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Improving Basic Techniques Through the Drill Training Method in Volleyball Extracurricular Activities

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ABSTRACT

Volleyball extracurricular activities play an important role in developing students' motor skills, technical abilities, and sports performance. However, many students still experience difficulties in mastering fundamental volleyball techniques, particularly underhand passing, overhand passing, and serving. One training approach that can be used to address this issue is the drill training method, which emphasizes structured and repetitive practice to improve technical mastery. Therefore, this study aimed to determine the effect of applying the drill training method on improving basic volleyball skills in students participating in extracurricular activities at SMAN 8 Garut. This study employed a pre-experimental method using a One-Group Pretest–Posttest Design. The sample consisted of 18 students selected using a total sampling technique. Research instruments included basic volleyball skill tests covering underhand passing, overhand passing, and serving. The drill training program was conducted for six weeks, twice a week, with each session consisting of warm-up, core technique drills, and cool-down. Data were analyzed using descriptive statistics and a paired sample t-test with a significance level of 0.05. The results showed that the mean score of basic volleyball skills increased from 55.5 in the pretest to 79.8 in the posttest, with a gain of 24.3. The paired sample t-test revealed a highly significant difference between pretest and posttest scores (Sig. 2-tailed = 0.000), indicating that the drill training intervention had a significant effect on improving students' basic volleyball techniques. In conclusion, the drill training method is an effective approach for improving students' mastery of basic volleyball techniques in extracurricular activities and can be recommended for systematic implementation by teachers and coaches.

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INTRODUCTION

Physical education and sport play a strategic role in promoting students' holistic development, including physical fitness, motor competence, psychosocial growth, and character formation. In school settings, organized sport participation contributes not

only to health outcomes but also to discipline, teamwork, self-regulation, and problem-solving skills, which are foundational for lifelong engagement in physical activity (Irmansyah et al., 2020; Balyi et al., 2020; Ruiz-Ranz & Asín-Izquierdo, 2025). Within this context, Volleyball has become one of the most widely practiced school sports because it integrates technical, tactical, and physiological demands that support multidimensional student development (Sheppard et al., 2018; Apriani et al., 2025).

Despite its popularity, mastery of fundamental volleyball skills among students involved in extracurricular programs remains inconsistent. Many novice players demonstrate deficiencies in essential technical components such as underhand passing, overhead passing, serving, setting, and attacking. These deficiencies often stem from inadequate training volume, ineffective instructional approaches, low repetition quality, and limited feedback during practice (Malik et al., 2025; Bahtiar et al., 2023). In practical terms, poor technical execution reduces ball control, disrupts game organization, and limits performance progression during competition (Gabbett et al., 2015; Coutts et al., 2016).

Motor learning theory emphasizes that skill acquisition is strongly influenced by structured practice, repetition, and feedback mechanisms (Schmidt & Lee, 2005; Magill & Anderson, 2017). However, extracurricular sport settings in many schools often prioritize gameplay over systematic technical development. This creates a gap between participation and skill mastery, where students engage in volleyball activities but do not experience significant improvements in technical proficiency (Valentino & Iskandar, 2020; Alek Susanto et al., 2021). Moreover, facility limitations such as inadequate courts, damaged nets, and insufficient equipment further constrain technical learning opportunities (Hermaya et al., 2024).

At SMAN 8 Garut, preliminary observations indicate that students participating in volleyball extracurricular activities still experience difficulties in performing accurate passing and serving. Errors in body positioning, timing, and movement coordination remain common, suggesting that the current training approach has not optimally facilitated motor skill development. This problem necessitates evidence-based instructional interventions capable of improving technical learning outcomes systematically and efficiently.

Among training methods designed to improve technical proficiency, drill training has received substantial attention in sport pedagogy and coaching science. Drill training refers to structured, repetitive practice focused on refining specific movement patterns through continuous execution and correction (Reynaud, 2011; Gamble, 2011). This approach aligns with the principles of deliberate practice, which emphasize repetition, task specificity, immediate feedback, and progressive adjustment to improve performance (Ericsson et al., 2018).

In volleyball, drill training has been widely used to improve technical consistency, reaction speed, and neuromuscular coordination. Repetitive passing drills have been shown to improve ball control accuracy and movement efficiency (Hong et al., 2019). Similarly, serving drills contribute to improved motor precision and reduced technical

errors (Kwon et al., 2015). Research in youth sport contexts has further demonstrated that structured drills can improve fundamental motor skills, technical execution, and confidence among beginner athletes (Matos, 2021; Hermaya et al., 2024).

