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The Effect of Teams-Games-Tournament Model on Fundamental Basketball Skills Among Secondary School Students: A Quasi-Experimental Study

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Abstract

Research Problems: The development of sport-specific skills in physical education remains suboptimal due to the dominance of teacher-centered instructional approaches, which limit students' active engagement and meaningful practice. Although cooperative learning models such as Teams-Games-Tournament (TGT) have been widely applied, empirical evidence examining their effectiveness on specific basketball skill components within structured experimental designs is still limited. **Research Objectives:** This study aimed to examine the effect of the Teams-Games-Tournament (TGT) cooperative learning model on students' basketball skill development. **Methods:** A quasi-experimental pretest–posttest control group design was employed. A total of 60 secondary school students were selected using cluster random sampling and assigned to an experimental group (n = 30) and a control group (n = 30). The study was conducted in a school-based physical education setting over a 6-week intervention period. The experimental group received TGT-based instruction, while the control group was taught using conventional methods. Basketball skills (passing, dribbling, and shooting) were measured using standardized performance tests with established validity and reliability (Cronbach's α > 0.80). Data were analyzed using descriptive statistics, normality and homogeneity tests, and paired and independent samples t-tests. **Results:** The results indicated that students in the TGT group achieved significantly higher post-test scores (M = 78.56, SD = 5.84) compared to the control group (M = 69.21, SD = 6.03), t(58) = 6.02, p < .001, with a large effect size (Cohen's d = 1.55). Significant improvements were also observed across all skill components (passing, dribbling, and shooting) in the experimental group compared to the control group. **Conclusion:** The Teams-Games-Tournament model has a significant positive effect on basketball skill development in physical education. This model enhances active participation, collaborative learning, and structured skill practice. Future research is recommended to explore its long-term effects and applicability across different sports and educational levels.

Keywords: Cooperative Learning; Teams-Games-Tournament; Basketball Skills; Physical Education; Quasi-Experimental Study.

Authors' Contribution: A – Research concept and design; B – Collection and/or assembly of data; C – Data analysis and interpretation; D – Writing the article; E – Critical revision of the article; F – Final approval of article

INTRODUCTION

Physical education (PE) plays a vital role in developing students' motor skills, physical competence, and lifelong engagement in physical activity. Within PE curricula, team sports such as basketball are widely used to promote technical skills, tactical understanding, and social interaction (Casey

& MacPhail, 2018; Kirk, 2013). However, despite its importance, basketball instruction in school settings often remains constrained by teacher-centered approaches that limit students' active engagement and meaningful practice opportunities.

Traditional instructional methods in PE typically rely on demonstrations followed by repetitive drills and whole-class activities. While these approaches may support basic skill acquisition, they often fail to actively involve all students, particularly those with lower skill levels or confidence (Casey & Goodyear, 2015). Consequently, students may experience reduced motivation, limited active learning time, and uneven skill development. These challenges highlight the need for more student-centered instructional approaches that emphasize active participation and collaborative learning.

Cooperative learning has emerged as an effective pedagogical model to address these limitations. Grounded in social constructivist theory, cooperative learning promotes interaction, shared responsibility, and active engagement among students (Casey & Goodyear, 2015). Recent evidence further supports its effectiveness in physical education. A systematic review by (Zach et al., 2023) found that cooperative learning positively influences both motor and psychosocial outcomes, while a bibliometric analysis by (Zhou et al., 2023) identified cooperative learning as a rapidly growing research area in sport pedagogy. Additionally, a recent meta-analysis confirmed its significant positive impact on students' learning outcomes in PE (Boke et al., 2025).

One cooperative learning model that has gained attention is the Teams-Games-Tournament (TGT) model, which integrates teamwork with structured competition (Slavin, 2014). Through heterogeneous grouping and tournament-based activities, TGT promotes equal participation, motivation, and meaningful practice. Previous studies have demonstrated the effectiveness of TGT in improving learning outcomes in sports such as volleyball and badminton (Dewi & Lestari, 2024; Lestari & Widayati, 2022). However, these studies have largely focused on affective outcomes or sports other than basketball.

