



The effect of peer teaching and think pair share on rhythmic gymnastics learning outcomes

Muhammad Lutfi Hasan^{1*,A-D,F}, Ibnu Fatkhu Royana^{1,A-C,F}, Utvi Hinda Zhannisa^{1,C,D,F}

¹Department of Physical Education, Sport, Health and Recreation, Faculty of Social Science and Sport Education, Universitas PGRI Semarang, Jl. Gajah Raya No.40, 50166, Semarang City, Central Java Province, Indonesia

*Corresponding author: Muhammad Lutfi Hasan; Universitas PGRI Semarang, Jl. Gajah Raya No.40, 50166, Semarang City, Central Java Province, Indonesia; email: muhammadlutfihasan2112@gmail.com

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ABSTRACT

Background: Rhythmic gymnastics plays a vital role in developing students' motor skills, coordination, and rhythm, yet many still face challenges in mastering movement concepts.

Objectives: This study compared the effectiveness of Peer Teaching and Think Pair Share (TPS) cooperative learning models in improving rhythmic gymnastics learning outcomes.

Methods: A quasi-experimental design with a two-group pretest–posttest was conducted on 68 eighth-grade students (male and female) at State Junior High School 4 Semarang, divided into Peer Teaching (n=34) and TPS (n=34) groups. Learning outcomes were assessed using a validated rhythmic gymnastics performance test, and data were analyzed descriptively with gain score calculation.

Results: The TPS group achieved a greater improvement in posttest scores (from 67.21 to 79.59; +18.41%) compared to the Peer Teaching group (from 79.18 to 79.85; +0.85%). These results indicate that TPS enhances students' understanding, coordination, and engagement in rhythmic gymnastics learning.

Conclusions: TPS is recommended for physical education teachers to improve performance, particularly for students with lower initial skills. Further studies should explore its long-term effects and retention.

Keywords: Cooperative learning, learning outcomes, peer teaching, rhythmic gymnastics, think pair share.

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INTRODUCTION

Physical education, sport, and health (PJOK) play an important role in developing students' motor skills, physical fitness, and cognitive and affective aspects (Bindayna & Salman, 2023; Sugiharto, 2020). One of the materials in PJOK that significantly contributes to physical development and coordination skills is rhythmic gymnastics. Gymnastics is a series of physical activities with structured and regular movements, aiming to improve strength, flexibility, coordination, and overall physical fitness (Sembiring et al., 2024). In practice, learning rhythmic gymnastics in schools often faces various challenges, such as low student participation, difficulty understanding motion concepts, and limited learning strategies that can accommodate differences in student abilities (Abdollahipour et al., 2015; Siregar et al., 2024; Kerr et al., 2019).

Learning rhythmic gymnastics demands physical abilities and cognitive skills such as recognition of movement patterns, understanding of rhythm, and coordination between music and movement (Slater et al., 2015; Hasibuan et al., 2020). The challenge that often arises is the lack of innovation in teaching methods, making learning monotonous and less motivating for students. This impacts learning outcomes that have not met the Minimum Completion Criteria (KKM) and the lack of active student involvement in the learning process (Widiastuti, 2022).

One of the efforts to overcome this problem is implementing a cooperative learning model. This model emphasises collaboration between students to help each other understand the material and practice movement skills (Budirahayu & Saud, 2023; Green et al., 2018; Mundelsee & Jurkowski, 2021). Two widely used models are Think Pair Share (TPS) and Peer Teaching. TPS allows students to think independently, discuss in pairs, and then share the results of the discussion with the class (Wong, 2022; Sholichah et al., 2022), while Peer Teaching emphasises the role of students as teachers for peers in small groups (Tanto et al., 2025).

Some previous studies have shown that TPS can improve interaction and concept understanding in learning PJOK (Lynott et al., 2022; Manda, 2025; Kamil et al., 2021), while Peer Teaching has been shown to improve students' confidence and motor skills (Widiastuti, 2022; Tanto et al., 2025). However, these studies generally focus on specific sports materials such as ball games or floor gymnastics; not many have directly compared the effectiveness of TPS and Peer Teaching in learning rhythmic gymnastics.

