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Improvement of manipulative skills of 6-year-old children through "Si buyung" gymnastics

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Abstract

This study aims to determine the effectiveness of Si Buyung Gymnastics in improving the manipulative skills of learners aged 6 years. The research method used was an experiment, and the sample used was 15 learners. The manipulative skill test instrument is adapted from the basic motion skills test, which is the test of catching and bouncing the ball. The sampling technique used is purposive sampling, namely: (1) individuals who are willing to be subjects or permitted by parents or guardians; (2) kindergarten students; (3) 6 years old; and (4) students who are physically and spiritually healthy. Pretest and post-test data analysis techniques use paired T-test statistical techniques. The results showed that movement and song learning had an influence on improving the manipulative skills of kindergarten students; this was shown from the pretest and post-test results. The results of the statistical test T-paired pretest amounted to 16.67, while the post-test was 19.44. The paired T-test shows higher post-test results than the pretest. The results of the data analysis showed a real improvement in the students' ball-bouncing skills after being given the Si Buyung Gymnastics treatment.

Keywords: Gymnastics Si buyung, manipulative, effectiveness, movement, kindergarten.

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INTRODUCTION

Manipulative skills are the ability to control and manipulate objects using objects, such as grasping, holding, or hugging (Khadijah & Amelia, 2020). This ability is important for developing fine motor, gross motor, and cognitive skills by age 6. Research shows that the sub-category of fundamental basic movement skills in manipulative skills is significantly

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associated with moderate to vigorous physical activity during the learning process in school (Cohen et al., 2014). Children's lack of manipulative skills causes them to watch more and engage less in play and physical activity, and children with good manipulative skills tend to be more active (Capio et al., 2015). In producing good and qualified learning in physical education, the excellent motoric movement must be accepted to reach the goal and follow the existing learning in the physical education curriculum to create graduation based on expectation (Zulrafli & Kamarudin, 2021). Therefore, it is important to pay attention to effective methods or programs for improving manipulative skills at that age.

One method often used in education is gymnastics (Riinawati, 2021; Devrilmez et al., 2019). Gymnastics has been shown to be effective in developing motor skills and coordination in children (Bhatia et al., 2015). In this context, it is necessary to study the effectiveness of gymnastics as a method that can improve the manipulative skills of students aged 6 years. There is a difference of opinion among academics regarding the benefits and effectiveness of gymnastics in the development of manipulative skills at that age.

Some education experts argue that gymnastics can improve the manipulative abilities of 6-year-old students because it involves movements that involve the whole body, including hand movements (Bhatia et al., 2015; Dönmez & Bavlı, 2020; Zulfah, 2019; Pradipta et al., 2023). They argue that through structured gymnastics exercises, students will develop coordination skills, hand muscle strength, and fine motor skills necessary for object manipulation. In addition, previous research states that there is a strong relationship between fundamental basic movement skills and gymnastics, which supports the view that gymnastics programs can accelerate the learning of fundamental movement skills in children (Abu et al., 2020; Rudd et al., 2015). Participant children in daily activities Field & Temple, (2017). Out of the fifty-five recreational activities that children participated in during extracurricular time, gymnastics was the only activity that positively correlated with children's motor skills,

specifically their manipulative skills. Similarly, children with higher levels of fundamental basic motion learn gymnastics skills more easily (Handayani et al., 2023).

Lack of gymnastic activities may be a contributing factor to a child's failure to develop more complex skills (Rudd et al., 2020). In particular, Dönmez & Bavlı (2020) Investigated the improvement of fundamental basic motion after eight weeks of gymnastics training in 40 children aged 5-6 years. The authors showed significant improvements in balance and locomotor skills in children who participated in recreational gymnastics compared to children who did not participate in gymnastics.

Researchers agree on the relationship between gymnastics and fundamental basic movement skills; however, there are differences of opinion regarding the relationship between gymnastics and object control skills (Field & Temple, 2017). This is because gymnastics generally does not involve the exercise of object control skills, so a slight improvement is expected.

One of the gymnastics used in this study was Si Buyung gymnastics. Gymnastics usually involves movements that combine physical activity with elements of play (Iswatiningrum & Sutapa, 2022). Si Buyung Gymnastics aims to improve motor skills, balance, coordination, and muscle strength for children of all ages (Eriani & Dimyati, 2020). Basically, Si buyung gymnastics combines the movements of the hands, feet, and other body parts with songs or songs accompanied by dance movements. Children are invited to follow movement instructions given by the instructor or through video guides. Some common movements in gymnastics include raising hands, kicking feet, jumping, and spinning.

