



Specific Imagery Training and Kicking Accuracy: A Case Study of Senior Taekwondo Athletes at a University

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ABSTRACT

Taekwondo is a combat sport that relies heavily on kicking techniques as the primary means of scoring points during competition. In the modern era of electronic scoring systems, kicking accuracy has become a crucial determinant of athletic performance because only kicks that strike designated targets with sufficient precision and force are rewarded with points. In addition to physical and technical factors, psychological skills such as imagery ability are believed to contribute to the successful execution of accurate kicking techniques. Therefore, this study aimed to examine the relationship between specific imagery training and kicking accuracy among senior taekwondo athletes at a university. This study employed a quantitative approach with a correlational research design. Participants consisted of senior taekwondo athletes with competitive experience who regularly participated in structured training programs. Data were collected using the Movement Imagination Questionnaire-Revised (MIQ-R) to assess imagery ability and a target-based kicking accuracy test to measure technical performance. Data analysis included descriptive statistics, normality testing, and Pearson correlation analysis. The results revealed that athletes demonstrated moderate to high levels of imagery ability and satisfactory kicking accuracy performance. Correlation analysis indicated a positive relationship between specific imagery training and kicking accuracy; however, the relationship was not statistically significant ($p > 0.05$). These findings suggest that imagery training contributes to enhanced concentration, mental readiness, movement coordination, and confidence, but it is not the sole determinant of kicking accuracy. Physical fitness, technical mastery, training experience, and motor control also play significant roles in performance outcomes. In conclusion, specific imagery training can serve as a valuable complementary strategy in taekwondo coaching programs. Nevertheless, optimal kicking accuracy is more likely to be achieved through the integration of mental training, technical practice, and physical conditioning within a comprehensive athlete development framework.

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A. Conception and design of the study;
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INTRODUCTION

Taekwondo is one of the most competitive combat sports worldwide and is characterized by its emphasis on kicking techniques as the primary means of scoring points during matches. The modern competition system, particularly after the implementation of electronic scoring systems, has increased the importance of kicking precision because points are awarded only when kicks strike designated target areas with sufficient force and accuracy (Oktaviani et al., 2022; Indrominoto, 2024). Consequently, kicking accuracy has become a decisive performance factor for taekwondo athletes, especially at the senior level where competition intensity and technical demands are substantially higher (Ali & Pahlawi, 2025; Dayu & Mulyana, 2025).

In contemporary taekwondo competitions, athletes are required not only to demonstrate superior physical capacities such as strength, speed, agility, and flexibility but also to execute technical movements with exceptional precision under highly stressful conditions. Observations in training and competition settings reveal that many athletes continue to experience difficulties in maintaining consistent kicking accuracy when confronted with rapid tactical situations, time constraints, and psychological pressure (Andira, 2025). Missed or inaccurately directed kicks frequently reduce scoring opportunities and may significantly influence match outcomes. Therefore, improving kicking accuracy remains a central challenge in taekwondo coaching and athlete development.

Recent studies have highlighted that sports performance is influenced not only by physical and technical factors but also by psychological variables such as concentration, self-confidence, emotional regulation, attentional control, and mental preparedness (Prasetya, 2019; Setiawan et al., 2023). Athletes who possess strong psychological skills often demonstrate greater consistency in executing technical skills during competition. Consequently, modern sports coaching increasingly recognizes the importance of integrating mental training strategies alongside physical conditioning and technical practice.

Among various psychological interventions, imagery training has emerged as one of the most widely applied and scientifically supported mental training methods in sport psychology (Di Corrado et al., 2020). Imagery refers to the process of mentally simulating movements, situations, or experiences without physically performing them. Through imagery, athletes create cognitive representations of desired movements, allowing them to rehearse technical skills mentally while strengthening neural pathways associated with motor execution (Putri & Raharjo, 2023; Nursaba et al., 2024). Despite growing interest in imagery training, empirical evidence regarding its effectiveness in improving specific technical skills, particularly kicking accuracy among senior taekwondo athletes, remains limited and requires further investigation.

