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Analysis of Multiball and Pair Training on The Forehand Drive Accuracy of Table Tennis Athletes of The Anjam Slawi Club

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Abstract

The purpose of this study was to determine which training had a greater effect on the accuracy of forehand drive shots in Anjam Slawi Club athletes, whether multiball training or pair training. The type of research used was an experimental study with a pretest-posttest design. The research population was 10 Anjam Slawi Club athletes, with a sample of 10 athletes using a saturated sampling method. This study was divided into 2 groups, multiball and pair training, each group consisting of 5 athletes. Multiball training was measured with 50 balls for 5 minutes, where the subject hit the ball using a forehand drive towards the target, and the score was determined based on the number of balls that entered the target. Pair training was carried out by hitting with an opponent like a match for 5 minutes. The Wilcoxon test showed that multiball training 0.43 and pair training 0.43 had a significant effect ($p < 0.05$). In the T test, the mean value of the multiball pretest was 147.40 and the multiball posttest was 175.80 with a difference of 28. As well as the mean value of the paired training pretest was 141.00 and the paired posttest was 163.60 with a difference of 22. If seen from the difference in the mean value of multiball and paired training, it can be concluded that multiball training has a greater influence on improving forehand drive strokes in Anjam Slawi Club athletes. Thus, this study suggests using the multiball training method.

How to Cite

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INTRODUCTION

Table tennis is a racket sport played by two players (singles) or four players (doubles) on a table with a net as the boundary line of the opponent's court. Table tennis is a small ball game that is included in the competitive sports. This sport uses a rubber-coated racket as a bat, because this sport is basically a type of sport whose technique is hitting with a racket or bat. A table tennis racket consists of a wooden board (bat) covered with rubber on one or both sides. The types of rubber used are very diverse, such as pips-in (plain rubber), pips-out (outer pimpled rubber), and long pips (long pimples), each of which has a different effect on the ball. A table tennis racket consists of a wooden board (bat) covered with rubber on one or both sides. The types of racket used are very diverse, such as pips-in (plain rubber), pips-out (outer pimpled rubber), and long pips (long pimples), each of which has a different effect on the ball (Jia et al., 2025). Striking techniques are used more frequently in table tennis. Because table tennis is essentially a hitting sport, striking techniques are used more frequently in table tennis (Penebangan et al., 2024).

Drive is a type of stroke that has the least friction, a drive stroke is also called a lift which is the basis of various types of attack strokes (Ewan Irawan, 2019). Forehand drive is a basic skill in table tennis, this is reinforced by the statement According to (Atmaja dan Tomoliyus 2015). Forehand drive is a shot that is made when the ball is on the right side of the player's body (Tomoliyus, 2017:58). The forehand drive is a very important stroke in table tennis. It is also very frequently used in table tennis because it is used to attack the opponent's defense (Santosa et al., 2024).

The accuracy of the forehand drive is a very important component in a match because the accuracy of the shot can be used to kill the opponent (winning point) (Atmaja & Tomoliyus 2015). When an athlete has good forehand drive technique, it becomes the most lethal technique for targeting an opponent's weaknesses. Forehand drive accuracy is closely related to maturity and frequency of practice (Waluya et al., 2019). Improving the accuracy of your forehand drive requires specific, regular, and programmed practice. Multiball drills and paired drills are particularly effective for developing forehand drive accuracy in table tennis.

Multiball is a training program that is useful for improving the ability and quality of hitting. By doing this program, the coach can adjust the pass or design the speed and accuracy of the ball according to his wishes, while the athlete can feel the hit that is being trained. (Kadeira 2021). In an effort to improve the quality of the Drive shot, athletes must have a good training program as a form of training such as the Multiball program for athletes (Mahyudi, 2007). This method is very effective for improving or developing the accuracy of strokes in table tennis games (Mongsidi et al., 2023). This multiball training method emphasizes hitting frequency, allowing athletes to become accustomed to hitting the ball at the intended target. Multiball is also effective in improving other shots that require precision (forehand push, forehand smash), reinforcing the method's excellent performance in attacking shot accuracy (Aulia et al., 2023).

Pair training is also crucial for athletes to improve their shot accuracy. This type of training is similar to a real-life table tennis game, where the opponent acts as a control or active aid (M. Sahib Saleh, 2020). Pair training allows small groups to work together to build sporting relationships or perform complex activities that cannot be done in large groups (Waluya et al., 2019). A good coaching process can provide effective training for athletes, therefore, a good coaching process can improve the quality and performance of athletes. In addition to good training, coaching is also very important for an athlete. With the right coaching process, the right training pattern will be established, allowing athletes to improve their playing abilities.

