

Analysis of Basic Movement Abilities: Survey study in children

Análisis de las capacidades básicas de movimiento: Estudio por sondeo en niños

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Abstract. Study purpose. Children's basic movement abilities are an important aspect of their physical, cognitive and social development. Basic motor skills include a variety of motor skills needed to live daily life, such as walking, running, jumping, and controlling their body. These basic movement abilities develop significantly as children grow and develop. The aim of this research is to determine the basic movement abilities of children in Ujungbatu District. Materials and Methods. This type of research is quantitative descriptive with a survey. The sample in this study was all 30 children from Ujungbatu District and all were taken to become research samples, so it was called the total sample. Data was collected using the TGMD-2 Instrument and then processed using the percentage formula. Results. The results of the research are: (1) The average locomotor ability of children in Ujungbatu District is classified as 46.67 "Medium". (2) The average object control ability of children in Ujungbatu District is in the classification of 36.67 "Medium". (3) The basic movement abilities possessed by children in Ujungbatu District are on average classified 46.67 "Medium". Good basic movement skills in children have a positive impact on their physical and mental health. Children who have strong basic motor skills tend to be more physically active, have improved social skills, and feel more confident in a variety of physical activities. Conclusion. Therefore, it is important for parents, educators and child health workers to support the development of children's basic motor skills by providing opportunities to play, practice and participate in a variety of physical activities.

Keywords: Movement Skills, Basic Movement, Child Age

Resumen. Objetivo del estudio. Las habilidades motrices básicas de los niños son un aspecto importante de su desarrollo físico, cognitivo y social. Las habilidades motrices básicas incluyen una variedad de habilidades motrices necesarias para la vida diaria, como caminar, correr, saltar y controlar su cuerpo. Estas habilidades motrices básicas se desarrollan significativamente a medida que los niños crecen y se desarrollan. El objetivo de esta investigación es determinar las habilidades motrices básicas de los niños del distrito de Ujungbatu. Materiales y métodos. Este tipo de investigación es cuantitativa descriptiva con una encuesta. La muestra en este estudio fueron los 30 niños del Distrito de Ujungbatu y todos fueron tomados para convertirse en muestras de investigación, por lo que se denominó muestra total. Los datos se recogieron utilizando el Instrumento TGMD-2 y luego se procesaron utilizando la fórmula de porcentaje. Resultados. Los resultados de la investigación son: (1) La capacidad locomotora media de los niños del distrito de Ujungbatu se clasifica como 46,67 "Media". (2) La capacidad media de control de objetos de los niños del distrito de Ujungbatu se clasifica en 36,67 "Media". (3) Las habilidades básicas de movimiento que poseen los niños del Distrito de Ujungbatu están clasificadas como media 46,67 "Medio". Unas buenas habilidades básicas de movimiento en los niños tienen un impacto positivo en su salud física y mental. Los niños que poseen sólidas habilidades motrices básicas tienden a ser más activos físicamente, tienen mejores habilidades sociales y se sienten más seguros en una variedad de actividades físicas. Conclusión. Por lo tanto, es importante que los padres, educadores y trabajadores de la salud infantil apoyen el desarrollo de las habilidades motrices básicas de los niños ofreciéndoles oportunidades para jugar, practicar y participar en diversas actividades físicas.

Palabras clave: Habilidades de movimiento, movimiento básico, edad infantil

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Introduction

Basic movements in motor development science terminology are called Fundamental Movements involving certain basic movement elements from just one movement (Norito et al., 2022; Umar., 2023). Basic movements are movements that involve different parts of the body such as the legs, arms, torso and head. These basic movements become special and complex movement skills that can be used in games, sports and physical recreation activities. As stated by Hulteen et al., (2017) that good basic movement skills can support good physical activity involvement throughout life such as cycling, swimming, running (Akmal et al., 2020; Norito et al., 2022), and can improve health such as fitness and status body weight (Bremer & Cairney, 2016).

