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Descriptive Study on the Physical Literacy of Indonesian Children Aged 6-8 Years: Baseline Normative Data and Interpretation Guide Using the PL-C Quest

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Abstract

Introduction: Physical literacy (PL) is recognized as a fundamental concept for encouraging children to engage in lifelong physical activity and achieve healthy outcomes. However, in Indonesia, normative data and interpretive criteria for assessing children's physical literacy are lacking. The Physical Literacy in Children Questionnaire (PL-C Quest) is a validated pictorial self-report tool, but no interpretation guidelines exist for its use in Indonesian contexts. **Objectives:** This study aimed to establish baseline normative data and preliminary interpretive guidelines for the PL-C Quest in Indonesian children aged 6–8 years. **Method:** A cross-sectional descriptive study was conducted with 50 children (19 boys, 31 girls) aged 6–8 years, recruited from Indonesian elementary schools. Each child completed the 30-item PL-C Quest, which uses cartoon illustrations to assess perceived physical literacy across four domains (Physical, Psychological, Social, Cognitive). Descriptive statistics (means, standard deviations, ranges, percentiles) were calculated for total and domain scores. Preliminary percentile-based categories were developed to interpret individual scores. **Result:** The mean overall PL-C Quest score was 90.22 ± 11.74 (out of 120; ~75.2% of the maximum), with a median of 92 and range of 59–112. Domain scores (as percentages of their maximums) were highest in the Social domain (79.3%), followed by Physical (77.0%), Psychological (72.4%), and Cognitive (71.6%). Five interpretive categories were defined: Very High, ≥102 points, High, 97–102, Moderate, 80–97, Low, 71–80, and Very Low, ≤71. Boys scored marginally higher on average than girls (91.53 vs. 89.42), and scores showed a slight decline with increasing age (mean for 6-year-olds 98.67; 7-year-olds 90.84; 8-year-olds 87.20). **Conclusion:** This study provides the first normative data on physical literacy for Indonesian children, revealing generally high perceived physical literacy with particular strengths in social interaction and physical competence. Areas for improvement include the cognitive and psychological domains. The new percentile-based categories offer educators and practitioners practical benchmarks for interpreting PL-C Quest scores and identifying children who may benefit from targeted interventions. These findings supply a crucial baseline for developing physical literacy programs and future research in Indonesia.

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INTRODUCTION

Physical literacy has been acknowledged as a fundamental idea in encouraging children to engage in physical activity throughout their lives and achieve healthy outcomes (Whitehead,

2019). Physical literacy is a comprehensive concept encompassing physical, psychological, social, and cognitive aspects of human development (Corbin, 2014). It is defined as "the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life" (Sum et al., 2018). The Australian Physical Literacy Framework (APLF) operationalizes this concept through four interconnected domains: physical (skills and fitness through movement), psychological (attitudes and emotions toward movement), social (interaction with others in physical activities), and cognitive (understanding how, why, and when to move) (Keegan et al., 2019). This framework provides a structured basis for understanding and assessing physical literacy in children (Sport Australia, 2019).

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International studies have shown that physical literacy scores can vary significantly across populations. For instance, Chinese children aged 4–12 demonstrated different domain score patterns compared to Australian children, underscoring the importance of developing culture-specific normative data (Zhang et al., 2021). Moreover, establishing clear interpretive guidelines is crucial for translating assessment scores into meaningful categories to guide interventions and program development. Indonesia, with its diverse cultural background and unique educational context, requires specific attention to physical literacy development (Irmansyah et al., 2021). With over 50 million school-aged children, it is essential to establish appropriate assessment tools and interpretation standards to promote healthy, active lifestyles and support national public health objectives.

Therefore, this study aimed to: (1) establish preliminary normative data for physical literacy in Indonesian children aged 6–8 years using the PL-C Quest, (2) develop interpretive guidelines for score classification, (3) examine physical literacy profiles across the four domains, and (4) investigate potential differences based on gender and age. The findings provide a foundation for future large-scale studies and will contribute to the development of culturally appropriate physical literacy assessment and intervention programs in Indonesia (Ma'mun et al., 2022).