Observations have shown that the accuracy of forehand drives for Anjam Slawi Club athletes is still not optimal. Sometimes, athletes are still unable to direct their forehand drives, making it easier for their opponents to return their attacks. Some athletes also frequently make mistakes when executing forehand drives, particularly with improper body positioning and incorrect stance. Furthermore, they often hit too hard, often resulting in the ball going out of the target area. Another problem is the lack of research to determine the accuracy of forehand drives and the effect of multiball training and pair training on forehand drive accuracy among Anjam Slawi Club athletes.

This problem occurred among the athletes at Club Anjam Slawi, necessitating a solution to the problems experienced by the players, with the goal of improving their abilities and achieving success. Athletes' success requires systematic and systematic training (Media et al., 2019). One way to address this issue is through multiball and pair training to identify and improve forehand drive strokes in table tennis athletes at the Anjam Sla-

wi Club. Given these challenges, researchers are interested in conducting an experiment aimed at improving the accuracy of forehand drive strokes.

METHODS

The method in this research is an experimental research method with a relationship between two causal elements that cause changes in other factors. (Sugiyono, 2020) explains that the experimental research method can be interpreted as a research method used to find the effect of certain treatments on others under controlled conditions. In this study, the researcher used a pretest-posttest design with a sample of 10 athletes from the Anjam Slawi Table Tennis Club. The study was conducted with a training program that had to be implemented by two sample groups. By comparing the two groups, the "additional" improvement in the experimental group can be attributed to the training program (Dong et al., 2025). Each sample group received treatment for 12 sessions, three times a week.

A research design is needed to serve as a reference to simplify the steps involved. It also serves as a flow and guideline to ensure the research meets expectations.

This study used a static pretest-posttest research design with a population of 10 athletes at the Anjam Slawi Club. The sample used in this study was 10 athletes. The number of samples taken from this population used a saturated sampling technique, which is a nonprobability sampling technique. The researcher used nonprobability purposive sampling because what is important is not random representation, but all those who meet the research criteria (Rabbi et al., 2023). As explained by Sugiyono (2015: 122), "Nonprobability sampling is a sampling technique that does not provide an equal opportunity for each element or member of the population to be selected as a sample." One such sampling technique is saturation sampling. Sugiyono (2015: 124) explains that "Saturation sampling is a sampling technique where all members of the population are used as samples." This is often done when the population is relatively small, less than 30 people, or when research aims to make generalizations with very small errors. This study used primary data. Primary data was obtained directly during field sampling, and the results cannot be generalized and can only describe conditions at that time.

According to Tomoliyus (2017), the table tennis forehand drive accuracy test instrument has high content validity (CVR = 0.99) and reliability of 0.95. The table was marked with two targets: 30 cm x 30 cm and 60 cm x 60 cm. Pretest and posttest data collection was conducted by feeding 50 balls to the subjects. The subjects aimed the balls at the target using forehand drives. The total score was obtained by hitting 50 forehand drives that hit the target.

The data analysis used in this study was a t-test. To verify the validity of the sample, normality and homogeneity tests were performed. The data analysis technique used in this study was a t-test to determine whether the data were normal or not. If the data were not normal, a non-parametric test was required. Furthermore, a homogeneity test was also performed to determine whether the data were homogeneous.

RESULTS AND DISCUSSION

This study was conducted to determine the effect of multiball and paired training on forehand drive accuracy and to determine which training method had the most significant effect on improving forehand drive accuracy for athletes from Club Anjam Slawi 2025. Data analysis used in this study was non-parametric. Normality and homogeneity tests were performed to verify sample validity.

Table 1. Pre-test and post-test results of multiball and pair training on forehand drive accuracy

Name	Multiball Training		Name	Pair Training	
	Pre Test	Post Test		Pre Test	Post Test
X1	165	182	Y1	165	173
X2	160	187	Y2	149	173
X3	157	169	Y3	145	161
X4	131	178	Y4	142	152
X5	124	163	Y5	104	159

Table 2. Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Deviation
Pretest Multiball	5	124	165	147.40	18.555
Posttest Multiball	5	163	187	175.80	9.731
Pretest Paired	5	104	165	141.00	22.506
Posttest Paired	5	152	173	163.60	9.209

Source: 2025 Research

The **Table 2** above shows that before receiving treatment in the multiball group, the forehand drive precision test had an average score of 147.40 with a standard deviation of 18.555, with the highest score being 165 and the lowest score

being 124. After receiving multiball training, the maximum forehand drive test score was 187 and the lowest score was 163. The standard deviation was 9.731, and the average was 175.80.

