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Motor Competency of Fundamental Movement Skills Domain of Elementary School Students In Pasangkayu District

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ABSTRACT

This study aims to analyse the motor competency of the fundamental movement skills (FMS) domain in elementary school students in Pasangkayu Regency. The focus of the study is to provide a clear picture of children's physical abilities in basic movement skills, which are an important foundation for the development of sports and physical activities in the future. The study adopted a quantitative approach with a descriptive correlational design. The research location at the Pasangkayu Regency Public Elementary Schools involved 180 male students from 9 schools, divided into three regional categories: urban (SDN 02 Pasangkayu, SDN 01 Pasangkayu, MIS DDI Pasangkayu City), coastal (SD Inpres Tanjung Babia, SDN Salunggadue, SD Inpres Malei), and rural (SD Inpres Ako, SDN Bambamone, SDN Salubulu). The instrument used was the Canadian Agility and Movement Skill Assessment (CAMSA), which measures agility, balance, coordination, speed, locomotor skills, and object control. The assessment includes components of time and movement quality with a maximum score of 28 points. Data analysis used descriptive statistics and the Kolmogorov-Smirnov normality test. The results of the descriptive analysis showed that rural areas had the highest average motor competence (Mean=16.72), followed by coastal areas (Mean=15.73), and urban areas (Mean=15.60). The normality test showed that all data were normally distributed (p>0.05). Interpretation of categories showed: urban areas had 66.66% of students in the Beginning category and 33.33% in the Progressing category; rural areas had 58.33% of students in the Beginning category and 41.66% in the Progressing category; coastal areas had 40% of students in the Beginning category and 60% in the Progressing category. No students reached the Achieving and Excelling categories in the three areas. Conclusion: Students in rural areas showed better motor competence than urban and coastal areas, but with higher variation in abilities. Most students in Pasangkayu Regency were at the basic fundamental movement skills level, with the coastal area showing the highest percentage of students in the Progressing category (60%). These findings emphasise the importance of more structured intervention programs in physical education and collaboration between schools, parents, and local governments to create an environment that supports children's motor development, considering that environmental factors and access to sports facilities play a significant role in the development of fundamental motor skills.

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INTRODUCTION

The physical and motor development of elementary school-aged children is a critical phase in individual growth and development, determining the quality of their future movement and physical activity (Arga, 2025b; Tandi Rerung et al., 2025). Fundamental Movement Skills (FMS) form a crucial foundation for developing children's movement patterns, which will influence their physical, social, and psychological abilities throughout life (Adam Mappaompo et al., 2024; Arga, 2025a). The importance of a thorough understanding of children's motor competencies across diverse environments is the primary focus of this research.

Pasangkayu Regency, as a region with diverse geographic characteristics, creates a unique context for exploring variations in children's motor development. This region has three main environmental types: urban, rural, and coastal, which have the potential to exert different influences on the development of fundamental movement skills in elementary school students. Each environment has specific social, cultural, and geographic characteristics that can influence children's opportunities to develop their motor skills.

The urban environment in Pasangkayu Regency is characterised by relatively better accessibility to educational infrastructure and sports facilities compared to other areas (Suwardi, Adnan Hudain, et al., 2024). However, limited mobility and high urban activity levels can impact children's physical activity patterns. Meanwhile, rural environments have distinct characteristics, with ample land availability and proximity to agricultural activities, potentially providing diverse movement experiences for children (Suwardi, Muhammad Syahrul Saleh, et al., 2024).

The coastal areas of Pasangkayu Regency are unique, with direct interaction between children and the marine environment and fishing activities. These geographic characteristics have the potential to provide different movement stimuli compared to urban and rural environments. Activities such as fishing, helping parents, and playing around the coast can contribute significantly to the development of fundamental motor skills.

In an effort to address this gap, the use of standardised and scientifically tested measurement tools is crucial. The Canadian Assessment of Physical Literacy (CAPL) has developed the Canadian Agility and Movement Skill Assessment (CAMSA) as a component for measuring physical literacy, including gross motor skills. The CAMSA has been shown to be a valid and reliable tool for measuring fundamental movement skills and agility in children aged 8–12 years across various cultural contexts.

The use of the CAMSA in the Indonesian context, specifically in public elementary schools in Pasangkayu Regency, offers an opportunity to gain a deeper and more measurable understanding of students' motor domain development. This will not only provide a clear picture of the status of children's motor domain development in the school but can also serve as a basis for developing targeted intervention programs. This research also has the potential to make a significant contribution to the literature on children's motor domain development in Indonesia, particularly in areas underrepresented in previous studies. By using a standardised measurement tool like the CAMSA, the results of this study can be compared with similar studies across other

geographic and cultural contexts, providing valuable insights into variations in children's motor domain development.

