

The Effect of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes

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Abstract— The study aims to determine the effect of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes. This type of research is descriptive quantitative with an *ex post facto* approach. The population in this study were Outstanding Athlete Development (PAB) silat athletes totaling 40 athletes with an age group of 13-17 years. The data analysis used is normality test, Linearity test, hypothesis testing using *t*-test. The analysis was assisted by SPSS (Statistical Product and Service Solutions) Version 23. The results showed that there was a significant influence of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes, with a *p*-value of 0.000 < 0.05. The magnitude of the influence of Intelligence Quotient on "T" Kick Accuracy of Silat Pencak Athletes is 41.80%. The correlation coefficient is positive, meaning that if Intelligence Quotient is higher, then "T" Kick Accuracy will also be higher. Suggestions for further researchers are expected to be able to develop training models related to the IQ ability of curration funds, so as to increase the "T" Kick Accuracy of Pencak Silat Athletes.

Keywords— Intelligence Quotient, "T" Kick Accuracy, Pencak Silat.

I. INTRODUCTION

Pencak silat is an ancestral sport of the Indonesian people that has developed from various regions in the country as a symbol of unity and integrity in a reflection of Indonesian culture (1,2). Pencak silat is also the only work of the Indonesian people themselves and has a role as a means and infrastructure to form healthy, strong, agile, calm, patient, chivalrous, confident and devoted to God Almighty. The sport of pencak silat has grown with its participation in the 2018 Jakarta-Palembang Asian Games. A total of 16 countries participated in this championship. This development has an impact on increasing public interest in the sport of pencak silat.

Pencak silat matches can be divided into four categories, namely, the sparring category, single category, double category, and team category (3–5). Sparring category pencak silat is a category of competition that features two athletes from different camps who both face each other using elements of defense and attack. The characteristics of the movements required in pencak silat are fast and sudden (explosive). The basic principle of sparring category pencak silat is to get as much value as possible by making attacks on predetermined targets. The attack that is assessed is any form of attack that enters the target with power, steady, and without being blocked by the opponent's parry. In order to get value, good accuracy of movement is needed, so that all forms of attacks that are launched can be right on target.

The types of techniques in sparring pencak silat that can be used to get scores are punches, kicks, and falls (6). The most dominant technique used is the kick technique as much as 47% (7). Because the kicking technique is the dominant technique used during the match, the kicking technique is a special focus in this study. The kicking technique is a movement performed using the legs to defend or attack to get as many points as possible. If the kicking technique is successful, it will get a value of "2". This technique is often used as the main weapon of athletes to produce value in matches. By knowing how important kicking techniques are, the implementation of kicking techniques in matches must be precise, effective and efficient.

The kick technique in pencak silat is one of the dominant techniques used by athletes to get scores. Fast and sudden movements are required, so that the attack cannot be anticipated by the opponent. Decision-making ability depends on the athlete's intellectual intelligence. When doing the kick technique there are several stages of movement that must be done. The movement in the kicking technique begins with a ready attitude or posture (ready position), then proceeds with the implementation stage starting from take-off until the impact on the target (impact). Kicks that are often used in martial arts games, one of which is the side kick ("T" kick) (8).

The "T" kick is a kick that uses one foot and leg, the trajectory is straight forward and the contact is on the heel, sole and the outer side of the sole of the foot, straight position, usually used for side attacks, targeting all parts of the body (9). The "T" kick is a kick performed in an oblique posture. The part of the foot that is hit when doing it is the side of the sole of the foot or the sword of the foot. How to do this "T" kick is in principle the same as other kicks how to train it, first start with a posture, bend and raise your knees as high as possible with a sideways body position and push your feet in a T hutuf position, then immediately pull your legs back like a swinging motion and the thighs remain raised high, place it on the floor to form a posture like when you are going to kick (10).

The research conducted is related to the sport of pencak silat in the Development of Talented Athletes (PAB) in the age group 13-17 years, so that the grouping applied is based on individual abilities in the sport of pencak silat. This study used a sample of athletes who passed the requirements for the Development of Talented Athletes in the sport of pencak silat. PAB is a forum for coaching student athletes in the Special

Region of Yogyakarta (DIY) who have the ability, talent and potential for optimal achievement development. The initial stage of this coaching is a screening in sports which is then followed up with talent scouting activities carried out by the DIY Provincial Education Office in collaboration with the Faculty of Sport and Health Sciences UNY. This activity has been going on since 2004 and continues until now. The age group of Talented Athlete Development is divided into two, namely age 10-13 and age 13-17 years.