Movement learning is a form of learning that has an emphasis on something specific in improving the quality of body movements (Cagno & Trianni, 2014). Another case is that if a child has less competent movement skills, this can hinder physical activity, therefore it is important to provide adequate development and opportunities for children (Hulteen et al., 2017; Meester et al., 2018; Welis et al., 2022). In learning, the possibility of high student involvement or participation in participating in learning activities can be achieved through appropriately modified games (Faria et al., 2018). Examples such as those carried out by Nissa et al., (2020) through the results of developments that have been carried out through modified jump rope game media and guidelines for their use have had a good effect in improving gross motor and social development in children

in kindergarten. Basic movements required during childhood include running, jumping, shifting sideways, while manipulative movements can include throwing, catching, kicking and pushing, all of which are part of advanced movements of more complex basic movements (Chaeroni et al., 2022; Nugroho et al., 2021). The most important things that must be developed by young children are technical skills (basic movements) and improving physical condition (Donie et al., 2023; Haris et al., 2023). As explained by Engel et al., (2018), providing movement skills training to preschool children with a training intensity of at least 3 times a week can increase proficiency, physical activity (Culjak et al., 2014), and reduce sedentary behavior, and helps in reducing the burden of obesity in childhood (Han et al., 2018), and health risks (Bremer & Cairney, 2016), and can increase fitness for children (Ulpi et al., 2021).

Basic movement abilities are the development of elements of maturity and control of body movements that must be learned by elementary school age children (Barnett et al., 2016; Basman, 2019). Remembering this, directly or indirectly, will greatly influence daily behavior and support the development of movement and body posture in adolescence and adulthood. Motor skills in children should be developed at as early an age as possible (Webster et al., 2019), so that development and growth can be monitored properly and correctly. Where physical activity through sports activities is one of the choices for a better quality of life for children (Septianto et al., 2024; Suryadi, Nasrulloh, et al., 2024), as well as the elderly (Suryadi, Komaini, et al., 2024).

Problems that often occur in the implementation of skills learning include the facilities and infrastructure used are very minimal so that it affects physical activity (Ackah-Jnr & Danso, 2019), the number of children is too crowded, and the learning provided is too monotonous (Puspitarini & Hanif, 2019) so that children become less active/less enthusiastic in participating and this affects the level of students' movement abilities in carrying out their movement activities. The role of students in improving motor skills is also very important (McClelland & Cameron, 2019), if students have good motor skills, it is possible that students will tend to more easily perform skills in sports (Hulteen et al., 2018). Learning basic movement skills is crucial in Physical Education because these skills are integral components of the psychomotor domain (Juni Samodra et al., 2024).

Developing these skills involves mastering fundamental movements, providing children with a solid foundation for mastering specific tasks that require movement skills. Coaches must possess the ability and skills to conduct comprehensive situational evaluations, as this is essential for improving athlete performance by enhancing technical aspects or skills (Soniawan et al., 2021; Suhairi et al., 2023).

Materials and Methods

Study participants

In this research, the entire population of young athletes

from Ujungbatu District, Indonesia, consisting of 30 athletes, was included as the sample. The sampling method employed was total sampling, as per Sugiyono's approach in (2017), ensuring that all 30 athletes were considered for the study.

Research Design

This research adopts a descriptive quantitative approach employing the survey method, as indicated by previous studies (Rubiyatno et al., 2023; Suryadi et al., 2023). The investigation involves conducting tests and measurements to evaluate the fundamental movement abilities of children. The chosen instrument for this study is the TGMD-2 (Test of Gross Motor Development - Second Edition), a measurement tool specifically designed to assess gross motor skills in children (Ulrich, 2000). The motor skills test utilizing TGMD-2 comprises two subtest categories: locomotor skills and object control skills. The assessment of motor skills is carried out twice and recorded through video documentation. An observation sheet, aligned with TGMD-2 guidelines, serves as the instrument for data collection.

TGMD-2 evaluates the performance of locomotor skills, which consist of run, gallop, hop, leap, horizontal jump, and slide. Object control movements consist of striking, stationary dribble, catch, kick, overhand throw, and underhand roll. The following basic movement ability norms can be seen in table 1.

Table 1.
Basic Movement Ability Norms

No	Basic Movement Ability	Locomotor Ability	Control Object Capability	Information
1	>70.61	>38.22	>36.34	Very High
2	62.16-70.60	33.07-38.21	30.40-36.33	High
3	53.71-62.15	27.93-33.06	24.46-30.39	Medium
4	45.25-53.70	22.78-27.92	18.52-24.45	Low
5	<45.24	<22.77	<18.51	Very low

Data analysis

Data collected using TGMD-2 is then processed using the percentage formula. Data calculations in the research were assisted using the SPSS version 26 application.

Results

In the research conducted on children in Ujungbatu District, the examination of locomotor abilities revealed a range from the highest score of 44 points to the lowest score of 21 points. The average locomotor ability score was 30.50 points, with a standard deviation of 5.14. Based on the average, the classification of locomotor abilities for the children of Ujungbatu District falls within the "Medium" range. The subsequent frequency distribution table for locomotor ability data was created to provide a detailed breakdown.

