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PHYSICAL LITERACY PUBLICATION TRENDS IN INDONESIA USING BIBLIOMETRIC ANALYSIS

Hayudi, Adang Suherman, Nina Sutresna, Yunyun Yudiana*

Sport Education Study Program, School of Postgraduate Studies, Universitas Pendidikan Indonesia
*Correspondence: E-mail: hayudibuton86@upi.edu

ABSTRACT

This research aims to link mapping analysis with VOSviewer software in bibliometric engineering research on physical literacy in Indonesia. The results of this mapping can be used as a reference and help researchers to decide on future research themes, especially those related to physical literacy. The Publis or Perish application is used to search and collect databases based on Google Scholar. Titles, keywords, and abstracts are part of the bibliographic mapping data used in this research. The search results collected 989 articles published over 11 years (2013-2023). Based on the number of publications on physical literacy in Indonesia from 2013-2023 it is unstable. 2021 will be the peak publication of 240 articles. Research on the topic of physical literacy in Indonesia is still very lacking and is wide open for research, mainly including physical literacy in educational unit curricula, physical literacy is linked to knowledge, physical literacy is linked to elementary schools, physical literacy is related to national development policies.

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1. INTRODUCTION

The concept of physical literacy was accepted throughout the world after the United Nations Educational, Cultural and Scientific Organization (2013) recognized it as one of the main principles in the framework of quality physical education (Dudley, 2015). The whole world makes physical literacy a promotion of the hope of future savings in the form of health care, psychological well-being of the population, physical improvement and participation in sports (Cornish et al., 2020).

The development of physical literacy publications has increased starting from the 2000s (Lundvall, 2015). The concept of physical literacy has increased the attention of researchers by referring to physical education, sports participation and the promotion of physical activity (Edwards et al., 2017), physical literacy is also integrated into policies and implementation of education, sports and recreation (Jurbala, 2015). Physical literacy plays a role in promoting positive healthy behavior (Cairney et al., 2019).

Specifically in Indonesia, physical literacy has not yet become a point of attention for researchers (Friskawati and Stephani, 2021), furthermore, according to Gita, physical literacy only focuses on measuring and developing physical literacy (3 studies), increasing physical literacy through learning approaches (2 two studies), and the concept of physical literacy for physical education (a total of one study). In its development, physical literacy has become part of the culture of physical education in schools (Irmansyah and Lumintuarso, 2021). In this case, to increase physical literacy in students, the competence of physical education teachers is an essential factor (Priadana et al., 2023).

Various trends in physical literacy research publications have been presented, one of which is the latest research stating, to ensure that children and teenagers are actively involved in physical activity, it is necessary to include physical literacy in physical education learning, this is done as an effort to develop sports in the fields of health, education, recreation. including elite sports (Friskawati et al., 2023). The culture of conscious movement in the concept of physical literacy can be integrated with physical education in schools (Gani et al., 2022). Physical literacy does not merely discuss physical abilities, but is also related to knowledge, attitudes and movement abilities (Suherman, 2020). The data from this research illustrates the importance of physical literacy for a culture of healthy living.

Bibliometric research on physical literacy globally has been carried out using Web of Science data with the research results stating that there are four thematic categories in physical literacy, namely health and quality of life, fitness and physical competence, education, and movement skills (Mendoza et al., 2022). The five thematic groups in physical education are the presentation of physical education, physical activity of students at school, physical education for teenagers, human motor competence, and physical activity for adults (Tomanek and Lisa, 2020). Other research on physical literacy using bibliometrics in America, Canada and England has been carried out, with recommendations for future research to carry out in-depth research related to one variable as well as tracking and reviewing physical literacy models (Lee and Chang, 2020). Based on this research, of course there have been many studies that have examined physical literacy globally. However, so far there has been no research that examines the bibliometric analysis of physical literacy in Indonesia using VOSviewer mapping. Therefore, this analysis is considered important to obtain information regarding the quantity and recency of a term (Merigo and Yang, 2017).

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The purpose of this analysis is to link mapping analysis with VOSviewer software in bibliometric engineering research on physical literacy in Indonesia. The results of this mapping can be used as a reference and help researchers to decide on future research themes, especially those related to physical literacy.

2. METHODS

The method used to analyze publication data is by using several applications. The first application, in the form of reference management, is the Publish or Perish application for preparing database sources. This application is useful for collecting research data that has been published on the topic of physical literacy. Physical literacy data was then collected from 2013-2023, where this data has been indexed by Google Schoolar. The keywords used in preparing this article are "physical literacy" and "Indonesia". Search results found 989 articles related to this topic. The second application, namely the VOSviewer application, is used for data visualization mapping analysis (Urbano et al., 2023). Through this application, bibliometric mapping is used to view and analyze publication trends (Mukherjee et al., 2022). The text data used for analysis is the title and abstract, the frequency of the number of terms appearing is limited to 6 occurrences. There are three forms of data mapping that we do, namely: network visualization, overlay visualization and density visualization.