Victory in the sparring category is obtained if one of the camps manages to get the highest score. The attacks that are scored are all forms of attacks that enter the target with power, steadiness, and without being blocked by the opponent's parry. So, the ability to make the right decision is needed, so that all forms of attacks that are launched can be effective to produce scores. Even though they have good kicking techniques, athletes cannot always kick right on target, because there are other determining factors that must also be mastered by martial arts athletes, namely intellectual intelligence. Thus the ability of intellectual intelligence is needed so that decision making produces attacks that are recognized by the judges.

Intellectual intelligence participates in supporting successful sporting achievements (11). Intellectual intelligence is the ability to understand and solve problems (12,13). Intellectual intelligence (IQ) is a qualification of human intelligence that is dominated by the ability to think rationally and logically (14).

Intellectual intelligence is the ability to act purposefully, think rationally, and deal effectively with the environment (15). Intellectual intelligence is the intellectual ability, analysis, logic and ratio. It is the intelligence to receive, store and process information into facts. Intellectual intelligence is the human ability to think rationally, analyze, determine cause-and-effect relationships, think abstractly, use language, visualize things and understand things.

Intellectual intelligence is the ability needed to perform various mental activities of thinking, reasoning and problem solving (16,17). Intellectual intelligence is the ability to acquire, recall, and use to understand abstract and concrete concepts and relationships between objects and ideas, and apply knowledge appropriately (18).

These abilities can be measured and classified into levels called IQ (Intelligence Quotient). These IQ levels can be measured using a series of specialized tests by psychologists. These tests measure both verbal and non-verbal abilities including memory, problem solving, logical abstraction, perception, information processing, and visual motor skills (19).

Based on the description that has been presented, it is known that intellectual intelligence has an influence on the accuracy of athletes' kicks, so it is necessary to analyze intellectual intelligence at the beginning of training. Based on the background that has been stated above, the researcher is interested in conducting research with the title "The Effect of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes".

II. METHOD

Study Participants

The population in this study were Outstanding Athlete Development (PAB) silat athletes totaling 40 athletes with age groups 13-17 years.

Study Organization

This type of research is descriptive quantitative with an ex post facto approach. Ex post facto which means after the fact, with survey data collection. Intellectual intelligence tests cannot be carried out by ordinary people. So that for the intellectual intelligence test the researcher submits its implementation to a certified Psychology Bureau. The Psychology Bureau used in this study is the Ulfa Potential Bina Psychology Bureau.

The side kick or "T" accuracy test is measured using the "Mega's Kick Accuracy" instrument. This tool is shaped like a bag in general, which is cylindrical like a rolling pillow, but on this bag there is an outer layer / outer bag with different colors and there are also different scores / points in each color. The bag measures 100cm in length with a diameter of 30cm and weighs between 18kg-19kg. The outer skin of the bag is divided into 7 areas with different colors, 2 red areas at the top and bottom as red zones/areas that are prohibited to attack with each area measuring 12.5cm. Then in the center is divided into 5 areas with each area having a width of 15 cm and in each area there are number points. Three (3) areas in the center as the target attack area (this attack area is determined from the average tolok height of early age fighters) in the attack area there are number points 2 and 1 this point corresponds to the points that can be obtained when making an attack in a pencak silat match. Then at the edge of the attack area there is an area with a number point (-1) this area describes the part of the fighter's body that should not be attacked such as the neck and the bottom of the center.

After the bag is ready, then the observer and scorekeeper prepare next to the bag. After that, the testee stands in front of the bag to kick. After the fighter is ready, the testor gives the signal to the fighter to start kicking. As long as the fighter kicks the scorekeeper records the points obtained from the kicks made by the fighter. Kicks are performed 10 times (one type of kick).



Figure 1. Samsak Mega's Kick Accuracy

Statistical Analysis

The data analysis used is normality test, Linearity test, hypothesis testing using t-test. The analysis was assisted by SPSS (Statistical Product and Service Solutions) Version 23.

