



REVIEW ARTICLE

STANCE OF SPORTS AND FITNESS: A SCIENTOMETRIC REVIEW

Davi Sofyan^{1,2ADCD}, Yudha Munajat Saputra^{1ACD}, Juntika Nurihsan^{1AC},
Nurlan Kusmaedi^{1AC} and Khairul Hafezad Abdullah^{3BCD}

¹Universitas Pendidikan Indonesia

²Universitas Majalengka

³Universiti Teknologi MARA

Authors' Contribution: A – Study design; B – Data collection; C – Statistical analysis; D – Manuscript Preparation; E – Funds Collection

Corresponding Author: Davi Sofyan, e-mail: davisofyan@unma.ac.id

Accepted for Publication: December 9, 2022

Published: December 23, 2022

DOI: 10.17309/tmfv.2022.4.20

Abstract

Background. Sport and fitness are physical requirements in the same way that humans require food and water. On the other hand, sport and fitness is a highly complex field of study, complicating attempts to define critical terms, resulting in a relative lack of scientometric analysis.

The study goal is to look at the development of sport and fitness research around the world, using the Scopus and Web of Science databases as its foundation.

Materials and methods. Publications are gathered using the Scopus and Web of Science databases as well as scientometric parameters, including worldwide publication trends, the authors who receive the most citations, the amount of citations, and author keywords.

Results. The results show the authors' keywords analysis was inspected based on their relationship to physical activity, physical exercise, and physical training. The United States was the most active country, with 601 publications. As expected, the United States is a leader in physical activity promotion, with 19.3 percent of the population participating in sports and exercising daily in 2019. The International Journal of Environmental Research and Public Health from Switzerland leads 68 publications, which is another noteworthy finding. Additionally, according to this analysis, Ortega, F.B., of the School of Medicine, University of Granada, Madrid, Spain, is the author who publishes the most documents with 33 in total.

Conclusions. According to our research, the top five keywords that gained traction over the previous two years were "Cardiorespiratory Fitness," "Body Composition," "Health," "Physical Activity," and "Adolescents." The study value to the field of sports and fitness is that it provides readers and upcoming researchers with a wide range of sports and fitness trends from the past and present. Additionally, the study findings will aid future academics in predicting potential industry trends.

Keywords: Sports and fitness, Physical activity, Cardiorespiratory fitness, Scientometric.

Introduction

Fitness became extremely popular toward the end of the twentieth century. And as the fitness industry grew in prominence over the next decade, it sparked increased interest in newspapers and other media outlets (Agerbo, 2016). It is also the shreds of evidence that wearable sports and fitness technologies have found commercial success (Vidal et al., 2021). Wearable technology, the top fitness trend worldwide

since 2016, is evolving rapidly and unpredictably, and the wearables industry is expected to be worth US\$27 billion by 2022 (Ash et al., 2020; Düking et al., 2018; Thompson, 2018). In Europe, 40,000 sports and fitness facilities attract 40 million customers, while the same customer base in the United States generates annual revenue of around 22 billion USD (Avourdiadou & Theodorakis, 2014). The United States Department of Labor reported over 260,000 instructors in 2012. European countries have seen the same trend: the Ministry of Youth Affairs and Sports in France recorded 10,000 gyms in 2013 (Fontan et al., 2017). Furthermore, a recurring theme in the marketing and service literature is the need for more comprehensive models to clarify the role of the main

© Sofyan, D., Saputra, Y.M., Nurihsan, J., Kusmaedi, N., & Abdullah, K.H., 2022.

drivers explaining customer loyalty (behavioural intentions and purchase decisions), particularly in the context of sports and fitness (Theodorakis et al., 2014). This demonstrates that sport and fitness are an unavoidable requirement for every individual to support various activities and productivity. It is an up-and-coming field of science in the future.

The world's population now includes sports and physical education as part of their lifestyles (Sofyan et al., 2022). Keeping health as a top priority and advancing education reforms emphasising sports are both imperatives that must be upheld (Chen & Chen, 2017). In addition to traditional fitness activities, exercise may assist in achieving fitness goals (Beaudet et al., 2004). People who participate in fitness activities work to change their body capital in terms of physical appearance (e.g., lean, toned) and bodily functions (e.g., strong body) (Stewart et al., 2013). Understanding the factors that influence sports participation is critical for encouraging physical activity and the development of an active lifestyle (De Meester et al., 2020). Exercise and fitness are allotted a limited amount of time (Crook, 2013). Nonetheless, as sports and fitness grow in popularity, so does the demand for professionals in sports information. As a result, sports information becomes more accessible to the general public and the sports community.

When it comes to health benefits, exercise is a two-edged sword. The beneficial effect is primarily achieved through physical activity, which is a significant component of most sports (Malm et al., 2019). Sport and fitness, on the other hand, is a very complex field of study, making it challenging to define critical terms (Kielty, 2010). Recent research indicates that fitness and exercise accompany various social, economic, and physical environmental factors, but some issues, such as how people engage in fitness activities, have received little attention (Wu et al., 2018). Sports as a form of physical fitness should embrace the idea of low-carbon energy, promote physical activity in an environment that is energy-efficient, foster a vibrant fitness culture, encourage people to lead healthy lives through scientific fitness, protect the environment in a variety of ways, and make an energy-saving and low-carbon contribution to the sports industry (Li, 2012).

Several upstream studies have been conducted. People with lower levels of physical fitness are frequently in poorer health (Robertson et al., 2000). Adolescents' negative impact on secondary health conditions can be reduced by improving their basic motor skills and physical fitness as they enter adulthood (Foley et al., 2008). It is well established that maintaining a high level of physical fitness has numerous positive effects on adolescents' mental and physical health, including preventing obesity, cardiovascular and metabolic illness, and musculoskeletal issues (i.e., depression, anxiety, stress, and quality of life) (Biernat, 2011; Esteban-Cornejo et al., 2014; Janssen & Leblanc, 2010; Smith et al., 2014). Popular among kids, sport is a systematic kind of physical activity that has been connected to a range of psychological and social health outcomes, including improved social skills, lower depressive symptoms, higher self-esteem, and higher competence (Eime et al., 2013).

Due to the importance of sport and fitness, many studies have been carried out to scale most of the topics related to physical activity (Barber, 2007; Elbe et al., 2017; Fenton et al., 2016), national fitness policies (Tan, 2015), exercise

and the environment (Thorpe et al., 2021), fitness and health (Grant et al., 2014), recovery and rehabilitation (Morton et al., 2016), multi-activity sports (Gerdin & Pringle, 2017), event marketing (Kurscheidt et al., 2003), neuromuscular and metabolic (Vachon et al., 2020), fitness center business (León-Quismondo et al., 2020), fitness industry (Zhang & Wang, 2012). In addition, several scientometric studies have been conducted regarding the evaluation of sports source titles (Blagin et al., 2020; Elahi et al., 2020; Kusugal, 2018); positive youth development (Qi et al., 2022); athletic performance (Lombardo & Emiah, 2014); sports science (Yamin-firooz et al., 2014); eSports (Vanegas et al., 2018); sports sociology (Tian & Wise, 2020); sport sciences researchers (Soufi et al., 2018); fitness model (Ke, 2013).

Despite the importance of exercise and sports, scientometrics research in this area has not received much attention. The goal of this study is to analyze major works in the disciplines of sports and fitness that were published between 1919 to 2022. It is crucial to spot trends in research that has been published in journals in order to summarize the state of the literature at the time of this study. Responses to the following research questions were sought:

1. What are the most well-known sources, representative nations, and important organizations in the field of sport and fitness research?
2. What are the author's main keyword sources and influential sports and fitness-related topics?
3. How the major author keyword in the sports and fitness industries has changed over the past few decades?

Reasons for Scientometric Analysis

Using mathematical statistics, computing technology, and other mathematical techniques, scientometrics is a quantitative analysis of the input, output, and process of scientific activity (Zhou et al., 2019). Scientometrics is the creation of quantitative research techniques for the examination of the growth of science as a process for the transmission of knowledge (Chellappandi & Vijayakumar, 2018; Gonzales et al., 2021; Mingers & Leydesdorff, 2015; Ramy et al., 2018), communication in science, and science policy (Mohan & Kumbar, 2021; Velmurugan & Radhakrishnan, 2015), while analyzing patterns and the slow progression of scientific findings (Nyika et al., 2021). In comparison to the sociology of science, scientometrics has advanced significantly, and it now more closely resembles library and information science (Leydesdorff & Milojević, 2015). To have a deeper knowledge, scientometric analysis is required (Lai et al., 2017).