Despite these promising findings, important gaps remain. First, empirical research examining the effectiveness of TGT in basketball learning contexts is still limited. Second, many studies emphasize affective outcomes rather than objective motor skill performance measured through standardized assessments (Casey & MacPhail, 2018; Zach et al., 2023). Third, there is a lack of quasi-experimental studies that provide stronger evidence of causal relationships between instructional models and skill development. These gaps are critical given that basketball is a complex invasion game requiring the integration of technical skills such as passing, dribbling, and shooting, along with coordination and decision-making (Rico-González et al., 2020). Effective instruction therefore requires approaches that combine active engagement with meaningful and context-based practice.

Addressing these limitations, this study aims to examine the effects of the Teams-Games-Tournament cooperative learning model on students' basketball skill development using a quasi-experimental design and objective skill assessments. This study contributes to the literature by providing empirical evidence on the effectiveness of TGT in basketball contexts and by strengthening the use of performance-based evaluation in physical education research. Practically, the findings are expected to inform teachers in implementing more effective, engaging, and inclusive instructional strategies in team sport learning.

METHOD

Research Design

This study employed a quasi-experimental design using a pretest–post-test control group approach. This design was selected to examine the causal effect of the Teams Games Tournament (TGT) cooperative learning model on students' basketball skill development while maintaining ecological validity in a school-based physical education setting. Two intact classes were assigned as the experimental group (TGT-based instruction) and the control group (conventional teaching). Both groups received the same instructional content, learning objectives, and duration, differing only in the instructional model applied.

Students in the experimental group were taught using the Teams Games Tournament (TGT) cooperative learning model, which was implemented through a series of structured instructional stages. The lesson began with a class presentation, during which the teacher introduced fundamental basketball skills—passing, dribbling, and shooting—through brief explanations and skill demonstrations. Students were then organized into heterogeneous teams composed of mixed ability levels to promote peer learning and positive interdependence. During the team practice phase, students engaged in collaborative activities, providing peer feedback and sharing responsibility for improving team performance. This was followed by games and tournaments, where students participated in structured basketball games and skill-based competitions; individual performance scores contributed to overall team results, fostering both individual accountability and teamwork. The instructional process concluded with team recognition, in which teams received acknowledgment based on collective performance outcomes, reinforcing motivation, cooperation, and positive interdependence.

The control group received conventional physical education instruction, characterized by teacher-centred skill demonstrations, individual drills, and whole-class practice activities. Instruction primarily focused on repetitive skill execution directed by the teacher, without the inclusion of structured cooperative learning strategies, peer-based activities, or tournament-based elements. As a result, learning interactions were largely individual and teacher-led, with limited opportunities for collaborative practice or shared responsibility among students.

Participants

The participants were students enrolled in regular physical education classes at the secondary school level. A total of N = 60 students participated in the study, with 30 students assigned to the experimental group and 30 students to the control group. The classes were selected using cluster sampling, as random assignment at the individual level was not feasible. Prior to data collection, informed consent was obtained from the school authorities and participants. All students were physically healthy and had prior

experience with basic basketball activities as part of the physical education curriculum.

Research Instruments

Basketball skill performance was assessed using standardized basketball skill tests adapted from widely used physical education assessment protocols. The assessment focused on three fundamental basketball skills: passing, dribbling, and shooting. Passing skills were measured using a chest pass accuracy test, in which students performed repeated chest passes toward a designated wall target within a specified time limit, with scores based on the number of accurate passes completed. Dribbling skills were assessed through a slalom dribbling test, where students dribbled a basketball through a predetermined course as quickly as possible, and performance was recorded based on completion time and subsequently converted into standardized scores. Shooting skills were evaluated using a set-shot test from predetermined positions, with scores calculated based on the number of successful shots. An overall basketball skill score was computed by aggregating the standardized scores from the passing, dribbling, and shooting tests, providing a comprehensive measure of students' basketball skill development (AAHPERD, 2010; Rink, 2014; Memmert & Harvey, 2010).

