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The Contribution of Motor Educability to Basic Taekwondo Techniques

Abstract

This study aims to analyze the relationship between motor educability and mastery of basic Taekwondo techniques among young athletes at Mutiara Lid's Club (MLC). Using a quantitative descriptive correlational method with a cross-sectional approach, the study involved 35 athletes as respondents. Data were collected through motor educability and basic Taekwondo technique tests. Pearson correlation analysis showed a correlation value (r) of -0.100 with a significance value (p) of 0.569, indicating a very weak and non-significant relationship between the two variables. Simple linear regression analysis also showed that motor educability contributed only 1% to basic technique mastery, with the same non-significant p-value (0.569). Therefore, no significant relationship was found between motor educability and basic technique performance. Other factors such as training experience, motivation, or coaching methods may have a greater influence. Further research is recommended with a larger sample size and additional variables to obtain more comprehensive results.

Keywords: Motor Educability, Basic Techniques, Taekwondo, Correlation, Linear Regression.

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INTRODUCTION

Taekwondo is the physical expression of the human will to survive, and it is an activity to fulfill a person's mental needs (Mathunjwa et al., 2025). Basically, all actions in Taekwondo are developed from human instincts to defend oneself (Tirtawirya, 2005). Taekwondo has positive effects on the development of strength, speed, balance, flexibility, and endurance (Roh et al., 2020). Taekwondo has been popular since the beginning in 1975 and is now one of the most popular sports in every country. Taekwondo is the physical expression of human will to survive and is an activity to fulfill people's mental needs. Basically, all actions in Taekwondo (within) develop from human instincts for self-defense. The development of basic technical skills is closely related to an individual's motor abilities. One important indicator in measuring an athlete's readiness and potential is motor educability, which is the individual's ability to learn new motor skills quickly and efficiently (Susilo & Saputra, 2018). Athletes with high motor educability are usually more easily adaptable to new training and show significant skill improvements in a relatively short time (Seidel et al., 2017). Basic Taekwondo techniques have 5 components, namely the body parts that are targeted (keupso), the body parts used for attacking or defending, stances (seogi), defensive or blocking techniques (makki), and attack techniques (kongkyok kisul) which consist of punches (jireugi), swings (chigi), thrusts (chierugi), and kicks (chagi) (Muharram, Nur Ahmad, 2020). Taekwondo has basic kicks that must be mastered such as; Front Kick (Ap Chagi), Roundhouse Kick (Dollyo Chagi), Side Kick (Yeop Chagi). Side Kick (Yeop Chagi) and Roundhouse Kick (Dollyo Chagi) target two areas: the head (eolgol) and the torso (momtong/stomach and chest). The roundhouse kick is very suitable for use in competitions because it can be combined with various other kicks (Jung, 2020).

Motor educability can be used as a reference to measure students' ability to learn new motor skills (Trisna Rahayu & Kusuma Yuda, 2022). When an individual is given a learning task that the student has never done before and the result after the student performs it directly is that they can master it without significant difficulty, it can be said that the individual has good motor educability (Kawano et al., 2024). Based on expert opinions, it can be concluded that motor educability is a person's motor ability to learn new movements quickly (Tirtawirya, 2005). The easier a person masters new skills, the higher their level of motor educability. Taekwondo requires high basic technical skills to help athletes understand tactics, compactness, flexibility, and balance. Therefore, motor tests from an early age are important to identify and classify a person's talent in the martial art of taekwondo (Subkhi Mahmasani, 2020). Research on the contribution of motor educability to basic technical abilities in the sport of Taekwondo is still relatively limited, especially at club level or youth development. However, a good understanding of this relationship can serve as a foundation for developing more targeted and effective training programs. Therefore, this research aims to analyze whether there is a significant relationship between motor educability and mastery of basic techniques in the sport of Taekwondo, particularly among young athletes at the MLC club.

METHOD

This research is a quantitative descriptive correlational study used to analyze the relationship and contribution between motor educability and basic Taekwondo techniques using a cross-sectional approach (Dwi Candra & Hidayah, 2015). The research uses a quantitative descriptive correlation method with a cross-sectional approach, which is an approach that is momentary at a certain time and not followed continuously over a specific period. The activities carried out include data collection on the independent variable against the dependent variable. The measurements include assessing the characteristics of motor skills (independent variable) and basic soccer techniques (dependent variable) (Diri et al., 2019). The respondents in this research are students from Mutiara Lid's Club with a total of 35 respondents. The measurements in this research include assessing the characteristics of motor skills and basic Taekwondo techniques. The assessment of motor skill characteristics and basic Taekwondo techniques was conducted over two days. In addition, a questionnaire was given to the coach to obtain evaluations of the athletes regarding the specific quality of Mutiara Lid's Club students (Muarifah & Nurkhasanah, 2019). The first measurement of motor skill characteristics consists of the Hop

