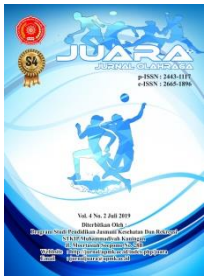
JUARA: Jurnal Olahraga

E-ISSN 2655-1896 ISSN 2443-1117

https://doi.org/ 10.33222/juara.v9i1.3755



PHYSICAL LITERACY LEVEL IN EARLY CHILDHOOD: USING THE PL-C QUEST INSTRUMENT

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Article Info

Article History:

Received Januari 2024
Approved Februari 2024
Published Maret 2024

Keywords:

physical literacy, early childhood, PL-C Quest, Early childhood education

Abstract

The physical literacy level of early childhood must be known to determine appropriate intervention in the future. This research will reveal the level of physical literacy of young children using a survey method. A total of 105 children were involved in this research from various types of formal and non-formal early childhood education services. Sampling used convenience sampling to maintain the code of ethics for research in early childhood. The PL-C Quest instrument is used to measure the physical literacy level of early childhood. The data is processed descriptively, then categorization is made for the measurement results. The results reveal that the physical literacy level of boys is the highest compared to girls. The level of physical literacy in all domains for boys is in the medium category, while in the physical and psychological domains for girls is in the low category and the social and cognitive domains are in the medium category. These results can be used as a basis for creating intervention programs to increase physical literacy in early childhood education.

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INTRODUCTION

Childhood is the ideal time to set the stage for them to become a “physically literate” individual. Physical literacy includes engaging in complex movement experiences for children that have the potential to encourage an active and healthy lifestyle in the future (Margaret Whitehead, 2010). Learning children's appropriate basic movement skills in early childhood education settings and their understanding of movement vocabulary can help them control their bodies and build motor skills that will increase the likelihood of their future participation in physical activities (Houser et al., 2018). Several physical education experts point out the importance of fostering the development of physical literacy in early childhood and providing these opportunities through program interventions that are in line with developmental appropriate practice in the early childhood education environment (Porter et al., 2022).

This is logical considering that there is a good relationship between a physically active lifestyle and various health indicators that are directly related to physical literacy (Hyndman & Pill, 2018). Several countries have begun to incorporate physical literacy constructs into their education systems (Spengler, 2015); however, global consensus regarding the definition of physical literacy is still lackingand a recent systematic review concluded that little empirical research assessing physical literacy has been conducted to date (Edwards et al., 2017). Due to the limited amount of objective data regarding physical literacy which is measured through assessment instruments (Tremblay & Longmuir, 2018).

Assessment and evaluation are very important in the fields of education and health, especially regarding the assessment of physical literacy (Green et al., 2018). However, so far several studies have revealed that measuring physical literacy in children is only seen from the assessment of physical fitness and physical skills (Rotz et al., 2020). Of course, this is controversial for the reason that instead of measuring just one component, namely, physical fitness in physical education classes, we should assess physical literacy, which is a broader, more holistic construc (Telford et al., 2021).

According to (Essiet et al., 2021), future research should investigate measures of physical literacy, treated as an aggregate measure of all the elements/domains that compose it, and health outcomes, including physical, social, and cognitive health. This measure could also help clarify whether increases in overall levels of physical literacy are indeed associated with higher levels of physical activity and vice versa. It would be very useful to have tools that could track physical literacy from childhood, to see how levels of physical literacy change over time and life circumstances.(Wainwright et al., 2020). Of course, these measuring tools must take into account contextual sensitivity and are only suitable for use at certain ages, to provide an idea of the level of physical literacy. One of them is a physical literacy measuring tool for children developed by (Lisa M. Barnett et al., 2020)that is Physical Literacy in Children Questionnaire (Physical Literacy-C Quest).

PL-C Quest is a physical literacy measuring tool designed for children by self-assessing the physical activities carried out by children. The PL-C Quest was developed to inform decision-making about programs and interventions for individual children and groups of children (e.g. within schools), and about policies for populations of children (e.g. across schools regionally or nationally). Therefore, arguments regarding the validity of data for this purpose must be supported by an evaluation of various sources of evidence that differ according to the culture of each country (Lisa M. Barnett et al., 2022).

Because little information is known about children's physical literacy levels and because monitoring and supervision is needed

to assess interventions and trends, the aim of this paper is to determine the physical literacy levels of children in early childhood education settings with a sample located in West Java, Indonesia uses the PL-C Quest children's physical literacy measurement instrument.

