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# Athletics Formula 1 Games for Elementary School Students: Learning Achievement for 60 Meter Running Speed

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**ABSTRACT**

This study aims to determine whether the implementation of the Kids Athletics Formula 1 game leads to an increase in 60-meter running speed among students in public elementary schools. The study also aims to develop innovative methods for enjoyable athletic learning for elementary school students. We conducted the study in two cycles using the Classroom Action Research method (planning, implementing actions, observation, and reflection). The subjects of the study were 18 grade VI students at public elementary school 7 Salatungo. The instrument used was a 60-meter running speed test with the Learning Objective Completion Criteria set at 80. The results of the study showed a significant increase in students' 60-meter running ability after the implementation of the Kids Athletics Formula 1 game. In the pre-cycle, the average student score was only 62 with a completion percentage of 0% (no students completed). In cycle I, the average score increased to 73 with a completion percentage of 22% (4 students completed). In cycle II, after the improvement of the learning method, the average score increased to 82 with a completion percentage of 100% (all 18 students completed the Learning Objective Achievement Criteria). The implementation of the Kids Athletics Formula 1 game has proven effective in increasing the 60-meter running speed of grade VI students at public elementary school 7 Salatungo. A fun learning approach through games can increase student enthusiasm and significantly improve their athletic skills.

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## 1. INTRODUCTION

In the context of physical education in elementary schools, athletics plays an important role in the development of students' motor skills (Wormhoudt et al., 2017; Pullen et al., 2020). Running activities, as one of the fundamental skills in athletics, improve physical fitness and develop children's coordination, balance, and reaction speed (Burhaein et al., 2020). Therefore, it is important for educators to find effective methods in teaching and improving running skills in elementary school students (Widiastuti & Hutapea, 2021).

Although athletics has many benefits, it is often considered a monotonous and less engaging sport for children (Rumini & Sulistyorini, 2020). This can lead to a lack of motivation and participation of students in athletic activities at school. As a result, the potential for developing athletic skills, including sprinting ability, is hampered. To overcome this problem, physical education experts and athletic coaches have developed various innovative approaches to teaching athletics to children. One promising approach is the concept of "Kids Athletics" introduced by the International Association of Athletics Federations (IAAF), now known as World Athletics (Gozzoli et al., 2022).

Kids Athletics is designed to make athletics more fun and accessible for children (Nurkholis & Weda, 2022). The program includes a variety of games and activities that adapt elements of athletics into a more engaging format that is appropriate to children's developmental level. One popular component of Kids Athletics is "Formula 1," a relay game that combines various athletic skills, including sprinting, hurdling, and slalom (Putra & Suharjana, 2021). Formula 1 in Kids Athletics offers a unique approach to training children's running speed (Hidayat & Pratama, 2022). This game does not only focus on straight sprints like in the conventional 60-meter dash but also combines other elements that improve agility and coordination. This makes training more varied and challenging while maintaining the element of fun that is important to motivate children (Setiawan et al., 2020).

Many elementary schools, especially in remote areas, still rely on conventional methods in teaching athletics (Hanief et al., 2020). This creates a gap between the potential for developing students' athletic skills and practice in the field. Public elementary school 7 Salatungo, as one of the elementary education institutions, faces similar challenges in developing its students' athletic skills, especially in increasing the speed of the 60-meter run. Despite having excellent potential, many students have not reached optimal speed in sprinting. This situation encourages the need for innovation in teaching methods and athletic training in the school (Aji & Winarno, 2021).

The introduction of the Kids Athletics Formula 1 game at public elementary school 7 Salatungo offers a potential solution to increase students' 60-meter run speed (Suwardi et al., 2024). By combining elements of play and competition, Formula 1 is expected to increase students' motivation to participate in athletic activities while developing the skills needed for sprinting (Juniarta & Siswantoyo, 2021). The implementation of Formula 1 in this school is also in line with the principles of modern education that emphasize active and student-centered learning. Through this game, students are not only passively receiving instructions but are actively involved in the learning process, developing skills through direct experience and interaction with peers (Prasetyo & Sudarko, 2021).