backward test, One knee balance, Half turn jump – left foot, Forward hand kick and Full left turn. The second measurement of motor skill characteristics consists of the Side leaning test, Grapevine, Cross leg squat, Knee jump to feet, and Russian dance. The measurement of basic Taekwondo technique characteristics includes the Stance (Seogi) test, Punch (Jireugi), Kick (Chagi), Block (Makki), and Pattern (Poomsae) (Fuadi & Meliala, 2016).

Before the measurements were conducted, the children performed standard warm-up exercises consisting of ABC drills, continuous running for 5 minutes, static stretching, and dynamic stretching. For the trial of each individual test, the children were then divided into smaller groups to facilitate the test implementation (Baihaqi et al., 2017). The data analysis technique in this research was carried out through several stages, starting with Pearson Product Moment correlation analysis to examine the direction and strength of the relationship between motor educability and basic Taekwondo techniques. This correlation is useful for determining whether there is a positive or negative linear relationship between the two variables (Juniar, 2019). The correlation coefficient value (r) will be used as an indicator of the strength of the relationship, with values approaching +1 indicating a strong positive relationship, and values approaching -1 indicating a strong negative relationship. The main analysis in this research is simple linear regression, which is used to examine the contribution or influence of the independent variable (motor educability) on the dependent variable (basic techniques). The regression model is tested for significance through the F test and t test. If the significance value (p-value) is less than 0.05, it can be concluded that motor educability provides a significant contribution to basic techniques (Aryanti, 2019). Data processing was carried out with the assistance of the latest version of the statistical software SPSS to produce more accurate and efficient calculations. This process includes inputting raw data, descriptive statistical testing, correlation, and simple linear regression. The use of SPSS is widely recommended in sports education research due to its accuracy and ease of use.

Result

This research aims to examine the relationship between Motor Educability (motor skills) and mastery of basic techniques in taekwondo sports. Based on the results of the statistical tests conducted, the approach used is Pearson correlation analysis and simple linear regression. For more details, see Table 1 below:

Table 1. Pearson Correlation Analysis and Simple Linear Regression

		Motor Educability	Basic Techniques
Motor Educability	Pearson Correlation	1	-0.100
	Sig. (2-tailed)		0.569
	N	35	35
Basic Techniques	Pearson Correlation	-0.100	1
	Sig. (2-tailed)	0.569	
	N	35	35

Based on the Pearson correlation analysis results, it shows a correlation value (r) of -0.100 with a significance value (p-value) of 0.569. This value indicates a very weak and negative correlation between Motor Educability and mastery of basic techniques. However, what is more important is that the significance value (p) is much greater than 0.05, which means that the correlation is not statistically significant. Therefore, it cannot be concluded that there is a meaningful linear relationship between the two variables. This weak negative correlation also suggests that an increase in Motor Educability scores is slightly correlated with a decrease in basic technique scores, although this relationship is very weak and not significant, so it is most likely a coincidence in the data.

The analysis continued using simple linear regression. This model positions Motor Educability as the predictor variable (independent) and basic technique scores as the dependent variable. The results from the model summary show an R value of 0.100 and an R^2 value of 0.010. This means that only 1% of the variation in basic technique ability can be explained by motor skills ability. The Adjusted R^2 value, which is even negative (-0.020), reinforces the conclusion that this regression model is very weak and even produces worse results compared to a model with no predictors at all. This indicates that the built model does not provide any meaningful additional information for predicting basic technique scores. For more clarity, see Table 2 below:

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	0.100[a]	0.010	-0.020	1.703	0.010	0.331	1	33	0.569

From the ANOVA test results used to determine the overall significance of the regression model, an F value of 0.331 was obtained with a significance (p) of 0.569. Once again, this value indicates that the regression model is not significant. This means that statistically, there is no real effect of Motor Educability on basic taekwondo technique abilities based on the sample data used. For more clarity, see Table 3 below:

Table 3. ANOVA Test Result

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.961	1	0.961	0.331	0.569[b]
	Residual	95.725	33	2.901		
	Total	96.686	34			

From Table 4, it can be interpreted that every one-unit increase in the Motor Educability value is estimated to decrease the basic technique score by 0.021 points. However, this regression coefficient is also not significant (p = 0.569), so once again, a strong scientific conclusion cannot be drawn from this relationship. The negative effect indicated by the coefficient also needs to be approached with caution because it is not significant, and it is most likely not reflective of a real relationship.

