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A Bibliometric Review of Basketball Game: Publication Trends Over the Past Five Decades

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This study aims to examine the evolution of basketball-related scientific publications in the Scopus database by using a variety of bibliometric indicators, such as publication trends, the most influential countries, the most productive authors, and author keywords. From 1969 until 2021, the Scopus database registered 584 basketball publications. This review scrutinised the bibliographic results using Microsoft Excel, Publish or Perish (PoP), and VOSviewer. The production pattern fluctuated throughout the year, but after 2011 it climbed dramatically. In 2006, publications on basketball research had increased to double digits, with 11 documents. Significantly, between 2020 and 2021, 140 publications were published, with 66 in 2020 and 74 in 2021 indicating scholarly interest. The United States is the most productive country, with 210 academic works. J. Sampaio and J. Yanci were the most prolific authors. The Universidad de Granada rose to the top of the productivity rankings. This study has several limitations; the method applied in this study needs to clarify how to find, categorise, and use a database. It's worth noting that data can also be obtained from other databases.

Keywords: Basketball; Bibliometrics; Scopus Database; Publication Trends; VOSviewer

I. INTRODUCTION

The entertainment industry has become a substantial and rapidly expanding component of the economy, with professional sports playing a significant role in boosting the commercialisation and globalisation of sports (Luo *et al.*, 2015). Basketball became an essential forum for the ongoing discussion and topped the sport's rankings, which justifies its popularity as a spectacle and cultural significance (Grundy *et al.*, 2014). Continuous conversation can occur through various media and means, one of which is the results of research conducted and published with open access or subscription, to contribute to the emergence of excellent and high-quality research in basketball development.

Scientific publications are increasingly being used to disseminate information in almost every field of study, including sports sciences (Sans-Rosell *et al.*, 2015; Blanca-

Torres *et al.*, 2020). In this context, a bibliometrics review is highly imperative because it is pragmatic to analyse the nature of publications concerning organisations and nations and determine the evolution or propagation of specific themes (Prieto *et al.*, 2015). Bibliometrics is the study or measurement of books or other publications using miscellaneous information to be scrutinised in innumerable databases (Abdullah, 2021a). Important too, a bibliometric review provides a snapshot of the current state of scientific research on a particular topic (Abdullah, 2021b). Bibliometrics is anticipated to be the dominant method of evaluating the influence of publications, scholars, and sources in the future (Pesta *et al.*, 2018).

A well-executed bibliometric review could lay the groundwork for substantial advancements in a topic, enabling and empowering academics to gain a holistic view of the field, identifying knowledge gaps, generating new

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research ideas, and positioning the planned contribution to the field (Donthu *et al.*, 2021). Predominantly, there are three types of bibliometric indicators: (1) quantity indicators that measure productivity in terms of the number of publications; (2) quality indicators that measure a publication's impact in terms of the number of citations; and (3) structural indicators that measure the relationship between publications. These three indicators favoured previous scholars in analysing publication trends in their subject of interest relevant to bibliometric measuring (Valérie & Pierre, 2010). As a result, bibliometric studies, which consider the amount and the quality of publications, are crucial (Blanca-Torres *et al.*, 2020).

In sports games, bibliometric analysis has been used in some research, such as handball (Prieto *et al.*, 2015; Ibáñez *et al.*, 2020), badminton (Blanca-Torres *et al.*, 2020), futsal (Palazon *et al.*, 2015), volleyball beach (Iermakov *et al.*, 2021), rugby (Villarejo *et al.*, 2010; Martín *et al.*, 2013), judo (Peset *et al.*, 2013; Caravaca *et al.*, 2018), jujutsu (Pérez-Gutiérrez *et al.*, 2021), taekwondo (Pérez-Gutiérrez *et al.*, 2015; 2017), swimming (Nugent *et al.*, 2016), tennis (Allen *et al.*, 2015; Knudson, 2020), artistic gymnastics (Vargas & Capraro, 2020), baseball (Huang & Hsu, 2021), tai chi (You *et al.*, 2021).

