

## Bibliometric analysis of harassment and bullying in sport

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### Abstract

**Background and Study Aim** This study aims to chart the trend of publications in the Scopus database and the Web of Science as well as the global evolution of harassment and bullying in sports.

**Material and Methods** ScientoPy and VOSviewer software were used in this study to analyze the number of publications, well-known research topics, proactive authors, author keywords, preferred sources, and institutional data. This study uses data reconciliation with 1, 883 different items from the Scopus database and the Web of Science. An increasing trend in sports nutrition research was found using the Scopus and WoS databases.

**Results** This field has grown significantly since 2015. In addition, the percentage of documents published in the last two years (2020 to 2021) shows that 22.40% were published on WoS and 22.04% on Scopus. The five keywords that are trending topics between 2020 and 2021 are "Sports", "Racism", "Race", "Sexual Harassment", and "Gender". Meanwhile, the keywords with the highest total link strength were "sports" (244), "racism" (169), "bullying" (165), "adolescents" (161), and "physical activity" (150). The University of Toronto, Canada, became the most productive institution with 22 publications.

**Conclusions** The most prestigious institutes and researchers in the field of harassment and bullying research in sports have been recognized, along with key research areas, keywords, and related papers. The study also offers potential readers and researchers a global perspective on the hottest issues in harassment and bullying in sport today. In addition, it provides various analyses to assist in the organization of data for the development of harassment and bullying research theories and methodologies in strong sports.

**Keywords:** harassment, bullying, bibliometric, Scopus, Web of Science

### Introduction

Harassment and oppression are unacceptable behaviors that can be carried out by individuals or groups against other individuals or groups that tend to harm them psychologically, socially, or economically. Bullying in sports, both by coaches and athletes, has recently received public attention [1]. The empirical literature on sexual violence and harassment in coach-athlete interactions serves as the sole basis for the identification of risk variables for athlete maltreatment in sport [2]. When trying to implement bullying and harassment management tools in sports, it can be difficult due to behaviors of sports leaders and even athletes themselves, such as ignoring, not responding to, and resisting bullying and harassment prevention [3]. Body contact, such as hitting the victim or damaging clothing or other property, can be considered physical intimidation [4].

A number of qualitative studies that have been conducted support the idea that bullying and

harassment, which may be difficult to identify, dominate in sports [5]. Several studies have also been conducted on bullying in sports, but 30% of young people say they have been bullied, according to True Sport [6, 7]. These studies also claim that antisocial behavior that manifests as aggression or violence in sports is often planned and purposeful [8]. In addition, because players are traumatized by the increasing prevalence of violence in sports, it may be difficult to spot bullying and harassment [9]. Bullying often discourages people from participating in sports, whereas hazing is done to increase commitment and be seen as a team member [4]. Bullying and hazing are both types of moral detachment that encourage and support antisocial behavior rather than prosocial behavior [4, 10, 11].

Harassment and abuse in sport is the result of an imbalance of power [12, 13], which is made possible by an organizational culture that belittles, denies, fails to stop, or even implicitly tolerates the problem [14]. The only large-scale study currently available is from the UK, where 75% of cases of psychological abuse are documented. These findings raise concerns that this may be the most important child sports

protection issue [15, 16]. Athletes report that they are ignored or denied support and attention, and are subjected to verbal abuse, yelling, scapegoating, rejection, exclusion, and threatening behavior [16, 17, 18, 19, 20].

Several bibliometric studies have been conducted in various fields, including: bullying among adolescents [21], cyberbullying [22], sexual harassment in the workplace [23], cyber bullying and education [24], bullying and harassment [25], cyber bullying and bullying [26], verbal bullying at school [27], adult bully syndrome [28], bullying in children [29], aspects of bullying and psychosocial [30], and bullying of students with disabilities in physical education [31].

The current study seeks to: 1) identify significant key sources and institutions in the area of harassment and bullying in sports; 2) conduct author keyword analysis and influential sports harassment and bullying research; and 3) identify publishing growth and important research areas of harassment and bullying in the most prominent sports. By providing potential readers and researchers with a summary of studies conducted on the quality of this harassment and bullying component, the authors hope this article will contribute to advancing understanding of current trends in harassment and bullying research in sports.

