



The Impact of 11 Sessions of 4v4+1+Target Training Can Enhance Pass Accuracy Short-Passing Accuracy in Adolescent Football Players

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Abstract

Short-passing accuracy is one of the keys to converting opportunities into goals, but mastering short-passing accuracy is still a significant problem for adolescent football players. This study aims to determine the impact of small-sided games (SSG) training with 4v4 + 1 + target format on improving short-passing accuracy in adolescent football players. This study is a quantitative descriptive study with a pre-experimental approach and uses a one-group pretest-posttest. The participants in this study were 12 adolescent athletes aged 14-16 years (15.2 ± 1.51) at Surya Muda Football Academy, Blitar City. The short-passing accuracy test was used to determine short-passing accuracy. The data that has been obtained was analyzed using a t-test with the help of SPSS. The results showed that 4v4+1+target training for 11 meetings could improve short-passing accuracy (Sig. 0.001 <0.05). In conclusion, 4v4+1+target SSG training can improve short-passing accuracy in adolescent football players and athletes. Exploration of other SSG formats needs to be investigated for their impact on football playing skills and improving physical and psychological conditions.

INTRODUCTION

Football players' positions on the field fluctuate unpredictably (Eleftherios et al., 2023; Fattah et al., 2023; Vantarakis & Stafylidis, 2023). The players pass and then move to find space. Passing affects a football match's outcome (Lepschy et al., 2018; Rocha-Lima et al., 2021). Passing accuracy is an interpretation of the quality of a footballer. Passing accuracy in football is essential for effective team play. Pass accuracy is needed not only by forwards, midfielders, and defenders; even a goalkeeper needs a measured pass. A study reported that English Premier League (EPL) teams successfully utilize defenders to build play (Adams et al., 2013). The pattern of passes made by players also has a purpose. Teams behind tend to use long passes to accelerate the conversion of opportunities into goals, while teams leading the score tend to use short passes to control the ball to maintain the score (Paixão et al., 2015).

Redwood-Brown (2008) studied the frequency and percentage of successful passes five minutes before and after a goal was scored. The analysis of the passes found that in the five minutes before a goal, the team that scored played a much more significant percentage of accurate passes compared to the average for the whole half, while the team that conceded played far fewer passes. This result shows that accurate passing not only maintains possession of the ball but also limits the possession and scoring opportunities of the opponent. Conversely, a team with players lacking accurate passes is more susceptible to interceptions, leading to easy counterattacks and potential goals for the opponent, especially within the 5-meter area.

Passing accuracy can be developed and mastered from a young age. Many elite teams improve passing accuracy with various forms of training. Studies developing in the world including in Indonesia report that passing accuracy can be enhanced through Small Sided Games (SSG) training (Anwar et al., 2024; Karim, 2018; Simbolon & Saviri, 2024), horizontal passes (Fauzi & Hariyadi, 2021), passing training with a certain distance (Pelamonia & Hutapea, 2020), diamond pass training (Alkhadaf & Syafii, 2019), and training with the triangle method (Alafgani & Rustiadi, 2021). One of the exercises that can be used is the Small Sided Games (SSG) exercise. SSG is now a prevalent training method among adult and youth football players; however, the usefulness of SSG was highlighted 30 years ago by world-renowned football coach Carlos Queiroz, who proposed investigating the future of SSG in his academic work while teaching at the Faculty of Human Kinetics in Lisbon, Portugal (Queiroz, 1985). SSG are played on small fields with different rules but have a similar structure to the actual game (Queiroz, 1985). SSG are played on small fields with different rules, but they have a similar structure to the actual game (Halouani et al., 2014; Hill-Haas et al., 2011), the length of the field (Köklü et al., 2017), the number of players and the size of the playing field (Casamichana & Castellano, 2010; Clemente et al., 2021).

SSG has evolved. The coaches organize the game to be modified in such a way as to achieve the goal. SSG can also be used to improve the agility of football players, not only in the skill aspect (Wea, 2020) but also to increase vo_{2max} (Hulka & Weisser, 2017; Supriady, 2020). Previous studies were limited

to the application of simple SSG such as three against 3 (3v3), four against 4 (4v4), three against 2 (3v2), and five against 5 (5v5) (Castelão et al., 2014; Evangelos et al., 2012; Xu et al., 2024), but the addition of other modifications has not been widely done such as the addition of neutral players and targets. This study investigates the impact of adding a neutral player and a target to a 4-on-4 formation called 4v4+1+target. The neutral player is tasked to assist both teams; when the ball is controlled by team A, the neutral player will assist team A, and if the ball is controlled by team B, the neutral player will assist team B. Targets are added in order to trigger the accuracy of players to pass on targets with a length and height of 1 meter each. Therefore, this study aims to determine the impact of SSG training with the 4v4+1+target format on improving passing accuracy in adolescent football athletes. The findings are expected to enrich the form of training that can be applied to SSG to improve the passing accuracy of adolescent football athletes.

