

The Relationship Between Arm Muscle Strength and Basic Movement Ability of Elementary School Students

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Abstract.

The purpose of this research is to find out The Relationship Between Arm Muscle Strength and Basic Movement Ability of Elementary School Students. This study uses a correlational quantitative method. The population in this study were male elementary school students in grades IV, V, VI at the Cirebon City State Madrasah Ibtidaiyah as many as 62 male students. The data collection technique uses tests and measurements. Data analysis uses product moment correlation with the help of SPSS version 25 software to analyze it. Based on the results of the analysis above, the coefficient of the relationship between arm muscle strength and basic movement ability is obtained by the value of $r_{count} = 0.521 > r_{table} (0.05) = 0.266$. From the results of the study it can be concluded that there is a significant relationship between arm muscle strength and basic movement abilities of elementary school students. This relationship is positive, meaning that the better the arm muscle strength, the better the students' basic movement abilities

Keywords: Arm Muscle Strength, Basic Movement Ability, Elementary School Students

INTRODUCTION

Elementary school-aged students' learning activities will produce students' skills and abilities if the process can guide, nurture, and stimulate (Lindt & Miller, 2017). Education is organized with a focus on basic physical growth and development (fine and gross motor skills), creativity, spiritual and emotional intelligence (Sidiq et al., 2021). One of the goals of education for elementary school-age children is for children to be able to perceive sensory stimuli and be able to manage their motor skills. The process of physical and motor development in elementary school students plays an important role in forming quality individuals in the future (Sujarwo et al., 2021). Children's physical and motor skills develop very rapidly (Susilo et al., 2021). Physical development is closely related to motor development. If there is interference with physical development, then the development of motor skills or movement is also hampered. The process of developing motion is beneficial for the development of physiological, cognitive, social, and emotional aspects (Purwanto et al., 2022).

Basically, humans move and do activities to survive. Unknowingly, humans have moved from an early age. Means that movement is an important requirement in survival. Good basic movement affects good movement for humans, because basic movement is the main element of all human movement. Basic human movements have been carried out by everyone without exception by children, for example when playing in the home or school environment. Examples of basic movements that children make when playing are walking, running, jumping, sometimes throwing and catching in certain games. Unknowingly, many games contain basic human movements. This means that physical activity has a big contribution to the basic movement abilities of a child (Riyanto & Kristiyanto, 2017).

In schools, physical activities that require basic movement have been arranged in a structured and planned manner to become a subject, namely Physical Education, Sports and Health (PJOK). Basic movement abilities become a basic competency that includes basic motion practice of simple games in physical education (Huda, 2018). Physical education occurs when students experience a reciprocal process with the school

environment through effective and efficient physical development in order to form a complete human being, because basically physical education is an integral element of the entire education system (Sari & Nurrochmah, 2021). Learning basic movement skills in PJOK needs to be instilled in children from elementary school so that children are aware of the importance of mastering basic movement skills well so that they can be useful in everyday life. Elementary school age is a period that greatly determines the growth and physical development and movement of children who play an important role in the formation of quality individuals in the future. Therefore, children of primary school age must get more attention to the development of basic movements (Widodo & Lumintuarso, 2017).

PJOK subjects function to develop children's basic movement skills because learning is done through physical activities that involve basic movements. Physical activity is a form of stimulation in order to bring out the potentials that students have in learning. A PJOK teacher plays an important role in being able to create various physical activities in learning that are able to stimulate the growth and development of children's basic movements. In other words, the physical activity created by the PJOK teacher must encourage students to be active in moving so that the learning objectives of basic movement skills can be achieved (Tri Iwandana & Stiyapranomo, 2022).

Strength is the ability of a group of muscles to withstand resistance or load in carrying out its activities. Arm muscle strength is a movement that is carried out explosively, meaning that someone is able to use the arm muscle strength that is maximally deployed in the shortest possible time to produce movement. A positive impact will be provided by good muscle strength, related to the use of power to make movements (Iwandana et al., 2018). If the power is large, the activity will be easier. The better the arm muscle strength, the better the students' ability to carry out their activities. Arm and hand muscle strength can be developed by lifting heavy objects, holding a tool, climbing stairs, hanging on a bar, and swinging. The role of arm muscle strength is to maintain balance and withstand excessive loads without causing excessive fatigue.