Although gymnastics has been recognized as an effective method of motor skill development and coordination in children, more research is needed to study the effectiveness of gymnastics in improving the manipulative skills of 6-year-old students. Many studies have investigated the effect of gymnastics on a wider range of children, with no particular focus on manipulative skills at that age. In addition, in a cultural context,

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the effectiveness of gymnastics in improving manipulative skills can be influenced by cultural factors. Si Buyung gymnastics, for example, is a traditional Indonesian gymnastics. Therefore, research involving different cultural contexts is needed to understand whether the effectiveness of gymnastics can be widely applied to various populations of students aged 6 years.

METHOD

This study used an experimental design. The type of experimental research design used in this study is quasi-experimental. This method is used to determine whether the treatment given to the experimental group has an impact. The sampling technique uses purposive sampling techniques, with a sample of 15 students aged 6 years. The purposive sampling method is done by considering specific criteria to meet the purpose of the study. As the study involves kindergarten students with low manipulative skills in a private kindergarten in Magelang City, the number of students recognized is 15 from 63. The statistical technique used to measure effectiveness is the paired T-test. The paired T-test is used to see the difference in pretest and post-test results. Before the data is tested at the paired T-test stage, it is first tested for normality with a significance level of > 0.05.

This research follows pseudo-experimental processes and procedures, where this study provided treatment to one group by intervening in subjects through Si Buyung Gymnastics with as many as 12 treatments. Bending will determine the impact of manipulative movements on 6-year-old kindergarteners.

Bujang & Darmawan (2019). Test instruments to measure manipulative skills. Fundamental Movement Skills (FMS), used to measure manipulative skills, are measured by catching and bouncing ball tests. The validity and reliability of the instrument are 0.76 (Apriani et al., 2020; Dwi Pradipta et al., 2022). The range of manipulative skills of 6-year-olds is as follows:

Table 1. Range of manipulative test scores by catching and bouncing a ball aged 6

Test	Very low	Low	Enough	Tall	Very high
Rating for girls					
Catching and bouncing the ball (20 seconds)	≤ 14	15 - 16	17 - 19	20 - 21	≥ 22
Rating for boys					
Catching and bouncing the ball (20 seconds)	≤ 14	15 - 16	17 - 20	21 - 23	≥ 24

(Aye et al., 2017)

The study was conducted by administering the pre-test to measure the students' manipulative skills in a one-group and post-test design. Then, the group was trained to develop manipulative skills through the implementation of Si Buyung gymnastics. With a total number of 14 meetings, the students were trained to improve their manipulative skills. The post-test was done after the treatment using the same test as the pre-test. Finally, the pre and post-test data were compared using a paired T-test.

RESULT

Description of Research Data

Pretest and post-test data of ball bounce games for children aged 6 years; the number of research subjects was 15 learners. A pretest is done before giving the Si buyung gymnastics treatment. While the post-test is carried out afterwards. The treatment was given 12 times by applying Si buyung gymnastics to students.

Table 2. Pretest and post-test catching and bouncing ball

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	15.40	15	3,089	,798
	Posttest	18.00	15	3,295	,851

The table above shows the data for the pre-and post-test results after 12 treatments. Furthermore, a normality test was carried out before analyzing the research data. Based on Table 2, it can be seen in the column mean pretest results: 15.40 and post-test: 18.00. Data on the difference between pretest and post-test results shows that there are differences in data; the average post-test results show more significance

than the pretest, meaning that students' bouncing skills have increased. Pretest data before treatment compared to post-test data after treatment increased from 15.40 to an increase of 18.00. This improvement means that Si Buyung's gymnastics treatment can improve the students' ability to bounce the ball.

Table 3. Normality test of kindergarten B's ball bouncing skills

	Shapiro-Wilk		
	Statistics	df	Sig.
Pretest	,962	15	,721
Posttest	,935	15	,319

Based on the table above, the pretest and post-test results of TK B jumping skills showed significance levels of 0.721 > 0.05 and 0.319 > 0.05. If the normality test result is > 0.05, the pretest and post-test results are normally distributed so that they can be continued with paired T-tests. The normality test can also be seen from the points spread on the Q-plot diagram for the pretest and post-test.

