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The Relationship Between Technical Decision Making and the Success of Attacks Among Pencak Silat Athletes

Silatulrahmi

Universitas Negeri Makassar, Sulawesi Selatan, Indonesia

silatulrahmi@unm.ac.id

ABSTRACT

This study aims to examine the relationship between technical decision making and attack success in pencak silat athletes from Sinjai Regency. Methods: This research used a correlational quantitative approach. The sample consisted of 30 pencak silat athletes from Sinjai Regency who were selected using a purposive sampling technique. Data were collected using a technical decision making observation instrument and attack success rates measured during controlled sparring sessions. Data analysis was performed using Pearson's product-moment correlation and simple linear regression at a significance level of $\alpha = 0.05$. Results: The results showed a significant positive correlation between technical decision-making and attack success ($r = 0.712$; $p < 0.05$). The coefficient of determination ($R^2 = 0.507$) indicated that technical decision-making accounted for 50.7% of attack success, while the remaining 49.3% was influenced by other factors. Implications: These findings underscore the importance of integrating technical decision-making training into the coaching programs of pencak silat athletes to enhance competition performance. Further studies should investigate additional variables such as psychological resilience, physical conditioning, and tactical adaptability in relation to attack effectiveness. Must be written in a single paragraph in English, max 250 words.

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AUTHORS' CONTRIBUTION

A. Conception and design of the study;
B. Acquisition of data;
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INTRODUCTION

Pencak silat is a traditional Indonesian martial art that has undergone a significant transformation from an ancestral cultural heritage into an international competitive sport. Recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as Intangible Cultural Heritage in 2019, pencak silat has now evolved and is contested in various prestigious sporting events, ranging from the SEA Games and Asian Games to world championships organized by the International Pencak Silat Federation (, PERSILAT). In the competition category, an athlete's success is determined not only by physical strength but also by technical skill and the ability to make precise decisions at every moment of a match, which unfolds at a high tempo with rapidly changing dynamics (Mulyana, 2013).

Competitive pencak silat matches require athletes to be able to read the situation, anticipate their opponent's movements, and execute offensive and defensive techniques accurately, quickly, and efficiently within a very short timeframe. This ability is known as technical decision making, a cognitive process that enables athletes to select and execute the most effective technical actions in dynamic match situations (Borysiuk & Waskiewicz, 2008). In the context of pencak silat, the technical decision-making process includes selecting the type of attack, determining the timing of the attack, selecting the target, and adapting to the opponent's defensive responses in real-time. The complexity of this process makes technical decision-making one of the fundamental aspects that distinguish high-performing athletes from those with average performance.

Recent research in the field of sports science increasingly underscores the importance of cognitive aspects in martial arts performance. Ruiz-Barquín et al. (2020) state that tactical decision-making ability is a significant predictor of success in competitive martial arts. In line with this, Chaabene et al. (2021) found that elite martial arts athletes consistently demonstrate higher decision-making speed compared to novice athletes, particularly in high-pressure situations such as when executing an attack. This finding is reinforced by Borysiuk and Waskiewicz (2008), who explicitly assert that the ability to make technical decisions quickly and accurately is one of the key differentiators between high-performing athletes and athletes with average performance.

From a neuropsychological perspective, technical decision-making in martial arts involves the interaction between visual perception, procedural memory, and executive brain functions that work synergistically under high-pressure conditions (Tenenbaum, 2003). Athletes with strong technical decision-making skills are able to process tactical information more quickly and efficiently, resulting in more precise motor responses. This directly correlates with the success rate of attacks during a match, as attacks executed at the right time and in the right situation are far more difficult for opponents to block (Williams & Davids, 1998). Furthermore, research in other martial arts such as taekwondo and karate also confirms that cognitive reaction speed plays a crucial role in determining the effectiveness of attacks and overall competitive success (Mori et al., 2002; Duthie et al., 2006).

