



Motor Skill Profile of Elementary School Students in Bandung Regency

Muhamad Suma Wijaya^{*1}, Mochamad Egi Margiyan², Anisa Shopian¹, Lilis Maesaroh¹,
Rifki Rosad¹, Julinur Hafid¹

¹Universitas Sali Al-Aitaam, Indonesia

²Universitas Muhammadiyah Kuningan, Indonesia

*Correspondence: E-mail: sumawijaya0@gmail.com

ABSTRACT

they are closely related to children's ability to perform various movement activities. This study aimed to determine the motor skill profile of elementary school students in Bandung Regency. The study used a quantitative descriptive method with a survey approach. Participants comprised 149 students from six elementary schools in Bandung Regency, selected through purposive sampling. The research instrument consisted of five motor skill tests: standing long jump, zig-zag run, one-leg stand, throw-and-catch ball test, and 30-meter sprint. Data were analyzed using descriptive statistics to identify students' motor skill levels. The results showed that most students demonstrated motor skills in the fair-to-good categories. Students generally showed relatively good performance in lower limb explosive power, hand-eye coordination, and movement speed. However, several students performed more poorly on the agility and balance components. Based on the overall test results, most students achieved good motor skill scores, while some were still categorized as fair or poor. These findings provide an overview of the motor skill conditions of elementary school students in Bandung Regency and may serve as reference data for physical education teachers and schools in developing appropriate physical education programs and physical activity opportunities for students.

ARTICLE INFO

Article History:

Submitted/Received April 2026

First Revised April 2026

Accepted May 2026

Publication Date May 2026

Keyword:

Elementary school students, motor development, motor skills, physical activity, physical education.

INTRODUCTION

Motor skills represent one of the most important developmental domains for elementary school children, given their direct relationship with the capacity to perform diverse movement activities-including running, jumping, throwing, catching, balance maintenance, and whole-body coordination. Elementary school students occupy a critical phase of accelerated growth and physical development, during which appropriate movement stimulation is essential to support optimal motor and physical outcomes (Ilyas & Awal, 2025; Wijaya & Hafid, 2024). During this period, motor development constitutes an important foundation for children's participation in physical activity, sport skill acquisition, and long-term health (Wijaya et al., 2023). Well-developed motor competence enables students to perform daily movement tasks efficiently, enhances physical fitness, and strengthens self-confidence and engagement in sport and physical activities (Hafid et al., 2025). Children with adequate motor competence additionally tend to be more physically active and socially engaged within school contexts. In contrast, deficiencies in motor skills may produce movement restrictions, reduced participation in physical activities, diminished fitness, and declining motivation for sport engagement. Motor skill development therefore warrants systematic attention within elementary school physical education, especially through structured, developmentally appropriate movement activities that support children's overall growth and active lifestyles.

The rapid advancement of digital technology and the accompanying transformation of children's daily lifestyles have contributed to a measurable decline in physical activity levels among school-aged populations. Children increasingly allocate discretionary time to screen-based activities rather than active outdoor play, with direct consequences for motor skill development. Low physical activity levels have been consistently associated with poor motor competence among elementary school students (Nurhidayah et al., 2024). International evidence corroborates this pattern: Barnett et al. (2021) reported that children with higher motor competence tend to demonstrate greater physical activity participation and superior physical fitness. Estevan et al. (2022) identified significant longitudinal associations between movement behaviour and motor competence during childhood, while Malambo et al. (2022) established that fundamental motor skills are positively related to physical fitness and overall child development.

Periodic evaluation of elementary school students' basic motor skills is therefore essential to document children's movement development conditions. Fundamental motor skills play a pivotal role in mastering sport-specific skills and adapting to varied movement demands across developmental stages (Aziz & Febi, 2026; Wijaya et al., 2025). Contextually appropriate physical education instruction has also been shown to produce significant improvements in elementary school students' motor competence. Gråstén et al. (2022) found that elementary school students' motor competence was generally moderate and related to low physical activity participation, while den Uil et al. (2023) demonstrated that lower motor competence was associated with reduced physical fitness and physical activity engagement.

Motor skills are further shaped by multiple interacting factors, including physical activity levels, environmental conditions, habitual play patterns, family socioeconomic status, and the quality of physical education instruction. Oktavian and Hakim (2022) documented differences in students' motor abilities attributable to family socioeconomic conditions, underscoring the role that context plays in shaping motor development. Schools accordingly bear an important responsibility in providing movement stimulation through effective and enjoyable physical education experiences (Dwijayanti et al., 2025).

