

Effects of Small-Sided Games on Character Development in High School Physical Education

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Abstract

Character development is one of the main objectives of Physical Education because it supports the social, moral, and personal growth of students. However, this objective has not been optimally achieved, especially in team game learning, where students still show limited cooperation, low discipline, and inadequate responsibility. Small-Sided Games (SSG) are known as a game-based learning approach that encourages active participation, communication, teamwork, and decision-making, all of which have the potential to support character development. This study aims to examine the effect of SSG on character development of high school students in team game learning, with a sample from SMA Negeri 1 Cikalong Wetan, West Java, Indonesia. Character development is conceptualized as a single construct measured through three dimensions: cooperation, discipline, and responsibility. A quasi-experimental method with a nonequivalent control group design was used, involving 68 grade XI students selected through cluster random sampling and divided into experimental ($n = 34$) and control ($n = 34$) groups. Data were collected using an 18-item character development questionnaire and observation sheet, and analyzed using descriptive statistics, Shapiro-Wilk test, Levene test, Wilcoxon Signed-Rank test, and Mann-Whitney U test. The results showed a significant increase in the experimental group ($p = 0.034$), and the post-test scores were significantly different between the experimental and control groups ($p = 0.004$). These findings indicate that Small-Sided Games have a significant positive effect on students' character development in team game learning in high school Physical Education.

Keywords: Small-sided games; character development; physical education; team sports learning; high school students

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Introduction

In an era when students face increasingly complex social and behavioral challenges, character development has become a primary focus of education systems worldwide, including in Indonesia (Berkowitz, 2021; Ministry of Education, Culture, Research, and Technology, 2021; Lickona, 2004). Schools are not only required to develop students' cognitive abilities but also to cultivate positive character traits that support their personal and social growth (Kristjánsson & Arthur, 2022; OECD, 2021). Character development in this context is not simply the transmission of moral knowledge, but rather the instilling of dispositions manifested in observable behaviors such as cooperation, discipline, and responsibility.

To address these needs, Physical Education (PJOK) offers a unique and distinct learning environment from classroom-based subjects, as it places students in real-life social situations involving teamwork, adherence to rules, and hands-on decision-making during physical activity (Bailey et al., 2009; Beni et al., 2017; Opstoel et al., 2020). Among the various learning contexts in PJOK, team games are particularly relevant for character development, as their structure requires students to collaborate with teammates, respect rules, take responsibility for their roles, and demonstrate discipline during play (Goudas & Giannoudis, 2008; Jadwiszczak et al., 2025).

Through activities such as soccer, basketball, and volleyball, students experience situations that encourage communication, mutual support, fair play, and collective problem-solving (Hovdal et al., 2021; Kang et al., 2024; Ludwiczak & Bronikowska, 2022; Zijian & Wang, 2025). These experiences help students develop social and moral values that extend beyond sports participation and can be applied in everyday life (Bailey, 2006, 2018; Cronin et al., 2023; Jadwiszczak et al., 2025). Although team games have great potential to support character development, initial observations at SMA Negeri 1 Cikalong Wetan indicate that student character development is still suboptimal.

Specifically, only 30% of students demonstrated cooperative behavior during team game activities, approximately 35% consistently adhered to game rules, and only 40% carried out assigned roles responsibly. This situation indicates that existing teaching practices do not provide sufficient meaningful opportunities for students to engage and develop character through team game learning. Therefore, a more innovative and structured learning approach is needed to increase meaningful participation while strengthening character development as part of the learning process.

To address these challenges, one learning approach that has received significant attention in Physical Education (PJOK) is Small-Sided Games (SSG). SSGs are modified game formats with fewer players, a smaller playing area, and simplified rules designed to increase student engagement and participation (Clemente et al., 2021; Fernández-Espínola et al., 2020; Hill-Haas et al., 2011). Compared to traditional game formats, SSGs provide more opportunities for ball contact, communication, decision-making, and interaction between players (De Souza et al., 2025; Fernández-Espínola et al., 2020; Li et al., 2024).

These characteristics make SSG a promising teaching strategy not only for improving technical and tactical skills but also for developing character-related competencies such as cooperation, discipline, and responsibility that emerge naturally through in-game interactions

(Clemente et al., 2021; Sulistiyono et al., 2021). The theoretical basis for this relationship can be understood through Bandura's social learning theory, which states that individuals learn behavior by observing and imitating the actions of others in social contexts, and through Kohlberg's theory of moral development, which emphasizes that moral reasoning develops through social interaction and perspective-taking.