Mental imagery has become a fundamental component of psychological skills training programs in various sports. Research in neuroscience and sport psychology suggests that imagery activates neural structures similar to those engaged during actual movement execution, thereby facilitating motor learning and performance

enhancement (Di Corrado et al., 2020). Mental rehearsal can improve movement coordination, decision-making processes, confidence levels, and technical execution through repeated cognitive simulation.

Previous studies have demonstrated positive effects of imagery interventions across numerous sporting contexts. Imagery training has been shown to enhance performance in precision-based sports such as archery, shooting, golf, and gymnastics, where accurate movement execution is essential for success (Moran et al., 2019; Slimani et al., 2016). In combat sports, imagery contributes to the development of tactical awareness, reaction speed, emotional regulation, and technical proficiency (Cumming & Williams, 2018).

Within taekwondo, imagery training has attracted increasing scholarly attention due to its potential to improve technical performance and psychological readiness. Dayu and Mulyana (2025) reported that imagery facilitates athletes' understanding of movement patterns and enhances motor coordination. Likewise, Yulianto (2025) emphasized that imagery constitutes a crucial psychological skill contributing significantly to sports achievement. Studies conducted by Putri and Raharjo (2023) further revealed that imagery interventions positively influence self-confidence, anxiety management, and overall athletic performance.

Recent literature also indicates that imagery training can strengthen motor memory and improve neuromuscular coordination by repeatedly activating cognitive representations of movement sequences (Di Corrado et al., 2020). Through systematic visualization, athletes can mentally rehearse ideal technical execution, identify movement errors, and develop more effective performance strategies before actual competition. This process becomes particularly important in taekwondo, where success often depends on executing complex kicking techniques within fractions of a second.

Furthermore, scholars have argued that sport-specific imagery interventions tend to produce stronger performance outcomes than generalized imagery approaches because they focus directly on the targeted skill being developed (Susanti et al., 2019). Specific imagery enables athletes to visualize movement details, including body positioning, target location, balance maintenance, timing, and coordination, which are directly associated with technical performance (Jeni, 2025). Consequently, sport-specific imagery training is increasingly recommended as an evidence-based strategy for optimizing athletic performance.

Although imagery training has been extensively investigated in sport psychology, several important research gaps remain. First, much of the existing literature focuses on general athletic performance, psychological readiness, anxiety reduction, motivation enhancement, or confidence development rather than examining specific technical outcomes such as kicking accuracy (Putri & Raharjo, 2023; Nursaba et al., 2024).

Second, studies investigating imagery in combat sports frequently evaluate overall performance indicators without isolating particular techniques that directly contribute to scoring success. As a result, the specific relationship between imagery training and kicking accuracy in taekwondo remains insufficiently understood. Existing findings

often emphasize broad performance improvements but provide limited evidence regarding how imagery influences precision-based motor skills during actual execution.

Third, previous investigations have predominantly examined youth athletes, novice participants, or mixed athlete populations. Research specifically focusing on senior taekwondo athletes remains relatively scarce. Senior athletes possess distinct physiological, psychological, and technical characteristics compared to younger athletes, making direct generalization of previous findings problematic (Ramadani et al., 2025).

Fourth, limited attention has been devoted to specific imagery training approaches that focus exclusively on visualizing targeted kicking movements. While general imagery protocols are commonly applied, there is insufficient empirical evidence concerning the effectiveness of imagery specifically designed to enhance kicking accuracy by emphasizing kick trajectory, target focus, body alignment, balance control, and eye-foot coordination (Bagas, 2025; Sumarjo et al., 2025).

Therefore, further investigation is required to establish a stronger empirical foundation regarding the role of specific imagery training in improving kicking accuracy among senior taekwondo athletes. Addressing this gap is essential for developing evidence-based coaching strategies that integrate psychological and technical training components.

Based on the aforementioned issues, this study aims to examine the relationship between specific imagery training and kicking accuracy among senior taekwondo athletes at the university level. The research seeks to determine whether athletes who engage in structured and sport-specific imagery practices demonstrate superior kicking accuracy compared to conventional training approaches.

