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THE EFFECT OF DRILL-PASSING TRAINING THROUGH CIRCUIT TRAINING ON THE UNDERHAND PASSING ABILITY OF VOLLEYBALL EXTRACURRICULAR STUDENTS AT SMP NEGERI 5 PRABUMULIH

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Abstract
This study aimed to determine the effect of drill-passing training through circuit training on the underhand passing ability of students participating in the volleyball extracurricular program at SMP Negeri 5 Prabumulih. Materials and Methods: A quantitative pre-experimental method with a one-group pretest–posttest design was used. The participants were 25 male volleyball extracurricular students selected using purposive sampling. The intervention consisted of 16 training meetings conducted from April to May 2026, three times per week, with each session lasting approximately 90 minutes. The training was organized into four circuit stations emphasizing repeated underhand passing drills, technical control, coordination, and movement consistency. Underhand passing ability was measured using the Brady Volleyball Test. Data were analyzed using the Shapiro–Wilk normality test and paired-sample t-test with SPSS version 26. Results: The mean pretest score was 14.56, while the mean posttest score increased to 18.68. The Shapiro–Wilk test showed that both pretest and posttest data were normally distributed ($p = 0.447$ and $p = 0.507$). The paired-sample t-test indicated a significant improvement after the intervention, with a mean difference of -4.120, $t(24) = -23.375$, $p < 0.001$, and a 95% confidence interval from -4.484 to -3.756. Conclusions: Drill-passing training delivered through circuit training significantly improved students' underhand passing ability. This method can be recommended as a structured and practical training strategy for volleyball extracurricular programs at the junior secondary school level.

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INTRODUCTION

Volleyball is a team sport that requires technical mastery, movement coordination, and consistent ball control. Among the basic techniques in volleyball, underhand passing has an essential role because it is commonly used to receive the

serve, control the first ball, and build the first phase of attack. Poor underhand passing reduces the quality of ball distribution and makes it difficult for a team to organize effective play. Therefore, students who participate in volleyball extracurricular activities need training programs that provide repeated, structured, and technically directed practice.

In the context of school extracurricular programs, technical problems often occur because students have limited training time, different levels of motor ability, and inconsistent mastery of the basic movement pattern. Initial observation at SMP Negeri 5 Prabumulih showed that several students were not yet able to perform underhand passing consistently for one minute. Common problems included weak ball contact, inaccurate direction, unstable body position, and difficulty controlling balls coming from different directions. These conditions indicate the need for a training method that is simple, progressive, and able to provide sufficient movement repetition without making students passive during practice.

Drill training is relevant for improving underhand passing because it emphasizes repeated execution of the same technical movement until the learner develops better coordination, accuracy, and movement automaticity. However, drill practice can become monotonous when it is delivered in only one format. Circuit training offers a practical solution because students rotate through several stations, each containing a specific technical task. This organization increases active participation, reduces waiting time, and allows students to experience varied but still focused repetitions. Previous studies have reported that circuit-based and drill-based volleyball training can improve underhand passing accuracy, consistency, and performance (Subagio, 2022; Pungki, 2021; Atmaranu et al., 2025; Permana et al., 2025). Based on these considerations, this study examined the effect of drill-passing training through circuit training on the underhand passing ability of volleyball extracurricular students at SMP Negeri 5 Prabumulih. The novelty of this study lies in the integration of repeated underhand passing drills into a four-station circuit format for junior secondary extracurricular students, with a structured 16-meeting intervention and objective measurement using the Brady Volleyball Test.

METHOD

This study used a quantitative pre-experimental method with a one-group pretest–posttest design. The design consisted of an initial test (O1), treatment using drill-passing through circuit training (X), and final test (O2). This design was selected to compare students' underhand passing ability before and after the training intervention.

The population consisted of students who participated in the volleyball extracurricular program at SMP Negeri 5 Prabumulih, South Sumatra, Indonesia. The sample included 25 male students selected using purposive sampling. The participants were selected because they were active members of the volleyball

extracurricular program and followed the full training schedule during the research period.

The study was conducted at SMP Negeri 5 Prabumulih from 6 April to 15 May 2026. Training was carried out three times per week on Thursday, Friday, and Saturday from 15.30 to 17.00 WIB. The intervention consisted of 16 meetings. Each session lasted approximately 90 minutes and included warm-up activities, the main drill-passing circuit, and cooling down. The circuit consisted of four stations. Each station emphasized a different underhand passing task, such as basic passing posture, passing to a target, passing control, passing direction, and repeated passing movement. The training was delivered progressively so that students first learned correct body position and arm contact, then developed accuracy, control, rhythm, and consistency.

Underhand passing ability was measured using the Brady Volleyball Test. In this test, students performed passing toward a wall target for one minute. The first throw was not counted as a score. A score of one was given for every legal pass that entered or touched the target area, while an unsuccessful pass received a score of zero. Each student was given three attempts, and the best score was used as the final score.

Data were analyzed descriptively using the minimum score, maximum score, mean, and category distribution. The Shapiro–Wilk test was used to assess data normality because the sample size was below 50 participants. Since the data were normally distributed, hypothesis testing was conducted using a paired-sample t-test at a significance level of 0.05.

RESULTS

The descriptive results showed an improvement in students' underhand passing ability after the drill-passing circuit training intervention. As shown in Table 1, the pretest score ranged from 9 to 20, with a mean score of 14.56. After 16 training meetings, the posttest score increased, ranging from 11 to 25, with a mean score of 18.68. These findings indicate an average improvement of 4.12 points after the intervention.

