JIAS
Journal of Indonesian Active in Sports
Vol. 2 (2) July 2025

Article

Comparative Analysis of Harlan Cohen's Drill and Two-Pass Reaction Drill in Enhancing Volleyball Setting Skills

Dedi Situmorang[1], David Siahaan[2]
[1,2]Department of Sport Coaching Education, Faculty of Sport Science, State University of Medan, Indonesia

History Article

Received:
January 2025

Accepted:
April 2025

Published:
July 2025

Keywords:
volleyball training methods, skill development strategies, player performance optimization, tactical and technical improvement, experimental training evaluation, sports coaching practices.

Abstract

This study investigated the effects of harlan cohen's and two-pass reaction on the setting skills of volleyball players at GAPERTA VC, Medan. A pretest-posttest experimental design was used, involving 10 male players who were evenly divided into two groups based on pretest rankings. Group A practiced harlan cohen's, focusing on agility and coordination, while Group B practiced the two-pass reaction, which emphasized quick decision-making and adaptability. The training program lasted six weeks, consisting of 18 sessions. Standardized assessments were conducted before and after the intervention, and the data were analyzed using paired and independent sample t-tests at a significance level of $\alpha = 0.05$. The results showed that both drills significantly improved setting skills. Harlan cohen's drill enhanced technical fundamentals, such as precision and control, whereas the two-pass reaction drill improved reaction time and situational awareness. Despite these distinct focuses, the independent sample t-test revealed no significant differences in the effectiveness of the two methods, suggesting their complementary potential. This study concludes that integrating these drills into training regimens can provide a comprehensive approach to developing both technical and tactical volleyball skills. The findings offer valuable insights for coaches seeking to optimize player performance through targeted training methods. Future research is encouraged to explore larger sample sizes and additional training variations to further validate and expand upon these results.

Corresponding Author: Dedi Situmorang, Universitas Negeri Medan, Indonesia
E-mail: dedisitumorang373@gmail.com

INTRODUCTION

Volleyball is a team sport that requires players to master various fundamental techniques, such as serving, passing, setting, spiking, and blocking. Volleyball has evolved into one of the most popular sports worldwide (Tirabassi, 2020). The

objectives of volleyball extend beyond competition and include fostering physical and mental health (Bilgin & Kurcan, 2024), developing body shapes suited to the sport—particularly tall and athletic builds—and enhancing talents in physical skills, technical proficiency, and tactical awareness. Additionally, volleyball aims to instill positive mental attitudes such as discipline, perseverance, creativity, responsibility, and strong determination (Hao, 2024). A critical factor in achieving these goals lies in developing the players' physical, mental, and technical capabilities.

GAPERTA VC, a volleyball club in Medan Helvetia, demonstrates significant potential in nurturing talented athletes. The club's noteworthy accomplishments include its first-place finish in the Langkat Regent's Cup for the 2003 birth year category and its second-place finish in the 2005 birth year category during the 2021 competition. Notwithstanding considerable challenges with the setters' performance, Gaperta VC attained noteworthy results. A thorough examination of numerous training sessions identified crucial issues with the setters' execution of precise overhead passes, a pivotal skill in volleyball. This deficiency manifested in errors during ball distribution, particularly in double passes, which adversely affected the team's capacity to generate effective attacking opportunities. Furthermore, the setters encountered difficulties with proper hand positioning during ball reception, which frequently resulted in finger injuries. These injuries further hindered their performance (Ozawa, Shuichi, Keita, Kazuyuki, & and Yamada, 2021). Moreover, the setters' limited knowledge of diverse attack variations and their inability to adjust setting techniques to align with the team's strategic needs served to restrict their offensive potential (Ramos, Patrícia, Keith, & and Mesquita, 2021). Notwithstanding these technical challenges, the team's adept offensive players, robust defense, and effective court communication enabled adaptation and the maintenance of a high level of performance (Woolley, 2011). The team's capacity to overcome setter deficiencies through resilience, adaptability, and teamwork was instrumental in their sustained success, underscoring the significance of a comprehensive team effort, even in the face of individual performance challenges.

