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The Impact of Traditional Games on Fundamental Motor Skills and Participation in Elementary School Students

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Abstract Fundamental Motor Skill (FMS) is the initial foundation for students to start practising more complex movements. FMS is still not specifically taken seriously enough to be taught. Teachers assume that students will master these abilities by themselves. Students' FMS abilities are still low, and the learning does not emphasize FMS as the initial foundation, so the level of students' participation is not satisfactory. In this study, researchers implemented a physical education program using traditional "*bebentengan*" and "*boy-boyan*" games. This study examines the impact of a physical education program using traditional *bebentengan* and *boy-boyan* games on FMS for elementary school students. This study used a one-group pre-test and post-test design with 43 participants as samples: 20 male and 23 female students. The Gross Motor Development (TGMD-3) instrument and the sports participation scale were employed to measure the students' skills. The results obtained in the Gross Motor Development (TGMD-3) with seven aspects resulted in a p-value of 0.000 <0.05, and in sports participation, a p-value of 0.000 <0.05, which means it has a significant effect. It can be inferred that the traditional games of *bebentengan* and *boy-boyan* significantly have a positive effect on elementary school students' FMS and their participation.

Keywords Fundamental Motor Skills, Participation, Traditional Games

1. Introduction

Physical education is an effective subject widely recognized to promote students' physical activity [1] [2]. Many benefits are obtained from physical education activities, such as physical, social, and emotional benefits, as well as developing knowledge and skills to live a physically active lifestyle [3]. It also prevents the risk of cardiovascular disease [4], improves physical fitness components, and regulates and prevents overweight and obesity [5]–[7].

Students spend more time at school daily and at least 30 minutes on physical activity [8]. Physical activity during school hours can occur during physical education, breaks, and classroom instruction [9]. Further, pre and post-school programs can provide additional opportunities for students to be physically active [8]. However, physical activity among students and adolescents has decreased [9], and more and more students spend more time on gadgets. Elementary school students who undergo long periods of academic learning become restless and experience decreased concentration [9].

Naturally, students participate in activities more than in formal learning. Most young students will play or find active ways to spend time involving physical activity.

Students may engage in more organized sports, either formally, in clubs and teams or informally, on fields and playgrounds. Generally, forms of play involving physical activity provide a large volume of activity that incorporates various movements and multiple muscle groups, increasing fitness such as cardiorespiratory, muscle strength, muscular endurance, speed, strength, and flexibility [10].

The facts show that elementary school students are given certain sports skills programs without first paying attention to basic motor skills so that sports skills cannot be mastered properly. Basic motor skills are generally considered the building blocks for more advanced movement and certain sports skills [11] [12]. Basic motor skills help students control their bodies, manipulate their environment, and form complex skills and movement patterns in sports and other recreational activities [12]. A common misconception is that students can naturally learn FMS [13]. However, more and more evidence indicates that many students are not acquiring skills in FMS development [14] [15]. If basic motor skills competence cannot be achieved, they cannot break through the proficiency barrier and engage in sports and games. Low performance in these skills can also jeopardize future physical activity. Thus, basic motor skills should be the main focus of basic physical education and early childhood years [16].

FMS is usually divided into two types: object control and locomotor skills [11] [17], and some include non-locomotor skills [18]. Object control skills involve transporting, intercepting, or projecting objects, such as throwing, catching, dribbling, kicking, underhand rolling, and hitting [17] [18]. On the other hand, locomotor skills include running, jumping, galloping, and gliding as different movements to transport the body from one location to another [18], [19]. Moreover, non-locomotor skills include moving the limbs in a stationary body position, such as swinging, lifting, swinging, stretching, hugging, arching, twisting, bending, pushing, and static balance [18], [20]. At least two goals of physical education are to teach students how to move and provide opportunities for physical activity [17]. Physical activity must be developmentally appropriate to be most beneficial to students.

