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## Bibliometric Analysis: Psychology in Sport

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### Abstract

Psychology in sport is a rapidly growing field that examines the influence of psychological factors on athletic performance and overall well-being. Research in this field has identified a range of psychological factors that can impact an athlete's performance, including motivation, self-confidence, anxiety, attention, and goal-setting. This paper aims to do a systematic review using a bibliometric meta-analysis, regarding the role of emotion in sport and identify avenues for future studies. Scopus database was used in the data-gathering phase. PRISMA approach and keyword search were extracted and analyzed. The research resulted in 1906 articles combinations of the following keywords: 'psychology', 'in', and 'sports'. This bibliographic data of articles published in the journals over the three years (2020-2023) were extracted. VOS viewer was used to analyzing the data contained in all articles which published in English language. Thus, in this article four items was analysed such as year of publication, subject area, countries, affiliation and more related with article publication. While the findings show that the utilization and acknowledgment psychology in sport effects the performance of the athletes. Furthermore, data showed psychology is an essential skill for athletes to deliver the best achievement. Moreover, researchers should examine the relationship between types of sports and effects of psychology in sport.

**Keywords:** Psychology, VOS Viewer, Bibliometric Analysis, PRISMA

### Introduction

Psychology plays a crucial role in sports performance, and the field of psychology in sports has gained considerable attention in recent years. Sports psychology focuses on understanding the mental processes that influence athletic performance, including motivation, anxiety, confidence, and concentration. The application of psychology in sports can help athletes improve their performance and achieve their goals. Additionally, it can aid coaches and sports organizations in developing effective training programs and enhancing team dynamics. According to a study by Schinke et al (2021), "Psychological factors have been identified as critical to the success of athletes and teams, and psychological skills training has become a fundamental part of athletic training programs." The authors highlight the importance of understanding the psychological aspects of sports performance and how they can impact an athlete's overall success.

Numerous studies have highlighted the importance of sports psychology in enhancing athletes' performance, managing stress and anxiety, and improving team dynamics. For example, a recent systematic review conducted by Lim and colleagues (2022) examined the effectiveness of psychological interventions on athletic performance. The review found that interventions such as imagery, goal-setting, self-talk, and relaxation techniques can significantly enhance athletes' performance and reduce anxiety.

Moreover, sports psychology can help athletes deal with the psychological challenges of injury. For instance, a study by Arvinen-Barrow and colleagues (2021) examined the role of psychological factors in the rehabilitation of injured athletes. The study found that psychological interventions such as goal-setting, positive self-talk, and imagery can aid in the rehabilitation process and promote a positive mindset, leading to a quicker return to sport. In terms of team dynamics, sports psychology can help improve communication and develop a shared sense of purpose. A study by Kim and colleagues (2020) found that team-based interventions, such as group goal-setting and team-building activities, can enhance team cohesion and performance.

Overall, the importance of sports psychology in enhancing athletes' performance, managing stress and anxiety, and improving team dynamics cannot be overstated. By addressing the psychological aspects of sports performance, athletes and teams can achieve greater success and well-being.

## II. Objective and Significance

So, this systematic survey is to identify peer-reviewed literature on the field psychology in sports through the Scopus database. The research work precisely summarized the research objective as shown in Table 1.

Table 1  
*Research Objective with Its Significance*

Research Objective	Significance of research
Analyze literature related to the psychology in sports	Contributed to identifying clusters that are frequently studied and be able to improve their related studies in the future.
Identify trends in literature review of the psychology in sports	Using the PRISMA approach and Bibliometric methods to identify research trends in the field.
Analyze the impact of the psychology in sports based on literature review.	Recommend the effectiveness of the psychology in sports

## iii. Material and Method

A systematic literature review is desirable for research on this topic. PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) and Bibliometric analysis have been applied to answer the research questions. PRISMA method was used to shortlist and

select the 1906 works from Scopus databases with explicit inclusion and exclusion criteria as below. This bibliographic data of articles published in the journals over the three years were extracted.

