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Improving Learning Motivation Through Small Games in Short-Distance Running Lessons Among Grade VIII Students at State Junior High School 30 Surabaya

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Abstract
This study examined changes in learning motivation among eighth-grade students at State Junior High School 30 Surabaya following the use of small games in physical education (PJOK) lessons on short-distance running. A quantitative approach with a one-group pretest–posttest design was employed, involving 30 students. Learning motivation was measured using a questionnaire administered before and after the instructional intervention. The intervention incorporated four small games: Squirrel House, Animal Hunting, Handball, and Black and Green. These activities were introduced to provide varied learning experiences and encourage students to participate more actively during lessons. The collected data were analyzed using descriptive statistics and a paired-samples t-test. The mean motivation score increased from 165.87 at pretest to 175.20 at posttest, representing a mean increase of 9.33 points. The paired-samples t-test indicated a statistically significant difference between pretest and posttest scores, $t(29) = 2.841$, $p = 0.008$, with a moderate effect size (Cohen's $dz = 0.519$). The findings indicate that students reported higher learning motivation after participating in PJOK lessons incorporating small games. These results suggest that incorporating simple and varied games can provide an alternative teaching approach to make short-distance running lessons more engaging and support active student participation. However, because this study did not involve a comparison group, the findings should be interpreted with caution. Further research involving larger samples and comparison groups is needed to provide stronger evidence regarding the effectiveness of this approach.

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Introduction

Physical education, sports, and health (PJOK) play an important role in developing students' movement skills, physical fitness, and sportsmanship. Through physical education, students have opportunities to learn various physical activities while developing positive attitudes toward participation and cooperation. However, the success of physical education lessons depends not only on the learning materials but also on students' motivation to participate in the activities. Students with strong learning motivation tend to show greater enthusiasm and involvement during lessons, while low motivation can make them more passive and less interested in physical activities (Mashiruddin et al., 2026). Therefore, maintaining students' motivation is an important part of creating effective and active physical education lessons.

Short-distance running is one of the athletics topics taught in physical education and requires students to develop speed, reaction, and movement coordination (Mahmud et al., 2024). During sprinting activities, students need to respond to starting signals, coordinate their arm and leg movements, and accelerate effectively. These movements require repeated practice so that students become familiar with the techniques. However, repeated running drills with little variation can make lessons feel monotonous and reduce students' interest in participating. Husain et al. (2025) reported a similar concern in short-distance running lessons at SD Negeri 16 Telaga Biru, where the lack of play-based activities could make learning less interesting. For junior high school students, therefore, teachers need to provide varied activities while still maintaining a clear connection with the objectives of short-distance running.

This condition was also observed during preliminary observations in class VIII-B at State Junior High School 30 Surabaya on September 21, 2026. The observation was conducted directly during a short-distance running lesson to see students' participation in the activities. Of the 31 students present, several students were observed talking with peers, waiting passively for their turns, or showing reluctance to practice running. Approximately 12 students appeared hesitant when asked to practice starting and running, while only a few students volunteered to participate or ask questions. The physical education teacher also reported that students sometimes became bored with repetitive starting and running drills, which made it difficult to maintain their participation. These observations provided the initial basis for considering a more varied learning activity in short-distance running lessons.

Learning motivation refers to the factors that encourage students to participate and remain involved in learning activities. It is commonly discussed in terms of intrinsic motivation, which comes from personal interest and enjoyment, and extrinsic motivation, which is influenced by factors such as encouragement and recognition (Cahyono et al., 2022). Both forms of motivation can influence students' participation in physical education depending on the learning environment (Sina, 2026). Self-Determination Theory (SDT), proposed by Ryan and Deci (2000), provides a framework for understanding motivation through three basic psychological needs: autonomy, competence, and relatedness. Autonomy refers to students' sense of choice and initiative, competence relates to their feeling of being capable of completing activities, while relatedness concerns their sense of connection and belonging with others (Ryan & Deci, 2000, 2020). In physical education, activities that allow students to make decisions, experience success, and interact with peers may support the satisfaction of these needs and

encourage greater participation. From this perspective, small games offer a potential learning approach for creating a more engaging environment in which students can experience challenge, achievement, and social interaction.

Small games generally have simple rules and can be adjusted to students' abilities, learning objectives, and available facilities. They can make physical education activities more varied while still maintaining the intended learning outcomes (Yuliana et al., 2024). In short-distance running lessons, games can be designed to involve reaction speed, acceleration, movement coordination, agility, and cooperation. Previous studies have reported positive findings from the use of games in physical education, although the activities and learning contexts have differed. Sauyai and Hartati (2026) examined traditional games such as bentengan and gobak sodor in relation to learning motivation among elementary school students, while Syawal et al. (2025) reported improvements in motivation, confidence, cooperation, and enthusiasm through relay games in short-distance running instruction. At the junior high school level, Gobel and Pakaya (2026) also reported positive student responses to modified games in sprint learning, while Amiruddin et al. (2024) examined the use of a poison-ball game at the beginning of physical education lessons.

