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The Effect of Shuttlecock Throwing Training on the Clear Shot Ability of Badminton Players at the UNP Badminton Academy

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Abstrac: This study aims to determine the effect of shuttlecock throwing exercises on the forehand clear ability of athletes at UNP Badminton Academy. The research used a quantitative approach with a pre-experimental method and a one group pretest-posttest design. The population consisted of 23 athletes, while the sample was 8 male athletes aged 11–14 years selected using purposive sampling. The research instrument was a forehand clear test (high clear test) to measure accuracy and technique. Data were collected through pre-test and post-test procedures and analyzed using the Liliefors normality test and paired sample t-test at a significance level of 0.05. The results showed an increase in the average score from 22.25 (pre-test) to 35.88 (post-test). The t-test result (tcount = 3.871 > ttable = 2.365) indicates a significant effect. It can be concluded that shuttlecock throwing exercises effectively improve forehand clear ability.

Keyword: Shuttlecock throwing, Forehand clear, Badminton, Skill improvement.

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INTRODUCTION

Badminton is a sport that involves hitting and returning a shuttlecock made of feathers with the aim of directing it into the opponent's court (Yunanto et al., 2022). The game uses a net, rackets, and a shuttlecock, and requires a wide variety of stroke techniques, ranging from slow to very fast shots. Badminton is also widely known as a popular sport that can be played by people of all ages and skill levels, as well as by both men and women, for recreational or competitive purposes (Nugraha & Sulistiadinata, 2020).. The main objective of the game is to score points and win the match by effectively placing the shuttlecock in the opponent's court (Walinono et al., 2017).

One of the most important basic techniques in badminton is the clear shot. According to Muhajir in (Asri et al., 2022),a clear shot is a shot aimed at sending the shuttlecock as high as possible deep into the opponent's backcourt. This technique serves to make it difficult for the opponent while giving the player an opportunity to adjust their position. Mastering the clear shot is fundamental because it plays a role in both defensive and offensive strategies, such as controlling the pace of the game, creating opportunities for attack, and reducing unforced errors (Muhajir, 2017). Additionally, the clear shot is often used to pressure the opponent into moving to the back of the court, thereby opening up space in the front of the court (Munandar, 2021).

In the context of sports development, mastering basic techniques such as the clear shot is a crucial component in shaping high-performing athletes (Ifanda et al., 2025). This aligns with Law of the Republic of Indonesia No. 11 of 2022 on Sports, which states that an athlete is an individual who engages in regular, systematic, and continuous training to achieve excellence (Mutohir et al., 2023;Ratu, 2025). One institution playing a role in this development is the UNP Badminton Academy, established in 2024 in Padang by the UNP Faculty of Sports Science. This academy focuses on athlete development through an integrated approach encompassing physical, technical, tactical, and mental aspects.

Several previous studies have examined training methods to improve badminton skills. Priyoko and Januarto (2022) found that explosive exercise programs significantly improved arm muscle power, which is an important physical component in badminton strokes. Wang et al. (2020) also reported that coordination-based training improved overhead stroke accuracy among badminton players. Furthermore, Lee et al. (2019) explained that modified training methods can accelerate motor skill acquisition in racket sports, especially for beginner athletes. Another study by Zhou et al. (2021) emphasized that enjoyable and varied training programs can increase athlete motivation and engagement during practice sessions. Although these studies focused on physical conditioning, coordination, and training motivation, research specifically investigating shuttlecock-throwing exercises as a method to improve clear shot ability in beginner badminton athletes remains limited.

Based on observations conducted at the UNP Badminton Academy, athletes' forehand clear abilities still vary considerably. Some athletes are able to execute clear shots effectively, while most beginners still struggle with shot accuracy, height, and control. Coaches also stated that many athletes have not yet developed optimal coordination, sufficient arm strength, or stable wrist control. In addition, monotonous training routines often lead to boredom and reduced motivation among beginner athletes. Therefore, this study proposes shuttlecock-throwing exercises as an alternative training method that is simpler, more engaging, and easier for beginners to perform. Unlike previous studies that mainly focused on general physical or coordination training, this research specifically examines the effect of shuttlecock-throwing drills on improving clear shot ability in beginner badminton athletes. Thus, the novelty of this study lies in the use of shuttlecock-throwing exercises as a modified technical training approach to enhance clear shot performance among athletes at the UNP Badminton Academy.