Furthermore, a large number of publications on various basketball topics have piqued the interest of previous researchers. The articles mainly focused on women's basketball (Carter *et al.*, 2005; Jiang & Lee, 2017), game efficiency indicators pertinent to basketball (Sporiš *et al.*, 2006), competitive balance (Meletakos *et al.*, 2015; Scott *et al.* 2019), fatigue (Rashid *et al.*, 2020; Li *et al.*, 2021), post-workout recovery (Calleja-González *et al.*, 2015), wheelchair basketball (Vanlandewijck *et al.*, 2004; de Groot *et al.*, 2012; Calleja-González *et al.*, 2015; de Witte *et al.*, 2016), technical skills (Klusemann *et al.*, 2012), injuries (Conde *et al.*, 2021), cultural innovation (Campbell, 2015), elite athletes (Sotiriadou & Shilbury, 2009; Scanlan *et al.*, 2011; Torres-Unda *et al.*, 2013; Bennett *et al.*, 2017), and college basketball (Blanco & Bairner, 2018; Fortunato, 2019).

However, the bibliometric review on basketball games is inadequate, with only one paper published. The paper is grounded on metadata retrieved from the Web of Science database. The study aimed to assess scientific production

relevant to the issue of basketball, which was undertaken by Saiz & Toro in 2015. Saiz and Ortega (2015) analysed a basketball-related bibliometric study by determining the distribution of analyses regarding research topics, proactive authors, and significant journals. However, the present bibliometric study includes different criteria for keyword analysis. This keyword analysis is likely to aid future researchers in understanding which terms are frequently utilised in previous studies. In addition, keyword analysis can help future researchers examine the scope and context of basketball-related research that can bring value to studying theoretical, practical, and field-specific knowledge through systematic review or scoping review.

This study focuses on a bibliometric review, which includes: 1) a description of the publication's descriptive parameters (evolution of publications), 2) leading sources, 3) countries and institutions, 4) active authors, 5) visualising citation patterns from academic works in basketball, 6) extracting keywords and producing maps that describe the co-occurrence of terms in academic works related to basketball, and 7) describing the impact and performance of academic works related to basketball. The data in this study is designed to provide a consistent summary of basketball game research patterns, which may stimulate readers and researchers to evaluate the data for future studies.

The author believes that a bibliometric review technique could significantly contribute to current basketball game research by filling gaps and opening up new avenues for future research. Based on bibliometric analysis and visualisation, this study presents an impartial and up-to-date overview of basketball.

II. MATERIALS AND METHOD

This bibliometric review aims to observe the trajectory of basketball-related articles in the Scopus database from their inception in 1969 until 2022. Even though the data retrieval occurred in 2021, Scopus already recorded the publication in 2022. A likely reason is that the data retrieval took place on December 26, 2021, which is the last week of 2021. This study was based on the entire process, from data collection through data filtering for the existing publications. Determining and clarifying the study's objectives is an essential first step in this bibliometric review.

In this study, the technique for gathering Scopus metadata is depicted in Figure 1. The selection and research procedure is explicitly based on the PRISMA flowchart's selection approach and research process (Moher *et al.*, 2010). The inquiry was completed in the Scopus database as a descriptive analysis utilising the document inspection technique. On December 26, 2021, the keyword "basketball" was searched in the Scopus database to retrieve a list of publications. The search strategy is based on the article title, abstract, and keywords. Scopus was chosen over other databases such as Web of Science and Pubmed because it includes more documents (Sweileh *et al.*, 2017) and has been a leading reference for previous scholars (Khiste & Paithankar, 2017).

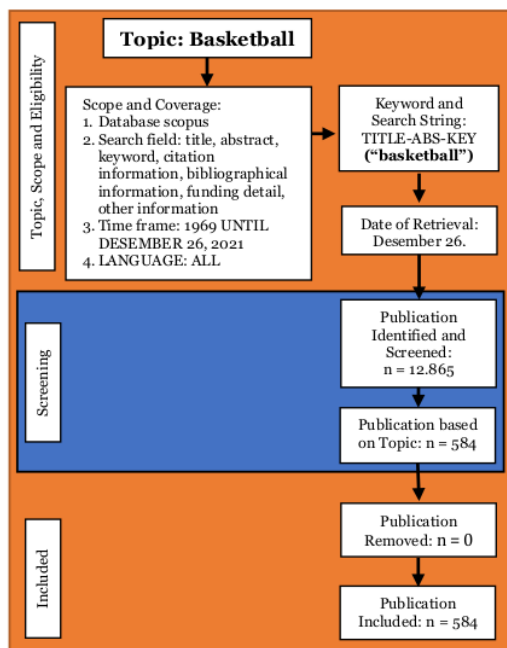


Figure 1. Strategy for selection and research procedure

As per the article title, abstract, and keywords, this study discovered 12,865 basketball publications (with three provisional scientific papers published in 2022) from 1969 to 2022. And based on the topic solely, 584 publications have been discovered. According to the publication status, 573 (98.12%) of the 584 publications retrieved were in the final stage, while 11 (1.88%) were articles in press. According to the type of scientific source, there are 440 (75.34%) journals, 72 (12.34%) conference proceedings, 42 (7.19%)

