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Differences in Lay-Up Ability of Boys and Girls of Lower-Class Elementary School Students

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Abstract

Studi purpose. This study was aimed to determine the ability of elementary school students, especially the lower classes, to do layups

Materials and methods. The sample was 117 elementary school students, 52 boys, and 65 girls. The layup ability test was carried out by giving five opportunities to students. Admission was scored one, and non-entry was scored 0. Descriptive and non-parametric analysis was used to explain the data that has been collected.

Results. The results showed little difference in the skill of laying up between boys and girls of low-grade elementary school students. This can be seen from the average layup ability and standard deviation values , which were not much different. This similarity was even more convincing when a non-parametric statistical test was carried out, which gave a significant count of 0.165

Conclusion. This concludes that there is no difference between boys and girls in the ability to do the layup

Keywords: Basketball, Lay Up, Motor, Coordination Movement

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Introduction

Throwing is the coordination of fine and gross motor skills into one (Matheis and Estabillo 2018). The ability to throw and the ability to play the sport of basketball have a close relationship (Šumar, Ćeleš, and Mededović 2022). Technically throwing in penalty shots takes into account several things the body is facing the basketball hoop, and the result of the throw is influenced by the height, speed, and angle of the throw (Veljović et al. 2021). Throwing over the head requires simultaneous muscle coordination and ultimately ends in the whipping of the hands to produce a throw (Calcei and Freehill 2021).

Throwing is also influenced by the weight and lightness of the object being thrown. If the ball gets heavier, it will require more energy and more preparation (Van Den Tillaar and Ettema 2004), so if necessary, training using ball medicine is necessary for adaptation and

effort. To improve throwing ability (Van Den Tillaar and Ettema 2004). Based on this research specifically for accuracy, regular balls are more effective for increasing throws.

In basketball, mastery of basic throwing skills supports learning basic techniques. The techniques used in basketball include layups, jump shots, and set shots (Wang, Liu, and Moffit 2009). These techniques are very important for scoring. Various attempts have been made to improve throwing skills, such as getting closer to the hoop to reduce the distance (Li 2021), lowering the basketball hoop, and doing direct playing practice to earn points (Ye 2014).

Lay-up is a very important skill; this is not unreasonable; it is stated that 93.58% of the score is contributed by this skill (Peltekova 2019), being one of the important skills (Wang, Liu, and Moffit 2006). The ability to throw a lay-up depends on one of them being the ground reaction force event (Lim and Park 2019). Whereas lay-up is one of the basic technical skills, eye and hand coordination (Ramadan et al. 2021), this is only seen from the execution of the final part. However, judging from the series of motions, eye, hand, and foot coordination is still being considered, and the ability to estimate the correct distance so that there are no wrong steps and technical errors occur.

Several studies have tried to share research results regarding the importance of laying up. Such as efforts to provide a track on the floor so that changes in foot movements become easier (Raeisiyan et al. 2021), by doing drills done repeatedly as is the case with shooting exercises (Ibrahim, Asmawi, and Sulaiman 2018), or directly playing games in-game settings the level of difficulty is set (Ghanati and MohammadZadeh 2018). This is so that students who are learning are asked to play a game in which in the end students must do a lay-up movement with the game rules that are conditioned, to provide an opportunity so that the final scenario is a lay-up movement.

Research shows that age and gender affect physical abilities differently (Borukova and Mavrudiev 2020). Based on this statement, the researcher is interested in one of them proving this difference. In this study, the subjects were specifically lower-grade elementary school students. The differentiator emphasized in this study is the gender of boys and girls. At the same time, the study used the ability to coordinate throwing in the form of skills to do a layup. One study stated that boys are better than girls at throwing (Johnson et al. 2019). Furthermore, does this also apply to low-grade students?

