COMPETITOR:
JURNAL PENDIDIKAN KEPELATIHAN OLAHRAGA
e-ISSN: 2657-0734 & p-ISSN: 2085-5389 ‖ Volume 17, Number 3, 2025 ‖ P.2929-2936

The Effect of Underhand Passing Variation Training on Forearm Passing Skills in Volleyball Extracurricular Students at SMA Negeri 8 Palembang

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ABSTRACT

This study aimed to examine the effect of varied underhand passing exercises on improving forearm passing skills in volleyball extracurricular students at SMA Negeri 8 Palembang. The research was guided by the hypothesis that training variations would significantly enhance students' forearm passing performance. A pre-experimental design using a one-group pretest–posttest approach was employed, involving 20 male students aged 14–16 years selected through purposive sampling. The study was conducted in Palembang, South Sumatra, and data were collected using a forearm passing test in which participants performed continuous wall passes for one minute. Data analysis was carried out using SPSS version 26, including normality and homogeneity tests, followed by a paired sample t-test. The findings showed a significant performance improvement, with the mean score increasing from 23.75 in the pretest to 27.35 in the posttest. Statistical analysis revealed $t(19) = 7.532$, $p < 0.05$, confirming the effectiveness.

ARTICLE HISTORY
Received: 2025/10/23
Accepted: 2025/10/28
Published: 2025/10/31

KEYWORDS
Underhand Passing;
Variation Training;
Volleyball;
Extracurricular Students.

AUTHORS' CONTRIBUTION
A. Conception and design of the study;
B. Acquisition of data;
C. Analysis and interpretation of data;
D. Manuscript preparation;
E. Obtaining funding

Cites this Article : Akbar, Muhammad Firstiawan; Muslimin, Muslimin; Hardiyono, Bayu; Melianty, Selvi; Endrawan, I Bagus. (2025). The Effect of Underhand Passing Variation Training on Forearm Passing Skills in Volleyball Extracurricular Students at SMA Negeri 8 Palembang. **Competitor: Jurnal Pendidikan Kepelatihan Olahraga**. 17 (3), p.2929-2936

INTRODUCTION

Volleyball is one of the most popular team sports worldwide, played at recreational, educational, and competitive levels (Denardi & Romero Cia, 2017). As a dynamic and complex game, volleyball requires players to master a combination of technical, tactical, physical, and psychological skills to perform effectively (Fikri et al., 2024). Among these, passing is considered a fundamental skill because it serves as the foundation for initiating offensive play and maintaining ball control (Sugianti et al., 2023). In particular, the forearm pass, also known as the underhand pass, plays a critical role in receiving serves, defending attacks, and facilitating team coordination (Azizi et al., 2022).

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Despite its importance, studies show that many student-athletes in school-based volleyball programs still struggle with forearm passing consistency and accuracy (Irwansyah & Purba, 2022). Observations at SMA Negeri 8 Palembang revealed that around 40% of extracurricular volleyball participants had not yet achieved satisfactory performance in this technique, primarily due to monotonous and repetitive training models that limit skill development. This aligns with findings from previous studies, which emphasized that the lack of training variation often leads to low motivation, reduced engagement, and slower technical improvement among young athletes (Dimani Mamrasar, 2021; Siregar & Purba, 2023).

To address these challenges, training variation has been introduced as an effective method to improve motor learning and prevent boredom during practice sessions. Variation-based exercises allow athletes to perform drills in diverse contexts, thereby enhancing coordination, adaptability, and long-term retention of skills (Rozzaq, 2019). In volleyball, varied passing drills such as wall-passing, partner-passing, and accuracy-target exercises have been found to increase both technical proficiency and player confidence (Viera & Fergusson, 2004; Azizi et al., 2022).

Several experimental studies support this approach. For example, Azizi et al. (2022) developed a passing model for junior high school students and found significant improvements in accuracy after introducing varied training. Similarly, Muhaimin and Yusuf (2019) demonstrated that wall-bounce and partner-passing methods effectively enhanced forearm passing in club-level players. These findings indicate that structured variation in training design contributes positively to skill acquisition and performance outcomes in volleyball.