The novelty of this study lies in several aspects. First, unlike previous studies that focus primarily on general performance outcomes, this research specifically investigates kicking accuracy as a critical technical performance indicator in taekwondo. Second, the study applies a specific imagery training approach that emphasizes visualization of particular kicking techniques, target points, body balance, movement trajectory, and coordination patterns. Third, the research focuses exclusively on senior university taekwondo athletes, a population that remains underrepresented in existing literature. Finally, this study contributes to the growing body of knowledge concerning the integration of psychological skills training into sport-specific technical development programs.

In conclusion, the increasing demands of modern taekwondo competition require athletes to achieve high levels of technical precision and psychological preparedness. While imagery training has demonstrated considerable potential in enhancing sports performance, evidence regarding its specific influence on kicking accuracy among senior taekwondo athletes remains limited. Therefore, this study provides an important contribution by examining the relationship between specific imagery training and kicking accuracy, offering both theoretical insights and practical implications for taekwondo coaching and athlete performance optimization.

METHODS

This research employed a quantitative descriptive method. The quantitative approach was chosen because the study aimed to measurably and systematically determine the relationship between specific imagery training variables and kicking accuracy in senior taekwondo athletes. The research design used a correlational approach, which aimed to determine whether or not there was a relationship and its strength between two or more variables without any treatment or manipulation of those variables (El Hasbi et al., 2023).

The subjects in this study were 21 active university taekwondo athletes from the Taekwondo Student Activity Unit (UKM). Subject characteristics included being 19-24 years old, senior, with at least one year of competitive experience, and regularly training at least twice a week. Subject selection used a purposive sampling technique with a judgmental sampling approach, based on specific criteria aligned with the research objectives.

The research instrument used the Movement Imagery Questionnaire-Revised (MIQ-RS) developed by Hall & Martin, (1997). To measure the athlete's imagery training abilities, which include aspects of visual imagery and kinesthetic imagery, using 14 questions. Meanwhile, kicking accuracy was measured using a target-based skills test with a body protector (Hugo), where the athlete performed 10 kicks and was scored with a score of 1 if on target and 0 if not Johnson, (2016). Data analysis was carried out using SPSS through descriptive tests, Shapiro-Wilk normality tests, and correlation tests to determine the relationship between specific imagery training and kicking accuracy.

Data analysis in this study was conducted using SPSS Ber (Statistical Package for the Social Sciences) with several stages of statistical testing. The analysis began with a descriptive test to obtain a general overview of the data, followed by a normality test using the Shapiro-Wilk technique to determine the data distribution, and a hypothesis test using a correlation test to determine the relationship between specific imagery training variables and kick accuracy.

RESULTS AND DISCUSSION

Result

Data analysis in this study was conducted using SPSS (Statistical Package for the Social Sciences)(Suciwaty et al., 2026). The results of the quantitative data analysis were then presented in tabular form to facilitate interpretation.

Table 1.
Descriptive Test

Variable	Amount	Minimum	Maximum	Amount	Average	Std. Dev.
Specific Imagery Training	21	52,00	79,00	1381,00	65,7619	7,69353
Kicking Accuracy	21	5,00	9,00	154,00	7,3333	1,31656

Table 1 shows the results of descriptive tests on the specific imagery training and kicking accuracy variables. Based on the table, the specific imagery training variable has

an average of 65.76 with a standard deviation of 7.69, a minimum value of 52.00, and a maximum of 79.00. This indicates that the level of athlete imagery ability is in the fairly good category with a relatively even data distribution. Meanwhile, the kicking accuracy variable has an average value of 7.33 with a standard deviation of 1.31, a minimum value of 5.00, and a maximum of 9.00. Thus, it can be seen that most athletes have a fairly good level of kicking accuracy, although there are still variations between individuals. Next, the author presents the results of the Normality test in Table 2.

Table 2
Normality Test Result

Variable	Statistik	Shapiro-Wilk df	Sig.
Specific Imagery Training	0,970	21	0,731
Kicking Accuracy	0,906	21	0,046

Table 2 shows the results of the normality test using the Shapiro-Wilk Technique. Based on the results obtained, the specific imagery training variable has a significance value of 0.731, which means the data is normally distributed because the significance value is 0.046, which indicates that the data is not completely normally distributed because the significance value is less than 0.05. Nevertheless, the analysis continued to observe the tendency of the relationship between variables. Then the author conducted a hypothesis test in Table 3.

