

Mapping of Literature on Sport and Religion Research: Scientometric Review

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ABSTRACT

Throughout history, many sports evolved from rituals performed at religious festivities. In light of this fact, it is apparent that religion and sports are symbolic systems or emblematic structures with shared values and goals. This study aims to provide a comprehensive overview of the descriptive parameters of publications by visualising citation patterns, extracting authors' keywords, and determining the influence and performance of research on religion and sports. The current study examined 1,408 publications concerning sports and religion in the Scopus and WoS databases, spanning 1899 to 2022. The results revealed a notable rise in publications regarding sport and religion following 2015, with a more substantial increase in Scopus publications than WoS. The United States accounts for about 457 of the total worldwide publications. In addition, the title of the scientific source, "Games and Economic Behaviour", is the most active, with 19 documents. With 170 documents, the keyword "physical activity" appears most frequently in this analysis. The trending topic with the most considerable absolute growth is "physical activity". The trending topic with the most significant relative growth is "osteoarthritis". In general, the research in this field is still changing as new techniques and avenues for conveying significant findings about values, appropriate cultural behaviour, and the extent of health emerge. This investigation helps generate novel ideas in the diverse study of the connection between sports and religion. The significance of spiritual values in physical activity, athlete injuries, and athletes' psychological growth is an area that warrants additional exploration.

Keywords: Sports, religion, physical activity, osteoarthritis, scientometric

INTRODUCTION

Despite variations in laws and practices, religions encourage their followers to participate in sports for various reasons, such as improving health, entertainment, and disease prevention. Sports and religion are inextricably linked and cannot be considered separate entities. Sofyan et al. (2022) liken sport to a narcotic or an opiate, allowing individuals to fulfil various social, economic, entertainment, and health-related desires. According to Sofyan et al. (2021), sports have become an indispensable part of human life, especially for those who view athletics as a fundamental aspect of their religious beliefs. For instance, Islam recommends swimming, running, horseback riding, archery, and wrestling (Kızar 2018; Marwat et al. 2014; Shavit & Winter 2011). Similarly, Christianity embraces athletics as part of its witness (Blazer, 2019). Sports such as cricket, football, hockey, volleyball, baseball, and basketball were among the earliest sports played by Christian missionaries, educators, and YMCA officials (McLeod et al., 2018). In Jewish culture, baseball, basketball, boxing, football, cricket, and tennis are played by immigrants from America (Alpert 2019; Dart 2021). Buddhists promote their religion by playing basketball (Casas 2017; Yu 2011), and Hindus learn to wrestle and play kabaddi (Bhattacharya 2012). This close relationship between sports and religion emphasises the importance of sports for religious adherents.

Researchers worldwide are increasingly interested in studying the relationship between religion and sports, as evident in the works of Carlson (2014), McLeod et al. (2018), Mazurkiewicz (2018), Blazer (2012), Trothen (2019), and Watson & Parker (2014). One study by Mackintosh and Dempsey (2017) delved into how young people perceive their religious identity (Islam) concerning their participation in sports. In the context of Christianity, Blazer (2014) explored how Christian values can validate or refute modern sporting ideals and practices and how they can contribute to the future of sports. The connection between sports and religion is essential for developing harmony, stability, community, and peaceful coexistence, as Jona and Okou (2013) pointed out. In modern sports culture, self-promotion and pride are virtues, and sports and religion provide individuals with a sense of status, self-worth, and identity, according to Clark (2015).

Although certain researchers believe that religion plays a crucial role in enhancing sports performance, some do not concur with this view. This disagreement stems from the common misconception that religion and sports have no connection. According to Cheng (2019), religion does not impact an individual's exercise choices. Furthermore, it is challenging to determine how religion affects sports (Noh & Shahdan, 2022), and researchers in both athletics and religion have expressed reservations about this topic (Parker & Watson, 2014). Most social scientific research on sports tends to downplay the significance of examining the religious dimensions of sports (Gibbons et al., 2017), and athletes often separate their religious beliefs from their sports practices, viewing sports as a secular endeavour (Ronkainen et al., 2019). Due to its influence on the social self and physical culture, especially in education and sports, religion receives less attention than other topics (Benn et al., 2011). Therefore, the lack of empirical research in sports and religion (Scholes, 2015) highlights the need for special consideration and attention (Alpert, 2014).

Encouraging the growth and development of scientific publications related to sports and religion is necessary to enable the field to compete with other areas. In order to gain a more

comprehensive understanding of the distribution of sports and religion research, our research utilises scientometric analysis. Several studies have explored different subdomains of these fields, such as the development of faith in young athletes who participate in sports (Livingston, 2019), attention to confession rituals and performance-enhancing drugs (Blazer, 2020), the role of sports pastors in critical examining sports and its relational dynamics (Jones et al., 2020), the psychological perspective of religion and spirituality in sports (Noh & Syahdan, 2020), insights from religious studies about the sport as a system of meaning (Sosis & Goalkeeper, 2022), religious treatment for elite athletes' pre-competition emotions (Hagan, 2021), and religion-based physical activity intervention (Silfee et al., 2017).

This study attempts to contribute to a better knowledge of the current publication patterns in sports and religion research. This comprehension can facilitate future research endeavours on sports and religion for scholars and academics. In contrast to other broad topics, however, there is a shortage of scientometric reviews of sports and religion research. This study aims to fill this void by conducting a scientometric analysis utilising the ScientoPy, VOSviewer, and datasets gathered from the Scopus and WoS databases. This study seeks to address the following research questions:

RQ1: What is the distribution of articles published in each database over the years, and how are the subject areas distributed? What types of documents are included?

RQ2: Who are the most prolific authors publishing articles on sports and religion?

RQ3: Which countries, institutions, and scientific sources are the most active in publishing articles on sports and religion?

RQ4: What are the most commonly used keywords by authors, and what terms have been popular in the past two years?

THE RATIONALE FOR CONDUCTING SCIENTOMETRIC ANALYSIS

In line with the introduction context, we have chosen to conduct a scientometric analysis for this study to contribute to advancing research on sports and religion. Scientometrics quantitatively analyses scientific activities, encompassing input, output, and processes, using mathematical statistics, computational technology, and other mathematical approaches (Zhou et al., 2019). The field of scientometrics employs quantitative research methodologies to explore the evolution of science as an information process (Mingers & Leydesdorff, 2015; Ramy et al., 2017; Chellappandi & Vijayakumar, 2018; Gonzales et al., 2021), as well as communication patterns and science policy (Mohan & Kumbar, 2021; Velmurugan & Radhakrishnan, 2015). Furthermore, it examines scientific outcomes' trends and gradual development (Nyika et al., 2021).