The five studies have not directly compared the effectiveness of TPS and Peer Teaching in rhythmic gymnastics learning at the junior high school level, even though the characteristics of rhythmic gymnastics, which require synchronization of movement, rhythm, and coordination, make it a unique context that has the potential to produce different results. Therefore, this study urgently addresses this gap by conducting a comparative analysis of the effects of TPS and Peer Teaching on rhythmic gymnastics learning outcomes at State Junior High School 4, Semarang.

The novelty of this study lies in the context of the material (rhythmic gymnastics), the level of education (junior high school), and the comparative design of two learning models that have not been widely studied. This study aims to analyze and compare the effects of TPS and Peer Teaching on students' rhythmic gymnastics learning outcomes. The findings of this study are expected to contribute to the development of more effective, inclusive, and motivating PJOK learning strategies, thereby increasing student participation and learning achievement.

METHODS

Study Design and Participants

This study used a quantitative approach with a quasi-experimental design, specifically a two-group pretest-posttest design. The research procedure was conducted for three weeks, with three meetings (one per week) for each group. Each learning session lasted for 2 lesson hours (\pm 70 minutes) according to the allocation of PJOK time at State Junior High School 4 Semarang. The determination of the duration of the treatment referred to the guidelines for implementing PJOK learning in the 2013 Curriculum and similar research by [Widiastuti \(2022\)](#), which used a similar period. Before the treatment, both groups were given a pretest to assess cognitive, affective, and psychomotor aspects using a validated assessment rubric. After the treatment, a posttest was conducted with the same instrument.

The research sample was selected using a purposive sampling technique. Inclusion criteria include: (1) VIII grade students who follow PJOK subjects regularly; (2) do not have injuries that interfere with the implementation of gymnastic movements; (3) willing to follow the entire series of research. Exclusion criteria include: (1) students absent more than once during the treatment; (2) students with a history of injury or health conditions that limited participation in moderate intensity physical activity. The participants consisted of 68 students, 34 students each in class 8F (Peer Teaching group) and 34 students in class 8H (Think Pair Share group). The average age of the participants was 13 years old.

Ethical approval statement

The research obtained ethical clearance from the Ethics Committee of the Faculty of Social Sciences and Physical Education (FPIPSKR), Universitas PGRI Semarang, under approval number 130/EC/FPIPSKR-UPGRIS/III/2025. All activities involving human participants complied with the ethical guidelines set by the institution and/or national research authorities and the principles outlined in the 1964 Helsinki Declaration and its subsequent revisions. Prior to participation, written informed consent was secured from all participants.

Research Instruments

The research instrument is a rhythmic gymnastics performance test that refers to the rubric for assessing class VIII PJOK lesson plans. It was developed based on the Ministry of Education and Culture guidelines. This instrument measures four main components: (1) flexibility, (2) coordination of movements, (3) accuracy of movements to the rhythm of music, and (4) smoothness of the series of movements. The test was conducted by performing a series of rhythmic gymnastics movements that had been taught, then assessed by two PJOK teachers who had been trained using a scoring rubric.

The instrument was validated by three PE experts from universities and secondary schools to ensure content and context appropriateness. The inter-rater reliability test resulted in a reliability coefficient of 0.87, indicating a high level of consistency of judgment. Content validity was obtained through expert assessment of the suitability of indicators with the basic competencies of rhythmic gymnastics in junior high school.

Data Analysis

Data were analysed using descriptive statistics to see the difference in pretest and posttest scores in each group and to calculate the percentage of improvement in learning outcomes. This analysis was conducted to describe the changes that occurred after the treatment without conducting inferential tests. The analysis results are presented in the form of tables, diagrams, and percentage increase, so that readers can understand the comparison of the effectiveness of the two learning models.

