




RESEARCH ARTICLE

Application of Traditional Games to the Fundamental Movement Skills of Children 5-6 Years of Age

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Abstract

This research is motivated by children's fundamental movement skills, which are less than optimal. Mastery of fundamental movement skills that are less than optimal will affect the achievement of further movement skills. The purpose of the study was to determine the effect of using traditional games on fundamental movement skills. The traditional games applied are engklek, gobag sodor and boi-boinan. Using 3 traditional games is important because the results of previous research on fundamental movement skills have never used more than one type of traditional game and the results of children's fundamental movement skills are maximized. Using a quantitative approach with the type of pre-experimental research design one group pretest posttest Sampling using a random sampling technique with the result being 30 child samples. Using a quantitative approach with the type of pre-experimental research design one group pretest posttest Sampling using random sampling techniques with the results of 30 child samples. Using parametric statistical methods and data collection techniques by observation using the Test of Gross Motor Skill-Second Edition (TGMD-2) instrument, namely running movement, jumping motion, gallop, horizontal jumping movement, catching movement, kicking movement, throwing motion, ball rolling motion, and leap movement. The statistical test results show a p value = 0.00 which means there is a relationship between fundamental movement skills and traditional games. In addition, the results of data analysis have an effect of 5% so it is concluded that there is an effect of traditional games on fundamental movement skills in children.

Keywords

Indonesian Traditional Games, Fundamental Movement Skills, 5-6 Years Old Children

INTRODUCTION

The importance of mastering fundamental movement skills from an early age is one of the important elements to achieving physical competence that will lead children to have good physical literacy (Gallahue & David, 2012). The positive impact of mastering fundamental movement skills is children's involvement in physical activities when they are teenagers (Barnett et al., 2019) as well as their confidence (McGann et al., 2020). In addition, fundamental movement skills also increase the fun of playing so that it can lead children to have good physical activity (Chan et al., 2019). These studies show the importance of children mastering fundamental movement skills

from an early age. Mastery of fundamental movement skills also has a positive impact on the realm of children's health such as obesity, which is rarely found in children (Bryant, 2013). Williams (2012) explains that children with fundamental movement skills will be more active which will prevent children from becoming obese. Similarly, research Duncan (2017) also said that children's low fundamental movement skills are related to obesity.

Apart from the health aspect, Bremer (2016) it says that fundamental movement skills have a positive impact on children's social and emotional development. Good movement skills can have a positive impact on children's academic achievement at school such as in aspects of cognitive and language development.

Received: 13 August 2024 ; Revised ; 05 October 2024 ; Accepted: 29 October 2024; Published: 25 November 2024

How to cite this article: Fitri, A.W., Dimiyati, D., and Ayriza, Y. (2024). Application of Traditional Games to the Fundamental Movement Skills of Children 5-6 Years of Age. *Int J Disabil Sports Health Sci*;7(6):1329-1338. <https://doi.org/10.33438/ijdsHS.1532819>

The importance of mastering fundamental movement skills in children accompanied by the empirical evidence already described, indicates that it should be a consideration for PAUD teachers in school learning. However, the research [Kurniawan \(2018\)](#) said there were 50% of children had not mastered fundamental movement skills, especially in fundamental manipulative movements. From the research results [Farepsi & Suryana \(2021\)](#) dan [Firman et al., \(2022\)](#) Children's manipulative movements have not increased and have decreased due to learning from the effects of the COVID-19 pandemic. Reinforced there is also no significant increase in manipulative movements in preschools that have used the physical education curriculum for children aged 4-5 years in Finland ([Iivonen & Saakslanti, 2014](#)).

In addition, the fundamental movements of children in two big cities in Indonesia such as Cirebon ([Widiarti et al., 2021](#)) and Depok ([2014 Djuanda & Suryani, 2021](#)) fundamental locomotor movements is not good, for example in the ability of children to jump in various directions using one foot or two feet, and vice versa jumping in the reverse direction. Reinforced by research results ([Muslihin, 2020](#)) that children perform fundamental movements such as walking still with the tip of the foot pointing outward, and inward, and when children tread using the ball of the foot and becomes common mistakes exist.