In the pairs group, before receiving treatment, the highest forehand drive precision test score was 165 and the lowest score was 104, while the average score was 141.00 with a standard deviation of 22.506. After receiving pair training, the highest forehand drive test score was 173 and the lowest score was 152. The standard deviation was 9.209, and the average was 163.60.

Table 3. Normality test for Multiball and paired exercises

Variable	Sig. (p)	Description
Pretest Multiball	0,169	Significant
Posttest Multiball	0,200	Significant
Pretest Pair	0,110	Significant
Posttest Pair	0,200	Significant

Source: 2025 Research

The normality test results in the **Table 3** above show that the pretest score for multiball training on forehand drive accuracy for Anjam Slawi Club athletes has a significant value of 0.169 and is considered normal because the Kolmogorov-Smirnov normality test value is greater than α = 0.05 (sig>0.05). Meanwhile, the posttest score is 0.200, which is greater than α = 0.05 (sig>0.05), thus categorizing the data as normal. The hypothesis of normally distributed data is accepted because both values come from normally distributed populations. Thus, the normality of distribution can be stated.

From the normality test results in the table above, it can be concluded that the pretest score for paired training on forehand drive accuracy for Anjam Slawi Club athletes has a significant value of 0.110, which is greater than α = 0.05 (sig>0.05), indicating normality. The posttest score also has a significant value. 0.200, which is greater than a = 0.05 (sig>0.05), indicating that the value is normal, based on the results of the normality test in the table above. Therefore, it can be concluded that both data come from normally distributed populations. Therefore, the hypothesis stating that the data are normally distributed is accepted and the data normality is met.

The pretest and posttest in the Multiball exercise had normal values according to the Kolmogorov-Smirnov normality test. The pretest and posttest in the paired exercise were also categorized as normal. In this case, parametric tests can be performed because all data are considered normal. Unless the data are non-normal, non-parametric tests cannot be performed.

Based on the Pretest Homogeneity Test, the significant value (sig) is known based on the mean of 0.902 > 0.05 so it can be concluded that the initial test data (Pre-test) from multiball training and pair training are homogeneous or the same. Based on the Posttest Homogeneity Test, the significant value (sig) based on the mean is 0.902 > 0.05, so it can be concluded that the final test data (post-test) from multiball training and pair training are homogeneous or the same.

Hypothesis 1 in this study states that the multiball training approach has a significant influence on increasing the accuracy of the forehand drive stroke of the table tennis athletes of Club Anjam Slawi 2025. The Wilcoxon test is used to test the hypothesis in the following way **Table 4.**

Table 4. Wilcoxon Multiball Exercise Test

Statistic	Value	Statistic
Z	-2,023	Z
Sig.	0,043	Sig.

Source: 2025 Research

Asymp. Sig. (2-tailed) > 0.05, Ho is accepted and H1 is rejected.

Asymp. Sig. (2-tailed) < 0.05, Ho is rejected and H1 is accepted.

The **Table 4** above shows that Ho is rejected and H1 is accepted because the significance value of 0.043 is less than 0.05. It can be concluded that multiball training significantly improved the forehand drive accuracy of the 2025 Anjam Slawi Club athletes, as data analysis showed a significant difference between the forehand drive accuracy results before and after multiball training..

Hypothesis 2 in this study shows that pair training has a significant effect on increasing the accuracy of forehand drive strokes of Club Anjam Slawi 2025 athletes. The Wilcoxon test was used to evaluate this hypothesis, and the results are as follows **Table 5.**

Table 5. Wilcoxon Paired Exercise Test

Statistic	Value	Statistic
Z	-2,023	Z
Sig.	0,043	Sig.

Source: 2025 Research

Asymp. Sig. (2-tailed) > 0.05, Ho is accepted and H2 is rejected.

Asymp. Sig. (2-tailed) < 0.05, Ho is rejected and H2 is accepted.

Based on the **Table 5** above, the signifi-

cance value of 0.043 is less than 0.05, so it can be concluded that Ho is rejected and H2 is accepted. Based on the data analysis, there was a significant difference between the forehand drive results before and after pair training. Therefore, it can be concluded that pair training has a significant effect on improving the forehand drive strokes of the 2025 Anjam Slawi Club athletes.