At the regional level, particularly in Sinjai Regency, South Sulawesi, pencak silat has long been one of the leading sports that consistently produces high-achieving athletes at both the provincial and national levels. This is not unrelated to the cultural support of the local community, which has a strong historical connection to this martial art. However, the researcher's initial observations indicate that there are still significant challenges regarding athletes' technical decision-making, as evidenced by the high frequency of failed attacks or those not executed optimally during matches. This condition indicates a gap between the technical skills that athletes have theoretically mastered and their ability to make decisions to execute those techniques at the right time and in the right situation under the pressure of competition (Ago et al., 2022). This

gap ultimately results in a decrease in the effectiveness of attacks and the athletes' overall competitive performance.

Although a number of studies have examined various aspects of pencak silat, such as physical condition (Nugraha & Pratama, 2021), mastery of basic techniques (Hasanuddin et al., 2020), and training strategies (Mulyana, 2013), studies that specifically and in-depth examine the relationship between technical decision-making and the success of attacks in pencak silat athletes, particularly at the district level, remain very limited. This limitation creates a strong scientific urgency to conduct research that is more focused on the cognitive and technical dimensions of pencak silat athletes' performance. A comprehensive understanding of the relationship between these two variables is expected to provide an empirical foundation for coaches and sports trainers in designing training programs that are more holistic, structured, and evidence-based.

Based on the background described above, this study aims to scientifically examine the extent of the relationship between technical decision-making ability and attack success among pencak silat athletes in Sinjai Regency. More specifically, this study seeks to answer the following question: Is there a significant relationship between technical decision-making ability and attack success among pencak silat athletes in Sinjai Regency? The results of this study are expected to provide meaningful scientific contributions, not only to the development of sports science, particularly in the field of pencak silat, but also as a practical reference for coaches in integrating cognitive training into athlete development programs in a more systematic and planned manner.

METHODS

This study employs a quantitative correlational approach aimed at identifying and measuring the strength of the relationship between technical decision making as the independent variable (X) and attack success as the dependent variable (Y). A correlational design was chosen because it can reveal relationships between variables without experimentally manipulating the research subjects (Creswell & Creswell, 2018).

The study population consisted of all competitive pencak silat athletes registered with the Sinjai Regency Branch of the Indonesian Pencak Silat Association (IPSI), totaling 45 individuals. Sampling was conducted using purposive sampling with the following criteria: (1) active athletes who had participated in at least one championship at the regency level within the past two years; (2) male; and (3) currently active in training. Based on these criteria, a sample of 30 athletes was obtained.

The instruments used in this study consist of two parts. First, a technical decision-making observation sheet developed based on Raab's (2020) framework, which covers four dimensions: (a) speed of situational perception, (b) accuracy of technique selection, (c) speed of decision execution, and (d) tactical adaptation to situational changes. Each dimension was rated on a 1–5 Likert scale by two raters who were nationally certified coaches. Interrater reliability was calculated using Cohen's Kappa, yielding a value of $\kappa = 0.84$, which falls into the "very good" category. Second, records of successful attacks

obtained from video recordings of official matches were calculated as the percentage of attacks resulting in points or penalties for the opponent out of the total number of attacks made.

The data collection procedure was conducted in three stages: (1) observation of controlled sparring sessions, with three sessions per athlete; (2) assessment of technical decision-making by two independent evaluators; and (3) recording of successful attacks from video footage. The data were then analyzed using Pearson's Product-Moment correlation test after meeting the prerequisite tests, namely the Kolmogorov-Smirnov normality test and the linearity test. Additionally, simple linear regression analysis was performed to determine the magnitude of the independent variables' contribution to the dependent variable. All statistical analyses were conducted using SPSS version 26.0 at a significance level of $\alpha = 0.05$.

RESULTS AND DISCUSSION

Result

A descriptive analysis was conducted on the two research variables: technical decision making and attack success. A summary of the descriptive statistics for both variables is presented in Table 1 below.

