

## How can Small Sided Game training methods (3 vs 3 and 6 vs 6) and VO2max affect basic soccer skills? ¿Cómo pueden afectar los métodos de entrenamiento de juego reducido (3 contra 3 y 6 contra 6) y el VO2máx a las habilidades futbolísticas básicas?

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**Abstract.** Study purpose. Mastering the fundamentals of soccer is essential for skill development. Therefore, employing effective training techniques becomes crucial to enhance these fundamental soccer skills. This study aims to discern: (1) Variations in the impact of the 3 vs. 3 small-sided game method compared to the 6 vs. 6 small-sided game method on fundamental soccer skills; (2) Disparities in the impact of high and low VO2max levels on fundamental soccer skills; and (3) The repercussions of the interaction between the 3 vs. 3 small-sided game method and the 6 vs. 6 small-sided game method in conjunction with VO2max levels (high and low). Materials and Methods. A 2 x 2 factorial design was used for this experimental study methodology. 24 athletes, including 12 from the Sports Talent School (STS) West Sumatra football academy and 12 from the Indonesia Muda Soccer School, served as the research subjects. The Yo-Yo Intermittent Recovery Level 1 test is the tool used to measure VO2max. The "David Lee" competence test has been adopted as the yardstick for gauging fundamental soccer abilities. Two-way ANOVA was the method of data analysis employed, with a significance level of 0.05. Results. The study's findings are outlined as follows: (1) Indicated by a significance value of ( $p=0.009<0.05$ ), there exists a disparity in the impact of training between the 3 vs. 3 small-sided game and the 6 vs. 6 small-sided game on fundamental soccer skills. With an average posttest difference of 1.69 seconds, the 3 vs. 3 small-sided game training approach proves superior to the 6 vs. 6 small-sided game method. (2) A significance value of ( $p=0.005<0.05$ ) suggests a distinction in the effects of high and low VO2max levels on fundamental soccer skills. Displaying a posttest average difference of 6.23 seconds, higher VO2max levels are more advantageous than lower ones. (3) With a significance p value of  $0.018<0.05$ , it is evident that an interaction exists among the 3 vs. 3 small-sided game, 6 vs. 6 small-sided game, and VO2max levels (high, low) concerning fundamental soccer skills. Conclusion. based on outcomes The investigation found a strong relationship between the interaction of training techniques and VO2max on fundamental soccer playing abilities. These findings can be employed in the training of fundamental soccer game skills as a guide.

**Keywords:** Small Sided Game, VO2max, Basic Skills, Football.

**Resumen.** Objetivo del estudio. Dominar los fundamentos del fútbol es esencial para el desarrollo de las habilidades. Por lo tanto, el empleo de técnicas de entrenamiento eficaces resulta crucial para mejorar estas habilidades futbolísticas fundamentales. Este estudio tiene como objetivo discernir: (1) Las variaciones en el impacto del método de juego reducido de 3 contra 3 en comparación con el método de juego reducido de 6 contra 6 en las habilidades fundamentales del fútbol; (2) Las disparidades en el impacto de los niveles altos y bajos de VO2max en las habilidades fundamentales del fútbol; y (3) Las repercusiones de la interacción entre el método de juego reducido de 3 contra 3 y el método de juego reducido de 6 contra 6 en conjunción con los niveles de VO2max (alto y bajo). Materiales y métodos. Para la metodología de este estudio experimental se utilizó un diseño factorial 2 x 2. 36 atletas, incluyendo 12 de la escuela de fútbol Sports Talent School (STS) West Sumatra y 24 de la escuela de fútbol Indonesia Muda Soccer School, sirvieron como sujetos de investigación. El test Yo-Yo de Recuperación Intermitente Nivel 1 es la herramienta utilizada para medir el VO2max. La prueba de competencia "David Lee" se adoptó como criterio para medir las habilidades futbolísticas fundamentales. El método de análisis de datos empleado fue el ANOVA de dos vías, con un nivel de significación de 0,05. Resultados. Las conclusiones del estudio son las siguientes: (1) Indicado por un valor de significación de ( $p=0,009<0,05$ ), existe una disparidad en el impacto del entrenamiento entre el juego reducido de 3 contra 3 y el juego reducido de 6 contra 6 en las habilidades futbolísticas fundamentales. Con una diferencia media tras la prueba de 1,69 segundos, el método de entrenamiento de juego reducido de 3 contra 3 demuestra ser superior al método de juego reducido de 6 contra 6. (2) Un valor de significación de ( $p=0.005<0.05$ ) sugiere una distinción en los efectos de los niveles altos y bajos de VO2max en las habilidades fundamentales del fútbol. Mostrando una diferencia media postest de 6,23 segundos, los niveles más altos de VO2max son más ventajosos que los más bajos. (3) Con un valor p de significación de  $0,018<0,05$ , es evidente que existe una interacción entre el juego reducido de 3 contra 3, el juego reducido de 6 contra 6 y los niveles de VO2máx (alto, bajo) en relación con las habilidades futbolísticas fundamentales. Conclusion. basada en los resultados La investigación encontró una fuerte relación entre la interacción de las técnicas de entrenamiento y el VO2max en las habilidades fundamentales de juego de fútbol. Estos resultados pueden emplearse como guía en el entrenamiento de las habilidades fundamentales del juego de fútbol.

