

The Level of VO2 Max With Kizami Tsuki's Punch Speed In Karate Athletes

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Authors' contribution:

A. Conception and design of the study; **B.** Acquisition of data; **C.** Analysis and interpretation of data; **D.** Manuscript preparation; **E.** Obtaining funding

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ABSTRACT

This study is a correlational descriptive study that aims to determine the relationship between VO2 Max and Kizami Tsuki's Punch Speed in Karate martial arts sports in KKI Dojo H3 athletes. The independent variable in this study is the ability of Cardiovascular, while the dependent variable is Kizame Tsuki's Punch. The population in this study is Makassar City KKI Karate Athletes with a population of 15 people. To obtain the data, researchers used the Bleep Test. The results showed a significant relationship: VO2 Max with the speed of Kisami Tsuki punches on karate athletes KKI dojo H3 Makassar.

Keyword: VO2 Max; Speed; Blow; Kizami Tsuki; Karate

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INTRODUCTION

Martial arts have been known since prehistoric times. In those days life was still very simple and depended entirely on nature. Humans use certain techniques to hunt, gather food, live on the move, and protect themselves from wild animals and opponents. Humans use spears, gadah and arrows. When humans introduced war, martial arts developed into more sophistication. Sometimes they take inspiration from nature such as animal movements when fighting. Based on that, various fighting techniques were created so that humans could win battles quickly without getting hurt much. Increasingly, science developed into its art (Ancient, 2016). In some Asian countries, martial arts is more than just a way to fight.



Asians developed martial arts as a philosophy of life and with it, they learned about life and wisdom (Suganda et al., 2016). When firearms were known, the glory of martial arts began to recede. But that didn't make martial arts extinct. Martial arts continue to be developed because they can be used to protect yourself without having to carry weapons everywhere. Also in peacetime, martial arts are still in demand by people because they are used to maintain health (Automatic, 2016). From here martial arts developed as an outstanding sport as well as karate martial arts which are often competed in official championships (Bagia, 2016). Karate is one of the martial arts sports that is in great demand by all circles (Alhinduan et al., 2018). This is evidenced by the many karatekas who participate in training at various training places commonly called "dojo". Starting from children, and teenagers, to adults. Apart from being a fortification of oneself from evil, this sport is also an achievement. In addition, the government also began to pay special attention to one of the martial arts sports (Wanda et al., 2018).

The number of potential karate athletes makes several circles or government agencies make competitions both regional, national, and international (Aribowo & Alnedrat, 2018). These competitions are just to find superior karateka seeds to be further built again and in the hope that they can become karateka of national pride (Purba, 2017). At the world level, Indonesia is one of the countries with the best karate athletes who have scored achievements at the international level with the best results that have been inscribed by competing athletes (Oktasari et al., 2018). The success that has been achieved proves that Indonesia cannot be underestimated in this martial sport. At the regional level, it is usually called (Porda) which is followed by all districts in a province competing to field their best athletes, of course, with one main goal, namely to become the overall champion, including the best athletes in the Sul-sel karate martial arts branch, it can be said to be one of the contributors to karatekas owned by the Indonesian nation. Therefore, several areas in South Sulawesi promise the best coached athletes who are able to compete with foreign athletes.

In addition to Porda, several tournaments include karate martial arts as mandatory matches, namely pre-PON, PON, Pomnas, Seagames, etc. Matches that are especially in karate are not inferior, such as Kejurda, Kejurnas, Kasad Cup, home affairs cup, Indonesian intercity championships, and others. With so many championships held, this strengthens that karate martial arts is in great demand and gets its place for lovers (Diagusta & Priambodo, 2019).

In karate, a karateka must have good basic techniques, because it is one of the many factors that determine the achievement of achievements including the branch of martial arts, namely karate. Basic karate techniques according to J.B Sujoto (2006) suggest that "Basic techniques are divided into several large groups including punching movement techniques, deflections, and kicking techniques". Of all these basic techniques, the object of research is the punch technique. Kisami Tsuki punch is a punch that leads to the target's face (Manullang, 2019). Karateka who has a fast Kisami Tsuki punch speed and hits the right target will be able to collect a lot of points when competing, and this gives a great chance to become the winner in a match (Sari, 2020).

