ISSN Print: 2664-7559
ISSN Online: 2664-7567
Impact Factor (RJIF): 8.19
IJSHPE 2025; 7(2): 331-337
www.physicaleducationjournal.in
Received: 09-07-2025
Accepted: 12-08-2025

Veena S Nair
Research Scholar, Department of Physical Education and Sports Sciences, Hindustan Institute of Technology and Science (Deemed to be University), Padur, Chennai, Tamil Nadu, India

Dr. R Ramakrishnan
Assistant Professor (SG), Department of Physical Education and Sports Sciences, Hindustan Institute of Technology and Science (Deemed to be University), Padur, Chennai, Tamil Nadu, India,

Corresponding Author:
Veena S Nair
Research Scholar, Department of Physical Education and Sports Sciences, Hindustan Institute of Technology and Science (Deemed to be University), Padur, Chennai, Tamil Nadu, India

Global research trends in physical literacy and their efficacy on motor competence: A bibliometric study

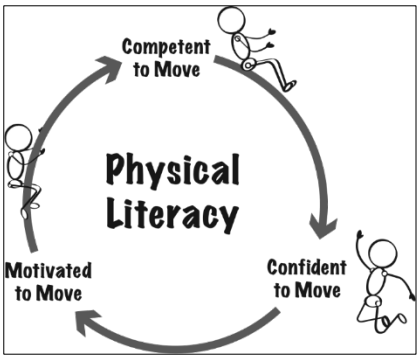
Veena S Nair and R Ramakrishnan

DOI: https://doi.org/10.33545/26647559.2025.v7.i2e.266

Abstract
Physical literacy, which is defined as the complete integration of physical skill, motivation, confidence, knowledge, and understanding, has emerged as a central idea in the fields of health, education, and sports sciences. Physical learning, in contrast to traditional performance models, places an emphasis on meaningful physical activity throughout one's entire life by establishing connections between the physical, cognitive, psychological, and social domains. In light of the fact that physical inactivity is on the rise all over the world, which is a factor that contributes to obesity, cardiovascular risk, and a decrease in well-being, this is especially pertinent. There is evidence that children and adolescents who have a greater PL have superior motor competence, executive skills, and academic performance. On the other hand, children and adolescents who have a low PL are related with behaviors that are more sedentary and have poorer psychosocial outcomes. PL integration varies over the world, with Canada and Australia leading the pace while many underdeveloped regions lag behind. This study examines global PL research trends from 2017 to 2025 using bibliometric analysis, focusing on PL's effects on cognitive development and motor ability. The findings emphasize rapid publishing growth, famous authors, and major theme groupings. The analysis also shows research gaps, emphasizing the need for grassroots policy integration and longitudinal interventions to maximize person-centered care's lifetime effects.

Keywords: Physical literacy, motor competence, bibliometric analysis

Introduction
In the fields of health education and sports sciences, the notion of physical literacy (PL) is referred to. According to Whitehead (2010) [13], it is paired with physical competence, motivation, confidence, and knowledge growth in order to facilitate understanding of emotions through lifetime physical activity with the goal of facilitating emotional development. According to Edwards *et al.* (2017) [5], PL is not like a typical model since it takes into account human mobility from the perspectives of the physical, mental, and social dimensions.
Inactivity is a major public health problem, and the PL is helping to address this issue. The World Health Organization (WHO) has made the recommendation that, on a global scale, 80 percent of adolescents and 27 percent of adults do not fulfill the standards for physical exercise. In the study conducted by Cairney *et al.* (2022) [2], the findings indicate that there are substantial risks for the obese class, cardiovascular disease, and mental illness issues. In addition to promoting a healthier way of life, it also enhances education, self-regulation, and social involvement (Roberts *et al.*, 2022) [6]. Being framed as a balance raises the concept.
PL enhancement is inconsistent worldwide despite its promise. According to Tremblay *et al.*'s 2022 [12] study, children and adolescents with poor PL often have worse confidence, motor competence, and activity willingness. These deficiencies undermine physical control, mental health, concentration, and academic achievement. Lack of formal physical education (PL) is linked to decreased school motivation, sedentary adolescence, and higher adult non-communicable illness rates (Young *et al.*, 2023) [14].
Research shows that PL interventions can alleviate these inclinations, but their implementation is scattered. Even though the UK, Canada, and Australia have adopted PL into their educational systems and regulations, Adi *et al.* (2024) [1] report that many developing nations are still considering it. This difference raises concerns about global fairness in PL promotion, especially from grassroots educational settings where key skills are first learned.