METHOD

This study is quantitative descriptive research with a pre-experiment approach and a group pretest-posttest design. The participants were adolescent football players aged 14-16 at the Surya Muda Football Academy, Blitar City. This study is a population study because all participants, totaling 12 athletes, were involved. The pass accuracy test was used in this study to determine the accuracy of horizontal passes (short passes), not long passes (Irianto, 1995). The test instructed all athletes to pass to a target with a length and height of 1 meter and the opportunity to kick ten times. The distance

between the ball and the target is 9 meters, and the ball must enter the target until it travels 9 meters after the target. The initial test (pretest) was conducted to determine the initial ability of passing accuracy. Then, all participants received treatment in passing training with a 4-on-4 design plus one neutral person and one target (4v4+1+target) measuring 1 meter in length and width, respectively. The treatment was given for 11 times. Furthermore, to determine whether there is an improvement (final ability), the final test (posttest) is carried out. The treatment design is described in Table 1.

Table 1. 4v4+1+Target Training Design

Type of Exercise	Training Load	Assignment
4v4+1+Target	1. Exercise duration: 3 minutes 2. Number of Sets: 5 3. Rest between Sets: 1 minute 4. Total Duration: 15 minutes	1. In one group, try to play the ball to each other (ball possession) 2. With a limit of 2 touches per player

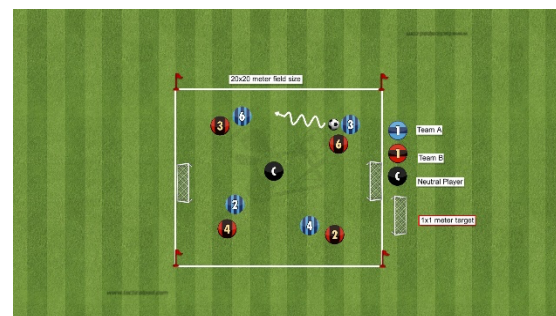


Figure 1. 4v4+1+Target Training Scheme with Field Size 20x20 meters

The data obtained is then analyzed through hypothesis testing using the T-test (paired sample T-test) to determine the effect of giving treatment using the training model with the help of SPSS.

RESULT AND DISCUSSION

Data on the characteristics of the participants are shown in Table 2.

Table 2. Participant Characteristics (n = 12)

Parameters	Mean ± SD
Age (year)	15.2 ± 1.51
Height (m)	1.52 ± 8.05
Body weight (kg)	47.2 ± 8.2
BMI (kg/cm ²)	16.53 ± 2.75

The results of the passing accuracy test on football players aged 14-16 years can be seen in Table 3 below.

Table 3. Descriptive Statistics of Passing Accuracy Test Results

No	Stage	N	Min	Max	Mean	SD
1	Pretest	12	4	8	5,83	1,27
2	Posttest	12	6	10	8,25	1,29

Table 4. Normality Test and Homogeneity Test

Normality Test				
Stage	Shapiro Wilk			Sig.
	Statistic	df		
Pretest	.936	12		.449
Posttest	.920	12		.284
Homogeneity Test				
Stage	Levene Statistic	df1	df2	Sig.
Hasil Pretest-Posttest	.314	3	44	.815

Table 3 shows an increase between the pretest mean score of 5.83 and the posttest mean score of 8.25. The data variance is homogeneous, according to the homogeneity test results displayed in Table 4 (Sig. 0.815 > 0.05). In addition, the data proved to be normally distributed based on the data normality test (Sig. > 0.05).

Based on Table 5, the hypothesis test results using the paired sample t-test technique obtained a result of 0.001 < 0.05. This shows an increase in passing accuracy influenced by small-sided games training with the 4v4 + 1 + target training model.

Table 5. Results of Pretest-Posttest Hypothesis Test with Paired Samples T-Test

		Paired Differences		t	df	
		Mean	Std. Deviation			Two-Sided p
Paired	Pretest - Posttest	-2.417	1.240	-6.751	11	.001

The findings of this study indicate that short-passing accuracy in football games can be improved through 11 times of continuous SSG training without a break in training, which is done three times a week. The results of these findings are significant, with a change in the average value at the time of the pretest and posttest. The findings of this study are also reinforced by the findings of research conducted by Anwar et al. (2024), who also investigated the impact of SSG with 5v5 and 4v4+1 training variations on passing accuracy in football games. In the study, the number of meetings for the treatment was eight weeks (15 training times). Another study also reported that applying SSG training for six weeks (training three times a week) can improve passing accuracy in youth football athletes (Rahmania Putri et al., 2023). Although there is no mention of the form of exercise variation, it is proven that SSG can improve short-passing accuracy in football games. Many other studies have also reported that SSG effectively improves passing accuracy (Aprianto et al., 2020; Firdaus et al., 2022; Puriana & Aziz, 2023).

