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Physical Education Motor Skills Test in Primary School in the Last 5 Years: A Systematic Review

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ABSTRACT

The development of a child's movement is an essential period or phase in their growth and development. Movement development becomes an important foundation for a child in gaining good movement effectiveness in the future. This study aims to systematically review some literature that has developed or tested instruments related to movement skills in elementary school students in the last five years. This study is a systematic review study by adopting the Preferred Reported Item for Systematic Reviews and Meta-Analyses (PRISMA) method in conducting data collection. The researcher used single database as the database of this systematic review research. The data collection process using the PRISMA method integrated with the SCOPUS website, obtained initial identification results of 929 documents. Furthermore, the results of articles that fit the inclusion criteria were 210 articles. The results were sorted and selected again until finally obtaining 10 articles with the most citations. These findings highlight the necessity for a more adaptable methodology in the future development of fundamental movement assessment tools. The proposed instruments should fulfill validity and reliability criteria while also addressing practical considerations, including ease of administration, adaptation to diverse facility settings, and alignment with the requirements of educators in the field.

INTRODUCTION

The development of a child's movement is an essential period or phase in their growth and development (1). Movement development becomes an important foundation for a child in gaining good movement effectiveness in the future (2). The role of parents as the first place of education for children is important to ensure that the process of motion development is directed (3). However, parents do not know whether what they give to their children in ensuring this process actually has a good effect or not. In this case, formal education through school is needed to ensure that this development can be measured and structured.

The education in question is physical education. In elementary school, physical education becomes the basis and foundation of movement for a child (4). Physical education teachers must pay attention and ensure their students gain holistic learning and movement experiences. The implementation of a meaningful learning process is one way of how these students receive holistic learning (5). Through this, learning movement at the elementary school level will be able to form the foundation of a child's movement optimally.

In optimizing the movement learning process, proper and appropriate measurements are needed for elementary school students. Currently, there are various instrument models that are relevant to elementary school students (6). These instruments have passed feasibility tests such as validity and reliability. Physical education teachers only need to choose and adjust instruments that suit their students. The selection of the instrument, of course, has several things to consider such as its advantages and disadvantages.

This study aims to systematically review some literature that has developed or tested instruments related to movement skills in elementary school students in the last five years. The researcher tried to facilitate physical education teachers in determining the appropriate test instrument for their students. This research will be a reference for physical education teachers related to the development of primary school students' movement skills test instruments. Thus, physical education teachers will find it easier to choose and sort out movement skills test instruments without having to study each of these instruments.

RESEARCH METHOD

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This study is a systematic review study by adopting the Preferred Reported Item for Systematic Reviews and Meta-Analyses (PRISMA) method in conducting data collection. The researcher used one database as the database of this systematic review research. The SCOPUS database was chosen by the researcher because the research documents in the database have good quality through the index of SCOPUS itself. The keywords "motor skills" OR "fundamental movement skills" AND test OR instrument AND "physical education" were used in this study in the data collection process. Data collection was conducted on May 15, 2025 directly through the SCOPUS website.
The researcher applied inclusion and exclusion criteria in the data collection process, which are presented in the following table.

Table 1. Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
1. Published research documents in 2020-2025 2. Research documents published in English 3. Research documents published in the form of articles 4. Research documents that have been published or not in press.	1. Research documents published outside the 2020-2025 range 2. Research documents that are not in English 3. Research documents that are not published in the form of articles 4. 4. Research documents that are still in press.

On the other hand, researchers also screened keywords using the website feature in SCOPUS. To ensure that the identified research is in accordance with the objectives of this study, the researcher made keyword limitations through the SCOPUS website feature. The keywords "Physical Education", "Motor Skills", and "Motor Performance", were selected as limitations from the results of data identification on the SCOPUS website.
The collaboration between the PRISMA method and the features on the SCOPUS website provides effectiveness and efficiency in the data collection process. In addition, researchers are also able to ensure that the research data obtained is in accordance with the objectives of this study. The systematics presented through PRISMA and the screening feature of the SCOPUS website can minimize the occurrence of biased research data. Thus, the results of this study can be maximized and have a significant impact on the readers.