Scientometrics has evolved significantly from the sociology of science and is now more closely aligned with library and information science (Leydesdorff & Milojevi, 2015). A deeper comprehension necessitates scientometric analysis (Lai et al., 2017). Scientometrics frequently utilises statistical and mathematical methods to analyse scientific literature quantitatively and qualitatively (Nath & Jana, 2021). The combination of scientometrics and social network analysis

has made a compelling argument supporting research collaboration (Ceballos et al., 2017). Scientometric data aids in assessing the breadth and progress of scientific research and serves as a criterion for evaluating the standards and excellence of scientific research productivity (Wani & Zainab, 2017; Young et al., 2015). ScientoPy is a script-based Python tool that enables temporal scientometric analysis. Temporal analysis may be used to determine the emergence of new phenomena and their development into emerging trends or issues (Ruiz-Rosero et al., 2017).

METHOD

Selection, retrieved, and collection of data

Scientometric analysis is a technique that enables researchers to comprehend the nature of research based on existing literature. In this study, scientometric analysis is employed using the information framework mapping method to examine the current state of research and organise the theoretical structure of publications (Abdullah, 2021a). A likely reason is that this approach assists in understanding the publication patterns in sports and religion better. Furthermore, this method enables the evaluation and incorporation of established research directions while comprehending developing trends in the field (Abdullah, 2021b). Consequently, it is vital to use a multidisciplinary database to search and identify literature related to sports and religion. It is essential to perform a database search with high-impact factors to obtain a list of high-quality and frequently cited papers. Thus, the Scopus and Clarivate Web of Science (WoS) databases were selected for this study as they meet these requirements. ScientoPy is a tool that can process datasets retrieved from these two primary databases (Ruiz-Rosero et al., 2019).

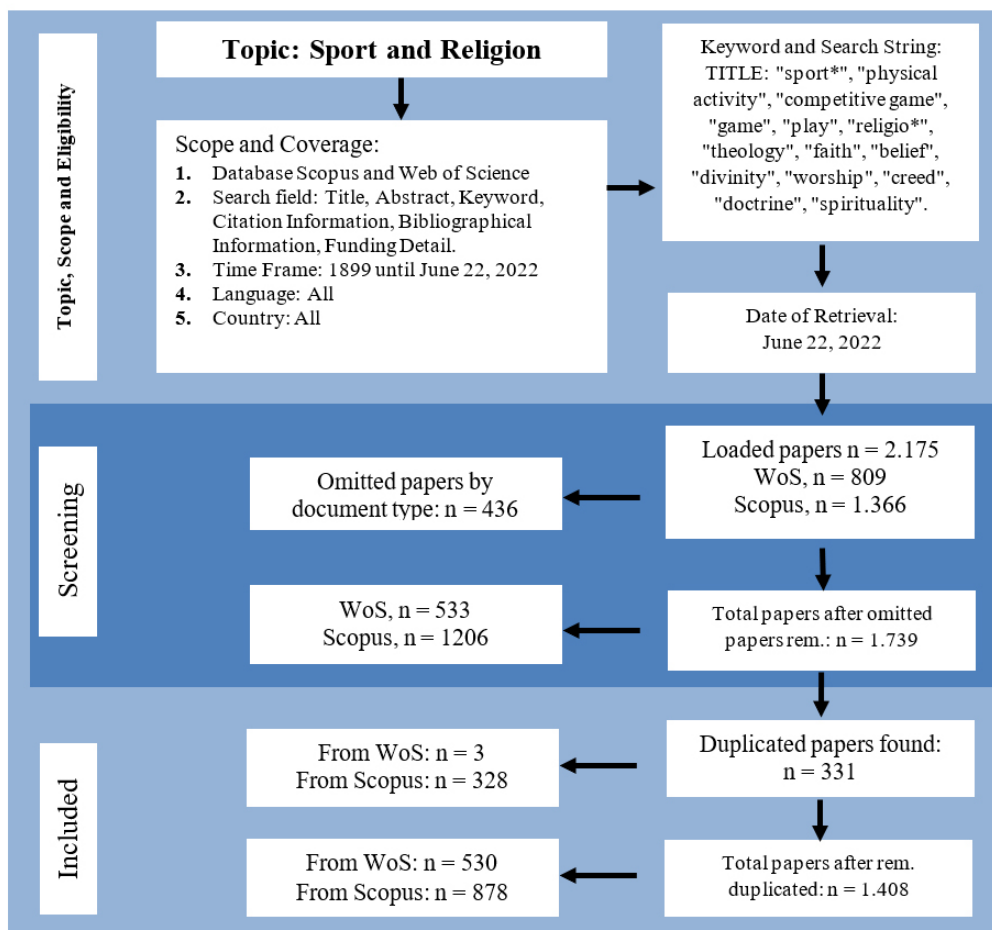
ScientoPy is a Python script that automatically generates and reports on the main topic (based on the author's keywords), the author's country, institution, publication, and related documents. This automated data synthesis avoids the potential for bias, as in individual studies. The results obtained in processing different data have greatly helped researchers (Abdullah & Sofyan, 2023; Cruz-Ordóñez et al., 2018; Ruiz-Rosero et al., 2017). The tool used to analyse the bibliography of documents is a different literature review manuscript called ScientoPy (Pabon et al., 2020).

A search was carried out on June 22, 2022, to compile a list of publications related to sport and religion without considering the year of publication by Scopus and WoS. The initial approach used TITLE-ABS-KEY in Scopus and Topic in WoS for string searching. However, after manually examining the documents, it was discovered that many articles were unrelated to sports and religion. Therefore, the search method was revised to use the search string TITLE. ScientoPy is a valuable tool for ensuring that the data collected from Scopus and WoS databases is free of overlapping or redundant datasets during the preprocessing stage of scientometric analysis. It is too capable of categorising popular, specialised, and trending topics in scientometric data analysis. The PRISMA flowchart is also a helpful tool to guarantee that papers are located, assessed, and submitted using a standardised and transparent method.

Figure 1 illustrates the method for collecting documents from Scopus and WoS databases. This process likely involves identifying relevant keywords and search terms, specifying search criteria and filters, and exporting datasets for analysis. The data collected from Scopus and WoS

databases can then be preprocessed using ScientoPy to remove any duplicates or inconsistencies of the datasets. Once the data has been cleaned and organised, it can be used for further analysis and visualisation, such as generating citation networks, co-authorship networks, or keyword co-occurrence maps.

Figure 1. Flow chart of data collection approach (adopted from Moher et al., 2009).



Data analysis strategy

Figure 2 gives a summary of the preprocessing phase that employs ScientoPy. It illustrates the number of documents extracted from each database and the number of duplicate entries removed. The chart suggests that Scopus contained more papers after eliminating duplicates than WoS. The preprocessing stage resulted in a total of over 300 publications that were deemed valid for this study. This is because a minimum threshold of 300 validated publications is generally expected for conducting bibliometric analyses (Donthu et al., 2021).