Scientometrics frequently employs statistical and mathematical techniques to quantitatively and qualitatively examine scientific literature (Nath & Jana, 2021). The benefits of research collaboration have been amply demonstrated through the application of scientometrics and social network analysis (Ceballos et al., 2017). Scientometric data is a tool for analyzing the quality and productivity of scientific research, as well as the breadth and advancement of scientific research (Wani & Zainab, 2017; Young et al., 2015). ScientoPy is a script-based Python tool for performing temporal scientometric analysis. We can use temporal analysis to pinpoint the emergence of a new phenomenon and its

development into a trend or emerging issue (Ruiz-Rosero et al., 2017). Throughout the course of this study, scientometric indicators pertaining to publication, topic, source title, and citation trends and progressions were examined (Li et al., 2016). Numerous bibliographic databases are analyzed using the scientometric methodology (Martynov et al., 2020). Locating and extracting papers on a research-related topic is the first stage in performing a scientometric study (Malakoutikhah et al., 2021).

Materials and methods

The number of publications in any field of study contributed to persuasive arguments for scholars to collect relevant (Aziz et al., 2022). In order to fully comprehend the patterns of sport and fitness research, this study uses information framework mapping methods to analyze the research situation and construct the existing theoretical structure (Abdullah, 2021), the objectives of the research must be made clear early on in this review (Abdullah & Abd Aziz, 2021). ScientoPy software was used to analyze this scientometric analysis. A special piece of software for analyzing bibliographic records is called ScientoPy. It is a Python script that creates a list of the most popular themes by author, author, and nation keywords, as well as related papers (Pabon et al., 2020), and it removes the chance of bias that can happen in individual studies (Ruiz-Rosero et al., 2017). throughout the course of this study, scientometric indicators pertaining to publication, topic, source title, and citation trends and progressions were examined (Li et al., 2016). Numerous bibliographic databases are analyzed using the scientometric methodology (Martynov et al., 2020). Locating and extracting papers on a research-related topic is the first stage in performing a scientometric study (Malakoutikhah et al., 2021). However, analyzing author names (such as those on a primary list of authors) poses a risk of bias in the study because of potential name similarity.

Search Strategy

On October 8, 2022, data was collected from two well-known databases with high impact factors, Scopus and Web of Science (WoS). Initially, the string search strategy used TITLE-ABS-KEY in Scopus and Topic in WoS, but the amount of metadata was very large, and many articles were not related to sports and fitness after manual checking of existing documents. As a result, the search strategy was modified to use the search string TITLE. As a result, 3,013 documents were obtained from the Scopus database and

3,267 documents from the WoS database. The keyword terminology is well-known and not novel, particularly among sports researchers. For instance, there are a lot of published data in other, more well-known topics and disciplines. Additionally, publications whose authors did not use the acronym sports and fitness in terms that correspond to the terminology have been located using the conjunction "OR." In table 1, the search string and data retrieval in both databases are explained.

Data repossession and management

All duplicate articles can be removed by ScientoPy software during data pre-processing. In this study, repossession data was pre-processed. ScientoPy processed data at this stage using the following document types: conference paper, article, review, and proceeding paper (Ruiz-Rosero et al., 2019). This research excluded books, book series, and letters. The simplification of author names is another function of pre-processing. The author's initial and last names frequently don't match up in published works. By applying pre-processing, ScientoPy may condense names, accents, and abbreviations. due to the fact that names are shortened or simplified while discussing things like countries, language, and organisations (Pabon et al., 2020). Figure 1 shows the accuracy of data collection and using PRIMA.

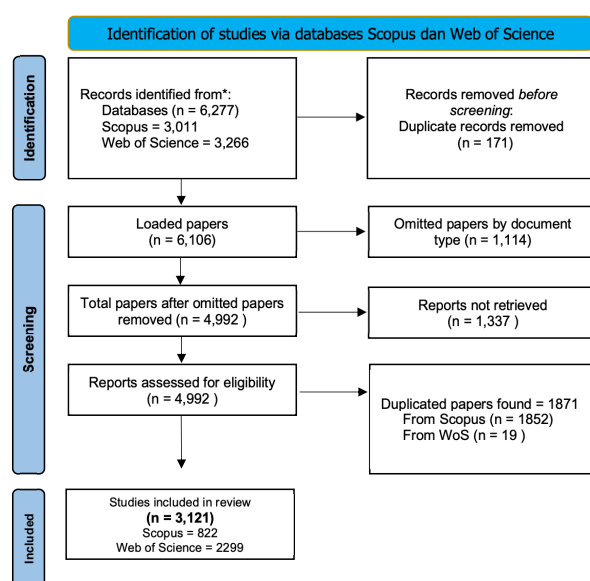


Fig. 1. Flow diagram of searches of databases and registers

Table 1. The search string and retrieval data of sports and fitness

Database	Search Field	Search String
Scopus	TITLE-ABS-KEY = 38,839 document results	TITLE-ABS-KEY (("sport*" OR "physical activ*" OR "physical exercise*" OR "physical training") AND ("fitness"))
	TITLE = 3,011 document result	TITLE (("sport*" OR "physical activ*" OR "physical exercise*" OR "physical training") AND ("fitness"))
Web of Science	TOPIC = 36,880 results from Core Collection	Results for ("sport*" OR "physical activ*" OR "physical exercise*" OR "physical training") AND ("fitness") (Topic)
	Tilte = 3,266 results from Core Collection	Results for ("sport*" OR "physical activ*" OR "physical exercise*" OR "physical training") AND ("fitness") (Title)

Results

The researcher conducts and delivers a process analysis in this section that enables the reader to comprehend the current state of the sport and fitness research landscape as well as anticipated publication patterns that will be helpful for future study. The time frame covered by our review investigation is from January 1 of 1990 to December 31, 2021. The initiation year is preconfigured by default in the ScientoPy software since the software suggests this configuration. Both databases' history of sports and fitness papers reveals a striking trend, where this industry has expanded greatly since 2013. 126 publications came from both databases this year. Additionally, 482 (18.08%) papers released in the two most recent years (2020 to 2021) have been published, of which 234 (8.77%) documents in 2020 (188 documents in WoS and 46 documents in Scopus) and 248 (9.31%) documents in 2021 have been published (215 documents in WoS and 33 documents in Scopus).

However, by making changes to the ScientoPy global settings file, we can alter the filter for this particular document type. The most common form of document tracked was an article, which had up to 2264 published manuscripts. With an AGR of 29.05, it can be concluded that there has been an upward trend or growth in the quantity of documents produced on a given subject. Accordingly, depending on the type of article document, the average number of documents issued each year varies from the preceding year. With a total of 215 manuscripts, review articles are the second most common type of document. The third to sixth types of documents are 181 proceedings paper, conference paper (40), book chapter (20), and two articles in press, respectively.

According to an in-depth search of the ScientoPy software, of all the types of documents available, reviews receive the most citations. Janssen and LeBlanc's (2010) review, "Systematic review of the health benefits of physical activity and fitness in school-aged children and youth," published in the *International Journal of Behavioral Nutrition and Physical Activity*, BioMed Central Ltd., United Kingdom, received 2,742 citations. This review explains that physical activity has been linked to a variety of health benefits. The dose-response connections seen in observational research imply that your health will improve as you increase your physical activity level. The outcomes of experiments demonstrate that high-risk children's health can be improved by even modest levels of physical activity (e.g., obese). To reap major health benefits, one must engage in physical exercise of at least moderate intensity. High-intensity activities might potentially be more advantageous. The largest health benefit came from aerobic-based exercises, with the exception of bone health, which needed high-impact weight-bearing activities.

Based on the data retrieved from the ScientoPy software, Table 2 lists the number of authors who regularly produced articles on sports and fitness. The total number of publications, Average Growth Rate (AGR), Average Documents per Year (ADY), Percentage of Documents in the Last Years (PDLY), and the author's h-index are all listed in the table. The top five authors who have made at least 29 publications and have contributed to sport and fitness are listed in Table 2. Citing key researchers in our investigation helps with both distribution and scientific acclaim. One of the lead authors

is Ortega, F.B., who has 33 published publications and works at the Unit for Preventive Nutrition, Department of Bio-sciences and Nutrition at NOVUM, Karolinska Institutet, Huddinge, Sweden, and Department of Physiology, School of Medicine, University of Granada, Madrid, Spain.

