

# The Effect of Traditional Games and Drill with Motor Ability on Skills (Running, Jumping, Overhand Throw and Catching) at Elementary School

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Received April 20, 2021; Revised May 26, 2021; Accepted September 22, 2021

## Cite This Paper in the following Citation Styles

(a): [1] Hendra Saputra, Achmad Sofyan Hanif, Iman Sulaiman, Desy Tya Maya Ningrum, "The Effect of Traditional Games and Drill with Motor Ability on Skills (Running, Jumping, Overhand Throw and Catching) at Elementary School," *International Journal of Human Movement and Sports Sciences*, Vol. 9, No. 6, pp. 1097 - 1103, 2021. DOI: 10.13189/saj.2021.090603.

(b): Hendra Saputra, Achmad Sofyan Hanif, Iman Sulaiman, Desy Tya Maya Ningrum (2021). *The Effect of Traditional Games and Drill with Motor Ability on Skills (Running, Jumping, Overhand Throw and Catching) at Elementary School. International Journal of Human Movement and Sports Sciences*, 9(6), 1097 - 1103. DOI: 10.13189/saj.2021.090603.

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**Abstract** Fundamental skills are obtained through physical education learning. Students can master one particular sport that is useful in everyday life. Elementary school students aged 6-12 years like to play or have fun in activities. Teachers are expected to design structured games that provide benefits for children's kinesthetic development. The purpose of this study was to determine the difference between TG and Drill that affects the fundamental skills (run, jump, overhand throw and catch) in elementary school. The method used in this research is experimental treatment by level 2 x 2 with a sample of 40 students. Data on the results of fundamental skills were obtained from TGMD-2. The data analysis technique was a two-way analysis of variance (ANOVA) and then continued with the t- Dunnet test at a significance level of  $\alpha = 0.05$ . The results of this study indicate that students who learn with the TG model (A1) are higher than the drill model (A2) with a  $t_0$  value of  $2.243 > t_{tab} 1.684$ . There is an interaction effect between physical education learning methods and motor ability tests on students' fundamental skills (running, jump, overhand throw and catch) with a value of  $F_0 12.835 > F_{tab} 4.08$ . The fundamental skills of students taught by the TG model (A1B1) were higher than practice (A1B2) for high motor ability tests with a  $t_0$  value of  $5.448 > t_{tab} 1.684$ . The fundamental skills of students taught by the TG model (A1B2) are lower than a drill

(A2B2) for low motor ability tests with a  $t_0$  value of  $1.886 > t_{tab} 1.684$ . The study concludes that TG has effects on improving students' fundamental skills for high motor skills. Meanwhile, drill has effects on improving students' fundamental skills for low motor skills. The findings of this study also state that traditional games can be used as a physical education learning model because there are elements of physical movement and building cooperation between students.

**Keywords** Traditional Games, Drill, Fundamental Skill, Motor Ability

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## 1. Introduction

Physical education is learning that can optimize and develop talents in students because there are elements of psychomotor, cognitive, and affective and foundational for a child's development (movement education, cognitive growth, socializing functions, emotional development) [1]. Basic motion is an element that underlies a series of motion. Teacher's lack of knowledge to organize systematic physical education learning can result in a lack of opportunities for students to be active. Teachers

implement Game-Centered Approaches and identify the challenge presented by prior experiences of learning games, which were mostly based on a traditional approach [2]. Educational policies and teachers' lack of training were the primary restrictions related to promoting opportunities for children to learn motor skills [3]. The REACH program provides a model for a service-learning approach where pre-service students can practice and refine their teaching skills through extended involvement in an after-school program that served students in a low SES community [4]. It is hoped that the fundamental skills acquired through physical education learning will allow students to master a particular sport and be useful for carrying out physical activities in everyday life. Physical education has allowed us to identify discourses they drew on in their everyday practice [5].

Fundamental skills must be mastered and possessed by all students at elementary school because they are the types of sports students like and can be a basis for participating in physical education learning. Self-controlled video feedback without the guidance of a teacher on movement technique led to similar learning effects as traditional guidance of the teacher in a PE context [6]. Learning that is carried out in elementary schools cannot be separated from the activities of coaching and developing students' multilateral movement skills, so that later it is expected that there will be a perfect movement directed at one type of sport. Silat, Taekwondo, and Karate have similar skills such as kicking, jumping, punching, and so on [7]. Physical education is indeed an assemblage that are comprised of epistemological (usually science-based), material (humans, gym equipment, etc.), and subjective (gender, ethnicity, etc.) bodies [8]. The process of designing the resource has demonstrated overwhelmingly that 'ease of use' is a primary consideration for teachers. The issues such as access to equipment, access to novel learning activities and their suitability for learners, play a significant role in the uptake and acceptance of the resource [9].

