



Analysis of Physical Literacy Measurement in Physical Education for Early Childhood

Feida Noorliala Istiadah¹, Rahmat Permana*²

¹ Guidance and Counseling Department, Faculty Of Teaching and Education, Universitas Muhammadiyah Tasikmalaya, Tasikmalaya, Indonesia

² Primary School Teacher Education Department, Faculty Of Teaching and Education, Universitas Muhammadiyah Tasikmalaya, Tasikmalaya, Indonesia

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Abstract

The problem and research question in this study is how to measure Physical Literacy (PL) skills, especially in early childhood, especially since teachers' perceptions of PL are still limited to theories and concepts. This article aims to analyze PL measurement tools for early childhood, as library material for AUD teaching staff. The research approach used was a literature review. This approach was chosen because the data collected was secondary data. Data collection is done by determining keywords which are then searched through reputable scientific databases. The data that has been obtained is analyzed using a two-themed approach, namely PL Assessment in Concept and Practice by sorting out Scopus Q1 reputable international journals and well-known publishers. The results of the analysis show that practically there are 5 journals and 2 journals conceptually for early childhood in the age range category 8-12 years so that it can be called big children or later childhood. While in early childhood the research that develops is still on the discussion of concepts, characteristics and how teaching teachers understand to better understand the concept of PL as a whole.



*Corresponding email : rahmat.pgsd@umtas.ac.id

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INTRODUCTION

Physical Literacy (PL) conceptually refers to individuals who have the motivation, confidence, physical competence, knowledge and understanding to assess and take responsibility for their engagement in lifelong physical activity (IPLA, 2019). There are four elements of literacy: motivation, confidence, physical competence, knowledge and understanding. Motivation and confidence fall under the affective domain which is aimed at individuals who have high enthusiasm and enjoyment in doing physical activity as part of their daily life (Edwards et al., 2018; Shearer et al., 2018, 2021). While PL has been identified as an overarching guiding framework and goal for policy makers for quality physical education curricula (UNESCO, 2015). The lack of empirical evidence linking PL to physical fitness outcomes in early childhood is characterized by the lack of valid and reliable measurement (Cairney et al., 2018; Dudley et al., 2017). In part, this may be due to the difficulty in defining the concept, the appropriateness of assessment at the early childhood level.

The early childhood level requires a teacher who is not only limited to transferring knowledge, but also at every opportunity must be able to keep up with developments, especially in relation to the science of PL assessment in schools. Because if the PL assessment carried out by the teacher is appropriate for early childhood, it can improve the standards, expectations and profile of PL in learning early childhood movement activities which have an impact on children's physical literacy or physical literacy (Corbin, 2016; Tremblay et al., 2018). PL assessment has the function of mapping individual progress in physical literacy, changing the way physical

learning is viewed (Durdan-Myers et al., 2018; Young et al., 2021). The perspective of early childhood teachers on learning children's motor activities is sometimes partial, separating the physical and psychological, which should not be the case. Physical and psychological are a whole unit in PL so that PL assessment is not only psychomotor aspects. In line with Fathiyati et al., (2022) and Permana & Alfadh (2021) that the term assessment in physical education is not merely a final test, but must be a mapping of children's initial abilities in physical literacy, so the term is called PL assessment not PL test.

The obstacles to implementing PL assessment in early childhood education in Indonesia are still the lack of information about PL measurement tools, the lack of priority given to children's motor learning, and the motivation of teachers to upgrade their knowledge is very limited due to complex teacher administration issues. In line with Van Rossum et al.'s research (2021) teachers' barriers to PL assessment are related to time, space, limited expertise, and difficulties in assessment differentiation. Thus, considering the feasibility of PL measurement tools is essential when determining appropriate use in the context of early childhood education (Barnett et al., 2019).

There are several studies on physical literacy measurement tools based on the search, including the Canadian Assessment of Physical literacy (CAPL) (Longmuir et al., 2018) The Physical literacy Assessment for Youth ((Kreillaars, 2014) Passport for life assessment from (Shearer et al., 2021). The novelty in this article opens the concept of PL that can be measured validly and reliably by referring to reputable international journals and the track record of countries that have implemented PL measurement tools at

the early childhood level. Determination of the theme of analysis in this study focuses on (1) assessment of psychomotor domain PL assessment, (2) assessment of affective domain PL assessment, (3) assessment of cognitive domain PL assessment.

METHODS

The research method used in this article is a literature review. The justification for choosing the process is that the researcher will collect information from previous studies on physical literacy assessment. The literature review will organize the data collected, identified, and presented in a narrative format (Karlina Sanenek et al., 2023). The research results on physical literacy measurement tools will be able to fill in the results of the previous study. The data collected is secondary data which will be analyzed for content. Researchers limit data searches for information collection through reputable international journals recognized by the Ministry of Education and Culture, including; Scopus, Elsevier, Thomson Reuters, Springer, Taylor and Francis. The keywords of the data collection process are physical literacy, assessment, and measurement tools. Not all sources from journal articles were used; there was a sorting process with a theme approach. The theme in question consists of two aspects, namely conceptual and practical PL assessment for early childhood.

