



Analysis of Short and Long Serves on the Effectiveness of Rallies and Point Acquisition in Badminton Athletes

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Abstract

One of the basic techniques in badminton is serving, which is an important shooting at the beginning of a rally and maintains the pattern or while determining tempo and opportunities to control the game. The purpose of this study is to analyze the difference in effect between short serve and long serve on the effectiveness of rallies and point acquisition in 2025 Semarang Regency Championship. For the purpose of this study, a quantitative approach with a non-experimental observational comparative design was used. The research sample was 14 athletes in the Men's Beginner Singles (TPA-UTAMA) category, using a total sampling technique. Data were collected through systematic observation and video documentation of the matches. Data were analyzed using descriptive statistics, normality test, homogeneity test, and Paired Sample t-Test hypothesis test by using SPSS 26 software. The results: Short serve 51.63 ± 20.60 Long serve 48.36 ± 20.60 The average point and the average score of 53.06 ± 8.49 were the same for both methods of acquiring points by rallying from attackers. The normality test results revealed that all variables were normally distributed ($p > 0.05$) and the homogeneity test showed that there was heteroskedasticity between the variances ($p > 0.05$). Such results suggest that both serve methods contribute relatively evenly to the success of rallies and point scoring. And at the regional training level, a match's success is based more on how solid the overall game is than what type of serve is being used. Real match data allow to evaluate these parameters and build a more complete training program.

How to Cite

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INTRODUCTION

Sports are a systematic process involving various physical activities, efforts, and activities aimed at developing and improving a person's physical and spiritual potential (Rui, 2023; Hasan et al., 2025). Today, sports have become an essential part of everyone's life. A phenomenon observed in everyday life shows that many people still engage in sports activities in the morning, afternoon, evening, and night (Handayani et al., 2024). This shows that public awareness of the importance of sports is increasing. Sports offer various benefits for physical health that can be felt immediately, so nowadays sports have become part of a lifestyle that needs to be maintained regularly to maintain fitness and health (Wakitayanti & Hartono, 2021).

Badminton is one of the most popular sports in Indonesia and has made the nation proud through numerous international achievements (Sholicha & Wahyudi, 2022). This is inseparable from sports achievement coaching. According to PBSI data for 2025, there are 4,765 active badminton clubs with 89,812 registered athletes throughout Indonesia. This data illustrates the breadth and structure of the national badminton development system spread across various regions, from urban to rural areas. Badminton is played with a net, a racket, and a shuttlecock and involves various striking techniques, ranging from slow to very fast strokes, including feint movements (Mahmood & Alwan, 2022). The main objective in badminton is to direct the shuttlecock into the opponent's playing area so that the opponent is unable to return it properly, while at the same time trying to keep the shuttlecock from falling into one's own playing area (Woo et al., 2024). The fast, dynamic, and complex nature of badminton requires every athlete, whether beginner or professional, to have thorough mastery of basic techniques (Wahyudi et al., 2018). Every rally in a badminton match is determined by the athlete's ability to execute techniques accurately and consistently, where one of the most fundamental techniques is the serve (Ma'arif et al., 2024).

The serve is the first shot to start the game. Serves in badminton are divided into two types: short serves and long serves (Setiawan et al., 2025). A short serve is a racket stroke directed to the front area of the court with a low and thin trajectory over the net, which aims to limit the opponent's movement and force the opponent to return the shuttlecock by lifting it (Siregar et al., 2024). Meanwhile, a long serve is a shot

directed to the back of the court with a high, long trajectory, which serves to pressure the opponent's position, force the opponent to move backwards, and change the tempo of the game (Pangaestu et al., 2025).

In professional matches, service results are a significant technical performance parameter for studying the player's playing model and the efficiency of his tactics. The competitive matches' outcome, resulting from a player's service changes dynamically when a player is under pressure. This observation is consistent with the findings of Eval Edmizal et al. (2024), the official match data offers a more objective and accurate picture of technical performance than data from training observations. This is because competitive conditions directly influence technical execution through psychological pressure, physical fatigue, adaptation to the opponent's tactics, and the dynamics of the match score.

Tournaments at the regional level, such as the 2025 PBSI Semarang Regency Badminton Championship (Kejurkab), continue to be an integral part of the athlete performance development system carried out in stages by PBSI. This tournament will be held to accommodate athletes from various clubs in the Semarang Regency area, across various categories and age groups, with a variety of playing styles. These differences include variations in technical mastery, experience with competition, game strategy, physical condition, and an athlete's mental state. These differences can shape the usage patterns and outcomes of short and long serves, with short serves generally more effective at bringing about rallies and point scores in live-game situations.