According to Table 2, within the interval class >38.22 for locomotor ability, 1 individual or 3.33% exhibited a "Very High" classification. In the interval class 33.07 - 38.21, 6 individuals or 20.00% demonstrated a "High" classification. The interval class 27.93 - 33.06 included 14 individuals or

46.67% with a "Medium" classification. For the interval class 22.78 – 27.92, 8 individuals or 26.67% received a "Low" classification. Finally, in the interval class <22.77, 1 individual or 3.33% was categorized as "Very Low."

Similarly, the assessment of control object abilities in children from Ujungbatu District showed scores ranging from the highest of 36 points to the lowest of 14 points. The average score was 27.43 points, with a standard deviation of 5.94. Object control abilities, based on the average value, fall into the "Medium" classification. The corresponding frequency distribution table for control object capability data is outlined in Table 3.

As per Table 3, within the interval class 30.40- 36.33 for control object ability, 11 individuals or 36.67% exhibited a "High" classification. In the interval class 24.46 – 30.39, 11 individuals or 36.67% demonstrated a "Medium" classification. The interval class 18.52 – 24.45 included 6 individuals or 20.00% with a "Low" classification. Lastly, in the interval class <18.51, 2 individuals or 6.67% received a "Very Low" classification. In terms of basic movement abilities, the examination showed scores ranging from the highest of 77 points to the lowest of 40 points. The average score was 57.87 points, with a standard deviation of 8.41. The classification of basic movement abilities for the children of Ujungbatu District, based on the average, falls within the "Medium" range. The corresponding frequency distribution table for basic movement ability data is outlined in Table 4.

According to Table 4, within the interval class >70.61 for basic movement abilities, 2 individuals or 6.67% demonstrated a "Very High" classification. In the interval class 62.16 - 70.60, 6 individuals or 20.00% exhibited a "High" classification. The interval class 53.71 – 62.15 included 14 individuals or 46.67% with a "Medium" classification. For the interval class 45.25 - 53.70, 6 individuals or 20.00% received a "Low" classification. Finally, in the interval class < 45.24, 2 individuals or 6.67% were categorized as "Very Low".

Table 2.

Frequency Distribution of Locomotor Ability Data

No	Interval Class	Absolute Frequency	Relative Frequency	Information
1	>38.22	1	3.33	Very High
2	33.07-38.21	6	20.00	High
3	27.93-33.06	14	46.67	Medium
4	22.78-27.92	8	26.67	Low
5	<22.77	1	3.33	Very low
Amount		30	100	

Table 3.

Frequency Distribution of Control Object Capability Data

No	Interval Class	Absolute Frequency	Relative Frequency	Information
1	>36.34	0	0	Very High
2	30.40-36.33	11	36.67	High
3	24.46-30.39	11	36.67	Medium
4	18.52-24.45	6	20.00	Low
5	<18.51	2	6.67	Very low
Amount		30	100	

Table 4.

Frequency Distribution of Basic Movement Ability Data

No	Interval Class	Absolute Frequency	Relative Frequency	Information
1	> 70.61	2	6.67	Very High
2	62.16-70.60	6	20.00	High
3	53.71-62.15	14	46.67	Medium
4	45.25-53.70	6	20.00	Low
5	<45.24	2	6.67	Very low
Amount		30	100	

Discussions

The aim of this research was to assess the proficiency of children in fundamental movements. The findings reveal that, on average, children in Ujungbatu District demonstrate "Medium" level competency in basic movements. Nevertheless, there are notable discrepancies, with some children scoring notably lower or higher compared to their peers in each sub-test. This underscores the necessity for interventions aimed at improving the overall average proficiency of children in basic movements. An associated study suggests that skills related to game performance, which are closely linked to fundamental movement abilities, can be enhanced through engagement in net games (Harianto et al., 2023). Appropriate games are instrumental in improving motor skills in students (Suryadi, Nasrulloh, et al., 2024).

Physical education is dedicated to various forms of physical activity (Aziz et al., 2023; Hardinata, Fakhrudin, et al., 2023; Hardinata, Yosika, et al., 2023; Mashud et al., 2023, 2024; Samodra et al., 2023), emphasizing large muscle movements (gross motor skills) (Pedersen, 2019). It concentrates on physical movements in games, sports, and the fundamental functions of the human body (Walton et al., 2019). In elementary schools, physical and health education aims to stimulate holistic growth and development, both physical and mental, as well as emotional and social well-being (de Oliveira et al., 2019; Jacob et al., 2020; Maugeri et al., 2020). This aligns with efforts to nurture and develop basic movement abilities, instill values and attitudes, and promote a habit of healthy living (Carballo-Fazanes et al., 2020).