METHODS

Survey research was conducted in several types of early childhood education services (formal and non-formal) in the cities of Bandung and Cimahi with a total of 105 children consisting of 52 boys and 53 girls. Sampling was carried out using convenience samplingconsider ethical considerations in research with early childhood according to (Berman et al., 2016), namely 1) permission from parents and school; 2) To ensure children are protected during research, clear child protection protocols are implemented. Protocols can address issues such as what to do if a child appears to be experiencing stress while undertaking research; and 3) how to detect signs of distress indirectly when children are given measurement instruments.

The instrument for measuring physical literacy uses the Physical Literacy in Children Questionnaire (Physical Literacy-C Quest) for children aged 4-8 years which has been developed (Barnett et al., 2020). Early childhood physical literacy perceptions use the PL-C Quest which has been developed by (Barnett et al., 2020) which aims to measure self-reports of physical literacy perceptions of children aged 4-8 years. This PL-C Quest instrument has four measurement aspects, namely Physical - 12 items, Psychological - 7 items, Social - 4 items and Cognitive - 7 items which are presented through colored cardboard themed image options. These four aspects already have a reliability value of $\alpha = 0.92$; physical: $\alpha = 0.82$; psychological: $\alpha = 0.75$; social: $\alpha = 0.72$; cognitive: $\alpha = 0.77$ (Barnett et al., 2022). The researcher has received official permission from Sport Australia as the License holder of the PL-C Quest Instrument to use it directly in Indonesia even though it is felt that many image items are not in accordance with Indonesian culture.

The procedure for measuring physical literacy using the PL-C Quest includes early childhood education class teachers being given training to understand how to use the PL-C Quest instrument, then the children are interviewed by class teachers at each school using the PL-C Quest instrument. An example of an image of the PL-C Quest instrument is available in Figure 1. The research results were processed descriptively and then classified into scale measurements in the categories Low, Medium and High.(Potato, 2023).

Figure 1. PL-C Quest instrument

FINDINGS AND DISCUSSION

Findings

The calculation results descriptively describe the different levels of physical literacy between boys and girls. Figure 1 explains in detail the graph of the average score for physical literacy in general from four categories, namely physical, social, psychological and cognitive.

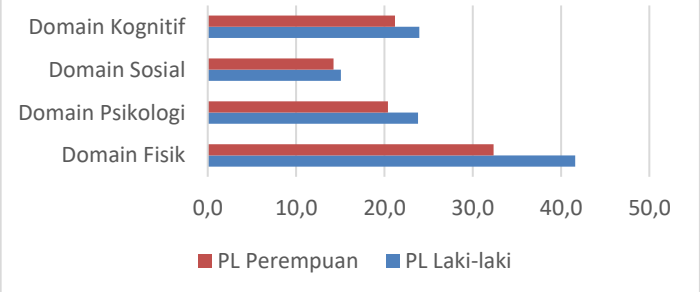

Figure 1. Obtained average scores for children's PL

Based on Figure 1, it can be seen that the average PL score obtained from eachcategories

namely physical, social, psychological and cognitive show that men are higher than women. In the physical domain, the average PL score was 41.6 while for women it was 32.4; the psychology domain obtained an average PL score of 23.8 while for women it was 20.4; the social domain obtained an average PL score of 15.1 while for women it was 14.2; and the cognitive domain obtained an average PL score of 23.9 while for women it was 21.2. So that the results of calculating a child's physical literacy score are meaningful, categorization is carried out (High, Medium, Low) using the High category formula:X > M+1SD; Medium: M-1SD < M +1SD; Low: X<M-1SD. So the following results were obtained which are presented in table 1.

Table 1. Category of PL Score acquisition

	Man	Category	Woman	Category
Physical Domain	41.6	Currently	32.4	Low
Psychology Domain	23.8	Currently	20.4	Low
Social Domain	15.1	Currently	14.3	Currently
Cognitive Domain	23.9	Currently	21.2	Currently

From table 1 it can be seen that the average physical literacy score for boys was in the medium category for the four physical literacy domains. Meanwhile, girls are only in the social and cognitive domains in the medium category, while in the physical and psychological domains they are in the low category.