Table1.
Descriptive Statistics of Research Variables

Variable	N	Mean	SD	Range
Technical Decision Making	30	68.73	9.42	48–90
Attack Success Rate (%)	30	54.27	12.38	28–78

Prerequisite Tests and Hypothesis Tests

The Kolmogorov-Smirnov normality test indicates that the data on technical decision making ($D = 0.112$; $p = 0.200$) and attack success ($D = 0.098$; $p = 0.200$) are both normally distributed. The linearity test indicates a linear relationship between the two variables ($F = 21.47$; $p < 0.001$). The results of the correlation and regression tests are presented in Table 2

.**Table2** .
Results of Correlation and Regression Tests

Relationship	r	R	Calculated F	Sig.
TDM → Attack Success	0.712	0.507	28.64	0.000

Based on Table 2, a correlation coefficient of $r = 0.712$ was obtained with a significance value of $p = 0.000$ ($p < 0.05$). This indicates a significant, positive, and strong relationship between technical decision making and attack success among pencak silat athletes in Sinjai Regency. The coefficient of determination $R^2 = 0.507$ means that 50.7% of the variation in attack success can be explained by variations in technical decision making, while the remaining 49.3% is influenced by other factors outside the variables under study.

Discussion

The results of this study confirm the proposed hypothesis that there is a significant relationship between technical decision-making and the success of attacks. These findings are consistent with the research by Chaabene et al. (2021), who found that the ability to make quick and accurate decisions plays a crucial role in determining the effectiveness of martial artists' technical actions in competition. Furthermore, Ruiz-Barquín et al. (2020) also confirmed that athletes with good decision-making abilities tend to have higher success rates in attack actions in contact martial arts.

In the context of pencak silat, competition matches take place at a very fast pace, with a very narrow window of time to execute attacks effectively. Raab (2020) explains that in such situations, an athlete's ability to rapidly process perceptual information and convert it into appropriate motor responses is a critical component of technical performance. Athletes with high technical decision-making scores in this study were found to have a significantly higher attack success rate, indicating that this cognitive ability plays a direct role in the effectiveness of technical execution.

These findings are further supported by the results of a study by Ago et al. (2022) on national-level pencak silat athletes, which demonstrated a significant correlation between tactical cognitive capacity and the technical efficiency of attacks. Furthermore, Nugraha & Pratama (2021) revealed that training programs explicitly designed to train technical decision-making components can significantly improve the effectiveness of pencak silat athletes' attacks compared to conventional technical training alone.

The fact that technical decision-making accounts for 50.7% of attack success indicates that half of the variation in attack success can be explained by this cognitive aspect. The remaining 49.3% is likely influenced by factors such as physical condition, psychological aspects, competitive experience, the opponent's quality, and other situational factors. Hasanuddin et al. (2020) found in their study that physical factors such as reaction speed and agility also significantly contribute to attack success, consistent with the finding that other factors besides technical decision-making play a role.

From a practical perspective, the findings of this study have important implications for coaches and administrators of pencak silat training programs in Sinjai Regency. Training programs designed solely to improve physical ability and technical memorization without integrating technical decision-making exercises are unlikely to result in optimal improvements in attack success during matches. Creswell & Creswell (2018) and researchers in cognitive sports emphasize the importance of scenario-based training that simulates real match conditions to effectively train decision-making components.

CONCLUSION

Based on the research findings and discussion, it can be concluded that there is a significant and positive relationship between technical decision-making and attack success among pencak silat athletes in Sinjai Regency, with a correlation coefficient of $r = 0.712$ ($p < 0.05$), which falls into the strong category. Technical decision-making

contributes 50.7% to the success of attacks, with the remaining 49.3% influenced by other variables outside the scope of this study. These findings confirm that cognitive ability in technical decision-making is a key determinant of the effectiveness of attacks in pencak silat matches.

Based on these findings, it is recommended that pencak silat coaches in Sinjai Regency integrate training methods that systematically develop technical decision-making skills, such as scenario-based situational exercises, decision-making drills under time pressure, and video analysis of matches. The limitations of this study include a relatively small sample size and the specificity of the geographical context. Further research is needed with a larger sample size, a longitudinal design, and consideration of additional variables such as emotional intelligence, competition experience, and physical condition to obtain a more comprehensive picture of the factors determining the success of attacks in pencak silat.

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