

Bibliometric analysis of leadership and physical education based on Scopus data

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ABSTRACT

This paper aims to conduct a bibliometric analysis of articles published in the Scopus database on leadership and physical education. The bibliographic data set was administered using VOSviewer. According to the search results, there were a combined 614 articles on leadership and physical education studies. Additionally, the researchers restricted the search to English-language journal articles and the types of documents that may be found. Consequently, 427 articles worth of records were discovered. Based on publications in the Scopus database, the findings revealed that the development of publications in the fields of leadership and physical education has increased, although there is an up-and-down trend from year to year; “quest” became the first choice among other publication media to publish research results; Beauchamp from Canada is the most contributing and influential author on this topic; physical education, physical activity, leadership, curriculum, transformational leadership, adolescents, health, sport, professional development, and education are keywords that frequently feature in those. Therefore, by highlighting specific gaps, a thorough analysis of leadership in physical education might help scholars and practitioners advance current understanding in this field.

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1. INTRODUCTION

Leadership is one of the most crucial elements in constructing an organization. In an organization, a leader is a person who can exert influence over variables such as personal rights, working conditions, organizational policies, recognition, advancement, and responsibility [1]. In fact, how does a leader control these factors and motivate his subordinates [2]. Without direction or leadership, the connection between individual and organizational objectives might be weakened or interrupted [3]. Leadership style is also very important in education [1].

In school organizations worldwide, school leadership is considered a key factor in school improvement [4], and effective in terms of school success and student achievement [5]–[7]. There is substantial evidence that certain leadership behaviors facilitate student learning more effectively than others [8]. Moreover, successful attainment of school objectives is a true representation of effective school leadership methods [9]. An effective leadership integration channel is modeling and replicating the leadership characteristics desired by teachers [10]. Leadership is also considered to be an important influencing factor in

physical education teaching [11], because it can help, guide, and facilitate physical education [11], [12]. The role of physical education and physical activity is important in the education of future generations [13]–[15].

Various stakeholders, including researchers, educators, and national sports bodies, have also recognized the potential value of physical education leadership [16]. However, over the last two decades the challenges of leadership in physical education subjects have grown significantly [17], [18]. Physical education teachers as leaders in subjects continue to face daily challenges from competition in curriculum time, subject values and teacher competencies [18]. Due to the wide variety of leadership styles advocated by academics and researchers, Allami *et al.* noted in their study that physical education teachers find it challenging to select the most effective leadership style [19].

There have been many researchers from various countries who have studied leadership and physical education, such as China [20], [21], Iran [22]–[24], Turkey [25], Australia [26], Brazil [27], Spanish [28], and Greece [29], [30]. Previous research discussed the leadership style of physical education teachers with learning motivation [20], assessment of teacher transformational leadership in physical education [28], identification of leadership styles for physical education teachers [1], physical education teachers' views on transformational and transactional leadership styles, as well as the organizational cynicism [25], leadership qualities of principals and physical education teachers [29], [30], and investigating the management style of physical education administrators [24]. These studies showed that teacher and principal leadership have a very important role in increasing students' learning motivation in physical education.

Previous researchers have been encouraged to conduct in-depth studies on leadership and physical education. Most studies use empirical methods [1], [20]–[22], [25]. However, no researcher has yet conducted a bibliometric study on the topic. Although previous researchers have discussed bibliometric concepts in leadership studies, such as leadership excellence publication trends [31], pedagogical leadership [32], leadership in nursing [33], leadership in management research [34], public service leadership motivation [35], and destructive leadership in organizational research [35]. However, nobody has connected it to the subject of physical education. This way, we fill in the blanks and pave the road for future research. Provides an objective and up-to-date review of the leadership and physical education literature through bibliometric-based analysis and visualization. Researchers, teacher educators, and practitioners rely on us for well-documented and trustworthy material, as well as to develop ideas for their future study.

