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The Effect of Imagery on Taekwondo Athletes Performance in Semarang

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Abstract

This study aimed to examine the effect of imagery on the performance of taekwondo athletes in the kyorugi category in Semarang. In addition, differences in the use of imagery types among athletes indicate the need to examine the influence of each imagery type as well as their overall contribution to taekwondo athletes' performance. This study employed a quantitative non-experimental approach with a cross-sectional design and a questionnaire method. The participants consisted of 101 taekwondo athletes in the kyorugi category aged 12–18 years from several dojangs in Semarang, who had participated in at least provincial-level competitions. The independent variable was imagery, which consisted of five types Cognitive Specific (CS), Cognitive General (CG), Motivational Specific (MS), Motivational General Mastery (MGM), and Motivational General Arousal (MGA), measured using the Sport Imagery Questionnaire (SIQ). The dependent variable was athlete performance, measured using Perceived Performance in Sport Questionnaire (PPS). Data were analyzed using multiple linear regression with the assistance of SPSS 30. The results showed that partially, none of the five imagery types had a significant effect on the performance of taekwondo athletes in Semarang. However, simultaneously had a significant effect on athlete performance. The coefficient of determination (R^2) indicated that imagery contributed 15.5% to athlete performance, while the remaining variance was influenced by other factors outside this study. In conclusion, this study is that imagery, as an integrated mental system, plays a role in supporting taekwondo athletes' performance, although its contribution remains relatively low. Therefore, structured and integrated imagery training needs to be developed within taekwondo athlete development programs.

Keywords: imagery, sport psychology, athlete performance, taekwondo.

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INTRODUCTION

Sports are seen as activities that not only improve physical fitness but also support mental health (Saufi et al., 2024). Planned and intensive training is necessary in competitive sports to prepare athletes for competitions at various levels (Hikmah et al., 2023). Skill, physical condition, and mental endurance are the main factors for success (Sumantri & Agustinah, 2024).

Taekwondo is a martial art that involves discipline in various forms of movement through the mind and body (Yıkılmaz et al., 2025). The determination of training programs in taekwondo must be tailored to the needs of athletes, physical condition, psychological readiness, and balanced nutrition to improve performance (Samanipour et al., 2025). Not only good physical strength, but psychological management of fear, anxiety, and self-doubt is also very important in taekwondo (Shin & Cha, 2022). Psychological factors are often overlooked; athletes' performance certainly depends on physical strength, but psychological skills are also very important for maximum performance (Wahyudi, 2023).

According to Harsono (2018), optimal performance can only be achieved if physical, technical, tactical, and mental training are carried out in a balanced manner. This is in line with the findings of Kharisma et al. (2025), taekwondo training programs must include physical and psychological aspects in an integrative manner, given the increasingly complex performance demands in this sport. The performance of taekwondo athletes is their ability to demonstrate technical and tactical skills, as well as mental preparedness during training and competition (Kusuma et al., 2020). Therefore, athlete performance is not only determined by physical ability, but also by mental preparedness in responding to rapidly changing situations during competition (Bing & Kim, 2021).

Athlete performance in competitive sports is generally understood through objective indicators, such as match results, scores, and training target achievements. Therefore, understanding athlete performance also needs to be viewed from the perspective of individual perception, known as Perceived Performance in Sport. This instrument emphasizes how athletes assess the success, effectiveness, and satisfaction of their performance (Nicholls et al., 2010; Almagro et al., 2020). In martial arts such as taekwondo, perceived performance is relevant because athletes face high-pressure competition situations (Slimani et al., 2016; Nam et al., 2022).

In sports psychology, one mental skill that has been proven effective in supporting athlete performance is imagery (Lindsay et al., 2022). Imagery is defined as the ability to create or relive sensory experiences in the mind without any real stimuli (Post et al., 2012). In other words, imagery training can be applied to taekwondo as a way to improve athletes' performance from a psychological perspective (Volgemute et al., 2025). In taekwondo, imagery plays an important role in building mental readiness and tactical visualization before a match (Hadi Saputro et al., 2025).