This study aims to evaluate the effects of two training methods—Harlan Cohen's drill and the Two-pass Reaction drill—on setting skills among players at GAPERTA VC. The Harlan Cohen drill is designed to enhance the setters' agility, footwork, and explosive movement by incorporating plyometric exercises that augment leg strength

and coordination. These exercises are critical for quick directional changes and effective overhead passes. This drill is designed to enhance the setter's efficiency in traversing the court and optimize their positioning for delivering precise passes under pressure. Conversely, the Two-pass Reaction drill emphasizes enhancing reaction time and adaptability. This drill trains the setter to swiftly adjust to imperfect passes and make accurate decisions in real-time. By simulating game-like conditions that require rapid reaction to variable ball trajectories, this drill enhances coordination and decision-making skills, equipping setters with the ability to manage unpredictable situations during matches. Collectively, these training exercises target critical aspects of performance, including but not limited to, enhancing passing accuracy, reducing reaction time, and implementing preventative measures to mitigate the risk of injury. The overarching objective of these training methodologies is to optimize the setting performance of players at GAPERTA VC, thereby contributing to the enhancement of their overall athletic abilities and the overall quality of the setting. By identifying the impact of these training approaches, the research seeks to contribute to the club's performance improvement and the effectiveness of its training programs.

The issues highlighted form the foundation for this research, titled "The Comparative Effects of Harlan Cohen's Drill and Two-pass Reaction Drill on Setting Skills at GAPERTA VC in Medan Helvetia." The study aspires to provide practical recommendations for volleyball clubs, particularly GAPERTA VC, in designing training programs to enhance their achievements in 2024 and beyond.

METHODS

This experimental study aimed to determine the comparative effects of Harlan Cohen's drill and the two-pass reaction drill on volleyball setting skills at GAPERTA Club, Medan, North Sumatra. The study was conducted at GAPERTA Club, specifically at the Denzibang GAPERTA field, located at Jl. Gaperta No. 100, Helvetia Tengah, Medan City, North Sumatra. The research was conducted over a period of six weeks, comprising 18 training sessions held three times a week—on Mondays, Wednesdays, and Fridays—from 4:00 PM to 6:00 PM during August–September 2024. Each session was meticulously structured to include a 15-minute dynamic warm-up, which was designed to prepare the athletes physically, followed by 60 minutes of targeted training. The training program encompassed two distinct drills: The first was Harlan Cohen's drill, which was designed to enhance footwork, agility, and explosive

movement. The second was the Two-pass Reaction drill, which was aimed at improving reaction time and adaptability in unpredictable setting situations. The training sessions concluded with a 15-minute cool-down period, aimed at reducing muscle tension and facilitating recovery.

At the beginning of the study, a pretest was administered to assess the initial setting skills before the intervention. Following the treatment, a posttest was conducted using the same standardized assessment tool. The study applied a ranking system based on the athletes' pretest results. Participants were divided into two groups using a matching-pairing technique, as detailed below:

Table 1. Group Distribution Based on Matching Pairing

Group A: Harlan Cohen's Drill	Group B: Two-Pass Reaction Drill
1	2
3	4
5	6
7	8
9	10

This study employed a two-group pretest-posttest design due to the limited sample size and the absence of comparable groups in the vicinity. Consequently, a pre-experimental approach was adopted.

Table 2. Research Design

Pre-Test	Ordinal Pairing	Treatment	Post-Test
T1	Group A	Harlan Cohen's Drill	T2
	Group B	Two-Pass Reaction Drill	

Data analysis involved categorizing responses based on the study variables, presenting descriptive statistics for each variable, and performing hypothesis testing using paired and independent sample t-tests at a significance level of $\alpha = 0.05$. Preliminary tests for normality and homogeneity were conducted before hypothesis testing. Statistical analysis was performed using SPSS version 25.

RESULTS & DISCUSSION

Data Description

The pretest results for volleyball setting skills in Group A, which underwent Harlan Cohen's drill training, showed that 3 participants (60%) were categorized as low, 1 participant (20%) as moderate, and 1 participant (20%) as high. The mean score was 2.60, the median was 2.00, and the standard deviation was 0.896. Similarly, for

Group B, which underwent the two-pass reaction drill training, 3 participants (60%) were categorized as low, 1 participant (20%) as moderate, and 1 participant (20%) as high. The mean score was 2.60, the median was 2.00, and the standard deviation was 3.777.

