

The Effect of Training Method and Coordination on First Ball Receiving Skills in Sepaktakraw El efecto del método de entrenamiento y la coordinación en las habilidades de recepción del primer balón en Sepaktakraw

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Abstract. This study aims to determine the effect of the practice of passing through the wall individually and in pairs, high coordination and low coordination, the interaction effect between the practices of passing through the wall individually and in pairs and coordination (high and low) on the skills of receiving the first ball in the sepak takraw. This study is an experimental study using a 2 x 2 design. The research subjects were 24 student athletes of the PSTI Club, Sleman Regency. The data collection instrument used a measurement test. Data analysis using two-way Anova (Two Way Anova). The results showed that (1) there was a significant difference in the effect between the individual and paired methods of passing through the wall on the skills of receiving the first ball in the sepak takraw game. The practice method of passing to the wall in pairs is higher compared to the practice of passing to the wall individually on the skill of receiving the first ball in the sepak takraw game; (2) there is a significant difference in the effect of high coordination and low coordination on the skills of receiving the first soccer takraw ball. Athletes who have high coordination are better than low coordination on the skill of receiving the first takraw ball; and (3) there is a significant interaction between the individual and paired method of passing through the wall and coordination (high and low) on the skills of receiving the first ball of sepak takraw.

Keywords: Training method, coordination, the ability to receive the first ball

Resumen. Este estudio tiene como objetivo determinar el efecto de la práctica de atravesar la pared de forma individual y en parejas, la coordinación alta y baja, el efecto de interacción entre las prácticas de atravesar la pared de forma individual y en parejas y la coordinación (alta y baja) sobre las habilidades para recibir el primer balón en el sepak takraw. Este estudio es un estudio experimental que utiliza un diseño 2 x 2. Los sujetos de la investigación fueron 24 estudiantes atletas del PSTI Club, Sleman Regency. El instrumento de recolección de datos utilizó una prueba de medición. Análisis de datos mediante Anova bidireccional (Two Way Anova). Los resultados mostraron que (1) hubo una diferencia significativa en el efecto entre los métodos individuales y por parejas de pasar a través de la pared sobre las habilidades para recibir la primera pelota en el juego sepak takraw. El método de práctica de pasar a la pared en parejas es mayor en comparación con la práctica de pasar a la pared individualmente en la habilidad de recibir la primera pelota en el juego sepak takraw; (2) existe una diferencia significativa en el efecto de la alta y baja coordinación sobre las habilidades para recibir el primer balón de fútbol takraw. Los atletas que tienen una alta coordinación son mejores que una baja coordinación en la habilidad de recibir la primera pelota takraw; y (3) existe una interacción significativa entre el método individual y en pareja de pasar a través de la pared y la coordinación (alta y baja) en las habilidades de recibir la primera bola de sepak takraw.

Palabras clave: Método de entrenamiento, coordinación, capacidad para recibir el primer balón.

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Introduction

The development of the game Sepak Takraw, is now widely known by the public (Zarei & Ramkissoon, 2021; Nugroho et al., 2021). In the Special Region of Yogyakarta, Indonesia, each district/city already has a Sepak Takraw club. Success in playing Sepak Takraw, one of which is determined by the abilities or skills of the players (Jufrianis et al., 2021; Nasrulloh et al., 2020). A Sepak Takraw player must have basic skills and master the basic techniques of playing Sepak Takraw (Tan et al., 2022; Sutapa et al., 2020). Sepak Takraw players who do not have this ability will not be able to play Sepak Takraw well. The basic skills or techniques of Sepak Takraw are kicking using parts of the feet, playing the ball with the head (head playing), playing the ball with the chest, playing the ball with the thighs, and playing the ball with the shoulders (shoulder). Some of the basic techniques mentioned above, in the game Sepak Takraw is a unity that can not be separated or stand alone. The various basic techniques in Sepak Takraw are: Silat, kick horse, receive the ball with the thigh, chest, shoulder, heading, and treading (Aryanti, Victorian, & Bayu, 2021).