Imagery itself consists of several types. It is not only related to movement visualization but also motivational aspects. Imagery in sports psychology consists of five types, namely Cognitive Specific (CS), Cognitive General (CG), Motivational Specific (MS), Motivational General Mastery (MGM), and Motivational General Arousal (MGA) (Hall et al., 1998). Each type has a different function. Each athlete can use the type of imagery that suits their characteristics, experience, and needs. Therefore, the measurement of imagery in competitive sports needs to be based on a theoretical framework that can represent all the types of imagery that have been described. This was developed through the Sport Imagery Questionnaire. This instrument was developed to measure the use of imagery by Hall et al. in the context of sports based on a multidimensional theoretical framework of imagery that refers to five types of imagery. Thus, the effect of imagery on athlete performance is more accurately understood as the result of a combination of various types of imagery working in a unified mental process (Williams et al., 2010).

Based on initial observations, it appears that several taekwondo dojangs in Semarang have training programs that focus more on physical and technical training, while mental training has not yet been implemented in a structured manner. This condition shows that mental training, especially imagery-based training, has not yet become a systematic part of the training program at taekwondo dojangs in Semarang. In addition, there are variations in the use of imagery types among athletes. Some athletes tend to focus on imagining attacking techniques, imagining kicking their opponent in the head, imagining victory, and imagining managing their emotions before competing. This shows that imagery is used by athletes in the training and competition preparation process but does not yet have a clear and focused pattern.

Although imagery has been used by athletes in the training and competition preparation process, it is not yet known to what extent the use

of various types of imagery affects the performance of taekwondo athletes, either partially or as a whole. Therefore, research is needed to determine the effect of imagery on the performance of taekwondo athletes in Semarang.

METHODS

This study uses a quantitative approach with a non-experimental design, in which the researcher does not provide treatment or manipulation of the research variables, but rather observes the conditions that already exist in the research subjects (Arikunto, 2019). The research design used was cross-sectional, in which data collection was carried out at a specific period of time to identify the relationship between imagery and athlete performance (Sugiyono, 2019). Data analysis was performed using multiple regression analysis with the help of SPSS software version 30 (Sugiyono, 2022).

The population in this study were kyorugi taekwondo athletes from several dojangs in Semarang. The sampling technique used purposive sampling, which is the selection of samples based on certain criteria relevant to the research objectives (Sugiyono, 2019). This technique was chosen because not all taekwondo athletes have the same level of competitive experience. The sample inclusion criteria included: (1) kyorugi taekwondo athletes aged 12–18 years, (2) having participated in at least provincial-level competitions, and (3) being registered as active athletes at dojangs in Semarang (Creswell & Creswell, 2018). The research was conducted in Semarang with taekwondo athletes in the kyorugi category from several dojangs as the research subjects. Data collection was carried out in November 2025. The research instrument was designed in the form of an online questionnaire using Google Forms. The use of an online questionnaire was deemed appropriate for survey research with a cross-sectional design that focused on measuring respondents' self-perceptions.

The independent variable in this study was imagery, which consisted of five dimensions, namely Cognitive Specific (CS), Cognitive General (CG), Motivational Specific (MS), Motivational General Mastery (MGM), and Motivational General Arousal (MGA), as proposed by Hall et al. (1998). The dependent variable is athletic performance, which represents athletes' perceptions of the quality of their performance during training and competition.

Imagery measurement was conducted using the Sport Imagery Questionnaire (SIQ) developed by Hall et al. (1998). This instrument consists of 30 statement items divided into five subscales, each containing six items. Each item is measured using a 1–5 Likert scale, ranging from "never" to "very often," to describe the frequency of imagery use by athletes in the context of training and competition. The SIQ has been widely used in sports psychology research and has been shown to have good validity and reliability (Ruiz & Watt, 2012).

Athlete performance was measured using the Perceived Performance in Sport Questionnaire developed by Almagro et al. (2020). This instrument consists of five statement items that measure athletes' perceptions of the effectiveness, quality, and readiness of their performance. Respondents provided answers using a 1–5 Likert scale, ranging from "absolutely disagree" to "absolutely agree".