In SSG, learners continuously observe their peers, receive direct feedback, and negotiate rules and roles, creating a natural laboratory for character-related learning. Previous research has demonstrated the positive effects of SSG across various educational and sporting contexts. Research consistently shows that SSG improves technical skills, tactical understanding, and decision-making abilities (Clemente et al., 2021; Endriani et al., 2024; Práxedes et al., 2018). Beyond technical outcomes, SSG has also been found to foster social development, including teamwork, respect, and leadership (Lugaya et al., 2020; Sulistiyono et al., 2021).

In terms of affective outcomes, SSG has been shown to significantly increase students' motivation and active participation in physical education (Pop et al., 2022; Ridwan et al., 2022). However, a critical review of these studies reveals several methodological limitations. First, varying intervention durations, ranging from four to sixteen weeks, make it difficult to determine the optimal dosage for character-related outcomes. Second, inconsistencies in game formats, such as differences in the number of players and field dimensions, limit comparability across studies. Third, most studies focus on technical, physical, and motivational outcomes, with limited attention to character development as the primary dependent variable.

Furthermore, many existing studies lack a clear theoretical framework linking SSG characteristics to specific character dimensions, and few use observational data to triangulate self-report findings. These limitations informed the design of this study, which addressed these gaps by using a theoretically grounded conceptual framework, a standardized intervention protocol, and a mixed-assessment approach. Although SSG has been extensively researched, most research still focuses on technical, physical, and motivational outcomes. Research exploring its potential for character development in team game learning is limited.

Therefore, further investigation is needed to address this gap and provide empirical evidence regarding the role of SSG in supporting character development in the context of Physical Education and Health. Based on these considerations, this study aims to examine the effect of SSG on character development in senior high school students in team games learning, using a sample from SMA Negeri 1 Cikalong Wetan. Character development in this study is represented through three dimensions: cooperation, discipline, and responsibility, which serve as observable dimensions of the overall construct. These findings are expected to contribute to the development of more effective Physical Education and Health learning strategies and provide empirical evidence regarding the use of SSG as an approach to strengthen character development in the school environment.

Methods

This study used a quasi-experimental method with a nonequivalent control group design (Sugiyono, 2021). This design involved an experimental group and a control group that were not individually randomized. This design was chosen because the research was conducted in a

formal educational setting where intact classes could not be disbanded or rerandomized. The limitations of this design, particularly threats to internal validity from non-random assignment and potential selection bias, were acknowledged and mitigated by ensuring equivalence of the baseline characteristics of both groups through a pretest and consistency of procedures across both groups.

Participants were 68 eleventh-grade students (aged 16-17) from SMA Negeri 1 Cikalong Wetan, West Bandung Regency, Indonesia. Two pre-existing classes were designated as the experimental group ($n = 34$) and the control group ($n = 34$). All participants were actively enrolled in the Physical Education (PJOK) class and completed the pretest and posttest. Permission for the study was obtained from the school, and all students volunteered to participate. This study did not conduct an a priori power analysis due to limited access and administrative constraints; the sample size of 68 was the maximum achievable. This limitation is recognized as a weakness of the study.

This study used cluster random sampling (Sugiyono, 2021). The population consisted of twelve eleventh-grade classes. A digital spin-wheel application was used to randomly select two classes. The first selected class became the experimental group (XI-H) and the second selected class became the control group (XI-G). The intact class was retained as the research group, consistent with common practice in quasi-experimental research. The research instrument consisted of a character development questionnaire as the primary instrument and an observation sheet as a supporting instrument. Character development is conceptualized as a single construct measured through three dimensions of cooperation, discipline, and responsibility (Kemendikbud, 2025). The cooperation dimension was adapted from (Johnson et al., 1984), discipline from (Lickona, 1991), and responsibility from the national character education policy (Kemendikbud, 2025). The questionnaire outline is presented in Table 1.

Table 1. Character development questionnaire outline

Dimensions	Indicator	Number of Items
Cooperation	Communication during play	2
	Unselfish behavior	2
	Active participation in the team	2
Discipline	Compliance with the rules of the game	2
	Compliance with instructions	2
	Emotional control	2
Responsibility	Role implementation	2
	Decision-making	2
	Accountability for actions	2
Total		18

Responses were measured using a four-point Likert scale ranging from 1 (Never) to 4 (Always) (Sullivan & Artino, 2013). The use of two items per indicator was based on practicality and measurement efficiency. Prior to implementation, the questionnaire was reviewed through expert judgment involving three experts (two Physical Education lecturers and one experienced Physical Education teacher) with the criteria of item relevance, language clarity, and suitability to the developmental level of students. A pilot test involved 50 students

from another school. Item validity was assessed using Pearson Product Moment correlation; all 18 items showed correlation coefficients higher than the critical *r*-table (0.279) and significance below 0.05.