book series, 29 (4.96%) books, and 1 (0.17%) trade journal. These findings illustrate the significance of basketball in sports science research, establishing it as one of the most crucial study topics in the field (Sáiz & Toro, 2015).

This study has utilised the metadata obtained through topic searching. A likely reason is that when reading a scientific communication, the reader's attention is initially drawn to the topic. It should capture the reader's attention and persuade them to continue reading the manuscript. According to Shah (2014), a topic of an article helps readers understand and believe a manuscript's content and prepares them for what will come in the article's body. A further inspection of the metadata related to the topic "basketball" indicated 358 publications was categorised as articles, 63 review papers, 59 conference papers, 59 conference reviews, 21 book chapters, nine books, eight editorials, five notes, and one letter and a brief survey among the 584 publications. There are 563 publications available in English, 10 in Portuguese and Spanish, four in Chinese, three in Croatian, two in French, and one in German, Russian, and Turkish.

The bibliographic review in this study employs data in the form of Comma-separated Values (CSV) and Research Information Systems (RIS) formats. The data were then exported to Microsoft Excel, Publish or Perish (PoP), and VOSviewer software to analyse particular parameters, as determined by researchers (Abdullah, 2021c). It is worth noting that the uniqueness of VOSviewer is that this software could visual features based on mapping techniques, which transform CSV data into diagrams or clusters (van Eck & Waltman, 2010, 2021; Abdullah & Abd Aziz, 2021). The detailed information gathered for this review includes the author's name, document source, publications years, publication title, countries information, journal, topic area, and publication type.

Researchers frequently use mapping approaches to analyse critical information such as author, location, organisation, citation, cocitation, and other refining factors (Khalil & Crawford, 2015). As a result, in this study, the author employs the following VOSviewer parameters to analyse the above data: 1) Analysis type (Co-occurrence analysis), 2) Unit of analysis (All keywords), 3) Computation method (Full counting), and 4) Minimum number of author documents (2 documents).

III. RESULTS AND DISCUSSION

A. Publication Productivity Every Year

This section traces the evolution of basketball-related scholarly publications discovered between 1969 and 2022. It's critical to keep track of publication patterns to uncover possible research subjects for future research. It is also vital to assist readers and future researchers in determining the significance of the pertinent topic. This study may fascinate future scholars who want to fine-tune the factors determining the rise or fall of year-based publications. The popularity of this publication also demonstrates that basketball is one of the sports with a significant social, economic, cultural, and educational influence, as seen by scholars' desire to study the subject.

Over 50 years, a total of 584 papers have been published, with 180 of them being in open-access mode. It means they are free to download, analyse, and serve as a resource for researchers who want to read the entire article. However, 404 publications are not open access and require a fee to access the full content. Assume that additional publications can be made freely available. In such a situation, the number of visits to the journal's website, the number of readers of the publication, and the number of citations will all grow, and scientific discourse will become more open.

Kay RE authored the first paper on basketball, published in 1969. The article entitled "Our American Educational System: Do So-Called Modern Schools Do More Harm Than Good?" was published in *Clinical Paediatrics*. The article has received two citations. There were no other articles in the Scopus database during this time.

By observing the pattern of publications from 1969 to 2005, this study indicated a varying tendency in quantity over roughly 36 years; this trend did not suffer a radical or extreme growth (the number of publications was still in the single digits). Additionally, this study discovered that the direction of basketball articles is not particularly strong in the Scopus database. Perhaps another database, such as Web of Science, included more basketball-related publications. The reason for this scenario is that the Web of Science has also been recognised as a gateway to high-impact journals, effectively attracting the attention of previous researchers.