**Palabras clave:** Juego reducido, VO2max, habilidades básicas, fútbol.

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### Introduction

The strategic design of soccer game training holds a crucial role for players, as it can contribute to an effective

training process and enhance soccer playing skills (Suryadi, Okilanda, et al., 2023). The formulation of an efficient training program with well-defined objectives becomes possible through this approach, fostering improvements in players' soccer abilities. Coaches play a pivotal role in the

endeavor to enhance players' mastery of football playing skills (Selimi et al., 2023). This highlights the significance of empowering the potential inherent in football schools. The creativity of soccer coaches manifests in their selection and implementation of training methods tailored to the capabilities and resources available at the soccer school (Homayounnia Firoozjah et al., 2020). This ensures the provision of adequate stimulation, enabling players to actively engage and maximize their potential.

Implementing suitable training methods for practicing soccer playing skills not only enables coaches to make optimal use of available facilities but also eliminates any excuses due to delays or inadequate resources at soccer schools. The choice of an appropriate training method is intricately linked to the training context (Rozi et al., 2023). Factors such as the training environment and the characteristics of the material being practiced should be taken into account when deciding on specific training methods (Mashud et al., 2024; Michailidis, 2022; Suryadi, Yanti, et al., 2023; Wati et al., 2023). In the context of the Indonesia Muda Soccer School and Talent School (STS) West Sumatra football Academy, the selection and application of training methods for soccer playing skills are crucial. This research aims to evaluate the effectiveness of two methods in the training process: the small-sided game 3 vs 3 and the small-sided game 6 vs 6. The objective is to determine which method yields better outcomes in enhancing players' proficiency in soccer playing skills.

In honing effective football technical skills, certain components need focused practice to master movements and achieve dynamic execution. Utilizing small-sided games, resembling real-game situations, serves as an effective training method designed to suit field needs and involving all players (Suryadi, Okilanda, et al., 2023; Tanri et al., 2023). Coaches can enhance training effectiveness and efficiency by adjusting the training area size, manipulating player numbers, and incorporating specific activities, such as one or two-touch games (Doewes et al., 2020). This game method immerses students in real-game scenarios, ensuring that the techniques developed align with actual gameplay.

To optimize the design of applied training methods, an exploration of factors influencing fundamental technical skills in soccer is essential. Achieving proficiency in soccer playing skills requires elements of physical fitness, including speed, flexibility, balance, precision, endurance, agility, coordination, and robust muscle explosive power. A well-rounded physical condition is complemented by proper nutrition, positively impacting overall body function. Various physical activities related to exercise contribute positively to fitness (Athaya et al., 2023; Rubiyatno et al., 2023; Saputra et al., 2023; Suryadi, Suganda, et al., 2023; Suryadi & Rubiyanto, 2022), including VO<sub>2</sub>max endurance (Supriatna et al., 2023; Suryadi, Yanti, et al., 2023).