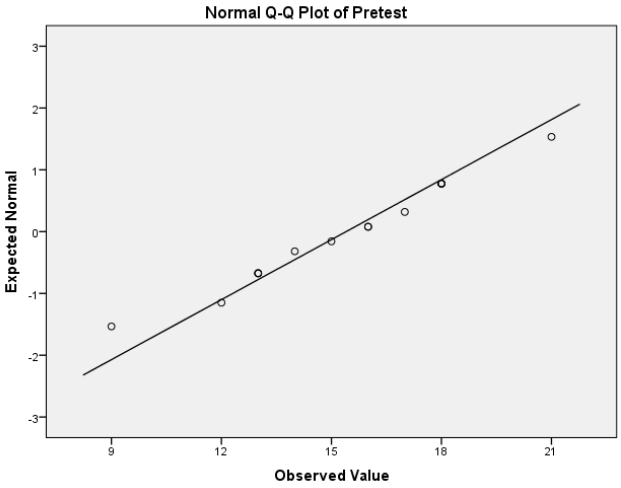

Figure 1. Q-plot diagram pretest bouncing test ball

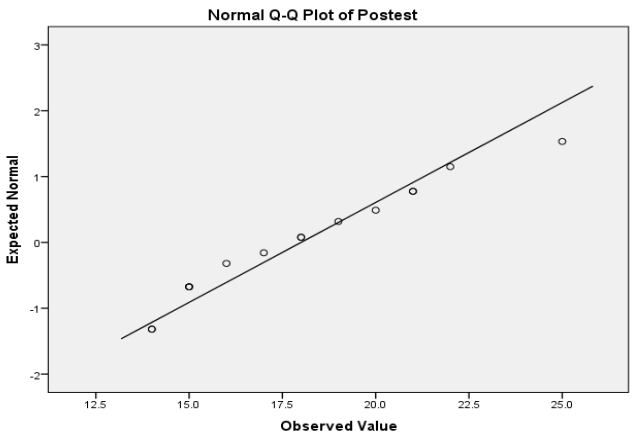

Figure 2. Q-plot diagram post-test test bouncing ball

Based on the Q-plot diagram for the pretest and post-test shown in Figure 1 and Figure 2, the data shows a normal distribution because the direction of the points on the Q-plot diagram increases upwards, so the data is declared normal and can be tested using paired T-tests to determine the difference between pretest and post-test.

DISCUSSION

This study shows that Si buyung gymnastics has a significant positive influence on improving the manipulative skills of 6-year-old students. After going through the Si Buyung Gymnastics program, there was a significant improvement in students' ability to control hand and finger movements, hold, throw, catch, and manipulate objects with accuracy. Previous research has shown that Milkie gymnastics improves students' eye-hand coordination and fine motor skills (Malkan Bihari, 2020). In the creation gymnastics method, children's gross motor skills can increase, so the use of the creation gymnastics method is chosen as one of the stimuli to develop children's gross motor skills (Maulin et al., 2019). Exercises involving hand, finger, and manipulative object movements help students develop the skills of holding, grasping, and controlling objects (Malkan Bihari, 2020). In addition, it is in line with other studies that show that gymnastics can increase student motivation and encourage active participation in activities that involve manipulative skills (Eriani & Dimyati, 2020; Pradipta & Sukoco, 2013). Factors such as engaging music, fun movements, and the approach of playing in gymnastics create a fun environment and motivate students to be actively involved (Puspitasari & Habibah, 2022).

In addition, movement and song can also provide increased physical activity, motor skills, and hand-eye coordination (Prahesti et al., 2019). Referring to this opinion, it is necessary to emphasize a learning approach that prioritizes movement so that it can be integrated with the school curriculum. So that it can help children understand various subjects. It is important to ensure that this method supports the holistic development of children and meets their needs at the age of 6 years (Zulfah, 2019). Learning movements and songs also facilitate trained teachers, and various interesting activities support the child's learning process (Waldo et al., 2022). Teachers should be able to conduct surveys on the measurement of manipulative motion skills as a basis for

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assessment. So that the assessment also supports the holistic development of children and meets the needs of students.

This study provides evidence that Si buyung gymnastics is effective in improving the manipulative skills of 6-year-old students. This program provides benefits in terms of manipulative motion skills. However, it is important to remember that support from teachers and parents and a holistic approach to manipulative learning also play an important role in achieving optimal results.

The study proves that implementing the Si buying a gymnastic program can affect the students' manipulative skills. It is significantly effective for developing the manipulative skills of 6-year-old students. Due to this being a pre-experimental design, the study was done in a narrow sample that can be specific and will have different findings implemented in different samples. It is also obvious that other variables out of the discussion of the study were uncontrolled. This study is expected to be beneficial for other researchers focusing on the same interest to conduct broader samples by also considering other variables under discussion. For the educational parties, both the teachers and the trainers can adopt the same strategy to solve similar problems.

CONCLUSION

The pretest result recorded a value of 16.67, while the post-test result increased to 19.44. Analyzing the differences between these two data sets shows significant changes. The average post-test result exceeds the pretest, showing an increase in students' manipulative skills. Specifically, when compared with the post-test data after applying the buyung gymnastics treatment, the pretest data increased from 16.67 to 19.44. This observed improvement means that the training treatment for Si Buyung has the potential to improve the bouncing skills of 6-year-old students. Further research is expected to increase the validity and generalisability of research results; it is recommended to use a larger sample size. This will provide a more representative picture of the

effectiveness of gymnastics in improving manipulative skills in the 6-year-old student population.

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