VOSviewer is a software tool for constructing and visualizing bibliometric networks. It is designed to help researchers explore and analyze large-scale bibliometric data, such as citation networks and co-citation networks. VOSviewer provides a range of visualization and analysis options, including network maps, cluster analysis, and density visualization. By using VOSviewer, researchers can gain insights into the structure and dynamics of scientific fields, identify key authors and publications, and track the development of research topics over time.

While the study of this paper appropriated the accompanying parts of scholarly works. VOS Viewer was used to analyze and answering the objectives of the study. The analysis was conducted to identify the frequency of publication of studies in psychology in sports. Among the aspects identified are publications issued from 2021 to 2023. Even the subject area and publication trends are also analyzed in this literature review. The outcome of VOS findings shows that the utilization and acknowledgment psychology in sports is huge and it's a major part of enhancing the performance of the athletes.

- The article period of 2021 to 2023
- The article focuses on psychology in sports.
- Duplicate article with same author and topic removed.

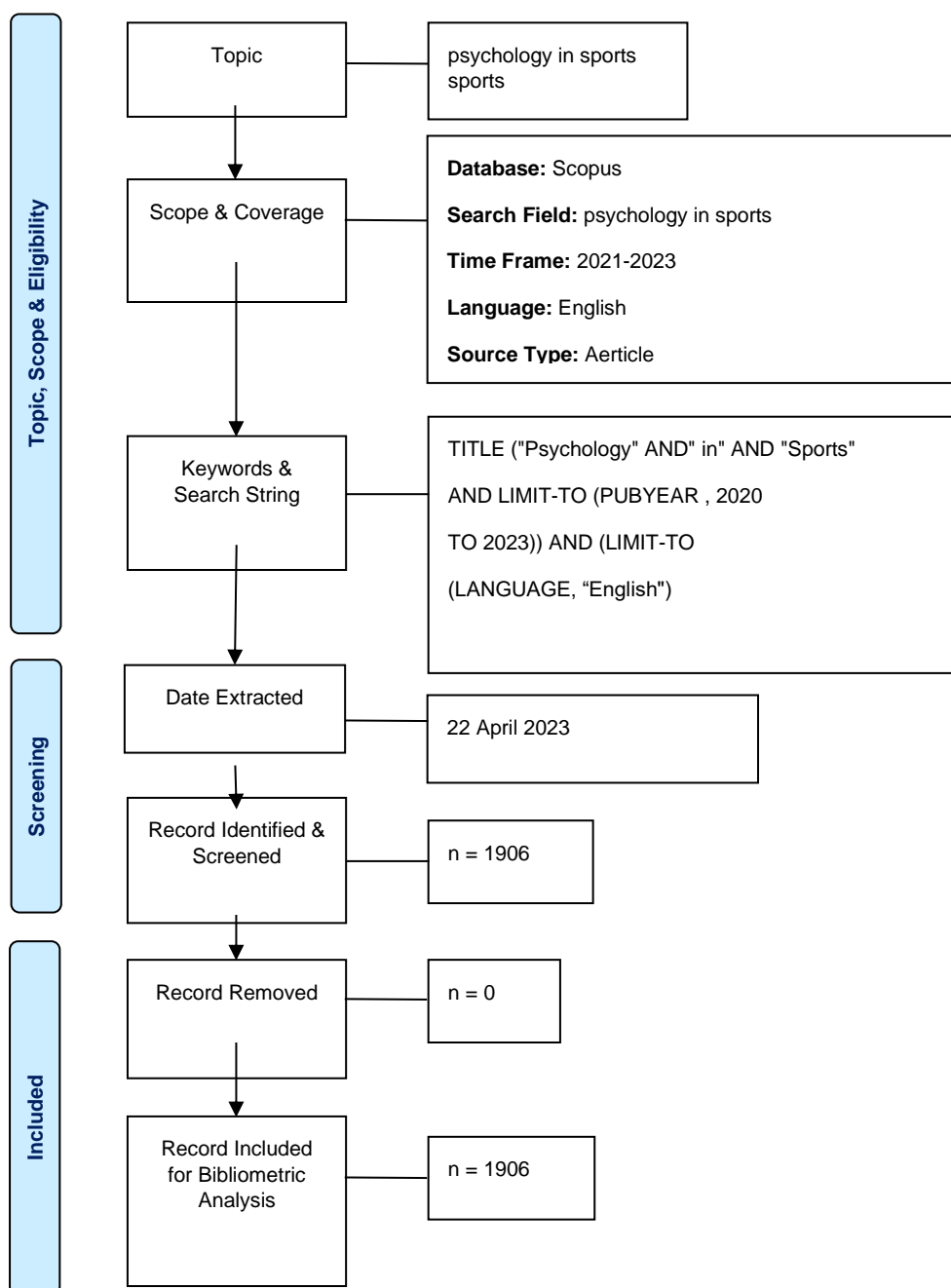


Fig. 1. PRISMA flowchart for the systematic review of psychology in sports.

### A. Current publication state of psychology in sports

Table 1 shows, an analysis is conducted to see the publication by trend or landscape of the study is conducted. Findings show for 2021, a total of 785 studies were published and 673 times referenced in other studies. The average citation value per cited publication for the year was 4.96 and a total of 5.79 studies recorded the index h, and 22 studies recorded the index value g. Meanwhile, for the year 2022 found that a total of 913 were published. Still, 47.90% articles in the total number were not referenced, and 1.70 studies recorded the value of the index h, and 12 studies recorded the value of the index g. Following the year 2023, a total of 208 were published and just 68 times referenced in other studies. The total number of study publications in the databases showed an increase for the years 2021 and 2022.

Table 1

*Year of publication*

Year	TP	NCP	TC	C/P	C/CP	<i>h</i>	<i>g</i>
2023	208	10.91%	37	68	0.33	1.84	3
2022	913	47.90%	486	1550	1.70	1.70	12
2021	785	41.19%	673	3896	4.96	5.79	22
Total	1906						

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; *h*=*h*-index; and *g*=*g*-index.