One of the articles written by Ortega, F.B. (2010) has been published and received the most citations written with Ruiz, J.R., Hurtig-Wennlof, A., Vicente-Rodriguez, G., Rizzo, N.S., Castillo, M.J., and Sjostrom, M., entitled "Cardiovascular fitness modifies the associations between physical activity and abdominal adiposity in children and adolescents: the European Youth Heart Study". The findings from this study provide information that abdomen adiposity is adversely correlated with cardiovascular fitness, and it appears that cardiovascular fitness modifies the relationships between physical activity and abdominal adiposity. The main factor that appears to be connected to abdominal obesity in under-fit children and adolescents is time spent engaging in vigorous physical activity. This discovery should be taken into account as lifestyle intervention tactics are developed further. It is necessary to confirm the findings from the high-fit group.

The average growth rate (AGR) each year is -1.5, meaning that the number of documents released for a topic does not increase significantly. This suggests that the author suffers a decrease in the average number of documents published every year when compared to the previous year. The average number of documents published each year is increasing, with an average of 2.05 documents per year (ADY) and a positive trend. Documents in recent years as a percentage (PDLY) are 15.02, indicating a good trend. Additional authors in the field of fitness and sport are listed in Table 2.

Table 2. The top five most active authors

Pos.	Author	Total	AGR	ADY	PDLY	h Index
1	Ortega, F.B.	33	-1.5	2.05	15.02	22
2	Ruiz, J.R.	32	-0.5	0.05	3.01	22
3	Blair, S.N.	30	-1.0	0.05	3.03	22
4	Ekelund, U.	29	0.05	2.00	13.08	19
5	Mota, J.	29	-1.0	1.00	6.09	17

Popular source titles, representative countries, and key institutions

Each author who contributes to a publication is connected to a certain organization. ScientoPy also utilizes this data in the process. This analysis enhances the reputation of the organization and motivates people to keep reporting it in order to improve its ranking. Journals, conference proceedings, and books all qualify as sources. The top 10 sources are listed in Figure 2 according to the quantity of articles that were published between 1990 to 2021.

The scientific sources with the most associated publications have been gathered into a list. The top 10 scientific sources for sports and fitness research are shown in Figure 2 by order of publication. This analysis detects the current sports and fitness-related research publications. This results shows that, with 68 published articles, the *International Journal of Environmental Research and Public Health* is the

top scholarly source for sports and fitness-related publications. The Journal of Sports Sciences is in third place with 45 documents, Medicine and Science in Sports and Exercise is in second place with 54 documents, and the Journal of Physical Activity & Health is in fourth place with 41 documents. These four scientific sources are the only ones with more than 40 publications. The International Journal of Environmental Research and Public Health has attracted 72.01% of publications pertaining to sports and fitness, which is in line with recent trends (2020 and 2021). Theory I Practical Fizicheskoy Kultury (25.07%) and the Journal of Sports Sciences (22.02%) are two further scientific journals that have produced papers more than 20% in 2020 and 2021.

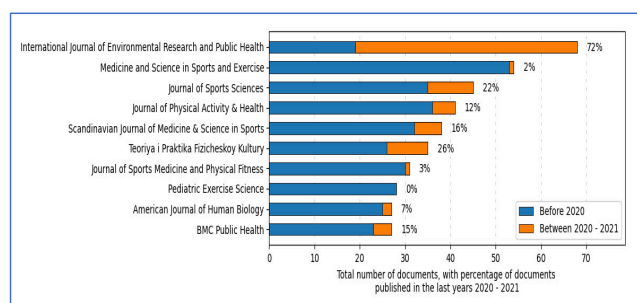


Fig. 2. The 10 most active scientific sources in publishing manuscripts related to sports and fitness

The nations with the greatest number of publications in this area have been collated in a list. The top ten nations, as determined by sports and fitness publications, are shown in Figure 3. Countries that are actively researching sports and fitness are identified through country analysis. Figure 3 shows that the United States has 601 publications. Second, with 232 publications, is the Spain, followed by Spain with 212 publications. Only these three countries have published more than 218 academic scholarly works, and the last is the United Kingdom with 214 publication.

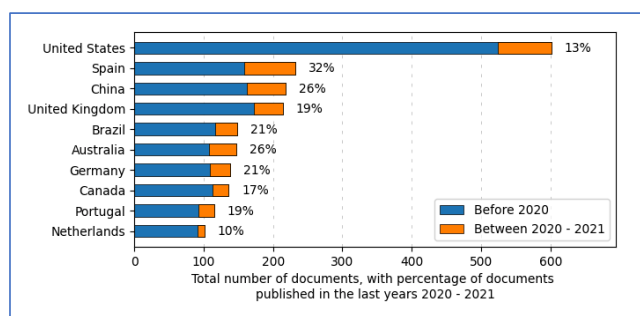


Fig. 3. The top ten most active countries in the field of sport and fitness

Publications list authors according to their specific institution or affiliation. Future cooperation amongst scholars have been made possible by their knowledge of which institutions best represent sports and fitness. The top ten organizations and nations that publish studies on sports and fitness are shown in a bar graph in Figure 4. The University of Granada in Spain has the most articles, according to Figure 4 of this report (68 publications). With 53 publications, the University of Porto in Portugal took second place. The

University of Jyväskylä in Finland, with 41 publications, is in third position. Despite being in tenth place, the University of Southern Denmark in Denmark has the highest PDLY (40.9%) of the nine other universities when it comes to working and conducting research on sports and fitness.

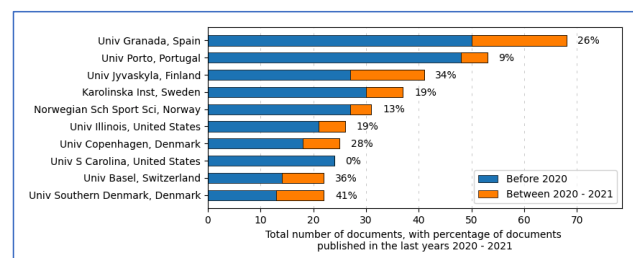


Fig. 4. The top ten most active institutions in the field of sport and fitness

The author's keyword base and influential topics

Author keywords are the words that the writers have specifically selected to characterize the content of a publication. The writers' keywords made it easier for readers and potential scholars to find important passages in articles. Many electronic search engines, databases, and journal websites use author keywords to discover pertinent publications. Using the authors' keywords, ScientoPy might then follow the development of a research question or search thesis. This section looks into the authors' main keywords from earlier sports and fitness studies. To finish the workflow, research trends were found based on the authors' keywords. Similar terms with British and American spellings, as well as singular and plural keywords, have been recommended to be mixed. These manual exercises aid in data arrangement and prevent term duplication, producing findings that are more reliable.

By analysing the top author's keywords with the highest AGR, ScientoPy can spot hot authors keyword (as described in the "Topic growth indicators" section). Figure 5 charts the development of the most popular trending topics in the area of sports and fitness. The total number of documents is plotted using a logarithmic scale against the year of publication on the left side of this progression map. As a result, the first row on the X-axis denotes the year the topic study was started, while the last line on the Y-axis displays the total number of documents produced for each topic. On the right's Y-axis, the AGR of each topic for the years 2021–2022, as well as the PDLY, are displayed. This graph can be used to determine the topics that have the highest AGR and highest PDLY. As a result, "physical activity" (29,00) was the trending topic with the highest absolute increase, while "cardiorespiratory fitness," (30,04), "body composition," (24,07) and "health" (24,02) were the three terms with the highest relative growth. Ten hot themes based on the author's keywords are shown in Figure 5.

Using cluster mapping, this study determined the co-occurrence of the authors' keywords by identifying themes or issues related to sports and fitness. ScientoPy was used to do preliminary processing on a combination of Scopus and WoS metadata datasets before the VOSviewer was used to produce a network map. Additionally, this study mapped the co-occurrence of the writers' keywords using a thesaurus

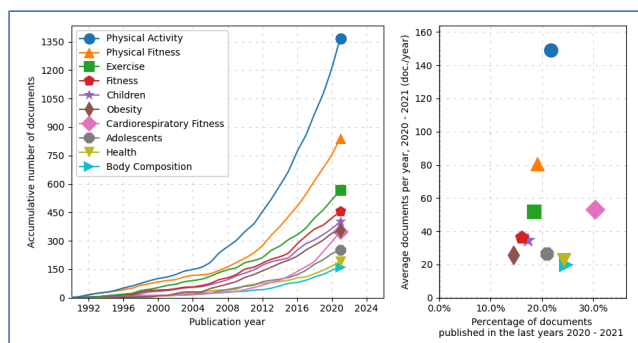


Fig. 5. Top 10 trending topics based on the author's keyword evolution plot related to sport and fitness

file. When combining similar terms, spelling changes, and singular or plural terms, such as accelerometer and accelerometry, sport and sports, thesaurus files are crucial.