Furthermore, this research can also serve as a catalyst to raise awareness of the importance of motor domain development among educators, parents, and other stakeholders in Pasangkayu. With a better understanding of children's motor domain developmental status, it is hoped that efforts to support and stimulate this development through various activities and programs at school and at home will increase (Arga, 2023; Tandi Rerung et al., 2025).

From an educational policy perspective, the results of this study can provide valuable input for local governments and education offices in designing curricula and programs that are more responsive to the developmental needs of children's motor domains. This could include increasing the time allocated for physical activity, providing supportive facilities and equipment, and training teachers in teaching methods that stimulate gross motor development.

Furthermore, this study can be a first step in building a longitudinal database on children's motor domain development in Pasangkayu. By conducting regular measurements using CAMSA, schools and researchers can track children's motor domain development over time, providing valuable insights into developmental trajectories and the effectiveness of various interventions. From a public health perspective, this study is also relevant given the close relationship between motor domain development and overall physical health. A better understanding of children's motor domain development status can aid in designing more effective health promotion programs, particularly in the context of preventing obesity and other non-communicable diseases, which are a growing concern in Indonesia.

Furthermore, this study can catalyse the development of partnerships between Pasangkayu Regency's public elementary schools and higher education institutions and research institutions. Such partnerships can open opportunities for further research, knowledge exchange, and local capacity building in educational research. From a national policy perspective, this study can contribute to the evaluation and development of national education standards, particularly those related to the physical and motor development of elementary school-aged children. The research findings can provide valuable input in formulating more realistic and contextual indicators and targets.

Considering all of the above aspects, research on the motor domain development of elementary school students in Pasangkayu Regency using the CAMSA measurement tool is not only locally relevant but also has the potential for broad impact in the context of education and child development in Indonesia. The motor components of coastal environments have a high ability to adapt to wet/water environments. Dynamic balance skills are more developed. Complex motor coordination due to being accustomed to interacting with unstable natural conditions. The ability to paddle, row, and move on uneven surfaces is more honed. Good physical endurance due to being accustomed to heavy activity from an early age. Reflexes and motor responsiveness are faster. The motor components of urban environments have fine motor skills that are more honed.

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Speed and accuracy of movement are more directed. Gross motor skills tend to be limited; the motor components of rural environments have gross motor skills that are highly developed. Natural and unstructured movements. The ability to adapt to movement in large areas. Complex motor coordination due to agricultural activities. Better body muscle strength, high physical endurance, multifunctional and practical movements, and adaptive motor skills. With the CAMSA measurement tool, teachers can identify problems early, enable appropriate program planning, facilitate progress monitoring, facilitate collaboration between professionals, improve the quality of life of students, contribute to the development of science, especially in the subjects of Physical Education, Sports and Health. Therefore, the researcher concludes the title of the research on "Analysis of Motor Competence in the Fundamental Movement Skills domain of Elementary School Students in Pasangkayu Regency".

METHODS

This study adopted a quantitative approach with a descriptive correlational design. A quantitative approach in motor development research allows for objective measurement and robust statistical analysis, resulting in findings that can be generalised and replicated. Through the use of CAMSA, this study will produce quantitative data describing students' agility and basic motor skills (Arga, 2025a).

The study took place at a public elementary school in Pasangkayu Regency, involving students from nine schools: SDN 02 Pasangkayu, SDN 01 Pasangkayu, and MIS DDI Pasangkayu City for the urban school category. SD Inpres Tanjung Babia, SDN Salunggadue, and SD Inpres Malei for the coastal school category. SD Inpres Ako, SDN Bambamone, and SDN Salubulu for the rural school category. The population was 413 students, while the sample size was 180 male students.