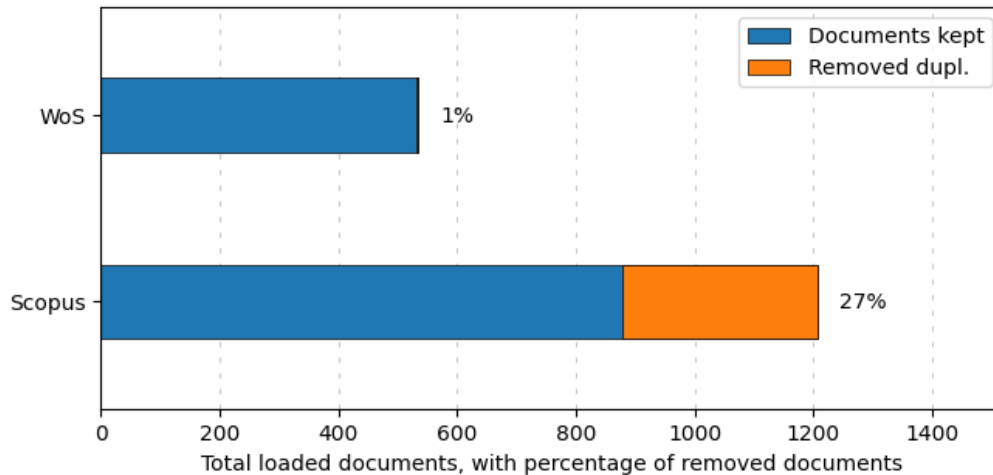


Figure 2. Preprocessing of data from the WoS and Scopus databases

After obtaining validated datasets, the subsequent stage involves running a scientometric analysis with ScientoPy and VOSviewer. This study applies ScientoPy to investigate developments and research trends in sports and religion. Ruiz-Rosero et al. (2019) revealed that ScientoPy employs five visualisation charts - timeline, trend bars, evolution, and word cloud - to present the distinctive features of the study. Nevertheless, the authors employed four visual charts, excluding bars, to interpret the results and gain diverse information in this study. VOSviewer is used to construct bibliometric mappings to explore the co-occurrence of author keywords. Van Eck and Waltman (2010) quantified that VOSviewer includes visual components derived from mapping techniques that transform CSV data into clusters or diagrams. As a result, mapping algorithms enable researchers to analyse detailed data such as authors, institutions, locations, citations, co-citation, and other refinement components (Abd Aziz et al., 2020). This study used the author's keyword as the analysis unit to investigate the co-occurrence analysis type.

RESULTS

This section offers readers an understanding of the current status and trends in sports and religion research. Indeed, the insights from this analysis can be invaluable for future researchers, as they provide a comprehensive reference point for gaining in-depth knowledge of sports and religion. The analysis begins with a descriptive overview of publication trends in sports and religion, encompassing the number of publications over time, highly productive authors and institutions, and the most frequently cited papers. This overview can facilitate the identification of the most influential authors and institutions in the field and offer insights into the main research topics and themes. Subsequently, the researchers perform a content analysis to recognise the most common research topics and themes in sports and religion literature. This involves scrutinising the publications' titles, abstracts, and keywords to recognise the frequently occurring topics and themes. The researcher then applies clustering algorithms or network analysis to recognise the connections between these topics and themes and visually present the primary research directions

and subfields in sports and religion.

Ultimately, the researchers performed a bibliometric analysis to pinpoint the most influential journals and highly cited papers in sports and religion. This approach can shed light on the impact of various journals and publications and the crucial research domains propelling the field's development. Through the analysis, the researchers can offer readers a detailed summary of the present research situation in sports and religion, along with significant findings about the main research directions and future trends shaping the field.

The evolution of publications, significant subject areas, and document type specifics

Analysing publishing trends yearly can be beneficial in identifying research topics. Databases provide a multitude of advantages, such as tracking personal career progress, identifying partnership and funding opportunities, locating relevant literature, selecting appropriate journals for publication or subscription, and more (Pranckute, 2021). Therefore, it is crucial for future researchers and readers to understand the research theme, which can attract aspiring scholars seeking to enhance the factors that impact annual publication fluctuations (Abdullah & Sofyan, 2022).

Figure 3 shows a significant growth in the number of publications related to sports and religion after 2015, with a higher increase observed in Scopus compared to WoS. Scopus is considered a leading data source due to its high-quality scientific publications across different academic fields. It is frequently updated and preferred by researchers in various fields due to its high impact factor.

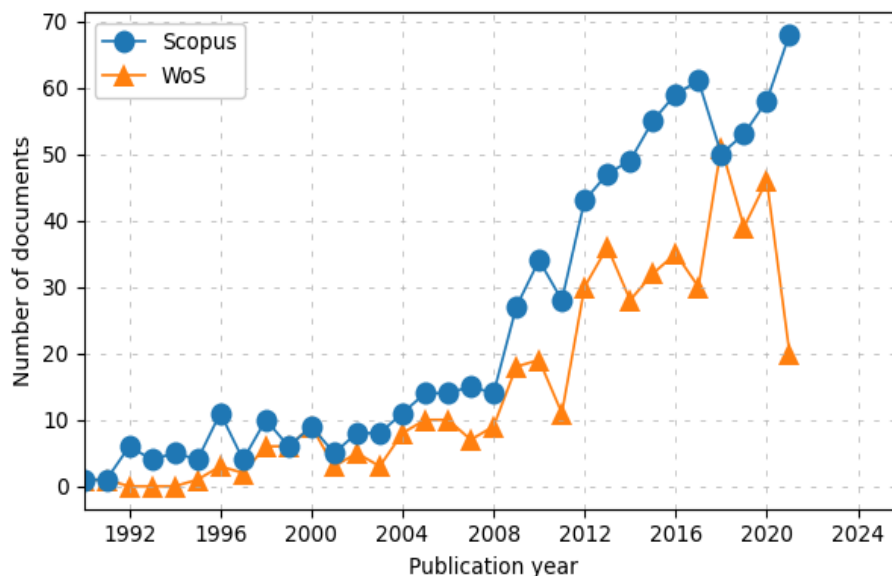


Figure 3. Timeline graph of publication productivity

Although Scopus is a well-regarded source for scientific publications, it is crucial to recognise that its impact factor is not necessarily higher than WoS's. The impact factor measures the average number of citations published in a particular journal received in a given year and is calculated by Clarivate Analytics, the parent company of WoS. In contrast, Scopus employs its measure of citation impact known as the Scopus CiteScore. WoS and Scopus have strengths and weaknesses, and researchers may use one or both databases based on their research requirements. It is always

advisable to consult multiple sources and evaluate the quality of publications individually. Scopus has a more comprehensive journal coverage than WoS, while WoS continues to be more selective in its journal coverage (Singh et al., 2021). Over the years, Scopus has earned an equal place as a comprehensive source of bibliographic data and has proven reliable and, in some ways, even better than WoS (Zhu & Liu, 2020; Harzing & Alakangas, 2016).