Many researchers have studied the fundamentals of motor skills associated with programs designed to improve them, such as SKIP (Successful Kinesthetic Instruction for Preschoolers), used to improve FMS in early childhood students [21]. The program provided is a motor skills curriculum successfully applied to the developmentally delayed African-American preschool population [21]. However, the program does not pay attention to the level of student participation and the relationship between basic motor skills and sports participation. This is why competencies in Physical Education need to be carried out so that changes and progress can be evaluated [22] [23]. Another study investigates local or traditional games against FMS [24]. Therefore, the effects have not been tested directly, and the types of traditional games used differ. So, the purpose of this study is not only to look at the effect of traditional games on FMS but also to see the effect on student participation in the age range of 10 to 11 years.

Traditional games are important in promoting cultural diversity and protecting cultural identity at local, national, and international levels [25]. Many traditional games offer the opportunity to take part in different roles in the game [26]. These games are the first pedagogical tools teachers can use in physical education subjects at school [26]. Such games require important skills to develop basic motor skills and improve students' motor skills [25].

2. Materials and Methods

2.1. Research Design

Based on the problems presented, this study used the pre-experimental method to answer the research issues in the background. The design used is a one-group pre-test and post-test design. This design is commonly used to evaluate issues related to social programs or human services [27]. The population in this study was in one of the sub-districts in Indonesia, totalling 96 students. The samples were taken randomly. Forty-three people, consisting of 20 male and 23 female students, were chosen. The samples were grade 5 students aged 10 to 11 years. During this age, students are developmentally ready to learn basic motor skills and will provide the best opportunity to engage in lifelong health-promoting physical activity [28]. The researcher obtained written approval from the school and parents for the entire sample involved in the study.

The instrument used to see FMS in students is the Test Of Gross Motor Development (TGMD-3) [29]. Furthermore, to see the level of student participation in physical activity using traditional games and sports participation instruments with a scale of 2 "yes" or "No," the dimensions of the instrument include (1) Pre-implementation, (2) Implementation, (3) Post-implementation/evaluation.

2.2. Procedure

The research used a one-group pre-test and post-test design to conduct two tests before and after treatment. TGMD-3 [29] is not fully carried out during the whole movement. It is intended that the test used is adapted to the program given to students, including a locomotor movement test (run, hop, horizontal jump, and slide), while for control object motion, two-hand catch, overhand throw, and underhand throw. In addition to doing a test using TGMD-3, students also filled out a participation questionnaire in sports at the pre-test. It illustrates students' participation in conventional programs. After the program, students again filled out the questionnaire to see the impact of the traditional game program on student participation.

Students were given a traditional game program for four weeks with a normal duration according to the physical education curriculum in Indonesia: 2x35 minutes/week. Physical Education activities at school are recommended for at least 60 minutes a week [30]. The intervention of basic motor skills for four weeks and with a duration of 2x 30 minutes a week can significantly improve the ability of Basic Motor Skills of students aged ten years [31]. However, the researchers set the frequency in practice by adding eight more meetings in four weeks.

2.2.1. Bebentengan

How to play the game *bebentengan* is as follows: (a) Before starting this game, the students are divided into two groups; (b) each group is required to choose a post such as a fort, tree, pole, or other objects that can be used as a base; (c) players are tasked with seizing the opponent's fortress and partially guarding their respective forts; (d) Each player must attach a hand to his fort before attacking; (e) Players will lose power when an opposing player has just renewed the strength of his fortress or base; (f) The losing player will be caught by being made a prisoner in his enemy's fortress; this prisoner can be saved by his group of friends by touching his body; (g) The group wins the game if they can touch the opponent's stronghold.

2.2.2. Boy-boyan

The game begins by determining two groups, A and B. The representatives of the groups decide who is the constituent of the tile fragments resembling a pyramid. The winner is the thrower using a tennis ball with a distance of approximately three meters. The pitcher must break the pile of tiles until it collapses. When the pile of tiles collapses, the pitcher must avoid throwing the ball at the tile guard team. Some throwing team members arrange the knocked-down tiles when the other team is chasing them. The game is over if the first pitcher finishes arranging the tile or the tile keeper manages to throw the ball at the tile-breaking team. After completion, the team that broke the tiles changed with the team that guarded and threw the ball to the team that broke the tiles.