Based on the results of observations on each training in karate athletes KKI dojo H3 Makassar. The most commonly used technique is punches, this is because punches reach the target faster and can be done repeatedly to create points as long as the technique is done correctly and Kisami Tsuki punches repeatedly (Simbolon & Siahaan, 2020). Of the several punch techniques in karate martial arts, the Kisami Tsuki technique is one of the most effective types of punches used, this is because the movement process is quite easy, and the impact weight produced is very large because of the simple form of movement (Ahmad Yanuar Syaui et al., 2021).

The results of the author's observations in following several competitions show that not all athletes can punch Kisami Tsuki well and quickly. There are still many who make punches that are sometimes fended off and weak do not hit the target and are exhausted in the first minute. This situation is thought to be caused by a lack of endurance. In a karate match, the speed and accuracy of the punch greatly determine the points (value) that will be obtained (Sasmita et al., 2022). A karate athlete is certainly required to have good endurance to support his performance and achievements (Cakrawijaya, 2021). Like karate athletes who are members of the Makassar H3 dojo KKI college, to achieve high achievements, these athletes are required to have good endurance.

METHODS

This research is a type of research that is descriptive. Descriptive research is a form of research aimed at describing existing phenomena, both natural phenomena and man-made phenomena. Phenomena can be in the form of forms, activities, characteristics, changes, relationships, similarities, and differences between one phenomenon and another phenomenon (Sukmadinata, 2006). Descriptive research is research that seeks to describe and interpret something. The survey conducted by researchers here is to directly review the research location that will be used as the object of research, namely Dojo KKI H3 Makassar.

Research design is a design or description that is used as a reference in conducting a study. This research is a type of research that is descriptive. Thus the research design model used can be seen in the figure below:

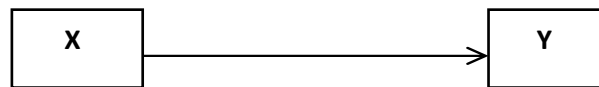


Figure 1.
 Research Design

The population in this study was Karate Athletes KKI Dojo H3 Makassar who participated in training activities with a total of 15 athletes. The sample in this study was the entire population in the Makassar h3 dojo which amounted to 15 athletes. Data analysis is a very important part of research because, with data analysis, the hypotheses set can be tested for truth and conclusions can be drawn.

RESULTS AND DISCUSSION

Result

Descriptive analysis

Descriptive data analysis is intended to get an overview of research data. Data descriptions are intended to be able to interpret and give meaning to the data.

Table 1.

Results of Descriptive Analysis of Data

Variable	N	Range	Min.	Max.	Sum	Mean	SDV	Variance
VO2 Max Level (X)	15	20.80	36.80	57.60	711.30	47.4200	7.09821	50.385
Kisame's punch speed (Y)	15	24.00	39.00	63.00	790.00	52.6667	8.73144	76.238

Data Normality Test

One assumption that must be met in order for parametric statistics to be used is that the data follows a normal spread. If the test turns out to be normally distributed data, it means that parametric statistical analysis has been fulfilled. To find out the data of this study is normally distributed, testing was carried out using the Kolmogorov Smirnov Test. The results of the data normality test can be seen in the following table.

Table 2.
Data normality test results

Variable	KS-Z	Asymp	Information
VO2 Max (X)	0.521	0.949	Significant
Kisame's punch speed (Y)	1.031	0.238	Significant

Correlation and Regression Test

There is a relationship between VO2 Max and the speed of Kisami Tsuki punches on KKI dojo H3 Makassar karate athletes. From the processing of correlation data carried out with the help of the SPSS program Version 16.00 the following results have been obtained in Table 3:

Table 3.
Correlation test results

Variable	Pearson Correlation	P	Information
VO2 Max's relationship with <i>Kisame</i> Tsuki's punch speed	0.943	0.000	Significant

