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The Effect of Small-Sided Games Training on Soccer Passing Skills among Elementary School Students at SDN Rora

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Abstract

Objectives: This study examined changes in soccer passing performance among elementary school students after an eight-week small-sided games (SSG) program.

Materials and Methods: A one-group pretest-posttest study involved 30 students aged 10-12 years at SDN Rora, selected through total sampling. Participants completed 24 SSG sessions over eight weeks (three 60-minute sessions per week). Passing performance was assessed before and after the program using a short-passing test. Descriptive statistics, a paired-samples t-test, percentage change, and the paired standardized effect size (d_n) were calculated.

Results: Mean passing scores increased from 18.73 ± 3.42 at pretest to 33.47 ± 4.28 at posttest, a mean increase of 14.74 points (78.70%). The paired comparison was statistically significant, $t(29) = 25.96$, $p < .001$, with a very large standardized change ($d_n = 4.74$).

Conclusions: Passing performance improved substantially after the SSG program. SSG can be considered a promising, game-based option for elementary-school soccer instruction; however, the absence of a control group prevents attributing the improvement solely to the intervention.

Keywords: elementary physical education; football; game-based learning; passing performance; small-sided games

Introduction

Football is widely used in physical education because it combines locomotor and object-control skills with cooperation, perception, and decision-making. Passing is central to this learning context: it supports ball circulation, collective play, and students' participation in realistic game situations. At SDN Rora, preliminary classroom observations indicated that several students had difficulty directing passes accurately under game-like pressure. A lesson dominated by decontextualized repetitions may provide practice volume but fewer opportunities to perceive teammates, opponents, space, and timing.

Small-sided games (SSG) modify formal football by reducing player numbers, adapting playing space, and changing task rules. These constraints can increase individual involvement and create repeated cycles of perception, decision, and technical execution. Reviews have shown that SSG formats can elicit frequent technical-tactical actions while simultaneously imposing meaningful physical demands (Bujalance-Moreno et al., 2019; Clemente & Sarmento, 2020; Sarmento et al., 2018). The approach is therefore relevant to physical education, where learning time, participation, and enjoyment must be managed together.

Evidence also indicates that SSG outcomes depend on how task constraints are designed. Player numbers, pitch dimensions, scoring rules, and coach instructions alter opportunities for passing and collective behavior (Clemente et al., 2014; Ometto et al., 2018; Yilmaz & Soylu, 2024). Research involving youth and school-age participants suggests that game-based practice can improve technical performance and motivation, although results cannot be generalized across all formats or populations (Pop et al., 2022; Ridwan et al., 2018).

Despite this growing literature, evidence from rural Indonesian elementary-school settings remains limited. The present study therefore examined whether students' soccer passing scores changed after an eight-week SSG program at SDN Rora. It was hypothesized that posttest passing scores would be higher than pretest scores.

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Materials and Methods

Study Design

This study used a pre-experimental, one-group pretest-posttest design. All participants completed a baseline passing test (O1), received the SSG intervention (X), and completed the same outcome assessment after the program (O2). Because the design did not include a comparison group, it estimates within-group change but cannot isolate the intervention from maturation, repeated testing, or other time-related influences.

Table 1. Study design

Group	Pretest	Intervention	Posttest
Single group	O1	X	O2

Study Participants

The participants were 30 students from SDN Rora, aged 10-12 years. Total sampling was used, with all students identified as eligible in the source population participating in the study. The group included male and female students.

Table 2. Participant characteristics

Characteristic	Value
Participants	30
Age range	10-12 years
Sex	Male and female
School	SDN Rora

Study Organization

The intervention lasted eight weeks and comprised three sessions per week (24 sessions in total). Each session lasted approximately 60 minutes: a 10-minute warm-up, 40 minutes of SSG activities, and a 10-minute cool-down. The main activities included 3 versus 3 and 4 versus 4 games, possession-based passing games, target-passing games, and transition games. These formats were intended to provide repeated passing opportunities in representative game situations.

Passing performance was measured before and after the intervention using the Soccer Short Passing Test reported in the source protocol. Students attempted to complete as many accurate passes as possible within the prescribed testing period. The same outcome and administration procedure were used at both measurement points.

