

An Analysis of Gross Motor Test Utilization in Early Childhood Development Assessment in Public Kindergartens of Deli Serdang Regency

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Abstract. Gross motor development is crucial for children's cognitive, socio-emotional, and communication growth. This study analyzed the use of gross motor tests in public kindergartens of Deli Serdang Regency, Indonesia, to explore current practices, challenges, and recommendations. Using a descriptive qualitative approach, data were obtained through interviews, observations, and document analysis with purposively selected teachers and principals. Findings revealed that assessments were conducted regularly, yet relied on non-standardized, teacher-modified instruments. Although schools referred to national indicators (STPPA), knowledge of validated tools such as TGMD-2, BOT-2, and MABC-2 was limited. Procedures generally allowed individual testing, multiple attempts, and showed high child engagement. Results supported follow-up learning but were inconsistently integrated into planning. Major challenges included time constraints, inadequate facilities, and insufficient teacher training. The study highlights the need for capacity building, infrastructure support, and adoption of reliable assessment tools.

Keywords: Gross Motor Development, Early Childhood Assessment, Kindergarten Education, Standardized Tests, Teacher Practices.

1 Introduction

Early childhood education is the fundamental foundation for children's holistic development. One of the most crucial aspects in this stage is gross motor development, which involves basic physical skills such as walking, running, jumping, and body coordination. Motor development is defined as the process of structural and functional changes in the body that enable independent movement, involving sensory and perceptual processes that allow individuals to understand and act within their environment [1].

Several studies highlight the strong relationship between gross motor skills and other developmental domains. For instance, there are significant correlations between motor competence and children's cognitive and socio-emotional development [2]. Children with lower cognitive functioning tend to exhibit weaker gross motor skills [3]. Furthermore, motor competence has been linked to mathematical and reading abilities [4] as well as communication skills [5]. From a psychological perspective, motor development is also considered a fundamental basis of developmental psychology [6]. These findings encourage teachers and researchers to provide adequate stimulation for gross motor achievements, such as outdoor activities [7], traditional games [8], and structured physical activities [9]. Conversely, insufficient gross motor development may negatively impact children's self-confidence, leading to feelings of inferiority among peers [10].

Given its significance, gross motor assessment becomes essential in evaluating children's development. Previous studies have identified various standardized instruments to measure gross motor development in early childhood [11]. Accurate assessment not only helps teachers understand children's progress but also plays a critical role in the early detection of developmental delays or disorders. However, in practice, kindergartens in Indonesia currently refer to the decree of the Badan Standar, Kurikulum, dan Asesmen Pendidikan (No. 031/H/KR/2024) regarding competencies and themes of *Projek Penguatan Profil Pelajar Pancasila*, which allows each school to determine its own methods, criteria, and assessment tools. Consequently, evaluation results often vary significantly between schools, even in similar contexts, raising concerns over the accuracy and objectivity of assessments that should ideally guide appropriate learning interventions.

Some kindergartens rely on direct observation without specific instruments, while others attempt to adopt unvalidated and unreliable tools. This situation indicates the urgency of conducting an in-depth analysis of gross motor test utilization in kindergartens, with the goal of formulating more standardized and high-quality evaluation practices.

Previous research has reviewed the diversity of gross motor instruments, identifying at least 12 commonly used tools, each with its strengths and weaknesses [11]. Recent advancements have even integrated technology, such as video-based kinematic computations [12][13] and motion capture systems [14]. Although these technologies offer precision, their high costs and technical requirements make them impractical for early childhood education settings with limited resources. Therefore, more affordable, practical, and adaptable innovations are needed.

This study aims to fill the gap by analyzing the utilization of gross motor tests in public kindergartens across Deli Serdang Regency. Specifically, it explores how assessments are designed, implemented, and interpreted by teachers, identifies differences in approaches across schools, and evaluates their alignment with established theories and standards of early childhood development. The findings are expected to provide evidence-based recommendations for the development of more relevant, accessible, and effective assessment tools tailored to the needs of early childhood education in Indonesia.

2 Method

This study employed a descriptive qualitative approach to explore practices, patterns, and variations in the use of gross motor tests for early childhood assessment in public kindergartens of Deli Serdang Regency. The approach allowed in-depth understanding from teachers' perspectives, capturing direct experiences and contextual challenges.