From the results of data analysis, a Pearson Correlation value of 0.943 and a P value of 0.000 ($P < 0.05$) were obtained. This shows that there is a significant relationship between VO2 Max and Kisame Tsuki punch speed in KKI dojo H3 Makassar karate athletes

Table 4.
Regression test results

Variable	R	Rsquare	t-count	P	Information
VO2 Max's relationship with <i>Kisame</i> Tsuki's punch speed	0.943	0.889	10,191	0.000	Significant

Based on the regression analysis performed, obtained the value of R 0.943, R square 0.889, t calculate 10.191 > t table 2.160 and P value 0.000 ($P < 0.005$). thus, the data shows that there is a significant influence of VO2 Max with the speed of kisame tsuki punches on KKI dojo H3 Makassar karate athletes. The R Square value shows 0.889 which means that the effect of VO2 Max with the speed of kisame tsuki punches on KKI dojo H3 Makassar karate athletes is 88.9% while the rest is influenced by other factors. The results of the Bleep Test (Vo2Max) frequency distribution table data are as follows:

Table 5.
Bleep Test (Vo2Max) frequency distribution table

No	Category	Frequency	Percentage
1	Excellent	0	0%
2	Good	4	26,67%
3	Enough	4	26,67%
4	Less	2	13,33%
5	Very Lacking	5	33,33%
Sum		15	100%

Based on the frequency distribution in **Table 5** above, the picture of the bleep test data frequency graph below is as follows:

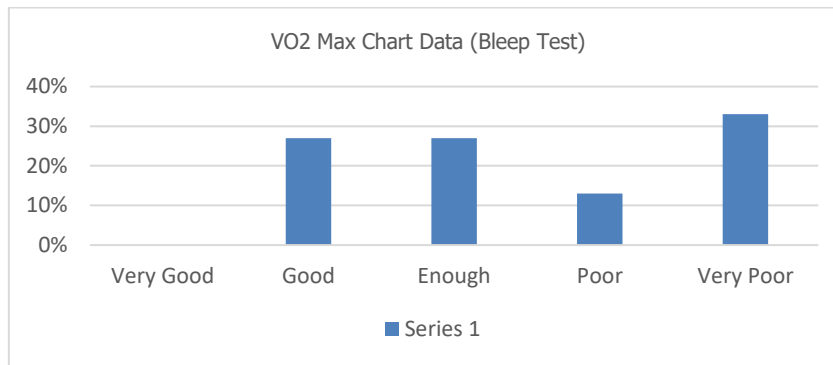


Figure 1.

Bar Chart Bleep Test (Vo2Max) data results

Based on **Table 5** and **Figure 1** above, show that the level of VO2 Max endurance ability in KKI dojo H3 Makassar karate athletes is in the good category and 26.67% (8 athletes), the sufficient category 13.33% (2 athletes) and the very less category 33.33% (5 athletes). This means that the average VO2 Max level in KKI Dojo H3 Makassar karate athletes is very lacking.

Discussion

VO2 max endurance is one of the physical potentials that everyone has to increase work productivity. For an athlete, physical freshness is one of the factors that affect physical readiness before receiving direction during training so that later with good physical freshness, athletes can receive training material provided by the coach optimally.

Based on the table and figure above, it can be seen that the results of the Bleep test VO2max endurance level are very less than 5 athletes or 33.33%, less than 2 athletes or 13.33%, moderately categorized as many as 4 athletes or 26.67%, good category as many as 4 athletes or 26.67%, and very good category does not exist. In general, the level of endurance VO2 max Karate athletes KKI Dojo H3 Makassar is dominantly categorized as very lacking.

Based on the observations of researchers, most of the Karate Dojo H3 Makassar athletes can conclude that the average athlete who has the Good and Sufficient categories is an athlete who is still actively training, while athletes who have the Less and Very Less categories are athletes who are rarely active in training and among them are active smokers.