SSG is a modified form of training that starts with the number of players, the size of the field, and the rules for the number of touches on the ball, so it requires the players to make passes with the right target. Factors that influence the determination of accuracy are high coordination, good accuracy, the size of the

target, the sharpness of the senses, the distance near the target, mastery of techniques, the speed of movement, the feeling of the player, and accuracy, and the strength and weakness of a movement (Mubarok & Mudzakir, 2020). Indirectly, SSG can be applied to develop coordination skills, sensory acuity, and decision-making accuracy.

In addition to the impact on short-passing accuracy, SSG is also reported to be used to improve dribbling skills (Mubarok & Mudzakir, 2020), improve shooting accuracy (Fatimah & Darmawan, 2018), improve the agility of football players (Wea, 2020), and even increase vo2max (Hulka & Weisser, 2017; Supriady, 2020). SSG is not only able to improve football playing skills but also has very dense characteristics, which are played in small sizes. There is "pressure" from the opponent to grab the ball; a player must immediately pass to his partner and make movements to open up space so there is a gap to receive the ball from teammates. This movement is what makes SSG can improve a player's agility (Theocharis et al., 2023). The variability of movement during SSG contributes to developing a more generalized motor program to cope with similar situations (Williams & Hodges, 2005). The evolution of technological devices (e.g., GPS, Heart Rate monitors, etc.) and the development and validation of new observational tactical instrument tools (González-Víllora et al., 2015) help coaches and scientists to study the specific tactical, physiological, and biomechanical characteristics of different SSG. Thus, the development of SSG research in football has increased exponentially in recent years (Beenham et al., 2017; Halouani et al., 2017;

McLean et al., 2016; Sarmiento et al., 2014; Silva et al., 2016).

SSG, an exercise that is adapted from actual games to suit the specific needs of a sport (Davids et al., 2013), is a fertile ground for innovation. Its adaptability allows it to be applied in a variety of sports, including futsal (Djaba et al., 2022; Hulka & Weisser, 2017), handball (Dello Iacono et al., 2018; Jurišić et al., 2021), basketball (Arslan et al., 2022; Delextrat & Martinez, 2014; Gomes et al., 2021), and more. The potential for innovation in SSG is further underscored by its numerous benefits, from improving skill mastery to enhancing the physical condition of athletes. These benefits are particularly pronounced when applied to adolescent athletes aged 12-15 years (Arslan et al., 2022; Harrison et al., 2013; Lemes et al., 2020; Sannicandro & Cofano, 2017). However, the extent of adaptation or acute effects may be influenced by various factors, such as age group, skill level, player gender, baseline fitness or technical/tactical dimensions, and even mental and psychological aspects (Kunrath et al., 2020).

The findings suggest that adding some rules to achieve the goal is essential. Setting a detailed training program based on the overloading principle allows for achieving the goal. One of the things to consider in improving accuracy is a target. With a target, players are motivated to aim the ball at the target. Thus, accuracy can increase. This also aligns with a study by Saputra & Humaid (2024), who reported that fixed and moving target training can improve passing accuracy. Coaches can adjust the game's intensity, duration, and number of touch combinations to improve fitness or vo2max.

It should be noted that the ability to master short-passing accuracy is also influenced by many things, including the athlete's eye-foot coordination ability (Anwar et al., 2024) and field conditions (Gómez-Jordana et al., 2021).

This study successfully investigated the impact of SSG on improving short-passing accuracy, but it has limitations. The small number of subjects involved, the lack of supervision outside the training program, the simple method, and only using the 4v4+1+target formation are some of the limitations of this study. Researchers can compare this with other forms of formation to increase accuracy. Future researchers can also measure the impact of various formation forms on improving accuracy, agility, vo2max, and psychological aspects such as confidence, decision-making under pressure, and team cohesion.

CONCLUSION

SSG training with a 4v4+1+target format is concluded to be effective in improving short-passing accuracy in football. SSG is not just about modifying the size, number of players, and other rules. However, they are also an effective form of training used to improve playing skills and the physical condition of adolescent football athletes. Future research is expected to test SSG training in a more complex format against physical and psychological components simultaneously so that it will enrich the findings, especially in football.

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and the study's findings enrich science, especially in football.

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