



## THE EFFECT OF THE TRAINING MODEL AND BALANCE ON STUDENTS' SEPAK SILA SKILLS ON SEPAK TAKRAW EXTRACURRICULAR IN FIRST MIDDLE SCHOOL

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### Abstract

**Study purpose.** This study aimed to examine the wall and pair models: (1) the difference in the effect of wall and pair exercises on Sepak sila (2) the difference between the high and low balance on Sepak sila (3) the interaction of wall and pair models with a high and low balance on Sepak sila skills.

**Materials and methods.** The method used in this research was a 2x2 factorial experiment. The research participants included 24 male students who took extracurricular sepak takraw aged 14-15 years with a height of 153-170± centimeters and a weight of 50-60 kilograms. The instruments used in this study were modified bass test balance instruments and Sepak sila instruments. Data collection techniques consisted of observation and tests. The data obtained were analyzed using a two-way Anova with the help of SPSS 20.

**Results.** (1) There was a significant difference in effect between the wall and pair training models on Sepak sila skills with F 19.698 and sig. 0.000 < 0.05. Based on the findings, the paired model was found to be better with an average of 46.17 compared to the model on the wall which obtained an average of 41.50. (2) It was found that there was a significant difference in effect between the high and low balance on Sepak sila skills where high balance was better with an average of 46.33 compared to low balance with an average of 41.33. (3) It was found that there was a significant interaction between the wall-mounted and paired exercise models with a high and low balance on Sepak sila skills with F 130.251 and sig. 0.000 < 0.05.

**Conclusions.** In conclusion, the paired exercise model is better than the wall exercise model. As a result, it is advised to use a paired model to strengthen the fundamental technical skills of Sepak sila.

**Keywords:** pair practice, Sepak sila, sepak takraw, first middle school students.

### Introduction

Sepak takraw is an original game sport from Asia (Wibisono, Indriarti & Daniati, 2020; Syam, 2019). This game was initially only played in the kingdom, but it developed into a recreational and achievement sport over time (Zulkifli, Asmawi, Hanif, & Bon, 2019). "Sepak" means kick "takraw" means ball made of rattan which the word comes from the Thai language (Zarei & Ramkissoon, 2021). The game of sepak takraw is played by two competing teams where each

team has three players named tekong, feeder, and spiker who are separated by a net (Wibisono, Indriarti & Daniati, 2020).

When it comes to process success, several aspects influence it. Technique mastery is one of the aspects that determine the improvement of achievement in sepak takraw. According to studies, to be successful in sepak takraw, players must first master basic methods before learning more advanced strategies (Asmawi, Hanif, & Bon, 2019; Coh et al., 2004; Sukmana, Mutohir & Muhyi, 2021). Another study states that to be skilled at playing sepak takraw, each individual must master basic techniques including heading, serving, smash, blocking, as well as kicking techniques including sepak badek, sepak kuda, sepak cungkil, and Sepak sila

(Adrian & Heru, 2020; Rohman Hidayat, 2018; Heriansyah, Adelian & Suhartiwi, 2017; Muhyi et al., 2021).

The main technique in sepak takraw is Sepak sila. Sepak sila is a kicking technique using the inside of the foot (Sucipto & Sugiyanto, 2017). Another theory states that the main basic technique in the game of sepak takraw is Sepak sila, remembering that when individuals master the technique of Sepak sila, it can make it easier for them to receive, control the ball, and withstand the opponent's attacks (Zulman, Umar & Atradinal, 2018). Saputra and Supriyadi (2017) stated that the basic technique that is important to master is Sepak sila, because, in the game of sepak takraw, most use the Sepak sila technique to pass and receive the ball well.

When viewed more closely, the basic practices of Sepak sila require balance. Novrianto (2013) conducted a study titled "Study on the association between balance and sila skills in the game of sepak takraw." His investigation discovered a substantial link. Tahmrin (2011) found that balance and leg muscle endurance contributed to Sepak sila in his study. The researcher might conclude from the findings of the two studies that technical skills are directly related to an individual's balance.

Efforts to improve the fundamental techniques of Sepak sila in sepak takraw, of course, necessitate the use of a good and appropriate program and approach. When testing a method, trainers are required to experiment. The teaching methods with reflections on the wall and the pair training method are two that are frequently used to teach basic concepts in sepak takraw (Riska, 2020; Mardela & Rahman, 2017; Tambunan, 2014; Khozali, 2015; Fadli & Yudi, 2019).

The application of the reflection method to the wall and in pairs has been tested and is considered to have a significant effect on improving basic techniques in sepak takraw. From his study, it was found that there was a significant effect of pair passing practice on the skills of passing the ball in takraw extracurricular students. Furthermore, Riska (2020), and Mardela and Rahman (2017) stated that there was a significant effect of practicing soccer skills using individual and pair training methods. However, other studies have stated that exercises with reflected media on the wall do not have a significant improvement compared to the hanging ball training method (Ermanto, 2013). Although the research from Ermanto (2013) provides strong evidence, Khozali (2015) refutes Ermanto's findings based on the results of his research that the paired method, wall reflecting media, and hanging media have an equally significant increase. Therefore, it becomes an empirical problem that requires re-testing by applying the exercise method using wall media and pairs supported by observation.

