



The Effect of Overhead Passing Practice with the Target Ring Method on Volleyball Passing Accuracy

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Keywords

overhead pass; volleyball; target ring; passing accuracy

Abstract

The overhead passing technique is one of the most important basic techniques in volleyball because it helps organize attacks and maintain the flow of the game. However, during training, some athletes still struggle to control the direction and accuracy of the ball during overhead passes. This study aims to determine the effect of overhead passing training with a target ring on the accuracy of overhead passing among extracurricular volleyball athletes. This study used an experimental design with a one-group pretest-posttest. The subjects were 20 extracurricular volleyball athletes at State High School 1, Pegandon. Data collection was conducted using an overhead passing skill test. The data were then analyzed using a paired-samples t-test to determine the difference in results before and after treatment. The results showed an increase in overhead passing ability after training with a target ring. The average pretest score of 8.85 increased to 15.25 in the posttest. The results of the paired-samples t-test showed a p-value of 0.000 (< 0.05), indicating a significant difference between the pretest and posttest scores. Thus, it can be concluded that overhead passing training using a ring target significantly improves the accuracy of overhead passing among extracurricular volleyball athletes.

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p-ISSN 2460-724X
e-ISSN 2252-6773

INTRODUCTION

Sport is a physical activity that plays a vital role in improving health, physical fitness, and the functional abilities of the human body (Hasan, 2024). Through regular, systematic, and sustained exercise, the body undergoes physiological adaptations that positively impact endurance, strength, coordination, and motor skills (Putri et al., 2025). In addition to maintaining health, sport also serves as a medium for education, recreation, and achievement. In education, sport plays a vital role in character building, discipline, teamwork, and the development of students' overall potential, including physical, mental, and social aspects. One sport that is growing rapidly and is widely popular is volleyball (Ismailova, 2022).

Volleyball is a team game played by two teams of six players each, separated by a net (Maulana et al., 2020). The main objective of the game is to send the ball over the net so that it lands in the opponent's half and prevents the ball from landing in your own half. Internationally, volleyball regulations and development are regulated by the Fédération Internationale de Volleyball, which establishes technical standards, facilities, and competition systems. In Indonesia, volleyball is governed by the All-Indonesia Volleyball Association, which plays a role in developing athletes and achieving national-level success in volleyball (Raihanati & Wahyudi, 2020).

Volleyball requires a good mastery of various basic techniques so players can play effectively and efficiently (Apriyanti & Wahyudi, 2021; Daryono et al., 2025). These basic techniques include serving, passing, smashing, and blocking. These four techniques are interrelated and form the foundation for a team's playing style. A good mastery of basic techniques allows players to control the ball precisely, maintain game stability, and create effective attacking opportunities (Raihanati & Wahyudi, 2020). Conversely, weak mastery of basic techniques can hinder the flow of the game and reduce overall team performance. One of the most important basic techniques in volleyball is passing.

Passing is a basic volleyball technique in which a player hits or passes the ball to a teammate to initiate an attack (Aini, 2021). There are two types of passing: underhand and overhand (Silmi & Wahyudi, 2025). Underhand passing involves hitting or directing the ball with both hands, either with the hands closed or with the hands swung from below. Overhand passing involves using both hands above the head with the fingers spread to direct the ball to a teammate (Pamungkas et al., 2024). This technique is typically used to provide an accurate pass to an attacking player, such as for a smash. The accuracy of an overhand pass is crucial for the success of an attack, as an accurate pass facilitates the spiker's optimal smash (Hafedh & Khalaf, 2024). Therefore, overhand passing skills must be structured to ensure players have good control over the ball's direction, power, and accuracy.

The accuracy of an overhead pass is a crucial component in determining the quality of a volleyball game (Ulyasari et al., 2024). Accuracy is a person's ability to direct and direct movements toward the desired target with as few errors as possible (Miftachul A'la & Liska Sukiyandari, 2025). Accuracy in overhead passing is essential for maintaining a smooth game, allowing players to better break away and organize attacks. Players with effective overhead passing skills can provide stable and targeted passes to other players and maximize scoring opportunities (Zen et al., 2025).

Improving players' overhead passing ability requires the use of effective training methods that are aligned with their skill levels. Structured and selective training can enhance motor coordination, ball control, and player concentration. One approach that can be applied is overhead passing practice using a ring target. The use of targets in training serves as a useful medium, as it provides players with a clear objective to aim for, thereby encouraging more controlled, directed, and accurate movements (Akbar et al., 2025). In addition, target-based training methods can also improve players' focus and concentration during practice.