Despite these findings, previous studies have not specifically examined the combination of the four small games used in the present study in short-distance running lessons for Grade VIII students. The four games are House and Rabbit, Animal Hunt, simplified handball, and Black and Green, which provide different forms of movement, interaction, and responses to signals. From an SDT perspective, these activities may provide opportunities for students to experience competence through completing physical challenges, autonomy through active involvement and responses to game situations, and relatedness through cooperation and interaction with peers (Ryan & Deci, 2000). Black and Green, in particular, involves responding quickly to a signal, which is related to the reaction and acceleration required in short-distance running. Previous research has also involved different age groups, game activities, learning contexts, or outcomes, making the specific combination and context of the present study less explored. In addition, Pratiwi and Hartati (2022) found no significant effect of simplified rounders on learning motivation during the pandemic, indicating that the use of games does not necessarily produce the same results across different instructional settings. The present study therefore addresses a specific gap by examining changes in learning motivation following the use of these four games in short-distance running lessons among Grade VIII students at State Junior High School 30 Surabaya.

Based on this gap, this study aimed to examine changes in learning motivation scores among Grade VIII students at State Junior High School 30 Surabaya before and after the implementation of small games in short-distance running lessons. The study used four small games to provide varied activities while maintaining a connection with the learning objectives of sprinting. The research question was whether students' learning motivation scores differed before and after participating in short-distance running lessons incorporating the four small games. The study hypothesized that students would have higher learning motivation scores after the intervention than before it. By examining this change, the study provides practical information for PJOK teachers who seek to vary short-distance running activities and encourage

student participation. The findings are also expected to support the use of appropriately designed small games as a practical option in junior high school physical education instruction.

Method

This study employed a quantitative approach using a pre-experimental one-group pretest–posttest design to examine changes in students' learning motivation following the implementation of small-scale games in physical education (PJOK) lessons on short-distance running. The research was conducted at State Junior High School 30 Surabaya, involving 31 eighth-grade students from class VIII-B as the initial population. Total sampling was applied, with 30 students included in the final sample because one student was absent due to illness. All 30 participants completed both the pretest and posttest assessments. The research instrument was a learning motivation questionnaire consisting of 46 statements adapted from Hakim and Syofyan (2017), using a five-point Likert scale ranging from 1 to 5. Positive statements were scored according to the selected responses, while negative statements were reverse-scored. All 46 items met the validity criteria based on item-total correlation, and reliability testing produced a Cronbach's Alpha coefficient of 0.892, indicating good internal consistency. The intervention consisted of four sessions conducted over two weeks, with each session lasting approximately 80 minutes (2 lesson periods). Each session included introductory activities, game-based learning, and a closing activity. Four small games were incorporated into short-distance running lessons: Squirrel House (Rumah Tupai), Animal Hunting (Berburu Binatang), Small Game Handball, and Black and Green (Hitam Hijau). Each game was allocated approximately 10 minutes and selected to provide varied physical activities related to movement, reaction, acceleration, coordination, and cooperation. Data collection involved three stages: pretest, intervention, and posttest. Students completed the motivation questionnaire before the intervention and answered the same questionnaire after all four sessions. Both assessments were conducted under standardized conditions using the same questionnaire, instructions, response scale, and administration procedures, with students completing the questionnaire individually. Data were analyzed using descriptive and inferential statistics. Mean and standard deviation were calculated to summarize the pretest and posttest scores. The Shapiro–Wilk test was used to examine the normality of the difference scores. Since the normality assumption was met, a paired-samples t-test was performed at a significance level of 0.05. Cohen's dz was also calculated to determine the magnitude of the observed change. Research permission was obtained from the school administration and coordinated with the physical education teacher at State Junior High School 30 Surabaya. Student participation followed the applicable school permission and consent procedures, and questionnaire responses were used for research purposes.

Results and Discussion

Results

This study aimed to examine changes in the learning motivation of eighth-grade students at State Junior High School 30 Surabaya following the implementation of small-scale games in PJOK lessons on short-distance running. Data were collected from 30 students using a learning motivation questionnaire administered before and after the instructional

intervention. The questionnaire scores were analyzed descriptively and inferentially to identify changes in students' learning motivation. The descriptive results of the pretest and posttest are presented in Table 1.