## Methodology

### *Data Source*

This study combines metadata from two well-known databases, Scopus and WoS, to analyze the growth and current trends in harassment and bullying research in sports. As such, it highlights the value of reviews in detecting problems and points the way forward for scientific research. The research objectives, which include evaluating the effects of publications, fields of study, authors, sources, and institutions by country based on the selected database, are also relevant to this study.

### *Method of Study*

The software framework used to organize the most significant research subjects, authors, countries, and related publications is called ScientoPy. ScientoPY is a free and open-source software built on top of Python that can eliminate bias in certain articles [32]. The following is possible with the ScientoPy script: Gaining access to the Clarivate Web of Science and Scopus databases is the first step. To account for the incoming data set, ScientoPy automatically creates preprocessing steps, including the number of articles per database both before and after the duplicate elimination filter is used [33]. A bibliometric review has grown in popularity as a result of the large number of published studies in almost all fields of knowledge [34]. Steps two through eight involve finding and

removing duplicate documents; sorting publications by document type; creating a graph showing the history of the most popular topics; creating a graph showing the history of selected items in a topic; and finding popular topics by looking at the top of the average growth rate (AGR), and calculate the h-index for the author and country. Building a system for analyzing research in the literature and finding publication patterns and trends has proven reliable with bibliometric analysis [35].

On August 14, 2022, institutional subscriptions were used to access the Scopus and WoS databases to obtain metadata for the current study. The data retrieval process begins with identifying the right keywords, related data, and the unique purpose of the analysis. In bibliometric analysis, the number of metadata requirements varies greatly. The minimum and maximum metadata standards that can be evaluated, as well as the number of metadata standards for bibliometric analysis, are not stated [36]. The metadata related to harassment and bullying in sports was collected using keywords based on: TITLE-ABS-KEY (“sport\*” OR “competitive game” OR “physical activity” OR “pastime” AND “bully\*” OR “racial bullying” OR “ethnic bullying” OR “racis\*” OR “harassment” OR “pester\*” OR “annoyance” OR “nuisance” OR “persecut\*” OR “bedevilment”). found as many as 1, 895 documents on Scopus and 1, 585 documents on the Web of Science (WoS). Data was collected in both databases on August 23, 2022. Data collection is only carried out on article-type documents.

### *Data Analysis*

The following types of documents are currently used by ScientoPy to process data: 1) papers presented at conferences; 2) articles; 3) reviews; and 4) papers [32]. Books, book series, and letters are among the documents left behind from this investigation. In addition, ScientoPy normalizes author names for metadata retrieved from the Scopus database by replacing them with semicolons, periods, commas, and special characters for metadata retrieved from both databases, and eliminates duplicate samples with the same title and author during the preprocessing stage [37].

Table 1 displays a preprocessed summary of all loaded documents for each database along with entries for which duplicates were removed. According to Table 1, the ScientoPy preprocessing script places the WoS document in front of the Scopus document; when duplication is removed, there are more documents from the WoS database than there are from Scopus.

## Results

The growth of harassment and bullying publications in sports across both databases is depicted in Figure 1. This shows the remarkable