The principle of exercise is a process of change for the better, which is to improve the physical quality, functional abilities of the body, and the psychic quality of a person. The higher the physical activity carried out every day, the better physical fitness obtained. To achieve good cardiovascular endurance fitness (Vo2max), it is necessary to have activities that must be done to improve the physical fitness of athletes, for example by increasing physical exercise.

Based on the results of descriptive analysis, it shows that the picture of VO2max endurance of athletes from the results of data analysis obtained a Pearson Correlation of 0.943 and a P value of 0.000 ($P < 0.05$). This shows that there is a significant relationship between VO2 Max and the speed of Kisami Tsuki punches in Makassar KKI Dojo H3 karate athletes.

Based on the regression analysis performed, obtained the value of R 0.943, R square 0.889, t calculate 10.191 > t table 2.160 and P value 0.000 ($P < 0.005$). thus, the data shows that there is a significant influence of VO2 Max with the speed of kisame tsuki punches on KKI dojo H3 Makassar karate athletes. The R Square value shows 0.889 which means that the effect of VO2 Max with Kisami Tsuki punch speed on KKI dojo H3 Makassar karate



athletes is 88.9% while the rest is influenced by other factors. Punches (Tsuki) are movements needed to attack opponents other than geri or kicks, in karate matches several punches can be used to attack opponents, one of which is Kisame tsuki, which is a straightforward punch that leads to head and solar plexus by stepping simultaneously with a punch.

Based on the correlation analysis carried out, a Pearson correlation value of 0.943 and a P value of 0.000 ($P < 0.05$) were obtained. This shows that there is a significant relationship between VO2 Max and Kizami Tsuki's punch speed on Makassar's KKI Dojo H3 karate athletes. Then the results of the data normality test analysis using the Kolmogorov-Smirnov test showed the VO2max Endurance result data obtained Kolmogorov-Smirnov value 0.521, Asymp. Sig 0.949 ($P > 0.05$), then it can be said that the data follows a normal distribution or normal distribution. Then the speed of Kizami Tsuki's punch obtained Kolmogorov Smirnov value 1.031, Asymp. Sig 0.238 ($P > 0.05$) then it can be said that the data follows a normal distribution or normal distribution.

Cardiovascular endurance in this case VO2 max is the maximum volume of oxygen that can be used per minute. According to Guyton and Hall (2008) in Giri Wiarto (2013) VO2 max is the speed of oxygen consumption in maximum aerobic metabolism. According to Thoden in the Suranto module (2008), VO2max is a maximal aerobic capture describing the maximum amount of oxygen consumed per unit of time by a person during exercise or tests, with exercise that is getting heavier until fatigue, the measure is called VO2max. The high and low endurance also affect the speed of Kisami Tsuki, because the higher the endurance of the athlete when running 20 meters back and forth or the Bleep Test, the higher the athlete maintains the speed of his stroke. So in the speed of the blow, endurance and speed are very important elements. To achieve a victory in a match, it is necessary to have coaching and training that is given and carried out properly, namely of course there is good guidance and training methods from the coach (M Saputra, Ramadi Ramadi, Ardiah Juita, 2017).

CONCLUSION

This study concludes that there is a significant effect of VO2 Max with the speed of *Kisami Tsuki* punches on KKI Dojo H3 Makassar karate athletes

The recommended suggestions are as follows:

1. Athletes are advised to increase cardiovascular endurance (VO2Max levels) to support the speed of kisame tsuki punches. In addition, athletes are asked to be serious and actively participate in training so that achievements in karate martial arts can be achieved
2. Coaches and sports coaches are advised to develop an exercise program that can improve cardiovascular endurance and speed of kisame tsuki strokes and pay attention to factors that affect the improvement of the two variables above.
3. To the managers and coaches of the Makassar H3 KKI dojo karate so that they would make the results of this research one of the foundations in compiling training programs and fostering athletes within the scope of the H3 Makassar KKI dojo.
4. Researchers who are interested in researching cardiovascular endurance and karate are advised to look for different variables either independent variables or dependent variables such as muscle strength, training methods or other basic techniques in karate.

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