RESULTS

Based on Table 1, the pretest results for Class 8F showed an average score of 79.18 with a range of 4 (minimum 77, maximum 81) and a standard deviation of 1.023. At the same time, the posttest scores increased slightly to an average of 79.85 with a range of 3 (minimum 78, maximum 82) and a standard deviation that decreased to 0.701. This indicates that after the intervention, the learning outcomes for rhythmic gymnastics in Class 8F remained relatively stable with minor variations in scores. In Class 8H, the pretest scores had an average of 67.21 with a broader range, namely 15 (minimum 59, maximum 74), and a standard deviation of 3.875, indicating a significant difference in initial ability among students. After the treatment, the posttest average score for Class 8H increased significantly to 79.59 with a range of 7 (minimum 77, maximum 83) and a standard deviation that decreased to 1.666, indicating improved learning outcomes and a more even distribution of student abilities. Overall, these data indicate that both the Think Pair Share and Peer Teaching models positively contributed to improved learning outcomes in rhythmic gymnastics, with a reduction in score variation indicating more equitable achievement across both classes.

Table 1. Descriptive Statistics of Pretest and Posttest Learning Outcomes of Rhythmic Gymnastics

Group	Mean	Range	Minimum	Maximum	Std. Deviation	N
Pretest Class 8F	79.18	4	77	81	1.023	34
Posttest Class 8F	79.85	3	78	82	0.701	34
Pretest Class 8H	67.21	15	59	74	3.875	34
Posttest Class 8H	79.59	7	77	83	1.666	34

Table 2. Percentage increase in Learning Outcomes of Rhythmic Gymnastics

Class	Pretest	Posttest	Difference	Improvement (%)
8F	79.18	79.85	0.67	0.85%
8H	67.21	79.59	12.38	18.41%

Based on Table 2, Class 8F, which implemented the Think Pair Share learning model, experienced an increase in rhythmic gymnastics learning outcomes of 0.67 points, equivalent to 0.85% of the pretest average score. This increase was relatively small because the students' initial scores were already high, limiting the room for improvement. Meanwhile, Class 8H, which implemented the Peer Teaching model, showed a much larger increase of 12.38 points or 18.41% of the pretest average score. This indicates that Peer Teaching significantly improves learning outcomes, especially for groups with lower initial abilities. Overall, this data indicates that differences in students' initial ability levels influence the extent of improvement achieved. Peer Teaching is more effective in improving learning outcomes in classes with more varied and generally lower initial scores.

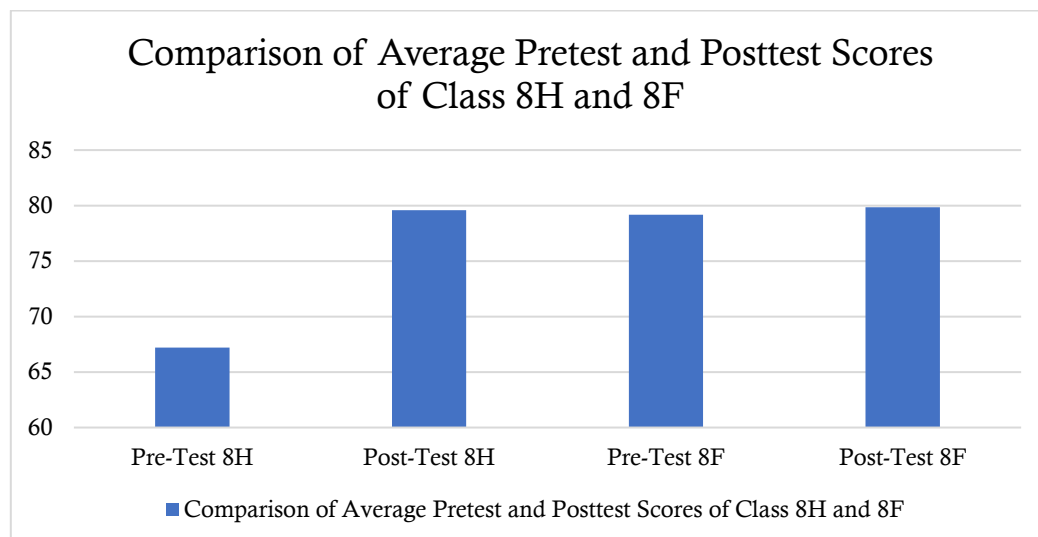


Figure 1. Student Achievement on Pretests and Posttests in Rhythmic Gymnastics Instruction for Grade 8 Students at State Junior High School 4 Semarang

Figure 1 shows an upward trend in the average scores of rhythmic gymnastics learning outcomes for both classes following the implementation of the learning models. In Class 8F, the average score rose slightly from 79.18 in the pretest to 79.85 in the posttest. In contrast, Class 8H demonstrated a more substantial improvement, with the average score increasing from 67.21 to 79.59. This visual representation highlights the positive shift in students' performance from pretest to posttest, reflecting the effectiveness of the applied learning approaches based on the descriptive analysis.