Observations were carried out at four junior high schools that had sepak takraw extracurricular activities. Researchers at this stage observe the practice process, the coach gives instructions to students to hold the ball themselves and then play the takraw ball so it doesn't fall with the correct soccer technique. However, additional observation reveals that students' use of the inner foot when performing the sila technique is not faultless. Many students continue to strike the heel, toe, and outside of the foot. Furthermore, motivation to practice versions of the kick model is still very low, as seen by students' mastery of basic movement skills for rock-ing and kicking during extracurricular activities. Individual exercises with the practice system of holding the ball once and then catching it are also common among students in this case. Kicking or holding the ball is a mandatory require-

ment that must be mastered by students so that the practice method using reflection media on the wall and in pairs needs to be done to optimize basic techniques, especially silage.

Based on the description described above, it can be understood that there are problems regarding the application, understanding, and motivation to practice the basic techniques of playing sepak takraw in first middle school extracurricular participants. To overcome this, the researchers will apply the exercise method with reflection media on the wall and in pairs. The purpose of this study was to test the exercise method with reflections on the wall and the pair practice method to improve the basic techniques of Sepak sila in terms of low and high balance in junior high school extracurricular participants in West Sleman Regency, Yogyakarta Province. This study hypothesizes that there are differences in wall exercises and pair exercises on Sepak sila skills, there are differences in high balance and low balance on Sepak sila skills, and there is an interaction between wall and pair exercises as well as balance on Sepak sila skills.

**Table 1.** Factorial Experiment Design 2×2

| Balance (K) | Practicing (L)                      |                                   |
|-------------|-------------------------------------|-----------------------------------|
|             | Sepak sila Practice with Walls (L1) | Sepak sila Practice in Pairs (L2) |
| High (K1)   | (L1K1)                              | (L2K1)                            |
| Low (K2)    | (L1K2)                              | (L2K2)                            |

Where: L1: Sepak sila Practice with Walls; L2: Sepak sila Practice in Pairs; K1: High balance; K2: Low balance; (L1K1): Sepak sila practice with the wall on high balance; (L1K2): Sepak sila practice with the wall on low balance; (L2K1): Sepak sila practice in pairs on high balance; (L2K2): Sepak sila practice in pairs on low balance.

**Table 2.** Instructions for the Sepak sila Skills Test Implementation

| Facilities used |                                                                                                                                                                                                         |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a.              | Spacious and flat sepak takraw field                                                                                                                                                                    |
| b.              | Takraw ball                                                                                                                                                                                             |
| c.              | Net                                                                                                                                                                                                     |
| d.              | Stopwatch                                                                                                                                                                                               |
| e.              | Meter                                                                                                                                                                                                   |
| f.              | Duct tape                                                                                                                                                                                               |
| g.              | Stationary                                                                                                                                                                                              |
| h.              | Whistle                                                                                                                                                                                                 |
| Implementation  |                                                                                                                                                                                                         |
| a.              | The ball is kicked using a Sepak sila technique (inner foot).                                                                                                                                           |
| b.              | The ball that falls to the ground can be used again, but the score on the second shot is determined from the start and is valid every time after the ball has fallen until the available time runs out. |
| c.              | Balls that are kicked using other techniques (other than Sepak sila) can still be used but the score does not count and as long as the ball has not fallen to the floor.                                |
| d.              | The ball that counts must be at chest level.                                                                                                                                                            |
| e.              | The area of the control field is not limited.                                                                                                                                                           |
| f.              | The time limit applied is one minute.                                                                                                                                                                   |
| Scoring         |                                                                                                                                                                                                         |
| a.              | The score is taken from the number of Sepak sila that can be taken in one minute.                                                                                                                       |
| b.              | Every three kicks are counted with a value of one and so on.                                                                                                                                            |
| c.              | Kicks that are not at chest level will not count.                                                                                                                                                       |
| d.              | The overall score is obtained by adding up all the kick scores that have been divided by three.                                                                                                         |