3. RESULTS AND DISCUSSION

Developments in Physical Literacy Research

Referring to Figure 1, it shows that the development of physical literacy research topics in Indonesia over 11 years (2013 to 2023), shows an unstable situation. If you look, the maximum increase occurred in 2021, previously in 2013-2016, if the total number of articles published was still very low, namely 47 articles, then there was an increase (2017-2020) respectively 40 articles (2017), 67 articles (2019), 67 articles (2018), 114 articles (2019) and 191 articles (2020).

Furthermore, the number of physical literacy research articles reached its peak in 2021 at 240 articles, before finally experiencing a decline in publications in 2022 to 174 articles and in 2023 to 116 articles. The increase in the number of published articles related to physical literacy is believed to be due to the COVID-19 factor, where a culture of conscious movement through physical education and sports is a core aspect (Gani et al., 2020; Rihatno and Nuraini, 2021). The impact spurred researchers to identify indicators of physical literacy during the outbreak of the corona virus in society (Zargani et al., 2023). Researchers are trying to understand the correlation between changes in physical activity during COVID-19 (Gan, 2022) and evaluation of physical literacy before COVID-19 (Sirkaite and Gruodyte, 2022).

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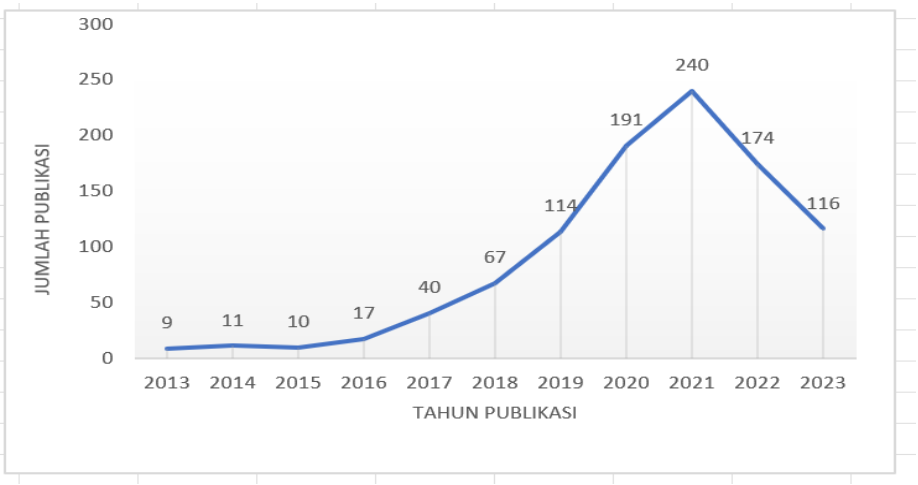

Figure 1. Development of Physical Literacy Research Publications

VOSviewer Visualization on Physical Literacy Topics

The results of the analysis using the VOSviewer application regarding physical literacy are divided into 7 clusters as follows:

(1) Cluster 1 contains 59 items, namely: adolescent, age, approach, bandung, behavior, city cross sectional study, data, determinant, effect, evidence, experience, factor, financial inclusion, financial literacy, financial technology, fintech, gender, government, growth , health literacy, importance, indonesia, indonesia version, industry, influence, Islamic financial literacy, issue, knowledge, lack, life, mental health, motivation, need, paper, participant, patient, performance, physical infrastructure, population, province, qualitative study, quality, questionnaire, relationship, report, respondent, role, smes, study, surabaya, survey, total, type, west java, woman, year, yogyakarta.

(2) Cluster 2 has 39 items consisting of: ability, concept, context, country, development, difference, east java, effectiveness, fact, goal, high school student, Indonesian student, inquiry, instrument, junior high school, junior high school student, lesson , level, literacy, literacy skill, low level, mathematical literacy, mathematics, model, physics, pisa, position, problem, project, research, science, science literacy, scientific literacy, score, self efficacy, senior high school, skill, student , students scientific literacy.

(3) Cluster 3 has 34 items, namely: barrier, bibliometric analysis, case study, child, comparative study, comparison, digital literacy, diversity, e learning, field, gap, higher education, ict, Indonesian child, instruction learning, lecturer, Malaysia, outcome , physical activity, physical education, physical literacy, place, readiness, religion, researcher, response, sport, strategy, teacher, technology, term, university, use.