Research Stages. The study was conducted in four phases: (1) preparation, including research design, instrument development, and research permits; (2) data collection through in-depth interviews with teachers and principals, direct classroom observations, and document analysis; (3) data analysis using thematic analysis to identify patterns, themes, and key issues; and (4) reporting, including formulation of findings and recommendations.

Location and Time. The research was conducted in selected public kindergartens across Deli Serdang Regency, North Sumatra, from February to July 2025.

Participants. The population comprised 31 public kindergartens, with participants selected purposively based on the criteria of conducting gross motor assessments, willingness to participate, and availability of relevant data.

Instruments and Data Collection. Instruments included interview guides, observation sheets, and document review formats. Interviews explored practices and challenges, observations recorded assessment implementation, and documents provided supporting evidence.

Data Analysis. Data were analyzed following Miles and Huberman's interactive model: data reduction, data display, and conclusion drawing. Triangulation of sources and techniques was applied to ensure validity and reliability.

3 Result

Interviews with 31 respondents consisting of teachers and principals from public kindergartens in Deli Serdang Regency revealed several important findings regarding the assessment of children's gross motor skills. The majority of schools (90.32%) already have written procedures or guidelines, either in the form of internal documents or integrated into the school's operational curriculum (KOSP). Meanwhile, 9.68% of schools do not have written guidelines and rely instead on teachers' habitual practices or direct instructions from the principal.

All schools reported using modified instruments. Most schools (80.65%) developed their own instruments by adapting the test items to available facilities and children's characteristics while referring to the national standard indicators outlined in the STPPA. In contrast, 19.35% of schools used modified instruments that did not refer to STPPA but were based on internal agreements or prior teaching practices. Decisions regarding instrument use were mostly made collaboratively by teachers through internal meetings (61.29%), while in 38.71% of cases, the choice was determined directly by the principal.

In setting indicators and assessment criteria, most teachers referred to the STPPA and adjusted them to the school context through discussions with colleagues and principals before the start of the school year. However, 38.71% of teachers admitted they did not fully understand the

indicators and tended to rely on examples from existing assessment formats. Regarding teacher preparedness, only 6.45% had received specific training on administering gross motor skill tests, while the remaining 93.55% had no formal training and gained their understanding through teaching experience and peer sharing.

All schools conducted gross motor assessments twice a year, at the beginning and end of each semester, and also performed additional evaluations at the end of each learning theme. The test was generally carried out individually (83.87%) to allow focused observation, while 16.13% implemented it in small groups of three to five children for time efficiency. On average, the assessment took 10–15 minutes per child depending on the number of test items and the child's readiness. Children were observed to be enthusiastic, cheerful, and actively engaged, especially when movements were demonstrated beforehand. Teachers usually allowed children to attempt movements more than once to build confidence and provide opportunities to demonstrate their best ability.

The facilities used varied, ranging from plastic balls, skipping ropes, balance beams, and marker cones to school yards and classrooms adapted as activity spaces. Some schools also included warm-up sessions to reduce the risk of injury. Most teachers (77.42%) consistently followed the procedures stated in the instruments, whereas 22.58% made adjustments in response to inadequate facilities or children's needs. Regarding assessment approaches, 64.52% of teachers applied a process-oriented approach focusing on movement quality, while 35.48% applied a product-oriented approach focusing on movement outcomes. To increase objectivity, 41.94% of schools involved more than one teacher in the assessment, though the majority (58.06%) relied on a single assessor.

In terms of documentation, almost all schools (90.32%) recorded assessment results manually using paper-based formats, while 9.68% had begun using simple digital tools such as spreadsheets or internal applications. All schools delivered assessment results to parents in the form of written reports at the end of each semester. The use of assessment results varied; most teachers (77.42%) used them to plan follow-up learning activities aimed at improving underdeveloped motor skills, whereas 22.58% had not yet integrated the results systematically into instructional planning.

Finally, schools faced several challenges in conducting gross motor assessments. The most common were limited time, particularly in classes with large numbers of children, and teachers' limited knowledge of standardized gross motor skill assessment tools with established validity and reliability, such as the Test of Gross Motor Development (TGMD-2), Bruininks-Oseretsky Test of Motor Proficiency (BOT-2), or Movement Assessment Battery for Children (MABC-2). As a result, most schools relied on self-developed modified instruments rather than standardized tests.