The Sepak Takraw game is played like a volleyball game, the game begins with a service kick or first kick in the double event, team, or quadrant game numbers (Irawan et al., 2021; Nasrulloh et al., 2021). The double event sepak takraw is played by two teams with two players per team, the inter-team game numbers are played by three people per team, and quadrants are played by four people per team (Kristiyanto et al., 2020). Service or first kick is the first kick to start the game, the opponent who receives the first kick tries to receive and play the ball and return it to the opponent (Nasrulloh et al., 2022). Each team may play the ball a maximum of three times, whether it is played by one player or with a teammate (Yudhistira et al., 2021). The first kick or kick off made by a player is generally done well and is considered an attack on the opposing team. The kick that is done as much as possible is difficult for the opponent to accept. Kicks can be done hard or slow, and placed into hard-to-reach areas of the opponent.

The skill of receiving the first ball from the first kick carried out by the opponent in the Sepak Takraw game is one of the skills that players really must master (Nopiyanto et al., 2021; Listyarini et al., 2021). This is because success

in receiving the first ball will greatly determine further ball control, if the player who receives the first ball does not succeed or the ball cannot be controlled (dead) then the opponent will easily get points or numbers (Sukendro et al., 2021; Ilham et al., 2021). The problems experienced by players, especially for students or beginners, as happened at the PSTI Sleman Regency club in receiving the first ball, are: (1) the ball cannot be received and controlled and dies alone or falls on its own court, (2) the ball is received and the bounce is far from the player but still within reach, (3) the ball is received but not in the player's possession and enters the opponent's court (Sutapa et al., 2021).

The success of the skill of receiving the first ball in the Sepak Takraw game is influenced by the mastery of basic techniques and physical conditions possessed by the player (Muazu Musa et al., 2020; Saifu et al., 2021). This is in accordance with the research of Rahmad (2020) that to play Sepak Takraw requires an excellent body and physical condition. To exercise, it is necessary to develop general physical conditions with regard to strength, endurance, speed, agility and flexibility (Nur & Syampurna, 2019; Nopembri et al., 2022). In particular, physical conditions include stamina, explosive power, reaction, coordination, speed, and balance (Hastuti et al., 2021). Coordination is one of the physical conditions that are generally needed in sports games, as well as in Sepak Takraw, it really requires coordination in carrying out these skill tasks (Asmawi, Hanif, & Bon, 2019; Hardianto et al., 2022). The coordination needed in the Sepaktakraw game is eye-hand-leg coordination (Astra & Artanayasa, 2017; Pratama et al., 2022). Coordination in the game of sepak takraw is absolutely necessary because there are many movements that must be carried out with good coordination (Kosni et al., 2017; Adji et al., 2022). For example, when a tekong controls the ball from the opponent's smash that is far from the body, the tekong must move quickly, precisely and the body must remain stable so that the ball can be saved (Yuniana et al., 2023; Salafi et al., 2022).

Efforts to improve control in receiving the first ball, of course, are needed. Forms of practice can be given to overcome problems in receiving the first ball (Utami et al., 2023; Kogoya et al., 2023). The introduction of the form of training methods that can be given is the method of passing bait training with the wall alone and the method of passing bait training with the wall simultaneously (Maseleno et al., 2016). The practice method of passing bait to the wall by itself is a form of exercise by bouncing onto the wall which can be adjusted in height and speed as a result of the passing made (Kubo et al., 2016). While the practice method of passing bait with a pair of walls, is a form of exercise by bouncing the ball to the wall which can be adjusted in height and speed as a result of passing made by a friend (Nugroho et al., 2022).

Through this exercise, it is hoped that the above-mentioned training method will contain the elements needed in receiving the first ball, which is an activity that emphasizes the player's need for skills in receiving the first

ball and positioning when receiving the ball, as well as intelligence in playing. Based on this background, the researchers wanted to conduct a study with the title "The Effect of Training and Coordination Methods on the Skills of Receiving the First Ball in the Game of Sepak Takraw". The remainder of this paper is organized as follows. Section 2 presents the materials and methods, Section 3 presents the results, Section 4 discusses the results, and finally Section 5 concludes the paper.