The increasing research interest in sports and religion in both databases demonstrates the importance of these topics for advancing research on sports and religion issues. For example, although religious or spiritual research in sports psychology is relatively neglected compared to the general psychology or medical science literature, previous research has highlighted the need to further study its importance in athletes' lives (Noh & Shahdan, 2022). Over the past 40 years, there has been a steady growth in the academic literature on sports and religion (Mazurkiewicz, 2018). Scholars exploring the intersection of sport, spirituality, and religion have developed rapidly in recent years (Trothen, 2019; Watson & Parker, 2014). These scholars and others have demonstrated the importance of introducing new theories and methods to studying sports and religion.

A crucial aspect of researching religion and sports is to analyse and assess theoretical and conceptual frameworks from different fields of study, as emphasised by Smith and Waller (2018). While no research solely concentrates on the relationship between religion and an athlete's career development and transition, several studies in sport psychology and sociology have touched on the intersection of religion and sports (Ronkainen et al., 2019). Moreover, religion has been found to be a crucial source of significance for some athletes who face challenging situations such as injury or subpar performance (Nesti, 2011).

It is imperative to review relevant research publications as this allows the identification of essential areas in which research on sport and religion has been carried out. The top 20 subject categories that can be used to classify sports and religion research from the Scopus and WoS databases are depicted in Figure 4. Based on Figure 4, "Religion" has been identified as the most investigated area, with a total of 147 documents. These results indicate that research in the field of religion mainly focuses on psychological aspects, health and physical activity. This is evidence that sport has the capacity to achieve goals similar to those achieved by organised religions (Bain-Selbo & Sapp, 2016; Trothen, 2019). The relationship between sport and religion has been intertwined and influential for centuries, dating back to ancient times, as noted by Alpert (2014).

As indicated by 87 documents, the second study area is "Social Sciences-Other Topics." One possible reason for misconceptions about integrating religious values into sports is a lack of understanding of the intersection of sports and religion. Both scholarly discourse and public perception often associate sports with religion, despite the fact that the definition of sports does not necessarily have a direct connection to religion, even though athletes may also be members of religious communities (Ronkainen et al., 2019; Barnat, 2019).



Figure 4. Word cloud graph of subject areas

Figure 5 displays the categories of documents that can be identified using ScientoPy, which include high-ranking research publications based on SJR (Scimago Journal Rank) and JCR (Journal Citation Reports). It should be noted that certain document types, such as books, editorials, errata, reports, and meeting abstracts, are not eligible for publication. However, it is possible to adjust the ScientoPy settings to modify the filtering of document types.

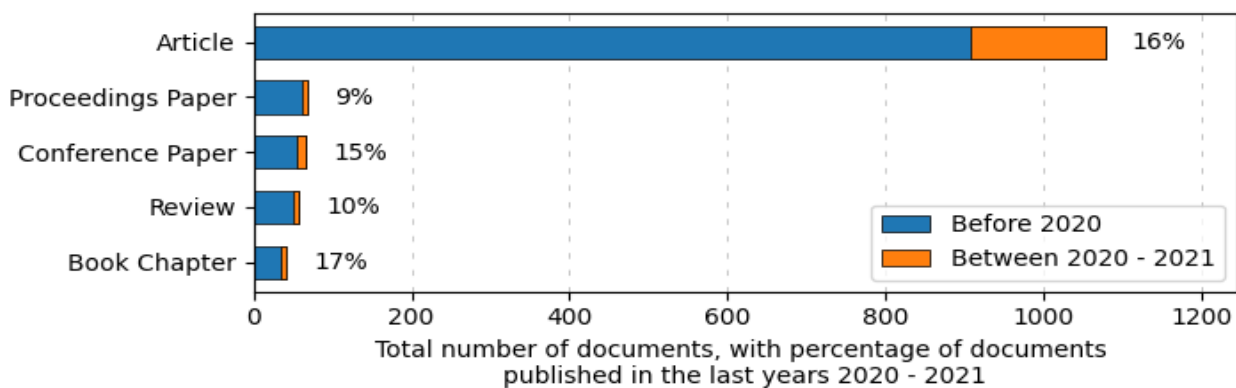


Figure 5. Documents type related to sport and religion that have been tracked

Figure 5 shows that articles are the most commonly tracked document type, with 1,077 documents and a declining AGR of -2.0, indicating a decrease in the number of publications on the topic. This means that there are differences in the average number of articles published per year compared to the previous year. Proceedings papers are the second most common document type, with 68 documents, followed by conference papers, review papers, and book chapters, with 66, 57, and 42 documents, respectively. Book chapters accounted for 16.07% of sports and religion

publications in 2020 and 2021, with other document types accounting for more than 10%, including articles (15.08%), conference papers (15.02%), and reviews (10.05%), following the current trend.

The proactive authors

Figure 6 represents the top 20 authors by the number of publications on sports and religion research in both databases. The thickness of the words describes that higher frequency. In this study, Parker, A., and Wilcox, S., were the most proactive authors, with a total of seven publications produced. Based on the authors' expanded results in ScientoPy, an article co-authored by Parker, A., with Sarkar, M., and Hill, D.M., published in 2014, entitled "Working with religious and spiritual athletes: Ethical considerations for sport psychologists," got the highest number of citations with 24 citations. This article is about how sports psychologists can better navigate the often-challenging landscape of working with athletes whose everyday lives and identities are based on religious and spiritual associations. Then, the article written by Wilcox, S. et al. (2007), entitled "The Health-e-AME Faith-Based Physical Activity Initiative: Description and Baseline Findings", which was published in Health Promotion Practice, Vol. 8, No. 1, pages 69-78, obtains 53 citations. The overview of the development, implementation, and baseline findings of faith-based physical activity (PA) initiatives across the United States are significantly enhanced by this study.



Figure 6. Word cloud graph of proactive authors

A second proactive author, Bain-Selbo, E., has published six articles related to sports and religion, and based on the author's expanded results in ScientoPy, an article written by Bain-Selbo, E., in 2019 in the journal Religions, entitled "Affect Theory, Religion, and Sport". Based on the article, Bain-Selbo, E. concludes that a proper view of influence theory is essential for studying sports' religious or spiritual dimensions. Moreover, it holds great promise as a tool for understanding the religious or spiritual dimensions of secular or seemingly non-religious cultural phenomena, particularly sports (Bain-Selbo, 2019).

The authors' proactive evaluations and publications show that the study of sports and religion covers various topics involving physical activity, health, mental health, and psychology. Indirectly, this topic can inform readers and other researchers that sports knowledge and religion are closely related and often interest previous researchers. As a result, there is a growing demand for a thorough examination of studies related to sports, physical activity, mental health, religion, and spirituality.