Table 3.
Hypothesis Test Results

Variable	N	Correlation Coefficient	Sig. (2-tailed)
Specific Imagery Training – Kicking Accuracy	21	0,425	0,055

Table 3 shows the results of the hypothesis test using a correlation analysis of 0.425. Based on this table, the correlation coefficient was 0.425 with a significance level of 0.055 ($P > 0.05$). This indicates a moderate positive relationship between specific imagery training and kicking accuracy, but the relationship is not statistically significant.

Discussion

Based on the results of the research that has been conducted, it can be seen that specific imagery training has a relationship with the kicking accuracy of senior taekwondo athletes, although the relationship is not statistically significant. This indicates that in general, imagery training has a tendency to support athlete performance, especially in increasing movement accuracy (Sumarjo et al., 2025). In line with sports psychology theory, imagery training is a mental strategy that can improve focus, concentration, and athlete readiness in facing competitive situations (Pratama & Utami, 2024). In addition, good visualization skills also play a role in helping athletes understand and internalize movement patterns more effectively (Hadian et al., 2025).

Furthermore, when viewed from the implementation process, specific imagery training provides athletes with the opportunity to mentally represent movements before actually performing them (Sumarjo et al., 2025). Thus, this training can help strengthen

the relationship between the cognitive and motor systems in producing more coordinated movements (Sari, 2025). However, the insignificant results in this study identified that the effectiveness of imagery is highly dependent on the individual's ability to visualize accurately and consistently (Hadian et al., 2025). This is also supported by research stating that not all athletes have the same imagery abilities, resulting in different effects on performance (Wijaya et al., 2024).

On the other hand, kicking accuracy in taekwondo is not only influenced by mental factors, but also by physical and technical factors (Febrianty et al., 2021; Sabatini et al., 2019). For example, muscle strength, balance, and motor coordination are crucial components in producing accurate kicks (Afrinaldi et al., 2021). Furthermore, from a motor learning perspective, the success of a skill is greatly influenced by repeated practice and consistent feedback. Therefore, although imagery training contributes to mental readiness, without the support of optimal physical training and technique, accuracy improvements will not be maximized (Gould et al., 2014).

Furthermore, the results of this study can also be explained by the variations in experience and training intensity of each athlete. Athletes with more competitive experience tend to have better imagery skills due to their increased familiarity with various competition situations (Pratama & Utami, 2024). Conversely, athletes with less experience may still struggle to construct specific and realistic mental images. Therefore, differences in individual characteristics such as experience, training frequency, and cognitive abilities also influence the study results (Rodiyana & Puspitasari, 2021). Thus, it can be concluded that specific imagery training still contributes to improving athletes' mental aspects, particularly in terms of concentration and motor agility, although it has not shown a significant relationship with kicking accuracy (Komarudin & Novian, 2021). Therefore, a more comprehensive training approach is needed that integrates mental, physical, and technical aspects simultaneously (Komarudin et al., 2024). Furthermore, the role of the coach is also crucial in guiding athletes to develop imagery skills effectively through structured and ongoing training (Manalu et al., 2024).

CONCLUSION

Based on research on the relationship between specific imagery training and senior kicking accuracy, it can be concluded that there is a relationship between the two variables, but the relationship is not statistically significant. The results of the analysis show that specific imagery training has a tendency to support athlete performance, especially in aspects of mental readiness and motor coordination, but has not had a strong influence on kicking accuracy. This shows that, although imagery training plays a role in improving mental aspects, kicking accuracy is also influenced by other factors such as physical condition, technique, and the athlete's competition experience. Thus, specific imagery training still has a role in supporting athlete performance. However, it needs to be supported by other aspects to achieve optimal results.

Therefore, it is recommended to pay more attention to the mental aspect of training by integrating imagery training into a comprehensive training program alongside physical and technical training. Furthermore, athletes need to increase consistency in performing imagery training so that their visualization skills can develop optimally and contribute more effectively to improving kicking accuracy.

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