The results of these studies indicate that teachers must further maximize fundamental movement skills in early childhood. Children's fundamental motion learning activities must be by the principles of early childhood learning, namely learning through play. Playing is an activity that is chosen by the child because it is fun and fulfills the primary needs of child development ([Andriani, 2012](#)). Traditional games as an activity that is fun for children and uses a lot of movement ([Fitri, 2016](#)). Reinforced by research results ([Gipit et al., 2017](#)) which concluded that in Malaysia using intervention-based traditional games was efficient in improving preschool children's motor skills.

In general, traditional games in Indonesia have been shifted by modern games ([Burhaein, 2017](#)). This results in not too many types of traditional games that still survive or are preserved today. Research results ([Nurhayati, 2012](#)) said traditional games in early childhood education institutions are rarely used in learning activities. For

this reason, the urgency is to apply traditional games to learning in schools.

Traditional games that are scattered throughout Indonesia are many but are still thought to have the potential to be preserved, namely *gobag sodor*, *engklek*, *jamuran*, *patok lele*, *kasti*, *boi-boinan* and *ular naga panjang* ([Burhaein, 2017](#)). There are many traditional games in Indonesia, in this study focused on several games such as *engklek*, *boi-boinan* dan *gobag sodor*. These three traditional games can improve motor development and are fun for young children ([Djuanda & Suryani, 2021](#); [Khisma et al., 2023](#); [Susena et al., 2021](#)).

Comparing previous research from [Kusumawati \(2018\)](#) limited to one traditional game, one fundamental motion and less specific to the age range 0-6 years. Thus this encourages researchers to test or prove the effect of traditional games on the fundamental movement skills of children aged 5-6 years and their effectiveness.

MATERIALS AND METHODS

Methods

This study allows researchers to directly evaluate the effect of games on children's skills by comparing skills before (pretest) and after (posttest) the intervention is given. By using only one group, researchers can focus on the changes that occur in that group after being given a particular game. Therefore, the one-group pretest-posttest design provides a practical solution to evaluate an intervention's effect in this complex situation ([Creswell, 2014](#)). The research design is presented with a chart in Figure 1.

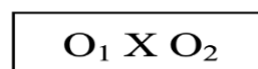


Figure 1. Research design

Participants

The sample determination was carried out using a random sampling technique with the criteria of children aged 5-6 years and not in a condition with special needs so that the total sample was 30 samples with details of 16 boys and 14 girls.

This research has been approved by the Ethics Committee of the University of State Yogyakarta (Reg.No.:T/66/UN34.9/KP.06.07/2024). Participant provided informed consent, with the volunteer form covering research details, risks, benefits, confidentiality, and participant rights. The research strictly adhered to the ethical principles of the

Declaration of Helsinki, prioritizing participant's rights and well-being in design, procedures, and confidentiality measures.

Instruments Study

Data collection techniques were done by observation using instruments Test of Gross Motor Skill-Second Edition (TGMD-2) running movement, jumping motion, gallop, horizontal jumping movement, catching movement, kicking movement, throwing motion, ball rolling motion, and leap movement (Ulrich & Sanford, 2000). This instrument has been validated and reliable on 135 children in Indonesia with validity results $2.27 > t$ table 1.65 and reliability 0.765 (Apriyani et al., 2018).

Procedure

The implementation of the research trial was carried out with 3 stages, namely giving pretests to children to determine initial abilities. Furthermore, the treatment/stimulus is given as an effort to influence children's fundamental movement skills. The treatment is given by using 3 traditional games engklek, boi-boinan and gobag sodor.

The engklek game is a traditional game played by jumping over plots drawn on the ground. The child will jump with one foot over the patches, avoiding the marked patches. In addition, children also throw gaco or other objects into certain plots, and the plots must not be stepped on during the game. This game trains children's balance, agility, and motor coordination.