III. RESULT

The results of the descriptive statistical analysis of Intelligence Quotient and "T" Kick Accuracy of Pencak Silat Athletes are presented in Table 1.

TABLE 1. Descriptive statistic

Variable	N	Mean ± Standard Deviation
Intelligence Quotient (X)	40	101.52 ± 6.28
"T" Kick Accuracy (Y)	40	4.85 ± 1.72

Berdasarkan Table 1 di atas, menunjukkan bahwa Intelligence Quotient diperoleh rata-rata sebesar 101.52 dan standard deviation sebesar 6.28, sedangkan data "T" Kick Accuracy diperoleh rata-rata sebesar 4.85 dan standard deviation sebesar 1.72.

Normality Test

The normality test uses the Kolmogorov-Smirnov Test, namely by looking at the significance value of the residual variable if the value is above 0.05, it can be said that the data is normally distributed. The results are presented in Table 2.

TABLE 2. Normality test result

One-Sample Kolmogorov-Smirnov Test			
		Intelligence Quotient (X)	"T" Kick Accuracy (Y)
N		40	40
Normal Parameters ^a	Mean	101.5250	4.8500
	Std. Deviation	6.28383	1.71793
Most Extreme Differences	Absolute	.094	.135
	Positive	.063	.115
	Negative	-.094	-.135
Kolmogorov-Smirnov Z		.594	.852
Asymp. Sig. (2-tailed)		.872	.462

Based on the statistical analysis of the normality test that has been carried out using the Kolmogorov-Smirnov test in Table 2, the variables of Intelligence Quotient and "T" Kick Accuracy of Pencak Silat Athletes obtained normality test results with a p-value > 0.05, which means that the data is normally distributed.

Linearity test result

Linearity testing is done through the F test. The relationship between the independent variable (X) and the dependent variable (Y) is declared linear if the p-value > 0.05. The results of the linearity test can be seen in Table 3 below:

TABLE 3. Linearity test result

Influence Variable	p-value	Sig.	Information
Intelligence Quotient dan "T" Kick Accuracy	0,101	0,05	Linier

Based on Table 3 above, it can be seen that the effect of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes obtained a p-value of 0.101 > 0.05. So, the relationship between the independent variable and the dependent variable is declared linear.

Hypothesis Test Results

Hypothesis testing using regression analysis. The results of the linear regression test analysis of the effect of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes are presented in Table 4.

TABLE 4. Results of linear regression analysis

Coefficients ^a						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	13.092	3.442		3.804	.001
	Intelligence Quotient (X)	.177	.034	.646	5.223	.000

a. Dependent Variable: "T" Kick Accuracy (Y)

Based on table 4 above, the linear regression equation resulting from this study can be determined as follows: "T" Kick Accuracy (Y) = 13.092 + 0.177 Intelligence Quotient (X). The interpretation of the regression equation is that the constant value is 13.092, meaning that if Intelligence Quotient is equal to zero (0), then "T" Kick Accuracy is 13.092.

Based on table 4 above, it shows that Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes obtained a t-value of 5.223 and a p-value of 0.000 < 0.05, then H0 is rejected, meaning that H1 which reads "There is a significant effect of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes" is accepted. The correlation coefficient is positive, meaning that if Intelligence Quotient is higher, then "T" Kick Accuracy will also be higher.

TABLE 5. The results of the coefficient of determination analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646 ^a	.418	.403	1.32789

a. Predictors: (Constant), Intelligence Quotient (X)

The coefficient of determination The results of the output in table 5 show the magnitude of the R Square value of 0.418. This means that 41.80% of the variation in "T" Kick Accuracy of Pencak Silat Athletes can be explained by variations in the independent variable, namely Intelligence Quotient. The remaining 58.20% is explained by other causes outside the model.

IV. DISCUSSION

The results showed that there was a significant influence of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes, with a p-value of 0.000 < 0.05. The magnitude of the influence of Intelligence Quotient on "T" Kick Accuracy of Silat Pencak Athletes is 41.80%. The correlation coefficient is positive, meaning that if Intelligence Quotient is higher, then "T" Kick Accuracy will also be higher.