**Table 3.** Practicing program of Sepak sila

| Sepak sila Practice in Pairs                                                                                                                                                                                                                                                                                                                              | Sepak sila Practice with Walls                                                                                                                                                                                                           | Meeting |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| a. Flexibility training<br>b. The ball is thrown with a parabolic dish to the student who is the partner. The partner accepts and kicks the ball with Sepak sila 1 time and catches it. The ball is thrown back to the opponent.<br>c. Dosage: 20 minutes. 3 sets $\times$ 8 reps, 30 seconds recovery<br>d. 15 minutes Games                             | a. Flexibility training<br>b. The ball is bounced off the wall and then juggled once with the Sepak sila technique before being caught.<br>c. Dosage: 20 minutes. 3 sets $\times$ 8 reps, 30 seconds recovery<br>d. 15 minutes Games     | 1,2     |
| a. Flexibility Training<br>b. The ball is thrown with a parabolic dish to the student who is the partner. The partner accepts and juggles the ball with Sepak sila 1 time and catches it. The ball is thrown back to the opponent.<br>c. Dosage: 20 minutes. 3 sets $\times$ 11 reps, 30 seconds recovery<br>d. 15 minutes Games                          | a. Flexibility training<br>b. The ball is bounced off the wall and then juggled once with the Sepak sila technique before being caught.<br>c. Dosage: 20 minutes. 3 sets $\times$ 11 reps, 30 seconds recovery<br>d. 15 minutes Games    | 3,4     |
| a. Flexibility training<br>b. The ball is thrown with a parabolic dish to the student who is the partner. The partner accepts and juggles the ball with Sepak sila 2 times and catches it. The ball is thrown back to the opponent.<br>c. Dosage: 20 minutes. 4 sets $\times$ 13 reps, 35 seconds recovery<br>d. 15 minutes Games                         | a. Flexibility training<br>b. The ball is bounced off the wall and then juggled 2 times with the Sepak sila technique before being caught.<br>c. Dosage: 20 minutes. 4 sets $\times$ 13 reps, 35 seconds recovery<br>d. 15 minutes Games | 5,6     |
| a. Flexibility training<br>b. The ball is thrown with a parabolic dish to the student who is the partner. The partner accepts and juggles the ball with Sepak sila 2 times and catches it. The ball is thrown back to the opponent.<br>c. Dosage: 20 minutes. 4 sets $\times$ 16 reps, 35 seconds recovery<br>d. 15 minutes Games                         | a. Flexibility training<br>b. The ball is bounced off the wall and then juggled 2 times with the Sepak sila technique before being caught.<br>c. Dosage: 20 minutes. 4 sets $\times$ 16 reps, 35 seconds recovery<br>d. 15 minutes Games | 7, 8    |
| a. Flexibility training<br>b. The ball is thrown with a parabolic dish to the student who is the partner. The partner accepts and juggles the ball with Sepak sila 3 times and catches it. The ball is thrown back to the opponent.<br>c. Dosage: 20 minutes. 5 sets $\times$ 18 reps, 40 seconds recovery<br>d. 15 minutes Games                         | a. Flexibility training<br>b. The ball is bounced off the wall and then juggled 3 times with the Sepak sila technique before being caught.<br>c. Dosage: 20 minutes. 5 sets $\times$ 18 reps, 40 seconds recovery<br>d. 15 minutes Games | 9, 10   |
| a. Flexibility training<br>b. The ball is thrown with a parabolic dish to the student who is the partner. The partner accepts and juggles the ball with Sepak sila 3 times and catches it. The ball is thrown back to the opponent.<br>c. Dosage: 20 minutes. 5 sets $\times$ 21 reps, 40 seconds recovery<br>d. 15 minutes Games                         | a. Flexibility training<br>b. The ball is bounced off the wall and then juggled 3 times with the Sepak sila technique before being caught.<br>c. Dosage: 20 minutes. 5 sets $\times$ 21 reps, 40 seconds recovery<br>d. 15 minutes Games | 11, 12  |
| a. Flexibility training<br>b. The student juggles the ball using the Sepak sila technique 2 times and then feeds it to his partner and juggles it 2 times without the ball falling<br>c. Dosage: 20 minutes. 6 sets $\times$ 23 reps, 45 seconds recovery<br>d. 15 minutes Games                                                                          | a. Flexibility training<br>b. The ball bounces off the wall and juggles it parabolically 3 times and horizontally 1 time<br>c. Dosage: 20 minutes. 6 sets $\times$ 23 reps, 45 seconds recovery<br>d. 15 minutes Games                   | 13, 14  |
| a. Flexibility training<br>b. The student juggles the ball using the Sepak sila technique 2 times and then feeds it to his partner and juggles it 2 times without the ball falling<br>c. Dosage: 20 minutes, 6 sets $\times$ 25 reps, 45 seconds recovery, 25 reps $\times$ 2 sets of target serve behind, overhead, and in front.<br>d. 15 minutes Games | a. Flexibility training<br>b. The ball bounces off the wall and juggles it parabolically 3 times and horizontally 1 time<br>c. Dosage: 20 minutes. 6 sets $\times$ 25 reps, 45 seconds recovery<br>d. 15 minutes Games                   | 15,16   |

## Materials and methods

### Study participants

This research is experimental research with field testing (Yulianto & Yudhistira, 202; Wicaksono et al., 2022). The experimental approach used is a 2 $\times$ 2 factorial involving

two independent variables given treatment, one dependent variable, and one controlled attribute variable (Collins et al., 2014; Rogers & Revesz, 2020). The sampling technique used was purposive sampling with the criteria (1) participants were extracurricular junior high school (SMP) students in West Sleman Regency, Yogyakarta Province, (2) actively participated in sepak takraw training, and (3) male. Based

on these criteria, there were 24 takraw extracurricular participants aged 14-15 years with a height of 153-170± and a weight of 50-65± kilograms.

A total of 24 participants will be divided into four groups by testing the modified bass balance test (Jazi et al., 2012). The results of the balance test will apply the Match Subject Ordinal Pairing (MSOP) pattern with the A-B-B-A pattern so that the group becomes balanced. Based on the test, it was found that 12 students who had high and low balance would be given Sepak sila training with bouncing the ball against the wall media, and 12 other students were given Sepak sila training with media where students pair up with each other. In detail, one group consists of 12 students who are divided into 2 teams, each consisting of 6 students who have a low balance and 6 students who have high balance Sepak sila practice by bouncing the ball against the wall media and in pairs. The factorial design is presented in the table 1.

The next procedure is to do a pretest on the Sepak sila group with wall media and in pairs. The instrument used was a Sepak sila skills test instrument from Ramadhan (2015) with a validity coefficient of 0.71 and a reliability of 0.68. The study explains that the Sepak sila skills test validity coefficient with a value of 0.70 and above has a level of measurement accuracy (Guntur et al., 2020; Dewangga & Tomoliyus, 2020; Yudhistira et al., 2021), while a reliability coefficient of 0.6 to 0.7 indicates moderate accuracy (Choubin et al., 2019). Therefore, the test of Sepak sila skills can be used in research. The procedure for the Sepak sila test is presented in the table 2.