This bibliometric study is reliable as it provides a mapping of studies and allows for a wider coverage of selected studies [36]. This bibliometric study uses VOSviewer to convert CSV data into graphs or clusters using visual elements based on mapping techniques [37], [38]. The publication of physical education focused bibliometric studies has increased over the past five years [39]–[48]. So, the goal of this study was to look at how scientific publications have changed over time and map out research on leadership and physical education. The process was primarily driven by the research questions: i) How does the Scopus database's productivity for leadership and physical education publications change?; ii) Which publications, authors, and articles are most well-known in the field of leadership and physical education?; iii) What are the terms that are frequently used in the Scopus database when discussing leadership and physical education?

2. RESEARCH METHOD

On the basis of the results of the academic literature database, bibliometric analysis is a mechanical method for understanding worldwide research trends in a particular topic [49]. A thorough search is conducted in the Scopus database in accordance with the goals of this study. Scopus stands out from other databases since it is created by the respectable Elsevier Co. and has indexes for over 14,000 publications in a variety of subject areas, including social sciences and mathematics [50]. Scopus provides the most comprehensive overview of global research output in the fields of science, technology, medicine, social science, and the arts and humanities [51].

In bibliometric analysis, choosing the right keywords is very important because they have a direct effect on the results [51]. The search keywords were (“leadership” OR “leader”) AND (“physical education” OR “sport education”). To obtain the documents, the researcher conducted a phrase search in the Scopus database on October 17th, 2022. The search results indicate that 614 Scopus-indexed articles on leadership and physical education were published between 1930 and 2022. Also, the researchers narrowed down the types of documents to just journal articles, and the search was only done on documents written in English. So that the number of documents found was 427 documents. This has fulfilled the requirements in analyzing bibliometrics, because Rogers, Szomszor, and Adams [52] stated that to analyze bibliometrics a minimum of 200 documents is needed. Meanwhile, Donthu *et al.* [53] stated that at least 300 documents were needed.

In this study, the scrutinized parameters were analyzed using Microsoft Excel and VOSviewer. Microsoft Excel is used to analyze publication trends and patterns [54], whereas VOSviewer is applied to identify the mapping of bibliographic data pertinent to leadership in physical education research publications. Publication trends and patterns were crucial in determining the growth of research in any field [37], [55].

In addition, researchers can benefit from mapping techniques when analyzing article data containing information about authors, locations, institutions, citations, co-citations, and other nuanced factors such as keywords [56]. The mapping technique in the current study is vital to express the most extensive keywords that have been concentrated on in previous research on leadership and physical education research publications. One possible explanation is that the article's keyword often represents the article's core substance and that the keyword's frequency of occurrence and co-occurrence may reflect the topics focused on in a particular field [57]. Figure 1 depicts the selection method and research protocol adopted from the PRISMA flow diagram [58].