Materials and methods

Study participants

The type of research used in this study is the type of experiment with using a 2 x 2 design, which is a factorial experiment involving two factors, consisting of two levels using an initial test (pre-test) and a final test (post-test). Research time is June-August 2020. The research subjects were 24 student athletes of the PSTI Club in Sleman Regency, which were then classified into 4 groups which were randomized by random sampling technique, which were then sorted by ranking from the highest to the lowest coordination.

Study organization

This study uses a two-factor and two-level experimental design, the first factor is the manipulative variable is the training method and the second factor is the attributive variable, namely coordination. The training method here consists of the practice of passing to the wall individually and in pairs, while the attributive variables consist of high and low coordination.

Table 1.
Factorial Research Design

Exercise Method (A) Coordination (B)	Passing to Individual Wall Practice Bait Training	Passing to the Wall Pairing Practice Method
	Method (A1)	(A2)
High (B1)	A1B1	A2B1
Low (B2)	A1B2	A2B2

Information:

A1: The Practice Method of Passing to the Individual Wall

A2: Practice Bait Passing to the Wall in Pairs

B1: High coordination.

B2: Low coordination.

A1.B1: Groups of individual high-coordinated wall-passing drills.

A2.B1: The group of passing-to-pair bait exercises with high coordination.

A1.B2: Individual low-coordinated group of passing passes to the wall.

A2.B2: Pairs of low-coordinate pairs of passing to the wall bait practice.

Statistical analysis

The type of data obtained in this study is quantitative data, and the data obtained from the measurement of the coordination test and the first ball receiving skill test. The instrument for measuring coordination uses the Silat test from Husni Thamrin (2008) with a test validity of 0.668 and a reliability of 0.794. The instrument to measure the skill of receiving the first ball from Sulaiman (2011) with a validity of 0.547 and a reliability of 0.690. The data analysis technique used in this study used a two-way ANOVA at a significance level of = 0.05. Considering that research data

analysis was carried out using ANOVA, before arriving at the use of two-way ANOVA (Two Way Anova), it is necessary to test requirements, which include normality test, and variance homogeneity test.

Results

This research data is the result of measurements of the effect of training methods (bait passing to the wall individually and in pairs) and coordination on the skill of receiving the first ball. Measurement of data was carried out twice, namely before treatment (pretest) and after treatment (posttest) in each group, namely (1) group of high-coordinated individual wall-passing drills; (2) training group for passing to pairs with high coordination; (3) Groups of individual wall-passing drills with low coordination; and (4) the practice group of passing to the wall in pairs with low coordination.

Table 2.
Comparison of the Mean Value of Each Treatment Group

No	Treatment Group	Pretest Mean	Posttest Average	Enhancement
1.	High-coordinate individual-wall passing pass	16.17	20.50	4.33
2.	High-coordinate pair passing to the wall	16.17	25.17	9.00
3.	Low-coordinate individual-wall passing passes	13.33	18.67	5.33
4.	Low-coordinate pair passing to the wall	13.33	16.00	2.67

Based on Table 2, it is known that the average value of the skill of receiving the first ball during the pretest in the high-coordinate individual-wall passing group (A1B1) is 16.17, and the average value at the posttest is 20.50. In the high-coordinated individual wall passing group, there was an increase in the skill of receiving the first ball by 4.33. the average value of the skill of receiving the first ball during the pretest in the high-coordinate paired wall-passing group (A2B1) was 16.17, and the average value at the posttest was 25.17. In the high-coordination paired wall-passing group, there was an increase in the skill of receiving the first ball by 9.00.

The average value of the skill of receiving the first ball during the pretest in the low-coordinate individual-coordinated wall passing group (A1B2) was 13.33, and the average value at the posttest was 18.67. In the low individual-coordinated wall passing group, there was an increase in the skill of receiving the first ball by 5.33. The average value of the skill of receiving the first ball during the pretest in the low-coordination paired-coordinated wall-passing group (A2B2) was 13.33, and the average value at the posttest was 16.00. In the low-coordination paired wall-passing group, there was an increase in the skill of receiving the first ball by 2.67.

Normality Test

The normality test of the data was carried out using the Shapiro-Wilk. The reading of the data results is said to be normal if the p value (Sig.) > 0.05. The results of the normality test are shown in Table 3.