Preliminary field observations conducted at several elementary schools in Bandung Regency identified a subset of students experiencing difficulties with fundamental movement tasks including sprinting, balance maintenance, hand-eye coordination, and agility. These observations indicate the need for empirical profiling of students' motor skill conditions as a basis for physical education programme evaluation and development. While studies examining elementary school motor skills have been conducted, most prior research has addressed isolated motor components, involved limited regional samples, or has not simultaneously profiled multiple foundational motor dimensions. The present study contributes novelty by mapping motor skill profiles across five integrated motor test items simultaneously, providing an updated empirical baseline for informing the design of more effective, developmentally responsive physical education programmes in Bandung Regency.

METHODS

A quantitative descriptive method with a survey approach was employed to characterise the motor skill profile of elementary school students in Bandung Regency. The descriptive method enabled systematic description of motor skill conditions across students, and the quantitative approach supported the statistical analysis of test score data.

Participants

Participants were upper-grade elementary school students actively enrolled in physical education classes across six elementary schools in Bandung Regency. The total population comprised 450 students. All participants were physically able to complete the full motor skill assessment battery and provided school permission to participate. Students who were absent during data collection or unable to complete all test items were excluded from analysis.

Sampling Procedure

Purposive sampling was employed, with one class selected from each of the six targeted public elementary schools, yielding a final sample of 149 students. Selection criteria required students to be actively enrolled in physical education, physically capable of completing all motor skill tests, in possession of school permission to participate, willing to complete the entire data collection process, and enrolled in grade levels designated by the researchers.

Research Instruments and Materials

Five standardised basic motor skill test items were administered. The

Standing Long Jump Test measured lower limb explosive power, requiring students to jump as far as possible from a stationary position; equipment included a measuring tape and marked jump line. The *Zig-zag Run Test* assessed agility and movement coordination using cones and a stopwatch. The *One-Leg Stand Test* evaluated static balance, with performance measured in seconds using a stopwatch. The *Throw-and-Catch Ball Test* assessed hand-eye coordination using a tennis ball and stopwatch. The *30-Metre Sprint Test* measured movement speed via stopwatch and measuring tape. All instruments were adapted from basic motor skill assessments commonly applied in elementary school physical education research.

Data Collection Procedures

Data collection was conducted at each participating school. Prior to testing, students received explanations of each test item's purpose and procedure, followed by a structured warm-up to reduce injury risk. Test items were administered in a predetermined sequence, with each student completing all five assessments. Researchers and school physical education

teachers jointly supervised administration to ensure consistent execution. Results were recorded on standardised assessment sheets.

Data Analysis

Motor skill test data were analysed using descriptive statistics, including mean, standard deviation, minimum, and maximum for each test item. Test scores were subsequently categorised into five levels-very good, good, fair, poor, and very poor-to characterise the motor skill profile of elementary school students in Bandung Regency. All analyses were conducted using statistical software.

RESULTS

Results varied across the five motor skill test items. Overall, the majority of students performed within the fair-to-good range, with relatively stronger performance in lower limb explosive power, hand-eye coordination, and movement speed. Table 1 presents the motor skill classification criteria applied in this study; Table 2 summarises the general outcome for each test item.

Table 1. Motor Skill Classification Criteria

Category	Score Range	Description
Very Good	90–100	Highly proficient motor skills
Good	80–89	Well-developed motor skills
Fair	70–79	Adequate motor skills
Poor	60–69	Below-average motor skills
Very Poor	<60	Underdeveloped motor skills

In the standing long jump, most students recorded distances above 120 cm, placing them in the good category-indicating that lower limb explosive power was relatively well developed. In the throw-and-catch ball test, the majority of students successfully completed more than 10 catches within the stipulated time, reflecting adequate hand-eye coordination. In the zig-zag run, several students recorded comparatively slow completion times, indicating that agility warrants more systematic attention within physical education programming. Similar patterns emerged in the one-leg stand, where inter-student variability in balance maintenance was pronounced. In the 30-metre sprint, most students were classified as fair to good, suggesting that movement speed was relatively well developed, though a proportion remained below the good threshold.