Games can also develop physical, motor, social, emotional, and personality aspects of students. Rules and game must also be designed to develop interaction between students and be adapted to students' thinking abilities. Playing traditional games maintains physical health, improves spiritual and mental states, and institutionalizes cultural values [10]. A deepening of

understanding of how game forms and gameplay will improve the quality of learning experiences in games, foster increasing and prolonged engagement of students [11]. That models of game learning actually process towards an aspect of physical education, then the Transforming Play model/process [12]. Performance improvements were associated with contextual features of extended team membership and consequent attunement of game-play interpersonal dynamics, nature of peer-teaching mediation, and game form design [13].

The application of traditional games (TG) in physical education learning can not only increase students' activity but also can be used to preserve culture. Traditional games (TG) are a first-rate pedagogical tool available to physical education teachers [14]. Indonesia is famous for its many tribes and cultures, so that each place/province has its own special characteristics. Traditional games are activities that grow and develop in certain areas, where there are cultural values and social values that are taught from one generation to the next.

From this game children will be able to develop physically, get useful and meaningful experiences, build relationships with friends and be able to preserve the nation's culture. The Sport Education Model (SEM) could be considered more effective than and Direct Instruction (DI) to improve Primary Education students' Physical Activity levels, game performance and friendship goals [15]. The research results have shown an improvement of human relations between students in class, and an increase of students' socialization outside classes, after implementing traditional games in school [16]. In addition, traditional games can also fill spare time as physical activity and improve physical fitness. That physical activity can be used as a means of stimulating cognitive skills and students' development in university training programs to optimize certain cognitive functions and improve learning [17]. Many traditional games have been lost due to the time and technology, so students in schools are less familiar with culture and games that can be applied as a physical education learning material in schools. Traditional games can play a key role in the emotional facets of physical education [18]. The table below (Table 1 and 2) will explain the season plan of each learning model in this study.

**Table 1.** Season Plan-Traditional Game in Physical Education

Season I	Season II	Season III
Lesson 1-2 <ul style="list-style-type: none"> <li>The teacher explains the traditional game (TG) model (Gieng-Gieng Asel, Meurimueng Rimueng, Keukuriken, Meuen Aceue, Mieun Kom, Meurimueng Rimueng 2)</li> <li>The teacher arranges the allocation of time, split groups, explains the rules of the game and learning</li> <li>Students practice each traditional game according to instructions from the teacher</li> </ul>	Lesson 3-6 <ul style="list-style-type: none"> <li>Students directed instruction for playing traditional games</li> <li>The teacher determines the frequency and time of each traditional games</li> <li>Lesson planned by the teacher</li> </ul>	Lesson 7-10 <ul style="list-style-type: none"> <li>Students immediately do warming-up</li> <li>Students practice immediately traditional games.</li> <li>Teacher-directed monitoring</li> <li>Lesson planned by the teacher</li> </ul>

**Table 2.** Season Plan Drill In Physical Education

Season I	Season II	Season III
Lesson 1-2 <ul style="list-style-type: none"> <li>Teacher-directed instruction of fundamental skill</li> <li>The teacher regulates the allocation of time, frequency and repetitions</li> <li>Students practice the fundamental skills according to the Teacher's instructions</li> </ul>	Lesson 3-6 <ul style="list-style-type: none"> <li>Students directed instruction: 1) warming-up, 2) practicing the fundamental skills separately</li> <li>The teacher determines the frequency and repetitions</li> <li>Lesson planned by the teacher</li> </ul>	Lesson 7-10 <ul style="list-style-type: none"> <li>Students directed do <i>warming-up</i></li> <li>Students immediately practice fundamental skills separately</li> <li>Teacher-directed monitoring</li> <li>Lesson planned by the teacher.</li> </ul>

The season plan that has been made by the researcher is based on the problems during the physical education learning process. The training model is often done by the teacher when giving material movement of fundamental skills. Whereas traditional games are one type of game that can be applied by teachers in physical education learning, because there are elements of fundamental skill movements. Although in physical education learning traditional games are rarely applied based on some articles, they have an impact and can be practiced by students.