METHOD

A cross-sectional descriptive study was conducted to establish preliminary normative data for physical literacy assessment in Indonesian children. This study design was chosen as appropriate for generating baseline descriptive statistics and developing interpretive guidelines for a population where such data did not previously exist.

Participant: Fifty children aged 6–8 years were recruited through purposive sampling from local elementary schools in Bandung, Indonesia. There were 19 boys (38%) and 31 girls (62%), with a mean age of 7.24 ± 0.59 years. The age distribution of the sample was 3 children aged 6 (6%), 32 children aged 7 (64%), and 15 children aged 8 (30%). All participants were enrolled in elementary school and completed the study in full.. The mean age was 7.24 ± 0.59 years. Inclusion Criteria: Children aged 6-8 years, Endrolled in elementary school, Able to understand and respond to pictorial questionnaire items, Parental/guardian consent and child assent. Exclusion Criteria: Children with diagnosed developmental disabilities that would impair questionnaire comprehension, Significant physical disabilities that would affect physical literacy self-perception, Absence on data collection days.

Psychometric evidence indicates that the PL-C Quest is a reliable and valid measure of children's perceived physical literacy, reporting ICC = 0.83 and α = 0.92 in Australian samples and subsequent evaluation across other cultural settings (Barnett et al., 2023). The PL-C Quest is a 30-item pictorial self-report instrument developed by the Australian Sports Commission and validated for children aged 4-12 years (Barnett et al., 2022). The questionnaire uses cartoon rabbit characters in various physical activity scenarios, with children selecting between two options (able vs. less able) and indicating their level of similarity to the chosen character on a 4-point scale (1 = not like me at all, 4 = very much like me).

The 30 items are distributed across four domains according to the Australian Physical Literacy Framework: Physical Domain: 12 items assessing movement skills, coordination, and physical competence (maximum score: 48). Psychological Domain: 7 items evaluating motivation, confidence, and emotional responses to physical activity (maximum score: 28). Social Domain: 4 items measuring interaction and cooperation in physical activity contexts (maximum score: 16). Cognitive Domain: 7 items assessing knowledge and understanding of

physical activity and movement (maximum score: 28). The total possible score ranges from 30 to 120, with higher scores indicating greater perceived physical literacy.

Data Collection Procedures: Data collection was conducted in school settings during regular school hours. Trained research assistants administered the questionnaire individually to each child in a quiet, comfortable environment. The pictorial format was presented on tablets/printed materials, and research assistants read the instructions aloud to ensure comprehension. Each administration took approximately 15-20 minutes per child.

Data Analys: Data analysis was performed using descriptive statistics to establish normative benchmarks. The following analyses were conducted:

Tabel 1 Normatif Benchmark

Descriptive Statistics	-Means, standard deviations, medians, ranges, and percentile distributions for total scores and domain scores -Frequency distributions for demographic variables
Domain Analysis	- Calculation of mean scores and percentages of maximum possible scores for each domain - Identification of relative strengths and areas for improvement across domains
Comparative Analysis	-Gender-based comparisons using descriptive statistics -Age-group comparisons across the 6-8 year range
Interpretive Categories	-Development of preliminary score interpretation categories based on percentile distributions -Establishment of cut-off points for classification purposes
Data Quality Checks	-Assessment of missing data patterns -Verification of score calculations and consistency checks

Descriptive statistics were presented as means ± standard deviations, and analyses were carried out using the relevant statistical software. Inferential statistical testing was not the main emphasis of this study due to its preliminary and descriptive character, although effect sizes and practical significance were considered in interpreting group differences.

Ethical Considerations: This study was conducted in accordance with ethical guidelines for research involving children. Prior to data collection, child assent and parental agreement were sought for each participant. Participants were made aware that their participation was entirely optional and that they might leave at any moment without incurring any fees. All information was securely kept and anonymised in accordance with data protection guidelines.