Table 3.
Normality Test Results

Treatment Group	Receiving the ball	Statistic	Sig.	Information
High-coordinate individual-wall passing pass	Pretest	0.866	0.212	Normal
	Posttest	0.861	0.191	Normal
High-coordinate pair passing to the wall	Pretest	0.866	0.212	Normal
	Posttest	0.866	0.212	Normal
Low-coordinate individual-wall passing passes	Pretest	0.822	0.091	Normal
	Posttest	0.640	0.091	Normal
Low-coordinate pair passing to the wall	Pretest	0.822	0.091	Normal
	Posttest	0.853	0.617	Normal

Based on Table 3, the results of the statistical analysis of the normality test using the Shapiro-Wilk test, in all the pretest and posttest data on the skills to receive the first ball, the results of the normality test obtained a significance value of $p > 0.05$, which means the data is normally distributed.

Homogeneity Test

To test the homogeneity of the similarity of variance between the data to the treatment group using the F-test, which compares the largest variance with the smallest variance. The results of the homogeneity test are shown in Table 4.

Table 4.
Homogeneity Test Results

Data	F	df1	df2	Sig.
Ball receiving skills	0.401	3	20	0.754

Based on Table 4, the results of the statistical analysis of the homogeneity test using the Levene Test. The calculation results obtained a significance value of 0.754 > 0.05. This means that the data group has a homogeneous variance. Thus the research subjects have the same variant or homogeneous.

Hypothesis Test

This study proposes 3 research hypotheses. Hypothesis testing in this study using the Two Way Anova test.

First Hypothesis Testing

The first hypothesis in this study is "There is a significant difference in the method of passing to tembo bait training individually and in pairs affecting the skills of receiving the first ball in the sepak takraw game. The results of the first hypothesis test can be seen in table 5.

Table 5.
Results of the First Hypothesis ANOVA Test

Source	Type III Sum of Squares	f	Mean Square	F	Sig.
Exercise Method	6.000	1	6.000	7.500	0.013

Based on the results of the Two Way Anova test in Table 5, the significance value of p is 0.013 and the F value is 7.500. Because the significance value of p is 0.013 < 0.05, it means that H0 is rejected. Thus, there is a significant difference between the individual and paired method of passing through the wall on the skill of receiving the first ball in the sepak takraw game.

Second Hypothesis Testing

The second hypothesis in this study is "There is a significant difference in coordination affecting the skills of receiving the first ball in the takraw game". The results of the second hypothesis test can be seen in table 6.

Table 6.

Results of the Second Hypothesis ANOVA Test.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Coordination	42.667	1	42.667	53.333	0.000

Based on the results of the Two Way Anova test in Table 6, the significance value of p is 0.000 and the F value is 53.333. Because the significance value of p is $0.000 < 0.05$, it means that H_0 is rejected. Based on this, it means that there is a significant difference between athletes who have high coordination and low coordination on the skills of receiving the first ball in the sepak takraw game.

Third Hypothesis Testing

The third hypothesis in this study is "There is a significant interaction between training methods and coordination on the skills of receiving the first ball in the sepak takraw game. The results of the third hypothesis test can be seen in table 7.

Table 7.

Results of the Third Hypothesis Two Way Anova Test.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Method Exercise				100.83	0.000
* Coordination	80.667	1	80.667	3	

Based on the results of the Two Way Anova test in Table 7, the significance value of p is 0.000 and the F value is 100.833. Because the significance value of p is $0.000 < 0.05$, it means that H_0 is rejected. Based on this, it means that the hypothesis which states that there is a significant interaction between the practice of passing through the wall individually and in pairs and coordination (high and low) on the skills of receiving the first ball in the sepak takraw game, has been proven.

Discussion

The development of the early soccer carried out by Tekong experienced rapid development (Kaharuddin et al., 2016; Trisnadi et al., 2023). The early soccer kick was carried out with various variations and was carried out with high technique (Amran et al., 2023). The first kick is not just a kick to start the game, but also as the first attack from the opponent and allows you to easily get points (Kauki et al., 2024). The kick is done with a high technique, causing the receiver to have difficulty in returning the ball. The first receiving player or defender is expected to be able to anticipate and be aware of the opponent's initial kick technique, in order to anticipate and be able to return the ball, so as not to lose points due to not being able to return the opponent's kick.

