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The Effect of Target Area Training on Smash Accuracy in the STOK Bina Guna Student Table Tennis Club (2026 Academic Year)

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Abstract
Objectives:
This study aims to analyze the impact of target area training on smashes at the STOK Bina Guna Table Tennis Student Activity Unit (UKM) for the 2026 Academic Year.
Materials and Methods:
This study used an experimental method with a One Group Pretest Posttest Design. The population in this study was all 16 male members of the STOK Bina Guna Table Tennis Student Activity Unit (UKM) for the 2026 academic year. The sampling technique used total sampling, so all members were included in the study sample.
Results:
The results showed that the average pretest score was 7.62, while the average posttest score increased to 15.08. The results of the normality test showed that the data were normally distributed with a significance value of 0.247 > 0.05, while the homogeneity test showed that the data were homogeneous with a significance value of 0.127 > 0.05. Based on the results of the hypothesis test, the t-count value was obtained = 3.980 with a significance value of 0.002 < 0.05, so that H_0 was rejected and H_a was accepted.
Conclusions:
Thus it can be concluded that target area training has an effect on table tennis smash strokes in the STOK Bina Guna Table Tennis UKM academic year 2026.
Keywords: Target Area Training; Smash; Table Tennis.

Introduction

Sports are activities undertaken by almost everyone to improve physical and mental fitness, primarily to support various aspects of life (Lesmana & Broto, 2018). Sports also serve as an important medium for developing an individual's character and personality (Donie, 2023). Furthermore, sports play a significant role in motivating individuals, groups, and even nations to achieve excellence. In accordance with Article 1 of National Sports Law No. 11 of 2022, sports are defined as activities that integrate physical, mental, and spiritual aspects to enhance physical, spiritual, social, and cultural potential. Sports encompass all aspects of sports management, ranging from education, training, coaching, to evaluation.

Table tennis originated in England in the 1880s as a recreational parlor game among the aristocracy, known as indoor tennis or gossima. The sport experienced periods of decline and resurgence before beginning to develop again in 1920, marked by the emergence of specialized table tennis clubs, particularly in European countries (Sutarmin, 2007). Significant development occurred in 1926 when the International Table Tennis Federation (ITTF) was established in Berlin. Since then, the rules, table dimensions, and ball specifications have been standardized. Table tennis was first introduced as an Olympic sport at the 1988 Seoul Olympics and has since become a sport that emphasizes speed, reflexes, and accuracy. Currently, table tennis is played in more than 226 ITTF member countries, with China, Japan, and Germany among the dominant nations.

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Table tennis was introduced to Indonesia around 1930 by Dutch and Chinese communities. At that time, the sport was known only in major cities such as Batavia, Semarang, and Surabaya, where it was played as a recreational activity in exclusive clubs. Following Indonesia's independence, in 1948, the All Indonesia Ping Pong Association (Persatuan Ping Pong Seluruh Indonesia) was established and subsequently renamed the All Indonesia Table Tennis Association (PTMSI) in 1951. In Indonesia, table tennis has become popular in both urban and rural areas, with facilities for playing the sport available in many places. Nevertheless, many Indonesians still lack an understanding of table tennis, including its history, rules, and techniques.

One of the sports that continues to develop at both national and international levels is table tennis. This activity can be played by two to four players using wooden paddles covered with rubber to hit a ball over a net on a table (Ndubisi, 2017). Table tennis is one of the most widely recognized and popular sports among the general public. It attracts participants from various social backgrounds. According to Peter Simpson (2008), Table tennis is a sport without age restrictions. Its popularity is largely attributed to its accessibility, as it can be played by people from all social groups.

Another term for table tennis is ping pong, which is a small ball game played by two players (singles) or four players (doubles). Table tennis belongs to the category of net games, in which the ball is hit over a net into the opponent's playing area (Haryanto & Amra, 2020). The international governing body for table tennis is the International Table Tennis Federation (ITTF), while the national governing organization in Indonesia is the All Indonesia Table Tennis Association (PTMSI). STOK Bina Guna, located at Jalan Aluminium Raya No. 77, Medan Deli, has a Table Tennis Student Activity Unit (UKM) that serves as a center for developing students' interests, talents, and potential, as well as their soft skills and hard skills outside the academic curriculum. The organization plays an important role in supporting student development, building character, developing leadership skills, and establishing professional relationships and networks to prepare students for the working environment. These activities are conducted twice a week, on Tuesdays and Thursdays.

Based on the results of preliminary observations conducted on the field, it was found that during Table Tennis Student Activity Unit training sessions, many students demonstrated good hitting power but lacked accuracy in placing the ball in areas that were difficult for their opponents to reach. Consequently, training activities did not produce optimal results and reduced attacking effectiveness during matches. Of the 16 research participants, only 4 (25%) were able to execute accurate shots toward the intended targets, while the remaining 12 (75%) were unable to hit the designated target areas accurately.