Gobag sodor is a traditional Indonesian game played by two groups of players. It is played on a rectangular field divided into sections. The main objective is to cross the lines guarded by the opposing team without being touched. Boi-boinan is a traditional game popular in Indonesia, especially among children. The game involves two teams, where the goal is to knock over and reassemble a pile of stones while avoiding the opposing team's throwing balls. The game combines speed, agility, and cooperation between players.

The treatment trial was given for 12 meetings, then divided into groups of four to five children. Each group will compete to complete tasks or obstacles contained in traditional games within 10 minutes. The role of the teacher is as a facilitator and supervisor to ensure the implementation of the game as expected. Before each game, the teacher explains and demonstrates to the children how to play the game. After being given treatment, children are given a posttest which aims to determine the final

ability of children's fundamental movement skills. Each child's activity was assisted by a research assistant to help observe the assessment of children's fundamental movement skills, which were then analyzed using parametric statistics.

Descriptive analysis will be conducted to describe the data obtained, provide fundamental summary statistics such as mean, median, standard deviation, and frequency distribution, and conduct a Chi-Square Test (Gravetter, 2014) with the TGMD-2 results. In the context of this study, the Chi-Square Test can be used to test the effect of traditional games on fundamental movement skills with the results of the TGMD-2 assessment, and then also statistically describe the fundamental movement skills.

RESULTS

Description of data on fundamental movement skills in the first trial assessment (pretest) before treatment and after treatment (posttest) with running, jumping, leaping (long jump), horizontal jumping, catching, kicking, throwing, and rolling the ball produces the following data:

Running Movement

The results of running movements before the treatment (Pretest) are more dominant in the low category with a total of 28 (93.33%) children in the score range of 4-5 and 2 (6.67%) children in the very low category with a score range of 1-3, while the value after the treatment (posttest) is most dominant in the high category with a total of 26 (86.67%) score range 6-7, 3 (10.0%) low category score range 4-5, and 1 (3.33%) child with a very high category with a score range of 8-12. It can be concluded that there are differences after being given traditional game treatment.

Jumping Motion

The results of running movements before the treatment (pretest) were more dominant in the low category with a total of 23 (76.67%) children in the score range of 4-5, 1 (3.33%) child in the very low category score range 1-3 and 6 (20.0%) children in the high category with a score range of 6-7, while the value after the treatment (posttest) was most dominant in the very high category with a total of 16 (53.33%) score range 8-12, 13 (43.33%) children in the high category score 6-7, 1 (3.33%) low category score range 4-5. It can be concluded that there are differences after being given traditional game treatment.

Leap Movement (Long Jump)

The results of the leap movement (long jump) with a relatively small number of assessments so that the assessment before the treatment (pretest) is the style of treatment (posttest) is most dominant in the very high category with a total of 16 (53.33%) score range 6 and 14 (47.67%) children in the high

more dominant in the high category with a total of 22 (73.33%) children in the standard score range of 4-5 and 8 (26.67%) children in the low category of the standard score range of 2-3, while the value after category score range 4-5. It can be concluded that there are differences after being given traditional game treatment.

Table 1. Frequency distribution of pretest and posttest of running motion

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	8 -12	0	0.00%	1	3.33%
High	6-7	0	0.00%	26	86.67%
Low	4-5	28	93.33%	3	10%
Very Low	1-3	2	6.67%	0	0.00%
Total		30	100%		100%

Table 2. Frequency distribution of pretest and posttest of jumping motion

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	8 -12	0	0.00%	1	3.33%
High	6-7	0	0.00%	26	86.67%
Low	4-5	28	93.33%	3	10%
Very Low	1-3	2	6.67%	0	0.00%
Total			100%		100%

Table 3. Frequency distribution of pretest and posttest of long jump movement

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	8 -12	0	0.00%	1	3.33%
High	6-7	0	0.00%	26	86.67%
Low	4-5	28	93.33%	3	10%
Very Low	1-3	2	6.67%	0	0.00%
Total			100%		100%

Horizontal Jumping Movement

The results of horizontal jumping movements before the treatment (pretest) were more dominant in the low category with a total of 24 (80.0%) children in the score range of scores, namely 4-5, and 6 (20.0%) children in the very low category of the standard range of scores 1-3, while the value after the treatment (posttest) was most dominant in

the high category with a total of 23 (76.67%) score range 6-7 and 7 (23.33%) children in the low category of score range 4-5. It can be concluded that there are differences after being given traditional game treatment.