Data Analysis

Data were analyzed using statistical software. Descriptive statistics, including means and standard deviations, were calculated to summarize students' basketball skill performance. Prior to hypothesis testing, assumption tests were conducted using the Kolmogorov–Smirnov test to examine data normality and Levene's test to assess the homogeneity of variances. Paired samples t-tests were employed to analyze within-group improvements from pretest to post-test, while independent samples t-tests were used to compare post-test basketball skill scores between the experimental and control groups. The level of statistical significance was set at $p < 0.05$.

RESULT

Descriptive statistics were calculated to summarize students' basketball skill performance in both the experimental and control groups before and after

the intervention. Table 1 presents the mean scores and standard deviations for pretest and post-test measurements.

Table 1. Descriptive Statistics of Basketball Skill

Group	Test	Mean (M)	Standard Deviation (SD)
Experimental (TGT)	Pretest	61.42	6.35
Experimental (TGT)	Post-test	78.56	5.84
Control (Conventional)	Pretest	60.97	6.12
Control (Conventional)	Post-test	69.21	6.03

Both groups demonstrated improvements from pretest to post-test. However, the experimental group showed a substantially greater increase in basketball skill scores compared to the control group. Data normality was examined using the Kolmogorov–Smirnov test. The results indicated that all pretest and post-test scores were normally distributed, as the significance values exceeded the 0.05 threshold. These findings confirm that the assumption of normality was met.

Table 2. Kolmogorov–Smirnov Normality Test Results

Group	Test	Sig.
Experimental	Pretest	0.187
Experimental	Post-test	0.200
Control	Pretest	0.164
Control	Post-test	0.173

The Levene's test was conducted to examine the homogeneity of variances between the experimental and control groups. The results indicated no significant differences in variances ($p > 0.05$), confirming that the data were homogeneous.

Table 3. Levene's Test for Homogeneity of Variances

Test	Levene Statistic	Sig.
Post-test Scores	0.664	0.418

Paired samples t-tests were performed to examine within-group improvements in basketball skills from pretest to post-test.

Table 4. Paired Samples t-Test Results

Group	Mean Difference	*t*	Sig.
Experimental (TGT)	17.14	12.84	< 0.001
Control (Conventional)	8.24	6.21	< 0.001

The results revealed a statistically significant improvement in basketball skill performance in both groups. However, the magnitude of improvement was considerably greater in the experimental group compared to the control

group. An independent samples t-test was conducted to compare posttest basketball skill scores between the experimental and control groups.

Table 5. Independent Samples t-Test Results

Group	Mean	SD	*t*	Sig.
Experimental (TGT)	78.56	5.84	6.02	< 0.001
Control (Conventional)	69.21	6.03		

The analysis showed a statistically significant difference in post-test basketball skill scores between the two groups ($t = 6.02$, $p < 0.001$). Students taught using the TGT cooperative learning model achieved significantly higher basketball skill performance than those taught using conventional instructional methods.

Overall, the statistical analyses demonstrated that the Teams Games Tournament cooperative learning model had a significant positive effect on students' basketball skill development. While both instructional approaches led to improvements, the TGT model resulted in greater gains, indicating its superior effectiveness compared to conventional physical education instruction.

DISCUSSION

The purpose of this study was to examine the effects of the Teams-Games-Tournament (TGT) cooperative learning model on students' basketball skill development. The results demonstrated that students who participated in TGT-based instruction showed significantly greater improvements in basketball skills compared to those who received conventional teaching. These findings support the effectiveness of cooperative and game-based pedagogical approaches in enhancing motor skill acquisition in physical education contexts.