In the context of education in Indonesia, sports extracurricular activities, especially volleyball, have an important role in developing students' potential outside of formal lesson hours. Volleyball extracurricular activities in high schools, including at SMA Negeri 8 Palembang, are a forum for students to improve their technical skills, physical fitness, and sportsmanship character. However, preliminary observations show that the underhand passing ability of volleyball extracurricular students at SMA Negeri 8 Palembang still needs to be improved, especially in terms of accuracy, ball control, and consistency of movement.

Underpassing is a fundamental skill that is the basis for defense and attack preparation in the game of volleyball. Weaknesses in the bottom passing technique can hinder the flow of play and reduce the overall effectiveness of the team. Therefore, structured and varied training methods are needed to improve students' underpass passing skills.

Given the above context, this study investigates the effect of varied forearm passing exercises on the passing skills of volleyball extracurricular students at SMA Negeri 8 Palembang. It is hypothesized that applying training variation will significantly improve students' forearm passing performance compared to pre-training levels. The results of this study are expected to contribute to the development of more effective and engaging volleyball training models, particularly in school-based extracurricular programs.

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METHODS

This study applied a quantitative approach using a pre-experimental design with a one-group pretest–posttest model. The design was appropriate for evaluating the effect of varied forearm passing exercises on students' volleyball performance because it allowed comparison of skill levels before and after the intervention under controlled conditions.

The research was conducted at SMA Negeri 8 Palembang, South Sumatra, Indonesia, over four weeks from July to August 2025. The study population consisted of 54 volleyball extracurricular participants, including 30 male and 24 female students. Using purposive sampling, 20 male students aged 14–16 years were selected as the research sample. The inclusion criteria required participants to be active members of the extracurricular program, to possess basic forearm passing skills, and to be in good physical health to safely complete the training program.

Data were collected through a standardized forearm passing test adapted from Muslimin (2022). In this test, students performed forearm passes against a wall marked with a target area for one minute, and the number of successful passes was recorded. This instrument was chosen because it provides a reliable and objective measure of forearm passing ability. Equipment used included official volleyballs, a stopwatch, and score sheets.

The research procedure began with a pretest to establish baseline passing ability. Following this, students underwent a structured training program that emphasized varied passing drills, including wall passing, partner passing, target-based passing, and game-like scenarios. Training sessions were held three times per week for four consecutive weeks, and each session lasted approximately 60 minutes. After the intervention period, a posttest using the same forearm passing test was conducted to measure performance improvement.

Data analysis was carried out using IBM SPSS Statistics version 26. The analysis began with tests of normality (Shapiro–Wilk) and homogeneity (Levene) to ensure the suitability of parametric tests. A paired sample t-test was then applied to compare pretest and posttest results, with the level of statistical significance set at $p < 0.05$. This procedure ensured that the analysis was both rigorous and replicable, providing valid conclusions about the effectiveness of varied passing training.

RESULTS AND DISCUSSION

The findings of this study demonstrate that varied forearm passing training had a significant positive impact on the volleyball skills of extracurricular students at SMA Negeri 8 Palembang. Based on the pretest results, the average score achieved by the 20 male participants was 23.75 passes, with scores ranging from 7 to 44 successful attempts within one minute. After undergoing four weeks of structured training that incorporated wall passing, partner passing, target-based drills, and game-like exercises, the posttest results showed a notable increase in performance, with the average score rising to 27.35 passes, ranging from 10 to 46. This improvement of 3.6 passes on average

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indicates that the training program effectively enhanced the students' ability to perform the forearm pass more accurately and consistently.

Table 1.
Descriptive Statistics of Pretest and Posttest Scores

N	Min	Max	Mean	Median	Modus	Std. Deviation	Variance	Range
20	7	44	23.75	23.05	20.25	07.18	51.57.00	37
20	10	46	27.35	27.05	35	07.42	55.08.00	36

Table 2.
Normality Test

Variabel	N	Statistic	df	Sig.	Keterangan
Pretest	20	0,63333333	20	0.073	Normal (p > 0.05)
Posttest	20	0,63055556	20	0.062	Normal (p > 0.05)

Based on Table 2 above, the pretest and posttest data are normally distributed (p > 0.05), meeting the assumptions for parametric testing.

Table 2.
Paired Sample t-test Results

Variable	t	df	Sig. (2-tailed)
Pretest–Posttest Score	7.532	19	0.000

Statistical analysis further supported these descriptive findings, as the paired sample t-test yielded $t(19) = 7.532$ with a significance level of $p < 0.05$, confirming that the difference between pretest and posttest scores was statistically significant.