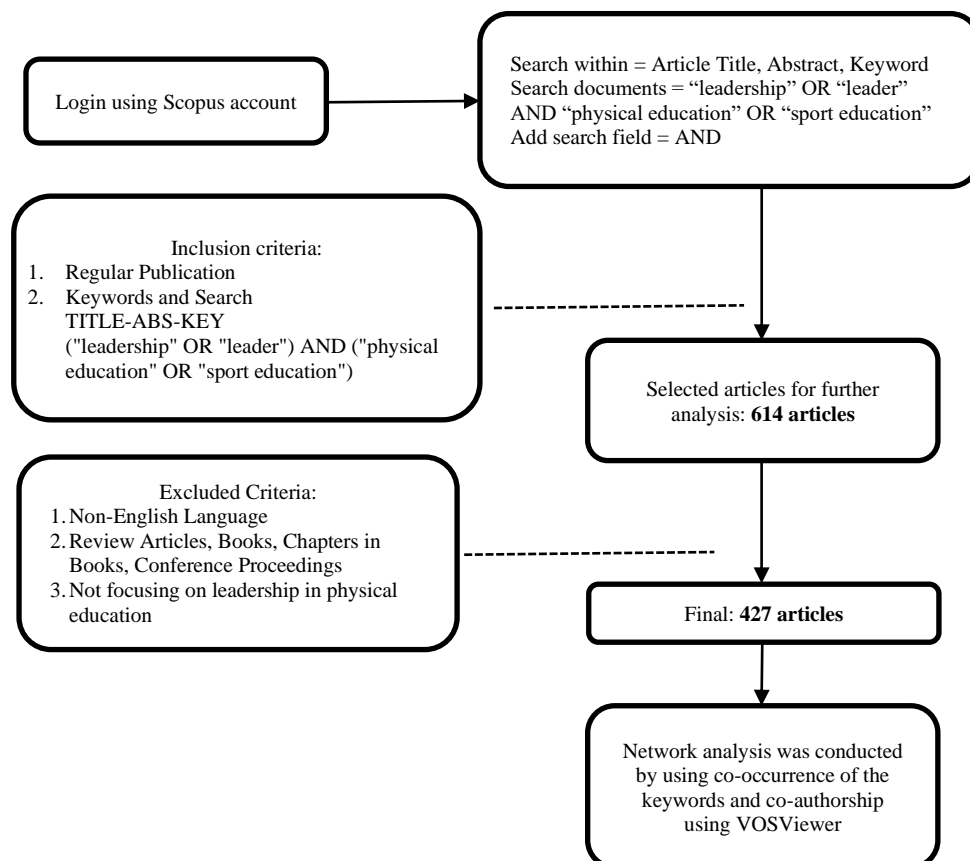


Figure 1. Systematic data inclusion and exclusion criteria

3. RESULTS AND DISCUSSION

In accordance with the research questions, the results of the bibliometric analysis are presented in this part. First, the researchers provide a summary of the literature, focusing on its historical evolution and the contributions of various nations, organizations, and document types. Second, we analyzed the most frequently cited journals, authors, and papers in academic publications. Thirdly, we perform a keyword analysis of often used terms in the disciplines of leadership and physical education.

3.1. How productivity of leadership and physical education publications develops using the Scopus database?

The first article with the title and keywords “leadership” OR “leader” AND “physical education” OR “sport education” was published in 1930. From 1930 to 2009, this topic was very minimally discussed by researchers and no more than 10 articles were published in that year. Beginning in 2010, the number of articles published in the topic of leadership and physical education increased to 14. Furthermore, from 2010-2020, the number of articles is increasing every year. There was a significant increase with 41 articles in 2020. Meanwhile, in 2021 there was another decline with 32 articles. This may be because a number of schools were closed during the COVID-19 pandemic. So many researchers find it difficult to conduct research in schools. Figure 2 depicts the dynamics of changes in publishing productivity.

From the published data obtained, the problems studied in the field of leadership and physical education focused on several areas determined by the Scopus database. The most dominant field of study is social sciences with 239 documents. The University of Illinois Urbana-Champaign, from United States of America is the most productive institution with 11 documents, while the author with the most publications in this field is Mark R. Beauchamp with 8 documents. The 10 main subject areas, affiliations, sources of titles, and authors are shown in Table 1.