Reliability yielded a Cronbach's Alpha of 0.891, indicating excellent internal consistency. Observation sheets were developed based on the same dimensions and completed by researchers during the pretest, six treatment sessions, and posttest. Responses were recorded using a four-point scale ranging from 1 (Never) to 4 (Always). The maximum score was 36 (9 indicators $\times$ 4). Scoring criteria were outlined in a specific behavioral rubric for each score. This study did not use multiple observers due to resource limitations; potential observer bias was acknowledged as a limitation and mitigated through systematic rubric-based recording. The study was conducted over eight sessions: one pretest, six treatment sessions, and one posttest.

At the first meeting, both groups completed a pretest and were observed using an observation sheet. The experimental group participated in six treatment sessions with SSG in soccer, volleyball, and basketball. The control group received conventional PJOK instruction with the same sports. The control group's conventional instruction included a 10-minute warm-up; a 15-minute technical explanation and demonstration; a 20-minute drill; a 20-minute full game of 6 vs. 6 or 7 vs. 7; and a 5-minute cool-down and evaluation. The teacher acted as the primary instructor, while the students followed the instructions.

Each treatment session in the experimental group targeted one dimension of character through game modifications, with each dimension addressed in two sessions using different sports. The cooperation session required mandatory passing and verbal communication. The responsibility session required role rotation and area-based positional adherence. The discipline session implemented clean-play rules. The formats used were 3 vs. 3 and 4 vs. 4. Details of the protocols are presented in Table 2.

Table 2. Small-sided games intervention protocol

Session	Dimension Focus	Sport	Format	Game Modifications
1	Cooperation	Football	3 vs 3	Passing is mandatory before scoring a goal; verbal communication is mandatory
2	Cooperation	Volleyball	3 vs 3	Each player must touch the ball before it passes over the net; verbal communication is mandatory.
3	Responsibility	Basketball	3 vs 3	Role rotation every 5 minutes; area-based position compliance
4	Responsibility	Football	4 vs 4	Role rotation every 5 minutes; area-based position compliance
5	Discipline	Volleyball	4 vs 4	Clean-play rule: technical fouls give the opponent points; game procedures are followed.
6	Discipline	Basketball	4 vs 4	Clean-play rule: technical fouls give the opponent points; game procedures are followed.

The duration of each session was 60 minutes with a 10-minute warm-up, a 5-minute explanation of the rules and modifications, a 35-minute SSG game divided into several rounds, and a 10-minute cool-down and reflection. The intensity was increased progressively by shortening the breaks between rounds and expanding the playing area. Physical education

teachers received brief training on the principles and implementation of SSG before the study. Implementation fidelity was monitored through direct observation of each session and recording the conformity of the plan with the implementation. At the final meeting, both groups completed a post-test and were observed using an observation sheet. Data were analyzed using descriptive statistics (mean, minimum, maximum, standard deviation) and inferential statistics.

Normality was checked using the Shapiro-Wilk test and homogeneity using the Levene test. The assumption of independence of observations was ensured through a design in which each student was measured only once in the pretest and once in the posttest. A four-point Likert scale was treated as ordinal data for non-parametric analysis. The test results showed that the data were not normally distributed and not homogeneous, so non-parametric analysis was used. The Wilcoxon Signed-Rank test was used to determine the differences between pretests and posttests within each group, and the Mann-Whitney U test to compare posttests between groups.

In addition to the p-value, effect sizes were calculated using the formula $r = Z/\sqrt{N}$ for both tests. Interpretation follows Cohen's r guidelines of 0.10 for a small effect, 0.30 for a medium effect, and 0.50 for a large effect. A 95% confidence interval is reported for the precision of the effect estimates. There were no missing data because all students completed the pretest, posttest, and all treatment sessions; completeness of data was verified after each data collection session. All analyses used IBM SPSS Statistics version 32 with a significance level of $\alpha = 0.05$.

Results

Descriptive statistics were used to describe students' character development scores before and after the intervention. The results of the analysis are presented in Table 3.