Personal learning is a lifelong process with many aspects. Physical literacy (PL) and early motor skill mastery (FMS) are linked. FMS like running, jumping, and catching form the basis for more complex motions (Chen *et al*., 2023) [3]. Strong performance learning foundations can predict greater levels of physical activity, cognitive function, and social adaptability in later life.

Physical training builds resilience, elegance, and skill in adolescents. Keegan *et al*.'s 2022 [6] study found that adolescents with higher PLs are more likely to be active, self-determined, and have healthier psychosocial identities. Luo *et al*. (2023) [7] found that PL in teenagers improves executive skills such working memory, attention, and inhibitory control, which boosts academic performance.

PL helps adults and older individuals maintain autonomy, minimize functional deterioration, and increase quality of life. (2023, Young *et al*.) [14] Research shows that older people with stronger PL had superior balance, cognitive resilience, and psychological well-being. The importance of lifelong engagement emphasizes the need for grassroots early training to ensure advantages for all ages.

PL, cognitive function, and motor performance are increasingly linked in studies. PL interventions increase physical and mental results simultaneously, according to growing evidence (Tompsett *et al*., 2022; Luo, 2023) [11, 7]. Movement can alter cognitive capabilities like spatial reasoning, memory, and problem-solving. According to Chen *et al*.'s 2023 [3] study, children with higher PL have better motor skills, academic ability, classroom decorum, and learning preparedness. This study supports the premise that performance learning goes beyond physical performance and includes cognitive and emotional development.

Bibliometric analysis is vital for measuring physical literacy research advancement. Bibliometric studies let researchers identify key contributors, follow trends, and find research gaps (Donthu *et al*., 2021) [4]. These are done using quantitative methods including co-citation analysis, keyword analysis, and collaboration networks. This strategy is essential in multidisciplinary domains like physical education (PL), which integrates health, psychology, education, and sports sciences. Recent bibliometric studies show the significant growth of PL literature. Mendoza-Muñoz *et al*. (2023) [9] found an exponential increase in publications in PL research. Health promotion, education policy, motor competence, and quality of life were common themes. A study by Mendoza-Muñoz *et al*. (2023) [9] examined the relationship between physical activity (PL) and health, fitness, and well-being in children and adolescents (2017-2025). These discoveries show that PL has extended from a theoretical concept to a global study field.

Review of the Study

Recent experiments have shown that PL affects cognitive development and motor skills in multiple ways. Research shows that structured physical learning interventions improve children's executive skills like attention, memory, and problem-solving and their physical skills like balance, coordination, and agility (Cairney *et al*., 2012) [2]. According to Edwards *et al*. (2017) [5], physical literacy programs improve children's cognitive performance, particularly in academic areas, as well as their self-confidence and motivation to exercise. Early PL training promotes brain development pathways for learning and motor control, according to longitudinal research. Neurodevelopment is supported by PL training. School-based studies indicated that PL treatments improve motor competence by concentrating on basic movement skills. This simplifies scheduled and unstructured physical activity (Chen *et al*., 2020) [3]. In conclusion, controlled trials have shown that PL-centered pedagogical techniques bridge the cognitive and physical domains, supporting the idea that active learning is important for children's development (Roberts *et al*., 2022) [6].

Objectives of the study

- To examine the trends growing in PL and motor competence for research publications between 2017 and 2025.
- To ensure the highlights keywords and top authors' contributions to the field of PL.
- To find out the most important country to lead the area of PL and motor competence.
- To examine the distribution of subject areas with an interdisciplinary nature.
- To highlight research gaps and future directions for PL and motor development.

Methodology

Research Design

For the purpose of providing a complete global overview of research trends in PL and their impact on cognitive development and motor ability, this study makes use of a bibliometric design. The process of retrieving data, filtering the data, and doing an analysis of the articles that are indexed in the Scopus database list are all included in this procedure.

Data Source

In order to obtain a primary source, the database was obtained from Scopus library. as a result of the indexing of journals that have been subjected to peer review across a variety of fields.