Figure 6 compares the number of times a keyword appears in VOSviewer to the size of the node. The keyword will be more noticeable the darker the stain is. The thickness of the line between the terms, which represents the degree of co-occurrence, determines the strength of the association. The author keyword is also shown in Figure 6 as an overlay graphic, emphasizing its connections to other keywords with the use of color, node size, text size, and connecting line thickness. 29 keywords were discovered to meet the current standard of having a minimum of 30 occurrences and 3,990 total keywords. In the diagram, blue nodes represent previously identified structures, whereas red nodes represent newly discovered structures.

The results showed that "physical activity" was the keyword that appeared the most with 699 times, and had

a total link strength of 1068. "physical fitness" (491 occurrences, 659 total link strength), "exercise" (316 occurrences, 441 total link strength), "fitness" (229 occurrences, 353 total link strength), "adolescents" (173 occurrences, 338 total link strength), "children" (160 occurrences, 319 total link strength), "obesity" (148 occurrences, 297 total link strength), "cardiorespiratory fitness" (179 occurrences, 274 total link strength), "health" (96 occurrences, 167 total link strength), "body composition" (78 occurrences, 140 total link strength), "accelerometry" (74 occurrences, 122 total link strength), and "youth" 66 occurrences, 111 total link strength). Only these 12 keywords have a total link strength above 100.

The VOSviewer results enabled us to deduce that the most frequently used keywords in 2013 were "cardiovascular disease" with 40 occurrences (77 tls). For these keywords, the article by Myers, J., et al. (2015), entitled "Physical Activity and Cardiorespiratory Fitness as Major Markers of Cardiovascular Risk: Their Independent and Interwoven Importance to Health Status" is the article that received the most citations, namely 401 citations. This review demonstrates that with losses so pronounced in recent generations, current patterns of physical activity are undoubtedly the lowest in human history, and forecasts for the future suggest additional global declines. Recent developments in statistical and epidemiological approaches have made it possible to measure the separate impacts of cardiorespiratory fitness and physical activity on health outcomes. Based on more than 50 years of epidemiological research, it is now well recognized that higher levels of cardiorespiratory fitness and physical activity are associated with improved health outcomes.

The most recent keyword that was initiated after 2016 was "cardiorespiratory fitness," with an occurrence of 179.

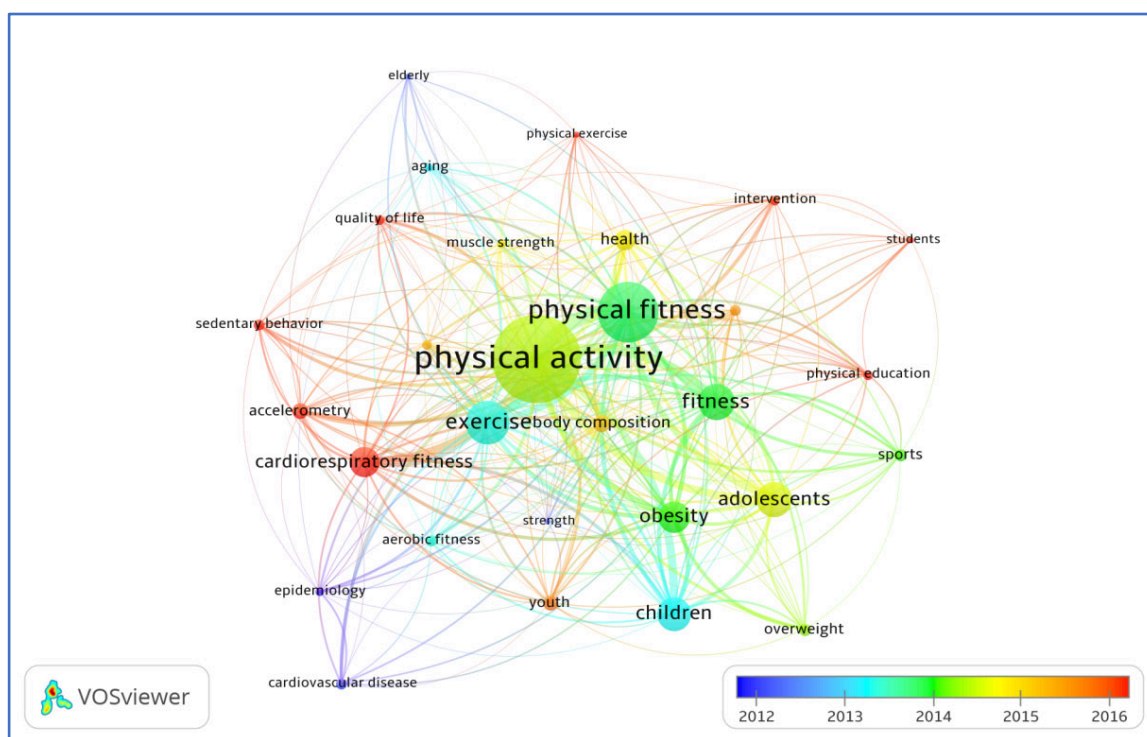


Fig. 6. Overlay visualization of the co-occurrence of authors' keywords

This keyword had (274 total link strength). Other keywords that emerged after 2016 included “accelerometry” (74 occurrence, 122 total link strength), “sedentary behavior” (43 occurrence, 80 total link strength), “physical education” (50 occurrence, 70 total link strength), “quality of life” (40 occurrence, 66 total link strength), “intervention” (32 occurrence, 65 total link strength), “students” (31 occurrence, 39 total link strength), “physical exercise” (41 occurrence, 36 total link strength).

Discussion

One of the most crucial processes in scientometrics analysis is pre-processing because the quality of the data affects the quality of the results (Cobo et al., 2011). One of the most crucial preprocessing stages that enables data quality, especially when working with datasets from two separate databases, is the elimination of duplication. This is crucial since even one article manuscript may contain more than two data in the Database, despite the fact that we claim to be able to filter metadata that may contain duplicate data.

Based on their excellence in scientific work for various academic fields, Scopus and Web of Science have proven to be the top data sources and have high impact factors. The scope and content of the well-known bibliometric databases Web of Science (WoS) and Scopus are the product of the indexation philosophies of their proprietors (Stahlschmidt & Stephen, 2022). However, major databases limit their capacity to offer an adequate selection of research materials. Although large databases do offer research, their scope is much wider and diverse than subject-specific resources (Marcocin et al., 2022). As a result, many universities require their professors to publish their scientific work in Scopus-indexed journals to increase the prestige of the university, attract new students, and absorb research funds. In addition, the university requires full-time professors to post articles on the Web of Science. From the other side, students, for example, we can see that publication in Scopus/WoS is a fairly formidable challenge that must be overcome. Even in many countries, Indonesia, for example, to complete a doctoral program (PhD), must publish academic papers in Scopus indexed journals. The negative impact of this rule is that many students are trapped in predatory journals. Not a few students are slow in completing their studies, and in the extreme, they drop out of college. Of course, this is inhumane, because with one condition that is not fulfilled (cannot publish articles on Scopus), doctoral students must thwart the struggle. That is a proven fact.

The first paper in this sports and fitness review, entitled “Physical Exercise and Physiological Fitness,” was published in 1919. The Journal of the American Medical Association, 73(1), 37, was published. This paper tells us that physical exercise is not uncommon to the point of excessive, resulting in final injury rather than benefit. Although intensive training is generally beneficial, failure to adapt to the increasing demands of work is always a concern and a clue that alternative methods of improving organisms should be found (1919). It is interesting to examine more deeply the benefits and disadvantages of excessive physical activity and exercise. Not infrequently and in many cases, if the activity is carried out excessively, it can damage psychological, anatomical, and physiological factors, even to the level of triggering death.

Exercise capacity and activity level have long been recognized as predictors of cardiovascular and overall mortality (Chang & Froelicher, 1994; Pate et al., 1995). Peak exercise capacity as measured in metabolic equivalents is the best predictor of mortality in normal subjects and of cardiovascular disease (Myers et al., 2002).