The use of Formula 1 in school athletic programs can provide additional benefits beyond increasing running speed. This game also has the potential to develop social skills, teamwork, and sportsmanship among students (Saputra & Ekawati, 2021). These aspects are important in the formation of character and the holistic development of children's personalities. From a physiological perspective, training through Formula 1 can provide a more comprehensive stimulus to children's cardiovascular and

musculoskeletal systems. The variety of movements in this game not only trains the muscles involved in straight sprints but also activates other muscle groups that are important for overall athletic performance (Kurniawan & Setyawan, 2021).

In addition, a game-based approach such as Formula 1 can help reduce the pressure and anxiety that children often experience in traditional athletic competitions (Lubis & Permana, 2023). By creating a more relaxed and enjoyable environment, students can develop their skills without excessive fear of failure. Using an experimental approach, this study will compare students' running performance before and after the implementation of a Formula 1-based training program (Jamalong & Syam, 2021). Furthermore, this study can also contribute to the development of physical education curriculum at the national level. By demonstrating the effectiveness of a game-based approach in teaching athletics, the results of this study can encourage a paradigm shift in physical education in Indonesia, from a traditional model to a more interactive and student-centered model (Prastyo et al., 2020).

Given that the average 60-meter run time for elementary school students ranges from 10-13 seconds for boys and 11-14 seconds for girls, research on improving the speed of the 60-meter sprint is very relevant and important (Morgan et al., 2019). Meanwhile, the results of the 60-meter run at the public elementary school, 7 Salatungo School, are still unable to approach the average running speed; for boys, the average time reaches 13–15 seconds to cover the distance, while for girls, the average time used is 18–20 seconds. Given the relatively long travel time, it is important for teachers to help students increase their running speed in order to compete effectively with other schools during inter-school competitions, whether between clusters or sub-districts at the elementary school level.

Observations in inter-school competitions convince teachers to provide a form of play that can increase students' running speed. In addition, this study is also relevant in the context of developing young Indonesian athletes. By identifying effective methods to develop basic athletic skills from an early age, this study can contribute to long-term efforts to improve Indonesia's athletic achievements at the international level (Wick et al., 2018). Finally, through this study, it is hoped that greater awareness can be created among educators, parents, and education stakeholders about the importance of innovation in teaching sports in elementary schools. By proving that fun methods such as Kids Atletik Formula 1 can provide significant results, this study can encourage more similar initiatives in the field of children's physical education and sports.

In the local context of public elementary school 7 Salatungo, the results of this study are expected to be a catalyst for positive change in the physical education program at the school. The successful implementation of Kids Athletics Formula 1 can pave the way for the introduction of other innovative methods, not only in athletics but also in other sports, and also to answer whether there is an increase in 60-meter running speed through the Kids Athletics Formula 1 game for students at public elementary schools.

## 2. METHOD

Classroom action research (CAR) is a type of research that aims to improve classroom learning practices (Mertler, 2022). CAR involves teachers as researchers who systematically identify problems in learning, plan corrective actions, implement actions, and reflect on the results to improve the quality of learning. According to Stringer (2021), CAR is a collaborative process involving teachers, students, and other stakeholders to solve practical problems in the classroom and improve teaching practices. CAR has four main stages, namely planning, action, observation, and reflection. In the planning stage, teachers identify problems and plan corrective actions. The action stage entails carrying out the prepared plan. The observation stage aims to collect data on the process and results of the action, while the reflection stage is used to analyze and evaluate the results of the action (Creswell & Creswell, 2017).

We conducted research in November 2024. The location was at the public elementary school, 7 Salatungo, Class VI. The researcher took a sample of 18 people. The table below presents the assessment of students' learning outcomes, valuing the Learning Objective Completion Criteria at 80 points.