Table 2. Results of the descriptive analysis of students' learning motivation scores

Statistic	***Pretest***	***Posttest***
Number of students	30	30
Average score per item	3.61	3.81
Standard deviation per item	0.28	0.31
Average total score	165.87	175.20

The mean total learning motivation score increased from 165.87 in the pretest to 175.20 in the posttest, showing an increase of 9.33 points. The mean score per item also increased from 3.61 to 3.81. These results indicate that students reported higher learning motivation scores after participating in lessons incorporating small games. The per-item scores provide the average response across the 46 questionnaire statements, while the total scores represent the accumulated motivation scores for each student. Before hypothesis testing, the normality of the difference scores between the posttest and pretest was examined using the Shapiro–Wilk test. The results showed a statistic of 0.97 and a significance value of 0.41. Since the significance value was greater than 0.05, the difference scores met the normality assumption. A paired-samples t-test was subsequently performed, and the results are presented in Table 2.

Tabel 2. Normality and Paired-sample t-test results

Component	**Result**
Shapiro-Wilk statistic (W)	0.97
Shapiro-Wilk significance	0.41
Mean difference in total scores	9.33
t-value	2.84
Degrees of freedom (df)	29
Significance (2-tailed)	0.008
95% Confidence interval	2.62-16.04
Cohen's (dz)	0.52

The paired-samples t-test showed a significant difference between pretest and posttest learning motivation scores, $t(29) = 2.84$, $p = 0.008$. The mean difference was 9.33 points, with a 95% confidence interval ranging from 2.62 to 16.04. The positive mean difference indicates that posttest scores were higher than pretest scores. The effect size was Cohen's $dz = 0.52$, indicating a medium effect. Overall, the results show that students' learning motivation scores increased following the implementation of small games in short-distance running lessons.

Discussion

The findings of this study show an increase in students' learning motivation scores following the implementation of small-scale games in PJOK lessons on short-distance running.

The mean total score increased from 165.87 in the pretest to 175.20 in the posttest, with a mean difference of 9.33 points. This increase indicates a positive change in students' responses to the learning motivation questionnaire after the instructional intervention. The findings suggest that incorporating small-scale games into physical education lessons can provide an alternative way to encourage students' involvement in learning activities. This is particularly relevant to short-distance running, which requires students to practice several movement components, including responding to starting signals, coordinating arm and leg movements, accelerating, and maintaining appropriate running techniques (Candra et al., 2020). Since these activities involve repeated practice, teachers need to consider how learning activities are organized to maintain students' interest and participation throughout the lesson (Hamdayama, 2022).

One approach to addressing this challenge is the use of small-scale games. Through activities with simple rules and clear objectives, students can practice movement skills in a more varied learning environment. Rather than repeatedly performing running drills, students are given opportunities to participate in activities that involve challenges, interaction, and cooperation with their classmates. This approach allows the learning process to remain connected to the objectives of short-distance running while providing a different experience from conventional practice activities. Previous research has also indicated that the use of small games can support student involvement and create more engaging physical education lessons (Yusuf et al., 2025). However, small-scale games should not be considered merely as activities for entertainment. Their implementation needs to be planned according to the learning objectives so that the playing activities remain relevant to the material being taught (Hidayatno et al., 2018). For example, games involving responses to visual or auditory signals can introduce reaction-speed activities, while relay games can provide opportunities to practice running movements in a more interactive setting.

The relationship between small-scale games and students' motivation can be further explained through Self-Determination Theory (SDT), which emphasizes the importance of autonomy, competence, and relatedness (Ryan & Deci, 2000, 2020). In the present study, the four games provided different opportunities related to these psychological needs. Black and Green involved responding to signals and making quick responses during the activity, potentially supporting autonomy through active participation and competence through the successful execution of reaction-based tasks. Animal Hunt involved movement and agility challenges that gave students opportunities to experience their ability to complete physical tasks, which is related to competence. House and Rabbit emphasized interaction among participants, providing opportunities for cooperation and social connection that may support relatedness. Similarly, simplified handball involved group participation, coordination, and interaction with classmates, potentially supporting relatedness while allowing students to apply movement skills and make decisions during the game. These connections suggest that the four games may have supported different aspects of students' experiences during physical education lessons. However, autonomy, competence, and relatedness were not measured separately in this study. Therefore, these explanations represent possible motivational mechanisms rather than direct evidence that each psychological need increased.

Relatedness deserves particular attention because several of the games involved interaction and cooperation among students. During House and Rabbit and simplified handball,

students had opportunities to communicate, coordinate their actions, respond to classmates, and participate toward shared game objectives. These interactions could help students feel included and supported by their peers rather than participating only as individuals. Students who receive encouragement and experience positive interactions during physical activities may feel more comfortable taking part in the lesson. This is consistent with the SDT perspective that feeling connected to others is an important psychological need associated with motivation (Ryan & Deci, 2000). In this context, cooperation was not only part of the game rules but also a possible way of creating a more socially supportive learning environment. Such experiences may have contributed to the positive change in motivation scores observed in the study.