Table 2. Summary of Motor Skill Test Results by Component

Test Item	Motor Component	General Result	Category
Standing Long Jump	Lower limb explosive power	Good (≥ 120 cm)	Good
Zig-zag Run	Agility	Relatively slow completion times	Fair
One-Leg Stand	Static balance	High inter-student variability	Fair
Throw-and-Catch Ball Test	Hand-eye coordination	>10 catches within time limit	Good
30-Metre Sprint	Movement speed	Majority fair to good	Good

Based on final composite score analysis, students' overall motor skills were generally categorised as good. However, a meaningful subset of students remained in the fair and poor categories, indicating that comprehensive physical education programmes targeting a broad range of fundamental motor components are warranted.

DISCUSSION

General Motor Skill Profile and Foundational Competence

The findings of this study establish that the motor skills of elementary school students in Bandung Regency are generally within the fair-to-good range. This indicates that most students possess sufficiently developed fundamental movement capacities to engage in physical education and broader physical activity, though meaningful heterogeneity exists across components and individuals. Fundamental motor skills are recognised as developmental prerequisites for participation in diverse physical activities, sports, and active lifestyles throughout the lifespan. Children who possess well-developed motor competence tend to participate more actively in physical activities and demonstrate superior physical fitness relative to peers with lower competence, creating a positive developmental spiral between motor skill and physical activity participation (Barnett et al., 2021; den Uil et al., 2023).

Explosive Power and Coordination: Relative Strengths

The relatively strong performance in the standing long jump reflects adequate development of lower limb explosive power—a component that supports diverse movement activities including running, directional changes, jumping, and sporting participation. Good explosive power also contributes to efficient physical task completion during physical education lessons and reduces the metabolic cost of movement. Similarly, the throw-and-catch ball test results suggest that hand-eye coordination is comparatively well developed in this population. Coordination is essential for manipulative motor tasks, particularly those involving object control in sporting and game-related contexts. Strong coordination abilities further support cognitive and perceptual development, as movement control demands concentration, reaction speed, and visual processing capacity. Zhang et al. (2022) confirmed that structured physical activity programmes significantly improve children's motor competence and cognitive function, supporting the continued integration of throwing, catching, and object manipulation activities into physical education lessons to optimise motor development.

Agility and Balance: Components Requiring Priority Attention

In contrast, the zig-zag run and one-leg stand tests revealed comparatively weaker performance, with agility and balance representing the most significant areas for curriculum attention. Agility is fundamental to rapid directional changes, movement coordination under dynamic conditions, and overall sport readiness, while balance underpins postural stability across both static and dynamic movement tasks. The lower performance in these components may reflect insufficient accumulated movement experience or limited participation in active outdoor play. Low physical activity levels are well-established correlates of poor motor competence, with children demonstrating low activity participation showing less optimal movement abilities relative to physically active peers (den Uil et al., 2023). High sedentary behaviour, in particular, has been associated with diminished motor competence in children and adolescents (Silva, 2025). Children who allocate substantial time to sedentary screen-based activities accumulate fewer opportunities to practise and consolidate fundamental movement patterns, with direct consequences for agility, balance, coordination, and overall

physical fitness. These findings emphasise the urgency of increasing regular, enjoyable physical activity opportunities for children both within and beyond school hours (Liu et al., 2023).

Pedagogical Implications and the Role of Physical Education

Overall, these findings indicate that motor skill development among elementary school students in Bandung Regency requires further systematic support through more active, structured, and engaging physical education programmes. Physical education teachers play a critical role in providing developmentally appropriate movement stimulation (Kurniawan et al., 2026). Instructional activities incorporating active games, coordinative exercises, and graduated fitness challenges can meaningfully improve students' motor competence (Anjanika et al., 2025). Physical education should not be oriented exclusively toward sport performance outcomes but should systematically emphasise the development of foundational movement skills through enjoyable, varied, and inclusive learning experiences that motivate sustained active engagement.

Motor competence in school-aged children is closely associated with perceived physical competence and physical activity participation (Carcamo-Oyarzun et al., 2025). Children with well-developed motor skills tend to be more self-confident and more actively engaged in sport and physical play, creating reinforcing cycles of competence, confidence, and activity (Crane et al., 2023). Conversely, lower motor competence may diminish confidence and reduce motivation to participate, creating a negative developmental cycle. Improving motor competence therefore carries psychological and social developmental benefits extending beyond the physical domain.