(4) Cluster 4 has 31 items consisting of: analysis, Indonesian, character, character education, culture, curriculum, education, elementary school, environment, evaluation, form, implementation, Indonesian, Indonesian culture, Indonesian language, Indonesian person, Jakarta, line, literacy movement, ministry, physical environment, profile, program, republic, school, school literacy movement, society, subject, success, textbook, way.

(5) Cluster 5 consists of 28 items, namely: activity, article, case, challenge, change, covid, English, home, implication, Indonesian teacher, information, literature, management,

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number, online, online learning, outbreak, pandemic, perspective, physical distancing, policy, present study, social distancing, solution spread, work, world.

(6) Cluster 6 has 26 items consisting of: advantage, application, awareness, community, condition, difficulty, era, idea, impact, Indonesian context, Indonesian society, industrial revolution, literature review, opportunity, Pancasila, person, physical, practice, process, region, situation, state, system, teaching, understanding, values.

(7) Cluster 7 consists of 10 items, namely: economic growth, effort, elementary school graduate, existence, future, human capital, Indonesian nation, learning process, obstacles, relations.

All clusters can be distinguished by color. Cluster 1 is red, cluster 2 is green, cluster 3 is blue, cluster 4 is yellow, cluster 5 is purple, cluster 6 is turquoise and cluster 7 is orange.

Network Visualization on Physical Literacy Topics

The interrelationship of various terms can be described and displayed through a visualization network. Figure 2 shows the relationship between terms through lines connecting one term to another (Lardika et al., 2023). Figure 2 shows in general the relationship between each cluster with the terms physical literacy and Indonesia in each theme studied. Here it shows that the term physical literacy is not visible because it is covered by other terms, meaning that research on physical literacy in Indonesia is still very lacking. However, Figure 3 is devoted to highlighting the term physical literacy, it very clearly shows the connection between physical literacy and other terms such as Indonesia, study, education, literacy, covid, physical education, year, and concept. Therefore, physical literacy research so far is still in the very poor category, especially in reaching other terms, for example in the educational sphere, the concept of physical literacy has not yet reached elementary schools or there is a curriculum as a basis for implementing physical literacy in schools.

Through VOSviewer analysis, it can be explained that the keyword physical literacy is not directly connected to the terms curriculum, basic education, knowledge, development, state policy and many other terms. Thus, this shows the location of the novelty regarding these terms for further research (Al Husaeni and Nandiyanto, 2022; Hamidah et al., 2020).

The total strengths and occurrences based on physical literacy terms in each cluster are as follows: cluster one (red) has 3,925 total link strengths and 716 occurrences, cluster two (green) has 1,007 total link strengths and 158 occurrences, cluster three (blue) has 513 total link strength and 84 occurrences, cluster four (green) has 686 total link strength and 115 occurrences, cluster five (purple) has 769 total link strength and 119 occurrences, cluster six (turquoise) has 328 total link strength and 51 occurrences, cluster seven (orange) has 189 total link strengths and 29 occurrences.

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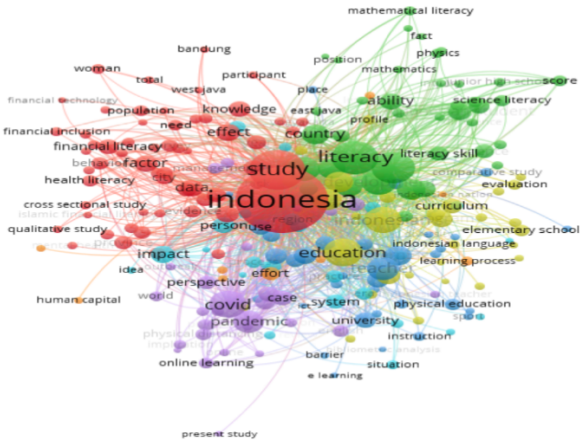

Figure 2. Visualization of the physical literacy topic network in Indonesia

Figure 3. Network visualization specific to the topic of physical literacy

Overlay visualization on the topic of physical literacy

The overlay visualization shows the year of publication, the brighter it is, the newer the year of publication (Chun, 2009). Figure 4 shows changes in the appearance of the term physical literacy publications from year to year. In 2019 the term physical literacy was linked to the term level (dark blue), at the beginning of 2020 the term physical literacy was often linked to the terms Indonesian, education, year and concept (dark green), at the end of 2020 it was often linked to the terms study and literacy (colour). light green) and in 2021 the term physical literacy will be widely associated with the terms covid and physical education (yellow).