The application of targets in overhead passing drills can further support improvements in both accuracy and consistency. Players are trained to direct the ball more precisely toward a predetermined target, which helps refine their passing skills. This method also contributes to the development of hand-eye coordination as well as overall overhead passing technique (Helyanan et al., 2025). Such an approach is particularly effective for students or beginner players who are still in the stage of developing fundamental volleyball skills.

Extracurricular activities play an important role in supporting the development of students' athletic abilities. Through these activities, students have the opportunity to improve technical skills, physical fitness, and teamwork. One of the schools actively implementing volleyball extracurricular programs is SMA Negeri 1 Pegandon. The program is conducted regularly throughout the academic year and involves routine training sessions as well as participation in various inter-school competitions. Therefore, the implementation of a structured and functional training program is essential to support the development of students' basic technical skills, particularly in overhead passing.

Observations of students in the extracurricular volleyball program at Pegandon 1 High School revealed several challenges with overhead passing. Some students struggled to pass the ball accurately, resulting in inaccurate passes and ineffective attack formation. This problem is suspected to be due to suboptimal training methods for improving overhead passing accuracy. Therefore, this study implemented variations in overhead passing exercises using ring targets to improve passing accuracy among volleyball students. This research is novel because it uses ring targets as a more targeted, measurable training method. The purpose of this study was to examine the effect of variations in overhead passing exercises using ring targets on improving overhead passing accuracy. The results are expected to contribute to the development of volleyball training methods, particularly in improving students' fundamental technical skills and demonstrating objectively measurable performance changes.

METHODS

This study employed an experimental method with a quasi-experimental approach using a one-group pretest–posttest design. This design involved a pretest to assess initial abilities, a treatment consisting of variations in overhead passing exercises using a target ring, and a posttest to assess changes in abilities after the treatment. The independent variable in this study was the variation in overhead passing exercises using a target ring, while the dependent variable was the accuracy of volleyball overhead passing. The study was conducted at State High School 1, Pegandon, Kendal Regency. The population was all 16 female volleyball extracurricular athletes at State High School 1, Pegandon. The sampling technique used was total sampling, so that all members of the population were included in the study sample.

The instrument used in this study was the AAHPERD Volleyball Skill Test for the passing component, which measures the accuracy of overhead passing in volleyball (Ghosh, 2024; Shahi, 2022). The following is an overview of the instrument used :

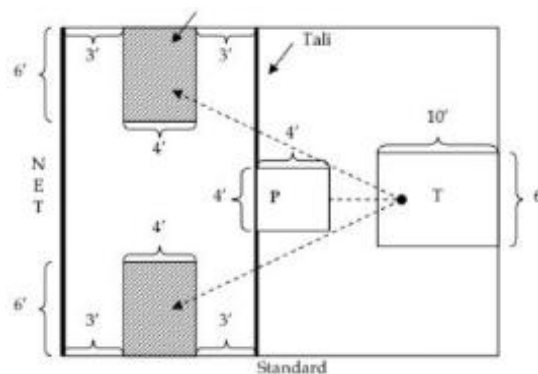


Figure 1. Volleyball Skill test passing (Jariono et al., 2023)

The test was conducted on a half-volleyball court with two target areas on the right and left sides. Each participant attempted 20 passes, consisting of 10 passes to the right target and 10 passes to the left target. The scoring system awarded 1 point if the ball passed the predetermined height limit and landed correctly in the target area. A score of 0 was awarded if the ball did not pass the height limit, touched the net or barrier, landed outside the target area, or the passing technique was invalid. The maximum score was 20, and the minimum was 0, which were converted to percentages to determine the outcome categories.

Table 1. Passing Accuracy Assessment Standards

Percentage	Category
81 – 100	Very Good
61 – 80	Good
41 – 60	Moderate
21 – 40	Poor
0 – 20	Very Poor

The analysis used descriptive statistics, including normality and homogeneity tests, and paired-samples t-tests in SPSS 26 to determine differences in results before and after treatment. The basis for decision making is that if the p-value is greater than 0.05, the null hypothesis (H_0) is accepted and the alternative hypothesis (H_a) is rejected. If the significance value is less than 0.05, H_0 is rejected, and H_a is accepted, indicating a significant difference.