**Table 1.** 60 Meter Sprint Speed Assessment Rubric

| 60 Meter Run | | |
|---|---|---|
| **Time (Seconds)** | **Value** | **Description** |
| 28 | 10 | Not Completed |
| 27 | 25 | Not Completed |
| 26 | 20 | Not Completed |
| 25 | 25 | Not Completed |
| 24 | 30 | Not Completed |
| 23 | 35 | Not Completed |
| 22 | 40 | Not Completed |
| 21 | 55 | Not Completed |
| 20 | 60 | Not Completed |
| 19 | 65 | Not Completed |
| 18 | 70 | Not Completed |
| 17 | 75 | Not Completed |
| 16 | 80 | Not Completed |
| 15 | 85 | Completed |
| 14 | 90 | Completed |
| 13 | 95 | Completed |
| 12 | 100 | Completed |

## 3. RESULTS AND DISCUSSION

### Results

#### Pre-cycle Learning Outcomes

The results of the initial test conducted on grade VI students of public elementary school 7 Salotungo totaled 18 students, and it was recorded that no student had

completed the Learning Objective Achievement Criteria, namely 80 for physical education and health, as listed in the Merdeka Curriculum, as follows:

**Table 2.** Assessment of Learning Outcomes for 60 Meter Running Speed

| No | Name | 60 Meter Running Speed | | | |
|---|---|---|---|---|---|
| | | Gender | Final score | Learning Objective Achievement Criteria | Description |
| 1 | A | M | 60 | 80 | Not Completed |
| 2 | B | M | 50 | 80 | Not Completed |
| 3 | N | W | 60 | 80 | Not Completed |
| 4 | A | W | 60 | 80 | Not Completed |
| 5 | Ad | W | 60 | 80 | Not Completed |
| 6 | Il | M | 70 | 80 | Not Completed |
| 7 | Fi | M | 70 | 80 | Not Completed |
| 8 | Ri | M | 50 | 80 | Not Completed |
| 9 | Hu | W | 60 | 80 | Not Completed |
| 10 | Al | W | 60 | 80 | Not Completed |
| 11 | Ak | M | 70 | 80 | Not Completed |
| 12 | Ad | M | 60 | 80 | Not Completed |
| 13 | Sa | W | 50 | 80 | Not Completed |
| 14 | Na | W | 60 | 80 | Not Completed |
| 15 | Sh | M | 70 | 80 | Not Completed |
| 16 | Naj | M | 70 | 80 | Not Completed |
| 17 | Cha | W | 60 | 80 | Not Completed |
| 18 | Afi | W | 70 | 80 | Not Completed |
| Total value | | | | 1.110 | |
| Average value | | | | 62 | |
| Students who achieved Learning Objective Achievement Criteria | | | | 0 | |
| Students who have not achieved Learning Objective Achievement Criteria | | | | 18 | |
| Percentage achieved Learning Objective Achievement Criteria | | | | 0% | |
| Percentage not achieved Learning Objective Achievement Criteria | | | | 100% | |

Based on the assessment of learning outcomes for 60-meter running speed, it was found that the total value was 1,110, with an average value of 62. None of the students completed the test, resulting in a completion percentage of 0%, while 18 students, representing 100% of the participants, did not complete it.

**Learning Outcomes in Cycle I**

In the action research cycle conducted in the classroom, I learned smoothly. The teacher implemented learning in accordance with the prepared RPP, namely with the Kids Athletics Formula 1 Game, which is expected to improve the learning outcomes of 60-meter running speed in Class VI students of public elementary school 7 Salotungo.

The implementation of cycle I consists of four stages, namely planning, action, observation, and reflection. The stages carried out in cycle 1 are as follows:

a. Planning: In the planning stage of cycle I, the researcher prepared learning consisting of lesson plan one, observation sheets for the physical education learning process with the material of 60-meter running speed through the Kids Athletics Formula 1 Game, and supporting teaching tools.

b. Implementation of action: The implementation of action in the learning process in cycle The implementation occurred during a single meeting, which included the following activities:

The steps in this learning are

1) Initial Activities (15 minutes)

First, students are lined up into four rows, pray, do apperception, take attendance, and do warm-ups that lead to core activities.