Player success in soccer playing skills is influenced by both internal and external conditions. Internal conditions encompass individual factors that differentiate one player from another, with physical ability being a significant factor.

Physical ability, particularly related to VO<sub>2</sub>max, significantly influences a player's performance in practicing skill movements and during matches (Hardinata et al., 2023). Therefore, a high VO<sub>2</sub>max is considered a crucial requirement for players to achieve peak performance in practicing soccer playing skills (Bahtra et al., 2020).

The difference in VO<sub>2</sub>max can be divided into two, namely high VO<sub>2</sub>max and low VO<sub>2</sub>max. The difference in VO<sub>2</sub>max for each player must be taken into consideration as a determining factor in soccer playing skills. Player differences in terms of VO<sub>2</sub>max will be a very important consideration in determining training methods that suit the character of each player (Hardinata et al., 2023). So that you can achieve optimal training results according to your potential. While previous studies have explored the impact of Small Sided Game 3 vs 3 and Small Sided Game 6 vs 6 exercises on VO<sub>2</sub>max and passing (Maujud et al., 2021), this research seeks to introduce a novel perspective by examining the distinct effects of Small Sided Game 3 vs 3 and Small Sided Game 6 vs 6 training on soccer playing skills, including VO<sub>2</sub>max. The variation in samples and environments adds an additional layer of complexity, creating a research gap that is essential to address and explore further. This study aims to contribute to the existing body of knowledge in this field.

## Materials and Methods

### Study participants

The study's population consisted of 50 players, comprising 23 from the Sports Talent School (STS) West Sumatra football Academy and 27 from the Indonesia Muda Soccer School. Purposive sampling was employed to select 24 players as research samples. The Small Sided Game 3 vs 3 treatment involved 12 players, while the Small Sided Game 6 vs 6 treatment involved 12 players. Subsequently, the players were categorized into two groups based on their VO<sub>2</sub>max capacity: the High VO<sub>2</sub>max group and the Low VO<sub>2</sub>max group. The measurement of VO<sub>2</sub>max utilized the "Yo-Yo Intermittent Recovery Level 1" test.

### Study Organization

This study adopts an experimental research approach with the objective of comparing two distinct treatments for research subjects, employing factorial design techniques. According to Sugiyono, (2019), a factorial experiment involves combining or crossing almost all levels of one factor with all levels of each other factor in the experiment. The data in this research were organized within a research design framework using a 2 x 2 factorial design, as illustrated in Table 1 and Figure 1.

Table 1.

Framework Research design 2 x 2 Factorial

Variables Manipulative Variable	Method Exercise	
Attribute	SSG 3 vs 3 (B1)	SSG 6 vs 6 (B2)
VO <sub>2</sub> Max Tall (A1)	A1B1	A1B2
VO <sub>2</sub> Max Low (A2)	A2B1	A2B2

### Information:

A1B1: The group of players who have High VO<sub>2</sub>Max are trained using the Small Sided Game 3 vs 3 method.

A1B2: The group of players who have High VO<sub>2</sub>Max are trained using the Small Sided Game 6 vs 6 method.

A2B1: The group of players who have Low VO<sub>2</sub>Max are trained using the Small Sided Game 3 vs 3 method.

A2B2: The group of players who have low VO<sub>2</sub>Max are trained using the Small Sided Game 6 vs 6 method.



Figure 1. Field shape for 3 vs 3 and 6 vs 6 small-sided game methods

Next, the VO<sub>2max</sub> test is carried out all over population be measured use test Yo-Yo Intermittent Recovery Level 1 is the same as maximum aerobic capacity. According to Suryadi, Yanti, et al., (2023) "aerobic fitness is the maximum capacity to inhale, distribute and use oxygen, which is measured through a laboratory test called oxygen intake (VO<sub>2max</sub>)". Several studies have also recommended Yo-Yo Intermittent as an instrument in measuring VO<sub>2max</sub> endurance (Hardinata et al., 2023; Suryadi, Yanti, et al., 2023).