DISCUSSION

The results of this study indicate that both the Think Pair Share (TPS) model and Peer Teaching are effective in improving rhythmic gymnastics learning outcomes among students at State Junior High School 4 Semarang. However, the improvement observed in the TPS group was higher than in the Peer Teaching group. The improvement in the TPS group can be explained by its systematic learning mechanism. The "Think" stage allows students to process information independently, building cognitive understanding of movement concepts (Lynott et al., 2022; Top et al., 2020). The "Pair" stage allows students to strengthen motor skills through paired exercises, effectively improving body coordination and movement synchronization with rhythm (Puspitasari & Habibah, 2022). The "Share" stage allows students to practice movements in front of the class, encouraging self-confidence, movement presentation skills, and active engagement (Kumala, Rahmania, & Purnama, 2022).

Meanwhile, improvements in Peer Teaching can be attributed to the principle of collaborative learning, in which students act as teachers for their peers. This role enhances understanding because students must master the material before teaching it, according to the theory of learning by teaching (Fiorella & Mayer, 2013). In rhythmic gymnastics, Peer Teaching enables direct correction of movements between students, facilitates more personalized learning, and enhances a sense of responsibility toward the learning process of group members (Widiastuti, 2022; Tanto et al., 2025).

From a practical perspective, these findings have important implications for Physical Education teachers. First, through structured discussions, teachers can select TPS for classes with relatively uniform skill levels to maximize movement coordination and conceptual understanding. Second, Peer Teaching can be an effective strategy for classes with varying initial skill levels, as it allows more proficient students to assist others, thereby promoting skill equity (Casey & Goodyear, 2015). Teachers may face challenges in ensuring that every student is actively engaged (Cereda, 2023; Mesias, 2022), avoiding certain students' dominance in discussions or teaching, and providing timely feedback to maintain the quality of rhythmic gymnastics movements (Dyson et al., 2016).

Limitations of the study

This study has several limitations. First, the sample size was limited to one school, so caution is needed when generalizing the findings to a broader population. Second, the duration of the intervention was relatively short, so it was impossible to measure the long-term effects of using TPS and peer teaching. Third, the variables observed only include cognitive and psychomotor learning outcomes, while affective aspects such as motivation, self-confidence, and emotional engagement have not been analyzed in depth.

For future research, it is recommended to expand the population and research location to include schools with different characteristics, extend the duration of the intervention to assess the sustainability of learning effects, and combine TPS or Peer Teaching with other creative learning models such as flipped classroom or project-based learning. Additionally, future research should include indicators of motivation, student engagement, and skill retention to provide a more comprehensive understanding of the effectiveness of PJOK learning strategies in rhythmic gymnastics.

CONCLUSIONS

Think Pair Share (TPS) was shown to have a greater impact on improving the learning outcomes of rhythmic gymnastics students at State Junior High School 4 Semarang than Peer Teaching. PJOK teachers are advised to implement TPS as a learning strategy, as it can increase student engagement, concept understanding, and movement coordination. For students, TPS provides an opportunity to practice collaboratively to increase self-confidence and mastery of techniques. Schools can make TPS a superior learning method in rhythmic gymnastics material. Future research should expand the sample size, extend the duration of the intervention, combine TPS with other strategies, and measure its impact on motivation, engagement, and long-term retention.

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DATA AVAILABILITY

All data supporting the findings of this study are included in the article and its supplementary materials. Additional datasets are available from the corresponding author upon a reasonable request.

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CONFLICT OF INTEREST

The author officially certifies that there are no conflicts of interest with any party with respect.

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