The most active countries, institutions, and scientific sources

The study has created a list of countries with the most highly ranked publications on sports and religion, ranking them in the top ten. According to Figure 7, the United States has the highest number of publications, with 457 documents published. The United Kingdom (142), Canada (81), and Australia (76) follow as the second to fourth countries with over 70 documents published. Spain has attracted the highest percentage of publications related to sports and religion in 2020 and 2021, with 31.08%, while Canada (28.04%), Germany (26.07%), and China (26.01%) have published papers with over 20% in the same period. This analysis helps to identify which countries are actively researching sports and religion-related topics.

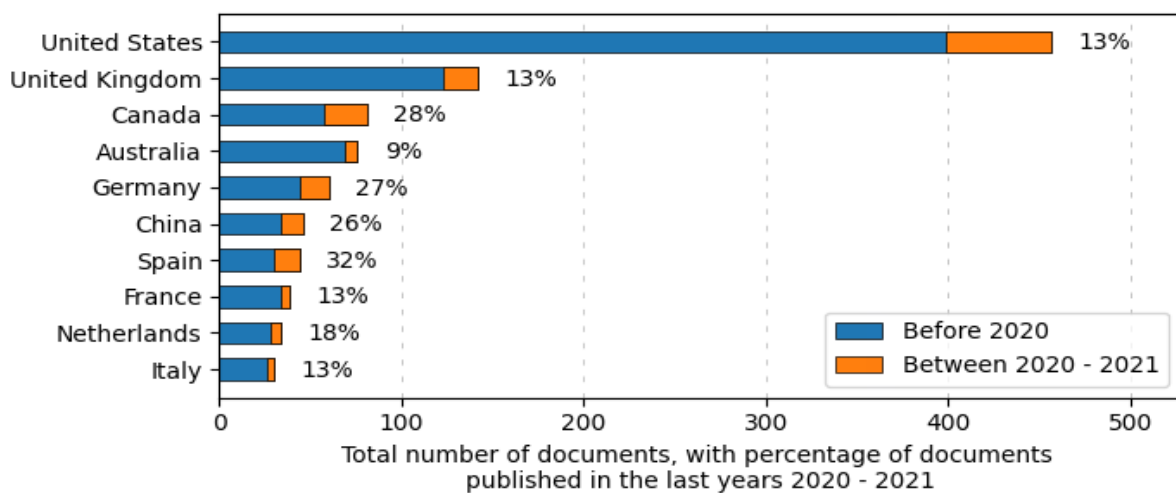


Figure 7. The top ten most active countries in the field of sport and religion

Table 1. The top ten scientific sources

Rank	SourceTitle	Total	AGR	ADY	PDLY	h-Index
1	Games and Economic Behavior	19	-0.5	01.00	10.05	10
2	Religiosus Ludens: Das Spiel Als Kulturelles Phanomen in Mittelalterlichen Klostern Und Orden	16	00.00	00.00	00.00	1
3	Religions	14	-2.0	01.05	21.04	5
4	Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)	12	02.00	02.00	33.03	2
5	Journal of Religion & Health	10	00.00	00.00	00.00	6
6	Journal of Disability and Religion	10	00.00	00.00	00.00	3

7	Psychology of Sport and Exercise	10	00.00	01.00	20.00	8
8	Journal of Economic Theory	9	00.05	00.05	11.01	7
9	Journal of Sports Sciences	8	-0.5	00.00	00.00	4
10	Frontiers in Psychology	7	-0.5	02.00	57.01	3

Description: AGR (average growth rate); ADY (average documents per year); PDLY (percentage of documents in last years)

Every author featured in the publication has an institutional affiliation which ScientoPy uses in its processing. Researchers can benefit from this information when searching for research residencies or enrolling in academic programs or research projects, as it helps them to identify the most relevant institutions in the field (Abdullah & Sofyan, 2023). The study also enhances the reputation of the institutions and encourages further writing to achieve high standing. Figure 8 is a word cloud that illustrates the 20 most productive institutions in sports and religion-related publications. As shown in the figure, the larger the size of the institution, the greater the number of publications. According to the current study, Pennsylvania State University (USA), University of Gloucestershire (UK), University of Split (Croatia), and University of Tennessee (USA) are the top four institutions, each with six published documents. Indiana University (USA), Stetson University (USA), University of Gdask (Poland), University of South Carolina (USA), and Western Kentucky University (USA) follow closely with five published documents each.

Researchers can choose research sources or participate in some of their academic programs or research projects by knowing which institutions are most representative in the disciplines of sport and religion. The scientific source with the most significant number of published article documents is “Games and Economic Behavior,” which has 19 documents. Measuring Beliefs in an Experimental Lost Wallet Game by Dufwenberg and Gneezy (2000) gained 235 citations, making it the article in this journal with the most citations. With 16 documents, the scientific source “Religions” comes in second place for having the most papers published. The ten most fruitful published scientific sources on sport and religion are shown in Table 1, along with brief descriptions.

The projected of relevant authors' keywords and trending topics

The term “author keyword” refers to a specific keyword that the author of a document chooses to help readers and researchers find relevant information within the document. Various search engines, databases, and journal sites commonly use this keyword. ScientoPy has the ability to use author keywords to track the progression of a particular research topic or search query. In this section, the author’s keywords from previous studies are analysed to determine research trends. To ensure accuracy, similar American and British spellings, as well as singular and plural keywords, can be combined, along with their abbreviations. This manual process helps to organise the data and eliminate duplicate terms, resulting in more complete results.

Figure 9 shows ten keywords from previous research. As seen in Figure 9, the larger the keyword size, the more significant the number of articles. In 170 documents, the keyword “physical activity” appears most frequently in this analysis. In second place is the keyword “religion”, which has been used in 70 articles. The third most common term is “beliefs”, which appears in 69 publications. In

fourth place is the keyword “sports”, which has been used in 51 articles. Based on the results, it is imperative to recognise that physical activity, beliefs, religion, and sports are the basis for studying sports and religion in the context of sports and religion. Faith-based organisations promise to promote physical activity, consequently tackling health disparities. However, in order to accurately evaluate the effectiveness of services provided by faith-based groups, high-quality randomised clinical trials are required (Tristao Parra et al., 2017). The impact of an athlete on political and collective action and the interaction of race, sport, gender, and religion are presented (Fontanilla, 2020). Although “motivation” is placed ninth in accordance with the present trend (2020 and 2021), its PDLY is ranked first with 50.00%. Exercise (29.04%) and self-efficacy (20.00%) are other terms having published papers with more than 20% in 2020 and 2021.

