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THE IMPACT OF UNDERHAND PASSING TRAINING USING A WALL BOUNCE TARGET ON VOLLEYBALL PLAYING SKILLS IN CLASS XI STUDENTS OF SMA NEGERI 2 LAWE SIGALA-GALA

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Abstract

This study aims to empirically analyze the effect of applying the wall bounce training method on improving underhand passing skills in volleyball games among 11th-grade students of SMA Negeri 2 Lawe Sigala-gala. This research used a quasi-experimental method with a one-group pretest-posttest design. The research sample consisted of 15 students selected through a purposive sampling technique. The measurement instrument used was the AAHPER (American Alliance for Health, Physical Education, and Recreation) Volleyball Passing Test. The wall bounce training intervention was carried out for 16 sessions with a frequency of 3 times per week. Data were analyzed using a parametric statistical paired sample t-test with the help of SPSS software after first testing for normality with the Shapiro-Wilk test. The results showed a significant increase in the average score. The average pretest score was 20.13 ("moderate" category), which increased to 25.07 ("good" category) in the posttest. The results of the paired sample t-test showed a significance value (Sig. 2-tailed) of 0.000 ($p < 0.05$), indicating that there was a statistically significant difference between the underhand passing ability before and after the treatment was given. Based on these findings, it can be concluded that the wall bounce training method is proven effective and has a significant positive impact on improving volleyball underhand passing skills. Therefore, this exercise can be used as an alternative training method that is simple, efficient, and effective to be applied in Physical Education, Sports, and Health (PJOK) learning, especially in volleyball material.

Keywords: ***Motor Skills, Physical Education Learning, Underhand Passing, Volleyball, Wall Bounce***

INTRODUCTION

Volleyball has established itself as one of the most popular sports in Indonesia, particularly among students. This sport not only offers recreational and health benefits but also requires mastery of basic techniques and a commitment to consistent practice. Among the fundamental techniques of volleyball, the underhand pass holds a very fundamental and crucial position. This technique serves as the primary foundation for building an attack, both for receiving the opponent's serve and for digging the opponent's attacks. Success in performing an accurate and controlled underhand pass determines the quality of the subsequent set, which ultimately directly affects the effectiveness of the attack launched.

Based on initial observations and interviews with the Physical Education, Sports, and Health (PJOK) teacher at SMA Negeri 2 Lawe Sigala-gala, it was found that the underhand passing skills of the 11th-grade students were still at a concerning level. The majority of students had difficulty controlling the direction and force of the ball's bounce. Common technical errors included: rigid and unbalanced body position, unstable forearm platform formation, inconsistent contact point with the ball, and lack of harmonious coordination of the entire body. Consequently, the ball often flew erratically, too high, or even failed to reach the setter. This low level of basic skill is the main obstacle to developing quality volleyball games at the school.

Amid the limitations of sports facilities and infrastructure often faced by many schools in Indonesia, including possibly a limited number of balls or unavailable courts, an innovative, simple, yet effective training solution is needed. One potential training method to address this issue is wall bounce training or practicing bouncing the ball against a wall. This method utilizes a wall as a consistent rebound medium, functioning as a tireless "training partner." Wall bounce training allows students to perform movement repetitions at high frequency without relying on a partner.

Furthermore, this method provides immediate feedback; if the pass is performed with an incorrect angle or force, the ball will rebound in an unexpected direction, allowing the student to immediately reflect and correct their mistake. This process is very effective in building muscle memory and improving the feel for the ball. Several previous studies, such as those by Saputra & Nasrulloh (2023) and Audina et al. (2025), have indicated that training using a wall medium can have a positive impact on passing accuracy and control. However, the context of its application at SMA Negeri 2 Lawe Sigala-gala with its specific student characteristics and environmental conditions still needs to be scientifically proven. Therefore, this research was conducted to systematically and objectively test the impact of wall bounce training on improving volleyball underhand passing skills, in order to provide practical and evidence-based solutions for PJOK teachers. Based on the described background, the research problem in this study is: "What is the significant impact of applying underhand passing training using a wall bounce target on underhand passing skills in volleyball games among class XI students of SMA Negeri 2 Lawe Sigala-gala?"