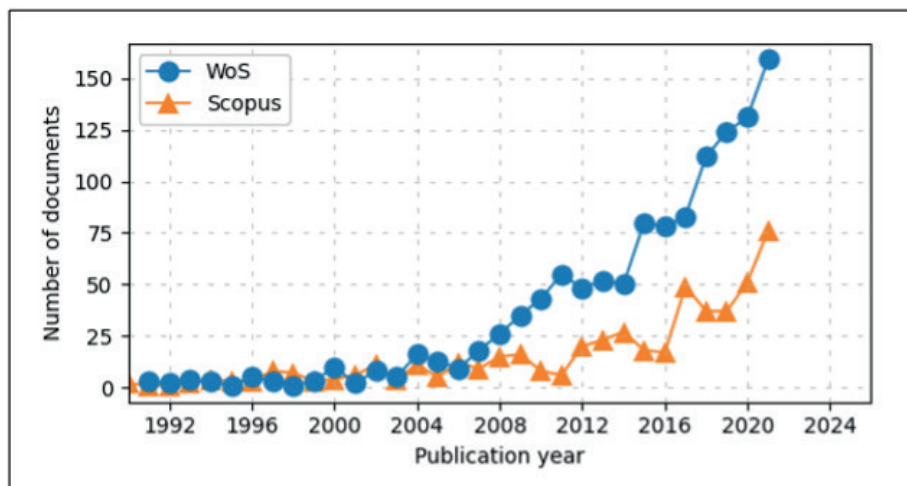
direction in which this field has grown significantly since 2015. In addition, the percentage of documents published in the last two years (2020 to 2021) shows that 22.40% were published on WoS and 22.04% on Scopus. The publication fluctuations for Scopus and the WoS database are depicted in Figure 1. Scopus has 586 documents, while WoS has 1,297 documents. This encourages researchers to continue to invest in ways of thinking and perspectives related to the study of harassment and bullying in sports, so that thinkers, researchers, and practitioners of physical education and sports can have an open dialogue. With 80 documents on Scopus and 213 documents on WoS published, 2021 was the most productive year for publishing papers related to harassment and bullying in sports. The WoS and Scopus databases had AGR, ADY, and PDLY, respectively (WoS, 13.05; Scopus, 22.05); (WoS, 203; Scopus, 61.05); and (WoS, 22.04, Scopus, 22.00 respectively). WoS also has an H-index greater than Scopus, with a value of 90 for

WoS and 36 for Scopus.

Based on their particular institution or affiliation, the authors are mentioned in the publication. Researchers can choose study locations and form future collaborations thanks to their knowledge of which institutions are best represented on the topic of harassment and bullying in sports studies. Figure 2 shows a bar graph of the top ten countries where studies on sports harassment and bullying have been published. According to Figure 2, the United States had the most published articles (635 publications). With 280 publications, the United Kingdom ranks second. Australia is in third place with 144 articles, and Canada is in fourth place with 138 articles. Only these four countries have published more than 100 articles. Germany became the country that contributed the most manuscripts during 2020 to 2021, with a total of 42% of all articles published in 2020 to 2021. Followed by Spain with a total of 40% in the second position and Brazil with a total of 35%

**Table 1.** Pre processing brief

Info	Number	Percentage
Loaded papers	2698	
Omitted papers by document type	0	0.0%
Total papers after omitted papers removed	2698	
Loaded papers from WoS	1304	48.3%
Loaded papers from Scopus	1394	51.7%
Duplicated removal results:		
Duplicated papers found	815	30.2%
Removed duplicated papers from WoS	7	0.5%
Removed duplicated papers from Scopus	808	58.0%
Duplicated documents with different cited by	508	62.3%
Total papers after rem. dupl.	1883	
Papers from WoS	1297	68.9%
Papers from Scopus	586	31.1%



**Figure 1.** The publication growth of harassment and bullying in sport on Scopus and WoS databases

Source: (Results of ScientoPy software analysis up to August 23, 2022)

in the third position.

For each country, Figure 3 shows how the total strength of co-authorship links with other countries will be calculated. The country with the greatest total link strength will be selected. The minimum number of 5 documents owned by the country and the minimum number of citations is 0.41 countries found related to studies on harassment and bullying in sports. The United States became the country with the largest total link strength, namely 138. The United States also obtained 8601 citations from 438 published documents. The total strength of links, citations, and number of documents from each subsequent country is the United Kingdom (225,

5027, 124), Canada (127, 1684, 77), Australia (127, 2040, 74), and Spain (79, 678, 56). Only those five countries have a total link strength of more than 50. The stains also describe the clusters of each country. In addition, the thickness of the line indicates that each country has a close relationship with joint research and publications. The United States is in Cluster 4, along with Australia, China, Croatia, India, and Japan. Figure 3 shows a visualization of the co-authorship network by country.