Every time students start a physical education program, they will be explained the game and what they will learn. Then, they will warm up first to prepare the students' cardiovascular and musculoskeletal systems for stronger physical activity [32]. Furthermore, they will perform static stretching first, followed by a warm-up to increase body temperature before doing the core program. Next, they will do a dynamic warm-up to prepare the body because it is important for all students to warm up before participating in physical education activities [33].

During the experimental phase, the game levels were applied differently. They aimed to challenge participants with different difficulty levels, so they were highly motivated. The game levels vary from adding the length and the number of tiles, as shown in Table 1.

Table 1. Traditional Game Level

Week-1	Week-2	Week-3	Week-4
Bebentengan Level 1 The distance of the playing field is 10 meters	***Bebentengan*** Level 3 The distance of the playing field is 30 meters	***Boy-boyan*** Level 1 The number of tiles is five pieces. The game area is 6 m^2	***Boy-boyan*** Level 3 The number of tiles is ten pieces. The game area is 10 m^2
Bebentengan Level 2 The distance of the playing field is 20 meters	***Bebentengan*** Level 4 The distance of the playing field is 40 meters	***Boy-boyan*** Level 2 The number of tiles is eight pieces. The game area is 8 m^2	***Boy-boyan*** Level 4 The number of tiles is 12 pieces. The game area is 12 m^2

3. Result

The results of the independent sample t-test on FMS, which includes the skills of run, hop, horizontal jump, slide, two-hand catch, overhand throw, and underhand throw, show a sig. Value < 0.05. This means that all skills show a significant effect. In other words, traditional games give differences and effectively enhance students' FMS significantly.

Table 2 shows the increase between the pre-test and the post-test after the students were given traditional games, most of which were run. So, inadvertently, students do running exercises with pleasure because of the fun. As a result, this game can improve the controlled object's basic movement skills, as shown in Table 2.

Figure 1 shows an average difference between pre and post-tests for every FMS skill. It indicates the changes in the skills shown by the participants. Further, to investigate the effect of traditional games on samples' FMS skills, hypothesis testing was conducted. The result of the hypothesis testing can be seen in Table 3.

Table 3 shows the results of the independent sample t-test on student participation with an average value of the pre-test of 9.571, the post-test of 18.522 and a sig. Value < 0.05. It can be interpreted that there is a difference in the average between the pre-test and post-test. In other words, there is a significant effect of traditional games on student participation in physical education programs.

Table 2. Independent Sample T-test in Fundamental Motor Skill (FMS)

Test Of Gross Motor Development (TGMD-3rd Edition)					
Skills	Test	N	Mean	St. Dev.	Sig. (2-tailed)
Run	*Pre*	*43*	*1,977*	*0,664*	*0,000*
	Post	*43*	*3,721*	*0,449*	
Hop	*Pre*	*43*	*2,535*	*0,499*	*0,000*
	Post	*43*	*4,814*	*0,389*	
Horizontal Jump	*Pre*	*43*	*2,302*	*0,666*	*0,000*
	Post	*43*	*3,884*	*0,321*	
Slide	*Pre*	*43*	*1,884*	*0,579*	*0,000*
	Post	*43*	*2,884*	*0,321*	
Catch	*Pre*	*43*	*1,419*	*0,580*	*0,000*
	Post	*43*	*2,860*	*0,347*	
Overhand Throw	*Pre*	*43*	*1,698*	*0,551*	*0,000*
	Post	*43*	*3,791*	*0,407*	
Underhand Throw	*Pre*	*43*	*2,279*	*0,449*	*0,000*
	Post	*43*	*3,907*	*0,290*	
Run	*Sig. 0,000 < 0,05 = H1 Accepted*				
Hop	*Sig. 0,000 < 0,05 = H1 Accepted*				
Horizontal Jump	*Sig. 0,000 < 0,05 = H1 Accepted*				
Slide	*Sig. 0,000 < 0,05 = H1 Accepted*				
Catch	*Sig. 0,000 < 0,05 = H1 Accepted*				
Overhand Throw	*Sig. 0,000 < 0,05 = H1 Accepted*				
Underhand Throw	*Sig. 0,000 < 0,05 = H1 Accepted*				