RESULT AND DISCUSSION

Result

Participant Feature: Fifty kids finished the PL-C Quest test. The sample had a mean age of 7.24 ± 0.59 years, with 19 boys (38%) and 31 girls (62%). The age distribution was: 6 years (n=3, 6%), 7 years (n=32, 64%), and 8 years (n=15, 30%). Every participant filled out the questionnaire without any missing information. Overall Physical Literacy Scores: The majority of kids scored

higher than the midpoint of the scale, as seen by the near-normal distribution and minor negative skewness of the overall physical literacy scores.

Table 2 displays the descriptive data for the overall physical literacy scores.

Statistic	Value
Mean ± SD	90.22 ± 11.74
Median	92.00
Range	59 - 112
Percentage of Maximum Score	75.2%
25th Percentile	80.00
50th Percentile	92.00
75th Percentile	99.00
90th Percentile	104.00
95th Percentile	105.00

The average overall score of 90.22, which is 75.2% of the highest possible score of 120, shows that Indonesian children in this sample typically thought they had good physical literacy abilities in all of the evaluated domains. Domain-Specific Analysis: Different patterns of perceived competence across various facets of physical literacy were found by analysing the four physical literacy domains.

Table 3 presents the detailed domain-specific results.

Domain	Items	Max Scores	Mean ± SD	Median	Range	% of Max	25th-75th Percentile
Physical	12	48	36.94 ± 5.70	39.00	24-46	77.0%	33-41
Phychological	7	28	20.28 ± 4.14	22.00	11-27	72.4%	18-23
Social	4	16	12.68 ± 2.88	13.00	4-16	79.3%	11-15
Cognitive	7	28	20.06 ± 4.25	21.00	12-28	71.6%	16-22

The domain analysis revealed that the Social domain achieved the highest percentage of maximum score (79.3%), followed by the Physical domain (77.0%), Psychological domain (72.4%), and Cognitive domain (71.6%). This pattern suggests that Indonesian children in this sample perceived themselves as particularly competent in social interactions during physical activities and in their physical movement capabilities, while showing relatively lower perceived competence in psychological and cognitive aspects of physical literacy.

Preliminary Interpretive Guidelines: Based on the percentile distributions of the total scores, preliminary interpretive categories were established to provide practical guidance for educators and practitioners. These categories are presented in Table 4.

Table 4. Initial Interpretive Classifications for Total Physical Literacy Results

Category	Score Range	Percentile Range	Interpretation
Very High	≥ 102	≥ 95th percentile	Exceptional physical literacy perception
High	97-102	75th-94th percentile	Above average physical literacy
Moderate	80-97	25th-74th percentile	Average physical literacy
Low	71-80	6th-24th percentile	Below average physical literacy
Very Low	≤ 71	≤ 5th percentile	Significantly low physical literacy

A framework for analysing individual scores and identifying kids who can profit from focused physical literacy programs is provided by these categories. Gender Differences: There were little variations in physical literacy scores across domains when boys and girls were compared.

Table 5 summarizes the gender-based analysis.

Domain	Boys (n=19) Mean ± SD	Girls (n=31) Mean ± SD	Difference
Total PL	91.53 ± 13.21	89.42 ± 10.66	+2.11
Physical	37.00 ± 6.23	36.90 ± 5.35	+0.10
Psychological	20.74 ± 4.49	20.00 ± 3.89	+0.74
Social	13.00 ± 2.85	12.48 ± 2.88	+0.52
Cognitive	20.22 ± 4.31	19.84 ± 4.21	+0.38

Boys showed slightly higher mean scores across all domains, with the largest differences observed in the Psychological domain (+0.74 points) and Social domain (+0.52 points). However, these differences were small in magnitude, suggesting that gender differences in perceived physical literacy are minimal in this age group.

Age-Related Patterns: Analysis across the 6-8 years age range revealed an interesting pattern of decreasing scores with increasing age, as shown in Table 6.

Table 6 Physical Literacy Scores by Age Group

Age Group	n	Mean ± SD	Range	Median
6 years	3	98.67 ± 5.73	92-106	100.00
7 years	32	90.84 ± 12.55	59-112	92.50
8 years	15	87.20 ± 9.62	72-104	88.00

The trend shows that 6-year-olds had the highest mean scores (98.67), followed by 7-year-olds (90.84) and 8-year-olds (87.20). This pattern may reflect developmental changes in self-perception accuracy or increasing awareness of physical limitations as children mature and gain more experience in physical activities. The distribution of total physical literacy scores showed several notable characteristics in table 7. The relative performance across domains revealed that Indonesian children showed in table 8.