Catching Movement

The results of the capture movement with a relatively small number of assessment indicators so

that the assessment before the treatment (pretest) is dominant in the high category with a total of 21 (70.0%) children in the score range of 4-5, 9 (30.0%) children in the low category with a standard score range of 2-3, while the value after the treatment (posttest) is most dominant in the very high category with a total of 16 (53.33%) score range 6 and 14 (46.67%) children in the high category score range 4-5. It can be concluded that there are differences after being given traditional game treatment.

Kicking movement

The results of kicking movements before the pretest were more dominant in the low category with a total of 28 (93.33%) children in the score range of 4-5 and 2 (6.67%) children in the very low category in the standard score range of 1-3, while the value after the treatment (posttest) was most dominant in the high category with a total of 25 (83.33%) score range 6-7, 2 (6.67%) children in the very high category score 8-12 (10.0%) low category score range 4-5. It can be concluded that there are differences after being given traditional game treatment.

Throwing Motion

The results of throwing movements before the treatment (pretest) were more dominant in the low

category with a total of 26 (87.67%) children in the standard range of scores 4-5, 3 (10.0%) children in the very low category in the standard range of scores 1-3 and 1 (3.33%) child in the high category with a score range of 6-7, while the value after the treatment (posttest) was most dominant in the high category with a total of 24 (80.0%) score range 6-7, 4 (13.33%) children in the low category score range 4-5 and 2 (6.67%) children in the very high category score range 8-12. It can be concluded that there are differences after being given traditional game treatment.

Ball Rolling Motion

The results of rolling the ball before the pretest were more dominant in the low category with a total of 28 (93.33%) children in the standard score range of 4-5 and 2 (6.67%) children in the very low category in the standard score range of 1-3, while the value after the treatment (posttest) was most dominant in the high category with a total of 23 (76.67%) score range 6-7, 4 (13.33%) children in the very high category score range 8-12 and 3 (10.0%) children in the low category score range 4-5. It can be concluded that there are differences after being given traditional game treatment.

Table 4. Frequency distribution of pretest and posttest of horizontal jumping motion

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	8 -12	0	0.00%	1	3.33%
High	6-7	0	0.00%	26	86.67%
Low	4-5	28	93.33%	3	10%
Very Low	1-3	2	6.67%	0	0.00%
Total			100%	30	100%

Table 5. Frequency distribution of pretest and posttest of catching motion

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	6	0	0.00%	16	53.33%
High	4-5	21	70%	14	46.67%
Low	2-3	9	30%	3	0.00%
Very Low	1	0	0.00%	0	0.00%
Total		30	100%	30	100%

Table 6. Frequency distribution of pretest and posttest of kicking motion

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	8 -12	0	0.00%	2	6.67%
High	6-7	0	0.00%	25	83.33%
Low	4-5	28	93.33%	3	10%
Very Low	1-3	2	6.67%	0	0.00%
Total			100%	30	100%

Table 7. Frequency distribution of pretest and posttest of throwing motion

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	8 -12	0	0.00%	2	6.67%
High	6-7	1	3.33%	24	80%
Low	4-5	26	86.67%	4	13.33%
Very Low	1-3	3	10%	0	0.00%
Total			100%	30	100%

Table 8. Frequency distribution of pretest and posttest of ball rolling motion

Assesment	Standard Score	Frequency			
		Pretest		Posttest	
		Absolut (Fa)	Relative (%)	Absolut (Fa)	Relative (%)
Very High	8 -12	0	0.00%	4	13.33%
High	6-7	0	0.00%	23	76.67%
Low	4-5	28	93.33%	3	10%
Very Low	1-3	2	6.67%	0	0.00%
Total			100%	30	100%

Based on the results of the average value and standard deviation of the overall fundamental movement skills of children. Then the value before the treatment (pretest) consisting of 30 samples was 56.50, the lowest score was 47, and the highest score was 68, with a standard deviation or standard

deviation of 5.36. After the treatment (posttest), fundamental movement skills were obtained with an overall average of 82.60. The lowest score is 76, the highest score is 92, with a standard deviation of 4.58.