Discussion

Physical literacy is often associated with children's physical activity patterns, although the two must be differentiated (Green et al., 2018; Whitehead, 2019). Physical literacy has become the main focus of physical activity and, as such, physical literacy can be said to be a precursor to physical activity, and is also developed through physical activity (Shearer et al., 2018). The results of this study reveal that boys' physical literacy gains are higher than girls'. These results can be related to the physical activity patterns carried out by different children. In particular, this crucial gender asymmetry has been observed in the play and physical activity levels of primary school-aged girls and boys (Marios, 2021). Research and observations have shown that factors such as preferences, culture, and physical development influence differences in physical activity patterns between the sexes. Previous studies have found that boys are generally more active than girls, but the focus has been more on differences in mean levels or proportions above threshold rather than on the full distribution of activity across all intensities (Børve & Børve, 2017; Dudley et al., 2018; Martínez-andrés et al., 2017).

Several reasons were revealed in research to confirm differences in physical activity and gender. Research (Metcalfe, 2019) revealed that this difference is the result of societal construction which states that sporty men and aesthetically attractive (but not 'sporty') women hold the most power in influencing social practices in carrying out physical activity. The focus of the issue of gender bias revolves around the belief that this interaction is a characteristic of the different behavior that girls and boys have, due to their different abilities and movement skills to support physical activity in early childhood education environments (Bartolom & Rodr, 2020). In line with this, research (Mayeza, 2016) revealed that boys tend to gravitate towards more rugged and strength-oriented activities, such as running, playing ball, or playing with toys that involve construction. On the other hand, girls may prefer activities that

focus on creativity, for example playing with dolls, drawing or role playing. Although boys and girls can engage in physical activity at the same intensity, there is a trend that boys tend to be more energetic and aggressive in play, which can result in higher intensity physical activity (Kretschmer et al., 2023).

Teachers' views of masculinity and femininity are still felt and can create an environment that supports constructive movement experiences in boys and girls. This attitude towards teaching/learning encourages motivation towards physical activity and creates a motivational climate involving movement tasks which can be different for boys and girls (Parri et al., 2020). Apart from that, the physical activity patterns of boys and girls in early childhood education environments can also be influenced by social interactions. Boys may be more likely to engage in competitive group play, while girls may prefer activities involving cooperation and more intimate social interactions that reflect a girl's femininity (Olofsson, 2003). Motor skills can also be a factor in these differences, boys and girls may have different levels of gross and fine motor development. Boys tend to have better gross motor skills, while girls may have an advantage in fine motor skills, such as writing or knitting (Goodway et al., 2019).

This research does not specifically differentiate between the basic motor skills of boys and girls, so the results are unable to reveal specific differences in children's physical literacy and motor skills. Apart from that, the limitation of this research is the use of the PL-C Quest instrument which has not been adapted to the culture in Indonesia. Therefore, for future research, it is in accordance with what is recommended (LM Barnett et al., 2022)to be able to adapt the PL-C Quest instrument to the circumstances and culture in each country, including Indonesia.

This research reveals that differences in physical activity patterns between boys and girls in early childhood education environments reflect differences in children's physical literacy in motivation, self-confidence, mastery of movement skills and knowledge about the importance of movement. It is important for educators and caregivers to understand the factors that influence these differences and design inclusive learning environments that allow all children to engage in physical activity in ways that meet their needs and interests (Evans et al., 2023). Thus, early childhood education can be a place that supports the development of children's physical literacy as early as possible, regardless of their gender. Therefore, it is important to adopt an inclusive educational approach in developing children's physical literacy. This means not only paying attention to the differences between boys and girls, but also understanding that each child has their own unique needs and potential (Meland et al., 2015). Teachers must pay attention to the individual needs of each child, facilitating the overall development of their physical skills.

CONCLUSION

Measuring the level of physical literacy in early childhood using the PL-C Quest instrument revealed that there are differences in the level of physical literacy between boys and girls. The assumption that factors such as preferences, culture, and physical development influence differences in physical activity patterns between the two sexes. In addition, the hierarchical pattern in the movement learning process carried out by class teachers in early childhood education environments makes it possible to convey the concepts of masculinity and femininity between children, so that there are different limits to the activeness of boys and girls in carrying out physical activities.

Of course, this is a new challenge for teaching movement in the early childhood education environment so that it always provides equal opportunities for boys and girls to move freely and in a structured way to be able to support children's motivation, self-confidence, motor skills and knowledge in doing things. physical activity throughout life.

Of course, the promotion of physical literacy can be carried out in the early childhood education environment by promoting the concept of equality, there is no difference between boys and girls. The results of this research can then also be used as a basis for creating a more specific movement learning intervention in early childhood education.

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