In publishing their papers, it is certain that most of the authors must provide information related to where they serve and work, so that the identity of the author's affiliation can be known. This will also

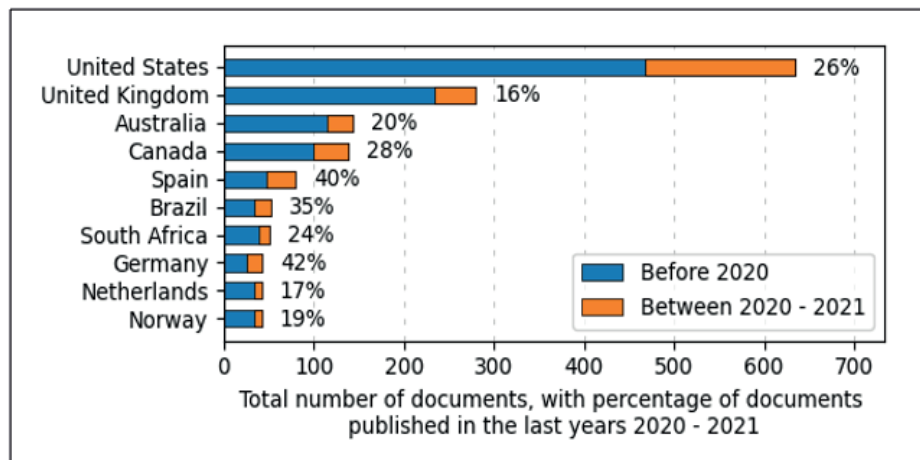


Figure 2. The top ten countries

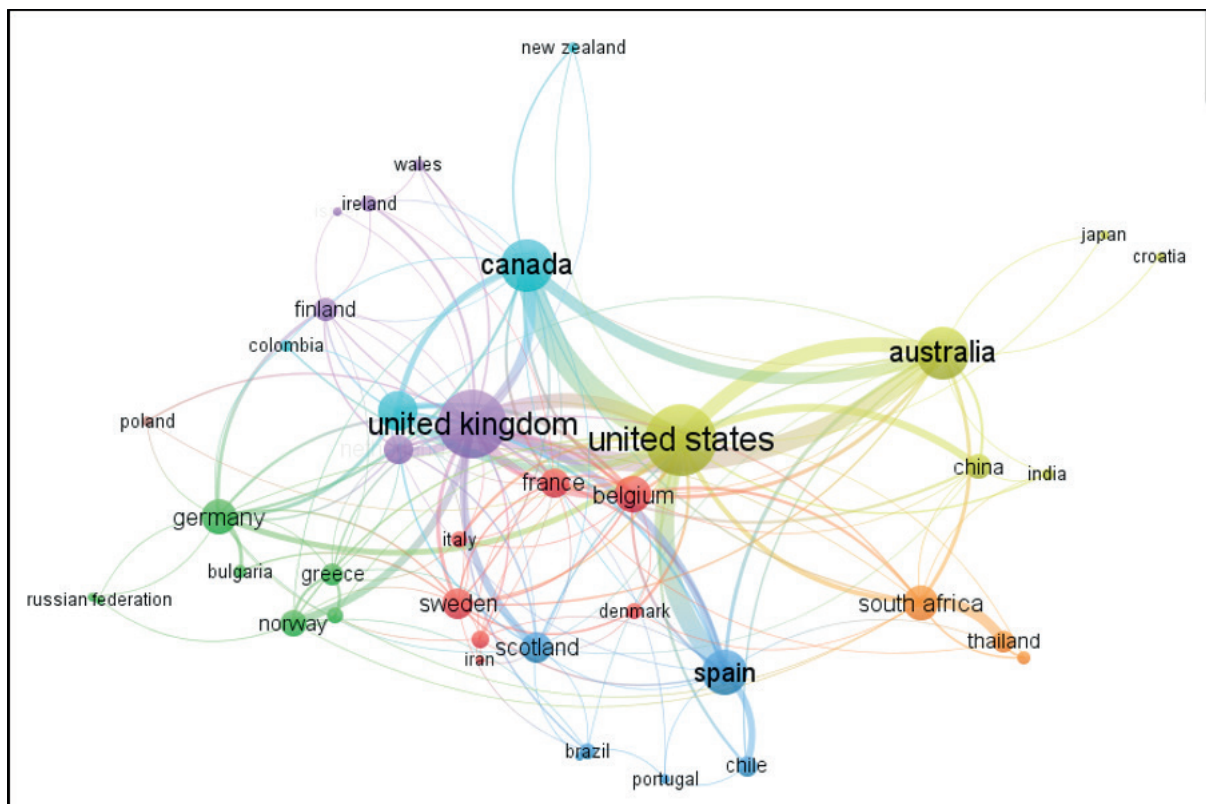


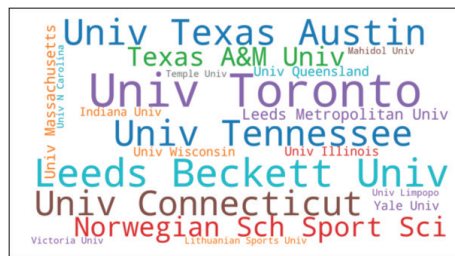
Figure 3. Total link strength co-authorship base on country

have an academic impact on the name and position of the institution in the eyes of the state, other institutions, professionals, researchers, teachers, and students. Figure 4 is a word cloud that describes the 20 most productive publishing institutions for harassment and bullying in