RESULTS AND DISCUSSION

The results in this study are divided into two parts, the first is related to the data collection process or results from PRISMA, and the second is related to the literature review of the 10 most relevant articles (in accordance with the objectives of this study). The 10 most relevant articles were selected through the screening feature on the SCOPUS website. In addition, researchers also paid attention to the number of citations to ensure the quality of the research. Thus, it is not only relevant in terms of topic, but also has good quality through the number of citations displayed. The following are the results of this literature review research.

1. PRISMA Screening Process

The data collection process using the PRISMA method integrated with the SCOPUS website, obtained initial identification results of 929 documents (see figure 1). The first identification results were then screened based on the predetermined inclusion and exclusion criteria. Furthermore, the results of articles that fit the inclusion criteria were 210 articles. The results were sorted and selected again until finally obtaining 10 articles with the most citations and discussing relevant topics (developing or testing instruments).

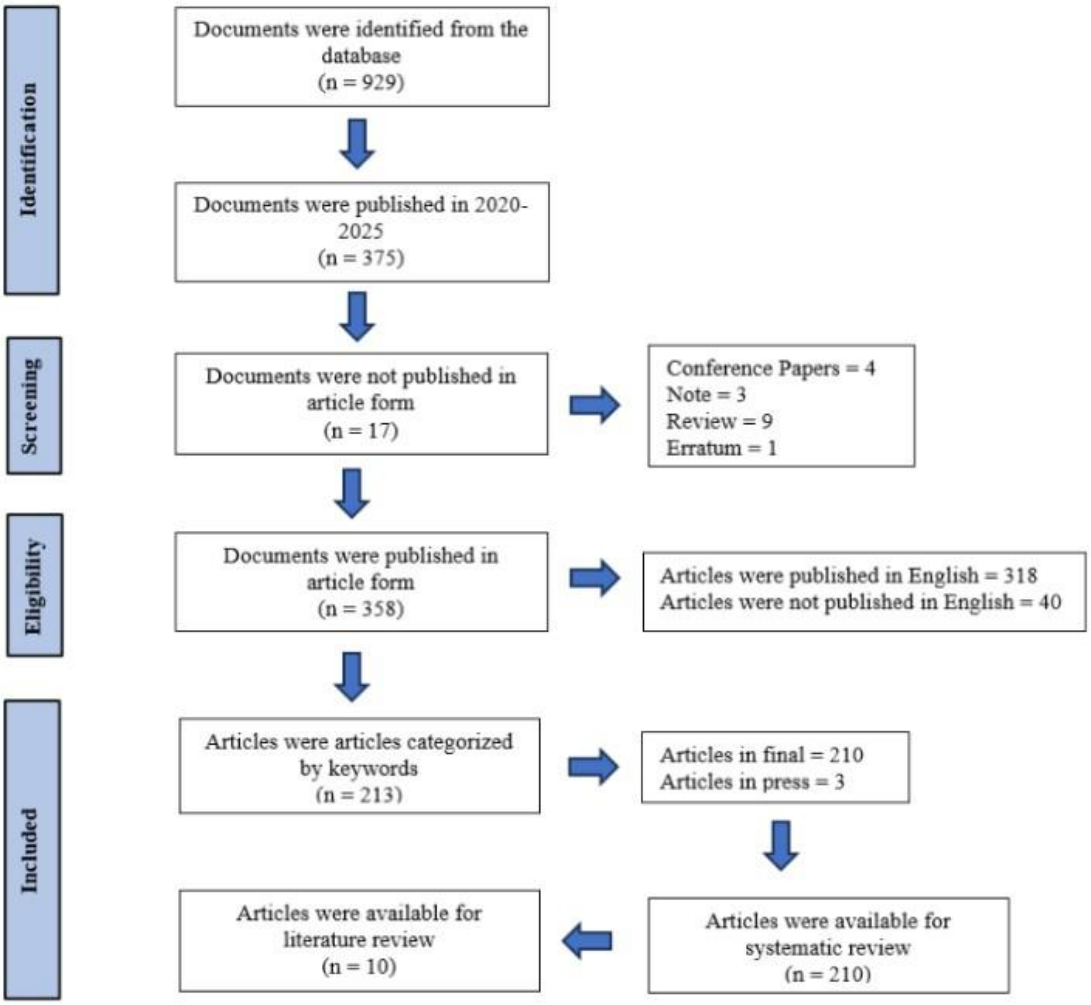

Figure 1. PRISMA flowchart screening process

1. Literature Review

The literature review was conducted with the aim of providing a visualization of how research has progressed on primary school students' movement skills test instruments (see table 2). Through these articles, the development of research can be mapped systematically and allow for the discovery of research gaps.