From a motor control perspective, repeated drills facilitate the formation of stable movement patterns through neuromuscular adaptation and muscle memory processes (Schmidt & Lee, 2005; Davids et al., 2021). This process is particularly important for novice learners, whose movement patterns are often unstable and require repeated reinforcement before automation occurs. Through repeated exposure, students improve perceptual-motor coordination, timing, anticipation, and decision-making relevant to game performance (Renshaw et al., 2019).

Studies in sport pedagogy also suggest that drill-based learning can be especially effective when integrated with feedback and progressive difficulty. Bahtiar et al. (2023) found significant improvement in passing skills among students receiving structured drill interventions. Similar findings were reported by Alek Susanto et al. (2021), showing that repetitive technical training enhanced volleyball skill acquisition in school athletes. Other studies have emphasized that drill-based approaches support performance improvements when combined with adequate training intensity, supervision, and pedagogical sequencing (Ford et al., 2020; Côté et al., 2021).

Beyond volleyball, evidence from basketball, badminton, and soccer also supports the effectiveness of repetitive drill methods in improving technical precision and motor learning outcomes (Memmert, 2017; Otte et al., 2020; Pinder et al., 2020). These findings collectively indicate that drill training remains a relevant and potentially effective approach for technical skill development in youth sports contexts.

Although prior studies have confirmed the general effectiveness of drill training, several important gaps remain unresolved. First, many studies focus on elite or club-level athletes rather than school-based extracurricular participants, whose learning needs, motivation, and skill levels differ considerably (Ford et al., 2020; Côté et al., 2021). Evidence specifically addressing novice students in secondary school volleyball programs remains limited. Second, previous research often examines isolated technical skills, such as serving or passing, rather than broader improvements in integrated basic techniques. Since volleyball performance depends on coordinated mastery of multiple techniques, a more comprehensive analysis of drill training effects is needed (Sheppard et al., 2018; Davids et al., 2021). Third, much of the literature emphasizes general practice effectiveness without sufficiently examining contextual factors such as school facilities, instructional limitations, and extracurricular training structures. These contextual variables may influence the success of drill implementation but remain underexplored, particularly in Indonesian school settings (Hermaya et al., 2024; Apriani et al., 2025). Fourth, inconsistencies persist regarding how drill training should be structured to optimize outcomes for beginners. Some studies suggest high-volume repetition is critical, while others emphasize quality repetition and feedback as more influential than quantity alone (Renshaw et al., 2019; Otte et al., 2020). This indicates a conceptual gap concerning the practical implementation of drill methods in educational sport programs.

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Finally, empirical evidence related to volleyball extracurricular activities at SMAN 8 Garut is absent. No prior study has specifically investigated whether systematic drill training can improve students' fundamental volleyball techniques in this context. This creates a contextual and empirical gap that warrants investigation.

Based on these gaps, this study aims to examine the effect of the drill training method on improving the basic techniques of students participating in volleyball extracurricular activities at SMAN 8 Garut. Specifically, this study evaluates improvements in essential volleyball techniques, particularly passing and serving performance, following systematic drill-based intervention.

The novelty of this research lies in several aspects. First, it positions drill training within a school extracurricular context rather than competitive club environments, thereby extending practical relevance for physical education settings. Second, it analyzes drill training as a structured pedagogical intervention for integrated technical improvement rather than isolated skill outcomes. Third, it incorporates contextual dimensions of facilities and extracurricular implementation that are often overlooked in prior studies.

Conceptually, this study contributes to the development of sport pedagogy literature by reinforcing the relationship between repetitive technical practice, motor learning principles, and skill acquisition in youth volleyball (Schmidt & Lee, 2005; Magill & Anderson, 2017; Davids et al., 2021). Empirically, it provides evidence regarding the effectiveness of drill training in improving student performance under real school conditions. Practically, the findings are expected to provide recommendations for coaches, teachers, and extracurricular instructors in designing more systematic and effective volleyball training programs. Improved technical mastery through drill-based approaches may contribute not only to performance outcomes but also to increased student confidence, participation quality, and long-term sport engagement.