### Statistical Analysis

This research data analysis uses the two-way Anova technique. To carry out the Anova analysis, a data analysis swim test was previously carried out. In this research, data analysis was assisted using the SPSS version 26 application.

### Results

The research results were obtained based on the results of pretest and posttest data on the influence of the Small Sided Game training method (3 vs 3 and 6 vs 6) and VO<sub>2max</sub> on basic soccer skills.

Research data for VO<sub>2max</sub> and soccer skills used the Small Sided Game 3 vs 3 training and were divided into 2 groups, namely: the group that had high VO<sub>2max</sub> and the group that had low VO<sub>2max</sub>. The results provide information that Sided Game 3 vs 3 training and high VO<sub>2max</sub> show better results than low VO<sub>2max</sub>. The results can be seen in the difference value between high VO<sub>2max</sub> and low VO<sub>2max</sub>. Data on VO<sub>2max</sub> and soccer skills using Small Sided Game 3 vs 3 training can be seen in table 2. The results in table 3 show descriptive statistics for the pretest and posttest of basic soccer playing skills using Small Sided Game 3 vs 3 training.

The results of the Small Sided Game 6 vs 6 training research were carried out on 2 groups, namely the group with high VO<sub>2max</sub> and those with low VO<sub>2max</sub>. The results provide information that Sided Game 6 vs 6 training and

high VO<sub>2max</sub> show better results than low VO<sub>2max</sub>. The results can be seen in the difference value between high VO<sub>2max</sub> and low VO<sub>2max</sub>. The statistical results of the research data for VO<sub>2max</sub> and soccer playing skills in the high VO<sub>2max</sub> group can be seen in table 4. Furthermore, descriptive statistics for the pretest and posttest of basic soccer playing skills with the Small Sided Game 6 vs 6 exercise are presented in table 5.

Before conducting the hypothesis tests, a normality test was performed using the Shapiro-Wilk test to determine if the data followed a normal distribution. The criterion used was  $p > 0.05$  for normal distribution. Based on the results (shown in Table 6), both VO<sub>2max</sub> data and soccer playing skills exhibited a significant value greater than 0.05, indicating that the research data is normally distributed.

A homogeneity test was then conducted to assess the uniformity of samples, checking whether the variance of samples taken from the population is consistent. The criterion for homogeneity is if the calculated F value is less than the F table value, the variance is considered homogeneous. In this case, the Levene's Test results showed that the calculated F value (1.947) was less than the F table value (2.90), suggesting that the variance is homogeneous (Table 7).

Moving on to the first hypothesis test, which aimed to examine the difference in the influence between the 3 vs 3 and 6 vs 6 small-sided game methods on Basic Football Skills, a two-way analysis of variance was employed. The results for the small-sided games training variable indicated a significant value of 0.009, suggesting a difference in influence between the two methods. Specifically, the small-sided games 3 vs 3 method had a superior effect compared to the small-sided games 6 vs 6 method, with a posttest average difference of 1.69 seconds (Table 8).

For the second hypothesis test, which aimed to determine differences in soccer playing skills based on the small-sided games 3 vs 3 and 6 vs 6 methods, the results for the VO<sub>2max</sub> variable yielded a significant value of 0.005. This indicated differences in basic soccer skills between players with high and low VO<sub>2max</sub> capacity. The analysis showed that players with high VO<sub>2max</sub> capacity had a more positive influence compared to those with low VO<sub>2max</sub> capacity, with an average posttest difference of 6.23 seconds (Table 9).