The posttest results showed improvements in Group A, with 2 participants (40%) categorized as high and 3 participants (60%) as very high. The mean score increased to 4.40, the median was 4.00, and the standard deviation was 0.548. For Group B, the results indicated that 1 participant (20%) was categorized as moderate, 2 participants (40%) as high, and 2 participants (40%) as very high. The mean score was 4.20, the median was 4.00, and the standard deviation was 0.837.

Analysis Prerequisites

1. Normality Test

The normality of the data distribution was tested using the Shapiro-Wilk method. The results are summarized in the table below:

Table 3. Normality Test of Pre-Test and Post-Test Setting Results in Each Group

Data	Shapiro-Wilk		Description
	Sig.	α	
Pre-test A	0.337	0.05	Normal
Post-test A	0.916	0.05	Normal
Pre-test B	0.530	0.05	Normal
Post-test B	0.318	0.05	Normal

As illustrated in the above table, the results of the pre-test and post-test setting ability in Group A (harlan cohen's drill) are normally distributed. The pre-test data obtained a significance value of 0.337 greater than the alpha value, and the post-test data obtained a significance of 0.916 greater than 0.05. Conversely, the pre-test and post-test data from group B (two-pass reaction drill) demonstrated a normal distribution, with a specific pre-test value exhibiting a significance value of 0.530 greater than 0.05 and a post-test value showing a significance of 0.318 greater than the alpha value.

2. Homogeneity Test

Table 4. Homogeneity Test of Pre-Test and Post-Test Setting Results in Each Group

Data	Levene's Test of Homogeneity Varians		Description
	F	Sig.	
Pre-test A & B	0.046	0.948	Homogeneous
Post-test A & B	1.389	0.272	Homogeneous

Homogeneity was assessed using Levene's Test for Equality of Variances, as summarized above. As demonstrated in the above table, the data on the outcomes of setting ability in the pre-test of groups A and B are homogeneous, with a value of 0.948 that exceeds the alpha level of 0.05. A similar homogeneous distribution of data is observed in the post-test of groups A and B, with a value of 0.272 that surpasses 0.05.

Hypothesis Test

Paired sample t-tests were used to assess the impact of each training method on setting skills, while independent sample t-tests were employed to compare the effectiveness of the two methods. The results are as follows:

Table 1. Results of Paired Sample T-Test

	Training Method	Sig. (2-Tailed)	α
Setting Ability Results	Harlan Cohen's (Group A)	0.00	0.05
	Two-Pass Reaction (Group B)	0.00	0.05

The first hypothesis yielded a significant result ($p = 0.000 < 0.05$), indicating that the harlan cohen's drill method has a substantial impact on the setting proficiency of volleyball athletes. The second hypothesis determined that the two-pass reaction drill program significantly influences the setting performance of volleyball athletes, with a p-value that is less than the alpha value.

Table 2. Results of Independent T-Test Test

	Training Method	T-Count	T-Table
Setting Ability Results	Harlan Cohen's & Two-pass Reaction (Groups A & B)	0.402	1.812

As demonstrated in the above table, the t-count value of 0.402 exceeds the t-table of 1.812. This finding indicates that there is no statistically significant difference in the influence of groups A and B (harlan cohen's and two-pass reaction drills) on the outcomes of setting ability in volleyball athletes.

Discussion

This study aimed to compare the effects of Harlan Cohen's drill and the two-pass reaction drill on the volleyball setting skills of GAPERTA VC athletes. The analysis revealed that both methods significantly improved setting skills, as demonstrated by the paired sample t-test results. However, the independent sample t-test showed no significant difference in the effectiveness of the two methods.

Harlan Cohen's drill, designed to enhance agility, coordination, and technical control, demonstrated significant benefits in improving setting performance. This finding aligns with research by Risma & Bakhtiar (2024) and Marinho & das Virgens Chagas (2022), which highlighted the positive impact of motor coordination-based training on mastering fundamental volleyball skills. Conversely, the two-pass reaction drill emphasized quick responses and decision-making in dynamic game situations. This approach supports the findings of Tchomche, Bingquan, & Shoukat (2024) and Söyler (2022), which suggested that reaction-based training accelerates players' adaptation to changing match scenarios. The lack of a significant difference between the methods suggests that they can be implemented complementarily to achieve optimal results. The importance of combining technical and tactical training to enhance overall athletic performance (Karpa et al., 2021; Risma & Bakhtiar, 2024). By integrating the technical focus of Harlan Cohen's drill with the responsive approach of the two-pass reaction drill, coaches can develop more effective training programs for improving players' setting skills.