2) Core Activities (110 minutes)

In the core activities, the teacher explains the learning objectives and motivates the students. Furthermore, the teacher demonstrates or provides an example of 60-meter running speed with the Kids Athletics Formula 1 Game approach. The jumping ability assessment is conducted directly by the teacher and researcher.

3) Closing Activities (15 minutes)

In the closing activities, students are gathered to conduct an evaluation of 60-meter running speed learning through the Kids Athletics Formula 1 Game. Then the teacher provides an opportunity for questions and answers, followed by cooling activities, lining up, and praying; then the students are dismissed.

c. Observation: Based on the results of observations made during long jump learning through the Kids Athletics Formula 1 Game, learning went smoothly, and the level of student enthusiasm in participating in learning increased so that learning was more lively and enjoyable. Filling in the observation sheet was carried out by the observer based on observations of ongoing learning. Filling in the observation sheet is related to the class learning process of the psychomotor aspect during long jump learning through the Kids Athletics Formula 1 Game, which is often done and repeated by classmates.

d. Reflection: During the implementation of 60-meter running speed learning through the Kids Athletics Formula 1 Game, Cycle I proceeded smoothly, and the children showed enthusiasm for learning. However, learning outcomes are still not optimal. Learning outcomes in cycle I are described in the following Table 3.

**Table 3.** Assessment of Learning Outcomes for 60 Meter Running Speed Cycle I

| No | Name | 60 Meter Running Speed | | | |
|---|---|---|---|---|---|
| | | Gender | Final score | Learning Objective Achievement Criteria | Description |
| 1 | A | M | 70 | 80 | Not Completed |
| 2 | B | M | 70 | 80 | Not Completed |
| 3 | N | W | 70 | 80 | Not Completed |
| 4 | A | W | 70 | 80 | Not Completed |
| 5 | Ad | W | 70 | 80 | Not Completed |
| 6 | Il | M | 75 | 80 | Not Completed |
| 7 | Fi | M | 75 | 80 | Not Completed |
| 8 | Ri | M | 70 | 80 | Not Completed |
| 9 | Hu | W | 70 | 80 | Not Completed |
| 10 | Al | W | 70 | 80 | Not Completed |
| 11 | Ak | M | 80 | 80 | Not Completed |
| 12 | Ad | M | 70 | 80 | Not Completed |
| 13 | Sa | W | 70 | 80 | Not Completed |
| 14 | Na | W | 70 | 80 | Not Completed |
| 15 | Sh | M | 80 | 80 | Not Completed |
| 16 | Naj | M | 80 | 80 | Completed |
| 17 | Cha | W | 70 | 80 | Not Completed |
| 18 | Afi | W | 80 | 80 | Completed |
| Total value | | | | 1310 | |
| Average value | | | | 73 | |
| Students who achieved Learning Objective Achievement Criteria | | | | 4 | |
| Students who have not achieved Learning Objective Achievement Criteria | | | | 14 | |
| Percentage achieved Learning Objective Achievement Criteria | | | | 22% | |
| Percentage not achieved Learning Objective Achievement Criteria | | | | 78% | |

Based on the assessment of learning outcomes for 60-meter running speed, it was found that the total value was 1,310 with an average value of 73. Four students completed the test, representing 22% of the total, while 14 students, or 78%, did not complete it.

**Learning Outcomes in Cycle II**

The implementation of cycle II consists of four stages, namely planning, action, observation, and reflection, which are improvements to cycle I. The stages implemented in cycle II are as follows:

a. Planning

1) Increase students' 60-meter running speed by using a more effective approach that incorporates fun games.
2) Develop more intriguing variations of the Kids Athletics Formula 1 game, such as relays or group games.
3) Focus on teaching basic running techniques (start, body position, and breathing) before the game.
4) Set a playing schedule of 30-45 minutes per session.
5) Use aids such as cones or starting lines to help students understand distance and position.
6) Conduct formative evaluations at the end of each training session to monitor student development.