Since 2006, the number of publications has increased to double digits, with 11 papers. Conversely, the number of publications returns to single digits in the following two years. The number of publications increased to double digits in 2009, with 11 papers. In 2010, the number of documents published quadrupled from 2009, reaching a high of 26, signalling the beginning of double-digit growth in publications. In 2011, there was another decline in publications, with 17 papers. However, the number of published documents increased from 2012 to 2015, and then the number of documents published fluctuated until 2019. It has been recorded that 140 publications have been released in the last two years (2020-2021). From 2020 to 2021, there is a promising trend of progress. Various factors have influenced scholars' interest in researching basketball-related issues. From 2020 to 2021, the Covid-19 pandemic, which began in 2019, significantly influenced basketball articles since working from home enabled researchers to write more papers. Moreover, with the growth of Information and Communication Technology (ICT) in this age, all vital information is available at the touch of a button. As a result, prior researchers could obtain papers and reference sources conveniently and quickly.

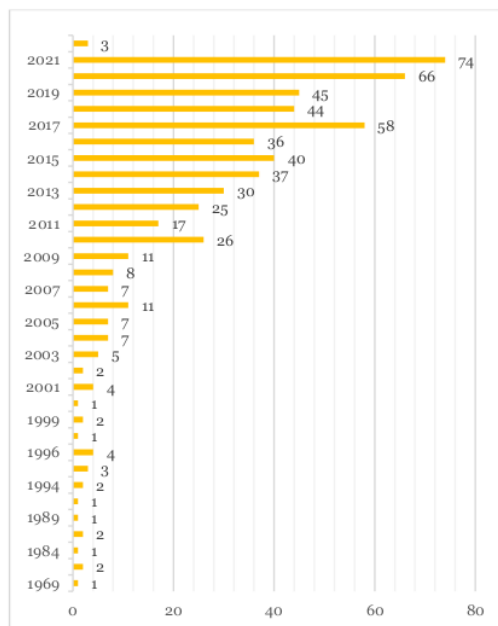


Figure 2. Publication productivity every year

B. The Most Reliable Scientific Source

Table 1 lists the most prominent scientific sources for basketball-related articles, ordered by the number of publications. A list of ten sources is offered, each containing at least five publications. With 11 publications, Lecture Notes in Computer Science has become a reputable source in this discipline. The uniqueness of this scientific source demonstrates that the advancement of sophisticated technology aids basketball research worldwide. Basketball is dense with entertainment nuances, attracting scholars from sports and non-sports fields to study the sport, notably computer science. Technological advancements have driven and aided adaptation, particularly in enhancing basketball knowledge during the learning process or games. Consequently, practitioners, physical education and sports educators, coaches, and stakeholders in basketball development can benefit from the significance of technology,

particularly computing. As a result, academics actively conduct basketball-related research, including computational and technology advancements. Therefore, they searched appropriate and recognised technological journals, such as Springer's Lecture Notes in Computer Science, to enhance the discussion of related aspects and expand their contributions to the body of knowledge.

PLOS One came in second place. Third place went to the Clinical Journal of Sport Medicine. Based on these findings, it is proposed that these sources offer essential knowledge that will allow aspiring researchers to gain valuable resources in their future studies in the pursuit of basketball greatness. It also conveys that the source makes finding and manipulating pertinent information more straightforward for readers. Table 1 shows the relationship between critical scientific sources and worldwide publishing patterns.

Table 1. The following are ten of the most authoritative scientific sources on the subject of basketball

Reputable Journal	Article	%
Lecture Notes in Computer Science	11	1,88
PLOS One	9	1,54
Clinical Journal of Sport Medicine	7	1,19
International Journal of Environmental Research and Public Health	7	1,19
Journal of Physical Education and Sport	6	1,03
Revista de Psicologia del Deporte	6	1,03
Advanced Materials Research	5	0,86
Advances In Intelligent Systems and Computing	5	0,86
Communications In Computer and Information Science	5	0,86
Nutrients	5	0,86

C. Writers Who are Most Prolific and Influential

The number of citations and citations per year are used to evaluate the effect and performance of the basketball research. As of December 26, 2021, citation metrics for

documents were retrieved. Harzing's Publish and Perish program has produced citation metrics by importing RIS format files from the Scopus database. Table 2 shows the ten most cited papers in the Scopus database (based on the number of citations).