### Study organization

The participants were 24 students divided into two groups so each group consisted of 12 students. Students are given treatment using wall media by bouncing the ball on the wall and in pairs with the number of training frequencies 3 times a week for 16 meetings. The researcher was assisted by four assistants to observe the pretest time during the exercise in 16 meetings and the post-test was taken after the 16th training meeting. The exercise program is presented in the table 3.

### Statistical analysis

The data was processed with the help of SPSS version 20 (Wicaksono et al., 2022). The data analysis used was a two-way ANOVA analysis. If there is an interaction, the analysis will be continued using the Tukey test with a significance level of 0.05 (Liang, Hiley & Kanosue, 2019). However, before applying the analysis, it is necessary to carry out prerequisite tests including tests for normality and homogeneity of the data. Thus, when the data is said to be normal and homogeneous, the test can be continued.

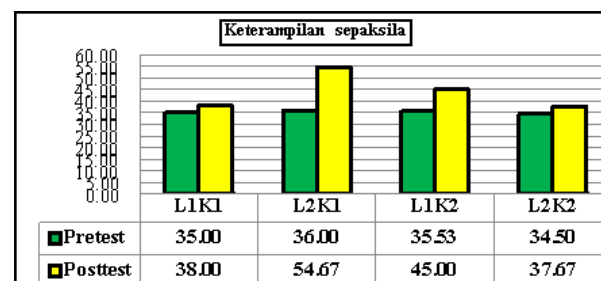
## Results

If it is displayed in the form of a diagram, the data on Sepak sila skills can be presented as shown in the following graph.

Based on the graph above, shows that the Sepak sila skills of the group (L1K1) who applied wall media and have high balance obtained an average pretest score of 35.00 and

**Table 4.** Analysis Results in Description of Pretest-Posttest

| Practicing                     | Balance     | Pretest      | Posttest     |
|--------------------------------|-------------|--------------|--------------|
| Sepak sila Practice with Walls | High (L1K1) | 35 ± 1.26    | 38 ± 1.10    |
|                                | Low (L1K2)  | 35.53 ± 1.37 | 45 ± 4.15    |
| Sepak sila Practice in Pairs   | High (L2K1) | 36 ± 0.89    | 54.67 ± 0.47 |
|                                | Low (L2K2)  | 34.50 ± 1.38 | 37.67 ± 2.25 |



**Fig. 1.** Graphics of soccer skills

increased at the post-test to 38.00. The group (L2K1) of Sepak sila in pairs who has high balance obtained an average pretest score of 36.00 and increased at post-test to 54.67. The group (L1K2) of Sepak sila with wall media which has a low balance obtained an average pretest score of 35.53 and increased at post-test to 45.00. The group (L2K2) of Sepak sila in pairs who have low balance obtained an average pretest score of 34.50 which increased to 35.67 at the posttest.

**Table 5.** Data Normality Test Results

| Group    | p    | significance | Information |
|----------|------|--------------|-------------|
| Pretest  | L1K1 | 0,713        | Normal      |
|          | L2K1 | 0,968        | Normal      |
|          | L1K2 | 0,801        | Normal      |
|          | L2K2 | 0,976        | Normal      |
| Posttest | L1K1 | 0,573        | Normal      |
|          | L2K1 | 0,986        | Normal      |
|          | L1K2 | 0,996        | Normal      |
|          | L2K2 | 0,920        | Normal      |

Based on the statistical analysis of the normality test that has been carried out using the Kolmogorov Smirnov test, it was found that all the pretest and posttest data on Sepak sila were normally distributed with a significance value of  $p > 0.05$ .

**Table 6.** Data Homogeneity Test Results

| F     | Df1 | Df2 | Significance |
|-------|-----|-----|--------------|
| 2.134 | 3   | 20  | 0.128        |

Based on the statistical analysis of the homogeneity test that has been carried out using the Levene test, a significance value of  $> 0.05$  was found. This result indicates that the data has a homogeneous variance.

According to the Anova test, the F value is 19,698 and the significance value is  $0.000 < 0.05$ . In other words, there is



**Table 6.** ANOVA Test Results for Paired Exercise and Wall Exercises

| Source          | Type III Sum of Squares | df | Mean Square | F      | Sig   |
|-----------------|-------------------------|----|-------------|--------|-------|
| Exercise Method | 130.667                 | 1  | 130.667     | 19.698 | 0.000 |

a significant difference in the effect between exercises with wall media and in pairs on Sepak sila skills. Paired group analysis got a score of 46.17 and the group with wall media got 41.50 so the post-test difference was 4.67. These results indicate that the group with paired exercises produced better results. The first hypothesis, that there is a significant difference in the effect of pair practice and wall media practice on soccer abilities, has thus been proved.

**Table 7.** ANOVA Test Results on Differences in High Balance and Low Balance on Sepak sila Skills

| Source  | Type III Sum of Squares | df | Mean Square | F      | sig   |
|---------|-------------------------|----|-------------|--------|-------|
| Balance | 150.000                 | 1  | 150.000     | 22.613 | 0.000 |

Based on the ANOVA test above, it is presented that the F value is 22.613 and the significance value is  $0.000 < 0.05$  which indicates a significant difference in influence on the Sepak sila skills between extracurricular students who have high balance and low balance. Based on the results of the analysis, students who have high balance get a score of 46.33 and students who have low balance get a value of 41.33, and students who have high balance are better. Thus, the second hypothesis which states that there is a significant difference in the effect between students who have high balance and low balance on Sepak sila skills has been proven.

