COMPETITOR:
JURNAL PENDIDIKAN KEPELATIHAN OLAHRAGA
e-ISSN: 2657-0734 & p-ISSN: 2085-5389 || Volume 17, Number 3, 2025 || P.2128-2135

The Effect of Conventional Training Methods And Varied Training Methods On The Forehand Ability of Table Tennis Athletes

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ABSTRACT

The purpose of this study is to determine the influence of conventional training methods and varied training methods on the forehand spin stroke skills of table tennis athletes at PTM Orbit Jaya Makassar. This research employed a quantitative method with an experimental design involving two groups of athletes. Each group consisted of seven male participants, with one group receiving conventional training and the other receiving varied training. Pre-test and post-test assessments were conducted to measure the athletes' skill improvement. Data were analyzed using descriptive statistics and inferential analysis, including normality testing, homogeneity testing, and t-tests. The results showed that both training methods significantly improved the athletes' forehand spin stroke skills. However, the group receiving varied training achieved a higher average post-test score compared to the group trained with the conventional method. These findings suggest that while both methods are effective, varied training contributes more substantially to improving athletes' performance. It can be concluded that the implementation of both conventional and varied training methods has a significant positive impact on the forehand spin stroke skills of table tennis athletes at PTM Orbit Jaya Makassar.

ARTICLE HISTORY
Received: 2025/07/03
Accepted: 2025/07/25
Published: 2025/10/02

KEYWORDS
Conventional Training;
Varied Training;
Forehand Spin,;
Stroke Skills;
Table Tennis..

AUTHORS' CONTRIBUTION
A. Conception and design of the study;
B. Acquisition of data;
C. Analysis and interpretation of data;
D. Manuscript preparation;
E. Obtaining funding

Cites this Article : Sahrir, Muh; Hudain, Muh. Adnan; Amahoru, Nurul Musfira; Sudirman; Ishak, Muhammad. (2025). The Effect of Conventional Training Methods And Varied Training Methods On The Forehand Ability of Table Tennis Athletes. **Competitor: Jurnal Pendidikan Kepelatihan Olahraga**. 17 (3), p.2128-2135

INTRODUCTION

Table tennis, often viewed as a casual game, is actually a sport rich in physical and psychological benefits. Besides being an effective cardio workout, it can also serve as physical therapy, improving motor coordination and concentration (Kamal, 2022). As an indoor game, table tennis can be played either singles or doubles, using a rubber-coated wooden bat, a small ball, and a table divided by a net (Solihin, 2020). This sport is known for its dynamic nature and ability to stimulate both the body and mind simultaneously.

One of the essential techniques in table tennis is the forehand stroke. According to Batubara (2019), the forehand stroke is known as a swinging motion with the racket open.

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This stroke is executed with the ball on the right side of the body, with the elbow at a 90-degree angle and the hand moving forward, without excessive wrist or shoulder movement. Mastering this technique requires structured practice and consistent repetition.

Table tennis encompasses various basic techniques such as the push, drive, spin, smash, and serve. These techniques are grouped into defensive, offensive, and serving strokes (Jayanti & Odebaadia, 2018). Developing these basic techniques requires intensive, targeted training that adheres to the principle of progressive overload. Effective training is not only structured but also fosters motivation and variation throughout the process.

However, field observations indicate that many obstacles remain, particularly among athletes at PTM Orbit Jaya Makassar. Common obstacles include limited facilities and infrastructure, low motivation to practice, a lack of understanding of basic table tennis techniques, and a tendency toward monotony in training methods. Furthermore, many physical education teachers and coaches still use repetitive training methods without innovation, making the training process less effective (Islamy & Nila F, 2017).

In addition to training methods, achievement motivation is also a crucial factor in achieving optimal learning outcomes. This motivation plays a role in encouraging athletes to practice and maintain their participation in the learning process. Therefore, a combination of appropriate training methods and approaches that increase motivation is essential to optimise the improvement of forehand stroke skills.