This study provides valuable insights for volleyball training program development, particularly for GAPERTA VC. Integrating these two methods is expected to maximize the potential of athletes, both technically and tactically. Furthermore, the findings lay a foundation for future research exploring the effectiveness of other training methods in enhancing volleyball performance.

CONCLUSION

This study demonstrates that both harlan cohen's and the two-pass reaction drills are effective in significantly improving the volleyball setting skills of athletes at GAPERTA VC. The harlan cohen's drill enhances technical skills such as agility and coordination, while the two-pass reaction drill develops quick responses and decision-making abilities in dynamic gameplay situations. Statistical analysis reveals no significant difference in the effectiveness of the two methods, suggesting that they can be applied complementarily to create a comprehensive training program. By integrating these approaches, coaches can optimize the development of both technical and tactical skills, contributing to the overall performance improvement of individuals and teams. These findings provide valuable insights for advancing volleyball training programs and highlight the potential for future research exploring broader and more innovative training methods.

REFERENCES

Bilgin, E., & Kurcan, K. (2024). The Place and Importance of Volleyball Teaching in Physical Education Classes. *IJOSS, 1*(1), 12-18.

Hao, X. (2024). The influence of volleyball training on the psychological health development of college students. *Revista de Psicología del Deporte (Journal of Sport Psychology), 33*(1), 258-269.

Karpa, I., Budzyn, V., Matviyas, O., Ripak, I., Lapychak, I., & Khorkavyy, B. (2021). Improving the technical and tactical actions of qualified football players of various positions in certain areas of the field. *Journal of Physical Education and Sport, 21*(3), 1461-1468. doi:https://doi.org/10.7752/jpes.2021.03186

Marinho, B., & das Virgens Chagas, D. (2022). Can motor coordination level predict performance on volleyball skills in youth? (¿Puede el nivel de coordinación motora predecir el rendimiento en habilidades específicas de volea en los jóvenes?). *Retos, 45*(0), 195-201. doi:https://doi.org/10.47197/retos.v45i0.90359

Ozawa, Y., Shuichi, U., Keita, O., Kazuyuki, K., & and Yamada, H. (2021). Biomechanical analysis of volleyball overhead pass. *Sports Biomechanics, 20*(7), 844-857. doi:https://doi.org/10.1080/14763141.2019.1609072

Ramos, A., Patrícia, C., Keith, D., & and Mesquita, I. (2021). Developing Players' Tactical Knowledge Using Combined Constraints-Led and Step-Game Approaches—A Longitudinal Action-Research Study. *Research Quarterly for Exercise and Sport, 92*(4), 584-598. doi:https://doi.org/10.1080/02701367.2020.1755007

Risma, N., & Bakhtiar, S. (2024). Improvement of Basic Volleyball Techniques through Motion Coordination Learning Model: A Literature Review. *Journal of Physical Education Health and Sport, 11*(2), 79-84. doi:https://doi.org/10.15294/jpehs.v11i2.22116

Söyler, M. (2022). Examination of the effects of reactive agility and planned change of direction skills on Self Defense techniques in private security and protection program students. *Sportis. Scientific Journal of School Sport, Physical Education and Psychomotricity, 8*(3), 309-328. doi:https://doi.org/10.17979/sportis.2022.8.3.9008

Tchomche, H. F., Bingquan, L., & Shoukat, S. (2024). Biomechanical Changes in Football Players Post Functional Strength Training: A Review paper: Biochemical Changes After Functional Strength Training. *THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 5*(04), 18-23. doi:https://doi.org/10.54393/tt.v5i04.244

Tirabassi, J. N. (2020). Volleyball. In M. Khodaee, A. L. Waterbrook, & M. Gammons (Eds.), *Sports-related Fractures, Dislocations and Trauma: Advanced On- and Off-field Management* (pp. 971-974). Cham: Springer International Publishing.

Woolley, A. W. (2011). Playing Offense vs. Defense: The Effects of Team Strategic Orientation on Team Process in Competitive Environments. *Organization Science, 22*(6), 1384-1398. doi:https://doi.org/10.1287/orsc.1100.0617