Table 2.  
VO<sub>2</sub>Max Data and Basic Football Skills with 3 vs 3 Small Sided Game Training

No	VO <sub>2</sub> Max High (A1B1)			VO <sub>2</sub> Max Low (A2B1)		
	Pretest (Second)	Posttest (Second)	Difference	Pretest (Second)	Posttest (Second)	Difference
1	35.17	33.14	2.03	35.33	34.25	1.08
2	34.88	30.53	4.35	43.08	38.41	4.67
3	38.45	32.77	5.68	36.27	35.12	1.15
4	40.12	33.95	6.17	35.03	33.18	1.85
5	37.57	34.11	3.46	39.53	37.58	1.95
6	45.31	36.29	9.02	46.56	43.32	3.24

Lastly, the third hypothesis test examined the interaction effect between training methods and VO<sub>2max</sub> on soccer playing skills. The results, presented in Table 10,

showed a significant interaction effect, as indicated by a significance value of 0.018, supporting the need for further tests using Post Hoc analysis.

Table 3.

Descriptive statistics of pretest and posttest basic football skills with Small Sided Game 3 vs 3 training.

No	VO2max High (A1B1)		VO2max Low (A2B1)	
	Pretest (Second)	Posttest (Second)	Pretest (Second)	Posttest (Second)
1	35.17	33.14	35.33	34.25
2	34.88	30.53	43.08	38.41
3	38.45	32.77	36.27	35.12
4	40.12	33.95	35.03	33.18
5	37.57	34.11	39.53	37.58
6	45.31	36.29	46.56	43.32
Amount	229.00	200.79	240.80	216.96
Mean	38.17	33.46	40.13	36.16
Std. Deviation	4.31	1.89	4.36	3.66

Table 4.

VO2Max data and basic soccer skills of participants using 6 vs 6 small sided game training.

NO	VO2max High (A1B2)			VO2max Low (A2B2)		
	Pretest (Second)	Posttest (Second)	Difference	Pretest (Second)	Posttest (Second)	Difference
1	33.75	31.51	2.24	42.51	36.59	5.92
2	33.57	30.31	3.26	36.53	33.12	3.41
3	39.88	32.83	7.05	37.24	35.51	1.73
4	35.7	34.18	1.52	35.71	32.15	3.56
5	38.09	34.16	3.93	36.85	35.28	1.57
6	46.03	35.79	10.24	46.56	43.32	3.24
7	35.11	32.94	2.17	37.33	36.88	0.45
8	41.37	35.5	5.87	40.09	37.65	2.44
9	37.59	33.09	4.5	39.06	35.17	3.89
10	42.37	38.22	4.15	41.66	39.71	1.95
11	35.19	32.45	2.74	47.15	45.38	1.77
12	40.34	35.25	5.09	42	40.25	1.75

Table 5.

Descriptive statistics of pretest and posttest basic football skills using Small Sided Game 6 vs 6 training.

No	VO2max High (A1B2)		VO2max Low (A2B2)	
	Pretest (Second)	Posttest (Seconds)	Pretest (Second)	Posttest (Second)
1	33.75	31.51	42.51	36.59
2	33.57	30.31	36.53	33.12
3	39.88	32.83	37.24	35.51
4	35.7	34.18	35.71	32.15
5	38.09	34.16	36.85	35.28
6	46.03	35.79	46.56	43.32
7	35.11	32.94	37.33	36.88
8	41.37	35.5	40.09	37.65
9	37.59	33.09	39.06	35.17
10	42.37	38.22	41.66	39.71
11	35.19	32.45	47.15	45.38
12	40.34	35.25	42	40.25
Amount	452.99	406.73	494.69	449.01
Mean	37.75	33.89	41.22	37.42
Std. Deviation	4.22	2.17	4.71	4.04