Search Strategy

A keyword-based search was conducted using the terms:

- “Physical Literacy” AND “Motor Competence”
- 66 documents were found published between 2017 and 2025.

Eligibility Criteria

- **Subject Area**: Studies were collected from the health professions, social sciences and psychology, totally 54 documents involved in this area.
- **Document Type**: Including research articles are 46 documents,1 book chapter, and 7 review papers were excluded.

- **Language**: Prefer only English language only considered 42 documents, other than language are not included like Spanish, Portuguese.
- **Publication Stage**: In final stage of publications 38 articles are added.
- **Open Access Status**: Finally, 21 articles were identified to access open method. Other paid version like 13 Green, 11 Gold, 4 Hybrid Gold, 1 Bronze were not added to these criteria.

Fig 1: Flowchart on Database Analysis from Scopus on PL and Motor Competence

Results

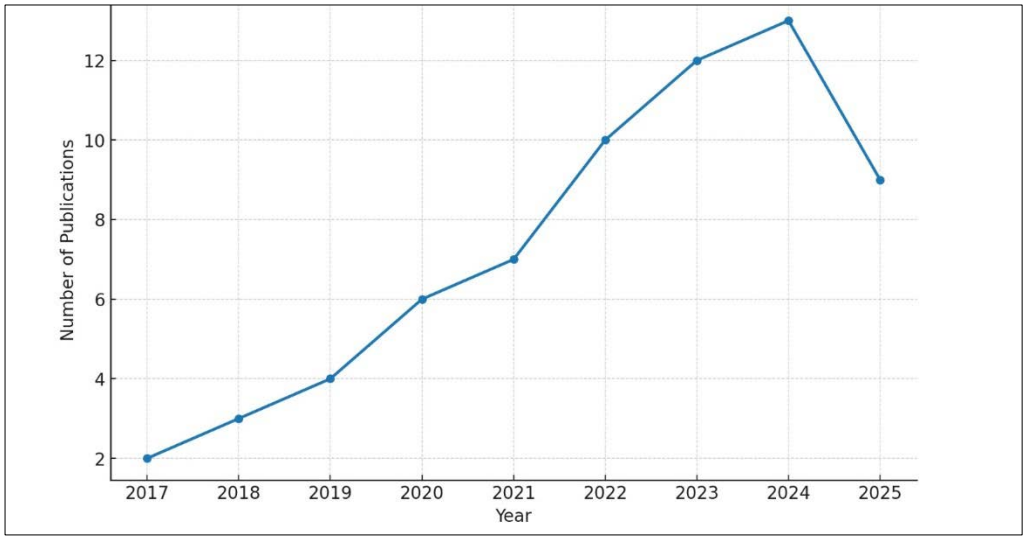


Fig 2: Annual Growth on PL and Motor Competence of Publication Trends

It is clear from this line chart that there has been a general increase trend in the number of publications for PL and Motor competency between the years 2017 and 2025. Beginning with a limited number of research conducted in the first few years of 2017 and 2018, it is a beginning. It demonstrates that during the course of 2019, the early attention steadily increased, which is reflective of the growing significance in this era. The years 2023 and 2024 are the most productive years, with more than twelve articles being produced in each year. These articles emphasize sources of interest and promote the health and education of people with Parkinson's disease. In the year 2025, the research field of PL was the only one to have a minor decrease in the number of incomplete indexing articles, which was shown to be nine. Only twenty-one articles were cited about the publications that were tracked as a minor portion in this field during the course of the last nine years all together. Using these data, the research gap that exists in the field of PL and motor competence is brought to light, and it is necessary to do investigations that span multiple cultures. This interdisciplinary strategy incorporates health, psychology, and social science views. The long-term consequences of exercise on cognitive and motor capabilities.