Table 2. Literature review

Author	Citation	Research Purposes	Study Design	Results
Elsborg, et. al., (2021)	28	To translate the Canadian Assessment of Physical Literacy, second edition (CAPL-2) into Danish, adapt it to the Danish context, and evaluate the measurement characteristics	Experimental Study	The categories and the overall CAPL-2 score were favorably correlated with physical education teachers' evaluations of their students in four key areas of physical literacy

		using a sample of Danish schoolchildren.		(i.e., enjoyment, confidence, motor skills, and diversity), demonstrating predictive validity. The instrument utilized to assess the domains of motivation and confidence demonstrated high internal consistency.
Menescardi et. al., (2022)	19	To assess the validity and reliability of the Canadian Agility and Movement Skill Assessment (CAMSA) in Spanish youngsters.	Experimental Study	The CAMSA serves as a valid and effective tool for evaluating motor skills in Spanish youngsters.
Dokkum, et. al., (2022)	15	To summarize (1) the data regarding the criterion validity of screening instruments for motor developmental issues in 5–6 years olds, using the M-ABC-2 as a reference, and (2) the feasibility of these instruments in community-based contexts.	Systematic Review	None of the measures demonstrated enough validity for motor screening at ages 5 to 6. Further investigation is required about screening tools for motor delay at ages 5 to 6.
Chang, et. al., (2020)	11	To assess the validity of the Children's Motor Skills Quotient (CMSQ) utilized in educational environments.	Experimental Study	The CMSQ appears to possess suitable test items and an adequate rating scale structure for assessing the movement skills of children aged 6 to 9 years in a physical education classroom setting.
Nagy, et. al., (2023)	11	To evaluate fundamental movement skill (FMS) assessment instruments applicable to primary school children.	Narrative Review	Researcher determined that while these tools are exemplary for research purposes, their application in an educational environment is challenging. Consequently, educators and trainers are recommended to consistently choose a singular assignment from the various assessment instruments that aligns

				with the skills they intend to evaluate.
Staples, et. al., (2021)	10	To assess the instructional sensitivity of the Test of Gross Motor Development-3rd edition (TGMD-3) performance criteria in response to performance variations among 48 children (ages 4–7) with and without Down syndrome after 10 weeks of physical education.	Experimental Study	The data demonstrate that the TGMD-3 is responsive to variations in performance among children with and without Down syndrome.
Wibowo, et. al., (2024)	7	To develop an evaluation instrument for gross motor abilities specifically designed for students aged 7-9, in accordance with their distinct attributes.	Research and Development (4D Model)	The assessment tool has strong validity and reliability, successfully tackling the issues related to the necessity for evaluations customized to the subject's attributes, goals, and significance.
Makaruk, et. al., (2023)	7	To create the novel age-specific assessment of FMS (Fundamental Motor Skills in Sport exam, in Polish: exam Fundamentalnych Umiejętności Ruchowych w Sporcie, FUS). The secondary objective of this study was to determine the validity, inter-rater reliability, intra-rater reliability, test-retest reliability, and internal consistency of the FUS test.	Research and Development	The findings demonstrate that the FUS test is valid, reliable, and practical for implementation in educational environments. This tool test can facilitate purposeful practice and enhance motor competence by offering a standardized and systematic method for assessing fundamental movement skills in school-aged children and adolescents.
Pierre, et. al., (2023)	3	Phase 1 aimed to investigate the viability of employing the KTK evaluation in U.S. children, while Phase 2 attempted to evaluate the adaptability of the scoring system utilized in other countries for application in the United States.	Experimental Study	The Phase 1 results demonstrated that the KTK assessment could be effectively administered in U.S. physical education classes by addressing three challenges: 1) KTK implementation, 2) the time required to assess each skill, and 3) the availability and cost of equipment necessary for

				test administration in a physical education context. In Phase 2, the researchers determined the raw scores and motor quotient scores in this sample, subsequently demonstrating comparable scoring trends between U.S. children and Flemish children from a prior study.
Nugroho, et. al., (2024)	1	To evaluate the validity and reliability of the Motor Competence Assessment (MCA) tool for individuals aged 12 years.	Experimental Study	The Motor Competence Assessment (MCA) tool has demonstrated both validity and reliability in the evaluation of motor skills. The validity and dependability of MCA provide it a significant asset across various contexts, including physical education, sports, and rehabilitation.