Table 2. 10 top productive authors

Cite	Cite per Year	Author	Title	Year	Source
320	24.62	D.M. Roden	Long-QT syndrome	2008	New England Journal of Medicine
274	15.22	J.M. Conn, J.L. Annest, J. Gilchrist	Sports and recreation related injury episodes in the US population, 1997-99	2003	Injury Prevention
265	18.93	R. Bartlett, J. Wheat, M. Robins	Is movement variability important for sports biomechanists?	2007	Sports Biomechanics

235	15.67	A. Junge, G. Langevoort, A. Pipe, A. Peytavin, F. Wong, M. Mountjoy, G. Beltrami, R. Terrell, M. Holzgraefe, R. Charles, J. Dvorak	Injuries in team sport tournaments during the 2004 Olympic games	2006	American Journal of Sports Medicine
193	13.79	S. Shapiro	Vagueness in Context	2007	Vagueness in Context
174	15.82	V. Manzi, S. D'ottavio, F.M. Impellizzeri, A. Chaouachi, K. Chamari, C. Castagna	Profile of weekly training load in elite male professional basketball players	2010	Journal of Strength and Conditioning Research
173	43.25	R.M. Hulteen, J.J. Smith, P.J. Morgan, L.M. Barnett, P.C. Hallal, K. Colyvas, D.R. Lubans	Global participation in sport and leisure-time physical activities: A systematic review and meta-analysis	2017	Preventive Medicine
168	28.00	V.G. Coronado, T. Haileyesus, T.A. Cheng, J.M. Bell, J. Haarbauer-Krupa, M.R. Lionbarger, J. Flores-Herrera, L.C. McGuire, J. Gilchrist	Trends in sports-and recreation-related traumatic brain injuries treated in US emergency departments: The National Electronic Injury Surveillance System-All Injury Program (NEISS-AIP) 2001-2012	2015	Journal of Head Trauma Rehabilitation
168	7.30	G.L. Nemhauser, M.A. Trick	Scheduling a major college basketball conference	1998	Operations Research
159	39.75	Y. Lu, Y. Wei, L. Liu, J. Zhong, L. Sun, Y. Liu	Towards unsupervised physical activity recognition using smartphone accelerometers	2017	Multimedia Tools and Applications

D. The Active Authors

Table 3 shows a group of five authors who have published at least three publications on basketball. With five publications, J. Sampaio, affiliated with Universidade de Trás-os-Montes e Alto Douro in Portugal, has led the ranking together with Yanci, J., Universidad del País Vasco, Spain. While Calleja-González, J., from the University of the

Basque Country, Spain, is in the following position with four publications. This information has demonstrated that university scholars have interested in basketball studies. The most well-known authors are from developed countries. However, few authors from developing countries actively engage in basketball research.

Table 3. Five of the most well-known and well-respected basketball writers

Author	Affiliation	Countries	H-Index	Publication
Sampaio, J.	Universidade de Trás-os-Montes e Alto Douro	Portugal	69	5
Yanci, J.	Universidad del País Vasco	Spain	27	5
Calleja-González, J.	University of the Basque Country	Spain	36	4
Iturricastillo, A.	University of the Basque Country	Spain		4
Babor, T.F.	University of Connecticut	United States	94	3

E. The Status of the Most Prominent and Influential State

Figure 3 depicts the ten most productive countries in basketball-related publications, each of which published at least 14. With 210 printed publications of academic scientific study, the United States is the most productive country, far ahead of other countries. With 49 and 47 scholarly

publications, China and Spain are the second and third most productive nations. There are no representatives from the African continent in the country distribution rankings, indicating that basketball is not a popular sport on the continent. Combined with the National Basketball Association (NBA), these ten countries represent the world's most prolific source of professional athletes and the world's

most affluent and grandiose leagues, which every professional athlete desires to play in. Among them are developed countries, except Brazil. This demonstrates that basketball is gaining popularity and is widely recognised by the general public in industrialised countries.

Table 4. The most well-known countries' standing in basketball publications

Rank	Country	Publication
1	United States	210
2	China	49
3	Spain	47
4	United Kingdom	40
5	Canada	31
6	Australia	28
7	Germany	23
8	Brazil	16
9	Italy	15
10	Taiwan	14

F. Institution with The Most Productive and Influential Workforce

A total of 160 institutions are participating in publishing research papers on basketball-related themes. Table 5 shows ten institutions that have published at least six times. With three institutions from Spain and four from the United States, Spain and the United States became the countries that contributed the most publications on basketball. The interaction between authors and institutions impacted research by providing knowledge on basketball to society and basketball fans. Table 5 has offered further information pertinent to the most productive and influential institutions.