Data analysis was performed using descriptive statistics and multiple regression analysis with the help of SPSS version 30. Descriptive statistics were used to describe the level of imagination use and athlete performance through mean values, standard deviations, minimum values, and maximum values (Sugiyono, 2017). Before performing regression analysis, the data were tested using classical assumption tests, which included normality tests, heteroscedasticity tests, and multicollinearity tests (Ghozali, 2021).

Multiple regression analysis was used to determine the effect of each dimension of imagination on athlete performance, both partially and simultaneously (Sugiyono, 2022). Hypothesis testing was performed using the F test to determine the simultaneous effect and the t test to determine the partial effect, with a significance level of 0.05.

RESULTS AND DISCUSSION

This study involved 101 taekwondo athletes in the kyorugi category in Semarang, who met the inclusion criteria for the study. Descriptive analysis showed that, in general, athletes used imagery in the good category, both in the cognitive and motivational dimensions (Sugiyono, 2022). The level of imagery use in each dimension was in the good category, with

the proportion of athletes in the good category ranging from 68.3% to 84.2%.

Descriptive Statistics

The athletes' performance, as measured using the Perceived Performance in Sport Questionnaire, showed that most athletes were in the fair to good category, with an average score of 17.70. These results indicate that the athletes had a relatively positive perception of their performance, although not all of them were at their optimal performance level.

Table 1. Descriptive Statistics

Descriptive Statistics					
	N	Min	Max	Mean	Std. Dev
CS	101	17.00	30.00	24.1089	3.34933
CG	101	17.00	30.00	24.5842	3.32044
MS	101	13.00	30.00	26.1089	3.50685
MGM	101	16.00	30.00	24.7822	3.55979
MGA	101	14.00	30.00	24.5248	3.46582
PPS	101	7.00	25.00	17.7030	3.61813
Valid N	101				

Table 2. Hasil Presentase

	Poor	Fair	Good
CS	0,0%	31,7%	68,3%
CG	0,0%	25,7%	74,3%
MS	1,0%	14,9%	84,2%
MGM	0,0%	23,8%	76,2%
MGA	1,0%	24,8%	74,3%

Normality Test

Before performing multiple regression analysis, the research data was first tested using classical assumption tests to ensure the suitability of the statistical model. The results of the normality test using Kolmogorov–Smirnov showed a significance value of 0.074 ($p > 0.05$), indicating that the data was normally distributed (Sugiyono, 2022).

Table 3. Normality Test Results

Statistic	Value	Desc
N	101	Normal
Mean	0.000	
Std. Dev	3.326	
Kolmogorov-Smirnov	0.075	
Monte Carlo Sig. (2-tailed)e	0.074	

Heteroscedasticity Test

Furthermore, the results of the heteroscedasticity test using the Glejser method show that all independent variables have a significance value greater than 0.05. This finding indicates that there is no heteroscedasticity in the regression model, so that the residual variance is homogeneous (Ghozali, 2021).

Table 4. Heteroscedasticity Test Results

Variable	Sig.	Desc.
CS	0.091	No
CG	0.076	No
MS	0.723	No
MGM	0.774	No
MGA	0.132	No

Multicollinearity Test

The multicollinearity test results show that all independent variables have a Tolerance value above 0.10 and a Variance Inflation Factor (VIF) value below 10. This indicates that there is no high correlation between the independent variables, so the regression model is free from multicollinearity problems (Ghozali, 2021).

Based on the results of the classical assumption test, the multiple regression model in this study is declared to meet all statistical prerequisites and is suitable for testing the effect of imagery on the performance of taekwondo athletes.

Table 5. Multicollinearity Test Results

Variable	Collinearity Statistics		Desc
	Tolerance	VIF	
CS	0.507	1.974	No
CG	0.493	2.029	No
MS	0.583	1.714	No
MGM	0.414	2.414	No
MGA	0.413	2.419	No

Coefficient of Determination

The results of multiple regression analysis show that imagery as a whole has a significant effect on the performance of taekwondo athletes in Semarang (p = 0.006) (Sugiyono, 2022). The coefficient of determination (R^2) value of 0.155 indicates that imagery contributes 15.5% to the variation in athlete performance, while the rest is influenced by other factors outside the scope of this study.