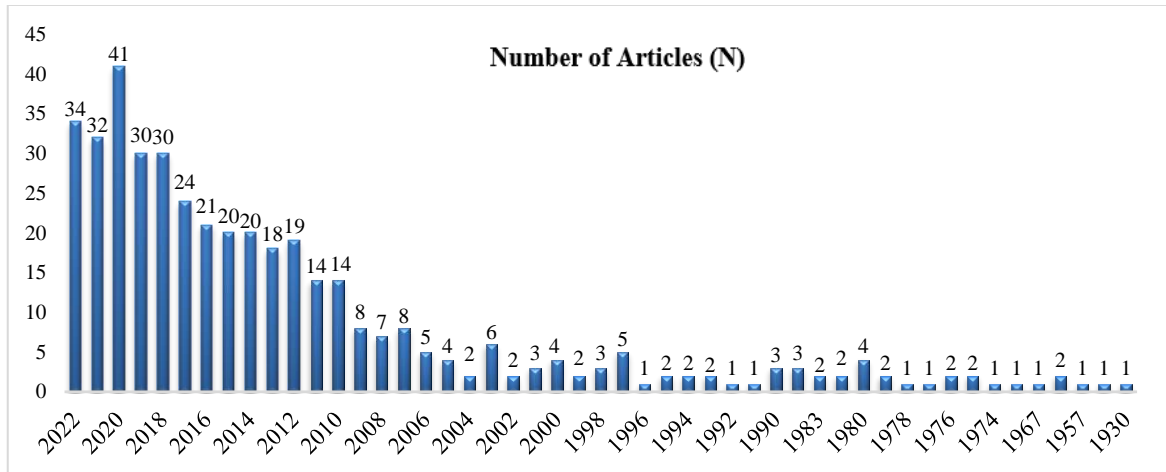


Figure 2. The number of articles written annually

Table 1. Publication profile on leadership and physical education research

Category	Top 10 leading publications
Subject area	Social Sciences (239); Medicine (236); Health Professions (189); Psychology (36); Arts and Humanities (26); Business, Management and Accounting (19); Nursing (10); Environmental Science (10); Biochemistry, Genetics and Molecular Biology (9); Agricultural and Biological Sciences (7)
Affiliation	University of Illinois Urbana-Champaign, United States of America (11); University of Limerick, Ireland (10); Loughborough University, United Kingdom (9); Louisiana State University, United States of America (8); Auburn University, United States of America (8); Edge Hill University, United Kingdom (8); The University of Queensland, Australia (8); Leeds Beckett University, United Kingdom (8); The University of British Columbia, Canada (7); University of South Carolina, United States of America (7)
Author	Mark R Beauchamp (8); Kim C Graber (6); Amelia Mays Woods (6); Peter Andrew Hastie (5); David Kirk (5); Morton Katie L (5); Paul M. Wright (5); Brian D Dauenhauer (4); David R Lubans (4); Laura Alfrey (4)

3.2. Which publications, authors, and articles are most well-known in the field of leadership and physical education?

Research articles are published in 60 titles (journals). These distinct journals’ published articles each have a different impact. The numerous citations of journals, writers, and article names demonstrate the influence. The top 10 journals in terms of the number of papers published in the domains of leadership and physical education are presented in Table 2. Of the 10 identified, the 3 best ranks, namely “Quest”, ranked first with 30 articles (7.03%), “Journal of Teaching in Physical Education” ranked second with 20 articles (4.68%), “Physical Education and Sport Pedagogy” was ranked third with the number of articles 7 (4.67%). Based on these top 10 journals, “Quest” has a percentage of over 7% of the 60 journals. This journal contributes the most in publishing research in the context of leadership and physical education, and becomes a recommendation for future researchers. Furthermore, Figure 3 displays the top 10 leadership and physical education journals in terms of the number of citations. Of the 10 identified, one journal that had the greatest impact was “Research Quarterly for Exercise and Sport” with 550 citations.

Table 2. Top 10 journals on leadership and physical education research

Journals	Papers	Percentage (%)
Quest	30	7.03
Journal of Teaching in Physical Education	20	4.68
Physical Education and Sport Pedagogy	20	4.68
Research Quarterly for Exercise and Sport	20	4.68
Sport Education and Society	18	4.22
European Physical Education Review	11	2.58
Journal of Physical Education Recreation and Dance	11	2.58
Journal of Physical Education and Sport	9	2.11
BMC Public Health	8	1.87
Journal of School Health	7	1.64