Based on the students' physical conditions, none of them had any physical disabilities or limitations. Therefore, their physical conditions were actually supportive of developing proper, precise, and accurate table tennis smash skills. Powerful strokes are an important asset in winning table tennis matches. When players can execute a smash effectively by directing the ball accurately toward the intended target, they have a greater opportunity to score points. Therefore, players must make the most of every opportunity to perform a smash in order to gain points. One of the most frequently used techniques for executing a smash is the forehand technique, which generally produces greater power than the backhand stroke and is commonly used as an attacking technique against opponents. The forehand smash is one of the most frequently employed strokes to launch attacks during matches. In addition to the accuracy of the forehand smash, footwork techniques and tactical strategies also contribute to achieving victory in every table tennis match (Mahendra, 2012). To develop good forehand smash accuracy, continuous, progressive, and systematic training is required. The forehand smash

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technique can be performed by observing the direction of the incoming ball and executing the stroke according to the intended target. An accurately executed and powerful forehand smash can generate points when performed correctly, making it difficult for opponents to return the ball.

Players' skills in table tennis are influenced by the application of appropriate and structured training methods. In table tennis, the target area refers to strategic locations on the opponent's side of the table that are intended to make ball returns difficult, force opponents to make errors, or prevent them from returning the ball altogether. The ability to execute an effective and accurate smash depends not only on proper technique but also on adequate eye hand coordination.

Eye hand coordination is one of the most crucial biomotor components in determining the accuracy of the forehand smash in table tennis. Eye hand coordination refers to the ability to integrate visual information received by the eyes with simultaneous and harmonious motor responses of the hands to produce precise, accurate, and efficient movements (Adhityadharma, 2021). In the context of table tennis forehand smash accuracy, eye hand coordination plays an important role in observing the direction and speed of the incoming ball, predicting the point of contact between the ball and the paddle, adjusting body and hand positioning, and executing the paddle swing at the appropriate timing. Players with good eye hand coordination can adjust their positioning and timing more quickly and accurately, resulting in more consistent and effective smash strokes.

Materials and Methods

Study Design

This study employed a quantitative experimental method to examine the effect of a specific treatment under controlled conditions. The research used a One Group Pretest Posttest Design, in which participants were given an initial test (pretest) before receiving the treatment (treatment), followed by a final test (posttest) to measure changes in performance after the intervention.

Study Participants

The population for this study consists of all members of the STOK Bina Guna Table Tennis Student Activity Unit (UKM) for the 2026 academic year, totaling 16 males. The sample for this study comprises the entire population of 16 individuals.

Study Organization

The research instrument is a data collection tool used to obtain relevant information through tests, interviews, observations, and questionnaires. This study used the smash forehand, applying the Norm Referenced Assessment (NRA) method to evaluate participants' performance. The assessment results were analyzed using percentage calculations and classified into four categories: very good, good, fair, and poor, based on the mean and standard deviation criteria proposed.

Statistical Analysis

Data analysis in this study employed quantitative statistical techniques to test the research hypothesis using a t test. Before hypothesis testing, normality and homogeneity tests were conducted to determine whether the data were normally distributed and had equal variances. The normality test used the Shapiro Wilk and Kolmogorov Smirnov methods, with a significance level of 0.05, while the homogeneity test was performed using SPSS. The hypothesis was tested using a paired sample t test based on pretest and posttest scores in a one group pretest posttest design to determine whether the treatment had a significant effect on the research variables.

Results

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Based on the data previously collected, this chapter presents an analysis and discussion of the findings from this study. The results are explained in relation to the objectives and hypotheses previously proposed.

The research findings regarding the effect of target-area training on the accuracy of table tennis smashes conducted with the table tennis student activity unit (UKM) at STOK Bina Guna for the 2026 academic year are presented in the table below:

Table 1. Research Results

Information	Average	Standard Deviation	Varian	Total Value Minimum	Total Value Maximum
Pretest	13,25	3,75	16	10	19
Postest	26,25	5,29	16	19	35

1. Pretest Data

A pretest is an activity designed to assess the skill level of the sample regarding a specific aspect of the sport in this case, table tennis, which is the subject of this research. The pretest is conducted by the researcher before any treatment is applied to the sample. In this initial assessment, a total of 212 successful smash shots were recorded among members of the table tennis student activity unit (UKM) at the Bina Guna College of Sports and Health. Consequently, the average number of smash shots is 13.25, based on a sample size of 16 individuals. The minimum score recorded in this initial test was 10, while the maximum score was 19.