The United States is the most active country in the world in promoting sports and fitness, and the country is concerned about it. Some of the most recent evidence in this regard is as follows: 1) The Bureau of Labor Statistics estimates that 19.3% of Americans participated in sports and exercise every day in 2019. The participation rate of men was higher (20.7%) than that of women (18 percent). This includes engaging in sports, fitness, and other leisure activities, 2) In 2019, Americans spent an average of 30 minutes per day engaging in sport, exercise, and leisure activities, 3) Hiking, camping, riding, fishing, and running & jogging are some of the most well-liked outdoor pursuits in the US., 4) In 2019, more than 50 million individuals went hiking, while more than 60 million people ran, jogged, and engaged in trail running, 5) High school athletics play a significant role in American sports culture. In the 2018–19 academic year, 4.53 million male students engaged in high school athletics, with football being the most popular sport with over one million participants. Around 3.4 million female students participated in the overall student body in 2018–19. With over 488 thousand participants, track and field had the most participation overall. With more than 450 thousand participants in 2019, volleyball was also very popular (Statista Research Department, 2022). Thus, it is clear why the United States was ranked as the most productive countries in this study.

As scholars continue to study the convergence of sports and fitness, more critical attention to the problem and a theoretical and practical orientation are required. There is no doubt that every professional must respect the authentic aspects and fitness needs of the personality in carrying out daily activities. Perhaps more importantly, scholars should seek to critically engage with theoretical and conceptual models from all disciplines when studying sports and fitness. Physical activity is certainly very beneficial for the condition of the body.

Meanwhile, the hot topic is cardiorespiratory fitness. The results of research conducted by Burden et al. (2022) show that adolescents who engage in 20 minutes of vigorous physical activity per day on average have maximal cardiorespiratory fitness, and there is little evidence that engaging in more or less intense physical activity is beneficial. In addition to always being related to physical health and fitness, cardiorespiratory fitness is also related to cognitive function and psychological well-being. Among school-age children, cognitive performance and cardiorespiratory fitness are important correlates and predictors of psychological well-being. When compared with groups of students with lower psychological well-being, those with higher levels demonstrated greater cardiorespiratory fitness, performance on concentration tasks, and attention accuracy (Chen et al., 2022). Children with high cardiorespiratory fitness have greater cognitive function than children with low cardiorespiratory fitness (Álvarez-Bueno et al., 2019). Cardiorespiratory health and cognitive processing speed are substantially related to depression, pain, and fatigue (Sandroff et al., 2019). Improving

cardiorespiratory fitness can increase cognitive processing speed without affecting the effects of fatigue, discomfort, or sadness (Gao & Zhou, 2022).

Physical activity or sports to improve fitness is a basic need that must be met to be able to stay strong in carrying out daily work routines. Therefore, various elements must be considered in encouraging the willingness of individuals to develop their identity through sports, especially exercises that prioritize the values of independence and prudence in implementing exercise interventions. The public must be very aware of the importance of increasing their fitness level with various programs. Programs such as providing exercise frequency, exercise intensity, duration of exercise, and type of exercise must really be adapted to the conditions and needs of society in general, not just non-athletes. Because giving intervention to athletes is very clear in accordance with the standards of each type of sport. Thus, further development of the constellation between physical activity, sports, and even physical education in schools is urgently needed to obtain more comprehensive information to prevent unwanted things from occurring, such as physical, kinetic, and even death.

Conclusions

This study has demonstrated the remarkable growth trajectory of sports and fitness research since 2013. Sports and fitness research is gaining traction due to the involvement of academics and practitioners, which requires a lot of scrutiny in this area. Exercise, physical activity, and sports are an inseparable part of many people's lives, especially when it comes to fitness. Thus, fitness is something that must be obtained by every individual to be able to support and carry out daily work activities. Not only that, good fitness is also expected to improve cognitive, affective, and psychomotor abilities. Therefore, it indirectly attracts and facilitates current and future researchers who want to explore deeper to become interested in sports and fitness.

This research is expected to be a stepping stone for future work in developing sports and fitness research on topics such as exercise and fitness and their impact on improving the psychological elements; the impact of exercise and fitness on people with autism; and in-depth studies of certain themes or issues discussed in this study. This research However, this analysis is only a starting point that can be disseminated with more in-depth investigations, such as a systematic literature review, meta-analysis, thematic analysis, and empirical studies, to obtain more accurate information related to this research in terms of content, methods, discussion, and results. We can also conduct research by examining the elements of the basic theory of ideals, reality, practicality, nature, and humanism, which are analyzed concretely in the field of sports and fitness. In fact, most of the research on fitness and exercise has been carried out in Western countries (Europe and America) where modern sports are dominant, with good technological support or in developed countries with strong sports histories and traditions, such as China. Little research has been done by developing countries in the field of exercise and fitness. Therefore, it is highly recommended for further researchers to explore information about physical activity and exercise in developing countries. Because not a few small and developing countries have good sports achievements.

The search strings that were used to conduct this study are mostly to blame for its limitations. The metadata is incorporated into the text throughout using the keyword "sports and fitness". The debate can alter slightly if more keywords are utilized. Additionally, the results of this study's keyword analysis have been predicted to spur the creation of fresh concepts, allowing for more effective dissemination and communication of academic works related to sports and fitness research as well as the emergence of new, more pertinent ideas and concepts.

Acknowledgment

The reviewers are acknowledged by the writers for their work. The reviewers' assessments helped this paper achieve the necessary scholarly standard. Future readers and researchers benefited from the reviewers' insightful remarks and viewpoints as well.

Conflict of interest

In writing this review, the author declared that there were no conflicts of interest.

References

- Agerbo, H. (2016). The incorporation of specialised data in lexicographical meaning explanations: A discussion based on sports and fitness terms. *Lexikos*, 26(July), 1-35. <https://doi.org/10.5788/26-1-1360>
- Vidal, L. T., Zhu, H., Waern, A., & Segura, E. M. (2021). The design space of wearables for sports and fitness practices. *Conference on Human Factors in Computing Systems - Proceedings*. <https://doi.org/10.1145/3411764.3445700>
- Ash, G. I., Stults-Kolehmainen, M., Busa, M. A., Gregory, R., Garber, C. E., Liu, J., Gerstein, M., Casajus, J. A., Gonzalez-Aguero, A., Constantinou, D., Geistlinger, M., Guppy, F. M., Pigozzi, F., & Pitsiladis, Y. P. (2020). Establishing a Global Standard for Wearable Devices in Sport and Fitness: Perspectives from the New England Chapter of the American College of Sports Medicine Members. *Current Sports Medicine Reports*, 19(2), 45-49. <https://doi.org/10.1249/JSR.0000000000000680>
- Düking, P., Stammel, C., Sperlich, B., Sutehall, S., Muniz-Pardos, B., Lima, G., Kilduff, L., Keramitsoglou, I., Li, G., Pigozzi, F., & Pitsiladis, Y. P. (2018). Necessary steps to accelerate the integration of wearable sensors into recreation and competitive sports. *Current Sports Medicine Reports*, 17(6), 178-182. <https://doi.org/10.1249/JSR.0000000000000495>
- Thompson, W. R. (2018). Worldwide Survey of Fitness Trends for 2022. *ACSM's Health and Fitness Journal*, 26(1), 11-20. <https://doi.org/10.1249/FIT.0000000000000732>
- Avourdiadou, S., & Theodorakis, N. D. (2014). The development of loyalty among novice and experienced customers of sport and fitness centres. *Sport Management Review*, 17(4), 419-431. <https://doi.org/10.1016/j.smr.2014.02.001>
- Fontan, L., Fraval, M., Michon, A., Déjean, S., & Welby-Gieusse, M. (2017). Vocal Problems in Sports and Fitness Instructors: A Study of Prevalence, Risk Factors, and Need for Prevention in France. *Journal of Voice*, 31(2), 261.e33-261.e38. <https://doi.org/10.1016/j.jvoice.2016.04.014>