b. Implementation of actions

The steps in this learning are:

Do a warm-up together for 10 minutes. Provide an explanation and demonstration of running techniques. Implement the Kids Athletics Formula 1 game for 20 minutes, with the planned variations. After warming up, the teacher provides an explanation and demonstration of basic running techniques, including starting position, starting technique, and body posture when running. Students are then divided into small groups to practice these techniques repeatedly, where the teacher provides direct feedback to improve the students' methods. The session continues with the Kids Athletics Formula 1 game designed to improve speed and running skills. Teams of students compete in several rounds of this game. Each team will get points based on the time they run and the techniques they apply. After each round, a short discussion is held to provide feedback to students and celebrate their achievements. At the end of the session, students cool down with gentle stretching movements to avoid injury. Then, the teacher facilitates a reflection session where students can share their experiences during training, the challenges they face, and what they have learned. The session is also an opportunity to provide motivation and emphasize the importance of continuity of training to achieve better results.

c. Observation

Based on the results of observations, record student participation in training and games. Observe the application of techniques taught by students. Observe the interaction between students during the game and its effect on learning enthusiasm. Measure the 60-meter running time before and after cycle 2 to see improvements.

d. Reflection

Comparing the results of students' running times before and after cycle 2 to evaluate the effectiveness of the method used. We are keeping track of the students who have made significant progress and those who continue to face challenges. We are gathering feedback from students about their experiences during the practice and

game sessions. The learning outcomes in cycle II are described in the following Table 4:

**Table 4.** Assessment of Learning Outcomes for 60 Meter Running Speed Cycle II

| No | Name | 60 Meter Running Speed | | | |
|---|---|---|---|---|---|
| | | Gender | Final score | Learning Objective Achievement Criteria | Description |
| 1 | A | M | 80 | 80 | Completed |
| 2 | B | M | 80 | 80 | Completed |
| 3 | N | W | 80 | 80 | Completed |
| 4 | A | W | 80 | 80 | Completed |
| 5 | Ad | W | 80 | 80 | Completed |
| 6 | Il | M | 85 | 80 | Completed |
| 7 | Fi | M | 80 | 80 | Completed |
| 8 | Ri | M | 80 | 80 | Completed |
| 9 | Hu | W | 80 | 80 | Completed |
| 10 | Al | W | 85 | 80 | Completed |
| 11 | Ak | M | 85 | 80 | Completed |
| 12 | Ad | M | 80 | 80 | Completed |
| 13 | Sa | W | 85 | 80 | Completed |
| 14 | Na | W | 80 | 80 | Completed |
| 15 | Sh | M | 85 | 80 | Completed |
| 16 | Naj | M | 85 | 80 | Completed |
| 17 | Cha | W | 80 | 80 | Completed |
| 18 | Afi | W | 85 | 80 | Completed |
| Total value | | | | 1475 | |
| Average value | | | | 82 | |
| Students who achieved Learning Objective Achievement Criteria | | | | 18 | |
| Students who have not achieved Learning Objective Achievement Criteria | | | | 0 | |
| Percentage achieved Learning Objective Achievement Criteria | | | | 100% | |
| Percentage not achieved Learning Objective Achievement Criteria | | | | 0% | |

The assessment of students' ability to run 60 meters in cycle II showed a total score of 1,475 and an average score of 82. The number of students who completed was 18 students, with a percentage of 100%, and there were no more students who did not complete. With the learning results above, students are declared to have met the Learning Objective Achievement Criteria in class.

**Discussion**

The results of the study showed a significant increase in students' running ability from pre-cycle, cycle I, to cycle II. In the pre-cycle, no students completed it; in cycle I, only 4 students completed it; and in cycle II, the number of students who completed it increased to 18, or all had completed it. This shows that the method applied can positively influence student learning outcomes. One of the factors that supports the increase in running speed ability is the use of game-based learning methods. According to constructivist learning theory, students will find it easier to understand and remember information when they are involved in fun and interactive activities (Lee et al., 2018; Karwasz & Wyborska, 2023). The Kids Athletics Formula 1 game provides space for students to learn while playing, which makes them more motivated to practice and participate actively.