4 Discussion

The findings of this study highlight both the strengths and gaps in the implementation of gross motor skill assessments in public kindergartens across Deli Serdang Regency. The majority of schools had written procedures integrated into the curriculum, aligning with national regulations that emphasize the importance of documented assessment standards [15] This indicates institutional awareness of the need for structured assessment. However, the absence of written

guidelines in some schools suggests potential inconsistencies in practice, raising concerns regarding assessment reliability.

In terms of instruments, all schools relied on teacher-modified tools, most of which were adapted from the Standar Tingkat Pencapaian Perkembangan Anak (STPPA). While this shows alignment with national benchmarks [15], the lack of adoption of standardized and validated tools such as TGMD-2, BOT-2, or MABC-2 reflects a broader issue of limited teacher training and dissemination. Similar to previous findings [16][17] the reliance on self-developed instruments indicates a need for professional development programs to enhance teachers' competence in using reliable measures.

Assessment procedures were generally consistent with assessment for learning principles, as teachers prepared tools, provided demonstrations, and observed children individually to ensure accuracy. Individual administration, preferred in most schools, allowed closer observation, although small group assessments were still used for efficiency. The enthusiasm of children during the assessments confirmed that the process was engaging and developmentally appropriate. However, variations in available facilities—from schoolyards and fields to modified classrooms—revealed infrastructural disparities that can affect the quality of motor skill assessment. This supports [18] argument that physical environment strongly influences the effectiveness of motor development programs.

Documentation practices showed that most schools continued to rely on manual, paper-based systems, with only a small proportion utilizing simple digital tools. Reports were consistently shared with parents, fulfilling transparency principles. Yet, only some teachers systematically used assessment outcomes to design follow-up activities, suggesting an underutilization of assessment data for instructional planning. This gap reflects a missed opportunity to fully integrate assessment into the cycle of teaching and learning.

From a methodological perspective, most teachers applied process-oriented assessments, which focus on the quality of movement rather than outcomes. This aligns with the recommendations of Gallahue and Ozmun [19], who emphasized the importance of process-based evaluations in understanding developmental progress. Nevertheless, the use of product-oriented approaches by some teachers reveals a lack of uniformity, which may impact assessment comparability across schools. Furthermore, while some schools employed multiple assessors to reduce subjectivity, the majority relied on a single teacher, which raises concerns regarding inter-rater reliability.

The main challenges identified—limited time, large class sizes, and insufficient knowledge of standardized instruments—mirror those reported in earlier studies [20]. The complete absence of TGMD-2, BOT-2, and MABC-2 in practice suggests not only a lack of access but also a systemic gap in professional training and resource provision. Addressing these challenges will require structured capacity-building initiatives, the provision of adequate facilities, and adaptation of standardized instruments to the local context.

Overall, while gross motor assessments in Deli Serdang public kindergartens are conducted regularly and follow basic guidelines, there remains a significant gap between current practice and ideal standards. Bridging this gap will require systemic efforts at the policy, institutional, and teacher-training levels to ensure that assessments are both developmentally appropriate and scientifically reliable.

5 Conclusion

The findings of this study indicate that gross motor assessments in public kindergartens across Deli Serdang Regency are conducted routinely and follow basic procedures. Most schools already have written guidelines and refer to the indicators outlined in the Standar Tingkat Pencapaian Perkembangan Anak (STPPA). However, the majority of assessments still rely on teacher-modified instruments that are not standardized. Teachers' understanding and use of validated and reliable instruments such as the TGMD-2, BOT-2, or MABC-2 remain very limited.

In terms of implementation, assessments were generally carried out individually, with teachers preparing available equipment, demonstrating the required movements, and allowing children more than one attempt. Children were observed to be enthusiastic and able to complete the test sequences successfully. The results of these assessments were mostly used to plan follow-up learning activities, although their integration into systematic instructional planning varied across schools.

Several challenges were identified in the assessment process, including limited time due to large class sizes, inadequate facilities, and the lack of teacher training related to standardized instruments. These constraints highlight the need for interventions such as teacher capacity-building programs, improved provision of facilities, and the introduction and adaptation of valid and reliable gross motor assessment instruments. Strengthening these aspects would enable more accurate, objective, and meaningful assessments to support early childhood motor development.

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