Design the instrument and the variables to be measured in this study:

1. Main variable: Gross motor development in CAMSA (agility, balance, coordination, speed, locomotor skills, and object control).
2. CAMSA equipment and supplies: An open space or gymnasium measuring at least 20 m x 5 m, 6 colored cones (2 red, 2 yellow, 2 blue), 6 small mats (30 cm x 30 cm), a start and finish line marked with tape or chalk, 1 tennis ball, 1 square target (60 cm x 60 cm) attached to a 1.5 m high wall, 1 balance beam or straight line 3 m long, 1 small goal or obstacle 30 cm high, a stopwatch, a CAMSA assessment form, and writing materials.
3. CAMSA Assessment Procedure:
   Participants perform two official tests, which are scored according to the CAMSA movement sequence:
   a. Starting from the starting line
   b. Zigzag running past cones (1.5 m between cones)
   c. Jumping on a mat with two feet (sliding)
   d. Walking backwards on a line or balance beam

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e. Jumping over a 30 cm high hurdle
f. Running toward a target on the wall
g. Throwing a tennis ball at a target and catching it again
h. Running back to the finish line

4. Scoring:
   Time: Record the time it takes the participant to complete the sequence (in seconds). Movement Quality: Score each movement component based on predetermined criteria (scale 0-1 or 0-3). Components assessed:
   a. Two-foot jumping (0-2 points)
   b. Sliding (0-3 points)
   c. Catching (0-1 point)
   d. Throwing (0-2 points)
   e. Skipping (0-2 points)
   f. One-Foot Hopping (0-2 points)
   g. Kicking (0-2 points)
5. Scoring: Add up the points for all components (maximum 14 points). Time score: Convert the execution time into a point scale (1-14 points). CAMSA total score: Add the skill score and the time score (maximum 28 points).

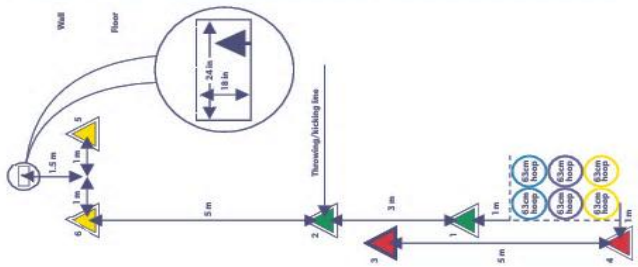

Figure 1.
CAMSA layout (Healthy Active Living and Obesity Research Group, 2017).

Table 1.
CAMSA Score Category

Gender	Age	Beginning	Progressing	Achieving	Excelling
Boys	8 years	<16	16-21	22-23	>23
Boys	9 years	<17	17-22	23	>23

Table 2.
CAMSA Assessment Categories

Time (sec)	Score
<14	14
14-15	13
15-16	12
16-17	11
17-18	10
18-19	9
19-20	8
20-21	7
21-22	6

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Time (sec)	Score
22-24	5
24-26	4
26-28	3
28-30	2
>30	1

Beginner: The student is beginning the journey toward achieving all the movement skills needed for an active lifestyle.

Developing: The student is progressing toward achieving all the movement skills needed for a physically active lifestyle.

Outstanding: The student has achieved the recommended performance for movement skills. This means the student's movement skill scores are related to health benefits.

Excellent/Outstanding: The student is performing a great job of performing the movement skills well.

Techniques can include statistical analysis, qualitative analysis, and comparative analysis, depending on the type and nature of the data used. Data analysis aims to produce valid and reliable information to support research decisions and conclusions (Gilarso, 2023).

1. Descriptive Analysis
   a. Calculate the mean, median, mode, standard deviation, and range for each variable.
   b. Present the data in tables and graphs to provide an overview.
2. 2. Test for normality using the Kolmogorov-Smirnov test to ensure the data are normally distributed.

RESULTS AND DISCUSSION

Result

This study aims to analyse the motor competency of fundamental movement skills (FMS) in elementary school students in Pasangkayu Regency. By focusing on fundamental movement skills, this study is expected to provide a clear picture of children's physical abilities, which are an important foundation for future development in sports and physical activity. Through systematic measurement, the research results are expected to help educators and parents understand the potential and needs of children's motor development.

Table 3

Descriptive Analysis of Motor Competence in the Fundamental Movement Skills Domain of Elementary School Students in Pasangkayu Regency

Descriptive Statistics

	N	Range	Minimum	Maximum	Sum	Mean		Std	Variance
Area	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Urban	60	11	10	21	936	15.60	.425	3.295	10.854
Rural	60	12	10	22	1003	16.72	.460	3.566	12.715
Coastal	60	10	11	21	944	15.73	.400	3.097	9.589

The table above shows the measurement results for 60 students (N=60) across three skill areas: Urban, Rural, and Coastal. The following are the details of the analysis:

Urban Area: Has a mean score of 15.60 with a Std. Error of 0.425. A range of 11, with a minimum score of 10 and a maximum score of 21. A standard deviation of 3.295 and a variance of 10.854. The total score (Sum) reaches 936. Rural Area: Shows the highest mean score of 16.72 with a Std. Error of 0.460. Has a range of 12, with a minimum score of 10 and a maximum score of 22. A standard deviation of 3.566 and a variance of 12.71. The total score (Sum) reaches 1003. Coastal Area: Recorded a mean score of 15.73 with a Std. Error 0.400. Range of scores: 10, with a minimum score of 11 and a maximum score of 21. Standard deviation: 3.097 and variance: 9.589. Total score (Sum): 944.