sports. Considering Figure 4, the larger the size of the institution, the larger the number of publications. This study reveals that the University of Toronto, Canada, has 22 publications with AGR (00.05), ADY (03.05), PDLY (31.08), and H-index (11) being the most active educational institutions or institutions in publishing papers related to harassment and bullying in sports. Leeds Beckett University, United Kingdom, is ranked as the second most active university with 19 documents, AGR (-0.5), ADY (02.00), PDLY (21.01), and H-index (10). The list of names of universities, affiliates, and other institutions is shown in Figure 4.

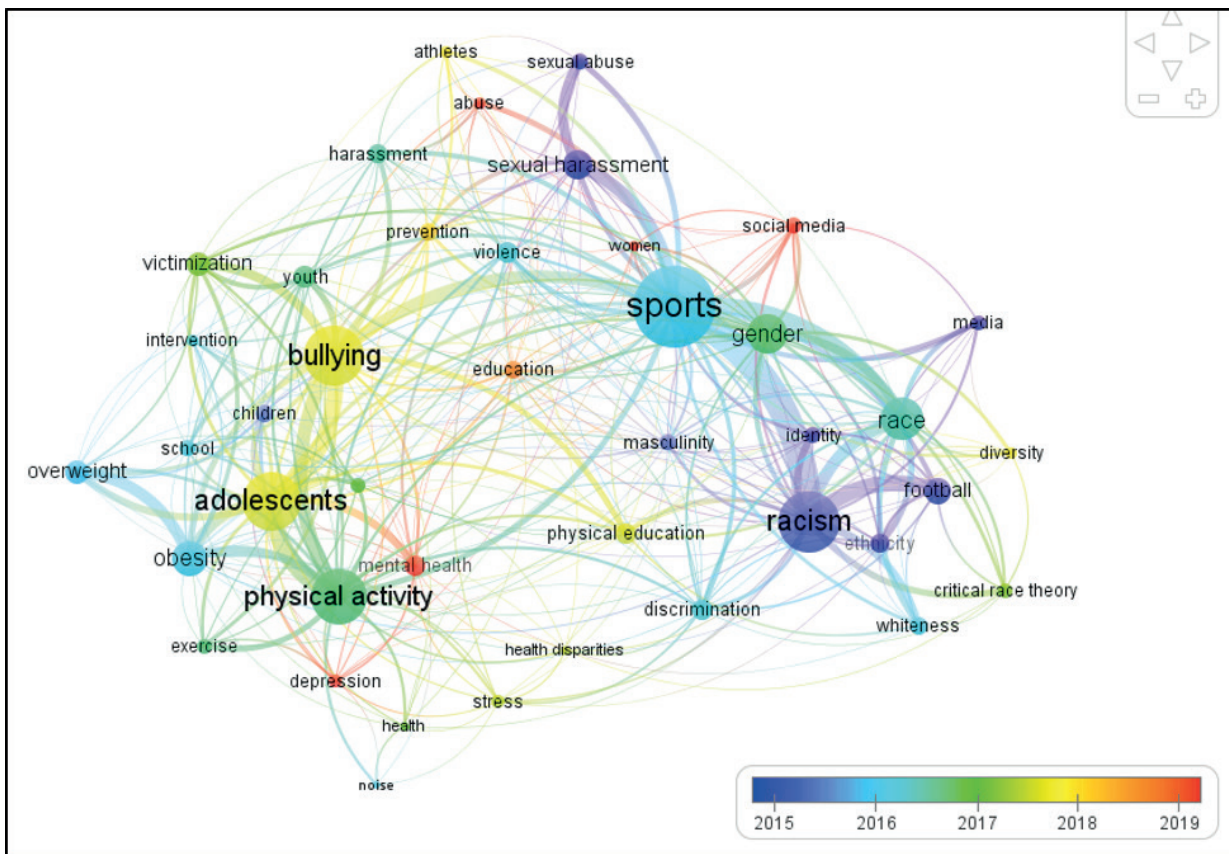
This study uses cluster mapping to determine