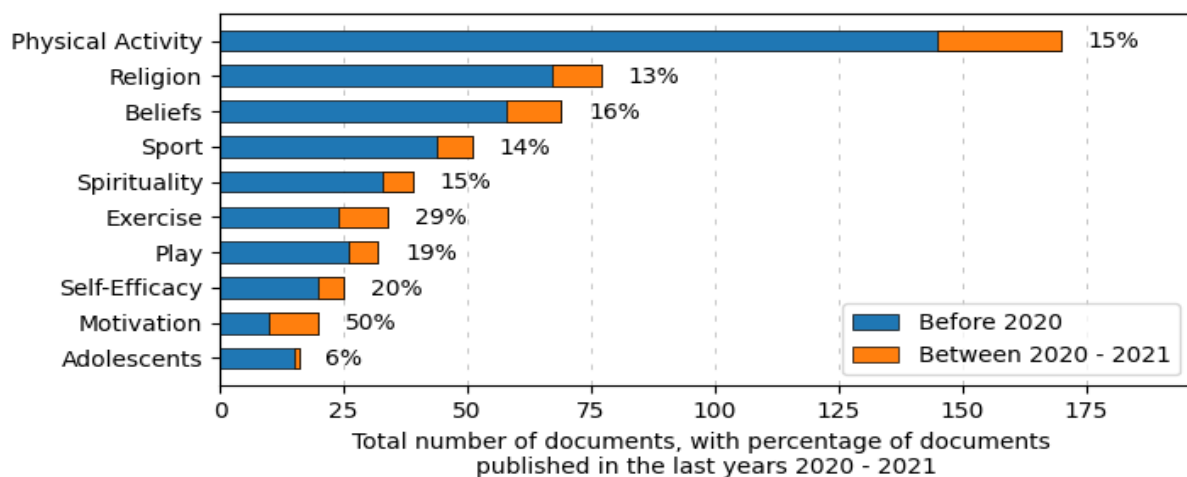


Figure 9. Word cloud graph of the ten authors' keywords

The co-occurrence of author keywords produced by VOSviewer is also examined in this study. After that, a concurrent keyword network was carried out using VOSviewer software (van Eck, 2010; 2019) and a thesaurus file (Gutiérrez-Salcedo et al., 2017) to remove duplicate terms from our database. This software is a popular keyword-processing tool (Hoppen & Vanz, 2016). These keywords consist of the author's keywords, displayed below the abstract, and ISI's KeyWordsPlus, which are words or phrases frequently appearing in the article reference title but not in the article title itself (Jiménez-Garca et al., 2020). Prior to delving into the findings, a thesaurus file with alternate spellings, abbreviations, and singular and plural combinations was created (Abdullah, 2022).

VOSviewer displays relationships between keywords. VOSviewer is a widely used tool for visualising and analysing bibliometric networks. In VOSviewer, the size of a node represents the frequency of a particular term or keyword in the dataset, while the thickness of the line connecting two nodes represents the strength of their co-occurrence. The overlay diagram in Figure 10 highlights the author's keyword and its connections to other keywords using colour, node size, and line thickness. The statement also suggests that only 28 out of 2,901 keywords met the minimum requirement of having at least ten occurrences in the dataset. This indicates that the authors may have filtered the dataset to focus on the most relevant and frequently occurring keywords. Additionally, the statement suggests that the blue nodes in the diagram represent previously researched terms,

while the red nodes represent new or less researched terms. This could indicate that the authors are attempting to identify emerging trends or areas of research that require further investigation.

The VOSviewer results allow us to conclude that the most frequently used keywords throughout 2014 were “beliefs” (74 occurrences), “adolescents” (18 occurrences), “game theory” (16 occurrences), “health” (15 occurrences), “culture” and “physical education” (13 occurrences), “attitudes” (12 occurrences), “children” (10 occurrences). The keyword strength with “physical activity” showed that “beliefs” resulted in 30 link strengths, “adolescents” (11 link strengths), “health” (10 link strengths), “culture” (4 link strengths), and “children” and “physical education” (3 link strengths). The newest keyword that started after 2017 is “play,” with 34 occurrences. This keyword has three link strengths with “religion”, “sport” (1 link strength), “spirituality” (1 link strength), and “children” (1 link strength). Other new keywords are “religiosity” (18 occurrences), “video games”, and “qualitative research” (10 occurrences).

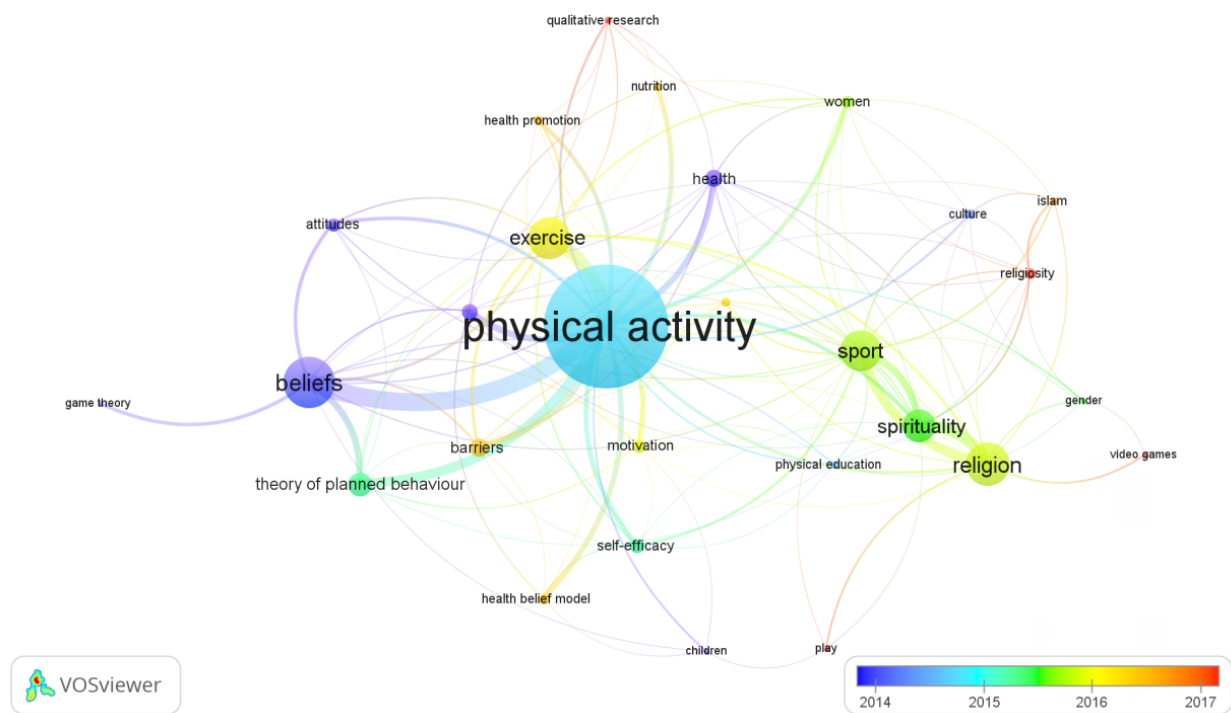


Figure 10. Overlay visualisation of the co-occurrence of authors' keywords

Academics in sports agree that the body and embodied activities such as sports have deep theological meaning (Sullivan, 2019). Any practice can virtually express physical development and attainment and add deep spiritual insight into our daily lives (Hutch, 2012). However, there has been no investigation into the adverse psychological effects of religion on sports (Noh & Shahdan, 2022). However, players in various sports have long been encouraged to play their best game for the glory of God (Purdy, 2016). Several sports psychology and sociology studies have explained how religion and sports intersect (Ronkainen et al., 2019).