Service results are closely linked to the playing style and rally-opening strategies used by (Zhou & Jie, 2021). Chen Long, an athlete, used short serves 99.18% of the time, which is consistent with controlling net play and rally consistency in game strategy. On the other hand, Viktor Axelsen demonstrated greater versatility, with 81.12% short serves and 18.88% long serves, showcasing his tactical flexibility across different match scenarios. These outcomes revealed patterns that can serve as indicators in analysing playing style, rally effectiveness, and contributions to point scoring.

Research conducted by found that service results are closely related to playing style and rally opening strategies. Athlete Chen Long used short serves 99.18% of the time, reflecting a strategy of controlling net play and rally consistency. Meanwhile, Viktor Axelsen showed more variety

with 81.12% short serves and 18.88% long serves, indicating tactical flexibility in dealing with various match situations. These findings confirm that serve outcome patterns can serve as important indicators for analysing playing style, rally effectiveness, and their contributions to point scoring.

Although research on serve outcomes has been extensively conducted on international elite athletes, empirical studies on regional training-level athletes remain relatively limited (Carboch & Smocek, 2020). Athletes at the regional training level differ in terms of competition experience, technical consistency, and competitive readiness. Therefore, analysing service results at the regional training level is important for understanding athletes' actual technical performance and as a basis for evaluation in the training process.

Based on observations at the Semarang Regency Championship, there were variations in short- and long-service results among athletes, both in terms of accuracy, effectiveness in forming rallies, and their contribution to point acquisition. These variations indicate differences in the quality of service technique execution in real match situations. The urgency of this research is to analyse service outcomes empirically to obtain an objective picture of the effectiveness of services at the regional coaching level. This study aims to analyse short- and long-term service results and their contributions to rally effectiveness and point acquisition in matches. The novelty of this study lies in applying service-based analysis to regional-level matches, which has so far been more commonly applied to international elite athletes, and in integrating the analysis of rally effectiveness and point contribution by service type, which has rarely been studied specifically. Thus, this study is expected to contribute, both scientifically and practically, to the development of badminton coaching based on real match data.

METHOD

This study uses a quantitative, comparative, non-experimental observational design to compare the effects of short serves and long serves on rally effectiveness and point acquisition. The study was conducted during official matches of the Men's Beginner Main Class (TPA-UTAMA) at the District Championship Tournament organised by PBSI Semarang District in 2025. The research population and sample consisted of 14 athletes aged 13-14 years, and were selected using a total sampling technique.

Data collection was carried out through

systematic observation using observation sheets and video documentation of matches to ensure data accuracy. The data obtained were analysed using descriptive statistics to determine the average and percentage of rally effectiveness and point acquisition. Prerequisite tests were carried out using normality and homogeneity tests. Furthermore, hypothesis testing was conducted using the Paired-Samples t-test. The analysis was performed using SPSS.26 statistical software to determine the difference in effectiveness between short serves and long serves.

RESULTS AND DISCUSSION

Tabel 1. Deskripsi Statistik

Variable	Min	Max	Mean	Std. Dev
Short Service	18.42	83.33	51.63	20.60
Long Service	16.67	81.58	48.36	20.60
Rally Effectiveness	36.00	66.30	53.06	8.49
Points	36.00	66.30	53.06	8.49

Based on **Tabel 1**, the short serve variable ranges from 18.42 to 83.33, with an average of 51.63 ± 20.60 . Meanwhile, the long serve has a minimum value of 16.67 and a maximum value of 81.58, with an average of 48.36 ± 20.60 . For the rally effectiveness and points variables, both have minimum values of 36.00 and maximum values of 66.30, with an average of 53.06 ± 8.49 . This indicates that rally effectiveness is directly related to points scored, so that the higher the rally effectiveness, the greater the athlete's chance of scoring points in the match.

Table 2. Normality Test

Variable	Statistic	df	Sig.
Short Service	0.965	14	0.811
Long Service	0.965	14	0.811
Rally Effectiveness	0.976	14	0.942
Points	0.976	14	0.942

Based on the results of the normality test, the significance value (Sig.) for short serves was 0.811, long serves was 0.811, rally effectiveness was 0.942, and points was 0.942. All of these significance values are greater than 0.05, so the data for all variables are normally distributed.

Tabel 3. Test of Homogeneity

Levene Statistic	df1	df2	Sig.
13,466	3	52	0,000

The results of the homogeneity of varian-

ce test using Levene's Test indicate a p-value of 0.000 (< 0.05), indicating that the data variance is not homogeneous.