METHOD

This study employs a quantitative approach using an experimental method. The design used is a pre-experimental design in the form of a one-group pretest-posttest design. This design involves a single group of subjects who are administered a pretest, then given a treatment, and finally a posttest. The purpose of this design is to determine changes in clear shot ability before

and after shuttlecock throwing practice. Thus, the effect of the treatment can be observed through the difference between the pretest and posttest results.

This study involves two variables: the independent variable and the dependent variable. The independent variable in this study is shuttlecock-throwing practice, which is a form of exercise performed by throwing a shuttlecock with the hand to train motor coordination, arm strength, and directional control. The dependent variable is the forehand clear stroke ability, which refers to the athlete's ability to execute a clear stroke toward the back of the court while considering technical aspects and stroke accuracy. The population in this study consisted of all 23 athletes at the UNP Badminton Academy. The sampling technique used was purposive sampling, which involves selecting participants based on specific criteria (Barlian, 2016). The criteria included male athletes aged 11–14 years, officially registered as academy members, in good physical condition without injuries, and actively participating in the training program regularly for one month prior to the study, with a training frequency of two sessions per week.

Male athletes were specifically selected to reduce differences in physical characteristics, strength, and motor performance between male and female athletes that could affect the research results. By using only male athletes, the sample became more homogeneous, allowing the effect of shuttlecock-throwing exercises on clear shot ability to be measured more accurately. Based on these criteria, 8 athletes were selected as the research sample.

The tool used in this study was the forehand clear ability test (high clear test), which aims to measure athletes' ability to execute a lob shot toward the back of the court (Edmizal et al., 2023;Huang et al., 2025).This test consists of 12 trials, with a scoring system based on the accuracy of the shuttlecock's landing within the target area as well as an assessment of movement technique. In this test, athletes perform a forehand clear shot from the back of the court toward a predetermined target zone on the opponent's side of the court. Each target area has a different score based on the accuracy of the shuttlecock's landing point. The farther and more accurately the shuttlecock lands toward the back boundary line, the higher the score obtained. Before the test is conducted, athletes are given instructions and a demonstration regarding the correct execution technique. The following is an illustration of the forehand clear test presented below:

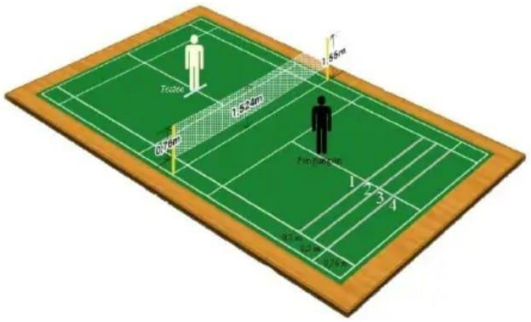

Figure 1. Forehand Clear Shot Test (Denatara 2021:86)

Data were collected through testing and measurement techniques, with prior explanations and practice provided to the feeders and research subjects to ensure the test was conducted consistently and in accordance with procedures. Data analysis was carried out in several stages, namely prerequisite tests and hypothesis testing. The prerequisite test used a normality test (Liliefors) to ensure the data were normally distributed (Mishra et al., 2019). Subsequently, hypothesis testing was performed using a paired-sample t-test with a significance level of $\alpha = 0.05$ to determine whether there was a significant difference between the pretest and posttest results. The results of this analysis were used to determine whether shuttlecock throwing practice had an effect on the badminton clear shot ability of athletes at the UNP Badminton Academy.

RESULT

Pre-test Results for Clear Shot Skills of UNP Badminton Academy Athletes

Based on the results of the pre-test of the clear shot ability of 8 athletes from the UNP Badminton Academy, the highest score was 31 and the lowest score was 16. Statistical analysis revealed a mean score of 22.25 with a standard deviation of 5.391. The frequency distribution of the pre-test results is shown in the following table.