The results of this study are expected to provide tangible and applicable benefits for various parties. For Physical Education, Sports, and Health (PJOK) Teachers, these findings can serve as empirical input and reference in selecting and applying effective, efficient, and easily implementable training method variations to improve students' volleyball underhand passing skills, thereby enriching teaching strategies in the field. For Students, this research is expected to increase their motivation to practice and their individual skills, particularly in underhand passing technique, through a flexible self-training method that can be practiced anywhere using a wall, both at school and at home. For Schools, the results of this study can be valuable consideration material in developing simple and cost-effective sports facilities, for example by optimizing the use of empty walls in the school environment equipped with target markers to support sustainable training activities. Finally, for Future Researchers, this scientific work can be used as a reference and academic basis for conducting further research with a broader scope, whether by developing variables, improving research designs, or using more diverse populations and samples.

LITERATURE REVIEW

Volleyball

Volleyball is a team sport played by two teams separated by a net. The main objective of the game is to ground the ball on the opponent's court and prevent the opponent from doing the same. According to the International Volleyball Federation (FIVB, 2022) and experts like Muhajir (2016), success in volleyball heavily depends on solid mastery of basic techniques, good team coordination, and excellent physical and mental preparedness. These basic techniques include serving, passing (overhand and underhand), setting, spiking, and blocking. Each technique plays a vital role in building a structured game pattern.

The underhand pass, often called a bump or forearm pass, is the basic technique for receiving and controlling balls coming from a low trajectory, such as an opponent's serve or spike. According to Suharno (2023), the underhand pass is the most frequently used technique in the game, especially when receiving serves, as it is considered more stable and accurate for low and hard balls. According to Ahmadi (2018), the stages of a correct underhand pass movement are executed through a structured series of phases. The first phase is the Ready Position, where the player stands with feet shoulder-width apart, one foot slightly forward, knees bent, torso leaning forward, weight on the balls of the feet, and focus on the ball.

Next, in the Arm Platform Formation phase, both arms are extended forward and joined together so that the hands are clasped, with wrists rotated inward to form a flat and solid "platform." The following critical phase is Contact with the Ball, where the ball must contact the forearms between the wrists and elbows—with the ideal contact point on the distal third of the forearms—and this contact must occur in front of the body, not to the side or below. The final stage is the Follow-Through Movement, performed with a pushing motion generated from the power of the legs and waist—not just relying on the arms—where the arms are directed towards the intended target with a smooth and controlled motion, not a hitting motion. The quality of the underhand pass is highly influenced by factors such as the accuracy of the body position under the ball, the stability of the arm platform, the consistency of the contact point, and the direction of the ball's rebound. Errors in any of these aspects, according to Suharno (2023), will directly result in low accuracy and control of the pass.

Wall Bounce Training in Volleyball

Wall bounce training is a form of drill where a player repeatedly bounces a volleyball against a wall using a specific technique, in this case, the underhand pass. The concept of this training is rooted in the principles of motor learning, specifically repetition without repetition – repeating the movement goal (bouncing the ball to a target) with slight variations in execution to create adaptation and expertise (Bernstein, 1967).

Based on the opinions of Hasibuan & Imran (2022) and Purnomo (2021), the wall bounce training method has several advantages that support its effectiveness. First, this method allows for High Repetition Rates, where students can perform hundreds of passes in a short time independently without relying on a training partner. Second, this method provides Immediate Feedback; the wall provides an objective and instant response, so technical errors like incorrect arm angle or force will be immediately visible from the deviated rebound direction, allowing for immediate correction. Third, in terms of practicality, this method offers Space and Time Efficiency as it can be done anywhere there is a flat wall, without requiring a full court or extensive equipment. Fourth, this training specifically contributes to Improved Hand-Eye Coordination and Feeling for the Ball, as it constantly trains concentration and the ability to predict the ball's trajectory. Finally, this method offers Ease of Providing Variation; training can easily be modified by drawing targets on the wall, changing the player's distance to the wall, or adding footwork elements to increase difficulty and prevent boredom.