Test instruments to measure children's basic movement skills have been developed since the early 2000s. This development has made a significant contribution to physical education. The contribution is in the form of a more measurable development of a child. However, as the years went by, instruments related to the measurement of basic movement skills began to develop massively. The emergence of various test instruments provides advantages and disadvantages for implementers who want to implement these instruments. The advantages offered are such as making it easier for physical education teachers to find and choose instruments that are suitable for their educational environment. On the other hand, the disadvantages that arise are related to the challenges of physical education teachers in implementing these instruments. The challenge in question is related to the availability of facilities and infrastructure when conducting tests in accordance with the specified instrument procedures. Therefore, research by van Dokkum, et. al. (2022), states that there is still no test instrument that makes it easy for physical education teachers, if they experience obstacles related to facilities and infrastructure. Thus, it is necessary to develop test instruments with procedures that make it easier for physical education teachers when conducting tests.

In the last five years, the development of movement skill test instruments has been carried out by taking into account the age development of a child. Research by van Dokkum, et. al. (2022), examined several test instruments for children aged 5-6 years. The result is that there is still no instrument that has validity suitable for children aged 5-6 years. Research by Staples, et. al. (2021) tried to prove the effectiveness of the Test of Gross Motor Development - 3 instrument for children with disabilities and non-disabilities. The results of the study prove that the TGMD-3 is effective for students with disabilities and non-disabilities. The TGMD-3 instrument is an instrument specifically for children aged 3-10. It is considered the most effective instrument in measuring the basic movement skills of a child or student (6). In addition, there is an instrument developed by Nugroho, et. al. (2024), proving that the

instrument he developed can have an impact on physical education, sports, and rehabilitation.
Several test instruments have been published with their respective characteristics. Each test instrument has its own strengths and weaknesses. This occurs due to differences in the environment in each region (16). The emergence of different perceptions is the reason for the positive and negative sides seen in every test instrument that develops. The role of researchers is needed in providing recommendations or insights related to variations of these instruments. Thus, physical education teachers who want to apply one of these instruments, will be facilitated through the recommendations or insights that have been given.
This study has limitations in the research process that has been carried out. The limitation is that researchers only limit the range of years for the last five years. This results in limited results obtained, and allows for research bias. It is possible that higher quality research has developed over the last five years. Furthermore, this study only used one database, SCOPUS. The database is limited to only one, resulting in less exploration of research data. The results obtained certainly cannot be optimized.
The researcher recommends that the limitations that exist in this study, be able to be resolved through the latest research in the future. Through this, the results obtained will be more comprehensive and provide more holistic insights.

CONCLUSION

In the past two decades, the advancement of assessment tools for children's fundamental movement skills has demonstrated considerable progress in the realm of physical education. The diverse instruments created have significantly enhanced the assessment of children's motor development in a more systematic and quantifiable way. Nonetheless, empirical evidence indicates that no singular instrument exists that is genuinely universal and readily adaptable to all educational environments. Certain instruments are beneficial for specific age groups or conditions; nevertheless, their implementation is frequently hindered by external variables, including inadequate infrastructure, diverse student characteristics, and variations in the educational environment.
These findings highlight the necessity for a more adaptable methodology in the future development of fundamental movement assessment tools. The proposed instruments should fulfill validity and reliability criteria while also addressing practical considerations, including ease of administration, adaptation to diverse facility settings, and alignment with the requirements of educators in the field. The constraints of this investigation, particularly regarding temporal scope and data sources, must be acknowledged as elements that influence the analytical depth. As a result, additional study is strongly advised to investigate the creation of instruments that are inclusive, pragmatic, and capable of addressing genuine difficulties in the realm of physical education. Consequently, it is anticipated that a tool can be developed that is both scientifically precise and adaptable to diverse educational settings.

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