Table 4. Paired Sample T-Test

Short Service Reliability Effectiveness -Long Service Reliability Effectiveness	Mean	Std. De- viation	t	f	Sig.
	3.96357	20.79881	0.713	13	0.488

Based on the results of the Paired Sample t-Test in Table 6, the average difference in rally effectiveness between short serves and long serves was 3.96 with a standard deviation of 20.80. The statistical test results show a t-value of 0.713, with 13 degrees of freedom (df) and a significance value (Sig.) of 0.488. Since the significance value is greater than 0.05 ($0.488 > 0.05$), it can be concluded that there is no significant difference between the rally effectiveness generated from short serves and long serves. This shows that both types of serves make a similar contribution to a match's rally effectiveness.

The average short serve effect reported was 51.63 ± 20.60 . In contrast, the average long serve effect was reported as 48.36 ± 20.60 . Generally, athletes in the Men's Beginner Singles category do not have a dominant serve. Descriptively, short serves have a slightly higher average value than long serves. However, the difference is not big enough to conclude that there is already an athlete bias towards one of these two classes. Such additional skills required for athlete development at this regional training level may also include mastery of a range of serve variations as part of overall skill development.

In badminton, short and long serves serve different strategic functions (Lino et al., 2026). Short serves demand more precision in control, accuracy in direction, and coordination of movement, so athletes with higher levels of maturity in their technical skills are more comfortable with its use. On the other hand, athletes who have yet to stabilize their technique may tend to choose long serves more frequently simply because they are easier and provide a greater margin of error. The findings of this study are consistent with those of Edmizal & Barlian (2024), who found that athletes exhibit various serve patterns, which are dictated by their strategies and play profiles. The serving patterns are still more short serves, and elite athletes have specific tendencies when serving, whether they do mostly long serves or a combination of short and long. Taufik et al., (2024) reported differences in short- and long-serve mastery among club athletes. Individual

attributes (technical skills, competitive experience, and tactical understanding) underlie these variabilities; experienced players can employ serve variations more effectively.

Based on the normality test results, all research variables showed normal distributions. This data distribution indicates that the athletes' serving ability and rally effectiveness are relatively even. However, there is still individual variation influenced by factors such as experience, training level, and physical and mental readiness (Sekulic et al., 2025). However, the homogeneity test results show that the data variance is not homogeneous. This condition indicates significant differences in ability levels among athletes (Saeterbakken et al., 2022).

The results of the Paired Sample t-Test show a significance value of 0.488 ($p > 0.05$), which means that there is no significant difference between the effectiveness of rallies resulting from short serves and long serves. Although the descriptive statistics show a difference in mean values, it is relatively small and not statistically significant. This indicates that the type of serve is not a major factor in determining the success of a rally. The serve is the initial phase of the game. However, the success of a rally is more influenced by the athlete's quality, such as their return ability, stroke technique stability, player position, and tactical decision-making during the rally. Thus, the effectiveness of a rally is multifactorial and does not depend solely on the type of serve used. These findings align with the research by Prajongjai et al. (2021), which found that a rally's success is determined by the overall sequence of play, including the athlete's technical stability, coordination, and concentration. The serve only plays a role in the initial formation of the rally, while the final success is more determined by the ability to manage the rally consistently and effectively (Li et al., 2025; Gomez et al., 2020).

The analysis also shows that there is no significant difference between short and long serves in terms of point acquisition ($p > 0.05$). In the rally point system, every rally won earns points, so the effectiveness of the rally directly affects point acquisition. With no significant difference in rally effectiveness, the contribution of both types of serves to point acquisition is also relatively the same. This shows that at the district championship level, point acquisition is more influenced by consistency of play than by the type of serve used. Factors such as technical stability, ability to control rallies, and minimal unforced errors play a greater role in determining success in acquiring points (Gusrinaldi et al., 2020).

This study suggests that serve type is equally effective in contributing to rally effectiveness and point acquisition for regional-level players. There were no significant differences among serve types, suggesting that a successful match is heavily determined by playing ability (technique, tactics, and strategy) and the athletes' mental and physical preparedness. This research also improves understanding of the technical performance characteristics of athletes at the regional training level. It can inform the development of better training that focuses not just on one serve category but also on rally stability and athletes' match preparedness.

CONCLUSION

The results of this study indicate that there is no significant difference between short and long serves used in generating rallies and points for male athletes. The paired-samples t-test value was 0.488 ($p > 0.05$). Long serves were slightly more effective on average than short serves. However, this difference was not statistically meaningful and helps illustrate that both serve types contribute equally to rally creation and point scoring. In conclusion, these results suggest that, at the regional training activity level, rally success and point scoring are more strongly predicted by technical/coordination consistency, the execution of rally management skills, the athlete's stability in play, and the athlete's physical and mental readiness than by serve type. This implies that, based on the analysis of actual game data, training programs should also focus on improving overall game performance.

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