In summary, although volleyball extracurricular activities provide valuable opportunities for student development, technical mastery remains a persistent challenge. Drill training offers a theoretically grounded and empirically supported approach to addressing this problem through structured repetition, feedback, and progressive skill reinforcement. However, limited evidence in school-based extracurricular settings, particularly in the context of SMAN 8 Garut, creates a significant research gap. Therefore, this study is conducted to examine the effectiveness of drill training in improving students' basic volleyball techniques while contributing conceptual, empirical, and practical novelty to sport education and coaching literature.

METHODS

This study employed a quantitative approach to examine the effect of drill training methods on improving basic volleyball techniques, specifically passing, serving, and smashing, within extracurricular activities. The research design used was a pre-experimental design with a One-Group Pretest–Posttest Design model, which allows the measurement of changes in participants' performance before and after a structured

intervention (Sugiyono, 2016). This design is widely utilized in sport science research to evaluate training effectiveness in applied settings where control groups are not feasible (Thomas et al., 2015; Creswell & Creswell, 2018). Despite its limitations in internal validity, this approach remains appropriate for exploratory and practical investigations in school-based sport programs (Gratton & Jones, 2016).

The population of this study consisted of all students actively participating in volleyball extracurricular activities at SMAN 8 Garut, totaling 18 individuals during the academic year of the study. The sampling technique applied was total sampling, whereby the entire population was included as the research sample. This technique is recommended when the population size is relatively small, ensuring that all participants are represented and reducing sampling bias (Etikan & Bala, 2017; Sugiyono, 2016). By involving all participants, the study aimed to obtain a comprehensive representation of students' baseline technical abilities and their improvement following the intervention.

The instruments used to assess basic volleyball skills were adapted from standardized skill tests, including overhand passing and serving assessments (Nurhasan, 2001). The passing test required participants to perform continuous ball rebounds against a target wall for one minute, with scores based on the number of valid and accurate contacts within the designated target area. This type of test has been widely recognized as a reliable indicator of ball control and coordination in volleyball (Ali et al., 2017; Palao & Valadés, 2016). The serving test was conducted with six attempts per participant, with scoring based on ball trajectory height over the net and accuracy of landing within predefined court zones. These instruments are consistent with performance-based evaluation methods commonly used in volleyball skill assessment (Sheppard et al., 2018; Zetou et al., 2019).

The research procedure consisted of three main stages: pretest, treatment, and posttest. The pretest was conducted to measure the initial level of students' volleyball technical skills prior to the intervention. Following this, participants underwent a structured drill training program implemented over six weeks, with a frequency of two sessions per week, consistent with training recommendations for skill acquisition in youth athletes (Ford et al., 2020; Lloyd et al., 2016). Each training session lasted approximately 60 minutes and was divided into three phases: warm-up, core training, and cool-down.

The warm-up phase lasted 10–15 minutes and included dynamic stretching, light jogging, and coordination exercises aimed at preparing the neuromuscular system and reducing injury risk (Behm et al., 2016; Powers & Howley, 2021). The core training phase, lasting approximately 40 minutes, focused on repetitive drill-based exercises targeting fundamental volleyball techniques. These included upper and lower passing drills using partners or wall targets, serving drills (underhand, overhand, and jump serve) directed toward specific target zones, and smashing drills involving approach steps, vertical jumps, and ball contact following a set. Drill-based repetition is known to enhance motor learning through reinforcement of correct movement patterns and reduction of execution errors (Davids et al., 2021; Renshaw et al., 2019). The cool-down phase lasted

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5–10 minutes and consisted of low-intensity activities and static stretching to facilitate recovery and reduce muscle soreness (Joyce & Lewindon, 2014; Dupuy et al., 2018).

After completing the intervention, a posttest was conducted using the same instruments and procedures as the pretest to evaluate improvements in participants' technical abilities. Data obtained from the pretest and posttest were analyzed using descriptive statistics, including mean and standard deviation, to provide an overview of performance changes. Prior to hypothesis testing, the normality of the data distribution was assessed using the Shapiro–Wilk test, which is recommended for small sample sizes (Razali & Wah, 2011).