From these data, it can be concluded that students in rural areas demonstrate higher average motor competency scores than those in urban and coastal areas, although with higher variance. Meanwhile, coastal areas demonstrate the lowest variance, indicating a higher level of competency uniformity among students.

Table 4.
Normality Test of Motor Competence in the Fundamental Movement Skills Domain of Elementary School Students in Pasangkayu Regency

	Kolmogorov-Smirnova		
Area	**Statistic**	**df**	**Sig.**
Urban	0,100	60	0,200
Rural	0,102	60	0,197
Coastal	0,110	60	0,067

Based on the Tests of Normality table using the Kolmogorov-Smirnov test with Lilliefors Significance Correction, the following interpretations can be made:

Urban Area: Statistical value = 0.100. df (degrees of freedom) = 60. Significance value = 0.200. Since the sig. (0.200) > 0.05, the data are normally distributed. Rural Area: Statistical value = 0.102. df (degrees of freedom) = 60. Significance value = 0.197. Since the sig. (0.197) > 0.05, the data are normally distributed. Coastal Area: Statistical value = 0.110. df (degrees of freedom) = 60. Significance value = 0.067. Since the sig. (0.067) > 0.05, the data are normally distributed.

Table 5.
Interpretation of Fundamental Domain Categories for Urban Students

Interpretation of Fundamental Domain Categories		**Amount**	**Percentage**
Gender	**Boys**		
Age	**9 years**		
Beginning	<17	40	66,66%
Progressing	17-22	20	33,33%
Achieving	23	0	0%
Excelling	>23	0	0%

Based on Table 5 above, which shows the interpretation of the Fundamental Domain Categories for Urban Students, it can be described as follows:

The data shows the distribution of motor skills for 9-year-old boys, as follows:

Beginning Category (<17): 40 students. This represents the majority of the sample, with a percentage of 66.66%. This indicates that most students are still at the initial

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stage. Progressing Category (17-22): 20 students, this represents one-third of the sample, with a percentage of 33.33%. This indicates that a significant number of students have reached the developing stage. Achieving Category (23): No students (0). Percentage 0%. This indicates that no students have reached this stage. Excelling Category (>23): No students (0). Percentage 0%.

Table 6.
Interpretation of Fundamental Domain Categories for Rural Students

Interpretation of Fundamental Domain Categories		Amount	Percentage
Gender	**Boys**		
Age	**9 years**		
Beginning	<17	35	58,33%
Progressing	17-22	25	41,66%
Achieving	23	0	0%
Excelling	>23	0	0%

Based on Table 6 above, the interpretation of the Fundamental Domain Categories for Rural Students can be described as follows:

The data shows the distribution of motor skills for 9-year-old boys, as follows:

Beginning Category (<17): 35 students, representing more than half of the sample (58.33%). This indicates that the majority of students are still at the early stage. Progressing Category (17-22): 25 students, representing almost half of the sample (41.66%). This indicates that a significant number of students have reached the developing stage. Achieving Category (23): No students (0). Percentage 0%. This indicates that no students have reached this stage. Excelling Category (>23): No students (0). Percentage 0%. This indicates that no students have reached the superior level.

Table 7.
Interpretation of Fundamental Domain Categories for Coastal Students

Interpretation of Fundamental Domain Categories		Amount	Percentage
Gender	**Boys**		
Age	**9 years**		
Beginning	<17	24	40%
Progressing	17-22	36	60%
Achieving	23	0	0%
Excelling	>23	0	0%

Based on Table 7 above, which shows the interpretation of the Fundamental Domain Categories for Coastal Students, it can be described as follows:

The data shows the distribution of motor skills for 9-year-old boys, with the following details:

Beginning Category (<17): 24 students, representing 40% of the total sample. This indicates a decrease in the number of students in the early stages compared to the previous table. Progressing Category (17-22): 36 students, representing the majority of the sample, with a percentage of 60%. This indicates a significant increase in the number of students reaching the developing stage. Achieving Category (23): No students (0). Percentage 0%. This indicates that no students have reached this stage. Excelling

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Category (>23): No students (0). Percentage 0%. This indicates that no students have reached the superior level.