Environmental conditions, habitual play patterns, school support structures, and family socioeconomic status collectively shape children's motor development trajectories (Yuliarsih et al., 2024). Children with access to adequate play facilities, supportive school environments, and opportunities for active movement are more likely to achieve strong motor development outcomes. Improving elementary school students' motor skills therefore requires a collaborative approach engaging schools, families, and communities in providing rich, accessible, and sustained opportunities for children to live actively and healthily.

CONCLUSION

The motor skill profile of elementary school students in Bandung Regency was generally characterised as fair to good across five assessed components: standing long jump, zig-zag run, one-leg stand, throw-and-catch ball test, and 30-metre sprint. Performance in lower limb explosive power, hand-eye coordination, and movement speed was relatively strong, while agility and balance components revealed lower performance among a meaningful subset of students. These findings document variation in motor competence across assessed components among elementary school students in Bandung Regency, with important implications for physical education programme design. The results underscore the value of periodic motor skill profiling as a basis for developing contextually appropriate, component-targeted physical education programmes that support students' motor development, physical fitness, and movement readiness.

AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

REFERENCES

- Anjanika, Y., Ruron, A. T. T., & Muhajir, N. (2025). Efektivitas active learning dalam pendidikan jasmani terhadap peningkatan kemampuan motorik siswa sekolah pelosok Nipah Panjang [Effectiveness of active learning in physical education for improving motor skills in remote school students]. *Unimuda Sport Journal: Jurnal Pendidikan Jasmani*, 6(1), 1–9. <https://doi.org/10.36232/unimudasportjurnal.v6i1.2862>
- Aziz, M. I. M., & Febi, A. (2026). Hubungan tingkat aktivitas fisik dengan kemampuan motorik siswa sekolah dasar [Relationship between physical activity levels and motor skills among elementary school students]. *Jurnal Olahraga Kebugaran dan Rehabilitasi (JOKER)*, 6(1), 30–41. <https://doi.org/10.35706/joker.v6i1.13555>
- Barnett, L. M., Hnatiuk, J. A., D'Souza, N., Salmon, J., & Hesketh, K. D. (2021). What factors help young children develop positive perceptions of their motor skills? *International Journal of Environmental Research and Public Health*, 18(2), Article 759. <https://doi.org/10.3390/ijerph18020759>
- Carcamo-Oyarzun, J., Herrmann, C., Gerlach, E., Salvo-Garrido, S., & Estevan, I. (2025). Motor competence, motivation and enjoyment in physical education to profile children in relation to physical activity behaviors. *Physical Education and Sport Pedagogy*, 30(6), 675–690. <https://doi.org/10.1080/17408989.2023.2265399>
- Crane, J. R., Foley, J. T., & Temple, V. A. (2023). The influence of perceptions of competence on motor skills and physical activity in middle childhood: A test of mediation. *International Journal of Environmental Research and Public Health*, 20(9), Article 5648. <https://doi.org/10.3390/ijerph20095648>
- den Uil, A. R., Janssen, M., Busch, V., Kat, I. T., & Scholte, R. H. J. (2023). The relationships between children's motor competence, physical activity, perceived motor competence, physical fitness and weight status in relation to age. *PLOS ONE*, 18(4), Article e0278438. <https://doi.org/10.1371/journal.pone.0278438>
- Dwijayanti, K., Hakim, A. R., Febrianti, R., & Alfin, F. (2025). Mapping kebugaran jasmani dan kemampuan motorik siswa sekolah dasar di era aktivitas minim gerak [Mapping physical fitness and motor skills of elementary school students in the era of minimal movement]. *SPRINTER: Jurnal Ilmu Olahraga*, 6(3), 843–848. <https://doi.org/10.46838/spr.v6i3.921>
- Estevan, I., Clark, C., Molina-García, J., Menescardi, C., Barton, V., & Queralta, A. (2022). Longitudinal association of movement behaviour and motor competence in childhood: A structural equation model, compositional, and isotemporal substitution analysis. *Journal of Science and Medicine in Sport*, 25(8), 661–666. <https://doi.org/10.1016/j.jsams.2022.05.010>
- Gråstén, A., Huhtiniemi, M., & Jaakkola, T. (2022). School-age children's actual motor competence and perceived physical competence: A 3-year follow-up. *Medicine & Science in Sports & Exercise*, 54(6), 1020–1027. <https://doi.org/10.1249/mss.0000000000002870>
- Hafid, J., Wijaya, M. S., Rosad, R., Shopiani, A., Maesaroh, L., & Margiyan, M. E. (2025). Physical condition profile of Proton FC futsal players. *Jurnal Master Penjas & Olahraga*, 6(2), 826–831. <https://doi.org/10.37742/jmpo.v6i2.190>
- Ilyas, M. B., & Awal, A. (2025). Literatur review: Kebugaran dan kondisi fisik cabang olahraga bela diri [Literature review: Fitness and physical condition in martial arts]. *Jurnal Dunia Pendidikan*, 5(6), 2466–2478. <https://doi.org/10.55081/jurdip.v5i6.4093>
- Liu, Y., Li, Z., Yuan, L., & Zhou, Z. (2023). The bidirectional correlation between fundamental motor skill and moderate-to-vigorous physical activities: A systematic review and meta-analysis. *Children*, 10(9), Article 1504. <https://doi.org/10.3390/children10091504>