Table 1. Frequency Distribution of Pre-Test Results for Clear Shot Ability

Ability score	*Pre test*		Category
	Frequency	Percentage	
≥46	0	0,00%	Excellent
40-45	0	0,00%	Good
33-39	0	0,00%	Fair
≤32	8	100,00%	Poor
Total	**8**	**100,00%**	

Based on the frequency distribution table, all participants scored in the "below average" category (≤32) for clear-hit ability, although each athlete's final score differed. A more detailed explanation can be seen in the following figure.

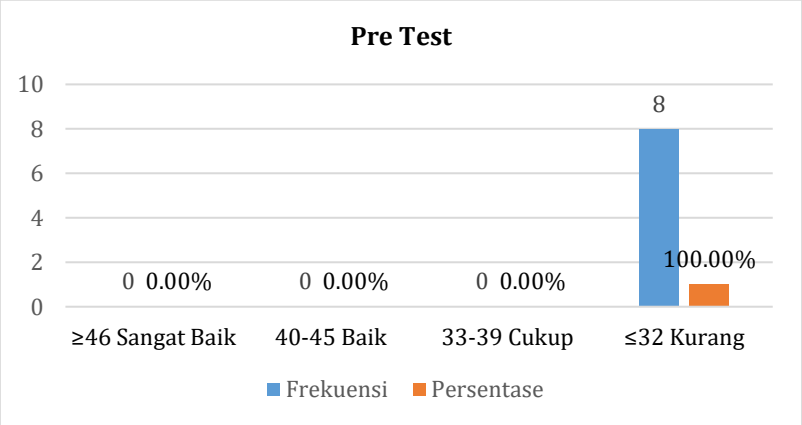

Figure 2. Pre-test Histogram of Clear Shot Ability

Post-test Results for Clear Shot Skills of UNP Badminton Academy Athletes

After 16 training sessions, a post-test of the clear shot ability was conducted on 8 athletes. The results showed a highest score of 54 and a lowest score of 20, with an average of 35.875 and a standard deviation of 12.60. Details of the frequency distribution can be seen in the following table.

Table 2. Frequency Distribution of Post-Test Scores for Clear Shot Ability

Ability score	*Post test*		Ability score
	Frequency	Percentage	
≥46	2	25,00%	Excellent
40-45	1	12,50%	Good
33-39	2	25,00%	Fair
≤32	3	37,50%	Poor
Total	**8**	**100,00%**	

Based on the frequency distribution table, the post-test results indicate an improvement in the clear shot ability following the intervention. Of the 8 athletes, 2 (25%) were in the excellent category (≥46), 1 (12.50%) in the good category (40–45), 2 (25%) in the fair category (33–39), and 3 (37.50%) remained in the poor category (≤32). Further details can be seen in the following figure.

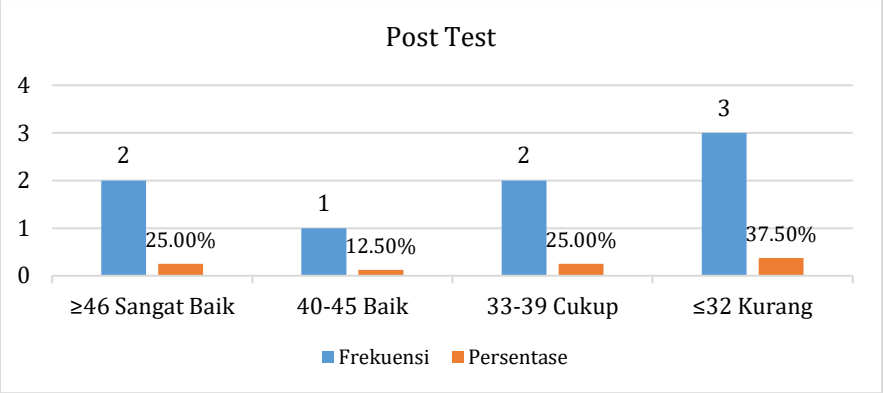

Figure 3. Post-Test Histogram of Clear Shot Ability

Normality Test

Before testing the hypothesis, a preliminary test was conducted in the form of a normality test using the Liliefors method with a significance level of α = 0.05. The test criteria are as follows: if $L_{count} < L_{table}$, then H_0 is accepted and H_1 is rejected; whereas if $L_{count} > L_{table}$, then H_0 is rejected and H_1 is accepted. The results of the normality test are shown in the following table.