- Theodorakis, N. D., Howat, G., Ko, Y. J., & Avourdiadou, S. (2014). A comparison of service evaluation models in the context of sport and fitness centres in Greece. *Managing Leisure*, 19(1), 18-35. <https://doi.org/10.1080/13606719.2013.849505>
- Sofyan, D., Abdullah, K. H., & Hafiar, H. (2022). The Philosophy of Sport and Physical Education: Four Decade Publication Trends via Scientometric Evaluation. *Physical Education Theory and Methodology*, 22(3), 437-449. <https://doi.org/10.17309/tmf.v.2022.3.20>
- Chen, X., & Chen, S. (2017). 'It's not doable!' Exploring physical education teachers' perspectives on the policy change of sport and physical education in Chinese universities. *International Journal of Sport Policy*, 9(3), 397-413. <https://doi.org/10.1080/19406940.2017.1320302>
- Beaudet, B. O. B., Acquaviva, J., & Grube, D. A. N. (2004). Take Sport Education a Step Further: Add Fitness. *Journal of Physical Education, Recreation and Dance*, 75(9), 39-43.
- Stewart, B., Smith, A., & Moroney, B. (2013). Capital building through gym work. *Leisure Studies*, 32(5), 542-560. <https://doi.org/10.1080/02614367.2012.697183>
- De Meester, A., Wazir, M. R. W. N., Lenoir, M., & Bardid, F. (2020). Profiles of Physical Fitness and Fitness Enjoyment Among Children: Associations With Sports Participation. *Research Quarterly for Exercise and Sport*, 93(1), 26-35. <https://doi.org/10.1080/02701367.2020.1788700>
- Crook, E. (2013). Sport and access to sport information in Australia. *Australian Library Journal*, 62(4), 295-304. <https://doi.org/10.1080/00049670.2013.845074>
- Malm, C., Jakobsson, J., & Isaksson, A. (2019). Physical activity and sports—real health benefits: A review with insight into the public health of sweden. *Sports*, 7(5). <https://doi.org/10.3390/sports7050127>
- Kiely, R. (2010). The sport and fitness sector: an introduction. *Leisure Studies*, 29(1), 120-121. <https://doi.org/10.1080/02614360902951724>
- Wu, X., Qin, X., & Zhou, H. (2018). Use of community spaces for sports and fitness - A case study of urban inhabitants in Shenzhen City, China. *International Review for Spatial Planning and Sustainable Development*, 6(3), 49-62. https://doi.org/10.14246/IRSPSD.6.3_49
- Li, X. (2012). Energy saving sports and fitness. *Advanced Materials Research*, 524-527, 2549-2552. <https://doi.org/10.4028/www.scientific.net/AMR.524-527.2549>
- Robertson, J., Emerson, E., Gregory, N., Hatton, C., Turner, S., Kessissoglou, S., & Hallam, A. (2000). Lifestyle related risk factors for poor health in residential settings for people with intellectual disabilities. *Research in Developmental Disabilities*, 21(6), 469-486. [https://doi.org/10.1016/S0891-4222\(00\)00053-6](https://doi.org/10.1016/S0891-4222(00)00053-6)
- Foley, J. T., Harvey, S., Chun, H. J., & Kim, S. Y. (2008). The relationships among fundamental motor skills, health-related physical fitness, and body fatness in south korean adolescents with mental retardation. *Research Quarterly for Exercise and Sport*, 79(2), 149-157. <https://doi.org/10.1080/02701367.2008.10599478>
- Biernat, E. (2011). Sport and other motor activities of Warsaw students. *Biomedical Human Kinetics*, 3(2011), 10-13. <https://doi.org/10.2478/v10101-011-0003-8>
- Esteban-Cornejo, I., Tejero-González, C. M., Martinez-Gomez, D., Del-Campo, J., González-Galo, A., Padilla-Moledo, C., Sallis, J. F., & Veiga, O. L. (2014). Independent and combined influence of the components of physical fitness on academic performance in youth. *Journal of Pediatrics*, 165(2). <https://doi.org/10.1016/j.jpeds.2014.04.044>
- Janssen, I., & Leblanc, A. G. (2010). Systematic Review of the Health Benefits of Physical Activity and Fitness in School-Aged Children and Youth. *School Nutrition and Activity*, 7(40), 209-246. <https://doi.org/10.1201/b18227-18>
- Smith, J. J., Eather, N., Morgan, P. J., Plotnikoff, R. C., Faigenbaum, A. D., & Lubans, D. R. (2014). The health benefits of muscular fitness for children and adolescents: A systematic review and meta-analysis. *Sports Medicine*, 44(9), 1209-1223. <https://doi.org/10.1007/s40279-014-0196-4>
- Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for adults: Informing development of a conceptual model of health through sport. *International Journal of Behavioral Nutrition and Physical Activity*, 10. <https://doi.org/10.1186/1479-5868-10-135>
- Barber, B. L. & W. K. (2007). Introduction to Sport and Physical Activity as Developmental Contexts. *International Society for the Study of Behavioral Development Newsletter*, 2(52), 5-7. www.issbd.org
- Elbe, A. M., Wikman, J. M., Zheng, M., Larsen, M. N., Nielsen, G., & Krstrup, P. (2017). The importance of cohesion and enjoyment for the fitness improvement of 8–10-year-old children participating in a team and individual sport school-based physical activity intervention. *European Journal of Sport Science*, 17(3), 343-350. <https://doi.org/10.1080/17461391.2016.1260641>
- Fenton, S. A. M., Duda, J. L., & Barrett, T. (2016). Inter-participant variability in daily physical activity and sedentary time among male youth sport footballers: independent associations with indicators of adiposity and cardiorespiratory fitness. *Journal of Sports Sciences*, 34(3), 239-251. <https://doi.org/10.1080/02640414.2015.1048273>
- Tan, T. C. (2015). The Transformation of China's National Fitness Policy: From a Major Sports Country to a World Sports Power. *International Journal of the History of Sport*, 32(8), 1071-1084. <https://doi.org/10.1080/09523367.2015.1036240>
- Thorpe, H., Brice, J., & Clark, M. (2021). New materialisms, sport and the environment: imagining new lines of flight. *Sport, Education and Society*, 26(4), 363-377. <https://doi.org/10.1080/13573322.2020.1837097>
- Grant, C. C., Janse van Rensburg, D. C., Pepper, M. S., du Toit, P. J., Wood, P. S., Ker, J., Krüger, P. E., Grobbelaar, C. W., Nolte, K., Fletcher, F., & Grant, T. C. (2014). The correlation between the health-related fitness of healthy participants measured at home as opposed to fitness measured by sport scientists in a laboratory. *South African Family Practice*, 56(4), 235-239. <https://doi.org/10.1080/20786190.2014.953888>
- Morton, S., O'Reilly, L., & O'Brien, K. (2016). Boxing clever: utilizing education and fitness to build recovery capital in a substance use rehabilitation program. *Journal of Substance Use*, 21(5), 521-526. <https://doi.org/10.3109/14659891.2015.1077281>
- Gerdin, G., & Pringle, R. (2017). The politics of pleasure: an ethnographic examination exploring the dominance of the multi-activity sport-based physical education model. *Sport, Education and Society*, 22(2), 194-213. <https://doi.org/10.1080/13573322.2015.1019448>