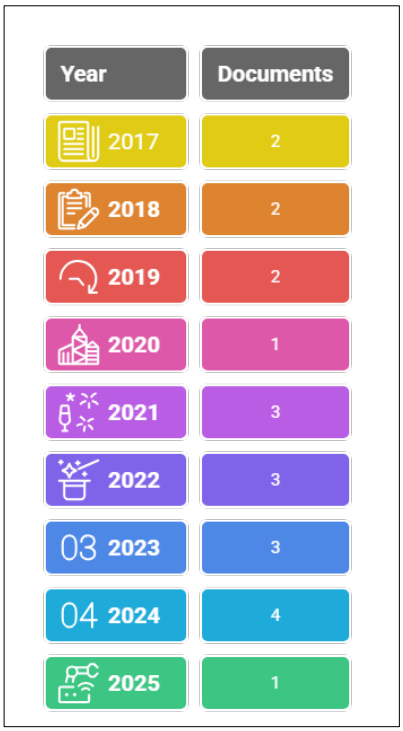


Fig 3: Top 10 Authors by Scientific Production on Physical Literacy

PL and motor competence research has increased steadily between 2017 and 2025, as seen by the articles published in this topic. The quantity of articles was minimal in the first few years (2017-2018), indicating that the topic area was still emerging. However, scientific articles have increased since 2019, indicating a shift toward acknowledging PL's significance in enhancing physical competence and cognitive skills. The high growth in 2021 and 2022 may be due to worldwide health and education programs that encourage PL. This trend reflects the increased academic awareness that is occurring. Despite the fact that there are some occasional changes in future years, the rising tendency indicates that research vigor is being maintained. It is anticipated that by the year 2025, the discipline will exhibit persistent academic involvement, which will mark its development as an important area of multidisciplinary investigation within the fields of psychology, social sciences, and health professions. Not only does this pattern refer to the expansion of the field, but it also indicates that there is a need for additional exploration of the research gaps that are still underexplored. Some examples of these gaps include longitudinal interventions and cross-cultural validations.

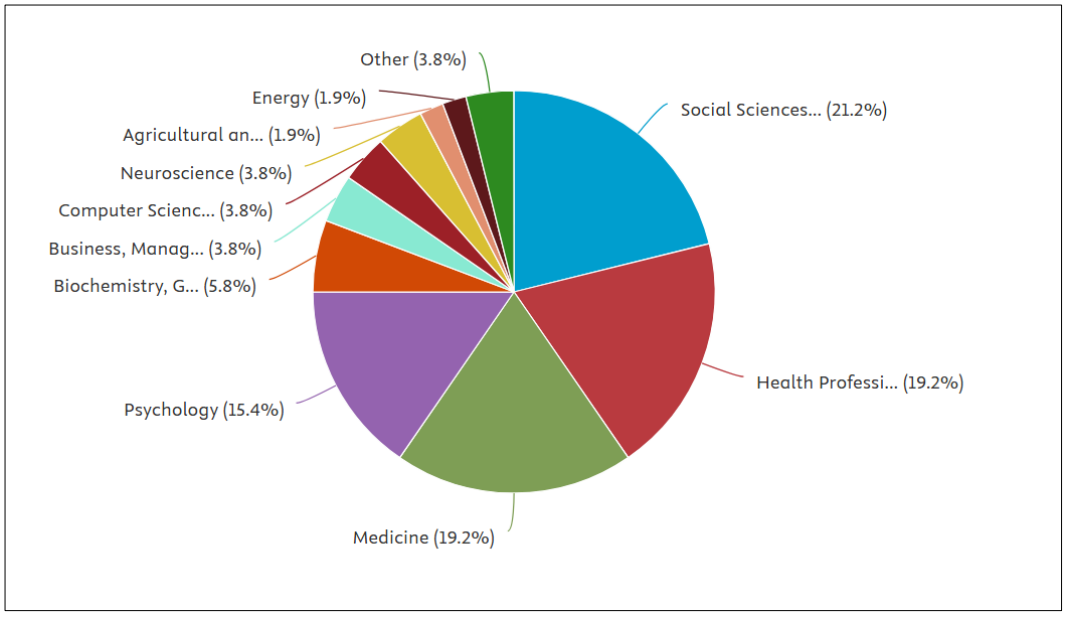


Fig 4: Top 10 Authors by Scientific Production on PL

PL and motor competence is an example of a multidisciplinary field of study, as demonstrated by the topic area. The social sciences account for 21.2 percent of the major fields, making up the majority of the disciplines. With 19.2 percent, both are on par with one another in the second position, which is the health professions and medicine. It is made clear that the primary focus of education is on the health and well-being of its students. The following position,

psychology, had a score of 15.4 as was described earlier. This indicates that there is an interest in the cognitive and behavioral aspects of the cognitive task. In addition, the percentages that are proved to be present in the fields of molecular biology, genetics, and biochemistry are 5.8. 3.8 percent of the population had three areas of expertise, such as management, business, and computer sciences. This sector accounts for 1.9 percent of the agricultural science and energy sector. It is a representation of contributions of a lesser amount. In general, the research focused on the fields of medicine, the sciences, biology, and technology, all of which are covered and suggest the prospective efforts that may be made.