Table 1.
Descriptive statistics of students' underhand passing ability

Variable	N	Minimum	Maximum	Mean
Pretest	25	9	20	14.56
Posttest	25	11	25	18.68

Note. The table shows an increase in the minimum, maximum, and mean scores from pretest to posttest, indicating improved underhand passing ability after the training program.

The category distribution also showed a positive shift. As presented in Table 2, before the intervention, no student was in the "very good" category, and only one

student was in the "good" category. After the intervention, three students reached the "very good" category and ten students reached the "good" category. Meanwhile, the number of students in the "poor" and "very poor" categories decreased. This shift indicates that the training program improved not only the average score but also the overall performance level of the students.

Table 2.

Category distribution of students' underhand passing ability

Category	Pretest n (%)	Posttest n (%)
Very good	0 (0.00%)	3 (12.00%)
Good	1 (4.00%)	10 (40.00%)
Moderate	4 (16.00%)	6 (24.00%)
Poor	10 (40.00%)	4 (16.00%)
Very poor	10 (40.00%)	2 (8.00%)
Total	25 (100%)	25 (100%)

Note. The posttest distribution shows a clear movement from lower categories toward higher categories after the drill-passing circuit training intervention.

The Shapiro–Wilk normality test showed that both the pretest and posttest data were normally distributed. As shown in Table 3, the significance value was 0.447 for the pretest and 0.507 for the posttest, both of which were higher than 0.05. Therefore, the data met the normality assumption, and the paired-sample t-test was appropriate for hypothesis testing.

Table 3.

Shapiro–Wilk normality test results

Variable	Shapiro–Wilk Sig.	Interpretation
Pretest	0.447	Normal
Posttest	0.507	Normal

Note. A significance value greater than 0.05 indicates that the data are normally distributed.

The paired-sample t-test showed a significant difference between pretest and posttest scores. As presented in Table 4, the mean difference was -4.120, with $t(24) = -23.375$ and $p < 0.001$. The 95% confidence interval ranged from -4.484 to -3.756 and did not cross zero. This finding confirms that drill-passing training through circuit training had a significant effect on improving students' underhand passing ability.

Table 4.

Paired-sample t-test results

Comparison	Mean Difference	t	df	Sig. (2-tailed)	95% CI
Pretest–Posttest	-4.120	-23.375	24	0.000	-4.484 to -3.756

Note. The negative mean difference indicates that the posttest score was higher than the pretest score. The significance value below 0.05 confirms a statistically significant improvement after the intervention.

DISCUSSION

The findings demonstrate that drill-passing training through circuit training significantly improved the underhand passing ability of volleyball extracurricular students. The increase from a mean score of 14.56 in the pretest to 18.68 in the posttest reflects meaningful technical improvement after 16 structured training meetings. This improvement can be explained by the repeated nature of drill-passing, which allowed students to practice the correct movement pattern, refine arm contact, adjust body posture, and improve ball direction. Repetition is important in technical skill acquisition because it strengthens coordination and helps learners develop more stable motor patterns.

The result is consistent with Subagio (2022), who reported that drill-passing through circuit training improved the underhand passing ability of male volleyball extracurricular students. The present study supports that finding in a different school context by showing that a four-station circuit can produce significant improvement in junior secondary students. The finding is also aligned with Pungki (2021), who found that bounce-ball drill training improved volleyball underhand passing skills, and with Mayori et al. (2025), who concluded that drill-based instruction improved underhand pass learning outcomes through repeated, directed, and gradual practice.

The use of circuit organization appears to be one important factor in the improvement. Circuit training allows students to remain actively involved because they move from one station to another with specific technical tasks. This structure reduces idle time and provides varied repetitions without losing the focus on the target skill. Atmaranu et al. (2025) also reported that circuit training can improve underhand passing performance in terms of accuracy, consistency, and speed. Similarly, the current study showed a shift in performance categories, with more students moving into the moderate, good, and very good categories after training.

The findings are also supported by research on passing accuracy in young volleyball athletes. Permana et al. (2025) found that passing training using part-whole methods significantly enhanced passing accuracy in athletes aged 10–14 years. Although the training model in the present study was different, both studies highlight the importance of systematic, progressive, and technically focused practice for young volleyball learners. Furthermore, Ilhamdi et al. (2023) reported that wall and paired passing drills improved underpass accuracy, which is relevant because the Brady Volleyball Test in this study also involved repeated passing toward a wall target.

From a practical perspective, the drill-passing circuit model is suitable for school extracurricular programs because it is easy to organize, does not require

complex equipment, and can be implemented with limited training time. Teachers and coaches can design several stations according to students' ability levels, such as basic posture station, wall-passing station, target-passing station, and partner-passing station. This makes training more active and less monotonous while still maintaining the principle of repeated technical practice. However, this study was limited by the absence of a control group, the relatively small sample size, and the focus on only one volleyball technique. Future studies should involve a control group, larger samples, and additional volleyball skills such as serve, set, smash, and block.

CONCLUSION

Drill-passing training through circuit training significantly improved the underhand passing ability of volleyball extracurricular students at SMP Negeri 5 Prabumulih. The mean score increased from 14.56 in the pretest to 18.68 in the posttest, and the paired-sample t-test showed a significant difference, $t(24) = -23.375$, $p < 0.001$. These findings indicate that a structured four-station drill-passing circuit can be used as an effective and practical training method for improving underhand passing ability among junior secondary school volleyball extracurricular students.

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