METHODS

This research is a quantitative research approach with a true experimental design. The main objective of this study was to determine the effect of conventional and varied training methods on the forehand spin ability of table tennis athletes at PTM Orbit Jaya Makassar. The research design used a pretest-posttest control group design, in which subjects were randomly divided into two groups: an experimental group with varied training methods and a control group with conventional training methods.

Table 1.
Research Design

Group	Pre test	Treatment	Post test
Experiment (E)	A1	X1	A2
Control (C)	B1	X2	B2

The subjects in this study were all 14 male athletes at PTM Orbit Jaya Makassar. The sampling technique used was total sampling, so the entire population was sampled. Each group consisted of seven athletes.

The research procedure was carried out in four stages: (1) a pretest to determine initial forehand spin ability, (2) treatment for 16 sessions over four weeks, (3) a posttest to determine improvement in ability after treatment, and (4) data analysis.

The instrument used was a forehand stroke skill test that covered three assessment aspects: preparation, implementation, and completion. Scores were assigned based on indicators in each aspect, with a value range of 1–3.

The data analysis techniques used included descriptive and inferential statistics. Hypothesis testing was conducted using t-tests using SPSS software, after first conducting prerequisite tests such as normality and homogeneity tests. This analysis was conducted to determine the effect of each training method and to compare the effectiveness of conventional and varied training methods.

RESULTS AND DISCUSSION

Result

The following descriptive data provides an initial overview of the conditions of each group before and after treatment. The experimental group received varied training, while the control group received conventional training. This data was obtained from the results of the pretest and posttest, which were then analysed statistically.

Table 2.

Description of Forehand Shot Ability Scores (Pretest–Posttest)

Group	Number of Samples	Total Score	Mean	Standard Deviation	Range	Minimum Score	Maximum Score	Variance
A1	7	88	12.57	1.812	5	10	15	3.28
A2	7	114	16.28	1.799	5	13	18	3.23
B1	7	105	15.00	2.309	6	12	18	5.33
B2	7	183	26.14	1.345	4	24	28	1.34

The results of Table 2 above show the forehand stroke ability of table tennis athletes from PTM Orbit Jaya Makassar, as follows:

The initial test data before the Conventional Training Method on the forehand stroke ability of table tennis athletes from PTM Orbit Jaya Makassar, from 7 samples, obtained a total score of 88, an average of 12.57, a variance of 3.28, a standard deviation of 1.812, a range of 5, a maximum score of 15, and a minimum score of 10.

The final test data after the Conventional Training Method on the forehand stroke ability of table tennis athletes from PTM Orbit Jaya Makassar, from 7 samples, obtained a total score of 114, an average of 16.28, a variance of 3.23, a standard deviation of 1.799, a range of 5, a maximum score of 18, and a minimum score of 18.

The initial test data before the Varied Training Method on Forehand Stroke Ability Table tennis athletes from PTM Orbit Jaya, from seven samples, obtained a total score of 105 with an average of 15.00, a variance of 5.33, a standard deviation of 2.309, a range of 6, a maximum score of 18, and a minimum score of 12.

The final test data after administering Varied Training on the Forehand Hitting Ability of Table Tennis Athletes from PTM Orbit Jaya, from seven samples, obtained a total score of 183 with an average of 26.14, a variance of 1.34, a standard deviation of 1.345, a range of 4, and a maximum score of 28 and a minimum score of 24.

The descriptive data analysis presented provides only an illustration of the forehand hitting ability of table tennis athletes from PTM Orbit Jaya Makassar before and after implementing the Conventional and Varied Training Methods. The data presented above does not yet demonstrate the relationship between the Conventional and Varied

Training Methods and the Forehand Hitting Ability of PTM Orbit Jaya Makassar Table Tennis Athletes. To verify the forehand hitting ability of PTM Orbit Jaya Makassar Table Tennis Athletes who participated in the Conventional and Varied Training Methods, data processing is required. This begins with determining whether the sample data is normal. Then, a homogeneity test is conducted. Once the two prerequisite tests are met, a T-test or hypothesis test is conducted.