Statistical Analysis

Means, standard deviations, minima, and maxima were calculated for pretest and posttest scores. A paired-samples t-test evaluated the mean within-participant difference at an alpha level of .05. Percentage improvement was calculated as (posttest mean - pretest mean) / pretest mean x 100. The paired standardized effect size was derived as d_n = t / square root of n; values of approximately 0.20, 0.50, and 0.80 were interpreted as small, moderate, and large, respectively. The analysis used the summary statistics reported in the source manuscript.

Results

Passing scores were higher at posttest than at pretest. The mean rose by 14.74 points, from 18.73 to 33.47, corresponding to a 78.70% increase relative to the baseline mean (Table 3).

Table 3. Descriptive statistics for passing scores

Assessment	n	Mean	SD	Minimum	Maximum
Pretest	30	18.73	3.42	13	25
Posttest	30	33.47	4.28	25	42

The paired-samples test showed that the pretest-posttest difference was statistically significant, $t(29) = 25.96$, $p < .001$. The effect size calculated from the reported t statistic and sample size was $d_n = 4.74$, indicating a very large standardized within-participant change (Table 4).

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Table 4. Paired comparison and magnitude of change

Comparison	Mean difference	t	df	p	d_n
Posttest - pretest	14.74	25.96	29	< .001	4.74

Discussion

The principal finding was a substantial increase in passing scores after 24 SSG sessions. The magnitude of the within-group change was statistically significant and practically large. This pattern is compatible with the view that representative, game-based tasks can support technical learning by coupling the action of passing with information about teammates, opponents, available space, and timing. Nevertheless, the finding should be interpreted as an association with participation in the program, not definitive proof of causation.

The result is consistent with systematic reviews reporting that SSGs provide repeated technical-tactical actions and can support skill development in football (Bujalance-Moreno et al., 2019; Clemente & Sarmento, 2020; Sarmento et al., 2018). It also aligns with Ridwan et al. (2018), who reported improved instep passing among students following SSG practice. Although that study involved older students, the shared direction of the findings suggests that reducing player numbers may increase meaningful passing repetitions across school-age groups.

A plausible mechanism is increased involvement. With fewer players, each learner is more likely to receive, control, and pass the ball, while the task continuously requires decisions under changing spatial conditions. Research shows that player numbers and scoring methods alter technical responses during SSGs (Clemente et al., 2014), and that manipulating task constraints shapes emerging individual and collective tactical behavior (Ometto et al., 2018). The mixture of 3 versus 3, 4 versus 4, possession, target, and transition activities in this study may therefore have offered varied but related practice opportunities.

The finding is also compatible with evidence that SSGs can influence motivation and physical outcomes in youth soccer (Pop et al., 2022). Enjoyable, cooperative, and competitive tasks may help elementary students remain engaged long enough to accumulate a high practice dose. However, SSGs do not automatically produce the same response in every format. Recent comparisons demonstrate that pitch size, rules, and team strategy materially change technical and perceptual demands (Yilmaz & Soylu, 2024). Teachers should consequently align constraints with the intended objective, such as requiring a minimum number of passes, using support zones, or adjusting space to the learners' skill level.

The study contributes context-specific evidence from a rural elementary school, a population less frequently represented in the SSG literature. Practically, the program provides a feasible lesson structure: short warm-up and cool-down periods surrounding 40 minutes of progressive, game-based passing activities. Teachers can use small teams to increase participation while observing both passing execution and decision quality.

Several limitations qualify the findings. First, the one-group design cannot rule out maturation, familiarity with the test, ordinary physical education exposure, or other concurrent experiences. Second, the source dataset did not provide individual scores, confidence intervals, test-retest reliability, or detailed evidence for the short-passing test's validity in this population. Third, the study did not measure retention, transfer to formal match play, fidelity, or enjoyment. Future research should use a randomized or matched comparison group, report instrument properties and individual-level data, monitor implementation fidelity, and include delayed retention and game-performance outcomes.

Conclusions

Elementary-school students at SDN Rora demonstrated markedly higher soccer passing scores after an eight-week SSG program. The findings support SSG as a promising instructional approach for creating frequent, contextualized passing practice. Because no control group was included, further controlled research is required before the observed improvement can be attributed exclusively to the intervention.

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Conflict of Interest

The authors declare no conflict of interest.

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