**Table 8.** ANOVA Test Results on the Interaction of Paired Exercises and Wall Exercises with Balance (High and Low) on Sepak sila Skills

| Source            | Type III Sum of Squares | df | Mean Square | F       | Sig   |
|-------------------|-------------------------|----|-------------|---------|-------|
| Exercise Method * | 864.000                 | 1  | 864.000     | 130.251 | 0.000 |
| balance           |                         |    |             |         |       |

Based on the ANOVA test results, the F value is 130.251 and the significance value is  $0.000 < 0.05$ , indicating an interaction. The third hypothesis, that there is a substantial interaction between pair practice and wall media exercises with high and low balance on Sepak sila skills, has thus been proved.

Based on the Tukey test, the asterisk (\*) can be explained that the pair having an interaction. Interactions are found in (1) L1K1-L1K2 (Sepak sila practice with wall media for students with high balance – Sepak sila practice with wall media for students with low balance). (2) L1K1-L2K1 (Sepak sila practice with wall media for students with high balance – Sepak sila practice in pairs for students with high balance). (3) L1K2-L2K1 (Sepak sila practice with wall media for students with low balance – Sepak sila practice in pairs for students with high balance), (4) L1K2-L2K2 (Sepak sila practice with wall media for

**Table 9.** Post Hoc Test Results

| Group | Interaction | Mean Difference | Std. Error | Sig   |
|-------|-------------|-----------------|------------|-------|
| L1K1  | L1K2        | -7.0000*        | 1.48698    | 0,001 |
|       | L2K1        | -16.6667*       | 1.48698    | 0,000 |
|       | L2K2        | 0.3333          | 1.48698    | 0,996 |
| L1K2  | L1K1        | 7.0000*         | 1.48698    | 0,001 |
|       | L2K1        | -9.6667*        | 1.48698    | 0,000 |
|       | L2K2        | 7.3333*         | 1.48698    | 0,000 |
| L2K1  | L1K1        | 16.6667*        | 1.48698    | 0,000 |
|       | L1K2        | 9.6667*         | 1.48698    | 0,000 |
|       | L2K2        | 17.0000*        | 1.48698    | 0,000 |
| L2K2  | L1K1        | -0.3333         | 1.48698    | 0,996 |
|       | L1K2        | -7.3333*        | 1.48698    | 0,000 |
|       | L2K1        | -17.0000*       | 1.48698    | 0,000 |

students with low balance – Sepak sila practice in pairs for students with low balance), (5) L2K1-L2K2 (Sepak sila practice with wall media for students with low balance – Sepak sila practice in pairs for students with low balance).

## Discussion

Efforts to improve abilities and skills in sepak takraw must be carried out through well-planned exercises and appropriate training methods. This is following several studies which state that training aims to improve competence and skills individually and in teams (Sulistiyono et al., 2021; Khudolii et al., 2020; Henry, 2013). Reinforced by other studies, it is stated that achieving success in the field of sports is the dream of every athlete so maximum coaching and approaches are needed (Nur, Ilham & Kamaruddin, 2021). Moreover, sepak takraw is considered a team sport that utilizes the mastery of qualified skills (Musa et al., 2020). The basic technique is important because various movements in sepak takraw require a perfect technique to win a match.

Coaches play an important part in the success of sepak takraw extracurricular students because sepak takraw extracurricular require specific attention not only for complete attendance but also for achievement sports. According to Nur, Ilham, and Kamaruddin (2021), sport is intended to give broader educational engagement and contribution, which necessitates an improvement in sports achievement in schools.

According to a previous study, coaches become like heroes with variable roles who can become facilitators, motivators, and parents, and always update knowledge so that the athlete's competence can dramatically rise (Wicaksono et al., 2022). According to Tirtawirya and Tomoliyus (2020), getting better at sporting activities is not easy, and it is required to pay attention to numerous elements such as physically, physically, and technically setting up an exercise program.

One of the most important basic techniques in sepak takraw is soccer. The study explains that the Sepak sila technique is the mother of the sepak takraw game because of its very vital function, namely to receive kicks from the opponent's service, feed to teammates, and as a ball carrier to the opponent (Suprayitno, 2018). Therefore, the role of the coach is needed to develop a good method to optimize the basic techniques of this Sepak sila in sepak takraw.

There are numerous training methods used in team sports that are carried out in certain games. That is, the training method used is appropriate for the competitive conditions (Said & Syam, 2022). The media training method of bouncing the ball against the wall and the pair training method are utilized in sepak takraw. These are two options for improving the fundamental techniques of sepak takraw, particularly the Sepak sila technique. According to a prior study, the exercise strategy used alone and in pairs attempts to develop the technique to be reached (Said, & Syam, 2022).

Based on the ANOVA test, the first hypothesis which states that there is a significant difference in the effect between pair practice and wall media practice on Sepak sila skills has been proven with an F value of 19,698 and a significance value of  $0.000 < 0.05$ . The analysis of the post-test results in the group with pair practice got a score of 46.17 and the group with wall media got a score of 41.50. Thus, the posttest difference is 4.67. In other words, the training method in the group with paired exercises produces better results.

Based on the Anova test, the second hypothesis which states that there is a significant difference in influence between students who have high balance and low balance on Sepak sila skills has been proven, which is indicated by an F value of 22,613 and a significance value of  $0.000 < 0.05$ . In the analysis of post-test results, students who have high balance get a score of 46.33, and students who have low balance get a score of 41.33. These results indicate that students who have high balance are better than students who have low balance in doing the silage technique.