From the table above, it can be concluded that there was an increase in the average scores in both groups, the control and the experimental groups. However, a greater increase was observed in the experimental group. This group showed an average increase from 15.00 to 26.14, with a decrease in the standard deviation from 2.309 to 1.345, indicating consistency in the results.

Before conducting the hypothesis test, prerequisite tests were conducted, including normality and homogeneity tests. The normality test was conducted using the Lilliefors method at a significance level of 0.05. A normality test was conducted to evaluate the distribution of the data on the Forehand Stroke Ability of PTM Orbit Jaya Makassar Table Tennis Athletes. The Liliefors Test was used to determine the extent to which the data were normally distributed (Kadir, 2010:108), at a significance level of α = 0.05. The complete data on Forehand Stroke Ability are as follows:

First, the results of the normality test calculation for the initial Conventional Training test on Forehand Stroke Ability, where n = 7, obtained Lh = 0.226 and Lt (0.05) = 0.200. Therefore, because Lh is smaller than Lt (0.05), it can be concluded that the initial data on Forehand Stroke Ability of PTM Orbit Jaya Makassar Table Tennis Athletes came from a normally distributed population.

Second, the results of the normality test for the initial test of Varied Exercises on Forehand Hitting Ability, where n = 7, obtained Lh = 0.172 and Lt (0.05) = 0.200. Therefore, because Lh is smaller than Lt (0.05), it can be concluded that the initial data for Forehand Hitting Ability of PTM Orbit Jaya Makassar Table Tennis Athletes comes from a normally distributed population.

The test results show that the calculated Liliefors value is smaller than the Liliefors table value, so it can be concluded that the data is normally distributed.

Table 3.
Summary of Normality Test Results

Groups	N	Lh	Lt (0,05)	Description
A1	7	0.226	0.200	Normal
B1	7	0.172	0.200	Normal

A homogeneity test is then performed to determine whether the variances between the groups are equal. The homogeneity test is a crucial step in statistical data analysis, particularly in research with an experimental design involving two or more groups. This test aims to determine whether the variances or distributions of the data between the groups being compared have a significant level of similarity. In the context of this research, the homogeneity test is used to evaluate whether there is a similarity in variance between the two treatment groups—the group given the conventional training

method (A) and the group given the varied training method (B)—on the variable of forehand stroke ability of table tennis athletes at PTM Orbit Jaya Makassar.

This step is crucial because the homogeneity test will determine the appropriateness of using further parametric tests, such as the t-test. If the variances between the two groups are homogeneous or equal, the statistical analysis used can be guaranteed to produce valid and reliable results. Conversely, if the variances between the two groups are not homogeneous, consideration should be given to using non-parametric statistical analysis methods or test modifications.

In this study, a homogeneity test was conducted using the variance comparison method (Bartlett's analysis or Levene's test) at a significance level of $\alpha = 0.05$, which is a common threshold in social and educational research. The results of this test indicate whether the differences in training outcomes between the two groups were solely influenced by the treatment or also by differences in variance between the groups.

More detailed information regarding the results of the homogeneity test can be found in the Homogeneity Test Summary Table. This table presents data including the variance values for each group, the calculated F value obtained from the calculation, and the F table value as a reference limit. If the calculated F value is less than the F table, it can be concluded that the variance between the groups is homogeneous. Therefore, hypothesis testing using the t-test can proceed with the assumption that the data meet the homogeneity requirements. This conclusion serves as an important basis for establishing the validity of this study's findings regarding the effectiveness of each training method on improving the athletes' forehand hitting ability.

This test, using the Bartlett method, yielded a calculated F value of 12.158 and an F table of 14.188. Because Fcount < Ftable, the variance of the data for both groups can be said to be homogeneous.

Table 4.
Summary of Homogeneity Test

Groups	Varians	Fcount	F table	Description
A1	19,950	12,158	14,188	Homogen
B1	16,776	-	-	-

Hypothesis testing was conducted using a t-test. The t-test results showed a significant difference between the pretest and posttest data for both the control and experimental groups. Furthermore, there was also a significant difference between the posttest results of the two groups.