Table 9. Mean value and standard deviation (SD) of pretest and posttest data

Indicator	Average (x)	Lowest Score	Highest Score	Standard Deviation	
Fundamental Movement Test	Pretest	56,50	47	68	5.36
	Posttest	82,60	76	92	4.58

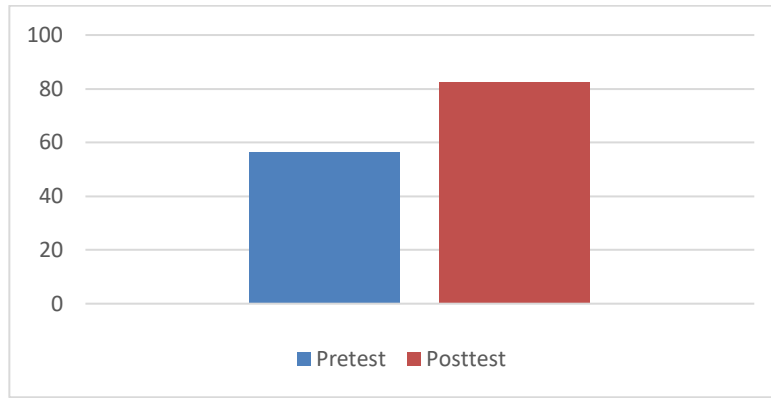


Figure 2. Diagram comparison of pretest and posttest results

Based on the influence test that has been carried out to answer whether the proposed hypothesis is accepted or rejected using the t-test, the results of fundamental movement skills are obtained with a t count of 59.44 which is then compared to the t table. Then obtained $d.b = (N-1)$ with a significance level of 5% of 1.699. The conclusion of the fundamental movement skills test

with a t-value of $59.44 > t$ table 1.699 means that the hypothesis is accepted so that there is an effect of traditional games on children's fundamental movement skills with a presentation of an increase of 46.50%. The overall P-value results are less than <0.05 , indicating that there is a relationship or there is an effect of the effectiveness of traditional games on children's fundamental movement skills.

Table 10. T-Test values

Treatment	Description	t-test	d.b	t table	Significant Level	Presentation of changes	p-value
Traditional Games	Pretest-Posttest	59.44	29	1.699	5%	46.50%	0.00

DISCUSSION

This study aims to determine the influence and effectiveness of traditional games on the fundamental movement skills of children aged 5-6 years. From the results of static calculations show there is an influence and effectiveness on fundamental movement skills in children aged 5-6 years. These results can be seen before treatment and after treatment using the TGMD-2 assessment instrument.

This is supported by research Akbari et al., (2009) that traditional games can improve children's fundamental movement skills. When compared to previous research Kusumawati (2018) Traditional games are equally effective for fundamental movement skills. This is because traditional games are fun and are done through play. The play approach in children can also improve various other aspects of development including social, emotional, personality, cognitive, and spiritual (Burriss & Burriss, 2011). The application of traditional games

has many benefits, the first is very easy to play and use tools or facilities in the surrounding environment, very simple without using costs so imagination and creativity are needed. Second, this game involves many people so that the utilization of learning time becomes more effective and efficient, besides that it also does a lot of movement activities so that the ability to communicate and interact with peers is more active. Third, traditional games contain ancestral values and moral messages such as the values of honesty, togetherness, sportsmanship, responsibility, enthusiasm, and obeying the rules (Burriss & Burriss, 2011).