ScientoPy can be used to identify trending topics by analysing the top author keywords with the highest AGR (average growth rate) as described in the “Topic growth indicators” section. Figure 11

is a plot that shows the evolution of the most popular trending topics in sports and religion. The plot shows the cumulative number of documents published for each topic on the left-hand side, while the right-hand side shows the AGR of each topic for the period 2021-2022, with the X-axis representing the PDLY (percentage of documents in the last years).

The trending topic with the most considerable absolute growth is “physical activity,” indicating that this topic has seen the highest increase in publications in the period analysed. The statement also states that the trending topic with the most considerable relative growth is “osteoarthritis,” suggesting that this topic has seen the highest increase in publications relative to its previous activity level.

Figure 11 represents ten trending topics based on the author’s keywords, implying that the authors have used ScientoPy to analyse the keywords in the dataset and identify the topics seeing the highest growth.

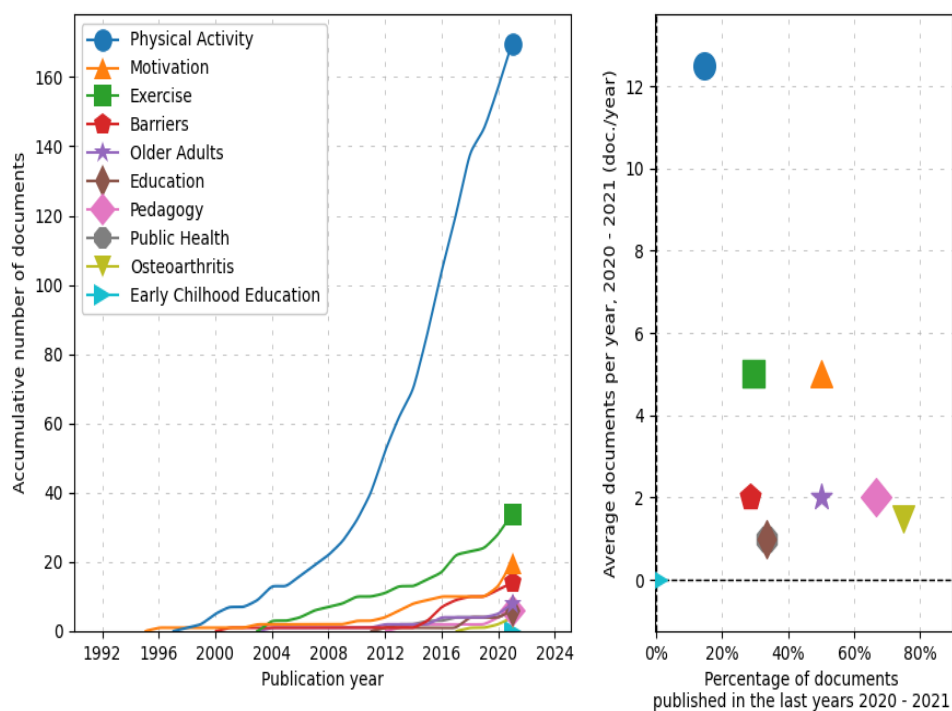


Figure 11. Top ten trending topics based on the author’s keyword

DISCUSSION

The present study offers a comprehensive review of the vast body of research examining the intersection of sports and religion, utilising two highly regarded databases, namely Scopus and WoS. Through content analysis of authors’ keywords, the study has identified areas of concern that warrant further investigation. The study has maintained a consistent approach by formulating research questions and ensuring the discussion remains focused on the predetermined topic. The outcome is a thorough and in-depth analysis of the subject matter.

The increasing research interest in sport and religion in both databases demonstrates the importance of this topic for advancing research on sports and religion issues. For example, although religious and spiritual research in sports psychology has been relatively neglected compared to general psychology or medical science literature, previous research has highlighted the need to learn more about its importance in the lives of athletes (Noh & Shahdan, 2020). Over the last 40 years, there has been a steady growth in the academic literature on sport and religion (Mazurkiewicz, 2018). Scholars exploring the intersection of sport, spirituality, and religion have proliferated recently (Trothen, 2019; Watson & Parker, 2012). These scholars and others have demonstrated the importance of introducing new theories and methods to studying sport and religion.

Based on its excellence in scientific work for various academic fields, Scopus has proven to be a top data source. Scopus has a high impact factor. The WoS continues to be more selective in covering journals, while Scopus has a broader range of journals (Singh et al., 2021). In recent years, Scopus has established itself as a reliable source of comprehensive bibliographic data and is, in some respects, even superior to WoS (Zhu & Liu, 2020; Harzing & Alakangas, 2016). As a result, many universities require professors to publish their academic papers in Scopus-indexed journals to promote the prestige of their universities, attract new students, and absorb research funding. In addition, universities require full-time professors to include articles in the WoS. From another point of view, students, for example, we can see that publication in Scopus or WoS is quite a challenge that must be overcome.

There is no doubt that every professional should respect the personality's authentic aspects and spiritual needs so that he or she can remember these five features of spiritual health in preparation for actual activities in physical education, sports training, or sports performance (Jirásek, 2015). Perhaps more importantly, scholars should seek to critically engage theoretical and conceptual models from all disciplines when studying religion, physical education, and sports (Smith & Waller, 2018). While there has been no specific research on the intersection of religion and an athlete's career development and transition, previous studies in the fields of sport psychology and sociology have provided insights into this area (Ronkainen et al., 2019). However, further research is necessary to fully understand the significance of religion in the lives of athletes (Noh & Shahdan, 2022).

The first piece on the subject of religion and sports to appear in either database was titled "Psychological, Pedagogical, and Religious Aspects of Group Games" and was authored by L. Gulick in 1899 for the periodical "The Pedagogical Seminary." This article makes an effort to tie some of the studies together and offer some potential directions. This is more illustrative than definitive. It generally presents summaries, conclusions, and points of view. The studies conducted concern: 1) the psychology of play, especially in the plays of Anglo-Saxon teenage boys; 2) the relationship between this instinct to play and the serious business of life, especially with the higher functions of social and psychic life; 3) the ways in which a genuinely religious life of service to humanity can be initiated and nurtured adequately in the boy; and 4) the proper direction of activities for organisations to foster religious life.