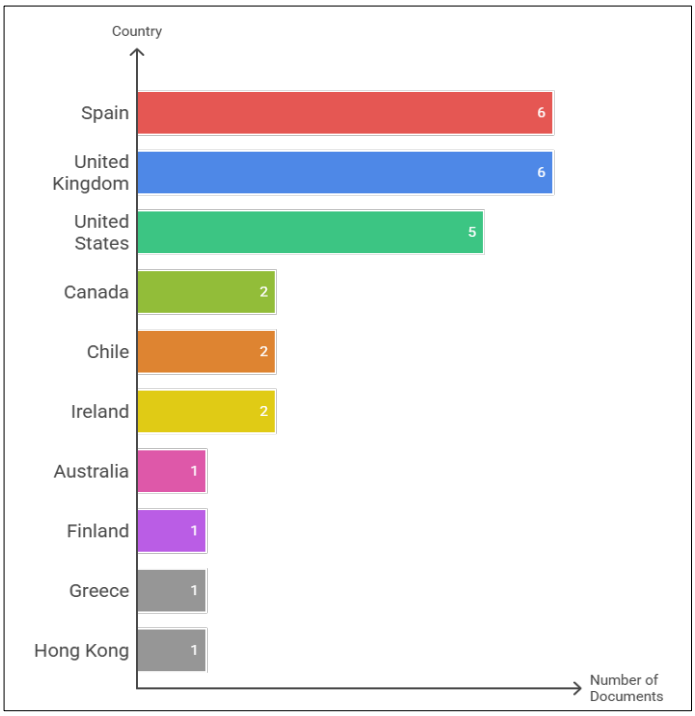


Fig 5: Top 10 Countries by Scientific Production on PL AND Motor Competence

According to the line graph, this particular field of research, which makes a contribution to the subject matter that has been chosen, is most concentrated in a narrow number of nations, such as the United Kingdom and Spain, with six publications in each of these countries. After that, the United States of America comes in second, closely followed by five newspapers that are located in the region. There was also presence from other countries, such as Canada, Chile, and Ireland, with two publications coming from each of these countries. The countries of Australia, Finland, Greece, and Hong Kong each provide a minimum amount of research, with each country having one article. In order to bring attention to the inequities, this graph illustrates the developed majority nations that are engaged in research activity. As a result of the research gap and the expansion of studies for scope in these regions, countries from Asia, Africa, and underdeveloped countries were recommending the research deficit.

Discussion

An output of growth in cognitive skills development and motor competencies is provided by the role of PL, which also contributes to an increase in the research area throughout the years 2017 through 2025. During the first few years, the number of articles increased, which is evidence of the attention values. Since the year 2017-2018, there has been a substantial increase in the number of people participating in PL training all around the world. In addition to contributing to the improvement of child development, it is in line with the global health promotion that takes place in the curriculum changes of schools. Publications reached their highest point during the 2023-2024 academic year, which is reflective of the academic participation in PL. On the basis of this, the majority of the community's educational and developmental programs and policies are constructed. During the year 2025, there is a modest decrease in the amount of scholarly interest that is represented, and problems with incomplete databases are shown. to provide a suggestion for the continuation of future publications for the purpose of trending.

In accordance with the characteristics of multidisciplinary disciplines, the studies are limited to focusing solely on the fields of social sciences, health, medicine, and psychology. There was a preponderance of study that concentrated on the health and educational field of PL, with a particular emphasis on the motor and cognitive results of children. These fields provide evidence that there is a connection between management, biology, computer science, and neuroscience. Developed nations such as Spain, the United Kingdom, and the United States of America are the primary focus of the majority of the magazine. It has the potential to improve monitoring and also to obtain a promotion in the field of PL. A few of the nations that have been highly influenced by western models and have discovered a limited number of various cultural, socioeconomic, and policy makers countries. There is a need for further cultural adaptations, such as a particular context, as well as local educational and health services. There are 21 final articles that have been published as a result of research that has been conducted over the course of nine years. During the stage of the scholarship domain, the PL, motor competence, and cognitive skills were brought to individuals' attention. Comparisons are made for the short-term outcomes and leaving a long-term impact in PL. The huge scale of cross-cultural differences, experimental validity, and design are taken into

consideration. The importance of PL is demonstrated by the fact that these research gaps are addressed through a randomized controlled trial, network collaboration, and techniques.