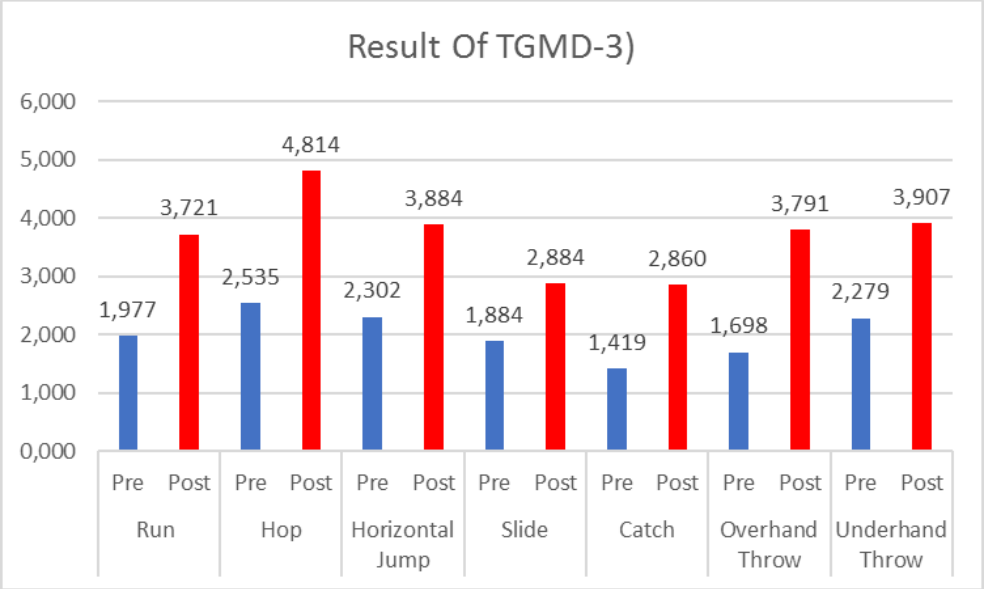

Figure 1. Difference between Pre-Test and Post-Test Results

Table 3. Independent Sample T-test in Students' Participation

Variable	Test	N	Mean	St. Dev.	Sig. (2-tailed)
Sport Participation	*Pre*	*43*	*9,571*	*1,364*	*0,000*
	Post	*43*	*18,522*	*1,635*	
Sig. 0,000 < 0,05 = H1 Accepted					

4. Discussion

In the initial meeting at the intervention stage, the physical education program used traditional games as material.

Students showed various levels of motor skill competence due to different experience levels [13]. The program resulted from many factors, including immediate environment, attendance of structured physical education, socioeconomic status, parental influence, climate [34], participation, and others. The different levels of skills shown certainly impact the level of early participation when students carry out physical education activities. Less skilled people realized their skills were lower, considered each task more difficult and challenging, and often showed less physical activity [13]. They tended to opt out of physical activity because they felt they were not as competent as others. They did not want to show incompetence [13] [35].

On the other hand, more skilled students felt they had better competence and perceived tasks as less difficult. They engage in mastery efforts more frequently [13]. This proves that students with higher motor skill competencies are more likely to persevere in physical activities, especially when they find it enjoyable and rewarding [36].