the co-occurrence of the authors' keywords with the aim of identifying themes or topics that are relevant to sports nutrition. The data set (a combination of Scopus and WoS metadata) was preprocessed with ScientoPy before creating a network map with VOSviewer. Furthermore, this study uses a thesaurus file to map the co-occurrence of the author's keywords. Thesaurus files are essential for combining similar terms, spelling variations, and singular or plural terms such as "sport" and "sports", "adolescents", "adolescent", and "adolescence".

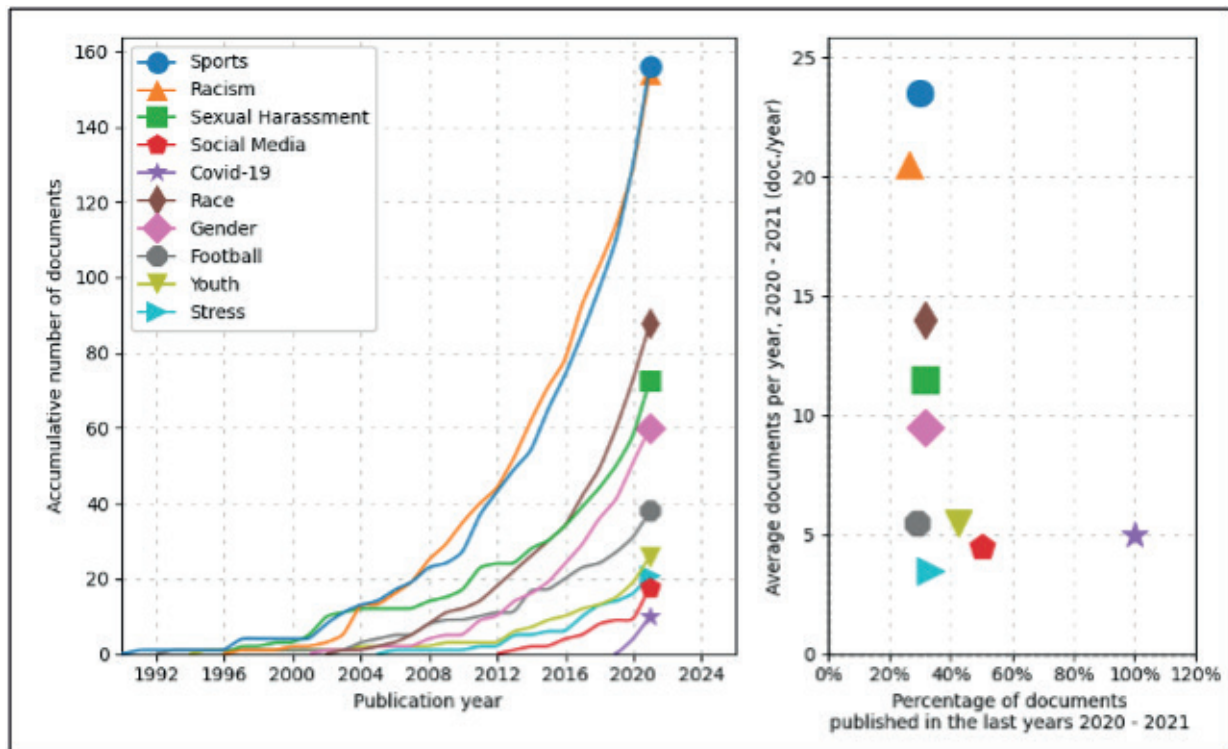
The frequency with which keywords appear in VOSviewer is proportional to the size of the node (see Figure 5). Lines represent relationships between keywords. The strength of the nexus link depends on the thickness of the line, which indicates the degree of co-occurrence. Figure 5 illustrates the author's keyword in an overlay diagram, highlighting its link to other keywords through the use of color,