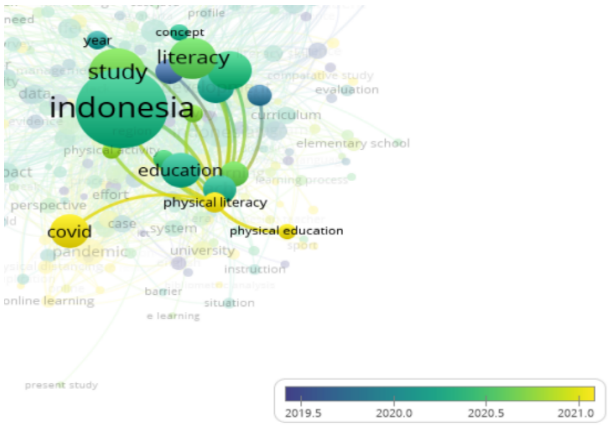

Figure 4. Overlay visualization on the topic of physical literacy

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Density Visualization on the Topic of Physical Literacy in Indonesia

Figure 5 shows a visualization of the density of research developments on the topic of physical literacy. Density visualization shows the number of occurrences by keyword. The brighter (yellow) indicates the denser it is, meaning that the keyword often appears in published research documents (Nandiyanto and Al Husaeni, 2021; Mulyawati and Ramadhan, 2021). However, if a keyword becomes greener (darker) on the density map, it shows that the keyword is still rarely researched (sparse). In this case, the keyword physical literacy in Indonesia is still not a concern for research by researchers. Thus, physical literacy research needs to be a concern for the government, researchers and physical activity activists to be researched and become a policy product that has an impact on community development in general and has an impact on the socialization of healthy living at the educational level (especially in the curriculum aspect at all school levels).

Figure 5. Visualization of the density of physical literacy topics

The results of bibliometric mapping illustrate that physical literacy in Indonesia has not been a concern for researchers. This expression is in line with research results which state that physical literacy in Indonesia has not developed like developed countries (Friskawati and Stephani, 2021). This can be seen from the number of physical literacy publications (Figure 1), before 2019 the number of publications only reached tens (67 studies). Furthermore, it increased in 2019 with the number of publications reaching 114 studies, continuing to increase until 2021 reaching 240 studies, after which it decreased. These findings illustrate that physical literacy research is temporal, inconsistent and ongoing. So the increasing frequency of physical literacy publications is thought to be due to the spread of the corona virus in society (Zargani et al., 2023). This makes researchers try to understand the correlation between changes in physical activity during COVID-19 (Gan, 2022) and evaluation of physical literacy before COVID-19 (Sirkaite and Gruodyte, 2022).

In other parts of the world, especially developing and developed countries, efforts have been made to promote, advocate and develop physical literacy programs. It is believed that the massive development of the concept of physical literacy is because physical literacy is able to offer solutions to overcome global problems related to the lack of individual interest in doing physical activity. The best strategy to increase the involvement of students and adolescents in physical activity is to include physical literacy in physical education (Friskawati et al., 2023). Physical literacy practitioners reached an agreement that the physical literacy model is in accordance with physical education culture and can be implemented in physical education learning in schools (Irmansyah et al., 2021). The importance of physical literacy for

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children is because physical literacy does not only focus on physical abilities but is related to knowledge, attitudes and movement abilities (Suherman, 2018).

The various research results above illustrate the importance of physical literacy for children's growth and development, but the results of this research show that the concept of physical literacy has not yet reached elementary schools or there is a curriculum as a basis for implementing physical literacy in schools. Through VOSviewer analysis, it can be explained that the keyword physical literacy is not directly connected to the terms curriculum, basic education, knowledge, development, state policy. Therefore, future research needs to include physical literacy in the education unit curriculum, physical literacy is linked to knowledge, physical literacy is linked to elementary schools, and physical literacy is linked to national development policies.

4. CONCLUSION

The use of the VOSviewer application in bibliometric mapping seeks to help analyze trends in physical literacy publications in Indonesia. Meanwhile, the Publish or Perish application functions as a search and data collection tool in this research. Information about physical literacy in Indonesia is filtered using the keywords "physical literacy" and "Indonesia". The use of titles, keywords and abstracts is part of the bibliographic mapping data used in this research. The search results collected 989 articles that were published from 2013 to 2023. 2021 was the year with the highest number of publications with 240 articles, this is related to when it was still in the atmosphere of the COVID-19 pandemic. Research on the topic of physical literacy in Indonesia is still very lacking and is wide open for research, especially including physical literacy in the education unit curriculum, knowledge, physical literacy is linked to elementary schools, physical literacy is linked to national development policies.

5. AUTHOR'S NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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