The implementation of small-scale games is also relevant to the objectives of the Merdeka Curriculum for PJOK at Phase D. The curriculum emphasizes the development and application of movement skills in different situations, as well as fair play, inclusive participation, leadership, collaboration, and group decision-making during physical activities (Ministry of Primary and Secondary Education, 2025). The four games used in this study provided opportunities for students to practice movement responses, agility, coordination, and cooperation within different game situations. These activities are relevant to the curriculum because students were not only involved in physical movement but also had opportunities to interact with classmates and participate according to game rules. Therefore, small-scale games can serve as an instructional option for supporting the implementation of PJOK learning objectives while creating more varied learning experiences. Their use should nevertheless remain connected to the intended movement skills and learning outcomes rather than being treated as activities separate from the lesson objectives.

The findings are also consistent with previous research on game-based approaches in physical education. Lamat et al. (2025) examined the use of small games to improve learning motivation and emphasized their potential to create more engaging learning activities. A similar concern can be found in the research conducted by Maulana and Yulfadinata (2026), which investigated the modification of soccer activities through a small-sided games approach. Although the learning material was different, their study highlights the potential of modifying game activities to support student motivation in physical education. Furthermore, the research by Priyono et al. (2026) on the Teaching Games for Understanding approach in short-distance running is relevant because it connects game-based learning with athletics instruction. Taken together, these studies provide a basis for understanding how game-based activities can be incorporated into physical education without separating student engagement from the intended learning objectives. The present study adds to this discussion by examining the application of four specific small-scale games in short-distance running lessons involving eighth-grade students at State Junior High School 30 Surabaya.

The results also have practical implications for the organization of physical education lessons. Teachers can use small-scale games as an alternative to introduce variation into short-distance running activities while maintaining the focus on the learning material. The selection of games should consider students' abilities, available facilities, and the movement objectives to be achieved. Activities can be arranged progressively, beginning with simple reaction-based games and continuing with running activities that involve coordination and cooperation. In this way, students can experience different forms of participation while remaining engaged with the

main learning objectives. The implementation of this approach should therefore be considered part of the instructional design rather than an additional activity unrelated to the lesson.

In interpreting the findings, alternative explanations for the increase in motivation should also be considered. The novelty of the games may have attracted students' attention because the activities differed from their usual running exercises. The Hawthorne effect may also have influenced students' responses, as their awareness of participating in a research activity could have affected their involvement during the lessons. In addition, increased teacher attention and guidance during the intervention may have contributed to students' enthusiasm and participation. These possibilities cannot be ruled out because the study used a one-group pretest-posttest design without a control group. Consequently, the observed increase should not be attributed exclusively to the implementation of small-scale games.

The effect size of 0.519 (Cohen's dz) indicates a moderate change in students' learning motivation following the intervention. In practical terms, this magnitude may be relevant to PJOK because motivation is associated with students' willingness to participate in physical activities, respond to instructions, and remain involved throughout the lesson. A moderate increase may therefore represent a meaningful improvement in the learning experience, particularly when teachers aim to encourage participation among students who are initially less enthusiastic. However, statistical significance and effect size alone do not establish the educational importance of an intervention. The practical value of the findings should also be considered in relation to the learning context, the duration of the intervention, and the opportunities provided for student participation (Lakens, 2013). Furthermore, this study focused on changes in students' learning motivation scores based on questionnaire responses. Therefore, the increase does not directly demonstrate improvements in running speed or short-distance running technique, which would require separate physical performance assessments. The findings should also be interpreted within the context of the participants and research design. Overall, the results support the potential use of small-scale games as an alternative instructional approach to encourage learning motivation in physical education lessons, particularly when teaching short-distance running to junior high school students.

Conclusion

The implementation of small-scale games in PJOK lessons on short-distance running was followed by an increase in the learning motivation of eighth-grade students at State Junior High School 30 Surabaya, from a mean score of 165.87 in the pretest to 175.20 in the posttest. The difference was statistically significant, $t(29) = 2.841$, $p = 0.008$, with a moderate effect size ($dz = 0.519$). Games such as House and Rabbit and Black and Green may be practical options for schools with limited facilities, while group arrangements and activity rotations can help accommodate larger classes. From an SDT perspective, these activities may support autonomy, competence, and relatedness through participation, movement challenges, and peer interaction, although these needs were not measured separately in this study. Future research should involve larger samples, longer interventions, randomized controlled designs, and mixed-methods approaches using SDT-based instruments to examine the motivational effects of each game.

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Authors' Note

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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