- Kurscheidt, M., Klein, M. L., & Deitersen-Wieber, A. (2003). A socioeconomic approach to sports: Lessons from fitness and event markets. *European Journal of Sport Science*, 3(3), 1-10. <https://doi.org/10.1080/17461390300073308>
- Vachon, D., Sadro, S., Bogard, M. J., Lapierre, J. F., Baulch, H. M., Rusak, J. A., Denfeld, B. A., Laas, A., Klaus, M., Karlsson, J., Weyhenmeyer, G. A., & del Giorgio, P. A. (2020). Paired O₂-CO₂ measurements provide emergent insights into aquatic ecosystem function. *Limnology And Oceanography Letters*, 5(4), 287-294. <https://doi.org/10.1002/lol2.10135>
- León-Quismondo, J., García-Unanue, J., & Burillo, P. (2020). Best practices for fitness center business sustainability: A qualitative vision. *Sustainability (Switzerland)*, 12(12). <https://doi.org/10.3390/su12125067>
- Zhang, Y. X., & Wang, L. (2012). The research on the sports consumption and the development of physical fitness industry. *Advances in Intelligent and Soft Computing*, 148 AISC(1), 7-11. https://doi.org/10.1007/978-3-642-28655-1_2
- Blagin, V. A., Zyryanova, V. A., & Akulova, P. E. (2020). Scientometric Evaluation of Sports Journals in Russia. *First International Volga Region Conference on Economics, Humanities and Sports (FICEHS 19)*, 114(Ficehs 19), 715-717. <https://doi.org/10.2991/aebmr.k.200114.168>
- Elahi, A. R., Gholampour, S., & Gholampour, B. (2020). A Scientometric Study of the Journal of Applied Research of Sport Management. *Caspian Journal of Scientometrics*, 6(2), 24-35. <https://doi.org/10.22088/cjs.6.2.24>
- Kusugul, S. (2018). The Scientometrics Analysis of Physiotherapy Journal. *International Journal of Library and Information Studies*, 8(2), 446-453.
- Qi, S., Hua, F., Zhou, Z., & Shek, D. T. L. (2022). Trends of Positive Youth Development Publications (1995–2020): A Scientometric Review. *Applied Research in Quality of Life*, 17(1), 421-446. <https://doi.org/10.1007/s11482-020-09878-3>
- Lombardo, M. P., & Emiah, S. (2014). Scientometric analyses of studies on the role of innate variation in athletic performance. *SpringerPlus*, 3(1), 1-15. <https://doi.org/10.1186/2193-1801-3-307>
- Yaminifirooz, M., Siamian, H., Jahani, M. A., & Yaminifirooz, M. (2014). Scientific production of sports science in Iran: A scientometric analysis. *Acta Informatica Medica*, 22(3), 195-198. <https://doi.org/10.5455/aim.2014.22.195-198>
- Vanegas, J. C., Ochoa, G. V., & Gutierrez, J. C. (2018). Scientometric analysis of research on eSports from 2007 to 2017. *Contemporary Engineering Sciences*, 11(70), 3463-3471. <https://doi.org/10.12988/ces.2018.87352>
- Tian, E., & Wise, N. (2020). An Atlantic divide? Mapping the knowledge domain of European and North American-based sociology of sport, 2008–2018. *International Review for the Sociology of Sport*, 55(8), 1029-1055. <https://doi.org/10.1177/1012690219878370>
- Soufi, M. R., Khasseh, A. A., & Khasseh, A. (2018). A Scientometric Analysis of Iranian Sport Sciences Researchers in ISI. *Communication Management in Sports Media*, 5(19), 49-62.
- Ke, W. (2013). A fitness model for scholarly impact analysis. *Scientometrics*, 94(3), 981-998. <https://doi.org/10.1007/s11192-012-0787-5>
- Zhou, W., Chen, Q., & Meng, S. (2019). Knowledge mapping of credit risk research: scientometrics analysis using CiteSpace. *Economic Research-Ekonomska Istrazivanja*, 32(1), 3451-3478. <https://doi.org/10.1080/1331677X.2019.1660202>
- Chellappandi, P., & Vijayakumar, C. S. (2018). Bibliometrics, Scientometrics, Webometrics / Cybermetrics, Informetrics and Altmetrics - An Emerging Field in Library and Information Science Research. *International Journal of Education*, 7(1), 5-8. <http://www.shanlaxjournals.in>
- Gonzales, L. G. V., Ávila, F. F. G., Torres, R. J. C., Olivera, C. A. C., & Paredes, E. A. A. (2021). Scientometric study of drinking water treatments technologies: Present and future challenges. *Cogent Engineering*, 8(1). <https://doi.org/10.1080/23311916.2021.1929046>
- Mingers, J., & Leydesdorff, L. (2015). A review of theory and practice in scientometrics. *European Journal of Operational Research*, 246(1), 1-19. <https://doi.org/10.1016/j.ejor.2015.04.002>
- Ramy, A., Floody, J., Ragab, M. A. F., & Arisha, A. (2018). A scientometric analysis of Knowledge Management Research and Practice literature: 2003-2015. *Knowledge Management Research and Practice*, 16(1), 66-77. <https://doi.org/10.1080/14778238.2017.1405776>
- Mohan, B. S., & Kumbar, M. (2021). Mapping of Stellar and Galactic Astrophysics Research in India: A Scientometric Analysis. *Science and Technology Libraries*, 40(1), 82-103. <https://doi.org/10.1080/0194262X.2020.1811831>
- Velmurugan, C., & Radhakrishnan, N. (2015). Scientometric observations of Authorship Trends and Collaborative Research on DESIDOC Journal of Library and Information Technology. *Collnet Journal of Scientometrics and Information Management*, 9(2), 193-204. <https://doi.org/10.1080/09737766.2015.1069957>
- Nyika, J., Mwema, F. M., Mahamood, R. M., Akinlabi, E. T., & Jen, T. (2022). A five-year scientometric analysis of the environmental effects of 3D printing. *Advances in Materials and Processing Technologies*, 8(sup2), 564-574. <https://doi.org/10.1080/2374068X.2021.1945267>
- Leydesdorff, L., & Milojević, S. (2015). Scientometrics. *International Encyclopedia of the Social & Behavioral Sciences: Second Edition*, 21, 322–327. <https://doi.org/10.1016/B978-0-08-097086-8.85030-8>
- Lai, Y., Wang, R., Chen, X., Tang, D., Hu, Y., Cai, J., Zhang, Q., & Hu, H. (2017). Emerging trends and new developments in monoclonal antibodies: A scientometric analysis (1980–2016). *Human Vaccines and Immunotherapeutics*, 13(6), 1388-1397. <https://doi.org/10.1080/21645515.2017.1286433>
- Nath, A., & Jana, S. (2021). A Scientometric Review of Global Altmetrics Research. *Science and Technology Libraries*, 40(3), 325-340. <https://doi.org/10.1080/0194262X.2021.1918607>
- Ceballos, H. G., Fangmeyer, J., Galeano, N., Juarez, E., & Cantu-Ortiz, F. J. (2017). Impelling research productivity and impact through collaboration: A scientometric case study of knowledge management. *Knowledge Management Research and Practice*, 15(3), 346-355. <https://doi.org/10.1057/s41275-017-0064-8>
- Wani, Z. A., & Zainab, T. (2017). A review of eminence of scientometric indicators in scientific research productivity. *COLLNET Journal of Scientometrics and Information Management*, 11(2), 273-285. <https://doi.org/10.1080/09737766.2017.1306179>
- Young, L., Wilkinson, I., & Smith, A. (2015). A Scientometric Analysis of Publications in the Journal of Business-to-