Table 3. Normality Test Results

Data	N	L_{count}	L_{table}	Distribution
Pre-test	8	0,143	0,285	Normal
Post-test	8	0,121	0,285	Normal

Based on the normality test table, the calculated L-value for the pre-test was 0.143 and for the post-test was 0.121, while the critical L-value (N=8; α = 0.05) was 0.285. Since both calculated L-values are less than the critical L-value, it can be concluded that the pre-test and post-test data are normally distributed.

T-Test

A hypothesis test was conducted to determine whether shuttlecock throwing practice has an effect on the clear shot ability of athletes at the UNP Badminton Academy. The test results are presented in the following table.

Table 4. T-Test Results

Variant		N	Average	T_{count}	T_{table}	Description
The Effects of Shuttlecock Throwing Practice	Pre-test	8	22,25	3,871	2,365	Influential
	Post-test	8	35,88			

Based on the results of the t-test, the calculated t-value was 3.871 and the critical t-value was 2.365. Since the calculated t-value is greater than the critical t-value at a significance level of α = 0.05, H0 is rejected and H1 is accepted. Thus, it can be concluded that shuttlecock throwing practice has an effect on the clear shot ability of athletes at the UNP Badminton Academy.

DISCUSSION

Based on the results of the hypothesis testing using a paired-sample t-test, the mean score for the clear shot ability in the pre-test was 22.25, and it increased in the post-test to a mean score of 35.88, as shown in the appendix. This indicates an improvement in the clear shot ability of UNP Badminton Academy athletes following the intervention of shuttlecock-throwing practice. Statistically, the results of the t-test calculation yielded a calculated t-value of 3.871, while the critical t-value was 2.365; thus, the calculated t-value is greater than the critical t-value, and it can be concluded that shuttlecock throwing practice has a significant effect on the clear shot ability of athletes at the UNP Badminton Academy.

Before conducting the hypothesis test, this study first performed a normality test. The normality test was conducted as a prerequisite for the hypothesis test. In this study, the test used the Liliefors method with a significance level of 0.05. The use of this test is based on the statistical requirement that t-test analysis requires normally distributed data. The test results showed that the calculated L-value for the pre-test and post-test data was smaller than the table L-value. Thus, the research data was deemed to be normally distributed and suitable for further analysis.

This improvement in ability can be explained theoretically by the fact that shuttlecock throwing is a form of exercise that emphasizes movement coordination, arm strength, and control of direction and force. Shuttlecock throwing is a form of exercise that emphasizes explosive movements of the upper limbs, particularly the shoulder, arm, and wrist muscles. Repetitive and targeted throwing movements can stimulate rapid and powerful muscle contractions, thereby contributing to an increase in explosive strength (power). This aligns with the research by (Priyoko & Januarto, 2022), which concluded that explosive exercises have been proven to increase arm muscle power by enhancing the ability to contract muscles rapidly and powerfully.

In the clear shot technique, an athlete must be able to hit the shuttlecock with great power and accuracy into the back of the opponent's court. Shuttlecock-throwing exercises indirectly train movement patterns similar to the clear shot, particularly in terms of arm swing, hand-eye coordination, and shoulder and arm muscle strength. The clear shot technique in badminton is a shot directed high into the air toward the back of the opponent's defensive line, aimed at making it difficult for the opponent to return the shuttlecock, thereby increasing the chances of controlling the game (Chen, X., Li & Zhang, 2025)

Through the implementation of varied and structured shuttlecock-throwing drills, athletes can perform stable and controlled repetitions of the movement, thereby optimizing the process of mastering the clear stroke technique. Repetitive training leads to neuromuscular adaptation that improves the athlete's movement efficiency. This aligns with the research by Widyawati et al. (2025), which concluded that structured and repetitive training can improve neuromuscular adaptation and the efficiency of athletes' movements. Furthermore, from a motor learning perspective, the improvement observed in this study can also be explained through the principle of skill acquisition, where repeated practice of simplified movement patterns facilitates the development of coordination and timing. For beginner athletes, reducing task complexity such as replacing racket use with throwing movements can enhance learning effectiveness and accelerate the mastery of fundamental techniques. This is supported by research from Lee et al (2019), which found that modified training methods significantly improve motor skill acquisition in racket sports by simplifying biomechanical demands.