Based on the Anova test, the third hypothesis which states that there is a significant interaction between pair exercise and exercises with wall media with high and low balance can be said to have been proven with an F value of 130.251 and a significance value of  $0.000 < 0.05$ . Based on the Tukey test, the interacting groups are (1) L1K1-L1K2 (Sepak sila practice with wall media for students with high balance – Sepak sila practice with wall media for students with low balance), (2) L1K1-L2K1 (Sepak sila practice with wall media for students with high balance – Sepak sila practice in pairs for students with high balance), (3) L1K2-L2K1 (Sepak sila practice with wall media for students with low balance – Sepak sila practice in pairs for students with high balance), (4) L1K2-L2K2 (Sepak sila practice with wall media for students with low balance – Sepak sila practice in pairs for students with low balance), (5) L2K1-L2K2 (Sepak sila practice with wall media for students with low balance – Sepak sila practice in pairs for students with low balance). In the end, the results have been obtained that all the hypotheses proposed by the researcher have been proven. This is reinforced by a study from Jaka (2014) which explains that training with individual and pair methods has a significant effect on soccer skills where the paired method is found to be better.

## Conclusions

Based on the results and discussion above, the researchers found that (a) there was a significant effect between exercises with wall media and pairs on Sepak sila skills where training with the paired method was found to have better results, and (b) there was a significant effect between students who have a high and low balance on the Sepak sila skills where high balance results in better performance, (c) there was a significant

interaction between training with wall media and paired with high and low balance. The findings of this study can be used as a reference that to improve the basic technical skills of Sepak sila, it is recommended to use the paired method.

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## Conflict of interest

All authors declare no conflict of interest.

## References

- Wibisono, A., Indriati, R., & Daniati, E. (2020, August). Sistem Seleksi Atlet Sepak takraw Keranjang. In *Prosiding Semnas INOTEK (Seminar Nasional Inovasi Teknologi)*, 4(3), 089-094. <https://doi.org/10.35969/inotek.v2i1>
- Syam, A. (2019). Analisis Kemampuan Inteligensi Atlet Cabang Olahraga Sepak takraw Provinsi Gorontalo. *Jambura Journal of Sports Coaching*, 1(2), 79-90. <https://doi.org/10.37311/jjsc.v2i1.2385>
- Zulkifli, Asmawi, M., Hanif, A. S., & Bon, A. T. (2019). Model Teaching Style and Motor ability on Sport Science Student Achievement Learning Outcome Sepak takraw. *Proceedings of the International Conference on Industrial Engineering and Operations Management Toronto, Canada, October 23-25, 2019*.
- Zarei, A., & Ramkissoon, H. (2021). Sport tourists' preferred event attributes and motives A case of Sepak takraw, Malaysia. *Journal of Hospitality & Tourism Research*, 45(7), 1188-1213.
- Coh, M., Jovanović-Golubović, D., & Bratić, M. (2004). Motor learning in sport. *Facta universitatis. Series physical education and sport*, 2, 45-59.
- Sukmana, A. A., Or, M., Mutohir, T. C., & Muhyi, M. (2021). *Permainan krawnjang kids takraw Indonesia*. Jakad Media Publishing.
- Adrian Sya'ban, & Heru Syarli Lesmana. (2020). Overview of Basic Technical Skills and Special Techniques for ATC (Ambacang Takraw Club) Women's Athletes in Sepak takraw. *Patriot's Journal*, 3(1), 26-37.
- Rohman Hidayat. (2018). The effect of self-based practice and feedback from friends on smash in sepak takraw for male athletes in Banyumas regency in 2018. *Proceedings of the National Seminar on the Theme of Sustainable Rural Resource Development and Local Wisdom VIII*, 14-15.
- Heriansyah, Adelian & Suhartiwi. (2017). *The Game of Sepak takraw, History, Basic Techniques, Game Rules, and Refereeing*. Jakad Media Publishing.
- Muhyi, M., Hanafi, M., Sukmana, A. A., Utamayasa, I. G. D., & Prastyana, B. R. (2021). The effectiveness of krawnjang game implementation on Sepak sila's skills in sepak takraw game at Surabaya sepak takraw academy. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*, 7(3), 367-377. [https://doi.org/10.29407/js\\_unpgri.v7i3.16148](https://doi.org/10.29407/js_unpgri.v7i3.16148)
- Sucipto, B., & Sugiyanto, S. (2017). Upaya Meningkatkan Kemampuan Sepak sila Melalui Variasi Latihan Berpasangan Pada Permainan Sepak takraw Siswa Kelas