Table 3. Descriptive statistics of character development scores

Group	Test	N	Mean	Min	Max	Elementary School
Control	Pretest	34	59.59	43	72	7.76
Control	Posttest	34	58.76	36	72	9.36
Experiment	Pretest	34	62.88	40	72	7.29
Experiment	Posttest	34	65.09	54	72	5.54

Descriptive analysis showed that the experimental group experienced a mean increase from 62.88 in the pretest to 65.09 in the posttest. In contrast, the control group experienced a slight decrease from 59.59 to 58.76. This contrasting pattern indicates a positive trend in character development among students participating in the SSG. Observational data were collected at the pretest, during the six treatment sessions, and at the posttest to support the questionnaire findings. The maximum possible score was 36 (9 indicators $\times$ 4). The observational results are presented in Table 4.

Table 4. Character development observation scores

Meeting Activity Control Experiment

1	Pretest	20	21
2	Session 1	20	21
3	Session 2	20	21
4	Session 3	21	23
5	Session 4	21	23
6	Session 5	21	24
7	Session 6	21	26
8	Posttest	21	25

Observational results showed a gradual increase in character-related behavior in the experimental group, from a score of 21 in the pretest to a peak of 26 in Session 6, then a slight decline to 25 in the posttest. In contrast, the control group remained relatively stable throughout the study. The Shapiro-Wilk test was used to check for data normality. The results are presented in Table 5.

Table 5. Results of the Shapiro-Wilk normality test

Group	Statistics	df	Sig.
Pretest Control	0.959	34	0.225
Posttest Control	0.924	34	0.021
Pretest Experiment	0.920	34	0.016
Posttest Experiment	0.908	34	0.007

The results showed that only the control group pretest data were normally distributed ($p > 0.05$). Since most of the dataset violated the assumption of normality, non-parametric statistical analysis was used. Levene's test was performed to assess the homogeneity of variance between groups. The results are presented in Table 6.

Table 6. Levene's test results

	Levene Statistics	df1	df2	Sig.
Based on Mean	16,646	1	66	< 0.001
Based on Median	10,831	1	66	0.002
Based on Median and with adjusted df	10,831	1	55,337	0.002
Based on trimmed mean	15,986	1	66	< 0.001

A significance value below 0.05 indicates heterogeneity of variance between groups. A Wilcoxon Signed-Rank test was performed to compare pretest and posttest scores within each group. The results are presented in Table 7.

Table 7. Results of the Wilcoxon signed-rank test

Group	Z	Sig.	Effect Size (r)
Control	-0.171	0.864	0.02 (small effect)
Experiment	-2,115	0.034	0.26 (moderate effect)

The results showed a significant difference between the pretest and posttest scores of the experimental group ($Z = -2.115$; $p = 0.034$; $r = 0.26$). In contrast, there was no significant difference in the control group ($Z = -0.171$; $p = 0.864$; $r = 0.02$). These findings indicate that the SSG intervention had a significant effect on students' character development scores, while the control group showed no significant changes. The Mann-Whitney U test was conducted to compare the posttest scores between the experimental and control groups. The results are presented in Table 8.

Table 8. Mann-Whitney U test results

Group	N	Mean Rank	U	Z	Sig.	Effect Size (r)
Control	34	27.56	342,000	-2,901	0.004	0.35 (moderate effect)
Experiment	34	41.44				

The Mann-Whitney U test showed a significant difference in posttest character development scores between the experimental and control groups ($U = 342.000$; $Z = -2.901$; $p = 0.004$; $r = 0.35$). The experimental group obtained a higher mean rank (41.44) than the control group (27.56), indicating that students who participated in SSG demonstrated better character development outcomes than those who received conventional PJOK learning. To provide a more nuanced picture, additional analyses were conducted on each dimension of character development (cooperation, discipline, and responsibility). The results are presented in Table 9.

Table 9. Comparison of pretest and posttest scores per dimension

Dimensions	Group	Pre-test (Mean $\pm$ SD)	Post-test (Mean $\pm$ SD)	Difference	Sig. (Wilcoxon)
Cooperation	Control	20.12 $\pm$ 2.89	19.85 $\pm$ 3.24	-0.27	0.712
	Experiment	21.03 $\pm$ 2.65	22.15 $\pm$ 2.18	+1.12	0.041
Discipline	Control	19.76 $\pm$ 3.12	19.44 $\pm$ 3.45	-0.32	0.658
	Experiment	20.85 $\pm$ 2.78	21.62 $\pm$ 2.35	+0.77	0.038
Responsibility	Control	19.71 $\pm$ 3.05	19.47 $\pm$ 3.18	-0.24	0.694
	Experiment	21.00 $\pm$ 2.54	21.32 $\pm$ 2.41	+0.32	0.047