Table 7. Score Distribution Characteristics

Range	The 53-point range (59-112) indicates substantial individual variability in perceived physical literacy
Central Tendency	The close alignment between mean (90.22) and median (92.00) suggests a relatively symmetric distribution
Skewness	Slight negative skewness indicates that more children scored above the mean than below
Practical range	90% of children scored between 72-104, providing a practical range for typical performance

Table 8. Domain Interrelationships

Strongest perceived competence	in Social domain (79.3% of maximum)
Good physical competence	perception in Physical domain (77.0% of maximum)
Moderate confidence	in Psychological aspects (72.4% of maximum
Areas for development	in Cognitive understanding (71.6% of maximum)

This pattern suggests that while children feel confident in their physical abilities and social interactions during physical activities, there may be opportunities to enhance their understanding of movement concepts and strengthen their psychological connection to physical activity.

Discussion

This study provides the first set of normative data for physical literacy assessment in Indonesian children aged 6–8 years using the PL-C Quest. The findings indicate that, overall, children in this sample have a relatively high perception of their physical literacy. The average total score was about 75% of the maximum possible, suggesting that on the whole, these Indonesian children view themselves as quite capable across the physical, psychological, social, and cognitive domains of physical literacy. This overall level is broadly comparable to reports from other countries using similar age-appropriate physical literacy assessments, though direct comparisons are limited by differences in instruments and cultural contexts (Barnett et al., 2022; Zhang et al., 2021). Importantly, within this generally positive picture, we identified distinct patterns across the four domains: the children's strongest self-reported domain was the social domain, followed by the physical domain, while the psychological and cognitive domains were relative areas for improvement.

In our domain-specific results, the Social domain emerged as the highest scoring area. This suggests that children felt very confident in their ability to interact, cooperate, and participate with others during physical activities. One plausible explanation is the influence of cultural factors: Indonesian culture strongly emphasizes community, cooperation, and social harmony. Many traditional Indonesian games and physical activities are group-oriented and encourage teamwork and social interaction (Irmansyah et al., 2021). This cultural environment may foster children's confidence and competence in social aspects of physical activity from an early age. The Physical domain was the second strongest, indicating that children perceive themselves as quite competent in fundamental movement skills, coordination, and overall physical abilities. This is an encouraging finding, as a solid foundation of motor skills and physical competence is crucial for ongoing participation in physical activity and sports. It suggests that by ages 6–8, many children have developed adequate motor skills or at least confidence in their physical capabilities, which can be attributed to both school physical education and active play opportunities.

In contrast, the Psychological and Cognitive domains had lower scores, highlighting important areas where children's physical literacy could be further developed. The

psychological domain encompasses motivation, confidence, enjoyment, and emotional regulation related to physical activity. The somewhat lower scores here may indicate that although children feel physically capable, some are less confident or intrinsically motivated, or they might experience anxiety or frustration when faced with physical challenges. This finding underscores the need for physical education programs to place greater emphasis on building intrinsic motivation and positive emotional experiences around physical activity. Strategies might include providing a supportive, fun environment, offering positive feedback, and teaching children how to cope with both success and failure in active play, thereby fostering resilience. The cognitive domain was the lowest scoring area, suggesting that many children have a limited understanding of movement concepts, health principles, and the "why and how" of physical activity. This likely reflects the current focus of early physical education in Indonesia, which may prioritize active play and motor skill development but give less attention to explicitly teaching concepts like rules of games, body mechanics, strategy, or health knowledge. It highlights an opportunity to better integrate conceptual learning into the curriculum. For instance, elementary physical education could incorporate simple lessons on why physical activity is important for health, basic knowledge of how the body moves (in an age-appropriate way), and encourage critical thinking about physical activities (such as asking children why we warm up or how to play a game fairly). Strengthening the cognitive aspect of physical literacy could help children not only do activities but also understand them, which is important for sustaining engagement long-term.