- Malambo, C., Nova, A., Clark, C., & Musalek, M. (2022). Associations between fundamental movement skills, physical fitness, motor competency, physical activity, and executive functions in preschool-age children: A systematic review. *Children*, 9(7), Article 1059. <https://doi.org/10.3390/children9071059>
- Nurhidayah, H., Gustiawati, R., Gani, R. A., & Kurniawan, F. (2024). Analisis systematic review program aktivitas fisik untuk anak sekolah dasar [Systematic review analysis of physical activity programmes for elementary school children]. *Multilateral: Jurnal Pendidikan Jasmani dan Olahraga*, 23(4), 348–358. <https://doi.org/10.20527/multilateral.v23i4.21789>
- Oktavian, I., & Hakim, A. A. (2022). Kemampuan motorik anak sekolah dasar berdasarkan perbedaan status sosial ekonomi keluarga [Motor ability of elementary school children based on family socioeconomic status differences]. *Jurnal Kesehatan Olahraga*, 10(2), 89–96. <https://doi.org/10.26740/jurnal-kesehatan-olahraga.v10i02.45182>
- Silva, A. F. (2025). Evaluating motor competence in children and youth: A narrative review. *Human Movement*, 26(1), 42–57. <https://doi.org/10.5114/hm/199533>
- Wijaya, M. S., & Hafid, J. (2024). Model cooperative learning dalam meningkatkan keterampilan bermain hoki: Studi eksperimen di SMK PGRI 1 Kota Serang [Cooperative learning model in improving hockey playing skills: An experimental study]. *Jurnal Master Penjas & Olahraga*, 5(2), 477–485. <https://doi.org/10.37742/jmpo.v5i2.127>
- Wijaya, M. S., Hafid, J., Maesaroh, L., Rosad, R., & Shopiani, A. (2025). Physical fitness level of children with special needs in special needs school. *Journal of Physical Education Health and Sport*, 12(1), 231–235. <https://doi.org/10.15294/jpehs.v12i1.32475>
- Wijaya, M. S., Hidayat, Y., & Sutresna, N. (2023). Integration of life skills through hockey in the framework of positive youth development. *JUARA: Jurnal Olahraga*, 8(1), 639–647. <https://doi.org/10.33222/juara.v8i1.2948>
- Yuliarsih, T., Santosa, S., & Mutiansi, D. (2024). Karakteristik perkembangan anak usia sekolah dasar pada fisik-motorik, kognitif, bahasa, dan implikasinya dalam pembelajaran [Developmental characteristics of elementary school children in physical-motor, cognitive, and language domains and their implications for learning]. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 9(2), 328–346. <https://journal.unpas.ac.id/index.php/pendas/article/view/15770>
- Zhang, J.-Y., Shen, Q.-Q., Wang, D.-L., Hou, J.-M., Xia, T., Qiu, S., Wang, X.-Y., Zhou, S.-B., Yang, W.-W., & Heng, S.-Y. (2022). Physical activity intervention promotes working memory and motor competence in preschool children. *Frontiers in Public Health*, 10, Article 984887. <https://doi.org/10.3389/fpubh.2022.984887>