Table 2. Pretest Results

Information	N	Score Min	Score Max	Mean	Standard Deviation
Pretest	16	10	19	13,25	3,75

Table 3. Details of Pretest Results

No	Name	Target 30 Cm	Target 60 Cm	Missed the Target	Total
1	Edell Rinto Sarumaha	1	2	8	19
2	Asjon Fisi Lahagu	1	2	7	19
3	Listeni Sarumaha	1	1	9	17
4	Wiwin Kristian		3	8	17
5	Raymon Julvadami Gulo		1	8	11
6	Open Rejeki Zebua		1	8	11
7	Romanus Waruwu		1	7	10
8	Eko Dius Halawa		1	7	10
9	Rinduan Kasih Harefa		1	8	11

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10	Riki Harefa		1	8	11
11	Abdian Pranata Giawa		3	7	16
12	Charles Syah Putra Hulu		2	8	14
13	Syukur Anugrah Gulo		1	9	12
14	Agusman Roberto Duha		1	9	12
15	Kharisman Gulo		1	7	10
16	Hafamati Lahagu		1	8	12
Amount		**212**			

Table 4. Frequency of Pretest Results

No	Score	Category	Frequency
1	very good	32-keatas	-14
2	Good	28–31	-14
3	Fair	24–27	-14
4	Poor	19–23	2
Amount			16

From the table above, we can see that the frequency with which student members of the table tennis club (UKM) at the Bina Guna College of Sports and Health perform smashes falls into the poor category for 2 individuals, while 14 others do not fall into any category at all, due to the very low scores they received.

2. Post test Data

A post test is an assessment conducted after an intervention or treatment to determine the extent to which the subjects have mastered the material or technique covered by the treatment. In this final assessment, the total score for smash shots among members of the table tennis student activity unit (UKM) was 420. Consequently, the average score for smash shots is 26.25, based on a total sample of 16 individuals. The minimum score recorded in this post-test was 19, while the maximum score was 35.

Table 5. Post test Results

Information	N	Score Min	Score Max	Mean	Standard Deviation
Postest	15	19	35	26.25	5,29

Table 6. Details of Posttest Results

No	Name	Target 30 Cm	Target 60 Cm	Missed the Target	Total

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1	Edell Rinto Sarumaha	4	4	2	34
2	Asjon Fisi Lahagu	4	3	3	32
3	Listeni Sarumaha	3	6	2	35
4	Wiwin Kristian	3	5	3	33
5	Raymon Julvadami Gulo	2	4	4	26
6	Open Rejeki Zebua	2	5	3	28
7	Romanus Waruwu	1	5	4	24
8	Eko Dius Halawa	1	6	2	25
9	Rinduan Kasih Harefa	2	4	3	25
10	Riki Harefa	1	5	4	24
11	Abdian Pranata Giawa	2	5	3	28
12	Charles Syah Putra Hulu	1	4	3	20
13	Syukur Anugrah Gulo	1	5	3	23
14	Agusman Roberto Duha	1	4	3	20
15	Kharisman Gulo	1	4	2	19
16	Hafamati lahagu	1	5	4	24
Amount		**420**			

Table 7. Frequency of Posttest Results

No	Score	Category	Frequency
1	very good	32-to the top	4
2	Good	28–31	2
3	Fair	24–27	6
4	Poor	19–23	4
Amount			16

From the table above, it can be seen that the frequency of table tennis smash executions among members of the table tennis student club at the Bina Guna College of Sports and

Health Sciences falls into the following categories: 4 individuals are rated as very good, 2 as good, 6 as fair, and 4 as poor. Therefore, target-area training has an influence on the execution of table tennis smashes among members of the table tennis student club at the Bina Guna College of Sports and Health Sciences.

Discussion

This study aims to determine whether target area training has an effect on table tennis smash accuracy among members of the STOK Bina Guna Table Tennis Student Activity Unit (UKM) in the 2026 academic year. The results of the analysis indicate a significant difference in smash performance before and after the treatment. Before the treatment, the participants achieved a mean score of 13.25, a standard deviation of 3.75, and a maximum score of 19. However, after completing 14 training sessions, the mean score increased to 26.25, with a standard deviation of 5.29 and a maximum score of 35.

Based on the research findings, target area training had a significant effect on table tennis smash accuracy among members of the STOK Bina Guna Table Tennis Student Activity Unit. Following 14 training sessions, the statistical analysis revealed a calculated t value of 15.922 and a Cohen's d effect size of 3.980, which falls into the very large effect category.

Conclusions

Based on the data analysis and research findings, it can be concluded that target area training significantly improves table tennis smash performance among members of the STOK Bina Guna Table Tennis Student Activity Unit. This was demonstrated by the results of 16 participants, whose posttest scores were higher than their pretest scores. Therefore, target area training can be used as an effective training method, and further development of training methods is needed to improve table tennis skills, particularly among prospective athletes.

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Conflict of Interest

The authors declare no conflict of interest.

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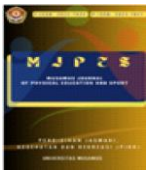
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