The development of interpretive categories for the PL-C Quest scores is a key practical contribution of this study. These percentile-based categories (from Sangat Rendah to Sangat Tinggi) provide educators and health professionals with a straightforward way to interpret a child's score relative to peers. For example, if a child's score falls into the Rendah (low) category, teachers or coaches can recognize that this child perceives their physical literacy to be below most of their peers, and they may benefit from additional support or individualized attention. In our results, about 5% of children scored in the Sangat Rendah range and roughly 6–24% in the Rendah range; these groups might warrant the most intervention. On the other hand, children in the Tinggi or Sangat Tinggi (high and very high) categories could be encouraged to take on leadership roles or serve as peer models during group physical activities, given their strong self-efficacy. Those in the Sedang (moderate/average) category represent the typical range and should continue to be engaged with well-rounded programming that can further enhance all domains of physical literacy. Overall, these categories turn raw scores into meaningful groupings, which can guide decision-making in educational and recreational settings. They are preliminary, but they offer a valuable starting point for practitioners to interpret PL-C Quest results until more extensive normative data are available.

The analysis of gender differences revealed minimal disparities between boys and girls in this age group. On average, boys scored only slightly higher than girls on the PL-C Quest, with differences on the order of fractions of a point within each domain. This suggests that at ages 6–8, boys and girls in Indonesia develop perceived physical literacy at a very similar pace. This finding is notable because some studies in older cohorts or other cultural contexts have reported gender gaps (often showing boys scoring higher in physical competence or confidence) by later childhood or adolescence. The lack of a large gap in our young sample might reflect Indonesia's relatively inclusive approach in coeducational elementary physical education, where boys and girls largely participate together in the same activities. It may also be that at this early age, societal gender stereotypes related to physical activity are not yet strongly internalized by children. In practical terms, the results imply that interventions to improve physical literacy can be designed in a largely unisex manner for young children, focusing on all children's needs rather than differing drastically by gender.

The age-related trend in the data—whereby 6-year-olds scored higher on average than 7- and 8-year-olds—warrants careful consideration. Intuitively, one might expect older children to score higher due to greater experience, but our findings showed the opposite. Several developmental factors could explain this counterintuitive pattern:

Overestimation by younger children: Six-year-olds may have a tendency to give optimistic self-assessments of their abilities (inflating their scores) due to a limited ability to judge their own skill level accurately. As children grow older, their self-assessments typically become more realistic, which could result in slightly lower self-rated scores at ages 7 and 8. Awareness of limitations: With age and experience, children likely face more challenging tasks and competitive situations. Seven- and eight-year-olds might be more aware of skills they have not yet mastered or of peers who perform better, leading them to rate themselves more conservatively. Social comparison: Older children engage in more peer comparison. An eight-year-old is more likely than a six-year-old to compare his or her physical abilities with classmates, which can affect self-perception. If older children see that others can run faster or throw farther, they might judge their own abilities more critically, resulting in a lower self-rating.

This age-related decline in perceived physical literacy suggests that as children mature, they might need support to maintain confidence in their physical abilities. Educational programs should aim to challenge children appropriately without discouraging them. For example, introducing new skills and activities in a progressive manner can help older children continue to feel a sense of accomplishment. It's also important to teach children how to handle competition and comparison constructively, emphasizing personal improvement and effort over direct comparison with peers. In sum, our age analysis highlights the importance of age-tailored approaches: younger children may need basic skill development and broad

encouragement, whereas slightly older children may benefit from activities that build resilience and sustain their confidence as tasks become more demanding.