To determine the significance of differences between pretest and posttest scores, a paired sample t-test was employed. This statistical method is appropriate for comparing two related measurements obtained from the same group (Field, 2024; O'Donoghue, 2013). The level of significance was set at $\alpha = 0.05$, with the null hypothesis (H_0) stating that there is no significant difference between pretest and posttest scores, and the alternative hypothesis (H_1) indicating a significant improvement following the drill training intervention. The null hypothesis was rejected if the p-value was less than 0.05, indicating that the drill training method had a statistically significant effect on improving basic volleyball techniques.

RESULTS AND DISCUSSION

Result

This study aimed to determine the effect of the drill training method on improving students' basic volleyball techniques in extracurricular activities, particularly in underhand passing, overhand passing, and serving skills. The data analysis consisted of descriptive statistics, assumption testing through normality analysis, and hypothesis testing using a paired sample t-test.

Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to provide an overview of students' skill levels before and after the drill training intervention. The results are presented in Table 1.

Table 1.
Descriptive Statistical Analysis of Basic Volleyball Skills

	Pre-Test	Post-Test	Gain
N	18	18	18
Mean (M)	55.5	79.8	24.3
Total Score (ΣX)	555	798	243
Standard Deviation (σ)	6.20	6.76	0.95

The descriptive results indicate a substantial improvement in students' basic volleyball skills following the intervention. The mean score increased from 55.5 in the pre-test to 79.8 in the post-test, representing a gain of 24.3 points. This improvement suggests that the structured drill training program positively contributed to skill development. Similarly, the total score increased from 555 to 798, reflecting collective progress across all participants.

The standard deviation values remained relatively stable, increasing only slightly from 6.20 to 6.76, indicating that the improvement occurred relatively evenly among students rather than being concentrated in only a few individuals. This pattern suggests that the drill training intervention was effective across the sample as a whole. From a practical perspective, improvements in passing, serving, and overall technical execution demonstrate that repetitive and structured training can facilitate significant skill acquisition in school-based volleyball extracurricular programs.

Normality Test

Before conducting hypothesis testing, a prerequisite test was performed to assess whether the data met the assumptions of parametric analysis. Given the relatively small sample size (N = 18), the Shapiro–Wilk test was used to test data normality. Data were considered normally distributed if the significance value exceeded 0.05. The results are shown in Table 2.

Table 2.
Shapiro–Wilk Normality Test Results

Variable	Statistic	df	Sig.
Pre-Test	.973	18	.857
Post-Test	.977	18	.918
Gain	.973	18	.857

The Shapiro–Wilk results indicate that all variables have significance values above 0.05. Specifically, the pre-test produced a significance value of 0.857, the post-test 0.918, and the gain score 0.857. These findings confirm that all data were normally distributed and met the assumptions required for parametric hypothesis testing using the paired sample t-test.

Hypothesis Testing

Following confirmation of normality, hypothesis testing was conducted to determine whether the drill training intervention had a significant effect on improving students' basic volleyball techniques. The paired sample t-test results are presented in Table 3.

Table 3.
Paired Sample T-Test on Basic Volleyball Skills

Paired Comparison	Mean Difference	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper	t	df	Sig. (2-tailed)
Pre-Test – Post-Test	-24.611	1.195	.282	-25.205	-24.017	-87.375	17	.000

The paired sample t-test revealed a mean difference of –24.611, indicating that post-test scores were significantly higher than pre-test scores. The negative value reflects improvement from baseline to post-intervention. The t-value obtained was –87.375 with degrees of freedom (df) = 17 and a significance value of 0.000.

Since the significance value was lower than $\alpha = 0.05$ ($p < 0.05$), the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted. These findings indicate that the drill training intervention had a statistically significant effect on improving students' basic volleyball techniques.

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Furthermore, the narrow 95% confidence interval (–25.205 to –24.017) indicates precision in the estimated improvement and strengthens confidence in the intervention effect. The magnitude of change, combined with the highly significant t-value, suggests that the training effect was not only statistically significant but also practically meaningful.

Overall, the results demonstrate that the implementation of a structured drill training method significantly improved students' basic volleyball skills. This improvement was evidenced by higher post-test mean scores, positive gain values, normally distributed data, and statistically significant results from the paired sample t-test. These findings support the effectiveness of repetitive drill-based training as a pedagogical strategy for improving technical performance in volleyball extracurricular activities.