The superior performance of the experimental group can be explained by several key characteristics of the TGT model. First, the integration of structured games and tournaments provided students with repeated opportunities to apply skills in authentic and dynamic contexts. From a motor learning perspective, learning is enhanced when practice conditions simulate real-game environments, allowing for better transfer and adaptability of skills (Button et al., 2021; Chow et al., 2021). Through TGT, students practiced

passing, dribbling, and shooting under conditions that required decision-making and coordination, which are essential for effective performance in invasion games such as basketball (Rösch et al., 2021).

Second, the cooperative structure of TGT promoted peer interaction, shared responsibility, and active engagement. Students were encouraged to support one another and contribute to team success, which likely increased their time-on-task and quality of practice. Previous research has shown that cooperative and student-centered approaches can enhance both engagement and skill learning by fostering interaction and feedback among learners (Bores-García et al., 2021; Metzler, 2017). In this study, peer feedback and collaboration may have facilitated more effective skill refinement compared to isolated and teacher-dominated instruction.

However, while the results favor the TGT model, it is important to consider alternative explanations and influencing factors. The improvement observed in the experimental group may also be partially attributed to increased student motivation, which is often higher in game-based and competitive learning environments. Additionally, differences in prior basketball experience among students could have influenced the rate of skill improvement, as students with previous exposure may adapt more quickly to game-based instruction. Teacher competence and familiarity with the TGT model may also have played a role in the effectiveness of implementation, as instructional quality is a critical factor in determining learning outcomes (Metzler, 2017).

Furthermore, several external variables that were not controlled in this study may have influenced the results. For example, gender differences in participation and engagement could affect skill development outcomes, as previous research suggests that boys and girls may respond differently to competitive and cooperative learning environments (Hastie et al., 2017). Similarly, variations in training intensity during lessons and students' involvement in extracurricular sports activities may have contributed to differences in skill improvement. Students who are more physically active outside of school may demonstrate greater gains regardless of the instructional model used.

The findings of this study are consistent with previous research reporting the effectiveness of TGT in improving learning outcomes in sports contexts (Andrianova et al., 2022; Ginanjar et al., 2023; Sembiring et al., 2020). However, this study extends the literature by providing empirical evidence of its effectiveness in basketball, a sport that requires the integration of technical skills, perceptual awareness, and decision-making under pressure. This highlights the potential of TGT as a suitable instructional model for complex invasion games in physical education.

From a practical perspective, the results provide clear guidance for physical education teachers. The TGT model can be effectively implemented by organizing students into heterogeneous teams, structuring learning sessions around progressive skill practice followed by game-based tournaments and ensuring balanced competition through ability grouping. Teachers should also provide clear instructions, monitor group interactions, and facilitate constructive feedback to maximize learning outcomes. Importantly, adapting the level of task difficulty and competition to students' abilities is essential to maintain engagement and ensure equitable participation.

Despite its contributions, this study has several limitations. The quasi-experimental design limits causal generalization, and the relatively short duration of the intervention may not capture long-term learning and retention effects. Future research is recommended to employ longitudinal and mixed-method approaches to examine the sustained impact of TGT on motor skills, tactical understanding, motivation, and physical activity engagement across diverse educational contexts (Beni et al., 2017; Kirk, 2013).

CONCLUSIONS

This study confirms that the Teams-Games-Tournament (TGT) cooperative learning model is an effective approach for improving students' basketball skill performance in physical education. By integrating cooperative learning principles with structured game-based activities, TGT promotes active participation, meaningful practice, and collaborative learning. These findings suggest that TGT can serve as a viable alternative to traditional

teacher-centered instruction, helping teachers create more engaging and inclusive learning environments that support skill development.

Despite its contributions, this study has several limitations, including the relatively short duration of the intervention and its focus on a specific educational context. Future research is recommended to examine long-term skill retention, explore the application of TGT across different sports and educational levels, and investigate its integration with other pedagogical approaches such as Teaching Games for Understanding (TGfU).

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest with any party in the implementation of this research

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