The results of the analysis also show that children's fundamental movement skills are in the high category (Hardy et al., (2010) said that mastery of fundamental movement skills is influenced by bio-psychosocial and environmental factors. As we know, the development of technology today makes children already love smartphones that provide various interesting features for children. The lack of children's fundamental movement skills may be due

to the reduction in children's physical activities that are consumed by playing smartphones (Zulfikar et al., 2021).

The traditional games used have been modified and have been arranged in a simple way so that children are easy to do and learn the game but do not change the main principles of the game. In addition, aspects that need to be considered in modifying traditional games are motion activities that are tailored to child development, and game steps that are easily understood by teachers and children. The traditional games used in this study are *engklek*, *gobag sodor* and *boi-boinan*. In contrast to previous research, the traditional game used is only one type (Kusumawati, 2018). Motion activities are contained in traditional games that have been modified in the form of fundamental motion skills. The choice of fundamental movements is an activity that children must do because at that age they begin to experience sensitivity to receive stimuli (Sutini, 2013) and also sensitivity (Hasanah, 2016). Not only that, at this time children also have a very large sense of curiosity, further the development of children aged 5-6 years during motor maturity so that fundamental movement skills are important in supporting physical activity and capital to be healthy and reduce the risk of diseases such as hypertension, diabetes, osteoporosis and cardiovascular disease (Bremer, 2016).

Fundamental movement skills are movements that do not occur naturally but occur when there is physical activity and by more complex areas, so with the mastery of fundamental movement skills, children may participate in doing physical activities (Bustiando & Nurkholis, 2018). Fundamental movement skills can also be said to be one of the stages that will make children actively explore their body movement abilities. Fundamental movement skills develop from the process of learning results by responding to a stimulus with a form of motion control and fundamental movement skills are influenced by maturity and environmental factors (Lemos et al., 2012).

Based on the results of the analysis and research that has been done, it proves that modified traditional games on the ability of children's fundamental movement skills. The existence of these results is expected that traditional games are an important concept to be implemented in the learning process, especially in learning fundamental movement skills in preschool. The advantage of this

research is that it is able to influence fundamental movement skills by applying traditional games. As is known, traditional games are starting to be abandoned and are rarely seen in the implementation of fundamental movement learning in preschools. This is because traditional games are considered as folk games that do not keep up with the times, especially the rapid development of technology. The shortcomings in this study are that the assessment indicators used only include 8 movement skills consisting of running, jumping, leaping, horizontal jumping, catching, kicking, throwing, and rolling the ball. Not only that, the shortcomings are also found in the small number of participants and the application time of traditional games is also not long.

Conclusion

From the research that has been carried out, the conclusion shows that there is an influence and effectiveness of traditional games on fundamental movement skills in children aged 5-6 years. The application of traditional games can affect the fundamental movement skills of children aged 5-6 years. These results are in the form of changes in results before treatment (pretest) and after treatment (posttest) with indicators of assessment of movement skills of running movement, jumping motion, gallop, horizontal jumping movement, catching movement, kicking movement, throwing motion, ball rolling motion, and leap movement when showing changes for the better.

The achievement in this study is because traditional games have been modified and adapted to the development of early childhood. In addition, traditional games are conceptualized using a child-centered approach so that it attracts children to do fundamental movement skills activities well. For the future, only further research needs to be carried out to be tested with a larger number of participants, a long time, and cover all aspects of fundamental movement skills.

ACKNOWLEDGMENT

The author would like to express his deepest gratitude to Yogyakarta State University as the place where the author studied. Deep gratitude is also expressed to all parties involved in this research.

Conflict of Interest

We declare that the article we have written is not involved in any conflict of interest.

Ethics Statement

This research has been approved by the Ethics Committee of the University of State Yogyakarta (Reg.No.:T/66/UN34.9/KP.06.07/2024).

Author Contributions

Study design, AF, D and YA; Data collection, AF; Statistical analysis, AF; Data interpretation, AF, D and YA; Literature search, AF, D and YA. All authors have read and approved the published version of the manuscript.

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