**Figure 4.** Top institution



**Figure 5.** Overlay visualisation of the co-occurrence of authors' keywords



**Figure 6.** Trending topic author keyword

node size, text size, and connecting line thickness. Based on co-occurrence with the author’s keyword analysis unit, the criteria used are the number of keywords that appear at least 15 times. From 3, 883 keywords, 42 meet the threshold.

The VOSviewer results allow us to conclude that the most used keyword in 2015 and 2016 was “racism” with 163 occurrences and 169 total link strength. Then next are “sexual harassment” (59, 68), “football” (41, 57), “ethnicity” (22, 38), “sexual abuse” (23, 32), “identity” (24, 31), “masculinity” (24, 31), “children” (27, 35). The most recent keywords starting after 2019 are “mental health” with 40 occurrences and 43 total link strength. Other keywords are “social media” (21, 33), depression (19, 26), and “abuse” (15, 22).

ScientoPy can identify trending topics by examining the top author keywords with the highest AGR (as described in the “Topic growth indicators” section). Figure 6 illustrates the evolutionary plot of the most popular trending topics in the field of harassment and bullying in sports. This evolution plot plots the cumulative number of documents (on a logarithmic scale) versus the year of publication on the left hand side. Thus, the first row on the X-axis represents the year the topic research was started, and the last line on the Y-axis represents the total number of documents published for each topic. The Y-axis on the right represents the AGR of each topic for the period 2020–2021, and the X-axis represents the PDLY. We can use this graph to determine which topics have higher AGR and higher PDLY. As a result, the trending topic with the largest absolute growth

is “sports”, while the trending topic with the largest relative growth is “covid-19”.

The author’s keyword “sports” has become the most used keyword in the last two years. With a total of 157 documents, AGR (07.00), ADY (23.05), PDLY (29.09), and H-index 26, the keyword “sports” became the keyword with the largest absolute growth, while “covid-19” became the keyword with the highest growth. largest relative (100.00), and the H-index (4). Other keywords in positions three, four, and five respectively have AGR, ADY, PDLY, and H-index values of “Racism” (155, 07.05, 20.05, 26.05, 23), “Race” (88, 02.00, 14.00, 31.08, 19), and “Sexual Harassment” (73, 04.05, 11.05, 31.05, 21).

### Discussion

Negative interpersonal interactions among athletes, expressed as bullying and harassment, were singled out as an important social issue along with other important issues such as athlete trauma, doping use, hopelessness, and deception [5, 38]. Despite the attitude of the public and sports professionals that bullying in sports should be prohibited [39], over the past ten years, scholars from many countries have examined this sporting phenomenon increasingly studied and analyzed [39, 40, 41, 42, 43, 44, 45]. However, evaluating this phenomenon and comparing the obtained data with other data presents many difficulties. Rejecting the cultural context of a particular nation is usually the result of a lack of adequate and reliable measurement techniques [3].

Based on an examination of the research area, the findings reveal that harassment and bullying in sports is dynamic and involves many other disciplines, both in the context of sports science and in other fields. Psychology, sociology, culture, gender, ethnicity, are starting points for a better understanding of harassment and bullying in sports. This information can make it easier to understand trends in harassment and bullying research publications in sports. The evidence can be used by researchers to select the best academic publishing portal for their reference. These statistics can be used by practitioners to assess previous research conducted by other researchers.

The three most well-known authors on the field of harassment and bullying in sports are Hylton, K. (14 documents), Fasting, K. (12 documents), and Puhl, R.M. (12 documents). The ability to appreciate the works of such published authors helps future readers and researchers. The fact that key authors are listed in the research spreads the word about their work and increases their credibility. In addition, future readers and researchers will be able to identify well-known authors who have written about harassment and bullying in sports, with whom they are most likely to work together in the future.