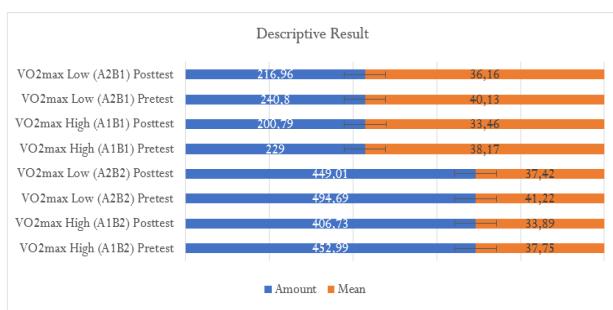


Figure 2. Pretest and Posttest of Basic Soccer Skills

Table 6.  
Shapiro-Wilk Normality Test

Variables	P	Sig.	Information
VO2Max data (SSG 3 vs 3)	High	0.831	0.05
High VO2Max Basic Football	pretest	0.389	Normal
Skills Data (SSG 3 vs 3)	Posttest	0.866	Normal
VO2Max data (SSG 3 vs 3)	Low	0.74	Normal
Low VO2Max Basic Football	pretest	0.293	Normal
Skills Data (SSG 3 vs 3)	Posttest	0.502	Normal
VO2Max data (SSG 6 vs 6)	High	0.056	Normal
High VO2Max Basic Football	pretest	0.523	Normal
Skills Data (SSG 6 vs 6)	Posttest	0.969	Normal
VO2Max data (6 vs 6)	Low	0.164	Normal
Low VO2Max Basic Football	pretest	0.17	Normal
Skills Data (SSG 6 vs 6)	Posttest	0.564	Normal

Table 7.

Levene's Test of Equality of Error Variances

Levene Statistics	df1	df2	sig.
1,947	3	32	0.142

Table 8.

Results of the Difference in Influence Between the Small Sided Game 3 vs 3 Method and the Small Sided Game 6 vs 6 on Basic Football Skills

	Type III Sum of Squares	df	Mean Square	F	Signification
Small Sided Games	60,586	1	30,586	5,537	0.009

Table 9.

Results of Differences in Basic Football Skills Between Players Who Have High and Low VO2Max

Results	Type III Sum of Squares	df	Mean Square	F	Sig.
VO2Max	120,547	2	60,274	6.27	0.005

Table 10.

Results of the Interaction Effect between Training Method and VO2Max on Basic Football Skills

Results	Type III Sum of Squares	df	Mean Square	F	Sig.
Small-Sided Games * VO2Max	16,044	2	8,022	4,562	0.018

Table 11.

Summary of Post Hoc Test Results

(I)	(J)	Mean Difference	Std. Error	Sig
VO2MAX	A1B2	-0.3875	1.55029	0.994
	A2B2	-4.1192*	1.55029	0.056
	A2B1	-3.5117*	1.79013	0.224
	A2B1	3.1242*	1.55029	0.204
	A1B2	-0.6075	1.55029	0.979
	A1B1	3.5117*	1.79013	0.224
A1B2	A2B2	-3.7317*	1.26581	0.029
	A1B1	0.3875	1.55029	0.994
	A2B1	-3.1242*	1.55029	0.204
	A2B2	3.7317*	1.26581	0.029
	A1B1	4.1192*	1.55029	0.056
	A2B1	0.6075	1.55029	0.979

Based on the research results in table 11, it is known that the analysis results marked with an asterisk (\*) indicate that the pairs that have interactions or pairs that are significantly different are as follows.

- 1) A1B1 - A2B2 = The group of players who have high VO2max are trained using the Small Sided Game 3 vs 3 method, with the group of players who have low VO2max trained using the Small Sided Game 6 vs 6 method;
- 2) A1B1 - A2B1 = The group of players who have

High VO<sub>2max</sub> are trained using the Small Sided Game 3 vs 3 method, with the group of players who have Low VO<sub>2max</sub> trained using the Small Sided Game 3 vs 3 method;

3) A2B1 - A1B2 = The group of players who have Low VO<sub>2max</sub> are trained using the Small Sided Game 3 vs 3 method, with the group of players who have High VO<sub>2max</sub> trained using the Small Sided Game 6 vs 6 method  
A1B2 - A2B2 = The group of players who have High VO<sub>2max</sub> are trained using the Small Sided Game 6 vs 6, with a group of players who have low VO<sub>2max</sub> trained using the Small Sided Game 6 vs 6 method.

Meanwhile, other pairs stated to have no difference in influence are as follows.