RESULTS AND DISCUSSION

Statistical data analysis on a sample of twenty athletes is presented in **Table 2** below:

Table 2. Statistical Descriptive Analysis

Variable	Overhead Pass Accuracy			
	Min	Max	Mean $\pm$ Stdev	Percentage
Pretest	7	11	8,85 $\pm$ 1,31	44,25%
Posttest	12	19	15,25 $\pm$ 1.92	76,25%

Based on **Table 2**, the results of the descriptive statistical analysis indicate an improvement in students' overhead passing accuracy after the implementation of the target ring training method. In the pretest results, the minimum score obtained by students was 7 and the maximum score was 11, with a mean score of 8.85 ± 1.31 and a percentage of 44.25%. After the training program was conducted, the posttest results showed a significant improvement. The minimum score increased to 12 and the maximum score reached 19, while the mean score rose to 15.25 ± 1.92 with a percentage of 76.25%. This increase demonstrates that the target ring training method contributed positively to improving the accuracy of overhead passing among students participating in volleyball extracurricular activities.

Table 3. Body Mass Index Classification

Classification	Skor Range	F	Percentage
Underweight	< 18.5	3	15 %
Normal	18.5-22.9	9	45 %
Overweight	23-24.9	6	30 %
Obese I	25-29.9	2	10 %
Obese II	> 30	0	0 %
Total		20	100

Based on **Table 3**, the distribution of body mass index in the 20 samples shows variation across several categories. Three individuals (15%) were underweight. The majority of the samples were in the normal category, namely 9 individuals (45%). Furthermore, 6 individuals (30%) were overweight. Two individuals (10%) were in the obese I category, while none were in the obese II category (0%). Overall, the data show that the majority of respondents were in the normal BMI category, although some respondents were still in the underweight, overweight, and obese categories.

Table 4. Classification of Pretest and Posttest Accuracy Results

Percentage	Category	Pretest	Posttest
81 – 100	Very Good	0	5
61 – 80	Good	0	14
41 – 60	Moderate	12	1
21 – 40	Poor	8	0
0 – 20	Very Poor	0	0
Total		20	20

Based on **Table 4**, the accuracy category for overhead passing changed between the pretest and posttest results for the 20 study samples. In the pretest phase, the majority of the sample (12 individuals) were in the adequate category, while 8 individuals were in the poor category, and none were in the good or very good categories. This indicates that before the training treatment, the participants' overhead passing accuracy was still classified as low to moderate. After receiving the training, the posttest results showed significant improvement: 14 students in the good category, 5 in the very good category, and only 1 in the adequate category. Furthermore, no additional samples were in the poor or very poor categories during the posttest. Overall, these results indicate a change in the upper-passing ability of extracurricular students after receiving the training treatment.

Table 5. Normality Test

Variable	Statistic	df	Sig.	Description
PreTest	.913	20	.072	Normal
PostTest	.963	20	.601	Normal

Based on the normality test results in **Table 5**, the pretest data had a significance value of 0.072, while the posttest data had a significance value of 0.601, with a sample size of 20. Because both significance values are greater than 0.05, the pretest and posttest data are considered normally distributed.

Table 6. Test of Homogeneity

Test of Homogeneity of Variance		Levene Statistic	df1	df2	Sig.	Description
Overhead Pass Accuracy	Based on Mean	3.171	1	38	.083	Homogeneous

Based on the homogeneity test results in **Table 6**, the significance value (Sig.) is 0.083, which is greater than 0.05 ($0.083 > 0.05$). Therefore, it can be concluded that the research data have homogeneous variance.

Table 7. Paired Sample T-Test

Pretest - Posttest	Mean	Std. Deviation	Std. Error Mean	t	df	Sig.	Description
	-6.400	1.231	.275	-23.247	19	.000	Significant

Based on the results of the Paired Sample T-Test in **Table 7**, the mean difference was -6.400, with a t-value of -23.247 and $df = 19$. The significance value obtained was 0.000, which is less than 0.05 ($0.000 < 0.05$). Thus, it can be concluded that there was a significant difference between the pretest and posttest results, indicating that the training provided significantly improved the accuracy of volleyball overhand passes in extracurricular volleyball athletes.