**B. Themes and trends of psychology in sports**

Meanwhile, the objective of this review study also emphasizes identifying trends or landscapes of studies conducted in the field of text visualization in education. Table 2 shows the analysis of the subject area of the study conducted in as many as 1906 studies conducted. The table below shows a total of 20 subject areas frequently studied between these three years. In that, many studies were done in the field of medicine, which is 997 (52.31%), followed by psychology with a total of 619 (32.48%), and studies in the field of health professions are 454 (23.82 %). On the other hand, environmental science subjects were performed once 289 (15.16%). It can be concluded that the subject area of psychology conducted many studies published in the database analyzed in this review paper.

Table 2

*Top five Subject Area*

Subject Area	Total Publications (TP)	Percentage (%)
Medicine	997	52.31%
Psychology	619	32.48%
Health Professions	454	23.82%
Environmental Science	289	15.16%
Social Sciences	285	14.95%

**C. Countries contributed to the publications.**

According to the number of publications, most of the articles originated from United States (n=453), followed by the United Kingdom (n=304), China (n=186), Australia (n=172), Spain (n=167), Canada (n=156), Germany (n=106), Brazil (n=85), Italy (n=79) and Sweden (n=70). According to the databased United States and the United Kingdom, the highest contributed to the publications meanwhile more European countries in the top ten countries contributed to the publications list except China which ranked third in th list.

Table 3

*Top 10 Countries contributed to the publications*

Country	TP	%
United States	453	23.77%
United Kingdom	304	15.95%
China	186	9.76%
Australia	172	9.02%
Spain	167	8.76%
Canada	156	8.18%
Germany	106	5.56%
Brazil	85	4.46%
Italy	79	4.14%
Sweden	70	3.67%
France	64	3.36%
Poland	55	2.89%
South Korea	55	2.89%
Netherlands	49	2.57%
Ireland	44	2.31%
Portugal	43	2.26%
Japan	38	1.99%
Switzerland	38	1.99%
Norway	36	1.89%
Belgium	34	1.78%

**D. Most influential institutions with minimum of twenty publications.**

There were a total of 10 institutions with a minimum of 20 publications. The most prolific institution with total publication (n=30) was the Loughborough University. Followed by The University of Queensland with (n=28) publications, University of Portsmouth with (n=26) publications. On another hand four institutions which La Trobe University, Deutsche Sporthochschule Köln, Liverpool John Moores University and the University of Baghdad were equal publications (n=20).