The bibliometric trends, taken as a whole, indicate that PL has developed into a significant interdisciplinary topic that bridges the fields of psychology, education, and health. On the other hand, the underrepresentation of particular fields of study and geographical areas, in conjunction with the dearth of longitudinal and experimental studies, highlights the necessity for future research to embrace methodologies that are more inclusive, interdisciplinary, and reflective of the entire world. To shape policies, implement educational interventions, and promote health programs that harness physical literacy's full potential in encouraging children's motor competence and cognitive development, this field needs rigorous empirical evidence to improve health.

Research Gap

Research on PL and its relationship to cognitive development and motor abilities has grown in recent years, although there are still many gaps. Beginning with a reasonable number of publications published between 2017 and 2025, this topic has seen little research.

This highlights the quality of the evidence and the need for more thorough studies across demographics. To make matters worse, research is unevenly distributed geographically. Most research originate from wealthier countries like Spain, the UK, and the US, whereas rising regions like Asia, Africa, and others are underrepresented.

This disparity reduces the findings' cultural diversity and casts doubt on their global applicability. Another gap is that most studies are in health sciences, medicine, psychology, and social sciences.

Existing research is limited by its narrow disciplinary emphasis. Because neurology, molecular biology, technology integration, and educational policy experts contribute little, it is difficult to grasp the mechanisms and systemic factors that affect physical literacy outcomes.

Most studies have used cross-sectional or short-term designs. This has left a gap in longitudinal research on PL's impact on cognitive and motor development throughout life. Experimental and randomized controlled trials (RCTs) that establish causal links and validate therapies are scarce.

The cognitive domain remains understudied since most research has focused on physical ability, not executive processes, memory, attention, or academic outcomes. The lack of standardized assessment instruments and physical literacy standards causes differences that make it harder to evaluate and synthesize data across contexts. Finally, social and policy factors are neglected. There has been minimal research on how socioeconomic status, gender, community environment, and education policy affect physical literacy acquisition and impact. Overall, these limitations demonstrate the need for transdisciplinary, longitudinal, and globally inclusive research. Standardized tools and policy-oriented perspectives should be used in this research to strengthen the evidence basis and improve physical literacy therapies.

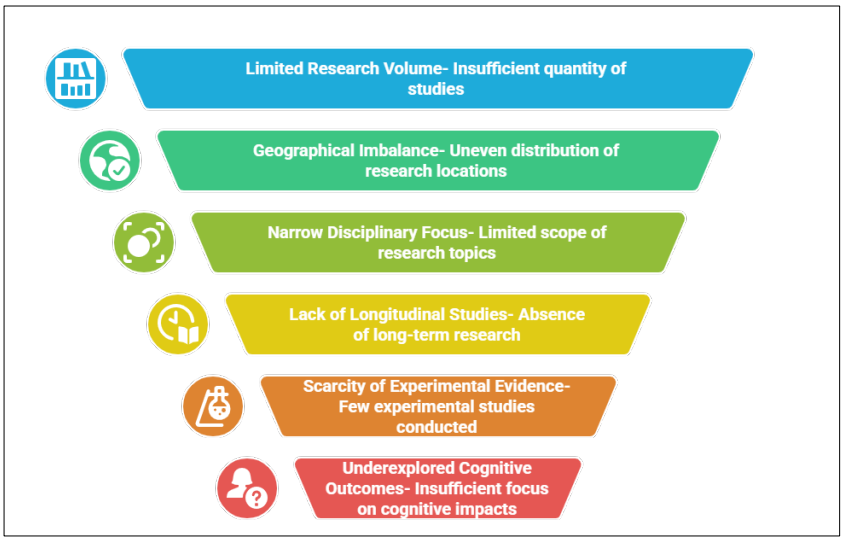


Fig 6: Research Gaps in Physical Literacy and Motor Competence

Conclusion

This bibliometric analysis illuminates the global focus on PL and its effects on cognitive and motor development in children and youth. The findings show that academic contributions in health sciences, psychology, and social sciences will increase from 2017 to 2025, indicating a high awareness of the importance of physical learning in improving physical and cognitive results. However, the lack of publications, geographic imbalance that benefits wealthier countries, and lack of approaches suggest that study in this area is still growing. The underrepresentation of longitudinal studies, experimental trials, and standardized frameworks highlights the need for more robust, worldwide research.