In addition, in cycle II, the increase in the number of students who completed can also be attributed to modifications made based on feedback from cycle I. In cycle I, students may not have fully understood the techniques taught. By placing more emphasis on basic techniques and dividing into small groups in cycle II, students get more attention and opportunities to practice individually. This is in line with the theory that timely and specific feedback can enhance student learning (Hattie & Timperley, 2017).

Another factor that contributed to this improvement was the development of a positive learning environment. In games, students not only focus on competition but also support each other and learn from each other. This creates a supportive learning climate, where students feel comfortable trying and making mistakes. Previous research has shown that a positive learning environment can enhance student motivation and performance (Wentzel, 2018).

In addition to the social aspect, high physical involvement during the game also contributes to increased speed. Training conducted in a game context allows students to train more at the same time compared to traditional methods. According to research by Erwin et al. (2023), regular physical activity can improve aerobic capacity and muscle strength, both of which are important for running speed.

Furthermore, measuring running speed periodically during the cycle also plays a role in increasing students' awareness of their progress. When students see their results improving, this can increase their self-confidence and encourage them to continue practicing. Research shows that measurement and feedback can strengthen students' intrinsic motivation (Schunk, 2016).

The Kids Athletics Formula 1 game also integrates elements of healthy competition among students. Competition can be an effective motivator for improving performance, as long as it is done within reasonable limits and not excessively. In this context, students are motivated to run faster in order to achieve better scores for their team. This is in line with research showing that positive competition can improve learning outcomes (Ames, 2020).

After analyzing the factors that influence the increase in running speed, the results of this study also show that collaboration between teachers and researchers in designing

and implementing learning activities is crucial. This collaboration allows researchers to gain deeper insight into students' needs and better adjust learning methods. Other studies emphasize the importance of collaboration between educators to improve the quality of learning (Friend & Cook, 2020).

Overall, the results of this study indicate that the Kids Athletics Formula 1 game is an effective method in improving students' 60-meter running speed. With support from previous theories and research, it can be concluded that the integration of games in physical learning not only improves technical skills but also students' social and motivational aspects. This study opens up opportunities for further exploration of innovative learning methods that can be applied in the context of physical education.

The kids athletics Formula 1 game has a significant impact on the development of children's running speed from a biomechanical perspective. In this activity, children perform sprint, jump, and slalom movements that involve various biomechanical components such as acceleration, angular velocity, and ground reaction force. This varied movement pattern stimulates the main muscles that play a role in running, such as the quadriceps, hamstring, and gastrocnemius muscles, to work in a coordinated manner. In addition, this activity helps optimize the body's angle during running, allowing children to naturally learn how to lean forward at the correct angle to achieve maximum speed.

From a biomechanical perspective, this game also helps develop children's ability to generate greater horizontal force while running. Through the series of movements in Formula 1, children learn to increase their stride length and frequency, which are two important components of running speed. When children perform slalom and rapid changes of direction, they also develop the ability to manage their body's center of gravity more efficiently, which ultimately contributes to increased stability and dynamic balance while running. All of these aspects lead to improved mechanical efficiency during the running movement.

## 4. CONCLUSION

In the pre-cycle stage, none of the students met the completion criteria for the 60-meter running speed test. This result shows that the previously applied learning methods have not been effective in improving students' physical abilities. This condition reflects the need for a new approach to sports learning in schools. After implementing the Kids Athletics Formula 1 game in cycle 1, there was a visible increase, with 4 students achieving learning outcome completion. Although these results show progress, the number of students who completed it is still low. In cycle 2, after making improvements based on the results of cycle 1, there was a significant increase, with 18 students achieving learning outcome completion. This increase in learning outcomes shows that the Kids Athletics Formula 1 game is effective in improving students' 60-meter running speed.

The results of this study contribute to the development of innovative methods in physical education in elementary schools and can be used as a model for implementation in other schools.

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