Several previous studies have supported the effectiveness of training using a wall medium. Saputra & Nasrulloh (2023) in their research on a junior volleyball club found that wall passing drills significantly improved underhand passing accuracy compared to conventional training methods. Similarly, Audina et al. (2025) concluded that the training method with a wall target was effective in improving control and consistency of underhand passing in beginner athletes. This research seeks to strengthen these findings within a more specific context, namely in a high school environment with students as subjects, while also providing a structured and measurable wall bounce training procedure.

Based on the literature review, a theoretical framework can be constructed as follows: The low underhand passing skill in students is caused by a lack of repetition and consistent feedback in training. The wall bounce training method offers a solution by providing both intensively. Through high repetition, students will develop muscle memory for the correct passing movement. Meanwhile, immediate feedback from the wall allows students to independently correct their technical errors, such as arm angle and pushing force. This process, if carried out in a structured manner and for a sufficient duration, will theoretically result in a significant improvement in the accuracy, control, and consistency of volleyball underhand passing skills.

RESEARCH METHOD

Research Design

This research used a quasi-experimental method. The selected design was the One Group Pretest-Posttest Design. In this design, measurements were taken on a single group before (pretest) and after (posttest) the treatment (wall bounce training intervention) was administered. This design can be depicted as O1 -- X -- O2, where O1 means the initial measurement (Pretest) of underhand passing skill, X means the treatment (Wall bounce training intervention) and O2 means the final measurement (Posttest) of underhand passing skill.

This research was conducted over 6 weeks during the Even Semester of the 2023/2024 Academic Year. The research location was the Volleyball Court and the area around the sports building of SMA Negeri 2 Lawe Sigala-gala, which had adequate flat walls for training. The research involved 15 students selected through Purposive Sampling technique. The inclusion criteria for sample selection were: (1) Active 11th-grade students participating in PJOK lessons; (2) Having an initial underhand passing skill score categorized as "moderate" or "poor" based on the teacher's assessment; (3) Willing to participate seriously in the entire research series; (4) Physically healthy and free from injuries hindering physical activity.

Research Instrument

The instrument used to measure underhand passing skill was the AAHPER (American Alliance for Health, Physical Education, and Recreation) Underhand Passing Skill Test. This test has proven international validity and reliability for measuring underhand passing accuracy and control. The test procedure begins with a tester (ball thrower) standing on the opposite side of the net, while the research subject stands in the passing area (zone 5 or 1) behind the attack line. The tester then throws the ball using a lob (high arc) from across the net towards the subject, who must perform an underhand pass towards a target setter standing in the front 2/3 position above the net. Each subject is given 10 attempts. The scoring system for this test is divided into four categories. A score of 3 is given if the ball lands above the net and can be set easily by the target setter to position 4. A score of 2 is obtained if the ball lands above the net but its direction is less accurate, so the target setter can still set it with more effort. A score of 1 is given if the ball touches the net or lands out of the target setter's reach but is still within the court. Meanwhile, a score of 0 is given if the ball goes out of bounds or fails to cross the net. The raw score from 10 attempts (maximum 30) is then converted into assessment categories: Very Good (26-30), Good (21-25), Moderate (16-20), and Poor (≤15).