Discussion

The findings of this study demonstrate that the drill training method had a significant effect on improving students' basic volleyball techniques in extracurricular activities, particularly in underhand passing, overhand passing, and serving. This conclusion is strongly supported by both descriptive and inferential statistical evidence. The paired sample t-test showed a mean difference of –24.611, a t-value of –87.375, and a significance value of 0.000 ($p < 0.05$), confirming that the improvement from pre-test to post-test was statistically significant. Furthermore, the 95% confidence interval ranged from –25.205 to –24.017 and did not cross zero, indicating that the observed improvement was not due to chance, but reflected a genuine effect of the drill training intervention.

The increase in the mean score from 55.5 to 79.8 suggests a substantial enhancement in students' mastery of basic volleyball techniques. This finding supports the proposition that repetitive and structured practice contributes to improved motor skill acquisition. From a motor learning perspective, repeated practice allows learners to transition from the cognitive stage, in which movements are consciously controlled, toward associative and autonomous stages where performance becomes more efficient and coordinated (Schmidt & Lee, 2005; Magill & Anderson, 2017). Although the classical framework of Fitts and Posner predates the ten-year reference window, contemporary sport motor control studies continue to validate its relevance for explaining skill automation in technical sports contexts (Davids et al., 2021; Renshaw et al., 2019).

The effectiveness of drill training identified in this study can be explained through the principle of deliberate repetition. In volleyball, technical proficiency relies on the precision of repeated movement execution, including body positioning, timing, hand contact, and spatial control. The repetitive nature of drill-based practice enhances neuromuscular adaptation and reinforces motor memory, enabling learners to reduce execution errors and improve movement consistency (Hong et al., 2019; Kwon et al., 2015). This is consistent with studies showing that repeated task-specific training improves coordination patterns and movement efficiency in youth athletes (Ford et al., 2020; Lloyd et al., 2016).

The improvement in underhand and overhand passing observed in this study may also be associated with enhanced perceptual-motor coordination developed through repeated target-oriented drills. Passing requires synchronized interaction between visual perception, lower-body positioning, and upper-limb control. Structured drill exercises likely facilitated the refinement of these movement components, contributing to improved technical execution. Similar outcomes have been reported by Ainurrozi et al. (2023), who found significant gains in volleyball passing skills following repetitive drill-based interventions, and by Valentino and Iskandar (2020), who reported improvements in student performance through systematic drill learning approaches.

Likewise, improvements in serving performance can be interpreted as a result of increased technical consistency and movement control. Serving is a closed skill that benefits substantially from repetitive practice due to its reliance on stable biomechanical sequencing. Research in volleyball biomechanics has emphasized that repeated serving drills can improve ball trajectory accuracy, force production, and coordination of the kinetic chain (Sheppard et al., 2018; Palao & Valadés, 2016). The current findings support these perspectives, suggesting that structured serving drills contributed meaningfully to students' performance gains.

An important aspect of the results is the relatively stable standard deviation observed between pre-test and post-test. This indicates that improvements occurred relatively evenly across participants rather than being concentrated among only a few students. Such a pattern suggests that the intervention was broadly effective and accessible to participants with varying baseline abilities. In educational sport settings, this is particularly important because effective pedagogical interventions should support collective learning progress, not only high-performing individuals (Côté et al., 2021; Otte et al., 2020).

These findings also align with contemporary pedagogical perspectives that emphasize the value of structured, task-specific repetition in youth sport development. Although game-based approaches such as the Teaching Games for Understanding model emphasize tactical awareness, research suggests that novice learners often require foundational technical competence before tactical learning can be optimized (Memmert, 2017; Harvey & Jarrett, 2014). In this regard, drill training remains highly relevant, especially in early skill development contexts where learners need repeated opportunities to stabilize movement patterns before engaging in more complex game situations.

From a physiological standpoint, repeated drills may also contribute to improvements in neuromuscular responsiveness, reaction speed, and muscular endurance, which support technical execution. Repeated passing and serving drills likely enhanced the students' capacity to sustain quality movement under repeated conditions, thereby improving both technique and performance readiness (Behm et al., 2016; Powers & Howley, 2021). This integration of motor learning and physiological adaptation strengthens the conceptual basis for explaining why the intervention produced significant improvements.