The shift from early childhood to middle childhood begins a vulnerability period and determines the activities students are interested in. Whether or not the activity continues is based on their willingness, although interventions can be carried out for students to remain involved in physical education activities. The vulnerability phase in this activity did not occur. It is because the traditional game program provides pleasure and fun. The transition from early childhood to middle childhood marks an important developmental time when perceived motor skill competence changes concerning its role in traditional games. At this time, students tend to have a higher level of cognitive development and a more sophisticated cognitive capacity to compare themselves with their peers more accurately [13].

By using traditional games in physical education, students will not be bound by rules as in competence because games have play elements that can be fun for students and train coordination of the five senses and other physical body parts. One of the physical activities that students like is traditional games [24]. Using traditional games in learning provides many benefits for students [37]. Not only fitness but also social effects, such as participation rates in physical education programs, will increase, as shown in Table 2. There is a significant effect of implementing physical education programs using traditional games on students' participation in physical education programs. As students, participation in sports and playing activities strongly indicates physical activity

involvement into adulthood [38].

The involvement of students in the game gets stronger, along with the level of mastery of the game. The game activities are no longer at the understanding level but are already at the stage of the urge to win the game and get recognition. At this level, the students ask to repeat the traditional game because they do not want to lose to the opposing group. It shows that there is competition between groups to achieve victory. It encourages stronger participation, not just in physical education programs but because students want to be involved in a more solid team.

The types of movement in traditional games taught are relatively the same as in FMS, used as the learning physical education aims, especially in this research. The result is that students' running skills and participation in traditional game learning increase. Because game-based physical education activities can improve students' physical fitness, including running skills, and can have a strong impact when done correctly [39] [40]. Running is easier to do and train because almost all physical activities involve running.

In contrast to the hop and horizontal jump movements, students are indirectly trained through traditional *bebentengan* or *boy-boyan* games. Both games encourage the ability to learn to move more easily. This physical activity provides more opportunities to promote neuromotor development, which promotes FMS development [36]. It can be seen in Table 3. There is a significant effect between traditional games with hop and horizontal jump skills. The students frequently showed horizontal jump skills, especially in *boy-boyan* games, as they tried to avoid the ball the opposing team threw.

The *boy-boyan* game trains students to develop basic object control movements. This game requires them to manipulate the ball so that the ball can go in the desired direction. At least three basic object control skills can be developed: two-hand catch, overhand throw, and underhand throw. The game requires them to aim the ball. It forces them to practice in a game environment. During the training process, they were unaware of these as parts of game activities. Students' underhand throw skills will likely be trained when they knock down a pile of tiles in the *boy-boyan* game. Students usually choose this movement because throwing accuracy is higher than overhand throws and requires less power.

Further, the overhand throw movement is improved when they try to throw the ball at the opposing team as a target. This movement demands a strong and fast throw, so the overhand throw motion is used. The guarding team must work together to throw the ball to the opponent. When all members are defeated, they take turns as the throwing team. To throw the other team, they must pass the ball with other members to approach the opposing team. The ability to catch the ball well is needed in these conditions. This throwing and catching activity is what trains students to control the ball.

The results of this research do not stop at the level of basic movement skills (FMS). FMS is only an initial aim of learning, not the final aim. Maintaining mastery of basic motor skills contributes not only to the physical development of students but also to the student's cognitive and social development. It provides the basis for an active lifestyle [23]. Although FMS is a basic movement that initiates more complex motor skills, FMS is not a common movement pattern but a learned movement pattern to form the basis for more complex physical activities and sports [41].

5. Conclusions

Indonesia has many games developed from the customs and culture of the local society. They are carried out for various purposes, whether to fill spare time, traditional celebrations, or others. The traditional games of *bebentengan* and *boy-boyan* are cultural heritages that can improve FMS and elementary school student participation in physical education learning. It is because it has been proven that these games can contribute to increasing FMS and student participation. Although the games have begun to be marginalized by digital gadget games, the benefits provided cannot be replaced with gadget games, especially for improving motor skills.

Mastery of FMS in this study is used as a basic benchmark obtained from traditional games. Students get more than just FMS, so it requires further research that examines other advantages of traditional games in physical education programs.

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