

The Effect of Obstacle Race Games on Physical Fitness Levels among Elementary School Students at SDN 1 Pringgasela Selatan in 2025

Bagus Darmawan¹, *Rusdiana Yusuf², Muhsan³

*Corresponding Author Rusdiana, e-mail: rusdiana@undikma.ac.id

¹Physical Education and Health Study Program, Faculty of Sport, Health, and Community Sciences, Universitas Pendidikan Mandalika, Mataram, Indonesia

Abstract

Objectives: This study aimed to determine the effect of obstacle race games on the physical fitness levels of elementary school students at SDN 1 Pringgasela Selatan in 2025.

Materials and Methods: This study used a quantitative approach with a quasi-experimental one-group pretest-posttest design. The participants were 30 students aged 11 years from SDN 1 Pringgasela Selatan. Physical fitness was measured using the Elementary School Children's Physical Fitness Test, which included Body Mass Index, V Sit Reach, Sit Up, Squat Thrust, and Pacer Test. The intervention consisted of obstacle race games conducted for six weeks. Data were analyzed using descriptive statistics and hypothesis testing through paired sample t-test or Wilcoxon signed-rank test.

Results: The results showed that obstacle race games improved several components of students' physical fitness. Significant improvements were found in flexibility, abdominal muscle strength and endurance, lower-limb muscle endurance, and cardiorespiratory endurance. These improvements were reflected in the post-test results of V Sit Reach, Sit Up, Squat Thrust, and Pacer Test. However, Body Mass Index did not show a significant change after the intervention.

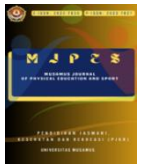
Conclusions: Obstacle race games had a positive effect on improving most components of physical fitness among elementary school students. This method can be used as an enjoyable, active, and effective learning strategy in physical education to improve students' functional fitness.

Keywords: physical fitness, obstacle race, elementary school students, physical education, game-based learning

Introduction

Physical fitness in elementary school children is an important foundation for growth, development, and long-term health. Good physical fitness supports students' physical performance, learning readiness, mental health, social development, and prevention of non-communicable diseases in later life. Therefore, physical education at school should provide meaningful movement experiences that help children develop healthy and active lifestyles.

In recent years, children's physical activity levels have tended to decline. This condition is influenced by sedentary habits, excessive use of digital devices, limited safe play areas, and reduced opportunities for active play. As a result, many children show low endurance, poor agility, limited strength, and reduced enthusiasm during physical education activities.



Initial observations at SDN 1 Pringgasela Selatan showed that several students became tired easily during physical activity and had low enthusiasm in physical education lessons. Some students also showed limited agility, balance, and movement coordination. This condition indicates the need for an innovative and enjoyable learning method that can increase students' participation and improve their physical fitness.

One potential method is the obstacle race game. Obstacle race is a physical activity that involves a series of movement challenges, such as running, jumping, crawling, balancing, climbing, and passing through obstacles. These movements can stimulate various components of physical fitness, including flexibility, muscular strength, muscular endurance, agility, coordination, balance, and cardiorespiratory endurance.

Game-based physical education is suitable for elementary school students because children naturally learn through play. Through games, students can move actively, enjoy the learning process, and develop physical, cognitive, social, and emotional skills. Nasution (2020) stated that game-based learning in physical education can increase students' physical activity. Similarly, Dewi and Pratama (2022) found that active learning through games can improve motivation and physical fitness among elementary school students.

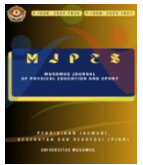
Previous studies have also reported positive effects of obstacle-based activities. Kurniawan and Sugiarto (2023) found that obstacle course programs improved several components of physical fitness, including aerobic capacity, muscular strength, and agility. Nugroho (2024) also emphasized that obstacle-based activities can increase student participation and fitness in physical education.

Based on this background, this study aimed to examine the effect of obstacle race games on the physical fitness levels of elementary school students at SDN 1 Pringgasela Selatan in 2025.

Materials and Methods

Study Design

This study used a quantitative approach with a quasi-experimental design. The specific design used was a one-group pretest-posttest design. This design was applied to compare students' physical fitness levels before and after the obstacle race intervention.



Group	Pretest	Treatment	Posttest
Experimental group	O1	Obstacle race games	O2

Participants

The participants were 30 students aged 11 years from SDN 1 Pringgasela Selatan. All participants took part in the pretest, intervention, and posttest stages.

Intervention Program

The intervention consisted of obstacle race games conducted for six weeks. The activities included running, jumping over obstacles, crawling, balancing, passing through movement stations, and completing physical challenges in a game-based format. The obstacle race was designed to be safe, enjoyable, and appropriate for elementary school students.

Instruments

Physical fitness was measured using the Elementary School Children's Physical Fitness Test. The components measured were:

1. Body Mass Index
2. V Sit Reach
3. Sit Up
4. Squat Thrust
5. Pacer Test

Data Analysis

Data were analyzed using descriptive statistics, including mean, standard deviation, minimum score, and maximum score. Hypothesis testing was conducted using paired sample t-test or Wilcoxon signed-rank test, depending on the distribution of the data. The significance level was set at $p < 0.05$.

Results

Descriptive Results

The descriptive results showed changes in several physical fitness components after the obstacle race intervention.