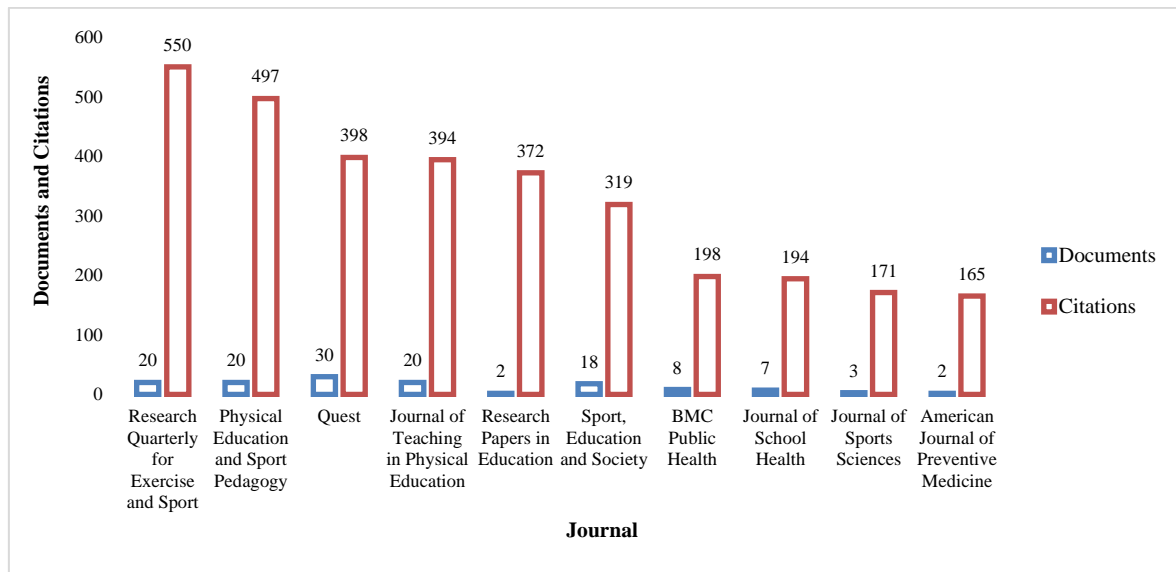


Figure 3. Top 10 cited journals on leadership and physical education research

The authors who are most active and important in the fields of leadership and physical education are then determined based on their publication and citation counts. One crucial statistic for assessing the value and influence of research articles is the number of citations [59]. Quotations are used as a measure of influence [60]. Of the 427 titles published in the Scopus database, 1,110 authors contributed to this field. Out of 1110 authors, Mark Robert Beauchamp (Canada) is the most contributing author by publishing 8 articles. Furthermore, the most influential writer based on the number of document citations is David Kirk (Australia) with 455 citations. Table 3 and Table 4 show the situation more plainly.

Table 3. Top 10 productive authors

Authors	Country	Documents
Mark R Beauchamp	Canada	8
Kim C Graber	United States	6
Amelia Mays Woods	United States	6
Peter Andrew Hastie	United States	5
David Kirk	Australia	5
Morton Katie L	United Kingdom	5
Paul M. Wright	United States	5
Brian D Dauenhauer	United States	4
David R Lubans	Australia	4
Laura Alfrey	Australia	4

Table 4. Top 10 influential authors

Authors	Country	Citations
David Kirk	Australia	455
Kathleen Armour	United Kingdom	427
Rachel A Sandford	United Kingdom	427
David R Lubans	Australia	407
Mike Jess	United Kingdom	404
Richard Peter Bailey	Malaysia	372
Ian Pickup	United Kingdom	372
Donald R Dengel	United States	315
Andrew Peter Hills	Australia	315
Peter Andrew Hastie	United States	267

Looking at the number of articles published in the Scopus database and having been cited by other authors, we were interested to know which articles had the most influence on the areas of leadership and physical education. Of the 427 titles published in the Scopus database, the article entitled “development and psychometric properties of the transformational teaching questionnaire” written by Beauchamp *et al.* [61] which is the most cited article with a total of 56 citations. Table 5 provides a clearer depiction.

Table 5. Top 10 most influential articles

Title	Reference	Journal	Citations	Years
“Development and psychometric properties of the transformational teaching questionnaire”	[61]	Journal of Health Psychology	59	2010
“Summary of the American heart association scientific statement: promoting physical activity in children and youth: a leadership role for schools”	[62]	Journal of Cardiovascular Nursing	42	2008
“Who teaches primary physical education? change and transformation through the eyes of subject leaders”	[63]	Sport, Education and Society	37	2015
“Techniques of power in physical education and the underrepresentation of women in leadership”	[64]	Journal of Teaching in Physical Education	35	2007
“Transformational teaching and adolescent self-determined motivation, self-efficacy, and intentions to engage in leisure time physical activity: a randomized controlled pilot trial”	[65]	Applied Psychology: Health and Well-Being	34	2011
“Dualling with gender: teachers’ work, careers and leadership in physical education”	[66]	Gender and Education	27	2007
“Transformational teaching and physical activity: a new paradigm for adolescent health promotion?”	[67]	Journal of Health Psychology	23	2010
“Scaffolding student-coaches’ instructional leadership toward student-centered peer interactions: a yearlong action-research intervention in sport education”	[68]	European Physical Education Review	21	2018
“Disrupting racialization: considering critical leadership in the field of physical education”	[69]	Physical Education and Sport Pedagogy	20	2015
“Transformational teaching and physical activity engagement among adolescents”	[70]	Exercise and Sport Sciences Reviews	19	2011