Table 4

Most top 10 influential institutions in publications

Affiliation	TP	%
Loughborough University	30	1.57%
The University of Queensland	28	1.47%
University of Portsmouth	26	1.36%
Universidad de Extremadura	25	1.31%
Harvard Medical School	24	1.26%
University of Toronto	21	1.10%
La Trobe University	20	1.05%
Deutsche Sporthochschule Köln	20	1.05%
Liverpool John Moores University	20	1.05%
University of Baghdad	20	1.05%

F. VOS viewer visualization of a term co-authorship network based on the key words and author. Based on the VOS viewer, there were 32 items with 7 cluster in author in figure 2.

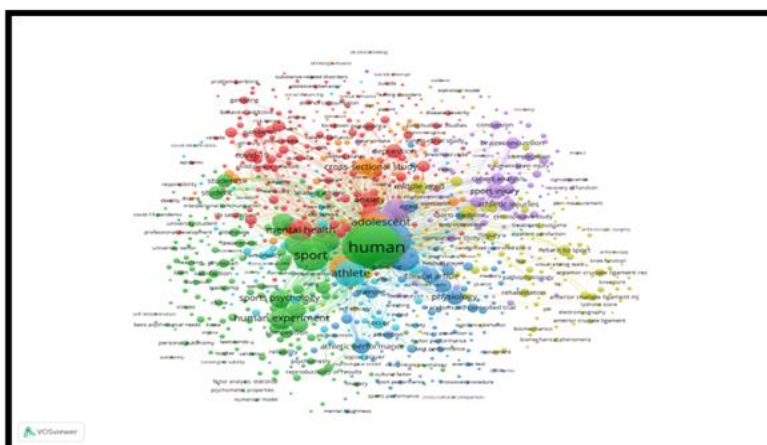


Fig 1. VOS viewer visualization of a term co-occurrence network based on keywords.

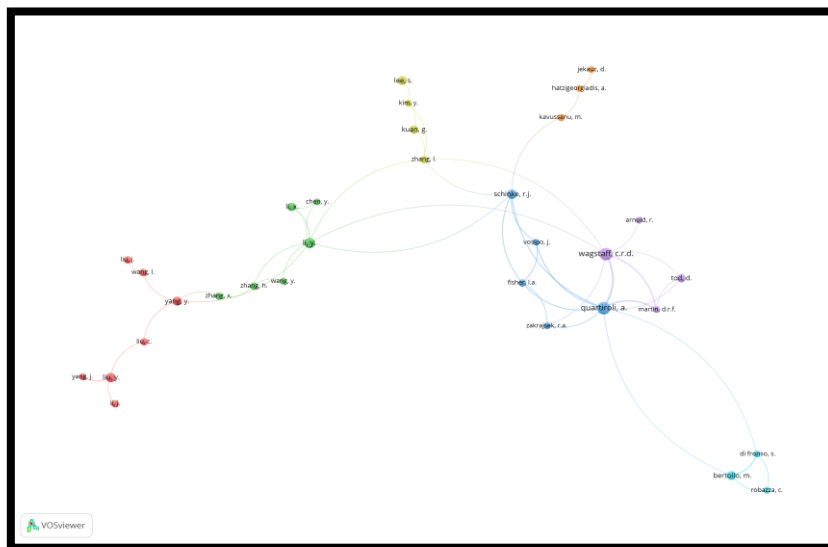


Fig 2. VOS viewer visualization of a term co-authorship network based on the author.