Analysis by dimension showed that the experimental group experienced significant improvements in all three dimensions: cooperation ($p = 0.041$), discipline ($p = 0.038$), and responsibility ($p = 0.047$). The largest improvement occurred in the cooperation dimension (+1.12), followed by discipline (+0.77), and responsibility (+0.32). In contrast, the control group showed no significant changes in any dimension. These findings suggest that SSG exerts a stronger effect on the cooperation and discipline dimensions than on responsibility, which may be due to the game's inherently demanding communication and rule-following characteristics.

Discussion

The findings of this study indicate that the implementation of Small-Sided Games (SSG) significantly influences the development of students' character in team game learning. The

Wilcoxon Signed-Rank test showed a significant increase in the experimental group after the intervention ($Z = -2.115$; $p = 0.034$; $r = 0.26$), while there was no significant change in the control group ($Z = -0.171$; $p = 0.864$; $r = 0.02$). The Mann-Whitney U test also revealed a significant difference between the experimental and control groups at the posttest stage ($U = 342.000$; $Z = -2.901$; $p = 0.004$; $r = 0.35$). These findings are consistent with recent research showing that modified game formats with fewer players and smaller areas can create a more intensive learning environment for students' social and emotional development (García-Angulo et al., 2024; Sánchez-Alcaraz et al., 2023; Trajković et al., 2023).

The improvement in character development in the experimental group can be explained by the psychological and social mechanisms that occur during the game. First, SSG creates an environment where each student has a higher frequency of involvement in decision-making, communication, and peer interaction. In a 3 vs. 3 or 4 vs. 4 format, no student can "hide" or avoid responsibility because each individual has a clear role and contributes directly to the game (Rojas-Valverde et al., 2023). This environment encourages the emergence of cooperative behavior, discipline, and responsibility naturally through the direct consequences of their actions in the game.

Second, Bandura's social learning theory explains that students learn behavior through observing and imitating models in their environment. In social learning groups, students continually observe peers demonstrating cooperation, rule-abidingness, and responsibility, so these behaviors are reinforced through modeling and vicarious reinforcement (Bandura, 1986; Herrera-Valenzuela et al., 2024). Third, Kohlberg's moral development theory emphasizes that moral reasoning develops through social interaction and perspective-taking. Social learning groups create situations in which students must negotiate rules, resolve conflicts, and consider the interests of the team above their own, which directly stimulates the development of their moral reasoning (Kohlberg, 1984; Mouratidou et al., 2023).

The findings of this study align with recent studies demonstrating the effectiveness of SSG in developing students' social and affective competencies. Casado-Robles et al. (2024) reported that SSG improved cooperation and communication between players in physical education lessons. Serrano et al. (2023) found that SSG significantly increased prosocial behavior and reduced selfish behavior in middle school students. Meanwhile, García-Castejón et al. (2023) showed that SSG contributed to the development of personal and social responsibility by increasing active involvement and interaction between players.

This study also supports the findings of (González-Espinosa et al., 2024) who stated that a game format with fewer players provides more opportunities for students to practice social skills such as listening, negotiating, and resolving conflicts constructively. Thus, SSG is not only effective for developing technical and tactical skills but also serves as an effective vehicle for character education in physical education. Analysis per dimension showed that the experimental group experienced significant improvements in all three dimensions: cooperation ($p = 0.041$), discipline ($p = 0.038$), and responsibility ($p = 0.047$). The largest increase occurred in the cooperation dimension (+1.12), followed by discipline (+0.77), and responsibility (+0.32).

These findings indicate that SSG exerts a stronger effect on the dimensions of cooperation and discipline than on responsibility. This difference in effect size can be explained

by the characteristics of the game itself. The dimensions of cooperation and discipline are directly stimulated by implemented game modifications, such as mandatory passing before scoring, verbal communication, and clean-play rules. Meanwhile, the dimension of responsibility, although also stimulated through role rotation and positional adherence, requires a longer internalization time because it involves deeper self-awareness and accountability (Peñarrubia-Lozano et al., 2023; Sánchez-Oliva et al., 2024).