3.3. What are the most frequently appearing keywords in the field of leadership and physical education in the Scopus database?

This analysis identifies the primary study areas of interest and create a conceptual framework. It can also highlight significant developments in the study of leadership and physical education. Finding keywords and terms that appear together in the same article is referred to as co-occurrence. This analysis demonstrates the connections between terms and keywords that co-occur in the network map [37], [60]. Using the VOSviewer software, we started the investigation by concentrating on the author’s keywords. There were 1047 keywords found from 427 articles included in Scopus database. Only terms with at least two instances each were used, and 176 words were discovered. Each of the seven clusters is made up of similar keywords that show up in the same hue (Figure 4). The terms with the most occurrences in the research sample, according to the data visualization analysis performed using VOSviewer showed that the keywords with the highest number of occurrences in the research sample were physical education (93), physical activity (33), leadership (23), curriculum (9), transformational leadership (9), adolescents (8), health (8), sport (8), professional development (7), and education (7). Table 6 lists the top 10 high-frequency keywords together with their bibliometric details, such as the quantity and strength of linkages, average year of publication, and average number of occurrences. Figure 4 displays a depiction of the item density of high-frequency keywords.

Table 6. Top 10 keywords on leadership and physical education research

Keywords	Occurrences	Link	Total links strength
Physical education	93	101	204
Physical activity	33	86	86
Leadership	23	28	37
Curriculum	9	19	19
Transformational leadership	9	11	14
Adolescents	8	16	25
Health	8	31	68
Sport	8	14	20
Professional development	7	17	17
Education	7	20	20

