024). Mental Health Among Elite Youth Athletes: A Narrative Overview to Advance Research and Practice. *Sports Health: A Multidisciplinary Approach*, 16(2), 166–176. <https://doi.org/10.1177/19417381231219230>
66. Wijewickrema, M. (2023). A bibliometric study on library and information science and information systems literature during 2010–2019. *Library Hi Tech*, 41(2), 595–621. <https://doi.org/10.1108/LHT-06-2021-0198>
67. Zhe, C., Lu, X., & Xiong, X. (2021). Analysis of Influence Factors on the Quality of International Collaboration Research in the Field of Social Sciences and Humanities: The Case of Chinese World Class Universities (2015–2019). *Sage Open*, 11(4), 1-12. <https://doi.org/10.1177/21582440211050381>
68. Zhu, J., & Liu, W. (2020). A tale of two databases: the use of Web of Science and Scopus in academic papers. *Scientometrics*, 123(1), 321–335. <https://doi.org/10.1007/s11192-020-03387-8>

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

FUNDING

This research received no external funding.

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