RESEARCH METHODS

This study uses a correlational quantitative method. The population in this study were male elementary school students in grades IV, V, VI at the Cirebon City State Madrasah Ibtidaiyah as many as 62 male students. The data collection technique uses tests and measurements, namely with a hand grip dynamometer. This tool can be used to measure arm muscle strength, the unit of value is in kilograms (kg). The validity value of the test is 0.880 and the reliability value is 0.938. This test has been tested for use. There are also other tests, namely the Basic Movement Ability test consisting of an agility test in the form of a 4 x 10 meter shuttle run, a coordination test that can be done by throwing and catching a ball, a balance test using a stork stand positional balance test, and speed using a 30 meter sprint test. Data analysis uses product moment correlation with the help of SPSS version 25 software to analyze it.

RESULTS AND DISCUSSION

Table 1. Description of Arm Muscle Strength Frequency

Number	Intervals	Frequency	%
1.	10,5 – 12,35	9	16,67
2.	12,36 – 14,21	9	16,67
3.	14,22 – 16,07	13	24,07
4.	16,08 – 17,93	14	25,93
5.	17,94 – 19,79	5	9,26
6.	19,80 – 21,6	4	7,40
Amount		54	100

The results of calculating arm muscle strength variable data obtained, minimum value = 10.5 , maximum value = 21.6 , mean (mean) = 15.542 , standard deviation = 2.7268. Table description of the data analysis of arm muscle strength is as follows:

1. Normality test

Based on the results of the normality test, it is known that the significance value is $0.200 > 0.05$, so it can be concluded that the residual values are normally distributed.

2. Linearity Test

Linearity testing is carried out through the F test. The relationship between variables X and Y is declared linear if the value of F_{table} with $df = m; N-m-1$ at a significance level of $0.05 > F_{count}$.

Table 2. Correlation Test Results

	F_{count}	df	F_{Table}	Sig	Information
X.Y	0,712	1:53	2,31	0,801	Linier

From the table above, it can be seen that the F_{count} value of all independent variables with the dependent variable is smaller than F_{table} . So, the relationship of all independent variables with the dependent variable is declared linear.

3. Hypothesis testing

Analysis of the research data used to test the hypothesis consists of simple regression analysis and multiple regression. The results of a simple regression analysis are as follows:

Table 3. Correlation Test Results

	X	Y	r_{table}
X	1	0,521	0,266
Y		1	-

Based on the results of the analysis above, the coefficient of the relationship between arm muscle strength and basic movement ability is obtained by the value of $r_{count} = 0.521 > r_{table} (0.05) = 0.266$. With these results, the hypothesis reads "there is a significant The Relationship Between Arm Muscle Strength and Basic Movement Ability of Elementary School Students".

Basic movement ability is a general skill that experiences continuous repetition until it becomes a habit, the basis of experience for locomotor, non-locomotor and manipulative movements so that the quality of life increases. To obtain good basic movement skills, every elementary school student is required to have elements of basic movement abilities, namely arm muscle strength, leg muscle strength, and eye-foot coordination.

Basic movement ability is a phase of learning motion aimed at the development and maturity of children's movement skills which include the basic movements including the body, space, effort, and connectedness. One must master locomotor, non-locomotor, and manipulative movements in order to have good basic movement skills. To support good basic movement abilities, elements of good physical condition are also needed. In this study the aim was to determine the relationship between arm muscle strength, leg muscles, and eye-foot coordination with basic movement abilities.

CONCLUSION

From the results of the study it can be concluded that there is a significant relationship between arm muscle strength and basic movement abilities of elementary school students. This relationship is positive, meaning that the better the arm muscle strength, the better the students' basic movement abilities.

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