Hypothesis 3 in this study states that the multiball training method has a more significant effect than pair training on improving the accuracy of forehand drives of Anjam Slawi Club athletes. To test this hypothesis, an n-gain test was conducted with the following test results **Table 6.**

Table 6. Paired Sample Test

	Variable	Sig. (p)	Description
Pair 1	Pretest Multiball Postest Multibal	0,012	Significant
Pair 2	Pretest Pair Postest Pair	0,058	Significant

Source: 2025 Research

Based on the **Table 6** above, it can be seen that the average difference between the pretest and posttest is with a sig value (2-tailed) of 0.000. The results of the t-test (Paired Sample Test) show that there is a significant difference in value between the pretest and posttest data if the sig value (2-tailed) is <0.05. If the sig value. (2-tailed) > 0.05, then there is no significant difference between the pretest and posttest in multiball and paired exercises on multiball accuracy. In the results of the t-test above, it can be seen that the sig. Multiball exercise (2-tailed) is 0.012 and paired is 0.002 <0.058, so it can be concluded that the results of the difference between the experimental posttest and control pretest scores indicate that there is a significant difference.

Table 7. T-Test

	Variable	Sig. (p)	Description
Pair 1	Pretest Multiball	147,40	Increase
	Posttest Multiball	175,80	
Pair 2	Prettest Pair	141,00	Increase
	Posttest Pair	163,60	

Source: 2025 Research

Table 9. In the pretest of multiball training, the average score at the beginning of the experiment was 147.40, while the posttest of multiball training showed an average score of 175.80. This indicates an increase in positive changes in the experimental group after being given treatment. The positive increase in the experimental group occurred because they received a more targeted intervention than the control group (Chadjikyprianou & Constantinidou, 2025). In the pair training, the average pretest score was 141.00. And for the average score for the posttest of pair training, it was 163.60. The results for both showed the same increase, but it can be concluded that multiball training had a greater effect on forehand drive strokes in athletes from Club Anjam Slawi.

According to research findings, athletes from the Anjam Slawi Table Tennis Club significantly improved their forehand accuracy using both multiball and paired training techniques. However, each approach contributed differently depending on the athlete's reaction time and training conditions (Zhang, 2022). Multiball drills have been shown to improve forehand drive strokes (Fadjri et al., 2024). Compared to shadow training, multiball training also provides greater improvements (Aulia et al., 2023). Multiball training, which was more effective in increasing stroke frequency and intensity, allowed athletes to practice more in a relatively short time. This training improved concentration, reaction speed, and shot accuracy using a variety of balls provided by the coach (Yao, 2024). This naturally boosted athletes' returns, particularly forehand drives. Furthermore, pair training emphasizes tempo and teamwork (in pair training, both athletes have more time to adjust their technique and control the ball, similar to a typical match) (Aulia et al., 2023).

Pair training improves forehand drive accuracy because athletes can sense the opponent's playing patterns and ball bounce (Langitan, 2018). Research indicates that multiball training is more effective in improving forehand drives than pair training. Multiball training emphasizes greater intensity and repetition, accelerating the athlete's technique adjustment process. Pair training also has a significant impact, but it focuses more on the athlete's understanding of game tactics and coordination during competition (Pane et al., 2021).

Therefore, a combination of these two methods is crucial to maximize the athlete's playing style during competition. Overall, this study confirms that both training methods are equally effective in improving forehand drive accuracy, but multiball training provides more optimal results. Therefore, coaches are advised to prioritize multiball training as the primary method for developing forehand drive technique, without neglecting pair training as a complement to improve athlete readiness for competition situations.

CONCLUSION

Based on the results of data analysis and a series of statistical tests conducted, it can be concluded that the training program provided had a positive impact on improving forehand drive technique skills in athletes from Club Anjam Slawi in 2025. The research findings showed that multiball training had a good effect on improving forehand drive accuracy. This indicates that the multiball method can help athletes hone movement consistency, reaction speed, and shot accuracy through high repetition frequency and controlled variations in ball direction. With intensive and structured training conditions, athletes become more accustomed to adjusting body position, timing, and shot angle optimally.

Furthermore, partner training has also been proven to have an a effect on improving forehand drive accuracy. This method allows athletes to practice in situations that more closely resemble real-life game conditions, thereby improving their ability to read the ball's direction, coordinate with their opponent, and make decisions when hitting. Direct interaction with a training partner also contributes to training concentration and technical stability during rallies. However, the comparison results show that multiball training has a greater effect than partner training in improving forehand drive accuracy. The advantages of multiball training lie in the higher intensity of the training and the coach's full control over the tempo and ball variations, allowing athletes more opportunities to repeat specific techniques. This allows for a more effective movement learning process and a focus on correcting technical errors.

Overall, this study confirms that both training methods are equally effective in improving forehand drive accuracy, but multiball training provides more optimal results. Therefore, coaches are advised to prioritize multiball training as the primary method in developing forehand drive technique, without neglecting partner training as a complement to improve athlete readiness in match situations.

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