These findings are consistent with research (Menescardi et al., 2023) showing that the cooperation and discipline dimensions are more responsive to short-term interventions, while responsibility requires longer and more consistent interventions. Observational data corroborates the questionnaire findings. The experimental group's observational scores increased gradually from 21 in the pre-test to 26 in Session 6, then decreased slightly to 25 in the post-test. This gradual increase indicates that character development through SSG is progressive and accumulates over repeated experience in the game. The slight decrease in the post-test after Session 6 is likely due to the absence of SSG in the post-test session, so that the stimulated character-related behaviors are not fully maintained without reinforcement from the same game format.

This pattern aligns with findings (Jiménez-Parra et al., 2024) that suggest the effects of game-based interventions on social behavior tend to peak during the intervention and decline slightly afterward, unless there is a sustained reinforcement mechanism. Therefore, to maintain and strengthen character development, SSG needs to be integrated sustainably into the physical education curriculum, not just as a short-term intervention. The control group showed a slight decrease in character development scores, both on the questionnaire (from 59.59 to 58.76) and in the observational (stable at 20-21).

This decline, although not statistically significant, is interesting to discuss. One possible explanation is that conventional learning with a full-game format (6 vs. 6 or 7 vs. 7) and a structured drill approach provides fewer opportunities for students to actively engage in meaningful social interactions. In a full-game format, students with lower abilities tend to be less engaged, while students with higher abilities dominate the game (Gonçalves et al., 2023). As a result, cooperative behavior, discipline, and responsibility are not optimally stimulated and may even decline due to a lack of reinforcement.

These findings indicate that conventional teacher-centered learning that is oriented towards mastering basic techniques needs to be complemented by a more learner-centered approach that emphasizes social interaction, such as SSG, to optimally achieve character development goals (Hortigüela-Alcalá et al., 2024).

Conclusion

This study concluded that Small-Sided Games (SSG) significantly contributed to the development of students' character in team games learning in physical education. The results of the Wilcoxon Signed-Rank test showed a significant increase in the experimental group ($Z = -2.115$; $p = 0.034$; $r = 0.26$), while the control group showed no significant change ($Z = -0.171$; $p = 0.864$; $r = 0.02$). The Mann-Whitney U test also confirmed a significant difference between the experimental and control groups at the post-test stage ($U = 342.000$; $Z = -2.901$; p

= 0.004; $r = 0.35$). These findings indicate that SSG, with its 3 vs. 3 and 4 vs. 4 formats and game modifications designed to stimulate cooperation, discipline, and responsibility, is able to create a more intensive and meaningful learning environment than conventional learning. Thus, the research objective to test the effect of SSG on the character development of high school students in team game learning has been achieved, and the results are consistent with the theoretical framework built in the Introduction.

Analysis by dimension revealed that the experimental group experienced significant improvements in all three character dimensions: cooperation ($p = 0.041$), discipline ($p = 0.038$), and responsibility ($p = 0.047$). The largest increase occurred in the cooperation dimension (+1.12), followed by discipline (+0.77), and responsibility (+0.32). Observational data also supported this finding, with the experimental group's observation score increasing gradually from 21 at pretest to 26 at Session 6, then decreasing slightly to 25 at posttest. This pattern suggests that character development through SSG is progressive and accumulates with repeated experience in the game, although the effect may decline slightly after the intervention ends without continued reinforcement. In contrast, the control group showed a slight decline in character development scores, indicating that conventional learning with a game-heavy format and structured drill approach provides less opportunity for students to actively engage in meaningful social interactions. These findings confirm that SSG is not only effective for developing technical and tactical skills but also an effective vehicle for character education in physical education.

Based on these findings, SSG can be recommended as an alternative learning strategy for physical education teachers to integrate character education into team games. To maintain and strengthen the effects of character development, SSG should be integrated sustainably into the curriculum, rather than simply as a short-term intervention. However, this study has limitations, including the relatively short duration of the intervention, the use of self-report questionnaires and observations by a single researcher, and its limited generalizability to one school and one age group. Future research is recommended to extend the duration of the intervention, conduct follow-up to assess retention of effects, involve multiple observers and more objective measurement methods, and compare the effectiveness of SSG with other pedagogical approaches such as Teaching Games for Understanding (TGfU) and the Sport Education Model (SEM) in the context of character development. Thus, this study provides empirical and theoretical contributions to the development of character education in physical education, while paving the way for more comprehensive and sustainable further research (Clemente et al., 2024; García-Hermoso et al., 2024; López-Gil et al., 2024; Martínez-Bello et al., 2024; Sánchez-Miguel et al., 2024).

Author's Statement

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