The analyzed literature was filtered according to the article's main topic, which was related to physical literacy assessment measurement tools for early childhood. Twenty-seven international journal articles finally met these requirements. The data analysis used in this study was thematic. The data analysis was done thematically by extracting themes from relevant data (Braun & Clarke, 2023) The data that has been filtered is then analyzed to find information that is relevant to the research topic. Each piece of information was coded for easy identification. Inappropriate articles were minimized to ensure the target analysis was thematic. The same codes were then grouped into a topic.

Data Analysis

The analysis data results on physical literacy assessment in the last five years were 27 articles from reputable international journals. Of the 27 reputed journals, researchers sorted back based on Quartile 1 (Q1) with reputable indexers, namely Scopus, and well-known publishers, namely Springer, Taylor & Francis, Sage, and Human Kinetics. They produced seven relevant journals related to physical literacy assessment for early childhood, practically and conceptually. More details can be seen in Table 1, showing the author, year, method, findings, and indexer.

Table 1. Journal Reputable

No	Author and Year	Title	Method	Findings	Journal
1	Patricia E. Longmuir*, Katie E. Gunnell, Joel D. Barnes, Kevin Belanger1, Geneviève Leduc, Sarah J. Woodruff and Mark S. Tremblay (2018)	Canadian Assessment of Physical Literacy (CAPL) Second Edition: a streamlined assessment of the capacity for physical activity among children 8 to 12 years of age	R&D	CAPL-2 consists of three Physical Competency protocols (plank, Progressive Aerobic Cardiovascular Endurance Run [PACER], Canadian Agility and Movement Skill Assessment [CAMSA]).	BMC Public health, Indeks Scopus Q1, Publisher springer
2	Joel Blanchard, Nadine Van Wyk, Emily Ertel, Anastasia Alpous & Patricia E. Longmuir (2019)	Canadian Assessment of Physical Literacy in grades 7-9 (12-16 years): Preliminary validity and descriptive results	R&D	245 children, this validity study showed that the modified OT assessment (CAPL 789) can be administered among children from grades 7 to 9.	Sport Science, Indeks Scopus Q1, Publisher Taylor&francis
3	Patricia E. Longmuir, Sarah J. Woodruff, Charles Boyer, Meghann Lloyd and Mark S. Tremblay,(2018)	Physical Literacy Knowledge Questionnaire: feasibility, validity, and reliability for Canadian children aged 8 to 12 years	R&D	The results of this study provide evidence of the feasibility, reliability, and validity of the PLKQ as an assessment of physical literacy knowledge and understanding in Canadian children in grades 4, 5, and 6.	BMC Public health, Indeks Scopus Q1, publisher springer
4	Ming Hui Li a, Raymond Kim Wai Sum a, Mark Tremblay(2020)	Cross-validation of the Canadian Assessment of Physical Literacy second edition (CAPL-2): The case of a Chinese population	Cross-validation	This study is the first to apply CAPL-2 to a Chinese population; incorporating a comprehensive OT assessment into a Chinese study, allowing for cross-country comparisons.	Sport Science, Indeks Scopus Q1, Publisher Taylor&francis
5	Aspasia Dania, Vasiliki Kaioglou, Fotini (2020)	Validation of the Canadian Assessment of		The findings of this study provide support regarding	European Physical

No	Author and Year	Title	Method	Findings	Journal
		Physical Literacy for Greek children: Understanding assessment in response to culture and pedagogy	Confirmatory factor analysis (CFA)	the construct validity of the Greek version of the CAPL-2 that will be used to assess OT in children aged 8-12 years.	Education Review, Scopus Q1, Sage Publisher
6	Capio, C.M., Ho, H.C., Chan, C.C. et a (2022)	Understanding and Awareness of Physical Literacy by Early Childhood Educators in Hong Kong – a Mixed-Methods Study	Mixed-Method	Resource availability, teacher training, education policy, family environment, and community environment were found to influence the development of physical literacy in ECD settings..	Early Childhood Education Journal, Scopus Q2, Springer Publisher
7	Hilary A.T. Caldwell Nicole A. Proudfoot,1 Natascja A. DiCristofaro , et.all (2022)	Preschool to School-Age Physical Activity Trajectories and School-Age Physical Literacy: A Longitudinal Analysis	SKIP Study and HOPP study	examine group-based trajectories of device-rated physical activity from preschool years to school age and to determine whether trajectory group membership is associated with school-age PL.	Journal of Physical Activity and Health, Scopus Q2, human kinetic publisher

DISCUSSION

Table 1 shows that physical literacy assessment for early childhood is divided into practical and conceptual themes. First, practically there are five articles from seven journals. Suitable means are how the PL assessment procedure, the validity and reliability of PL, and its development in several countries, namely Canada, China, and Greece. The story of PL in other countries opens a discussion to continue developing PL. In line with Whitehead (Whitehead, 2010), PL should have become necessary in health and physical education from preschool to age school. Table 1 shows that PL assessment in early childhood is in the age range of 8-12 years, which means it is in the later childhood phase (big children).