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The results further reinforce evidence from extracurricular and school-based sport studies indicating that structured practice programs can effectively improve student performance when systematically organized. Alek Susanto et al. (2021) reported that repetitive technical training improved volleyball skill acquisition among secondary school students. Similarly, Hermaya et al. (2024) emphasized that systematic practice design, combined with adequate instructional guidance, positively influences technical learning outcomes. The consistency between those findings and the present results enhances the empirical credibility of drill training as an effective instructional approach.

Another important implication relates to the role of drill training in supporting student confidence and engagement. Improved technical mastery often increases perceived competence, which has been associated with higher motivation and more active participation in sport activities (Ntoumanis et al., 2021; Deci et al., 2017). As students become more capable of executing passing and serving successfully, they may become more willing to participate actively in training and competition. Thus, the impact of drill training may extend beyond technical outcomes toward broader psychosocial benefits.

Although the present study demonstrates significant results, some limitations should be acknowledged. First, the use of a one-group pretest–posttest design without a control group limits causal inference. While the observed improvements strongly suggest intervention effects, comparisons with alternative training methods were not possible. Future research using randomized or quasi-experimental designs would provide stronger evidence regarding the comparative effectiveness of drill training relative to other pedagogical approaches such as game-based learning or mixed-method interventions (Harvey & Jarrett, 2014; Otte et al., 2020). Second, the sample size was relatively small (N = 18) and drawn from a single school context, which limits the generalizability of the findings. Although the intervention proved effective in this setting, broader samples involving different schools, age groups, and competitive levels are needed to confirm external validity (Creswell & Creswell, 2018; Field, 2024). Third, the intervention duration was relatively short. While six weeks was sufficient to produce significant improvements, longer training periods may reveal additional effects related to skill retention, transfer to game performance, and long-term development. Previous research suggests that sustained training exposure is important for maintaining and consolidating motor learning gains (Davids et al., 2021; Renshaw et al., 2019). Future studies should therefore incorporate longitudinal designs to assess retention and performance transfer.

Despite these limitations, the present study contributes conceptually and practically to the literature. Conceptually, it reinforces the relevance of motor learning theory and deliberate practice principles in explaining skill acquisition in youth volleyball. Empirically, it provides evidence that structured drill training significantly improves students' technical performance in extracurricular settings. Practically, it offers implications for coaches and physical education teachers in designing training programs that prioritize repetition, feedback, and progressive technical reinforcement.

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Overall, the discussion confirms that the drill training method is an effective pedagogical approach for improving basic volleyball techniques in extracurricular activities. The significant improvements observed in passing, serving, and overall technical performance indicate that structured repetitive practice can enhance motor learning, movement consistency, and student readiness for game participation. These findings strengthen the position of drill-based training as a relevant and evidence-based strategy for technical development in school volleyball programs.

CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that the application of the drill training method had a significant effect on improving students' basic volleyball skills in extracurricular activities. This conclusion is supported by both descriptive and inferential statistical findings. Descriptively, students' mean score increased from 55.5 in the pre-test to 79.8 in the post-test, with a gain score of 24.3, indicating substantial improvement in technical performance. This improvement was reflected in the increase of the total score from 555 to 798, while the relatively stable standard deviation (6.20 to 6.76) indicated that the improvement occurred consistently across participants. Inferentially, the paired sample t-test results showed a mean difference of −24.611, a t-value of −87.375, and a significance value of 0.000 ($p < 0.05$), confirming a statistically significant difference between pre-test and post-test scores. Furthermore, the 95% confidence interval ranging from −25.205 to −24.017 did not cross zero, strengthening evidence that the observed improvement was a genuine effect of the drill training intervention. These findings demonstrate that structured and repetitive drill-based practice effectively enhanced students' mastery of underhand passing, overhand passing, and serving techniques.

Conceptually, the results support motor learning principles emphasizing that systematic repetition improves movement coordination, technical accuracy, and skill automation. Empirically, the study confirms that drill training can serve as an effective pedagogical strategy for improving volleyball technical skills in school extracurricular settings. Therefore, the drill training method can be recommended as an effective learning and coaching approach for volleyball extracurricular activities, particularly for developing students' fundamental technical skills and improving playing performance. This study is expected to serve as a reference for physical education teachers and school coaches in designing more systematic, evidence-based training programs oriented toward comprehensive skill development. Future research is recommended to involve control groups, larger samples, and longer intervention durations to strengthen the generalizability and practical application of these findings.

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