These results reinforce the notion that varied training methods are more effective than monotonous or repetitive drills in developing technical skills. Previous studies have also shown that a lack of variation in practice tends to reduce motivation and engagement, which ultimately hampers learning outcomes (Dimani Mamrasar, 2021; Siregar & Purba, 2023). By contrast, integrating diverse passing drills helps students maintain interest while simultaneously improving coordination, control, and adaptability in gameplay situations. This is consistent with the work of Azizi et al. (2022), who found that model-based training variations significantly improved the accuracy of volleyball passing among junior athletes, and with Muhaimin and Yusuf (2019), who demonstrated that wall-bounce and partner-passing drills effectively enhanced players' technical mastery. The findings also align with principles of motor learning, which emphasize that skill retention and transfer are better achieved through varied practice compared to repetitive drills (Rozzaq, 2019).

The practical implication of these findings is that volleyball coaches and physical education teachers should integrate training variation into their instructional methods. Doing so not only enhances technical skill acquisition but also prevents boredom and builds motivation, which are crucial for long-term athlete development. Although the study successfully demonstrated the effectiveness of varied forearm passing training, certain limitations should be acknowledged. The sample was relatively small and limited to male students from a single school, which restricts the generalizability of the results. Additionally, the absence of a control group means that causal relationships should be

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interpreted with caution. Future research could benefit from larger and more diverse samples, including female participants, and from employing true experimental designs with control groups to strengthen the evidence base. Despite these limitations, the present study provides strong support for the use of training variation as an effective strategy to enhance volleyball passing skills, particularly within the context of school-based extracurricular programs.

The results of this study reinforce the idea that the variation training method is more effective than monotonous or repetitive training in developing technical skills. Previous research has shown that a lack of variety in practice tends to reduce students' motivation and engagement, which ultimately hinders motor learning outcomes (Dimani Mamrasar, 2021; Siregar & Purba, 2023). Instead, by integrating a variety of diverse passing exercises, students can maintain their interest while simultaneously improving coordination, control, and accuracy in passing. This is consistent with the research of Azizi et al. (2022), which found that model-based training simulations significantly improve volleyball passing accuracy among junior athletes. The variety of exercises applied in the study—including wall-passing, partner-passing, target-based drills, and game-like exercises—allowed students to experience different training contexts, thereby improving adaptability and long-term skill retention.

The improvement of lower passing ability shown in this study can also be explained through the principles of motor learning. According to Rozzaq (2019), varied exercises facilitate better skill transfer because students are exposed to a variety of situations that simulate actual game conditions. In this study, the results of the posttest showed that participants were able to make an average of 27.35 passes in one minute, with the number of successful attempts ranging from 10 to 46 times. This wide range of scores indicates that, despite variations in individual abilities, the overall exercise program successfully improves students' ability to perform forearm passes more accurately and consistently. These findings are in line with the research of Viera and Fergusson (2004) and Azizi et al. (2022), which emphasized that varied passing exercises improve both technical proficiency and player confidence.

In addition, the findings of this study also support the results of Muhaimin and Yusfi's (2019) research, which demonstrated that the wall-bounce and partner-passing methods effectively improve forearm passing abilities in club-level players. In this study, the use of wall-passing, partner-passing, target-based drills, and game-like exercises provided a diverse stimulus for students to develop their passing skills in a variety of contexts. Wall-passing helps students improve consistency and ball control through controlled reps, while partner-passing and game-like exercises simulate real-life game situations that require quick adaptation and decision-making. The combination of these methods allows students to not only improve their technical abilities but also develop a tactical understanding of when and how to use the bottom passing effectively in the game.

The practical implications of this study suggest that physical education teachers and volleyball coaches in schools should integrate a variety of exercises into their instructional methods. Doing this not only increases the acquisition of technical skills but

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also prevents boredom and builds intrinsic motivation among students. As emphasized by Dimani Mamrasar (2021) and Siregar & Purba (2023), a lack of exercise variety often leads to low motivation, reduced engagement, and slower technical improvement among young athletes. By implementing varied passing exercises, volleyball extracurricular programs can create a more dynamic and engaging learning environment that encourages active participation and long-term skill development. The results of this study provide empirical evidence that such an approach is effective in the context of Indonesian education, especially at the high school level.