Practical PL Assessment for early childhood

According to the background in chapter one, the development of physical literacy in Indonesia still revolves around explaining definitions and concepts. A measuring tool must be used to assess physical literacy, especially for students. Several literacy instruments have been developed outside Indonesia. In Canada, such as the Passport for Life formative assessment tool, the Physical Literacy Assessment for Youth (PLAY) Tools, and the Fundamental Movement Skills (FMS) Assessment Tool (Jean de Dieu & Zhou, 2021) All three tests have been validated and can be applied in school institutions. These tests were carried out with rigorous research and development involving sports experts in Canada.

While at the age of 8-12 years, the PL instrument can adopt research (Longmuir & Tremblay, 2016; Young et al., 2021) under the name Canadian Assessment Physical Literacy (CAPL), which was developed based on

Whitehead's concept of physical literacy with coverage of 'physical activity, physical competence, motivation and confidence, and knowledge and understanding' so that this test is more comprehensive to assess physical literacy. CAPL has also tested 963 children in grades 4,5, and 6 (55% girls and 45% boys). However, this test needs to be tested and developed following child development, especially if the research is in Indonesia.

CAPL evolved into CAPL-2 or the second edition of several studies referring to Table 1 consisting of three Physical Competence protocols (plank, Progressive Aerobic Cardiovascular Endurance Run [PACER], Canadian Agility and Movement Skill Assessment [CAMSA]) (Pohl et al., 2019). The tests were revalidated on a larger scale and minimized the bias of the CAPL 1st edition. In Greece, research findings on OT supported the construct validity of the Greek version of the CAPL-2, which will be used to assess OT in children aged 8-12 years (Dania et al., 2020) China was the first country to implement the CAPL-2 in its population, incorporating a comprehensive OT assessment into research in China to make comparisons between countries (Shih et al., 2016)

Despite several assessments, CAPL has become one of the best OT mapping schemes. CAPL was the first to provide valid, reliable data and a comprehensive protocol for monitoring children's OT in the Canadian setting. To identify the desired PL assessment protocol, the CAPL development process involved a thorough curriculum review and extensive consultation with practitioners and researchers, with a final 3-round Delphi method process confirming the final model. No research has absolute truth, CAPL as an instrument still has gaps in terms of usability; some test components still need

to be improved some are failing the physical literacy test that Whitehead intended (Robinson & Randall, 2017). In line with (Edwards et al., 2017, 2018), various methodologies on physical literacy instruments often need to be more suitable for measuring or assessing physical literacy. Conventional and simple methods also cannot measure physical literacy.

Conceptual PL Assessment for early childhood teachers at the early childhood level have yet to understand the concept of PL thoroughly. In Indonesia, it can be interpreted that early childhood is at the PAUD and SD school levels, namely the tiny child and big child categories. In line with recent research from Capio et al. (2022) the availability of resources, teacher training, education policy, family environment, and community environment were found to influence the development of physical literacy in early childhood settings. So that early childhood teachers cannot briefly understand the concept of PL, it needs a transparent and conceptualized training process and stages.

Physical literacy has become an increasingly influential concept in recent decades. From philosophical to practical physical literacy has become part of a research topic. According to Almond & Whitehead (2018) said: "Physical literacy is a fundamental and valuable human capability that can be described as a disposition acquired by human individuals encompassing the motivation, confidence, physical competence, knowledge and understanding that establishes purposeful physical pursuits as an integral part of their lifestyle." Based on the explanation above, physical literacy is a fundamental and valuable human capability that can be described as a disposition acquired by an individual that includes motivation, confidence, physical competence, knowledge, and

understanding that establishes physical goals as an integral part of their lifestyle.

CONCLUSION

Practical PL assessment for early childhood is in the age range of 8-12 years, so it can be called big children or later childhood. Whereas in early childhood, the research that has developed is still on the discussion of concepts, characteristics, and how the teaching teacher understands better to understand the concept of PL as a whole. The implications of this research as a reference for teachers and parents who have early childhood to understand better children's physical activity during their development can be measured using valid and reliable assessments. For future researchers, as an opening to research PL assessment in early childhood with a representative sample and assessment development methods to be tested for acceptability in Indonesian children.

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