Materials and Methods

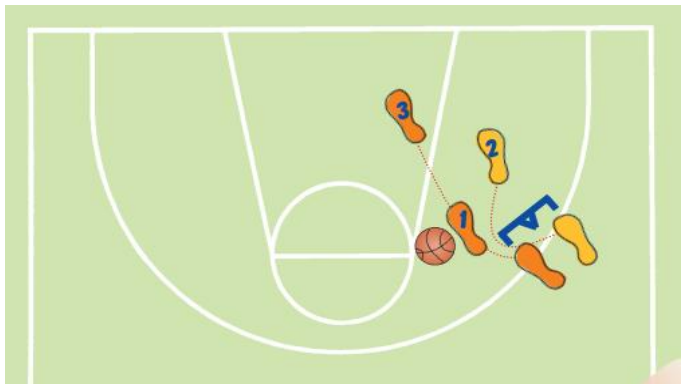
Study participants

This study aimed to describe the ability to make throws, especially layups, in low-grade elementary school students. In this case, the research subjects comprised 117 students, with 52 boys and 65 girls ranging from 6 to 8 years. Measurements were carried out on the ability to make a throw, in this case, the layup, which was quite a complex coordination for junior high school students. The test implementation was done by giving the same five opportunities to do layups with previously given examples and doing three trials.

Study organization

The procedure for doing a lay-up is as follows:

Lay-up was done on a basketball court with a start of 4 meters. Students doing lay-ups were given five opportunities each with the five balls provided. Students stood ready on a predetermined line, entered the ball with a trot rhythm, took two floating steps, and entered the ball with one hand. On the signal "YES," the students immediately dribbled the ball, jogged, took two steps to fly, and put the ball in with one hand (Endang Sepdanius, Muhamad Sazeli Rifki 2019).



(Barth, Boesing, and Barth 2010)

Pigure 11. Posisi *Lay-up*

Statistical analysis

Data was collected through tests and measurements; in the next step, data tabulation, grouping, and segregation of male and female groups were carried out. Furthermore, the data was analyzed using Axel and SPSS software programs. Descriptive statistical calculations and analysis of different tests were carried out between the male and female groups.

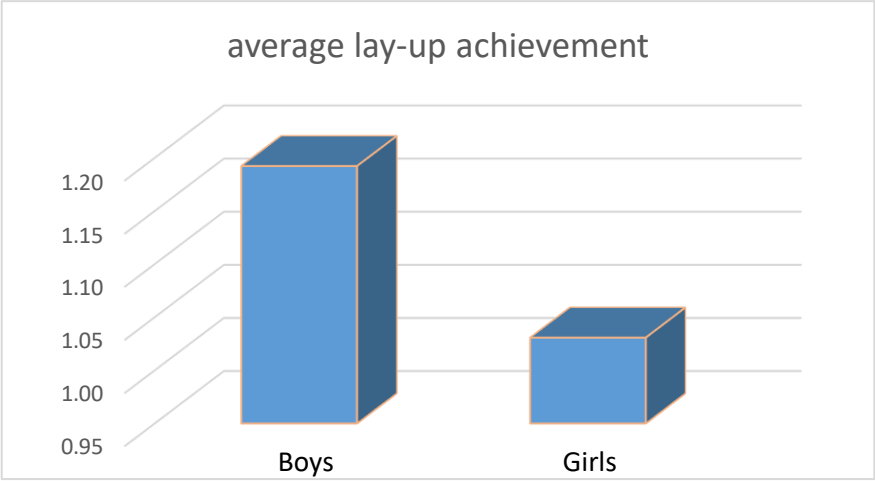
Results

This research was conducted on lower-grade elementary school students with an age range of 6 years to 8 years at SDN 10 Anjungan, Mempawah West Kalimantan. With a sample of 117 children. After the lay-up test was carried out, the data was arranged in a description table as follows:

Table 1. Descriptive Statistics Between Groups Of Boys And Girls In Layup Skills

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Lay-up achievement	Putra	52	1.1923	.68709	.09528
	Putri	65	1.0308	.61159	.07586

Table 1 and Graph 1 show very little difference in average ability between the two groups, where the male group had an average score of ability to lay up 1.19 and the female 1.03. It was similar to looking at the standard deviation. Based on the standard deviation between the two groups, each was almost the same at 0.6; this indicated that the range of abilities in each density group was the same. Furthermore, in Graph 1, it can be seen that between sons and daughters, male students were slightly above female students. However, judging from the opportunity to lay up to 5 times with an average, as shown in Table 1, this difference still needs to be bigger.