In addition, the effectiveness of shuttlecock throwing exercises is closely related to the concept of specificity in training. Exercises that mimic the actual movement patterns of a skill are more likely to produce positive transfer effects. The throwing motion shares biomechanical similarities with the overhead clear stroke, particularly in shoulder rotation, elbow extension, and wrist flexion. This is in line with findings by Phomsoupha and Laffaye (2015) and further supported by Shi et al. (2026), which highlight that badminton performance is highly dependent on upper limb coordination and explosive strength developed through sport-specific training.

Moreover, the observed improvement can also be linked to enhanced neuromuscular coordination and proprioceptive control. Training that involves repetitive directional tasks, such as throwing shuttlecocks toward a target, helps athletes develop better spatial awareness and control over movement precision. According to Wang et al. (2020), targeted coordination training significantly improves accuracy and consistency in overhead strokes in badminton players. This suggests that the improvement in clear shot ability is not only due to increased strength but also due to better integration of sensory and motor systems.

Finally, from a practical coaching perspective, the use of varied and engaging training methods such as shuttlecock throwing can also reduce boredom and increase athlete motivation, especially among beginners. Motivation plays a crucial role in training adherence and skill development. Research by Zhou et al. (2021) indicates that enjoyable and varied training programs contribute to higher engagement levels and better performance outcomes in young

athletes. Therefore, the success of this intervention may also be influenced by psychological factors in addition to physical and technical improvements.

Based on the overall discussion, it can be concluded that shuttlecock throwing exercises are effective not only in improving physical components such as strength and coordination but also in enhancing motor learning, technical mastery, and training motivation. These findings reinforce the importance of using modified, specific, and structured training approaches in developing fundamental badminton skills, particularly for beginner athletes.

CONCLUSION

Based on the findings of this study, it can be concluded that shuttlecock-throwing exercises are effective in improving the clear-shot ability of athletes at the UNP Badminton Academy. The training method helps beginner athletes develop better coordination, control, and movement patterns related to the execution of clear shots in badminton. Therefore, shuttlecock-throwing drills can be used as an alternative and modified training approach in badminton coaching programs, particularly for beginner athletes. This study also indicates that varied and engaging training methods may increase athletes' motivation and participation during practice sessions. Accordingly, coaches are encouraged to apply more innovative and structured training variations to support the development of fundamental badminton techniques. Future researchers are also recommended to conduct studies with larger samples, longer training durations, and different age categories in order to obtain broader and more comprehensive findings regarding badminton training methods.

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REFERENCES

Asri, N. C. N., Ismaya, B., & Gan, R. A. (2022). Tingkat Kemampuan Pukulan Lob Bulutangkis Peserta Ekstrakulikuler Bulutangkis Di SMPN 1 Kotabaru Cikampek. Jurnal IlmiahWahana Pendidikan, 8(15), 430–436.

Barlian, E. (2016). Metodologi Penelitian Kuantitatif dan Kualitatif. Sukabina Press.

Chen, X., Li, Y., & Zhang, W. (2025). Analysis of overhead clear technique and performance in badminton players. Journal of Sports Science and Medicine, 24(1), 45–52.

Denatara, Eskar T. 2021. Buku Ajar Bulutangkis. edited by Guepedia/La. Guepedia The First On-Publisher in Indonesia.

Edmizal, E., Barlian, E., Donie, Sin, T. H., Ahmed, M., Nugraha, R., Azedra, Okilanda, A., Putra, J., & Haryanto, J. (2023). Original Article Exploring The Interplay : Hand Muscular Power, Hip Flexibility, And Lob Shot Proficiency In Badminton. Journal of Physical Education and Sports (JPES), 23(12), 3318–3324. https://doi.org/10.7752/jpes.2023.12379

Huang, H., Guo, Z., Zhao, M., Liu, M., & Dai, J. (2025). Differences In Backcourt Forehand Clear Stroke Between Novice Players And Experienced Badminton Players: Based On Body Segment Acceleration Data. BMC Sports Science, Medicine and Rehabilition, 8(17).