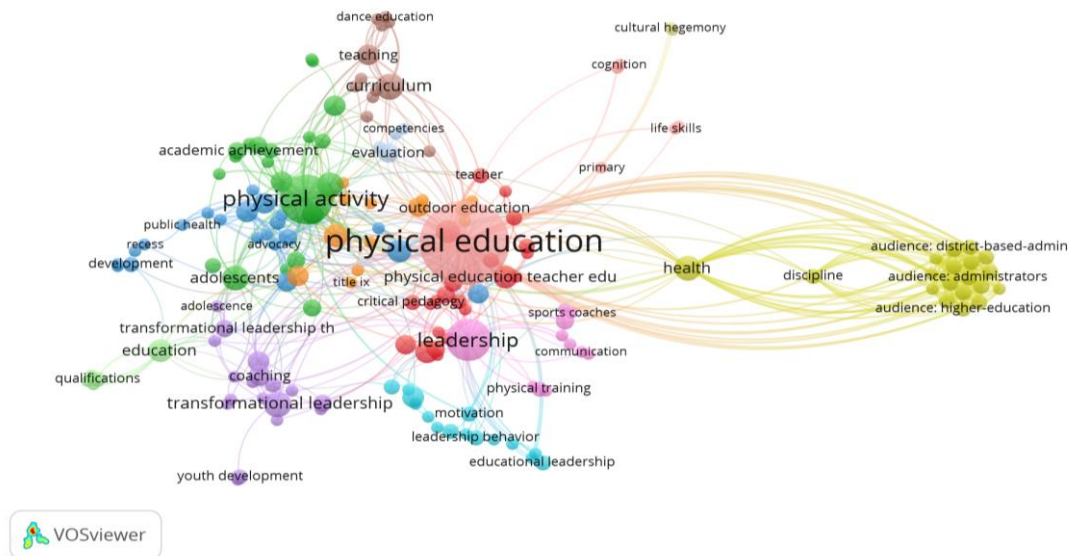


Figure 4. Keyword visualization analysis using VOSviewer

3.4. Publication productivity of leadership in physical education

Research in the field of leadership and physical education was first written by Savage in 1930 [71]. This article discusses adult and student leadership in physical education. From 1930 to 2022, this topic is growing. The increase started from 2010, and there was a significant increase in 2020 with 41 articles. The development of documents in the last five years, namely 2017 (30 articles), 2018 (30 articles), 2019 (17 articles), 2020 (41 articles), 2021 (32 articles), 2022 (34 articles). Based on this data, we can see the progressive increasing in researcher's interest on leadership topic in physical education, and it has potency to be developed on the next research. Griggs and Randall [17], [18] also stated that over the last two decades the challenges of leadership in physical education subjects have grown significantly. In the context of physical education, leadership has been identified as an important factor that can assist, guide and contribute to the provision of physical education [72].

3.5. Source, author, and article that the most influential on topic of leadership in physical education

The most sources publish articles on topic of leadership and physical education that is "Quest" that published by Taylor and Francis Group with contribution 30 articles. The author with the most publications is Mark R. Beauchamp (Canada) with 8 articles. In this mapping, it is found collaboration between authors. In order to improve the caliber of their work and their productivity, authors must collaborate [40], [73]. The most cited paper on the relationship between leadership and physical education is "development and psychometric properties of the transformational teaching questionnaire," by Beauchamp (56 citation). This study examines the evolution of transformational leadership theory as it relates to physical education taught in schools [61]. The 10 notable articles cover a variety of topics, including transformative teaching. To encourage student learning and personal development, transformational education entails developing dynamic relationships between teachers, students, and shared knowledge [74].

3.6. The keywords that often appear on topic of leadership in physical education

This analysis assists us to look at the main topic that people interested to, to build conceptual map. Besides, it can highlight the main trend in the research at leadership side in physical education. The appearance together keyword and term mean to identify keyword and term that found together in document. This analysis shows relation between keyword and term that appear together in network map [38], [60]. The result of data visualization analysis uses VOSviewer shows that keyword with the highest appearance amount is physical education (93), physical activity (33), leadership (23), curriculum (9), transformational leadership (9), adolescents (8), health (8), sport (8), professional development (7), and education (7). Based on the mapping of this keyword, it can be seen the interesting topic that researched, such as: i) Physical activity leadership development; ii) Transformational leadership on physical education curriculum management; iii) Professional development that focuses on knowledge and skills related to physical activity leadership; iv) Effects of transformational leadership in adolescents.

4. CONCLUSION

This study aims to conduct a bibliometric analysis of leadership and physical education-related articles published in the Scopus database between 1930 and 2022. The Scopus database reveals the following: the development of publications in the domains of leadership and physical education has increased, but there is an up-and-down trend from year to year; “quest” became the first choice among other publication media to publish research results with 30 articles; Mark R. Beauchamp from Canada is the most contributing author on this topic; Beauchamp also has the most influential articles entitled “development and psychometric properties of the transformational teaching questionnaire”; keywords that often appear those are physical education, physical activity, leadership, curriculum, transformational leadership, adolescents, health, sport, professional development, and education.

The limitations of this study include the author’s reliance on the Scopus database and journal articles as the only available sources. There are still other kinds of source documents in the Scopus database, including proceedings, book chapters, editorials, notes, erratum, books, letters, and book series. This research will not be significantly impacted by the modest number of articles from the restricted categories of documents and sources. This analysis was undertaken in order to provide insight into the direction of research on the subject of leadership in physical education. From 2023 till the following years, it can be continued for additional research. By examining which topics have and have not been covered by prior academics, the mapping’s findings can also be used as references. These characteristics are necessary for future researchers to elucidate the backdrop or address the extensive problem associated with leadership research in physical education. In addition, they can use review methodologies such as narrative review, environment review, systematic literature review, or meta-analysis to expound on the relationship discovered in this study. It is suggested that future researchers be able to simultaneously evaluate Scopus and Web of Science utilizing scientometric studies using the ScientoPy program.

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