Graph 1. Average Lay Up Achievements Between Boys and Girls of Lower-Class Students

Table 2. Results of the data normality test for the male and female groups

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Lay-up achievement	.298	117	.000	.788	117	.000

Based on the data normality test, it was stated that it was not normal; this can be seen from the results of the significance count for both Kolmogorov-Smirnova and Shapiro-Wilk, which were smaller than sig. 0.05. So that the data was then analyzed using non-parametric statistics. The non-parametric statistical test results are presented in the following table:

Table 3. Ranks mean different test results

	Gender	N	Mean Rank
Lay-up achievement	Male	52	63.35
	Female	65	55.52
	Total	117	

Table 4. The results of the Kruskal Wallis significance test

	Lay-up achievement
Chi-Square	1.947
df	1
Asymp. Sig.	.163

Based on Table 3 and Table 4, it can be explained that with an arithmetic significance of 0.163 greater than 0.05, it was stated that the two groups between male and female were declared to have the same ability; this means that there was no difference between the lay up abilities of male and female lower-class students daughter.

Discussion

In summary, this study aimed to prove whether the coordination ability of throwing abilities represented by the layup between boys and girls in the upper and lower elementary

school groups was different. We were departing from a research review that stated that there were differences between the abilities of male and female students. This study was especially for the lower class group between males and females. After testing and analysis, it turned out that the results for the two groups were the same. The same in a sense, it was proven by evidence that the mean ability between males and females was not much different; judging from the standard deviation, the densities of the two groups were also the same, and the non-parametric test results were more convincing with a calculated significance result of 0.163, it is explained that this value was far above 0.05 as the limit threshold that stated the data was the same or different. It was concluded that the ability to do the layup was the same between the male and female groups.

Maturity in throwing will affect the sport involved (Johnson et al. 2019); the better the throwing ability, the more possible it is to be involved in sports. This is even more convincing with research evidence conducted by (Liu 2022), which states that throwing is a challenging skill and fewer and fewer people are interested in it. Throwing has a high transfer value in sports such as baseball-softball, handball, javelin, and water polo (Chi 2010).

Several things make the development of throwing motion skills, gender, forearm growth, body, and stride length (M.A. and J. 2001). Accurate throws are affected by how the pitcher prepares for the previous dishes and the start of finger opening (Hore 1996). Be mindful of throwing with the technique above the head of the arm swing, movement of the legs and arms has a big impact (Petranek and Barton 2011).

Considering that shots are shot thousands of times in basketball (Simeonova 2012), the more the attack increases, the more shots will also increase. Things that need to be considered in learning to throw are posture, point of view, accuracy in using strength and speed, ability to estimate distance, and follow-up (Johnson et al. 2019). Lay-up exercises with as many drills as possible will improve both boys' and girls' abilities (Štirn, Brišnik, and Erčulj 2022). Improving the ability to lay up needs to be based on knowledge and understanding of the application of bioengineering to increase the accuracy and efficiency of the technique (Chakraborty and Mondal 2020). Counterattacks that end with a lay-up are more likely to succeed (Calderani et al. 2020). The things that are important to note in doing a lay-up, analysis include the effects of friction, ball inertia, and ball rotation (Huston and Grau 2003). Play, lay-ups occupying a percentage of up to 47.7% in matches are used, and unguarded lay-ups have a high chance of entering (Matulaitis and Grėbliūnas 2021). The role-playing method is more effective than the demonstration method in lay-up learning (Sumarsono and Syamsudin 2019).

It turns out that these findings were more likely to agree with a study conducted by (Sakurai and Miyashita 1983)which states that the ability to throw between males and females up to 4 years will be the same, there will be differences at the age of 5 years and up to the age of 8 years it will still be At the same time, it is only after nine years that the males will experience rapid progress. Then, the males will lead, as evidenced by a cross-sectional study comparing men's and women's throwing abilities (Lorson et al. 2013).

Conclusions

This research shows that the throwing skills, especially layups, between male and female students in lower class had the same skills. Maturity is important in children's motor development, so lower-class students should obtain motor literacy. Learning interventions are necessary to ensure more meaningful improvement and provide students with the skills to use their skills in activities and sports.

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Conflict of interest

Author declare that there is no conflict of interest whatsoever in this research.

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