- V Sd Negeri 18 Kota Bengkulu. *Kinestetik: Jurnal Ilmiah Pendidikan Jasmani*, 1(1), 1-5.  
<https://doi.org/10.33369/jk.v1i1.3368>
- Zulman, F. U., Umar, A., & Atradinal, F. U. (2018). Hubungan Keseimbangan dan Kelincahan terhadap Keterampilan Sepak sila Pemain Sepaktakraw SMP Negeri 2 Batang Anai. *Jurnal Mensana*, 3(1), 77-88.  
<https://doi.org/10.24036/jm.v3i1.68>
- Novrianto, A. (2013). Hubungan keseimbangan terhadap keterampilan Sepak sila dalam permainan sepak takraw pada siswa putra kelas VIII SMP Negeri 1 Palolo. *E-Journal Tadulako Physical Education, Health And Recreation*, 1(5). <https://doi.org/10.31258/jope.1.2.49-55>
- Tahrim, M. (2011). Kontribusi keseimbangan dan daya tahan otot tungkai terhadap kemampuan sepaksila dalam permainan sepaktakraw pada siswa smp seatap bide bajo kabupaten luwu. *Jurnal Pendidikan Kepelatihan Olahraga*, 3(1), 64-74. <https://doi.org/10.26858/com.v10i2.13184>
- Riska R, R. R. (2020). *Peningkatan keterampilan Sepak sila melalui metode latihan teknik pada atlet BKMF sepaktakraw FIK UNM* (Doctoral dissertation, Universitas Negeri Makassar).
- Mardela, R., & Rahman, F. (2017). Pengaruh Latihan Sepaksila Individu dan Berpasangan Terhadap Kemampuan Reservice Atlet Sepaktakraw. *Jurnal Performa Olahraga*, 2(01), 93-111. <https://doi.org/10.24036/jpo148019>
- Tambunan, S. H. (2014). *Perbedaan pengaruh latihan bola lambung dan latihan bola pantul ke dinding terhadap hasil keterampilan memaham pada atlet klub sepak takraw tunas mandiri pantai cermin tahun 2014* (Doctoral dissertation, Unimed).  
<https://doi.org/10.29408/porkes.v1i1.1097>
- Khozali, M. (2015). *Perbedaan pengaruh latihan passing bola di gantung dan latihan Passing bola ke dinding terhadap kemampuan passing Sepak sila siswa ekstrakurikuler sepak takraw pesantren Mawaridussalam Deli Serdang 2014/2015* (Doctoral dissertation, UNIMED).  
<https://doi.org/10.35438/sparta.v2i1.169>
- Fadli, M., & Yudi, A. A. (2019). Latihan Individu dan Berpasangan Berpengaruh Terhadap Hasil Reservice Atlet Sepaktakraw. *Jurnal Patriot*, 1(3), 1364-1371.
- Ermanto, A. (2013). *Perbedaan pengaruh latihan passing bola di gantung dan latihan passing ke dinding terhadap kemampuan passing Sepak sila atlet junior klub sepak takraw darul arafah deli serdang tahun 2013*. Thesis. Medan: Unimed. <https://doi.org/10.36728/jip.v7i2.1641>
- Yulianto, W. D., & Yudhistira, D. (2021). Content Validity of Circuit Training Program and Its Effects on The Aerobic Endurance of Wheelchair Tennis Athletes. *International Journal of Kinesiology and Sports Science*, 9(3), 60-65.  
<https://doi.org/10.7575/aiac.ijkss.v9n.3p60>
- Wicaksono, D. W., Hidayatullah, F., Kristiyanto, A., & Purnama, S. K. (2022). The Effect of Training Based on Part And Whole Combinations on Smash Techniques Improvement in Volleyball Sports for 11-12-Year-Old Athletes. *Physical Education Theory and Methodology*, 22(1), 62-69. <https://doi.org/10.17309/tmfv.2022.1.09>
- Tirtawirya, D., & Tomoliyus, R. A. S. (2020). *VO<sub>2</sub>max Athletes Performance of Yogyakarta Special Region in Pre PON 2019*. <https://doi.org/10.5220/0009797505600567>
- Collins, L. M., Dziak, J. J., Kugler, K. C., & Trail, J. B. (2014). Factorial experiments: efficient tools for evaluation of intervention components. *American journal of preventive medicine*, 47(4), 498-504.  
<https://doi.org/10.1016/j.amepre.2014.06.021>
- Rogers, J., & Revesz, A. (2020). *Experimental and quasi-experimental designs*. Routledge.
- Jazi, S. D., Purrajabi, F., Movahedi, A., & Jalali, S. (2012). Effect of selected balance exercises on the dynamic balance of children with visual impairments. *Journal of Visual Impairment & Blindness*, 106(8), 466-474.  
<https://doi.org/10.1177/0145482x1210600803>
- Ramadhan, F. (2015). *Uji validitas dan reliabilitas tes teknik sepak sila dan smash kedeng pada cabang olahraga sepaktakraw* (Doctoral dissertation, Universitas Pendidikan Indonesia).
- Guntur, G., Ngatman, N., Sridadi, S., Broto, D. P., & Pambudi, D. K. (2020). Pengujian validitas, reliabilitas, dan relevansi norma penilaian" dyer tennis test" terhadap tingkat keterampilan bermain tenis. *Jurnal Keolahragaan*, 8(2), 195-203. <https://doi.org/10.21831/jk.v8i2.35266>
- Dewangga Yudhistira, T. (2020). Content Validity of Agility Test in Karate Kumite Category. *Journal of Human Movement and Sports Sciences*, 8(5), 211-216.  
<https://doi.org/10.13189/saj.2020.080508>
- Yudhistira, D., Siswantoyo, T., Sumaryanti, D. T., Paryadi, L. O. A. V., & Sinta Naviri, N. (2021). Development of Agility Test Construction: Validity and Reliability of Karate Agility Test Construction in Kata Category. *International Journal of Human Movement and Sports Sciences*, 9(4), 697-703. <https://doi.org/10.13189/saj.2021.090413>
- Choubin, B., Moradi, E., Golshan, M., Adamowski, J., Sajedi-Hosseini, F., & Mosavi, A. (2019). An ensemble prediction of flood susceptibility using multivariate discriminant analysis, classification and regression trees, and support vector machines. *Science of the Total Environment*, 651, 2087-2096.  
<https://doi.org/10.1016/j.scitotenv.2018.10.064>
- Liang, Y., Hiley, M., & Kanosue, K. (2019). The effect of contact sport expertise on postural control. *PloS one*, 14(2), e0212334. <https://doi.org/10.1371/journal.pone.0212334>
- Sulistiyono, S., Akhiruyanto, A., Primasoni, N., Arjuna, F., Santoso, N., & Yudhistira, D. (2021). The Effect of 10 Weeks Game Experience Learning (Gel) Based Training on Teamwork, Respect Attitude, Skill and Physical Ability in Young Football Players. *Physical Education Theory and Methodology*, 21(2), 173-179.  
<https://doi.org/10.17309/tmfv.2021.2.11>
- Khudoli, O., Kapkan, O., Harkusha, S., Marchenko, S., & Veremeenko, V. (2020). Motor Skills Development: Optimization of Teaching Boys Aged 15 Press Headstand and Handstand. *Physical Education Theory and Methodology*, 20(1), 42-48.  
<https://doi.org/10.17309/tmfv.2020.1.06>
- Henry, I. (2013). Athlete development, athlete rights, and athlete welfare: A European Union perspective. *International Journal of the History of Sport*, 30(4), 356-373. <https://doi.org/10.1080/09523367.2013.765721>
- Nur, M., & Ilham Kamaruddin, J. (2021). The Effect of Solo Drill, Pairs Drill, and Mixed Drill Method on the Smash Kedeng (Scissors). *Annals of the Romanian Society for Cell Biology*, 25(6), 5524-5533.
- Musa, R. M., Majeed, A. P. A., Kosni, N. A., & Abdullah, M. R. (2020). Machine learning in team sports: performance analysis and talent identification in Beach Soccer & Sepak-takraw. *Springer Nature*, 1-12.  
[https://doi.org/10.1007/978-981-15-3219-1\\_1](https://doi.org/10.1007/978-981-15-3219-1_1)