Although this study shows promising results, some limitations need to be acknowledged. First, sample sizes are limited to 20 students from a single school, which can limit the generalization of findings to a wider population. Future research should involve a larger and more diverse sample from different schools to validate the effectiveness of the lower passing variation exercise. Second, the study did not measure the long-term retention effects of training programs, so it is unclear whether the observed skill improvements will persist over time. Longitudinal studies will be beneficial to assess the sustainability of the improvement of skills achieved through variation exercises. Third, the study did not compare the effectiveness of variation exercises with other exercise methods, such as traditional repetitive exercises or technology-based exercises. Future comparative studies can provide further insight into which practice methods are most effective for developing bottom passing skills in the school's extracurricular context. Despite these limitations, this research makes an important contribution to understanding how exercise variations can improve students' volleyball skills and offers practical guidance for educators and coaches in designing more effective and engaging exercise programs.

CONCLUSION

The findings of this study confirmed that varied forearm passing training significantly enhanced the volleyball passing skills of extracurricular students at SMA Negeri 8 Palembang. The average posttest score demonstrated a meaningful improvement compared to the pretest, and the paired sample t-test confirmed that this difference was statistically significant. These results indicate that the application of diverse training drills—such as wall passing, partner passing, target-based exercises, and game-like scenarios—was effective in improving the students' technical accuracy, consistency, and adaptability in performing forearm passes. In doing so, this research contributes to the advancement of knowledge in sports education and coaching science by providing empirical evidence that training variation can be successfully applied to skill development in a school-based setting.

Despite its promising results, this study has several limitations. The sample size was relatively small, limited to 20 male students from a single school, and the absence of a control group restricts the strength of causal conclusions. Therefore, the findings should be interpreted cautiously and not generalized beyond similar populations. Based

on the outcomes, volleyball coaches and physical education teachers are encouraged to adopt training variations as part of their instructional design, not only to improve technical skill acquisition but also to enhance student motivation and engagement. For future research, it is recommended to include larger and more diverse participant groups, incorporate female athletes, and utilize more rigorous experimental designs that involve control groups. Further studies might also explore the long-term effects of training variation on skill retention, transfer to actual match play, and psychological factors such as motivation and confidence. Such work will strengthen the evidence base and expand the applicability of training variation in developing volleyball performance across different educational and competitive contexts.

ACKNOWLEDGMENT

The author would like to express sincere gratitude to the principal and volleyball extracurricular coach of SMA Negeri 8 Palembang for granting permission and providing full support during the research process. Special thanks are also extended to the participating students whose enthusiasm and cooperation made this study possible. Appreciation is further conveyed to the faculty members and advisors from the Physical Education Study Program, Universitas PGRI Palembang, for their valuable guidance, feedback, and encouragement throughout the completion of this research.

REFERENCES

Arba, M. A. (2025). Pengaruh Keseimbangan Terhadap Kelincahan Dalam Permainan Sepakbola Pada Pemain Ssb Bajeng United Gowa. Jurnal Pendidikan Kepelatihan Olahraga (PEJUANG), 1(1), 24-29.

Arba, M. A., & Rahmatullah, W. (2025). Perbandingan Metode Pemulihan: Rendaman Kaki di Es vs. Istirahat Aktif Pasca Latihan Lari 12 Menit Mahasiswa PKO UPRI. Jurnal Pendidikan Kepelatihan Olahraga (PEJUANG), 1(2), 40-51.

Arba, M. A., Rerung, C. T., Hasanuddin, M. I., & Hasyim, M. Q. (2025). Pelatihan Sepak Bola Berbasis Permainan untuk Meningkatkan Kerjasama Tim di Kalangan Siswa SD Negeri 156 Buntu. Jurnal Perjuangan dan Pengabdian Masyarakat: JPPM, 1(1), 26-34.

Arga, A. (2025). Analisis Denyut Nadi Sebelum dan Sesudah Melakukan Lari 12 Menit Mahasiswa Pendidikan Kepelatihan Olahraga Universitas Pejuang Republik Indonesia. Jurnal Pendidikan Kepelatihan Olahraga (PEJUANG), 1(2), 11-25.