Table 4. Regression Coefficients

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	19.091	6.172		3.093	0.004
	TotalME	-0.021	0.036	-0.100	-0.576	0.569

From statistical analysis, no evidence was found that Motor Educability (the ability to learn new motor skills) has a significant influence on mastering basic Taekwondo techniques at Club MLC. Although it is assumed that individuals with high motor learning ability will master techniques more quickly, empirical data shows insignificant correlation and regression contribution. This may occur because there are several variables that influence the results. According to Ölmez (2021) sprint speed, anaerobic strength, and muscle explosive power are what significantly contribute to kicking distance in Taekwondo (ICC 0.623–0.854; $p < 0.05$). This means that physical strength factors may be more crucial than basic motor learning ability. Analysis of kicking power (turn-side vs. side) shows that kick type, body weight, height, and gender have a significant influence on kicking power (Góra et al., 2025). Thus, innate physical characteristics can dominate technique outcomes. A learning approach that relies solely on static

drills without competition context (such as ecological dynamics, TGFU, representative learning) may limit the ability to translate Motor Educability into real techniques (Sholehudin et al., 2025). Non-contextual approaches in the field tend to produce less transfer into performance.

Discussion

This research is important to conduct because it aims to understand the relationship between motor educability and mastery of basic techniques in Taekwondo, particularly among young athletes. In the world of sports, especially in the early development stage, knowing the variables that contribute most to performance improvement is crucial. Motor educability is often considered one of the early indicators for predicting an athlete's potential to learn new skills quickly and efficiently. However, this assumption has not been extensively tested empirically in the context of martial arts like Taekwondo at the club level. This research fills a gap in the literature, which is still limited regarding the relationship between motor educability and basic Taekwondo techniques, particularly in the context of developing young athletes at the grassroots level, which is often overlooked in academic research. This means that physical strength factors may be more crucial than basic motor learning abilities. Analysis of kicking power (turn-side vs. side) shows that the type of kick, body weight, height, and gender have a significant influence on kicking power (Góra et al., 2025). Thus, innate physical characteristics can dominate technical outcomes. A learning approach that relies solely on static drills without competition context (such as ecological dynamics, TGFU, representative learning) can limit the ability to translate Motor Educability into real techniques (Sholehudin et al., 2025). Field approaches that lack context tend to produce less transfer into performance.

The implications of this research are quite important for coaches and policymakers in the development of young athletes. These results indicate that relying solely on motor educability as the primary indicator in the selection process or training planning may be less effective. Therefore, coaches should consider other factors such as the athlete's physical condition, training experience, motivation, and more contextual learning approaches like ecological dynamics or TGFU (Teaching Games for Understanding). This research also suggests the need for comprehensive assessments in evaluating athletes' readiness and potential, not just from a single cognitive-motor aspect alone. However, this research has several limitations. The small sample size and inclusion of only one club make the results less generalizable to a broader population. Additionally, the cross-sectional approach used does not allow researchers to monitor the development of relationships between variables over a certain period. The measurement instruments used still have potential for subjectivity, especially in assessing basic Taekwondo techniques that require direct observation. Furthermore, the lack of control over other variables such as training experience, individual motivation, or coaching style also becomes a factor that can affect the validity of the results.

Based on the findings and limitations described, further research is recommended to use a larger sample size and involve more sports clubs or institutions. A longitudinal approach also needs to be considered so that the development of the relationship between motor educability and mastery of basic techniques can be observed dynamically. The addition of variables such as physical strength, motivation level, and the learning approaches used in training will also enrich the analysis. The use of mixed methods through the integration of quantitative and qualitative data, such as field observations and interviews with coaches, can also provide a deeper understanding. Thus, the results of future research are expected to provide a more comprehensive picture of the factors that truly influence the mastery of basic techniques in Taekwondo sports.

Conclusion

Overall, both from correlation analysis and regression, no sufficiently strong evidence was found to support the hypothesis of a relationship or influence between Motor Educability and mastery of basic techniques in taekwondo. This may be caused by several possibilities, including a relatively small sample size (N = 35), diversity in training, motivation, or other factors not measured in this study such as training experience, age, or coaching techniques. Thus, this

research concludes that in the context of the analyzed data, motor abilities as measured in the Motor Educability variable do not make a significant contribution to the mastery of basic taekwondo techniques. For future research, it is recommended to involve additional variables, increase the sample size, and use more comprehensive measurement methods for Motor Educability and basic techniques to provide deeper and more reliable results.

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