## 2. Method

The method used in this research is an experimental method with treatment to find the effect of certain variables on other variables in controlled conditions. Assigning subjects randomly to the treatment levels so that known and unsuspected sources of variation among the subjects are distributed over the entire experiment and do not affect the subjects in just one or a limited number of treatment levels [19]. This study aims to determine the difference between the independent variables and the dependent variable. There are three variables are 1) the learning model with the traditional game (TG) approaches and drills, 2) the dependent variable is a fundamental skill, and 3) the attribute variable is motor ability.

**Table 3.** Research Design Treatment by Level 2 x 2

Learning Model (A) Motor Skill (B)	TG (A1)		Drill (A2)
High (B1)	A1 B1	>	A2 B1
Low (B2)	A1 B2	<	A2 B2
Total	A1	>	A2

Data are collected using test gross motor development (TGMD-2) [20]. Performance criteria run: arms move in opposition to legs, elbows bent, a brief period where both feet are off the ground, narrow foot placement landing on heel or toe (not flat-footed), non-support leg bent approximately 90 degrees (close to buttocks). Jump: preparatory movement includes flexion of both knees with arms extended behind body, arms extend forcefully forward and upward reaching full extension above the head, take off and land on both feet simultaneously, and arms are thrust downward during landing. Overhand throw: windup is initiated with the downward movement of hand/arm, rotates hip and shoulders to a point where the non-throwing side faces the wall, weight is transferred by stepping with the foot opposite the throwing hand, follow-through beyond ball release diagonally across the body toward the non-preferred side. Catch: Preparation phase where hands are in front of the body and elbows are flexed, arms extend while reaching for the ball as it arrives, and the ball is caught by hands only. The data collection design obtained from the TGMD-2 is shown in the figure below.

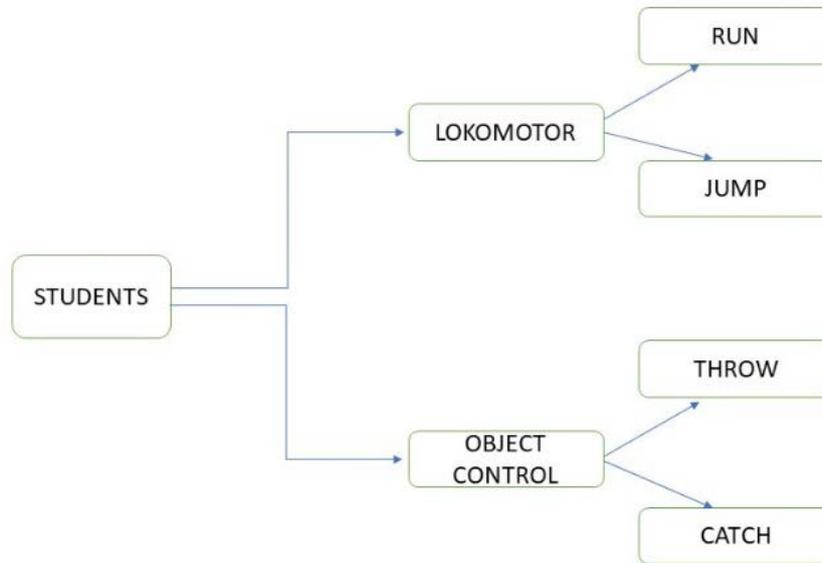


Figure 1. Diagram of Multiple-Indicators

The sample of this study was 40 students of elementary school aged 9-12 years old. The population was assigned to grade 4 to 6, amounting to 76 students from 2 elementary schools. The procedure for obtaining high and low groups in both models are: first, 27% of the total score; second, the order is taken from the highest score to the number of samples needed, the order is taken from the lowest score to the number of samples required, and the intermediate score between the highest score and the lowest score are eliminated.

### 3. Results

In this study, four results will be presented to answer the hypothesis of the research design above. The first hypothesis answers the effect of the learning model on fundamental skills in elementary school. The second answer is that there is an interaction between the learning model, motor ability and fundamental skills. The third answer is that there is a difference between the traditional game and drill learning models on fundamental skills for students who have high motor abilities. The fourth answer is that there is a difference between the traditional game and drill learning models on fundamental skills for students who have low motor abilities.