Research Procedure

This research was carried out through several systematic stages. The preparation stage included field observation, instrument preparation, sample determination, and socialization of the research procedures to the students. Next, in the pretest stage (O1), an initial test was conducted on the 15 samples using the AAHPER Volleyball Passing Test instrument to obtain baseline data on underhand passing ability. The intervention or treatment stage (X) involved the implementation of a wall bounce training program for 6 weeks, with a total of 16 effective sessions at a frequency of 3 times per week and a duration of 30 minutes per session. In weeks 1-2 (basic phase), training focused on mastering the basic wall bounce technique from a distance of 1.5 meters without a target, emphasizing the formation of correct movement. Then, in weeks 3-4 (development phase), the distance was increased to 2.5 meters and targets in the form of lines or circles on the wall were introduced, along with directional passing variations. The application phase in weeks 5-6 involved training from a distance of 3 meters with smaller targets, and the addition of footwork elements and simulations of receiving balls from various directions. After the intervention was completed, the posttest stage (O2) was conducted using the same instrument and procedure as the pretest to measure the final underhand passing ability.

Data Analysis Technique

Data analysis in this research involved several statistical approaches. First, descriptive statistics were used to describe the data characteristics, including the mean, median, mode, standard deviation, and percentage of pretest and posttest scores. Second, a normality test was conducted using the Shapiro-Wilk test at a significance level of $\alpha = 0.05$ to determine if the data were normally distributed, which is a prerequisite for using parametric statistical tests. Data were considered normal if the p-value > 0.05. Third, hypothesis testing was performed using the Paired Sample T-Test, given that the data met the normality assumption. This test aimed to determine whether there was a significant difference between the pretest and posttest scores. The decision was based on a significance level of $\alpha = 0.05$, where H0 was rejected and Ha was accepted if the Sig. (2-tailed) value < 0.05, indicating a significant difference. All data analysis processes were performed using IBM SPSS Statistics 25 software.

RESEARCH RESULTS

Descriptive Statistics of Pretest and Posttest Results

The results of the pretest and posttest measurements of underhand passing skill were analyzed descriptively to see the data trends. The results are presented in Table 1 and Table 2 below.

Table 1. Descriptive Statistics of Pretest and Posttest Scores

Statistic	Pretest	Posttest
Sample Size (N)	15	15
Minimum Score	16	21
Maximum Score	28	29
Average (Mean)	20.13	25.07
Standard Deviation	3.72	2.31

Table 1 shows an increase in the average score of 4.94 points, from 20.13 in the pretest to 25.07 in the posttest. The decrease in standard deviation from 3.72 to 2.31 indicates that the variation in scores among students became more homogeneous after the intervention, meaning the students' abilities became more uniform.

Table 2. Underhand Passing Skill Categories Pretest and Posttest

Category	Score Range	Pretest Frequency	Pretest %	Posttest Frequency	Posttest %
Very Good	26 - 30	2	13.33%	5	33.33%
Good	21 - 25	4	26.67%	8	53.33%
Moderate	16 - 20	7	46.67%	2	13.33%
Poor	≤ 15	2	13.33%	0	0%
Total		15	100%	15	100%

Table 2 provides a clearer picture of the shift in students' skill qualifications. Before training (pretest), the majority of students (46.67%) were in the "Moderate" category, and even 13.33% were still "Poor." After the intervention (posttest), a dramatic change occurred. No students remained in the "Poor" category. 53.33% of students were now in the "Good" category and 33.33% reached the "Very Good" category. The majority of students were now concentrated in the good and above categories (86.66%).

Normality Test

A normality test was conducted on the gain score data (the difference between posttest and pretest) using the Shapiro-Wilk Test. The results are presented in Table 3.

Table 3. Normality Test Results for Gain Score

Test Statistic	Shapiro-Wilk		
	Statistic	df	Sig.
Gain Score	0.936	15	0.321

Based on Table 3, a significance value (Sig.) of 0.321 was obtained. Since this value is > 0.05, H0 is accepted, meaning that the gain score data is normally distributed. Thus, the requirement for using the parametric Paired Sample T-Test is met.

Hypothesis Test (Paired Sample T-Test)

To test the research hypothesis, a Paired Sample T-Test was performed. The test results are presented in Table 4.