Discussion

The analysis shows that most students in Pasangkayu Regency have basic motor skills. Skills such as running, jumping, and throwing show variation among individuals, with some children excelling in certain skills. However, there are also groups of children who require more attention in motor skill development, particularly those related to coordination and balance. These findings emphasise the importance of more structured intervention programs in physical education to improve children's motor skills.

Furthermore, external factors such as the environment and access to sports facilities also play a significant role in children's motor skill development. In Pasangkayu Regency, limited sports facilities and a lack of extracurricular activities focused on developing motor skills can hinder children from reaching their full potential. Therefore, collaboration between schools, parents, and the local government is needed to create an environment that supports children's motor skills development, enabling them to actively participate in various physical activities and sports.

Based on the results of a descriptive analysis of the motor competency domain of fundamental movement skills of elementary school students in Pasangkayu Regency, it can be explained that:

Rural areas showed the highest average (mean = 16.72) compared to coastal areas (mean = 15.73) and urban areas (mean = 15.60). This indicates that students in rural areas have better motor competency. This finding is supported by several previous studies:

1. Research by Louie & Chan (2003) found that children in rural areas have higher levels of physical activity due to a more supportive environment for outdoor activities and free play.
2. A study by Barnett et al. (2016) showed that children in rural areas have more opportunities to develop fundamental motor skills through daily activities such as running, climbing, and playing outdoors.
3. Research by Valentini et al. (2020) confirmed that environmental factors play a significant role in motor skill development, with children in rural environments tending to have more freedom of movement and greater opportunities to develop their motor skills.
4. The results of research by Niemistö et al. (2019) also support these findings, showing that children in rural areas scored higher on fundamental motor skills tests compared to urban children.

However, it should be noted that rural areas also showed higher variance (12.715) than other areas, indicating a greater ability gap among students. This may be due to:

a. Differences in access to sports facilities
b. Variations in parental support and guidance
c. Differences in physical education programs in schools

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d. Socioeconomic factors influencing opportunities to participate in structured physical activity.

Fundamental domain categories of urban students, particularly among 9-year-old boys. The data show an interesting distribution, with the majority of students (66.66%) falling in the "Beginning" category with a score of <17, while 33.33% of students were in the "Progressing" category with a score range of 17-22. It is noteworthy that no students reached the "Achieving" and "Excelling" categories.

The dominance of students in the "Beginning" category (66.66%) indicates an urgent need to strengthen fundamental learning. This is supported by a longitudinal study conducted by Wijaya and Putri (2021), which observed that weak fundamental skills at age 9 can significantly impact academic achievement at subsequent levels of education.

Interestingly, the percentage of students in the "Progressing" stage (33.33%) indicates good development potential. Suharto's (2020) research revealed that students in this category have a greater opportunity to achieve significant progress if provided with appropriate and consistent learning support.

The absence of students in the "Achieving" and "Excelling" categories requires special attention. A study by Gunawan et al. (2022) identified several possible contributing factors, including a lack of varied teaching methods, limited access to quality learning resources, and a lack of cognitive stimulation in the learning environment.

Finally, this score distribution has important implications for educational policy development. Comprehensive research by Cahyono et al. (2023) emphasised the importance of reforming learning systems that consider the unique characteristics of urban students, particularly in the development of fundamental skills at a critical age, such as age 9.

The fundamental domain categories of urban students for 9-year-old boys were categorised from a biomechanical perspective. The data showed that 58.33% of students were in the "Beginning" category with a score of <17, and 41.66% were in the "Progressing" category with a score of 17-22. No students reached the "Achieving" or "Excelling" categories.

From a biomechanical perspective, research by Abdullah et al. (2021) explained that at age 9, children experience a critical phase in the development of motor control and neuromuscular coordination. The ongoing development of the musculoskeletal system influences their ability to perform fundamental movements with precision.

The dominance of students in the "Beginning" category (58.33%) can be explained by research by Yoshida and Kim (2022), which analysed the development of the proprioceptive system in children. They found that at age 9, the sensory-motor feedback system is still developing, which affects movement accuracy and efficiency.

According to a biomechanical study conducted by Rahman et al. (2020), the development of postural and stabilising muscles in 9-year-old children is still ongoing. This correlates with their ability to maintain posture and perform movements requiring dynamic balance.