Table 4. Anova 2 Ways

Source Varians	JK	db	RJK	F <sub>o</sub>	F <sub>tab</sub>
Inter-A	7,225	1	7,225	5,03	4,08
Inter-B	11,025	1	11,025	4,62	4,08
Interaction AB	30,625	1	30,625	12,835	4,08
Inside	85,9	36	2,386		1,79
Total	134,78	39			

#### 1. Differences inter-A

There are differences in fundamental skills between students who learn with traditional game models and drill with grades  $F_0(A) = 5,03 > F_{tab} 4,08$ . The one-party test is calculated by formula  $t_0(A) \sqrt{5,03} = 2,243 > t_{tab} = 1,684$  so that the traditional game learning model is higher than the drill applied to elementary school students. This means that the first research hypothesis has been tested.

#### 2. Interaction AB

Based on the results of the analysis of variance, the value is obtained as follows:  $F_{count} interaction F_0(AB) = 12,835 > F_{tabel} = 4,08$ . There is an interaction between the learning model and motor ability on the fundamental skills of students at elementary school. This means that the second research hypothesis has been tested. Table below will show an interaction diagram based on the calculation of Anova two ways.

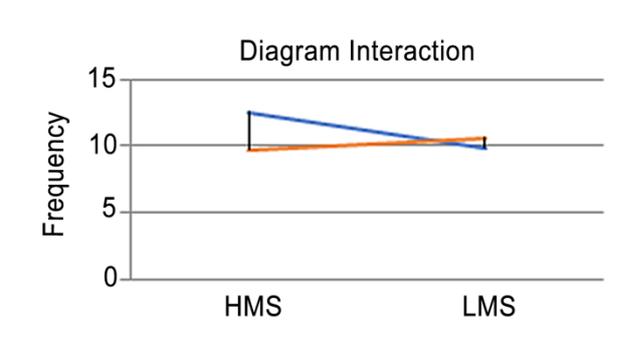


Figure 2. Diagram Interaction

#### 3. Differences Y in the groups (A1B1 and A2B1) and (A1B2 and A2B2)

Based on the summary of the results of the calculation of variance analysis, the values are obtained, as shown in

the table below. An advanced analysis of variance with the t-Dunnet test is conducted to compare the high ability motor learning model group. The calculation of difference effect of the value fundamental skill results of each group with the complete learning model can be seen in table 5:

**Table 5.** Analysis Statistic

Statistic	A1B1	A2B1	A1B2	A2B2	Total
n	10	10	10	10	40
$\sum Y_1$	125	99	97	106	427
$\sum Y_1^2$	1013	1577	961	1142	4693
$\sum y_1^2$	100,5	82,1	20,1	18,4	221,1
$\bar{Y}$	12,5	9,9	9,7	10,6	10,675

Based on the research data, the average score of the fundamental skills of the traditional game group with high motor ability was 12.5 and the low motor ability group is 9.7. The average score for the fundamental skills of the drill group with high motor ability is 9.9 and the low motor ability is 10.6. The results of the statistic t- Dunnet test are shown in the table below.

**Table 6.** Hypothesis Statistic t-Dunnet

Value	(Se)	$t_0$	$t_{table}$
$\bar{Y}_{11} - \bar{Y}_{21} = 2,6$	0,477	5,448	1,684
$\bar{Y}_{22} - \bar{Y}_{12} = 0,9$	0,477	1,886	1,684

Based on the results of the statistical test t-Dunnet A1B1 and A2B1, it is obtained that data  $t_0$  5,448 >  $t_{table(0,05;10)}$  1,684. This means that the fundamental skills of students with traditional game learning are higher than the drill for high motor abilities. The A2B2 and A1B2 values based on the statistic test t-Dunnet obtained that data  $t_0$  1,886 >  $t_{table(0,05;10)}$  1,684. This means that the fundamental skills of students with drill learning are higher than traditional games for low motor abilities. The third and fourth hypotheses of this study have been tested.