1) A1B1 - A1B2 =: The group of players who have High VO<sub>2max</sub> are trained using the Small Sided Game 3 vs 3 method, with the group of players who have High VO<sub>2max</sub> trained using the Small Sided Game 6 vs 6 method;

2) A2B1 - A2B2 = The group of players who have low VO<sub>2max</sub> are trained using the Small Sided Game 3 vs 3 method, with the group of players who have low VO<sub>2max</sub> trained using the Small Sided Game 6 vs 6 method

## Discussions

The findings of this study provide additional insights into the results of the data analysis. Through hypothesis testing, two main conclusions were drawn: (1) there is a significant difference in the impact between the primary research factors, and (2) there is a significant interaction between the main factors, manifesting as a two-factor interaction. Further discussion of the analysis results is elaborated below. The initial outcome affirms the influence of the Small Sided Game 3 vs 3 and Small Sided Game 6 vs 6 methods on Basic Football Playing Skills. The data indicates that the 3 vs 3 small sided game training method is more effective in enhancing basic football playing skills compared to the 6 vs 6 small sided game method. Previous research in the same context has similarly demonstrated that both the small sided game 3 vs 3 and small sided game 6 vs 6 training methods have proven efficacy in increasing VO<sub>2max</sub> and improving football passing skills (Maujud et al., 2021).

Regarding trading the number of players, a number of studies show that the reduced number of players compared to the 11 vs 11 format, results in a greater number of technical actions. This is because in the 3 vs 3 situation, both the area and the number of players are limited so it is very possible for many challenges or 1 vs 1 situations. A study says that in the small sided game 3 vs 3, the available space or game area is limited so that it encourages players to move more aggressiv (Silva et al., 2014). The small side game format can be modified by reducing the number of players to improve basic football skills. The fewer the number of players, the more often the players engage in technical actions (Duarte et al., 2013). Since the number of players and

playing area is limited, there is less time to make decisions, thus pushing players more towards cognitive skills (Della et al., 2011). Several theories stated in this research, it can be said that small sided games with different player formats will also have an impact on training results. Small sided games with a 3 vs 3 format are great for increasing individual player participation during the game compared to larger formats (Aslan, 2013).

In line with the literature on training to improve soccer skills, the small sided game 3 vs 3 can help participants acquire a better level of basic soccer skills, but in the training process they must first pay attention to the conditioning aspects in detail. For example, the capacity of each player and the whole cannot be equalized. Other research reveals that a combination of agility training with small sided games can actually improve soccer dribbling abilities (Suryadi, Okilanda, et al., 2023). Next, the second result is to see the effect of high VO<sub>2max</sub> and low VO<sub>2max</sub> on basic football skills. Based on research results on the differences in Basic Football Skills between players who have high and low VO<sub>2max</sub>, it shows that players who have high VO<sub>2max</sub> have better improvement results compared to players who have low VO<sub>2max</sub>. This is because players who have a high VO<sub>2max</sub> will be better able to play with better endurance, so that with better fitness, the player's condition can be maintained in training and playing soccer.

Mastering the skill of playing soccer involves intricate movements, combining elements such as running, ball control, and situational awareness on the field. Players need to seamlessly integrate actions like dribbling and ball control with running movements while maintaining a good VO<sub>2max</sub>. A robust VO<sub>2max</sub> is crucial for players as it facilitates the intake and distribution of oxygen to active muscle tissues, supporting metabolic processes during muscle exertion, as highlighted by (Al-Asiri & Shaheen, 2015). Therefore, the design of an exercise program is critical to determining success (Aziz et al., 2023; Chafidz et al., 2023; Mashud, Arifin, et al., 2023; Mashud, Warni, et al., 2023; Samodra et al., 2023; Sumantri et al., 2023; Umar et al., 2023).