### **Motivation and Contribution**

The study of psychology in sport has gained significant attention in recent years due to its potential to enhance athletic performance, improve mental well-being, and contribute to the overall understanding of human behavior in sports settings. However, the literature in this field is vast and diverse, making it challenging to navigate and comprehend the key trends and developments. Therefore, this bibliometric analysis aims to provide a comprehensive overview of the existing research, identify emerging themes, and highlight the most influential publications and researchers in the field. By undertaking this study, researchers and practitioners will gain valuable insights into the current state of psychology in sport and identify directions for future research.

This study will make several significant contributions to the field of psychology in sport. Firstly, it will offer a systematic and structured review of the existing literature, which will aid researchers, scholars, and practitioners in gaining a comprehensive understanding of the field's progress. By identifying the most influential publications and researchers, it will guide scholars in recognizing key contributors and their seminal works. Moreover, this analysis will shed light on emerging trends and themes within psychology in sport, helping to identify knowledge gaps and opportunities for further exploration. Ultimately, this study will provide a valuable resource for researchers and practitioners seeking to advance the application of psychological principles in sports settings, benefiting athletes, coaches, and the broader sporting community.

### **Discussion and Conclusion**

Psychology in sports is still a relatively interesting topic of study, but it has produced a multidisciplinary academic field that is both theoretical and practical. This research provides a detailed bibliometric analysis of the references identified in the academic junction of emotions in sports. Since bibliometric studies have applied several approaches and technologies that can be combined to improve the studies' strength and reliability. This study focuses on two bibliometric methods used in this research topic: bibliometric analyses and visual mapping of knowledge. Overall, the findings show that the research on this study issue has expanded in recent years across all scientific fields. The literature was analyzed in this study from the fields of sports emphasize emotion in sport. The bibliometric performance analysis conducted in this study reveals that the United States, United Kingdom and the China are the countries with the highest academic output in this field. These findings are also supported by visual mapping. Nevertheless, both methods agree that the United States is by far the most influential of these countries, as measured by the number of citations received and the h-index. This outcome is not unexpected.

Furthermore, in the recent three years, various countries have paid great attention to this research area. The examples of Australia, China, and Spain. They are significant and have greatly contributed to the production on this topic.

Somehow, Asia countries South Korea and Japan have fewer publications on this research except for China. This is can be one of the factors China athletes doing well in world competition.

Additionally, knowing this information may be useful for evaluating and recognizing new research ideas, as well as assisting in the construction of research networks. Such a network would support the expansion and strengthening of this interesting research topic. Second, the information offered in this study can be used to make decisions in the political and

sports institutional sectors about which projects to emphasize or fund concerning this research issue.

This study, however, contains several limitations. First and foremost, the changing processes of science must be considered. This indicates that the structure of science and other bibliometric performance measures may change slightly. Several researchers have appeared to publish on this topic in the previous three years, but nothing promises that they will continue to concentrate and develop their study. However, as previously said, the goal of this study is to provide an updated general overview of the research that has been conducted at the influence of psychology in sports. Moreover, the bibliometric performance measures are based on a review of scientific articles only. This suggests that several additional important documents may have been overlooked in the analysis. Similarly, using Scopus as the primary source of the studied references could lead to the exclusion of alternative papers. Future research should expand or supplement this bibliometric analysis to include other databases like WoS, EBSCO, and ProQuest, among others. However, to our knowledge, this study does a good job of capturing the important scientific experts who have contributed to this important field of inquiry.

Overall in this article analysed scientific publications and identify patterns, trends, and relationships in the literature. This article contained systematic review of the literature, creating citation maps, and identifying key authors, journals, and research themes on topic of psychology in sport. Furthermore VOS Viewer used to identify the most influential authors and journals, as well as the most commonly studied topics and themes in the literature. Additionally VOS Viewer also used to conduct a meta-analysis of the literature and identify gaps in the research. By identifying the most frequently studied topics and themes, researchers can identify areas where there is a need for further research or where new research approaches may be needed. Based on results, researcher recommended VOS viewer used for gain a better understanding of the literature and identify areas for future research.

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Gunathevan A/L Elumalai	Associate Professor	Sports Science and Coaching