



## **Cross sectional study of the ability to lay up children aged 6-11 years**

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### **ABSTRACT**

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This research is a cross-sectional study on the ability of elementary school children aged 6-11 years to throw in the basic lay-up technique. This research is a descriptive study, with the entire population being sampled, totaling 244 children, consisting of 38 children aged six years, 29 children aged seven years, 50 children aged eight years, 30 children aged nine years, 41 children aged ten years, and 56 children 11 years old. The instruments used are tests and measurements. The test chosen is the lay-up test; each child is tested for the ability to lay up on five occasions. Admission was scored 1, and non-entry was scored 0. Data were analyzed using Excel and SPSS and presented as measures of central tendency and graphs. The results showed that the child's ability has significantly increased from time to time in terms of age. As he gets older, his ability to lay up increases

**Key words:** basketball; lay up; motor development; throw.

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## **INTRODUCTION**

Gross motor skills include physical strength, movement, balance, coordination, and accuracy (Agustin et al., 2021; Ananditha, 2017; Hanum & Rohita, 2021). Examples of gross motor movements include throwing, walking, running and jumping (Trianingsih, 2016). Hidayanti (2013) states that there is a correlation between motor skills and mental psychology related to self-confidence and motor cognitive abilities. So this motor study is very important.

Dividing motor development into several stages, specifically at the elementary school level entering the final basic motion fare and entering the transition period to the application-specific motion phase (Gallahue et al., 2019). This phase of motion will be different at each age level according to formal or non-formal learning experiences (Istiqomah & Suyadi, 2019).

Physical education learning in schools is very important in relation to motor development, this motor development will ultimately have a major effect on the development of motion at the next age level (Hidayati, 2017; Iswanto & Widayati, 2021; Khaulani et al., 2020; Mustafa & Sugiharto, 2020; Nugraha, 2015). One of these motion learning processes is also influenced by growth which can be seen from anthropometry (Fadhullah et al., 2020).

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Research studies state that motor development is very important. How this child will affect all elements of the child's developmental life, be it social, emotional, or language (Hadi et al., 2017; Sutiarti & Delrefi, 2020), so it needs stimulus, increased self-confidence (Wijayanti, 2018), the right movement development occurs by providing encouragement, appreciation or learning opportunities (Darmanto et al., 2019; Haryanti et al., 2019; Nova, 2019).

Motion learning should be in accordance with age development, including the suitability of the selection of games chosen to be taught and trained (Khaulani et al., 2020; Ruswan et al., 2020). Games or play methods or modified games are more effective in efforts to improve basic movements (Mirawati & Rahmawati, 2017; Yahya, 2020), games have been proven to function for gross motor development such as kasti, jump rope, and go back so door (Fallo et al., 2020; Hasanah et al., 2018; Iswantiningtyas & Wijaya, 2015).

Research states that different ages will result in differences in motor abilities (Ramadhani, 2022), types of activities experienced (Yuda, 2012) social environment (Bakharuddin, 2014). This study aims to determine the differences in gross motor abilities of elementary school children aged 6 years to 11 years to the ability to lay up in basketball. Relevant research states that there are differences in gross motor abilities based on where children live (Karisman, 2018), based on gender (Beseler et al., 2022). Whereas in this research study took a developmental gap seen from the age of the child, in a cross-sectional study.

## **METHODS**

This research is cross-sectional research (Sugiyono, 2021). This study aims to see the ability of elementary school children aged 6-11 years to throw in the basic lay up technique. The population used in this study were all students of SDN 10 Anjungan. The entire population was sampled in this study. The sample amounted to 244 students, consisting of 38 children aged 6 years, 29 children aged 7 years, 50 children aged 8 years, 30 children aged 9 years, 41 children aged 10 years, and 56 children aged 11 years. The instruments used were tests and measurements. The test chosen was the lay up test, each child was tested for lay up ability in 5 opportunities. Entry was scored 1 and no entry was scored 0. Further can be seen in table 1. Data were analyzed using Excel and SPSS and presented in the form of central tendency measures and graphs.

Table 1. Lay up test assessment instrument matrix

	Score 1 (Enter)	Score 0 (No Entry)
Lay up 1		
Lay up 2		
Lay up 3		
Lay up 4		
Lay up 5		

## RESULTS AND DISCUSSION

### Research Results

The study was conducted on all primary school students at SDN 10 Anjungan, West Kalimantan. Data from the test results were analyzed and presented in table 2.

Table 2. Results of layup achievement of students aged 6 years to 11 years.

	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
6 years old	38	.7632	.71411	.11584	.00	2.00
7 years old	29	.9655	.49877	.09262	.00	2.00
8 years old	50	1.4400	.50143	.07091	1.00	2.00
9 years old	30	2.0000	.64327	.11744	1.00	3.00
10 years old	41	2.1951	.67895	.10603	1.00	3.00
11 years old	56	2.0536	.69856	.09335	1.00	3.00
Total	244	1.6148	.82598	.05288	.00	3.00

Based on table 2 and figure 1, at each age there is an increase in the ability to lay up. It can be seen from the age of 6-7 years that the ability tends to be low, and there are still students who cannot put the ball into the basketball 5 times doing lay ups. Starting at the age of 8 years, all students can score even if it is only one, and the average of all samples of 8-year-old children is 1.44. Likewise, at the age of 9 years, 10 years experienced an increase in the ability to lay up. At age 11 there is a decrease in ability, but it is thin and can be said to be still in the range of 9-11-year-old abilities.