The study Fazari & Damayanti aims to determine the relationship of intellectual intelligence (IQ) to playing skills in badminton. The results of the analysis show that there is no significant relationship between intellectual intelligence (IQ) and playing skills in badminton $p\text{-value } 0.082 > 0.05$ (20). The study Pratama, et al., shows that there is a relationship between the level of intelligence quotient (IQ) and the ability to play volleyball athletes (21).

Intelligence is an important factor that often determines victory in sports matches, especially in certain branches such as soccer, badminton or martial arts. This means that these branches require the ability to think quickly and precisely, then act quickly to anticipate their opponents. Therefore, this condition is closely related to sports so that it continues to increase well, it must still get a stimulus or stimulus to function, in a way that the athlete must be accustomed to using intellectual abilities.

The psychological aspect which is the level of Intelligence Quotient (IQ) is an element that has an important role for sports skills, especially in mastering and analyzing various movement skills in sports. Therefore, intellectual intelligence also determines a person's success in learning movement skills. Differences in the level of intellectual intelligence can affect a person's decision-making in performing movements, especially in the accuracy of movements.

A person with high intelligence will be able to learn quickly, and repeatedly choose effective actions in complex situations. Intelligence quotient will always be related to human activity itself, the difference lies in how quickly someone with a high Intelligence quotient (IQ) score and a low Intelligence quotient (IQ) score can complete a task (22). Intelligence quotient (IQ) is an index of a person's relative level of intelligence, compared to others. Intelligence quotient (IQ) is one of the psychological elements that means a measure of a person's intellectual, analytical (ability to analyze), and ratio and logic abilities (23).

Intellectual intelligence can support the performance of athletes when competing (24). This means that these branches require the ability to think quickly and precisely, then act quickly to anticipate their opponents. Therefore, this condition is closely related to sports in order to continue to increase properly must continue to obtain stimulus or stimulation to function, in a way that the athlete must be accustomed to using his intellectual abilities. Scharfen & Memmert in their research outstanding cognitive function is essential for high performance in sports (25).

Intellectual intelligence is the ability to act purposefully, think rationally, and deal effectively with the environment (15). Intellectual intelligence is intellectual ability, analysis, logic and ratio. Intellectual intelligence is the ability to acquire, recall, and use to understand abstract and concrete concepts and relationships between objects and ideas, and apply knowledge appropriately (18). Intellectual intelligence is the ability to learn from experience, think using metacognitive processes, and the ability to adapt to the environment (26,27).

Intellectual intelligence (IQ) is a qualification of human intelligence that is dominated by the ability to think rationally and logically (28). Approximately 80%, IQ is inherited from

parents, while the rest is built in the very early age of 0-2 years of human life (29). It is relatively used as a predictor of an individual's future success. The implication is that a number of researches to find tools (IQ tests) are designed as a ticket to enter the world of education as well as the world of work (30).

Intelligence in achievement sports is needed and can support athletes to be skilled in movement activities, because athletes can think quickly in making decisions that must be done correctly so that the expected optimal performance results are achieved properly. Intelligence is an important factor that often determines victory in sports. Especially in certain branches such as soccer, badminton, table tennis, basketball, tennis, martial arts, or others (20). When compared to non-experts, athletes with high levels of expertise should show superior results across a range of sport-specific cognitive domains (e.g., decision-making, declarative memory, perception, and visual search capacity) (31).

V. CONCLUSION

The results showed that there was a significant influence of Intelligence Quotient on "T" Kick Accuracy of Pencak Silat Athletes, with a $p\text{-value of } 0.000 < 0.05$. The magnitude of the influence of Intelligence Quotient on "T" Kick Accuracy of Silat Pencak Athletes is 41.80%. The correlation coefficient is positive, meaning that if Intelligence Quotient is higher, then "T" Kick Accuracy will also be higher.

To develop and optimize the ability of "T" Kick Accuracy of Pencak Silat Athletes, it is recommended to coaches, parents and those involved in it not only to consider the technical aspects but also the IQ (intelligence Quotient) aspect. Suggestions for further researchers are expected to be able to develop training models related to the IQ ability of curation funds, so as to increase the "T" Kick Accuracy of Pencak Silat Athletes.

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