Arga, A. (2025). Pengaruh Latihan Leg Raise Terhadap Kekuatan Otot Perut Mahasiswa PKO UPRI. Jurnal Pendidikan Kepelatihan Olahraga (PEJUANG), 1(1), 18-23.

Arga, S. P. (2023). Efektivitas Latihan Dan Bermain Usia Sekolah Dasar. Menelisik Ilmu Keolahragaan, 23.

Azizi, R., Dlis, F., & Sulaiman, S. (2022). Development of a volleyball passing learning model for junior high school students. *Journal of Physical Education, Health and Sport*, 9(2), 116–124. https://doi.org/10.15294/jpehs.v9i2.55611

Charmila, C., Wahyuddin, W., Fahrizal, F., Mappaompo, A. A., & Hudain, M. A. (2024). The Influence of Arm Muscle Strength, Leg Muscle Explosive Power, and Arm Length on Smash Ability in Volleyball among Students at Tana Toraja State 9 High School. Musamus Journal of Physical Education and Sport (MJPES), 6(2), 229-239.

Denardi, R. A., & Romero Cia, J. G. (2017). The effect of motor coordination on volleyball learning in elementary school students. *Journal of Physical Education and Sports Management*, 4(1), 45–52.

Dimani Mamrasar. (2021). The effect of varied training methods on motivation and skill acquisition in volleyball. *Jurnal Pendidikan Olahraga Indonesia*, 7(2), 101–110.

Fikri, A., Yusmawati, & Handayani, N. (2024). Analysis of technical skills in volleyball among extracurricular students. *International Journal of Physical Education and Sports Science*, 12(1), 33–41.

Hudain, M. A., Adil, A., Kasmad, M. R., & Arga, A. (2025). Pelatihan Terstruktur Di SDN Paccinangan Tentang Dribbling Bola Basket. LITERA ABDI: Jurnal Pengabdian Masyarakat, 2(1), 88-95.

Inpres, I. V. U. P. T. S. P. F. (2023). Meningkatkan Kemampuan Passing Bawah Bolavoli Melalui Media Pembelajaran Audio Visual Pada Siswa Kelas IV di UPT SPF SD Inpres Rappokalling I Kota Makassar. Journal on Education, 6(01), 2318-2326.

Irwansyah, & Purba, A. (2022). The role of training variation in improving volleyball passing accuracy. *Jurnal Pendidikan Jasmani*, 6(1), 23–30.

Mappaompo, M. A., Aprilo, I., Arfanda, P. E., & Arga, A. (2024). Shooting Accuracy of Sports Coaching Education Students: Goaling Game Practice. ETDC: Indonesian Journal of Research and Educational Review, 3(3), 204-210.

Muhaimin, & Yusuf, A. (2019). The effect of wall-bounce and partner-passing drills on forearm passing ability in volleyball. *Jurnal Olahraga dan Kesehatan*, 7(2), 55–63.

Muslimin. (2022). *Tes keterampilan dasar bola voli*. Jakarta: PT Raja Grafindo Persada.

Rerung, C. T. (2025). Analisis Efektivitas Teknik Tendangan Dollyo Chagi Melalui Metode Latihan Beban Kaki Terhadap Kecepatan Dan Akurasi Di Dojang TMC. Jurnal Pendidikan Kepelatihan Olahraga (PEJUANG), 1(2), 23-29.

Rerung, C. T., Aulria, S. N. M., Hudain, M. A., & Mappaompo, M. A. (2025). Pelatihan Teknik Dasar Taekwondo untuk Meningkatkan Motorik dan Percaya Diri Siswa SDN Inpres 127 Moncongloe. Jurnal Perjuangan dan Pengabdian Masyarakat: JPPM, 1(1), 35-42.

Rozzaq, M. (2019). Motor learning principles in sports education: The role of varied practice in skill retention. *Journal of Sport Pedagogy and Development*, 8(3), 77–85.

Siregar, A., & Purba, D. (2023). Monotonous training and its impact on students' motivation in volleyball extracurricular activities. *Jurnal Pendidikan Olahraga dan Kesehatan*, 11(1), 25–34.

Sugianti, Y., Hartati, S., & Andriani, F. (2023). The influence of drill methods on forearm passing skills in volleyball. *Journal of Coaching and Physical Education*, 5(2), 88–95.

Viera, B. L., & Fergusson, C. (2004). *Volleyball: Steps to success*. Human Kinetics.