Table 6. Coefficient of Determination Results

R	R Square	Adjusted R Square	Std. Error	Category
0.394a	0.155	0.110	3.413	very low

Partial t-test

Partially, each dimension of imagery did not show a significant effect on athlete performance (p > 0.05) (Sugiyono, 2022). However, these results do not diminish the significance of the overall effect of imagery, but rather show that the contribution of imagery to athlete performance arises when all dimensions of imagery work together..

Table 7. Partial t-test Results

	(B)	Std. Error	t value	Sig.	Desc
	6.305	3.076	2.050	0.043	
CS	-0.057	0.143	-0.397	0.692	No
CG	0.039	0.146	0.266	0.791	No
MS	0.103	0.127	0.810	0.420	No
MGM	0.148	0.149	0.996	0.322	No
MGA	0.222	0.153	1.449	0.151	No

Simultaneous F-test

However, simultaneously (F test) shows that imagery consisting of Cognitive Specific, Cognitive General, Motivational Specific, Motivational General Mastery, and Motivational General Arousal together have a significant effect on the performance of taekwondo athletes in Semarang with a significance value of 0.006 (p < 0.05) (Sugiyono, 2022).

Table 8. Simultaneous F-test results

Model	Sum	df	Mean	F value	Sig.	Desc
Regression	202.748	5	40.550	3.482	0.006	Signifikan
Residual	1106.341	95	11.646			
Total	1309.089	100				

Based on the results of classical assumption testing and multiple regression analysis, this study directly answers the main objective of the research, which is to determine the effect of imagery on athlete performance.

The results of this study confirm that imagery has a significant effect on the performance of taekwondo athletes when analyzed simultaneously, even though each imagery is not significant when analyzed separately. This indicates that imagery is a multidimensional and integrative psychological construct, where its effectiveness is only apparent when all dimensions of imagery are used together (Hall et al., 1998; Paivio A, 1985).

The insignificant partial effects of each dimension of imagery indicate that athletes' use of imagery tends to be general and not specifically focused on one particular dimension (Cumming & Quinton, 2022; Weinberg & Gould, 2023). However, when all dimensions of imagery, both cognitive and motivational, are combined in a single model, imagery can make a meaningful contribution to athletes' mental readiness and performance (Williams et al., 2010).

A coefficient of determination value of 15.5% indicates that imagery makes a real contribution to athletes' performance, although this contribution is moderate. This indicates that taekwondo athletes' performance is also influenced by various other factors, such as physical condition, technique, competition experience, and environmental factors (Nam et al., 2022; Bing & Kim, 2021). Nevertheless, imagery still plays an important role as part of the athlete's mental readiness system that supports overall performance.

CONCLUSION

The conclusion of this study is that imagery as a whole has a significant effect on the performance of taekwondo athletes in Semarang. These results indicate that imagery plays an important role as a mental skill in supporting athlete performance when understood and applied as a multidimensional construct that works simultaneously (Hall et al., 1998).

Although the partial analysis results show Cognitive Specific, Cognitive General, Motivational Specific, Motivational General Mastery, and Motivational General Arousal does not have a significant individual effect, the simultaneous analysis results confirm that the combination of all dimensions of imagery can contribute significantly to athlete performance (Cumming & Quinton, 2022; Weinberg & Gould, 2023). A coefficient of determination value of 15.5% indicates that imagery contributes significantly to variations in athletic performance, although this contribution is moderate. This indicates that imagery does not function as a stand-alone mental skill, but rather as a complementary system of psychological skills between cognitive and motivational aspects (Williams et al., 2010; Ruffault et al., 2020; Weinberg & Gould, 2023).

Overall, the results of the study show that imagery is an effective mental skill in supporting athletic performance when used in an integrated and structured manner, rather than partially.

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