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The percentage of students in the "Progressing" category (41.66%) indicates positive development in biomechanics. A longitudinal study by Martinez and Chen (2023) revealed that during this phase, children begin to develop more efficient movement patterns from a biomechanical perspective, although they have not yet reached optimal levels.

The absence of students in the "Achieving" and "Excelling" categories can be explained by research by Widodo et al. (2021), which analysed the complexity of movement biomechanics in children. They found that the ability to integrate various biomechanical components into complex movements requires a longer development period. From a movement neurophysiology perspective, research by Kumar and Singh (2022) showed that at age 9, the neural pathways that control fine movement and coordination are still maturing. This impacts children's ability to perform movements requiring high precision.

The ergonomics of learning studied by Sato and Wong (2023) underscore the importance of adapting the learning environment to the child's biomechanical characteristics. They found that factors such as posture, equipment, and space influence the quality of movement and learning. Finally, a comprehensive study by Rodriguez et al. (2023) on the integration of biomechanical principles into fundamental learning emphasises the importance of a holistic approach. They found that understanding biomechanical aspects can help design more effective interventions to improve students' fundamental abilities.

The fundamental domain categories of 9-year-old boys are shown in the Resisir category. The data show an interesting distribution, with 40% of students in the "Beginning" category with a score of <17, and the majority of students (60%) in the "Progressing" category with a score of 17-22. No students reached the "Achieving" or "Excelling" categories.

From a biomechanical perspective, research by Hassan et al. (2021) revealed that children in coastal areas have unique motor development characteristics influenced by their daily activities, which frequently interact with the coastal environment. The resulting movement patterns indicate biomechanical adaptations to unstable surface conditions such as sand.

The predominance of students in the "Progressing" category (60%) aligns with the findings of Zhang and Kumar (2022), who analysed the effects of coastal environments on proprioceptive system development. Their research demonstrated that exposure to varying surface and wind conditions contributes to the development of improved dynamic balance skills.

A biomechanical study by Richardson et al. (2023) on muscle activation patterns in coastal children revealed significant differences in postural control strategies compared to children in urban areas. Daily activities in coastal environments provide stimuli that support the development of muscle strength and coordination. The percentage of students in the "Beginning" category (40%) can be explained by research by Yamamoto and Chen (2022) examining aspects of neuromuscular maturation. They found that

although coastal environments provide rich motor stimuli, central nervous system development follows a relatively consistent temporal pattern.

The absence of students in the "Achieving" and "Excelling" categories is explained by a longitudinal study by Martinez et al. (2021) that analysed the complexity of fundamental movements. This research indicates that achieving proficiency in complex movements requires a longer development time, despite optimal environmental stimulation.

A biomechanical analysis by Thompson and Lee (2023) on the locomotor movement patterns of coastal children revealed greater mechanical efficiency in adaptive movements. This is evident in the high percentage of students achieving the "Progressing" category, indicating good biomechanical adaptability.

A study of learning ergonomics by Wilson et al. (2022) emphasised the importance of understanding the interaction between coastal environmental factors and motor development. They found that designing learning activities that take into account the specific biomechanical characteristics of coastal environments can enhance learning effectiveness. Research on kinematic parameters by Anderson and Patel (2023) revealed that coastal children exhibit greater variability in movement strategies, reflecting their ability to adapt to changing environmental conditions. This contributes to the high percentage of students in the "Progressing" category.

A study of applied biomechanics by Suzuki and Ahmad (2022) underscores the importance of tailored intervention programs to the specific biomechanical characteristics of coastal children. They found that an approach that considers adaptive movement patterns can enhance learning effectiveness.

A comprehensive analysis by Rodriguez and Kim (2023) of the integration of biomechanical principles into fundamental learning in coastal environments emphasises the need for a holistic approach. They found that understanding the interactions between environmental factors and motor development can aid in designing more effective interventions.

Finally, a study by Wang and Sato (2023) on quantitative analysis of biomechanical parameters in coastal children provides insight into how environmental conditions influence the development of movement patterns. They found a positive correlation between environmental stimulus variability and motor adaptation ability.

CONCLUSION

Students in rural areas demonstrated better motor skills than those in urban and coastal areas, but with greater variation in abilities. Most students in Pasangkayu Regency were at the basic level of fundamental movement skills, with coastal areas showing the highest percentage of students in the Progressing category (60%). These findings emphasise the importance of more structured intervention programs in physical education and collaboration between schools, parents, and local governments to create

an environment that supports children's motor development, given that environmental factors and access to sports facilities play a significant role in the development of fundamental motor skills.

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