Table 1. Descriptive Statistics of Pretest and Posttest Scores

Physical Fitness Component	Test	Mean	Standard Deviation	Minimum	Maximum
V Sit Reach	Pretest	5.89	2.3	3	13
V Sit Reach	Posttest		1.94	6	13
		.45			
Sit Up	F		1.27	10	15
	retest	.58			
Sit Up	F		1.30	14	19
	osttest	.59			
Squat Thrust	F		1.40	3	8
	retest	.56			
Squat Thrust	F		1.61	8	13
	osttest	.46			
Pacer Test	F		1.72	10	15
	retest	.58			
Pacer Test	F		2.16	12	19
	osttest	.23			

The posttest scores showed improvements in V Sit Reach, Sit Up, Squat Thrust, and Pacer Test. These findings indicate that students' flexibility, muscular endurance, lower-limb performance, and cardiorespiratory endurance improved after the obstacle race intervention.

Hypothesis Testing

The hypothesis testing showed that the obstacle race intervention significantly improved most physical fitness components.

Table 2. Summary of Hypothesis Testing

Physical Fitness Component	Result	Description
Body Mass Index	Not significant	No meaningful change after intervention
V Sit Reach	Significant	Flexibility improved
Sit Up	Significant	Abdominal muscle strength and endurance improved
Squat Thrust	Significant	Lower-limb strength and endurance improved
Pacer Test	Significant	Cardiorespiratory endurance improved

The results showed that obstacle race games significantly improved functional physical fitness components, although Body Mass Index did not change significantly during the intervention period.



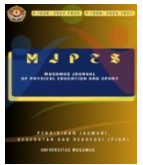
Discussion

The findings of this study indicate that the overall football skill level of fifth-grade students at SD Negeri 4 Cakranegara was generally in the moderate category. This means that most students already had a basic ability to perform football skills, but their technical mastery was not yet evenly developed across all components. This finding is consistent with previous studies showing that children's football performance is often influenced by differences in practice experience, motor coordination, and exposure to structured football learning activities. Duncan et al. reported that technical soccer skills such as passing, dribbling, and shooting are closely related to children's fundamental movement skills and perceived competence, indicating that students with stronger motor foundations tend to perform better in football-specific tasks (Duncan, Eyre, et al., 2022).

The strongest skill component in this study was heading, with 90% of students classified in the very good category. This result suggests that most students were able to coordinate body position, timing, and ball direction when performing heading movements. Throw-in also showed strong results, with 67% of students in the very good category. These findings may indicate that students performed better in skills involving relatively simple and predictable movement patterns. Previous research on basic football technical skills has also emphasized that football performance is supported by the mastery of several interconnected techniques, including passing, dribbling, shooting, ball control, and heading. When one component is not sufficiently developed, students' overall game performance may be affected (Pizarro et al., 2017).

Dribbling and running with the ball also showed positive results. In the dribbling test, 86% of students were in the good and very good categories, while in the running with the ball test, 67% of students were in the good and very good categories. These findings suggest that students were relatively capable of controlling the ball while moving. Dribbling is one of the most important technical skills in football because it enables players to maintain possession, change direction, avoid opponents, and create attacking opportunities. This is supported by Duncan et al., who stated that dribbling, passing, and shooting are among the most important motor skills in soccer and are therefore commonly emphasized in coaching and physical education contexts (Duncan, Martins, et al., 2022).

However, the results also showed that short passing and shooting were the weakest components. In short passing, 90% of students were categorized as very poor. This finding indicates that students had difficulty controlling ball direction, applying appropriate force, and performing accurate passing technique. Short passing is an important skill in football because it supports teamwork, ball circulation,



and tactical play. Similar findings have been reported in studies on basic football skills among children, where passing, dribbling, ball control, and shooting were used as key indicators to assess technical competence and to identify areas requiring improvement in training and curriculum design (Soniawan et al., 2021).

Shooting also needs improvement. The results showed that 43% of students were in the poor and very poor categories. Shooting is a complex skill because it requires coordination between body position, balance, leg swing, power, and target accuracy. The absence of students in the very good category suggests that students still need more structured and repeated shooting practice. Previous studies have shown that basic soccer skill tests commonly include passing, dribbling, and shooting because these components represent essential technical abilities needed in game situations. Therefore, low performance in shooting should be addressed through specific learning activities that emphasize accuracy, body positioning, and repeated technical practice (Atiq et al., 2024).

Overall, these findings show an imbalance in students' football skill development. Students performed better in skills that involve individual movement or relatively simple movement patterns, such as dribbling, running with the ball, heading, and throw-in. In contrast, students had more difficulty in skills that require accuracy, timing, target control, and cooperative play, such as short passing and shooting. This imbalance suggests that physical education learning should not only provide general football games, but also include systematic technical drills. Research on football learning has shown that structured practice methods, including drills and small-sided games, can support the development of technical skills because they provide students with repeated opportunities to perform football-specific movements in realistic learning situations (Sarajärvi et al., 2024).

Therefore, physical education teachers are encouraged to design more balanced football learning activities. Passing and shooting drills should be given more attention through repeated practice, target-based exercises, partner drills, and small-sided games. Learning activities should also be arranged progressively, starting from simple movements and gradually moving toward more complex game situations. Through structured and continuous practice, students are expected to improve their basic football skills more evenly and effectively..

Conclusions

Based on the results of the study, it can be concluded that the overall football skill level of fifth-grade students at SD Negeri 4 Cakranegara in 2025 was in the moderate category. The strongest skill components were heading, throw-in, dribbling, and running with the ball. Meanwhile, short passing and shooting were the weakest components and require further improvement. These findings show that the



students already had a basic foundation in several football skills, but they still need more structured and continuous practice to improve technical accuracy, especially in passing and shooting. Therefore, physical education teachers are encouraged to design football learning activities that emphasize gradual skill progression, repeated practice, proper technique, and game-based learning. Such learning strategies are expected to improve students' football skills more effectively and support their overall motor development.

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