Table 5. Institutions with the most productive

Affiliation	Country	Publication
Universidad de Granada	Spain	10
Universidad del Pais Vasco	Spain	9
George Mason University	United States	7
University of Michigan, Ann Arbor	United States	7
Universidad Politécnica de Madrid	Spain	7
Centro de Investigação em Desporto, Saúde e Desenvolvimento Humano	Portugal	7
University of Calgary	Canada	6
University of Washington	Unites States	6

University of Memphis	United States	6
Lithuanian Sports University	Lithuania	6

G. Distribution of Frequently Appearing Keywords Overlayed

In general, the keywords of any publications had denoted the significant components of a prior study that piqued curiosity among the authors. Publication keywords are essential components reflecting knowledge ideas in bibliometric research, and they've been widely employed to expose the knowledge structure of the study area (Su & Lee, 2010) and the technique of picking "important" keywords for this analysis (Chen & Xiao, 2016). The author's keywords often appear, highlighting the primary study topics and issues.

VOSviewer has mapped the authors' keywords in this analysis. In this study, the size of the nodes is related to the frequency with which the term appears. The connecting line's colour, node size, text size, and thickness in Figure 5 depict the link with other keywords (Sweileh *et al.*, 2017). There are 66 keywords in 10 distinct node colours (clusters) that have been assembled in the same cluster (red, green, blue, yellow, deep purple, blue sky, orange, brown, purple and pink). The keyword "basketball" is the most popular, denoted in the blue node. The keyword is clustered together with "coach", "collegiate athlete", and "national basketball association". This demonstrates how basketball is associated with the terms accompanying it. Further study on these keywords is required to understand the basketball issue deeper. Figure 4 and Table 6 provide more information on the keyword distribution.

This cluster is the basis for describing the publication trends. To explain in detail, cluster 1 is identical to physical activity in basketball, cluster 2 is identical to sports injuries in basketball, cluster 3 is identical to performance analysis in basketball, cluster 4 is identical to sports analytics in basketball, cluster 5 is identical to advertising about basketball in several media, cluster 6 is identical to training in basketball, cluster 7 is identical to athletes in basketball, cluster 8 is identical to sports that can be juxtaposed with basketball, the cluster is 9 identical to the basketball game, and cluster 10 is identical to sports.

Table 6. Keyword groupings with a high frequency of use in basketball publications

Cluster	Number of Keywords	Keyword Frequency (Occurrences)
Cluster 1	11	acl (3), biomechanics (3), education (3), exercise (3), injury (8), intellectual disability (3), physical activity (9), rehabilitation (5), spinal cord injury (3), sudden cardiac death (6), wheelchair sport (3).
Cluster 2	8	Ankle sprain (7), epidemiology (4), female athletes (4), gender (6), injury prevention (5), stress fracture (3), Twitter (5), women (6)
Cluster 3	8	Analysis (3), contextual interference (3), effectiveness (3), learning (7), performance analysis (14), physical education (5), tactics (3), team sports (15)
Cluster 4	7	Concussion (6), machine learning (6), prevention (7), return to play (4), sports analytics (9), sports injuries (4), statistics (3)
Cluster 5	5	Adolescents (9), advertising (3), asthma (3), children (7), media (13)
Cluster 6	5	Balance (3), conditioning (3), heart rate (4), periodisation (3), training (5)
Cluster 7	5	Anxiety (3), athletes (23), athletic performance (4), pain (3), return to sport (4)
Cluster 8	5	Football (11), hockey (3), sport performance (3), volleyball (3), wheelchair basketball (5)
Cluster 9	4	Basketball (54), coaches (3), collegiate athletes (4), national basketball association (9)
Cluster 10	4	Disability (3), neural network (3), sports (42), tracking (3)