Our findings carry important cultural and contextual implications for physical literacy development in Indonesia. The high performance in the Social domain is aligned with Indonesia's collectivist culture, which prizes group activities and mutual cooperation. This suggests that leveraging social elements—such as group games, team sports, and cooperative learning—could be a very effective component of physical literacy programs in this context. Children are clearly responding well to social-engagement aspects of physical activity, so maintaining this strength will be beneficial. In contrast, the lower Cognitive domain scores point to a need for curricular adjustments. It appears that current physical education approaches at the elementary level may be emphasizing learning by doing (physical participation) more than learning by understanding. While active participation is essential, adding a layer of cognitive learning could enrich children's physical literacy. Physical education curricula might incorporate short discussions or reflections on what was learned after a game, introduce simple concepts of anatomy or fitness (e.g., "Which muscles do we use when we jump?"), or integrate questions that make children think about strategy ("How can your team work together to score a goal?"). By doing so, we can cultivate not just physically active children but physically literate children who understand and value physical activity.

From a practical standpoint, the results of this study suggest several strategies for strengthening physical literacy in Indonesian children:

Curriculum development: Build upon the existing strengths in the social and physical domains by continuing to encourage cooperative games and skill development. Simultaneously, increase the emphasis on cognitive aspects of movement – for example, include lessons or modules that teach children why physical activity is important and how different movements benefit their bodies. Developing strategies to enhance intrinsic motivation and enjoyment (psychological domain) should also be a curriculum goal.

Teaching strategies: Leverage children's social strengths through cooperative and inclusive teaching methods. Teachers can use team-based activities and peer-learning opportunities to keep students engaged. It is also advisable to implement explicit instruction of movement concepts and health principles in simple, fun ways (such as using stories or visuals to explain concepts like heart health or fair play). Additionally, educators should focus on building psychological resilience – for instance, teaching children how to set personal goals, celebrate improvement, and manage setbacks in physical activities – to bolster confidence and enjoyment.

Assessment and monitoring: Utilize the interpretive categories established in this study to identify children who may need extra support. Regular monitoring of physical literacy (for example, periodic re-administration of the PL-C Quest or similar assessments) can help track progress over time. For children who fall into lower percentile categories (e.g., Rendah or

Sangat Rendah), targeted interventions can be developed, such as mentoring, additional practice sessions, or tailored encouragement. Likewise, children in the higher categories can be given leadership roles or advanced challenges to further their development and keep them engaged.

CONCLUSION

This study established baseline normative data and initial interpretation guidelines for the PL-C Quest in Indonesian children aged 6–8 years. The results indicate that Indonesian children in this age range generally have high perceived physical literacy, achieving about 75% of the maximum possible score on average. Their strengths are most pronounced in the social and physical domains, reflecting confidence in interacting with peers and in fundamental movement skills. Conversely, relatively lower scores in the psychological and cognitive domains suggest that these areas – such as intrinsic motivation, emotional resilience, and conceptual understanding of physical activity – merit additional attention in curricula and programs.

We introduced a set of preliminary percentile-based categories (Sangat Rendah, Rendah, Sedang, Tinggi, and Sangat Tinggi) that practitioners can use to classify children's physical literacy levels. These categories provide practical benchmarks for identifying children who may need extra support (those with low scores) and for recognizing those who could be role models or need greater challenges (those with high scores). Notably, we found minimal differences between boys and girls, indicating that both genders are developing physical literacy at similar rates in early childhood. We also observed a slight decline in self-reported physical literacy with increasing age, highlighting the importance of maintaining young children's confidence and enthusiasm as they grow older.

Overall, this research takes an important first step toward understanding and promoting physical literacy among Indonesian children. The normative data and insights from this study can inform educators, coaches, and policymakers in developing evidence-based strategies that build on children's social and physical strengths while addressing areas for growth in cognitive and psychological domains. By enriching physical education with components that foster understanding, motivation, and positive emotional experiences, Indonesia can work toward nurturing well-rounded, physically literate individuals who are equipped to lead active and healthy lives. Future studies building on these findings – with larger samples, longitudinal tracking, and intervention trials – will be crucial for refining the benchmarks and recommendations provided here, ultimately contributing to the improvement of public health and youth development through physical literacy in Indonesia and beyond.