Suprayitno, S. Hasil belajar Sepak sila permainan takraw. (2018). (Studi Ekperimen tentang Pengaruh Gaya Mengajar Dan Kemampuan Motorik pada Mahasiswa PJKR FIK Unimed). *Jurnal ilmu keolahragaan*, 17(1), 58-68. <https://doi.org/10.53682/pj.v2i2.1306>

Said, H., & Syam, A. (2022). The effect of training models and flexibilities on the performance of service in sepak takraw game. *AMCA Journal of Education and Behavioral Change*, 2(1), 45-50. <https://doi.org/10.51773/ajeb.v2i1.153>

## ВПЛИВ ТРЕНУВАЛЬНОЇ МОДЕЛІ ТА РІВНОВАГИ НА НАВИЧКИ УЧНІВ ВИКОНУВАТИ ТЕХНІКУ СЕПАК СИЛА НА ФАКУЛЬТАТИВНИХ ЗАНЯТТЯХ СЕПАК ТАКРО В ПЕРШІЙ СЕРЕДНІЙ ШКОЛІ

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 8 с., 9 табл., 1 рис., 38 джерел.

**Мета дослідження.** Це дослідження мало на меті вивчити моделі тренувань на стіні та в парах: (1) різницю у впливі вправ на стіні та в парах на виконання техніки Сепак сила (2) різницю між високою та низькою рівновагою на виконання техніки Сепак сила (3) взаємний вплив моделей тренувань на стіні та в парах із високою та низькою рівновагою на навички виконання техніки Сепак сила (жонглювання м'ячем на носі в ножному волейболі – Сепак такро).

**Матеріали та методи.** У цьому дослідженні використовували метод факторного експерименту за схемою 2×2. Учасниками дослідження були 24 учні чоловічої статі, які відвідували факультативні заняття Сепак такро, віком 14-15 років, зростом 153-170± сантиметрів і вагою 50-60 кілограмів. Вимірювальними засобами, які використовували в цьому дослідженні, були вимірювальні засоби модифікованого тесту Басса на динамічну рівновагу та вимірювальні засоби техніки Сепак сила. Методи збору даних склалися зі спостереження та тестів. Одержані дані були проаналізовані з використанням двофакторного дисперсійного аналізу за допомогою програмного забезпечення SPSS 20.

**Результати.** (1) Було встановлено статистично значущу різницю між моделями тренувань на стіні та в парах у впливі на навички Сепак сила з показником F 19,698 та значущістю 0,000 < 0,05. На підставі цих отриманих даних модель тренувань у парах із середнім показником 46,17 виявилася кращою, порівняно з моделлю тренувань на стіні, яка отримала середній показник 41,50. (2) Було встановлено статистично значущу різницю між високою та низькою рівновагою у впливі на навички Сепак сила, де висока рівновага була кращою із середнім значенням 46,33, порівняно з низькою рівновагою із середнім значенням 41,33. (3) Було встановлено наявність значущої взаємодії між моделями настінних тренувань і тренувань у парах із високою та низькою рівновагою у впливі на навички Сепак сила з показником F 130,251 та значущістю 0,000 < 0,05.

**Висновки.** Підсумовуючи, ми доходимо висновку, що модель парних вправ краща за модель вправ на стіні. Тому рекомендується використовувати парну тренувальну модель для зміцнення основних технічних навичок Сепак сила.

**Ключові слова:** парні вправи, Сепак сила, Сепак такро, учні першої середньої школи.

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