Movement ability signifies the quality of coordination and control in executing body movements (Bremer & Cairney, 2016; Paillard, 2019). The acquisition of movement skills involves a learning process, requiring an understanding of movement (Capiro & Eguia, 2021), and repetitive practice with awareness of correctness. Pangrazi & Beighle, (2019), emphasize the importance of learning basic motor skills from an early age, as children encounter various challenges in the learning process, and these skills become increasingly crucial in future activities, including sports (Levac et al., 2019).

According to Costa et al., (2021) suggest that low motor competency in Fundamental Motor Skills may hinder the acquisition of additional sports skills or more complex movements. Bakhtiar, (2014) asserts that to enhance the quality of future human resources, children must receive comprehensive education and development, encompassing intellectual, attitudinal, moral, and physical aspects. Jones et al., (2020) explain that fundamental motor skills, moderate to vigorous physical activity, and early childhood physical activity positively impact the early years of childhood.

Individuals who already have many movement skills at a young age can perform complex movement patterns in later years (Syahputra et al., 2021). Various learning models

have been provided by physical educators in order to develop these basic movement skills (Harianto et al., 2023; Sari et al., 2023; Widiarti et al., 2021). As done by Harianto et al., (2023) by modifying games for children so that they can stimulate good basic movement skills at a young age and make a positive contribution to increasing children's manipulative movement abilities such as throwing, catching, kicking and bouncing the ball. Children at an early age really need the ability to be able to move actively, because this can stimulate the growth and development of their basic movement skills (Dilandes et al., 2022). Basic movement skills are divided into two groups, namely object control abilities (Putri et al., 2020), and locomotor (Oktarifaldi et al., 2019).

Differences in basic movement abilities are influenced by various factors, including: biological and psychological aspects, among others (Maugeri et al., 2020), social (Nissa et al., 2020), children's motivation and cognition (Wick et al., 2017). Most children have not reached the maximum level of basic movements because the lack of opportunities for practice and decreased movement activity causes basic movements to become weak in special movements. This is in line with findings which state that learning basic movements has not run optimally, almost the majority of students feel less confident in carrying out movements (Suharnoko & Firmansyah, 2018), the use of learning models used is less varied and less effective in improving motor movements (Firmansyah, 2019), the results of learning basic movements still look ordinary and not well conditioned (Kustiawan et al., 2019), and students seem bored when participating in learning basic movements (Maksum, 2017) and due to body weight it becomes difficult to carry out basic movements (Kelly et al., 2021).

An appropriate cooperative learning approach can improve students' basic movement skills, especially in elementary schools. Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning (Kirik & Markic, 2012; Tangse & Dimiyati, 2021). In this case, the teacher's classroom management plays a very important role and the strategies used by the teacher (Pahrul et al., 2021; Reswari, 2021). So it is important for teachers to design learning that is varied and contains games that make students more active. In line with the results of Widiarti et al., (2021) that learning that contains several games can improve students' movement skills. According to Zhang et al., (2021) educational institutions pay attention to students to use their free time to do activities or sports to increase student motivation. Teachers are essentially a strategic component in efforts to advance education by formulating effective and efficient learning methods, one of which is a learning model using the cooperative learning (Risjanna et al., 2019; Setiawan et al., 2020).

Conclusions

This study emphasizes the importance of understanding

and supporting the development of children's basic motor skills, given its significant impact on their health and well-being. Environmental factors, sensory stimulation, and opportunities for play and practice play an important role in shaping children's basic movement abilities, and collaborative efforts from parents, educators, and child health workers are key in helping children reach their best potential in terms of basic movement abilities. The conclusions that can be drawn from the research findings are as follows: (1) The locomotor abilities of children in Ujungbatu District are on average in the "Medium" classification. (2) The average ability of children in Ujungbatu District to control objects is in the "Medium" classification. (3) The basic movement abilities possessed by children in Ujungbatu District are on average in the "Medium" classification. Strong basic movement abilities in children are associated with improved physical and mental health. Children with good basic motor skills tend to be more active, have improved social skills, and higher levels of self-confidence. To support the development of children's basic movement skills, it is important for parents, educators and child health workers to provide diverse opportunities to play, practice and participate in physical activities. This will help children achieve optimal basic movement skills, which are essential for their holistic growth and development.

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Conflict of interest

Not conflicts of interest to declare.

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