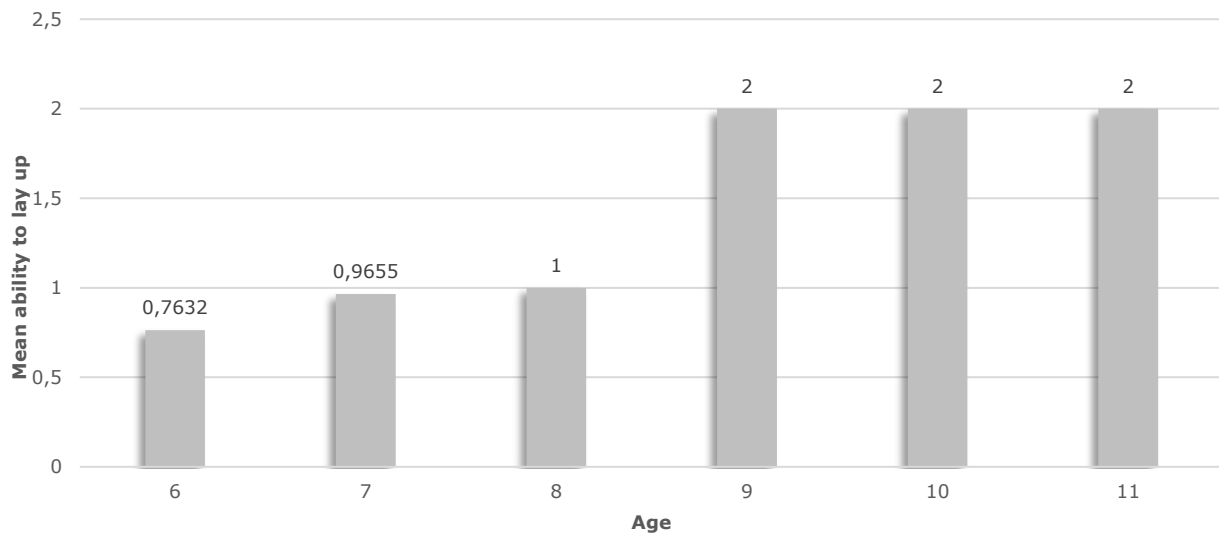


Figure 1. The results of the ability to lay up students aged 6 years to 11 years.

## Discussion

The results showed that the ability to lay up with a cross-sectional study showed an increase in the age line. Judging from graph 1, it can be observed that as children get older, their skills will increase. This condition is certainly in accordance with relevant research in motor studies. It is proven that sex and age play a role as a differentiator in physical abilities (Borukova & Mavrudiev, 2020).

It was found that gender and age differences also became different physical abilities possessed by students (Borukova & Mavrudiev, 2020), it turns out that sons have more practice compared to daughters, indeed sons are better than daughters (Johnson et al., 2019; Pahlevanian & Ahmadizadeh, 2014; Padmakar & Mukherjee, 2020). Furthermore, judging from anthropometry, sons have an advantage over daughters so that sons are indeed better (Robertson & Konczak, 2001; Gromeier et al., 2017) in performing throwing movements. It is important to note that this throwing ability correlates with the development of children's psychological maturation (Gromeier et al., 2022), to the mastery of sports (Chi, 2010; Maselli et al., 2019; Lola et al., 2022).

Furthermore, the importance of throwing ability is a complex motion (Patel & Bansal, 2018; Pratviel et al., 2021) will have a positive effect on the sport that is engaged in, a skill that is not easy to master (Liu, 2022). This throwing maturity will affect the sport to be engaged in, the better the throwing ability, the more it is possible to be involved in sports (Johnson et al., 2019; Chiu, 2010).

Researchers (Wang et al., 2009) argue that there are several techniques that must be mastered to score, namely shooting, jump shot, and lay up. Lay up is an important technique in basketball games (Štirn et al., 2022). A reliable

teacher or coach is needed to teach the correct lay up skills for beginners to learn, this is so that the correct education and skill learning process occurs (Mosleh et al., 2019). How to improve lay up skills can be done by increasing knowledge and understanding (Ibáñez et al., 2007) about ball rotation, friction effects, ball inertia (Huston & Grau, 2003), including the scientific basis of biomechanical techniques (Chakraborty & Mondal, 2020), drills (Peltekova, 2019), training by getting closer to the basket (Li, 2021) or lowering the basket (Ye, 2014).

Several researchers have recommended in relation to motor skills, that motor competence influences daily natural activity (Grimpampi et al., 2016), correlates with learning new movements and their development (Gimenez et al., 2012), and recommends these skills be taught (Capio et al., 2013), by providing opportunities in positive conditions to improve eye-hand coordination (Lucas et al., 2019).

## CONCLUSION

Layup and throwing skills cannot be separated. These skills are related, in accordance with the research objectives, it can be concluded that the mastery of layup children aged 6 years to 11 years has increased. The older the age the higher the ability to do layups achieved. So based on the results of this study, it is recommended to train the ability to throw and layup correctly and provide opportunities for success to children's students so that they have a happy impression and will continue to participate in physical activity in playing and exercising.

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