LIMITATIONS

Several limitations of this study should be noted when interpreting the findings: Sample Size and Generalizability: With a sample of 50 children drawn from a specific region, the results may not be fully generalizable to all Indonesian children. Larger studies with nationally representative samples are needed to create robust norms for the country as a whole. Age Range and Distribution: The age distribution in our sample was uneven (with a majority of 7-year-olds and very few 6-year-olds). This imbalance limits our ability to draw strong conclusions about differences between ages 6, 7, and 8. Future research should include a more balanced number of participants in each age group to better examine age-related trends. Cultural Adaptation: While the PL-C Quest appeared to be well understood by the children in this study, we did not undertake a formal cultural adaptation or validation of the instrument for Indonesia. Conducting a thorough validation (including language and content equivalence, if the tool is translated) would strengthen confidence that the PL-C Quest is measuring physical literacy similarly in Indonesian culture as it does in its original context. Self-Report Nature: The PL-C Quest is a self-report measure of perceived physical literacy. Children's self-perceptions may not perfectly align with their actual skill level or physical activity behavior. In other words, a child might rate themselves high or low in a domain in a way that doesn't fully reflect their true ability or involvement. This inherent limitation means results should be interpreted as perceptions, not objective performance. Cross-Sectional Design: This study was cross-sectional, capturing a snapshot of different children at one point in time. As such, we cannot infer developmental changes or causal relationships. We don't know, for example, how a single child's physical literacy might change from age 6 to 8, or whether certain interventions caused higher scores. Longitudinal studies would be valuable to track how physical literacy evolves as children grow and to identify predictors of positive change.

FUTURE RESEARCH DIRECTIONS

This preliminary study opens several avenues for future research: Large-Scale Validation: Conduct larger, nationally representative studies to establish robust norms across diverse Indonesian populations and regions. Longitudinal Studies: Follow children over time to understand developmental trajectories and the stability of physical literacy perceptions. Intervention Research: Develop and evaluate physical literacy interventions targeting the cognitive and psychological domains. Cultural Validation: Conduct formal cultural adaptation and validation studies of the PL-C Quest for Indonesian contexts. Objective Measures: Combine perceived physical literacy with objective measures of physical competence, physical activity levels, and health outcomes. Teacher and Parent Perspectives: Investigate how teacher and parent perceptions align with children's self-reported physical literacy.

This study establishes the first normative data for physical literacy assessment in Indonesian children aged 6-8 years, providing crucial baseline information for educators,

researchers, and health professionals. Indonesian children demonstrate relatively high perceived physical literacy overall (75.2% of maximum), with particular strengths in social interactions and physical competence domains. The key findings reveal that while Indonesian children feel confident in their physical abilities and social interactions during physical activities, there are opportunities to enhance their understanding of movement concepts and strengthen their psychological connection to physical activity. The Social domain emerged as the strongest area (79.3%), reflecting Indonesia's collectivist cultural values, while the Cognitive domain (71.6%) presented the greatest opportunity for development.

The established interpretive guidelines (Sangat Rendah ≤71, Rendah 71-80, Sedang 80-97, Tinggi 97-102, Sangat Tinggi ≥102) provide practical tools for assessment and intervention planning. These categories will enable educators to identify children who may benefit from targeted support and to monitor progress in physical literacy development. The minimal gender differences and the age-related decline in scores provide important insights for program development. The finding that younger children report higher physical literacy scores emphasizes the importance of maintaining confidence while appropriately challenging children as they develop.

These preliminary normative data and interpretive guidelines represent a significant step forward in physical literacy assessment for Indonesian children. However, the limitations of sample size and geographic scope highlight the need for larger, more comprehensive studies to establish robust national norms. The implications for practice are clear: Indonesian physical education programs should build upon children's strengths in social and physical domains while addressing the cognitive and psychological aspects of physical literacy. By focusing on conceptual understanding, intrinsic motivation, and positive emotional experiences in physical activity, educators can work toward developing well-rounded, physically literate children who will maintain active lifestyles throughout their lives. This research provides the foundation for evidence-based physical literacy assessment and intervention in Indonesia, contributing to the global understanding of physical literacy development across diverse cultural contexts. Future research building upon these findings will be essential for promoting the health and well-being of Indonesian children through enhanced physical literacy development.

AI DISCLOSURE STATEMENT

The authors declare that no generative AI tools were used to generate, analyze, interpret, synthesize, or write the scientific content of this manuscript.

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