Table 5.
Summary of t-Test Results

Comparison	t count	t table	Description
A1 vs A2	3,935	2,262	Significant
B1 vs B2	8,735	2,262	Significant
A2 vs B2	8,958	2,101	Significant

Thus, it can be concluded that both conventional and variable training methods significantly improved forehand hitting ability. However, the variable training method had a greater impact than the conventional method.

The results of this study indicate a significant improvement in forehand hitting ability in both groups. However, the greater improvement occurred in the experimental group using the variable training method.

Discussion

The Effects of Conventional Training: Conventional training focuses on consistent and structured repetition of techniques. This training is widely used to build fundamental skills such as correct stroke technique, body position, and movement coordination. In this study, there was an increase in forehand stroke ability from an average score of 12.57 to 16.28. This indicates that conventional methods can gradually improve athlete performance.

The advantage of conventional training is establishing technical consistency, especially in the early stages of learning. The use of repetitive exercises such as drills, practice pairs, and basic technique-based drills forms an important foundation for mastering forehand stroke skills.

The Effects of Varied Training. Varied training methods have been shown to produce more optimal results. The increase in the average score from 15.00 to 26.14 demonstrates the strong influence of this method. Varied training provides a broader learning experience through the use of various media, match scenarios, ball speeds, and situational simulations.

This training also improves motor adaptation, fosters creativity, and familiarises athletes with the pressures of real-life play. Furthermore, this method helps reduce training boredom due to its dynamic and interactive nature.

Comparison of Effectiveness: A comparison of the t-test results for A2 and B2 shows a significant difference. This indicates that varied training is more effective than conventional training. In general, varied training helps athletes develop complex technical skills and enhances psychological readiness for various types of matches.

Practical Implications: Coaches at PTM Orbit Jaya Makassar can combine these two methods in training sessions, but with an emphasis on varied training. The right combination of mastery of basic techniques (conventional) and application of techniques in real-life situations (varied) is believed to produce athletes with strong and adaptive technical abilities.

Based on the results of the data analysis, it can be concluded that the null hypothesis (Ho) is rejected, meaning there is a significant difference in forehand stroke ability between the group undergoing conventional training and the group undergoing varied training in table tennis athletes at PTM Orbit Jaya Makassar. Providing conventional training to table tennis athletes at PTM Orbit Jaya Makassar can contribute to improving their forehand stroke ability in table tennis. In table tennis, it is clear that varied training is an effective training method. This indicates that the results of forehand training for table tennis athletes at PTM Orbit Jaya Makassar require further training to gain strength. These results reflect an innovative approach to performing tasks and solving problems in new contexts.

Conclusion: Conventional training methods are effective in improving basic skills slowly but consistently. Meanwhile, varied training methods can provide faster and more significant improvements. Therefore, to improve overall forehand skills, varied training is highly recommended for continuous implementation in the PTM Orbit Jaya Makassar club training environment.

CONCLUSION

Based on the results of the data analysis, hypothesis testing, and discussion, the following conclusions can be drawn:

1. There is an effect of conventional training methods on improving the forehand stroke ability of PTM Orbit Jaya Makassar table tennis athletes.
2. There is an effect of varied training methods on improving the forehand stroke ability of PTM Orbit Jaya Makassar table tennis athletes.
3. There is a significant difference in the effect of conventional and varied training methods on forehand stroke ability, with varied training providing more optimal results.

ACKNOWLEDGMENT

The author would like to express his deepest gratitude to the Postgraduate Program of Makassar State University for the academic support and facilities provided during this research. He also thanks the coaches and table tennis athletes of PTM Orbit Jaya Makassar for their willingness to participate in this research and for their excellent cooperation.

The author would also like to thank his supervisor, Mr Muh. Adnan Hudain and Mrs Nurul Musfira, for their invaluable guidance, input, and direction in the preparation of this article. He hopes that the results of this research will make a positive contribution to the world of sports, particularly in the development of table tennis skills.

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