The small sided game 3 vs 3 and small sided game 6 vs 6 training methods both require high VO<sub>2max</sub> abilities, because the training methods and programs are given in the form of games that resemble real games. The indicator that differentiates between the two methods is the amount of oxygen consumed or VO<sub>2max</sub> when doing exercise. As has been explained, the Small Sided Game 3 vs 3 will create a more aggressive game, so that in its implementation, the rest time is less when compared to the Small Sided Game 6 vs 6. This shows greater metabolic dominance. Meanwhile, with the Small Sided Game 6 vs 6 method, the game situation will create a game that is more conservative and tends to just wait. This causes the ratio of the number of players to control the ball to be greater which allows for smaller oxygen consumption when compared to the Small Sided Game 3 vs 3 training method (Aslan, 2013).

So, it can be concluded that the application of the Small

Sided Game 3 vs 3 method for players who have low VO<sub>2max</sub> is considered less than optimal. With a low VO<sub>2max</sub>, players will find it difficult to adapt in the training process. So the Small Sided Game 6 vs 6 method is more appropriate for players who have a low VO<sub>2max</sub> to master basic football skills. The next discussion is the interaction between training methods and VO<sub>2max</sub> on soccer playing skills. The results on the effect of the interaction between training methods and VO<sub>2max</sub> on soccer playing skills show that the two variables, namely the small sided games training method and VO<sub>2max</sub>, influence the results on soccer playing skills. The results of the study showed that the group of players who were trained using the small sided game 3 vs 3 method with high VO<sub>2max</sub> had a better influence than students who had low VO<sub>2max</sub> levels, this was because the number of players and the playing area and the number of players were limited, thus encouraging players to perform a aggressive with high mobility. In small sided games 3 vs 3, featuring a smaller format with fast play.

The results of this research are in accordance with Silva's theory, which explains that in a 3 vs 3 situation, the available space or playing area becomes limited, thus encouraging players to move more aggressively (Silva et al., 2014). However, it should be realized that although smaller field sizes and formats can increase the involvement of each player during training, increasing player involvement and aggressiveness in training can also increase the effects of fatigue (Clemente et al., 2014). The results of this research are also reinforced by recent research which states that someone who has a high VO<sub>2max</sub> will adapt more easily (Hardinata et al., 2023). This means that students who have a low VO<sub>2max</sub> will not easily become breathless when carrying out every activity. They will easily experience fatigue, have difficulty adapting, and have difficulty concentrating, because they will have short breaths (easily gasp for breath) (Saputra et al., 2023; Silva et al., 2014). This shows that the effectiveness of an exercise is related to the physical abilities and characteristics of the students being trained.

So, it can be concluded that the application of the Small Sided Game 3 vs 3 method for players who have low VO<sub>2max</sub> is considered less than optimal. With a low VO<sub>2max</sub>, players will find it difficult to adapt in the training process. So, the Small Sided Game 6 vs 6 method is more appropriate for players who have a low VO<sub>2max</sub> to master basic football skills.

## Conclusions

Based on results analysis, method small sided games 3 vs 3 has a better effect, compared to the small method sided games 6 vs 6. Based on the analysis results, players with high VO<sub>2max</sub> capacity has a better effect compared with player with capacity VO<sub>2max</sub> low. Thus, it can be concluded that there is a significant influence between the interaction between training methods and VO<sub>2max</sub> on basic soccer playing skills. The implications of this research are useful for coaches, it can be a consideration for improving players'

soccer playing skills by paying attention to VO<sub>2max</sub> and good and effective training methods. The research results show that there is an influence of the small sided game training method on basic soccer playing skills, so that this training method can be used as a training program. Based on the conclusions above, there are several suggestions that can be made, namely: 1) For players who still have insufficient soccer playing skills, they can be improved by practicing small sided games. 2) It is recommended that coaches practice small sided games as a model to improve their soccer playing skills. 3) For future researchers, they can consider this research using other subjects, both in terms of quantity and quality level of players. Thus, in developing soccer athletes, it is necessary to consider the selection of appropriate Small Sided Game training methods and pay attention to the level of aerobic fitness (VO<sub>2max</sub>) of the players. This can be the basis for designing a more specific and effective training program to improve the basic ability to play football.

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## Conflict of interest

Not conflicts of interest to declare.

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