Table 4. Paired Sample T-Test Results

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Posttest - Pretest	4.933	2.186	0.564	8.743	14	0.000

Table 4 shows that the t-value is 8.743 with degrees of freedom (df) 14. The significance value (Sig. 2-tailed) is 0.000. Because this value of 0.000 is much smaller than 0.05, the Null Hypothesis (H0) is rejected and the Alternative Hypothesis (Ha) is accepted. This proves that there is a statistically significant difference between the underhand passing skill scores before (pretest) and after (posttest) the wall bounce training treatment was administered.

DISCUSSION

The main finding of this study proves that the wall bounce training intervention over 16 sessions successfully

significantly improved volleyball underhand passing skills. This improvement was evident both quantitatively, with an average score increase of 4.94 points, and qualitatively, marked by a shift in skill categories from "Moderate" to "Good" and "Very Good." Confidence in these findings is further strengthened as the paired sample t-test showed a highly significant result (p=0.000), confirming that this improvement was truly influenced by the training treatment and not a coincidence. The results obtained are consistent with the theoretical framework and supported by the findings of previous studies, such as those by Saputra & Nasrulloh (2023) and Audina et al. (2025), which also confirmed the effectiveness of training using a wall medium in improving passing accuracy. The effectiveness of wall bounce training can be explained through several key mechanisms. First, this training allows for a very high number of movement repetitions in a short time, thus optimally forming muscle memory. Based on motor learning theory, consistent and structured repetition is the key to automating movement, which initially is awkward and conscious, into a fluid motion that requires little thought—a vital advantage in fast-paced game situations.

The second mechanism at play is the provision of immediate feedback by the wall. The wall serves as an honest and objective feedback tool; any error in arm angle or hitting force will be immediately visible from the direction and height of the ball's rebound. This accelerated trial-and-error process allows students to immediately make corrections on subsequent repetitions, making it more effective in building kinesthetic understanding than mere verbal instruction. Furthermore, with targets drawn on the wall, students are not just bouncing the ball but are also required to train their focus, hand-eye coordination, and fine motor control to direct the ball to the intended point—an ability that is the essence of quality passing in an actual game. On the other hand, factors of efficiency and ease of access also supported the success of this method. This simple, self-administered training increased students' intrinsic motivation, allowing them to practice during their free time without depending on the presence of a partner or complex facilities. Thus, it can be concluded that the significant improvement that occurred was the result of the synergy of several factors: the formation of muscle memory through high repetition, the self-correction process through immediate feedback, and the improvement of focus and control. These findings strongly reinforce the position of wall bounce training as a highly valid and powerful drill method to be integrated into the volleyball learning curriculum in schools.

CONCLUSION AND SUGGESTIONS

Based on the data analysis and discussion that have been presented, it can be concluded that the wall bounce training program successfully significantly improved volleyball underhand passing skills in class XI students of SMA Negeri 2 Lawe Sigala-gala. This improvement is evident from the increase in the average score from 20.13, which was in the "Moderate" category, to 25.07, which falls into the "Good" category. The result of the paired sample t-test, with a significance value of 0.000 ($p < 0.05$), further confirms that this improvement is significant and indeed caused by the impact of the training intervention provided. Furthermore, wall bounce training has been proven effective as a method for improving the accuracy, control, and consistency of the underhand pass, with its advantages stemming from its principles of high repetition and an immediate feedback mechanism.

Based on these conclusions, the researchers propose several suggestions to various parties. For PJOK Teachers, it is recommended to integrate wall bounce training into the Lesson Implementation Plan for volleyball material, not merely as a variation but as a core component in developing basic skills, for example, by compiling structured and graded training modules. For Students, this method can be utilized for self-training outside of lesson hours, both at school and at home, to accelerate individual skill improvement. For Schools, it is hoped that they can provide or allocate space with flat and safe walls, equipped with targets or markers, so they can be used optimally for students' independent training activities. Finally, for Future Researchers, it is suggested to conduct follow-up studies with more complex designs, such as involving a control group, comparing the effectiveness of wall bounce with other training methods, researching its impact on different skill variables, or exploring the long-term effects of similar interventions with longer durations.

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