As a whole, the study shows that physical literacy is not only a foundation for motor competence but also a key role in cognitive functioning, lifelong physical activity, and well-being. Future research could strengthen the evidence foundation, shape policy, and improve physical literacy in education, health, and communities worldwide. This can be done by filling research gaps and expanding the study to cover more populations and scenarios. These improvements will eventually lead to healthier, smarter, and more active organisms.

Reference

1. Adi S, Kumar R, Lee J. Global disparities in physical literacy promotion: A comparative policy analysis. International Journal of Physical Education and Sport Sciences. 2024;14(2):115-128. https://doi.org/10.1080/ijpe.2024.142

2. Cairney J, Dudley D, Kwan M, Bulten R, Kriellaars D. Physical literacy, physical activity and health: Toward an evidence-informed conceptual model. Journal of Teaching in Physical Education. 2022;41(3):495-504. https://doi.org/10.1123/jtpe.2021-0212
3. Chen ST, Liu Y, Chen PJ. Fundamental motor skills and physical literacy in children: A developmental perspective. Frontiers in Psychology. 2023;14:1122345-1122358. https://doi.org/10.3389/fpsyg.2023.1122345
4. Donthu N, Kumar S, Mukherjee D, Pandey N, Lim WM. How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research. 2021;133:285-296. https://doi.org/10.1016/j.jbusres.2021.04.070
5. Edwards LC, Bryant AS, Keegan RJ, Morgan K, Cooper SM, Jones AM. 'Measuring' physical literacy and related constructs: A systematic review of empirical findings. Sports Medicine. 2017;47(1):113-126. https://doi.org/10.1007/s40279-016-0560-7
6. Keegan RJ, Barnett LM, Dudley DA, Telford RD, Lubans DR, Bryant AS, Roberts WM. Defining physical literacy for application in Australia: A modified Delphi method. Journal of Teaching in Physical Education. 2022;41(2):293-302. https://doi.org/10.1123/jtpe.2021-0020
7. Luo Y, Chen X, Zhang Y. Physical literacy and cognitive function among adolescents: A cross-sectional study. Frontiers in Public Health. 2023;11:1176432-1176445. https://doi.org/10.3389/fpubh.2023.1176432
8. Mendoza-Muñoz M, García-Rubio J, López-García J. A bibliometric analysis of physical literacy research: Global trends and thematic evolution. International Journal of Environmental Research and Public Health. 2022;19(21):14145-14158. https://doi.org/10.3390/ijerph192114145
9. Mendoza-Muñoz M, Prieto JL, Cid L. Physical literacy research in children and adolescents: A global bibliometric analysis (2017-2025). Frontiers in Sports and Active Living. 2023;5:1023456-1023470. https://doi.org/10.3389/fspor.2023.1023456
10. Roberts WM, Newcombe DJ, Davids K. Application of a constraints-led approach to pedagogy in schools: Embodying physical literacy. Frontiers in Education. 2022;7:855153-855168. https://doi.org/10.3389/feduc.2022.855153
11. Tompsett C, Burrows A, Bryant A. Physical literacy and its impact on cognitive and academic outcomes: A systematic review. Journal of Physical Activity and Health. 2022;19(5):347-360. https://doi.org/10.1123/jpah.2021-0569
12. Tremblay MS, Longmuir PE, Barnes JD, Belanger K. Physical literacy levels of Canadian children and youth: Current state and future directions. Applied Physiology, Nutrition, and Metabolism. 2022;47(2):177-186. https://doi.org/10.1139/apnm-2021-0567
13. Whitehead M. Physical literacy: Throughout the lifecourse. London: Routledge; 2010.
14. Young L, O'Connor M, Roberts W. Physical literacy and active ageing: Exploring links with cognitive resilience and quality of life. Aging & Mental Health. 2023;27(5):849-857. https://doi.org/10.1080/13607863.2022.2088415