The skill of receiving the first ball in the game of sepak takraw is a basic technique that plays an important role (Trisnadi et al., 2024). This is because the athlete must be

able to receive the first ball served from the opponent which tends to be the first attack aimed at scoring points as quickly as possible. In addition, nowadays the game of sepak takraw has developed that the service varies and becomes the first attack process and is carried out sharply falling into the opponent's area so that the opponent has difficulty receiving the first ball. The ability to receive the first ball is very important so that the team receiving the serve can play the ball and turn to attack (Maselena & Hasan, 2015; Pratama et al., 2024).

The practice of receiving the first ball, or the opponent's serve ball, is a very important exercise for every player, considering that this technique is not only important in the game but is one of the most difficult techniques to master. Players who don't learn to anticipate the first kick ball, then the opposing team will easily win the game just by kicking the ball. The game is fast paced, because imperfection in receiving the first ball causes a boring and unpleasant game. Receiving the first ball is said to be successful if the ball can be received perfectly with all limbs except the hands, the ball is received by bouncing it upright not far from the body, and the minimum height of the ball is attempted above the recipient's head, this is so that the ball can be played by the next team to arrange an attack. back to the opposing team (Mubin et al., 2015; Arifin et al., 2024).

The training method for the skill of receiving the ball, can also be done with reflection against the wall/wall. Hasanuddin et al. (2015) explains that there are practice method of passing bait to the wall independently and training method bait passing with the wall in pairs. According to the results of the study, it was shown that the practice method of passing to the wall in pairs was higher (good) compared to the practice of passing to the wall individually on the skill of receiving the first ball in the sepak takraw game. Furthermore, coordination is one of the physical conditions that are generally needed in sports games, as well as in the Sepak Takraw game that really requires coordination in carrying out these skill tasks. The coordination needed in the Sepaktakraw game is eye-hand-leg coordination (Rezaei et al., 2013; Salafi et al., 2023). Coordination in the game of sepak takraw is absolutely necessary because there are many movements that must be carried out with good coordination, for example in the skill of receiving the first ball. According to the results of the study, it was shown that athletes who had high coordination were better than low coordination on the skills of receiving the first takraw ball.

Conclusions

Based on the results of research and data analysis that has been carried out, the following conclusions are obtained; *Firstly*, There is a significant difference in the effect between the individual and paired methods of passing through the wall on the skill of receiving the first ball in the sepak takraw game. The training method of passing to the wall in pairs is higher (good) compared to the method of training to pass

to the wall individually on the skill of receiving the first ball of sepak takraw. Then, there is a significant difference in the effect between athletes who have high coordination and low coordination on the skills of receiving the first ball in the sepak takraw game. Athletes who have high coordination are better than low coordination on the skill of receiving the first soccer ball. *Lastly*, there is a significant interaction between the practice of passing through the wall individually and in pairs and coordination (high and low) on the skills of receiving the first ball in the sepak takraw game. Couples who have interactions or partners that are significantly different (significantly).

The group of athletes who were trained using the cross-to-wall bait training method with high coordination was better than the athletes trained using the individual wall-passing training method with high coordination, with a p value of <0.05 . The group of athletes who were trained using the pass-to-wall training method individually with high coordination was better than the group of athletes who were trained using the pair-wall-passing training method with low coordination, with a p value of <0.05 . The group of athletes who were trained using the paired pass-to-wall training method with high coordination was better than the group of athletes who were trained using the individual wall-passing training method with low coordination, with a p value of <0.05 . The group of athletes who were trained using the paired pass-to-wall training method with high coordination was better than the group of athletes who were trained using the pair-wall-passing training method with low coordination, with a p value of <0.05 . The group of athletes who were trained using the pass-to-wall training method individually with low coordination was better than the group of athletes who were trained using the pair-wall-passing training exercise method with low coordination, with a p value of <0.05 .

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Conflict of interest

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