- Business Marketing 1993–2014. *Journal of Business-to-Business Marketing*, 22(1-2), 111-123.
<https://doi.org/10.1080/1051712X.2015.1021591>
- Ruiz-Rosero, J., Ramirez-Gonzalez, G., Williams, J. M., Liu, H., Khanna, R., & Pisharody, G. (2017). Internet of things: A scientometric review. *Symmetry*, 9(12).
<https://doi.org/10.3390/sym9120301>
- Li, J., Li, H.-J., & Zhen, L. (2016). Research output of Journal Technovation: A scientometric study. *COLLNET Journal of Scientometrics and Information Management*, 10(2), 255-272. <https://doi.org/10.1080/09737766.2016.1213968>
- Martynov, I., Klima-Frysch, J., & Schoenberger, J. (2020). A scientometric analysis of neuroblastoma research. *BMC Cancer*, 20(1), 1-10.
<https://doi.org/10.1186/s12885-020-06974-3>
- Malakoutikhah, M., Alimohammadlou, M., Rabiei, H., Faghihi, S. A., Kamalinia, M., & Jahangiri, M. (2021). A scientometric study of unsafe behavior through Web of Science during 1991–2020. *International Journal of Occupational Safety and Ergonomics*.
<https://doi.org/10.1080/10803548.2021.1953787>
- Aziz, F. S. A., Harith, S. H., Abdullah, K. H., & Sofyan, D. (2022). Trends and Evolution of Road User behaviour Research: A Bibliometric Review. *International Journal of Information Science and Management*, 20(3), 69-93.
- Abdullah, K. H. (2021). Mapping of Marine Safety Publications Using VOSviewer. *ASM Science Journal*, 16(July), 1-9. <https://doi.org/10.32802/asmscj.2021.774>
- Abdullah, K. H., & Abd Aziz, F. S. (2021). Mapping of Laboratory Safety Research: a Bibliometric Review. *Malaysian Journal of Public Health Medicine*, 21(1), 303-310.
<https://doi.org/10.37268/MJPHM/VOL.21/NO.1/ART.864>
- Pabon, C. D. R., Sánchez-Benitez, J., Ruiz-Rosero, J., & Ramirez-Gonzalez, G. (2020). Coffee crop science metric: A review. *Coffee Science*, 15(1), 1-11.
<https://doi.org/10.25186/v15i1.1693>
- Ruiz-Rosero, J., Ramirez-Gonzalez, G., & Viveros-Delgado, J. (2019). Software survey: SientoPy, a scientometric tool for topics trend analysis in scientific publications. *Scientometrics*.
- Ortega, F. B., Ruiz, J. R., Hurtig-Wennlöf, A., Vicente-Rodríguez, G., Rizzo, N. S., Castillo, M. J., & Sjöström, M. (2010). Cardiovascular fitness modifies the associations between physical activity and abdominal adiposity in children and adolescents: The European youth heart study. *British Journal of Sports Medicine*, 44(4), 256-262.
<https://doi.org/10.1136/bjsm.2008.046391>
- Myers, J., McAuley, P., Lavie, C. J., Despres, J. P., Arena, R., & Kokkinos, P. (2015). Physical Activity and Cardiorespiratory Fitness as Major Markers of Cardiovascular Risk: Their Independent and Interwoven Importance to Health Status. *Progress in Cardiovascular Diseases*, 57(4), 306-314.
<https://doi.org/10.1016/j.pcad.2014.09.011>
- Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F. (2011). An approach for detecting, quantifying, and visualizing the evolution of a research field: A practical application to the Fuzzy Sets Theory field. *Journal of Informetrics*, 5(1), 146-166.
<https://doi.org/10.1016/j.joi.2010.10.002>
- Stahlschmidt, S., & Stephen, D. (2022). From indexation policies through citation networks to normalized citation impacts: Web of Science, Scopus, and Dimensions as varying resonance chambers. *Scientometrics*, 127(5), 2413-2431. <https://doi.org/10.1007/s11192-022-04309-6>
- Marconcin, P., Werneck, A. O., Peralta, M., Ihle, A., Gouveia, É. R., Ferrari, G., Sarmiento, H., & Marques, A. (2022). The association between physical activity and mental health during the first year of the COVID-19 pandemic: a systematic review. *BMC Public Health*, 22(1), 1-14.
<https://doi.org/10.1186/s12889-022-12590-6>
- Chang, J., & Froelicher, V. F. (1994). Clinical and exercise test markers of prognosis in patients with stable coronary artery disease. *Current Problems in Cardiology*, 19(9), 539-587. [https://doi.org/10.1016/0146-2806\(94\)90010-8](https://doi.org/10.1016/0146-2806(94)90010-8)
- Pate, R. R., Pratt, M., Blair, S. N., Haskell, W. L., Macera, C. A., Bouchard, C., Buchner, D., Ettinger, W., Heath, G. W., King, A. C., Kriska, A., Leon, A. S., Marcus, B. H., Morris, J., Paffenbarger, R. S., Patrick, K., Pollock, M. L., Rippe, J. M., Sallis, J., & Wilmore, J. H. (1995). Public Health and Prevention and the American College of Sports Medicine. *Journal of American Medical Association*, 273(5), 402-407.
- Myers, J., Prakash, M., Froelicher, V., Do, D., Partington, S., & Arwood, J. E. (2002). Exercise capacity and mortality among men referred for exercise testing. *The New England Journal of Medicine*, 346(11), 793-801.
- Statista Research Department. (2022). *Physical Activity - Statistics & Facts*. <https://www.statista.com/topics/1749/physical-activity/#dossierKeyfigures>
- Burden, S. J., Weedon, B. D., Turner, A., Whaymand, L., Meaney, A., Dawes, H., & Jones, A. (2022). Intensity and Duration of Physical Activity and Cardiorespiratory Fitness. *Pediatrics*, 150(1).
<https://doi.org/10.1542/peds.2021-056003>
- Chen, W., Gu, X., Chen, J., & Wang, X. (2022). Association of Cardiorespiratory Fitness and Cognitive Function with Psychological Well-Being in School-Aged Children. *International Journal of Environmental Research and Public Health*, 19(3), 1-10.
<https://doi.org/10.3390/ijerph19031434>
- Álvarez-Bueno, C., Cervero-Redondo, I., Díez-Fernández, A., Pardo-Guijarro, M. J., Sánchez-López, M., & Martínez-Vizcaíno, V. (2019). Cardiorespiratory fitness as a mediator of the relationship between birth weight and cognition in school children. *Psychology Research and Behavior Management*, 12, 255-262.
<https://doi.org/10.2147/PRBM.S197945>
- Sandroff, B. M., Pilutti, L. A., & Motl, R. W. (2019). Cardiorespiratory fitness and cognitive processing speed in multiple sclerosis: The possible roles of psychological symptoms. *Multiple Sclerosis and Related Disorders*, 27, 23-29. <https://doi.org/10.1016/j.msard.2018.09.033>
- Gao, H., & Zhou, C. (2022). Effects of Barefoot Walk Exercise on Cognitive Function and Brain Stress in Middle School Students. *Physical Education, Sport and Kinetotherapy Journal*, 60(Supplementary Issue), 545-557.
<https://doi.org/10.22143/hss21.12.3.11>

ПОЗИЦІЯ СПОРТУ ТА ФІЗИЧНОЇ КУЛЬТУРИ: НАУКОМЕТРИЧНИЙ ОГЛЯД

Даві Софьян^{1,2ABCD}, Юдха Мунаджат Сапутра^{1ACD}, Джунтіка Нуріхсан^{1AC},
Нурлан Кусмаеді^{1AC}, Хайрул Хафезад Абдуллах^{3BCD}

¹Університет Майаленка

²Індонезійський університет освіти

³Технологічний університет МАРА

Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 12 с., 2 табл., 6 рис., 84 джерела.

Спорт і фізична культура є фізичними потребами так само, як люди потребують їжі та води. З другого боку, спорт і фізична культура є надзвичайно складною галуззю дослідження, що ускладнює спроби визначення критичних термінів, що призводить до відносної відсутності наукометричного аналізу.

Мета цього дослідження полягає в тому, щоб розглянути розвиток досліджень у галузі спорту та фізичної культури в усьому світі, використовуючи бази даних Scopus та Web of Science як його основу.

Матеріали та методи. Публікації збирають за допомогою баз даних Scopus та Web of Science, а також параметрів наукометрії, включаючи світові тенденції публікацій, авторів, які отримують найбільше цитувань, кількість цитувань і ключові слова авторів.

Результати. Результати показують, що аналіз ключових слів авторів перевірявся на основі їх зв'язку з фізичною активністю, фізичними вправами та фізичною підготовкою. Найактивнішою країною виявилися Сполучені Штати, де вийшла 601 публікація. Як й очікувалося, Сполучені Штати є лідером у сприянні розвитку фізичної активності: у 2019 році 19,3 відсотка населення займаються спортом і виконують вправи щодня. Міжнародний журнал досліджень навколишнього середовища та громадського здоров'я зі Швейцарії очолює 68 публікацій, що є ще одним значним відкриттям. Крім того, згідно з цим аналізом, Ортега Ф.Б. з Медичної школи Університету Гранади, Мадрид, Іспанія, є автором, який публікує найбільше документів – загалом 33.

Висновки. Згідно з нашим дослідженням, топ-п'ять ключових слів, які набули популярності протягом попередніх двох років, були такі: "Кардіореспіраторна витривалість", "Склад тіла", "Здоров'я", "Фізична активність" і "Підлітки". Цінність цього дослідження для галузі спорту та фізичної культури полягає в тому, що воно надає читачам і майбутнім дослідникам широкий спектр спортивних і фізкультурних тенденцій минулого та сьогодення. Крім того, результати цього дослідження допоможуть майбутнім науковцям передбачити потенційні тенденції галузі.

Ключові слова: спорт і фізична культура, фізична активність, кардіореспіраторна витривалість, наукометричний.

Information about the authors:

Sofyan, Davi: davisofyan@unma.ac.id; <https://orcid.org/0000-0001-9510-7123>; Department of Physical Education, Universitas Majalengka, Jl. Raya K H Abdul Halim No.103, Majalengka Kulon, Kec. Majalengka, Kabupaten Majalengka, Jawa Barat 45418, Indonesia.

Saputra, Yudha Munajat: yudhamsaputra@upi.edu; <https://orcid.org/0000-0003-4142-622X>; Department of Sports Science, Faculty of Sports and Health Education, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No.229, Isola, Kec. Sukasari, Kota Bandung, Jawa Barat 40154, Indonesia.

Nurihsan, Juntika: juntikanurihsan@upi.edu; <https://orcid.org/0000-0002-9955-0349>; Department of Educational Psychology and Guidance, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No.229, Isola, Kec. Sukasari, Kota Bandung, Jawa Barat 40154, Indonesia.

Kusmaedi, Nurlan: nurlankusmaedi@upi.edu; <https://orcid.org/0000-0001-9294-9309>; Department of Sports Science, Faculty of Sports and Health Education, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No.229, Isola, Kec. Sukasari, Kota Bandung, Jawa Barat 40154, Indonesia.

Abdullah, Khairul Hafezad: khairul085@uitm.edu.my; <https://orcid.org/0000-0003-3759-6541>; Science Laboratory, Universiti Teknologi MARA, Jalan Ilmu 1/1, 40450 Shah Alam, Selangor, Malaysia.

Cite this article as: Sofyan, D., Saputra, Y.M., Nurihsan, J., Kusmaedi, N., & Abdullah, K.H. (2022). Stance of Sports and Fitness: A Scientometric Review. *Physical Education Theory and Methodology*, 22(4), 596-607. <https://doi.org/10.17309/tmfv.2022.4.20>

Received: 21.10.2022. Accepted: 09.12.2022. Published: 23.12.2022

This work is licensed under a Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0>).