Ifanda, A., Jafar, M., & Isdarianti, N. L. (2025). Evaluasi Tingkat Keterampilan Bermain Bulutangkis Pada Atlet UKM Bulutangkis Universitas Syiah Kuala Tahun 2025. Jurnal Pendidikan Tambusai, 9(3), 32291–32296.

Lee, J., Kim, S., & Park, H. (2019). The effect of modified training on motor skill acquisition in racket sports. International Journal of Sports Science & Coaching, 14(3), 345–353.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive Statistics and Normality Tests for Statistical Data. Annals of Cardiac Anaesthesia, 22(1), 67–72.

Muhajir. (2017). Pendidikan Jasmani, Olahraga dan Kesehatan. Kementerian Pendidikan dan Kebudayaan Republik Indonesia.

Munandar, W. (2021). Kontribusi Kondisi Fisik terhadap Kemampuan Pukulan Lob pada Permainan Bulutangkis. Indonesian Journal of Physical Activity, 1(1), 14–22. https://doi.org/10.59734/ijpa.v1i1.2

Mutohir, T. C., Lutan, R., Maksum, A., & Kristiyanyo, A. (2023). Laporan Nasional Sport Development Index 2022: Olahraga, Daya Saing, dan Kebijakan Berbasis Data. Kementerian Pemuda dan Olahraga Republik Indonesia.

Nugraha, A., & Sulistiadinata, H. (2020). Pengaruh model pembelajaran simulasi terhadap hasil belajar pukulan lob dalam permainan bulutangkis. JPOE, 2(2). https://doi.org/10.37742/jpoe.v2i2.62

Phomsoupha, M., & Laffaye, G. (2015). The science of badminton: Game characteristics, anthropometry, physiology, visual fitness and biomechanics. Sports Medicine, 45(4), 473–495.

Priyoko, R. D., & Januarto, O. B. (2022). Efektivitas Latihan Pliometrik dalam Meningkatkan Power Otot Lengan dan Otot Tungkai Atlet Bolavoli : Literature Review. 4(3), 54–64. https://doi.org/10.17977/um062v4i12022p54-64

Ratu, K. (2025). The Complexities of Illegal Athlete Transfers: A Challenge to the Integrity of Regional–National Championships and the Implementation of Law Number 11 of 2022. Jurnal Hukum, 7(1).

Shi, Y., Yi, M., Cai, R., Li, H., Luo, D., & Yu, M. (2026). The role of maturation in upper-limb plyometric vs. technical plyometric training for youth badminton players. *Frontiers in physiology*, *17*, 1765643. https://doi.org/10.3389/fphys.2026.1765643

Walinono, A. H., Hariyanto, E., & Amiq, F. (2017). Meningkatkan Pembelajaran Pukulan Forehand Lob Bulutangkis Dengan Menggunakan Part And Whole Method Pada Peserta Didik Kelas VIII E SMPN 1 Winongan Kabupaten Pasuruan. Gelanggang Pendidikan Jasmani Indonesia, 1(1). https://doi.org/10.17977/um040v1i1p63-73

Wang, R., Liu, Y., & Chen, L. (2020). Effects of coordination training on overhead stroke accuracy in badminton players. Journal of Human Kinetics, 74(1), 85–93.

Widyawati, D., Farmaning, G., Putri, T., Pratiwi, D. A., & Fitri, A. T. (2025). Peran Adaptasi Fisiologis terhadap Latihan Intensitas Tinggi (High-Intensity Training) dalam Optimalisasi Performa Atletik : Tinjauan Literatur The Role of Physiological Adaptation to High-Intensity Training in Optimizing Athletic Performance : Systematic Literature Review. 11(2), 61–76.

Yunanto, B., Wikarta, B. A., & Yanto. (2022). Penerapan Metode Pembelajaran Massed Practice Terhadap Ketepatan Pukulan Smash Pada Permainan Bulutangkis. Jurnal Pendidikan Jasmani, Kesehatan Dan Rekreasi, 7(2).

Zhou, Q., Li, H., & Sun, J. (2021). The impact of training motivation and enjoyment on young athletes' performance. Frontiers in Psychology, 12, 678–686.