The results of this study indicate that overhead passing training using the target ring method increases the production of accurate overhand passes among extracurricular volleyball athletes at Pegandon 1 State Senior High School. This is manifested in an increase in the average pretest score from 8.85 to 15.25. This increase indicates that the training allows students to direct and place the ball more accurately on the target. In volleyball, overhead passing is used to build attack patterns, so it is very important to perform it effectively and accurately to pass to the smasher (Tarigan et al., 2025). The improvement in overhand passing observed in this study indicates that structured, repetitive training can enhance players' basic technical skills. Training that focuses on specific skills provides players with an understanding

of accurate movement mechanics and eye-hand coordination. This is consistent with the opinion of Parulian et al (2025), who noted that systematic, programmed training encourages greater motor adaptation in athletes, leading to the development of optimal technical skills.

Based on descriptive statistics, all participants in this study showed improvement in scores after receiving the training treatment. The mean increase in scores was 6.4, with a percentage gain of 76.25%. These findings suggest that the target-based training method provides an effective stimulus for enhancing player accuracy. This type of training helps students understand how to properly direct the ball toward a specific target, encouraging greater focus on both the force and direction of the pass. The results of this study also demonstrate a shift in the classification of overhead passing ability. In the pretest, no students were categorized as good or very good; 12 students were in the moderate category, while 8 were classified as poor. Following the implementation of the ring target training in the posttest, there was a notable improvement: 14 students were categorized as good, 5 as very good, and only 1 remained in the sufficient category, while no students were classified as poor or very poor. This shift in classification indicates that training using circular targets can positively influence the quality of overhead passing technique. It suggests that strengthening key components of accuracy—such as concentration and movement—through more effective training methods, particularly simulation-based tasks, can enhance player motivation. With consistent practice, coordination between the nervous system and muscles becomes more refined, resulting in increasingly precise movements (Sopiyan et al., 2025). Furthermore, the use of circular targets in training can improve student motivation and engagement, as tool-based or media-assisted training tends to be more interactive than conventional, monotonous methods (Faisal et al., 2024; Muttaqin & Muhtarom, 2025). In extracurricular settings, student motivation plays a crucial role in determining the overall success of the training process.

The results of this study align with those of Muhammad Rusli et al (2022), who found that using target media in volleyball training can significantly improve the accuracy of overhead passes. This study demonstrated that training with specific targets can improve players' accuracy because they have a clear goal for each passing movement. Another study by Riyanto & Mulyana, (2024), also found that passing practice using target media can improve motor coordination and ball direction accuracy. The study explained that players who practice using targets tend to have better ball control than those who practice passing without a clear target.

Based on the results of the paired-samples t-test, the significance value was 0.000, which is less than 0.05, indicating a significant difference between the pretest and posttest scores. These results indicate that overhead passing training using the target-ring method significantly improves overhead passing accuracy among extracurricular volleyball athletes. This improvement indicates that using target media in training can help players control the direction and power of the ball more accurately. With a clear target, players can focus more on passing movements, enabling optimal coordination among their hands, eyes, and body position (Syah et al., 2024).

However, this study still has several limitations. One limitation is the relatively small sample size and the absence of a control group. Furthermore, this study focused solely on overhead passing skills without examining the effect of the training method on other volleyball technical skills, such as serving or smashing. Therefore, future research should involve a larger sample size and employ a more complex experimental design.

Overall, this study's results indicate that overhead passing training using the target ring method is an effective approach for improving overhead passing accuracy among extracurricular volleyball athletes. This training not only improves passing accuracy but also helps players refine basic technique, improve motor coordination, and increase motivation to practice. Therefore, this training method can be recommended as an alternative strategy for developing volleyball skills in school settings.

CONCLUSION

The research results showed that target-ring training improved overhead passing accuracy among extracurricular volleyball athletes at Pegandon 1 State Senior High School. This was demonstrated by an increase in the average score from 8.85 to 15.25 after treatment. The result of the paired-samples t-test showed $p=0.000$ (<0.05), indicating an effect of passing accuracy before and after training. In addition, the distribution of overhead passing ability categories differed: most students were at the fair and poor levels before training, but after further training, many improved to good and excellent levels. Thus, the target-ring training method has a positive effect on achieving high accuracy in overhead passing and on improving motor skill coordination and ball control. Therefore, this approach can be used as an alternative training strategy for volleyball development activities in schools.

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