The most frequently used keywords were, explicitly, "sports" (181 occurrences), "racism" (163 occurrences), "bullying" (122 occurrences), "adolescents" (134 occurrences), and "physical activity" (121 occurrences), allowing future readers and researchers to decide which one to use when analyzing documents. A further interesting finding of this study is that, as shown in Figure 6, "covid-19" is the 10th topic on the list, which has the highest PDLY (100%). "Social Media" is the 9th topic on the list, which has a PDLY of 50%. However, in the context of studies of harassment and bullying in sports, "youth" and "race" have PDLY (42.03% and 31.08%). Sports organizations in Canada do not differentiate between children, youth and adults when it comes to harassment policies. However, the treatment of children and youth in sports was the driving force behind the policy, and since then, the most significant and publicized incidents of abuse have almost always involved children and adolescents as victims [46]. Several studies have looked at variables that might reduce the relationship between bullying and racial and ethnic background, despite academic suggestions that the likelihood of being bullied in school is grouped by race and ethnicity [47].

The list of institutions in Figure 6 provides valuable information on research into harassment and bullying in sports by academics and professionals from various organizations. Understanding research professionals is the cornerstone of research on harassment and bullying in sports. The University of Toronto, Canada, has 22 publications, AGR (00.05), ADY (03.05), PDLY (31.08), and H-index (11) being the

most active educational institutions or institutions in publishing papers related to harassment and bullying in sports. One of the efforts that have been made to fight harassment and bullying in sport is the 2007 IOC Consensus Statement on Sexual Harassment and Abuse in Sport, which is expanded in this Consensus Statement, which also provides more evidence about forms of psychological, physical, and neglectful harassment and abuse [4].

Given the discussions contained in this study, researchers on harassment and bullying in sports were most interested in "sports", "racism", "bullying", "adolescents", and "physical activity". In addition, more and more research on harassment and bullying in sports is focusing on "sports", "racism", "sexual harassment", " and "gender." This valuable information provides future readers and researchers with the publication trends of harassment and bullying in sports. This suggests that a scientometric review allows discussion of critical aspects of previous research by leveraging the understanding of previous scholars to advance intellectually.

## Conclusions

The main purpose of this scientometric review is to examine the global evolution of research into harassment and bullying in sports. Recent queries were examined in the Scopus and WoS databases using search strings ("sport\*" OR "competitive game" OR "physical activity" OR "pastime" AND "bully\*" OR "ethnic bullying" OR "racist\*" OR "pester\*" OR "annoyance" OR "nuisance" OR "persecut\*" OR "bedevilment"). This database search yielded 2, 698 papers. After data reconciliation, this study examined 1, 883 unique entries from both databases, with 1, 297 unique articles from WoS and 586 unique articles from Scopus.

This study has demonstrated the remarkable growth trajectory of harassment and bullying research in sports since 2015. Research on harassment and bullying in sports is gaining traction due to the involvement of academics and practitioners, which requires a lot of scrutiny in this area. Harassment and bullying in sports is an inseparable part of the lives of many people, so efforts are needed to deal with and minimize the occurrence of these acts on a larger scale. Of course, this has an unfavorable impact psychologically, emotionally, and socially on athletes, coaches, and officials. indirectly by attracting and facilitating current and future researchers who want to learn more and be interested in the topic of harassment and bullying in sports.

The limitations of this study are mainly due to the search strings that have been implemented. If additional keywords are used, the discussion may be slightly different. However, this analysis is only a starting point that can be disseminated by more in-depth investigation, such as a scope review or

systematic literature review. These findings can develop a theoretical framework, map the current state of the field, and quickly identify gaps in scientific research. Furthermore, the findings of this study have been projected to stimulate the development of new ideas as a result of keyword analysis, enabling the more effective dissemination and communication of scientific work related to harassment and bullying research in sports and the

formation of new, more relevant concepts and ideas. This research is expected to be a stepping stone for future work in developing research on harassment and bullying in sports.

### Conflict of interest

The authors state that there is no conflict of interest

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