## 4. Discussion

In the first and second lessons the teacher explained 6 traditional game models, set time allocations, split the groups and explained game rules. Students practice each traditional game according to instructions of the teacher. In the third lesson, the students immediately did a warm-up and immediately practiced traditional games with a set time for each game. In the fourth lesson the students were getting used to physical education learning by practicing some traditional games, until the seventh lesson the students' fundamental skills began to improve. Traditional game of physical and motor fitness (agility, speed, balance, and reaction time) should be improved to give information to assist stakeholders such as physical education teacher [21]. Seeing from the development of better student skills until the tenth lesson it can be

recommended that traditional games should be effective and be used in physical education learning in elementary schools. The traditional game-based outdoor learning module that is produced affects the development of prosocial behavior of young children [22].

The implementation of the drill model in physical education learning at the first and second lesson of the teacher explains the material for fundamental skills, and set the time allocation, sets and repetitions each exercise material for running, jumping, overhead throw and catch. Students practice fundamental skills according to instructions of the teacher. In the third to sixth lesson the teacher determines sets and reps for each fundamental skill exercise (running, jumping, overhead throw and catch). The lesson plan is made by the teacher and students practice directly. The importance of including coach education protocols within the design of seasons of Sport Education concerning student coaches' instructional preparation [23]. In the 7th to 10th lesson, the teacher saw the development of student's skills, and in fact the fundamental skills were better than before. Physical education methods course and randomly assigned to teach a 15-lesson unit using Sport Education or skill-drill-game approach [24]. Even though their skills have improved, some students are not happy with the practice learning model because the learning is repetitive, which makes them bored. PE teacher who got inspired by a traditional game that was proposed in winter to a group of troublemakers as an alternative to the boring calisthenics [25]. PE teachers should take into account the effect that different activities may have on student's enjoyment level when designing and delivering their teaching units [26].

Based on the data obtained, it shows that overall, the traditional game learning model (TG) has a better effect than the drill learning model on students' fundamental skills. It can be recommended that traditional game learning strategies can be applied in physical education learning in elementary schools to improve fundamental skills. But several considerations must be made by the teacher, for example, learning material should be adjusted to traditional game designs, competitive games that can be played by all students should be chosen, and the tools used should be safe for students. PE teachers are therefore faced with a major challenge. In addition to introducing activities to improve students' emotional education, they must also seek to use activities that will create gender identities that are more in line with each student's wishes [27].

For students who have the high motor ability, the data obtained shows that the traditional game learning model has a better effect than the drill learning model on fundamental skills. For students who have low self-confidence, the data obtained shows that the drill learning model has a better effect than the traditional game learning model on fundamental skills. The two learning models have different effects on students'

fundamental skills. When connected with motor ability, in the group of students who have the high motor ability, it turns out that the traditional game learning model is better than a drill. Meanwhile, in the group of students who have low motor ability, it turns out that the drill learning model is better than traditional games. Effective games teaching session should consist of a visual demonstration of the 'ideal' performance model, repetitive practice of the model using isolated drills with corrective feedback by the teacher, before the playing of the actual game [28].

## 5. Conclusion

Based on the data analysis of hypothesis testing and the results of the research discussion that has been described above, it can be concluded that:

1. Overall, there is a difference between the traditional game and drill learning models to improve the fundamental skills of students at elementary school.
2. There is an interaction between the traditional learning model of games and drill with motor abilities on the fundamental skills of students at elementary school.
3. For students who have high motor ability, traditional games have a better effect than drill learning.
4. For students who have low motor ability, the drill learning model has a better effect than the learning model of traditional game. Students with the drill method will improve their skills faster, but there is no sense of competitiveness and cooperation between students during PE learning.

It can be concluded that the learning model of traditional games and drill can be applied in physical education learning to improve the fundamental skills of students at elementary school. The teacher can also choose several types of traditional games to be applied according to the needs of students in each lesson. In the future, it is hoped that traditional games can be developed by teachers or other researchers so that new types of games will emerge, which can be practiced by students and applied in physical education learning in schools.

## Acknowledgments

Researchers thank the students and teachers of the primary school 2 Tijue Pilot and Iqra Sigli who were participants in this research. The research team also helps in analyzing data and providing suggestions so that the research carried out is beneficial for the development of physical education learning in schools. I realize that this research still has shortcomings so that in the future it can be improved by re-conducting research on different samples and adding several types of exercise, so that the

impact of fundamental skills on mastery of certain sports skills will be known.

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