Another interesting discussion that can be drawn from this research is that academics of physical education and sports agree that the body and its embodied pursuits, such as sports, have profound religious significance (Sullivan, 2019). Physical activity and exercise can offer deep spiritual insight

into our daily lives and practically express physical progress and accomplishment (Hutch, 2012). However, no studies have examined the detrimental psychological impact of religion on physical education and sports (Noh & Shahdan, 2022). However, athletes in various sports have long been urged to give everything for the glory of God (Purdy, 2016). Several studies in sport psychology and sociology have explained the relationship between religion and sports (Ronkainen et al., 2020). While schools and school districts may enforce dress codes, they may not explicitly prohibit students from wearing clothing that conforms to their religious traditions. Because wearing certain jewellery serves as a reminder of faith, students are allowed to wear crosses (Protestants), crosses (Catholics), stars of David (Jews), or upright pentagrams (Wiccans) to school and, by extension, to physical education (Kahan, 2011). According to Macdonald (2003), physical education is one of several subjects that fall under the umbrella of health and physical education, health education, outdoor education, home economics, and religious education. It is embedded in all strands of Australia's health and physical education curriculum, including spirituality, according to Lynch (2015). In Brazil, how to relate Christian teachings in other ways to manage the bodies they learn is outside the domain of religion and the extent to which physical education creates tension in that relationship (Rigoni & Daolio, 2014). Physical education in many Western countries has mainly been influenced by orthodoxy and tenacious Christian principles (MacAloon, 2006) and Protestant morality (Robinson, 2018).

Based on the results of the keyword analysis, first, the findings indicate that it is essential to recognise that physical activity can be used as a starting point for studying sports and religion. Faith-based organisations plan to promote physical activity, which will help address health inequities. High-quality randomised clinical trials are needed to reliably assess the efficacy of services offered by faith-based organisations (Tristo et al., 2018). In addition, there are faith-based programs to promote physical activity (Bopp et al., 2012; Joseph, 2017), and the use of these interventions can be a successful strategy (Duru et al., 2010). It is crucial to conduct more in-depth and comprehensive studies on the impact of excessive physical activity or exercise leading to death, as many cases of sudden death are triggered and occur in both athletes and non-athletes. Over the past decade, researchers have concentrated on determining the true incidence and causes of sudden cardiac death in athletes. A 2011 study using the National Collegiate Athletic Association (NCAA) database revealed that only 56% of the 80 deaths between 2004 and 2008 were due to cardiac causes. The leading causes of sudden non-cardiac death are heat stroke and sickle cell disease (Harmon et al., 2011). Maron et al. (2016) released a large study in 2016 using data from the US National Registry of Sudden Death in Athletes from 1980 to 2011. There was a total of 2,046 athlete deaths, with 802 certified as sudden cardiac death by autopsy. Drug use and sickle cell disease are the most common non-cardiac and non-traumatic causes of sudden death. It is currently not feasible to find a practical solution to this issue. Notwithstanding, if the role of religion and spirituality is considered, the most effective approach would be to rely on prayer for protection, guidance, and support while dealing with the risks and uncertainties associated with sports. Adhering to religious principles can provide security and guidance in navigating such situations.

Second, related to the immense relative growth of keywords, namely "osteoarthritis". Knee osteoarthritis is the most common type of osteoarthritis (Davatchi et al., 2008), ranks 11th out of

291 and is the leading cause of pain, impaired mobility, and socioeconomic costs on a global scale (Whittaker & Roos, 2019). The likelihood of injury to the knee increases when an athlete has had a previous injury and makes the existence of post-traumatic development more meaningful (Vann et al., 2018). In these cases, many injured athletes turn to their religious or spiritual practices or beliefs to help cope with the stress that could lead to stopping competing (Najah et al., 2017) and facing critical moments such as injury or poor performance (Nesti et al., 2017). The findings in this group of athletes support the idea that religion plays a constructive role in enhancing adaptive coping and reducing negative emotions in athletes with career-threatening injuries (Najah et al., 2017), hopelessness, and anxiety (Shadan et al., 2022), mainly as a result of the injury. Osteoarthritis is among the most common causes of knee discomfort and decreased athlete performance. Previous studies have shown that athletes are more likely than the general population to develop knee osteoarthritis (Altamura et al., 2020). In addition to occurring in athletes, knee injuries are common in the elderly. Activities and routines carried out by each religion are different and have specific characteristics in worship. For example, since childhood, Muslims have been taught to perform "Shalat" worship, which involves many flexion movements. Worship "Shalat" is obligatory and sunnah (mandatory: 5 times a day, unlimited sunnah). So, it is clear that Muslims perform the "Shalat" (flexion) movement several times a day, so consciously or not, these activities carried out regularly can train knee strength. In addition, Islam requires Muslims to pray in congregation in the mosque, which involves walking and some movement of the knees, even though the degree of flexion is not as extensive as during the prayer ritual. From a medical perspective, the movement involved in prayer can stretch the soft tissues around the knee and reduce stiffness and contact stress on the articular cartilage (Chokkhanchitchai et al., 2010).

Therefore, various elements must be considered in encouraging the willingness of individuals to develop their identity through sports that prioritise religious values. Concerned students, athletes, managers, coaches, policymakers, spectators, and physical education teachers can develop new and better methods for incorporating religious principles into sports practice with this in mind. Programs such as providing facilities for religious leaders or religious experts to be able to add a religious touch to athletes are significant because they can make athletes appreciate everything that is gained sincerely, such as defeats and injuries. Thus, there is a great need for further development of the constellation between religion, sports performance, and physical activity to obtain more comprehensive information for the development of science and to create a new civilisation.

CONCLUSION

Failure to integrate religion into physical activity, such as physical education and sports, can lead to an imbalance between physical and spiritual health. It can undermine the principles of sportsmanship and fair play. In order to foster the willingness of individuals to develop their identity through sports that uphold religious values, multiple factors must be considered. Students, athletes, managers, coaches, policymakers, spectators, and physical education teachers should devise innovative approaches to incorporate religious principles into sports practice. One way to achieve this is by offering facilities for religious leaders or experts to impart religious teachings to

athletes. Such programs are crucial because they can help athletes appreciate the genuine gains that come with experiences such as defeats and injuries. Hence, there is an urgent requirement to conduct extensive studies on how religion, sports performance, and physical activity intersect. This would facilitate the acquisition of thorough knowledge that can be used to propel scientific advancement and promote the development of a new civilisation.

This study is a starting point for future research on the intersection of sports and religion. It can lead to more in-depth investigations, such as systematic literature reviews, meta-analysis, thematic analysis, and empirical studies, to obtain more accurate information about this research's content, method, discussion, and results. Future research can also examine elements of fundamental theories of ideals, reality, practicality, nature, and humanism, which are analysed concretely in sports and religion. Additionally, most studies on the intersection of religion and sports have taken place in Western countries where Christianity holds a dominant position, leaving limited research on the relationship between sports and religion in other major religions such as Islam, Buddhism, Hinduism, and Judaism. Consequently, future researchers are strongly encouraged to delve into these religions in the context of sports and religion.

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