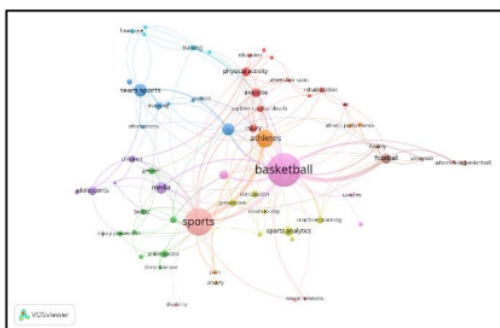


Figure 4. The author's keyword makes an appearance

F. Distribution of Frequently Appearing Keywords Overlaid

Figure 5 shows a network map created with VOSviewer to depict the country's contribution to basketball research. The map was built using a technique that included 14 papers and at least one reference per document. The citation network is made up of ten nations and is separated into four groups: China, Canada, and Australia are in the red cluster; Spain, Taiwan, and the United States are in the green cluster; Italy and Brazil are in the blue cluster, and Germany and England are in the yellow cluster. The countries represented by the nodes and the size of the nodes result in a considerable

number of publications. The United States has more significant nodes in this scenario, among other things. The United States has a massive number of citations and is the top country in publishing production. England is positioned in the second-ranked, and Spain and Australia are positioned in the third-ranked and fourth-ranked, respectively. As a result, these countries will play an essential role in strengthening scientific linkages and serving as information hubs in basketball.

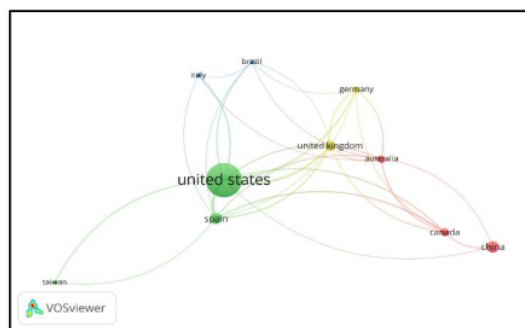


Figure 5. Country quotation network visualisation

As time passes and science advances, researchers and organisations increasingly turn to bibliometric investigations (Prieto *et al.*, 2015). This demonstrates that

academics are interested in this bibliometric study since it aligns with the demands of scientific research advancement. The necessity for this bibliometric analysis stems from the belief that scientific production is linked to many domains of science to establish how a research issue evolves.

It is feasible to discover, classify, and categorise scientific literature and establish publishing patterns in a study area using bibliometric investigations. Basketball is a diverse research topic with growing scientific interest. Thus, a more in-depth analysis is both required and intriguing. As a result, the need for a new area of research in basketball analytics is obvious.

IV. CONCLUSION

This bibliometric review could provide imperative and necessary information for readers, scholars, and academics about 53 years of basketball publishing patterns:

1. The number of academic works on basketball has fluctuated over the last five decades. The exhilarating number of publications is 50 in 2017, 66 in 2020, and 74 in 2021.
2. Until 2022, the United States, China, and Spain were the most active publishing countries. South Africa and Ethiopia have been recognised as African nations participating in basketball research, with two publications based on the database.
3. The most significant journal in basketball research appears to be Lecture Notes in Computer Science
4. With ten publications, Universidad de Granada, Spain, is the most famous educational institution in basketball topic study.
5. J. Sampaio, a professor at the Universidade de Trás-os-Montes e Alto Douro in Portugal, and J. Yanci, a professor at the Universidad del Pas Vasc in Spain, is the principal author of five academic research books on the subject of basketball.
6. The most prevalent term was “basketball,” which clustered with “coach” and “collegiate athletes” in the same category. This indicates that the topic of basketball is closely connected to the keywords stated, and future scholars should investigate these keywords to comprehend the topic of basketball better.

Basketball research will continue to be popular in the following decades. This sport will never go out of vogue as long as physical activity is necessary for all humans and the economy does not collapse. Furthermore, by understanding the idea of basketball and the growth trend of publications, researchers, academics, and readers may assess and propose basketball research that could synergise collaborative networks between researchers, academics, and readers.

Consequently, a bibliometric review in this study allows researchers to get insight into state of the art in a specific field or subject linked to basketball. However, this study had several limitations that could not be avoided. The researchers' study techniques are not optimal; for example, locating, categorising, and retrieving databases should be more resilient with combining keywords. Additional databases such as Google Scholar, Microsoft Academic, PubMed, and Web of Science can be used to gather data for basketball-related research. More studies should be conducted to examine the basketball topic's publishing trend. Readers, academicians, and researchers will be better able to discover the required knowledge to analyse or test basketball subjects in their future studies due to this bibliometric evaluation.

V. ACKNOWLEDGEMENT

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VI. CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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