

The Effect of Shuttle Run Training on VO2Max Physical Condition Results in Dojo Ziezoyuki Karate Academy Athletes

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Abstrak

Penelitian ini bertujuan untuk memberikan suatu latihan yang dapat meningkatkan daya tahan atlet Akademi Karate Dojo Ziezoyuki. Sebab dengan memberikan latihan daya tahan yang baik maka seorang atlet akan mampu menerapkan teknik dan taktik secara maksimal, sehingga dengan kemampuan daya tahan yang baik maka peluang untuk meraih prestasi akan semakin mudah. Penelitian ini merupakan penelitian eksperimen, dimana penelitian ini digunakan untuk mengetahui ada tidaknya pengaruh atau pengaruh terhadap suatu objek yang telah diteliti. Dalam penelitian ini pengumpulan data dilakukan dengan menggunakan tes jenis soal pilihan ganda dengan menggunakan tes awal (pretest) dan tes akhir (post-test). Populasi penelitian ini adalah seluruh atlet karate yang aktif berlatih di Dojo ZIEZOYUKI KARATE ACADEMY yang berjumlah 20 karateka. sampel berjumlah 30 orang dengan teknik pengambilan sampel menggunakan total sampling. Instrumen yang digunakan dalam penelitian ini adalah Multistage Fitness Test (MFT). Dalam penelitian ini pengumpulan data dilakukan pada saat pre-test dan post-test. Data yang telah terkumpul akan dianalisis menggunakan uji berpasangan dengan bantuan SPSS pada taraf signifikansi 5%. Uji normalitas dilakukan dengan menggunakan software IBM SPSS 20. Uji homogenitas dilakukan dengan bantuan software IBM SPSS 20 menggunakan uji Levene dengan mengacu pada nilai probabilitas atau Sig. berdasarkan rata-rata. Hasil pretest VO2 laki-laki menunjukkan nilai minimum 22,25, nilai maksimum 40,13, mean 31,5625, median 31,1900, dan standar deviasi 5,80528. Sedangkan hasil pretest VO2 wanita mempunyai nilai minimum sebesar 6,60, nilai maksimum sebesar 31,19, mean sebesar 20,2075, median sebesar 23,3650, dan standar deviasi sebesar 8,25331. Setelah dilakukan posttest VO2 nilai maksimum meningkat menjadi nilai minimum 28.95, nilai maksimum 45.72, mean 37.7108, median 36.2200, dan standar deviasi 6.09969 untuk laki-laki, sedangkan untuk perempuan hasil posttest VO2 nilai minimum 11.07, nilai maksimum 37.90, mean 23.0863, median 23.9250, dan standar deviasi 8.79715. Terbukti upaya peningkatan VO2 Max melalui latihan shuttle run memberikan pengaruh terhadap peningkatan VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY tahun 2023, dan berpengaruh besar terhadap performa pada saat Karateka bertanding secara langsung.

Kata kunci: Shuttle run, hasil kondisi fisik VO2MAX, atlet karate

Abstract

This research aims to provide an exercise that can increase the endurance of Dojo Ziezoyuki Karate Academy athletes. Because by providing good endurance training, an athlete will be able to apply techniques and tactics to the maximum, so that with excellent endurance abilities the opportunity to achieve achievements will be easier. This research is experimental research, where this research is used to determine whether there is an influence or effect on an object that has been studied. In this study, data collection was carried out using a multiple choice question type test using an initial test (pretest) and a final test (post-test). The population of this study were all karate athletes who actively trained at the ZIEZOYUKI KARATE ACADEMY Dojo, totaling 20 karateka. sample of 30 people with a sampling technique using total sampling. The instrument used in this research is the Multistage Fitness Test (MFT). In this research, data collection was carried out during the pre-test and post-test. The data that has been collected will be analyzed using Paired-test with the help of SPSS at a significance level of 5%. The normality test was carried out using the IBM SPSS 20 software. The homogeneity test was carried out with the help of the IBM SPSS 20 software using the Levene's test with reference to the probability value or Sig. based on mean. The VO2 pretest results for men showed that the minimum value was 22.25, the maximum value was 40.13, the mean was 31.5625, the median was 31.1900, and the standard deviation was 5.80528. Meanwhile, the VO2 pretest results for women had a minimum value of 6.60, a maximum value of 31.19, a mean of 20.2075, a median of 23.3650, and a standard deviation of 8.25331. After carrying out the VO2 posttest, the maximum value increased to a minimum value of 28.95, a maximum value of 45.72, a mean of 37.7108, a median of 36.2200, and a standard deviation of 6.09969 for men, while for women the posttest VO2 result was a minimum value of 11.07, maximum value 37.90, mean 23.0863, median 23.9250, and standard deviation 8.79715. It is proven that efforts to increase VO2 Max through shuttle run training have an influence on increasing VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY in 2023, and have a big influence on performance when Karateka competes directly.

Keywords: Shuttle run, VO2MAX physical condition results, karate athletes

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Introduction

Sport is an activity in human life that not only involves physical aspects, but also spiritual aspects, social aspects and even economic aspects (santosa giriwoyo, 2012:37). Sport is a series of regular and planned movements to maintain movement and improve movement abilities. Sport is a periodic necessity of life, meaning sport is a tool for physical, spiritual and social growth and development. Sports are also a means of hobbies, recreation and also as sports achievements that are competed in various sporting events or sporting events. To become an outstanding athlete, an athlete must carry out training systematically, continuously and seriously. Karate athletes are one of the largest groups of athletes in indonesia, while indonesia itself is one of the countries that has the potential to produce talented athletes. One of them is the sport of karate, because karate is a sport whose achievements can be taken into account.

Karate is a martial sport that is popular in indonesia. This karate martial sport is different from other martial arts sports because the priority in this sport is the art of movement and athlete performance, meaning that this sport does not injure the opponent or is often said to be not full of context when competing. Athletes' movement art is seen in kata and committee competitions. Karate has been included in school programs, through extracurricular activities and has been developed in many dojos in every district, sub-district and even in rural areas. Karate techniques are divided into three main parts: kihon (basic techniques), kata (stances) and kumite (fighting). Karate is a branch of martial arts where the form of movement involves using the feet and hands, such as punching, parrying and kicking. Dojo ziezoyuki karate academy is a karate training center located in kerobokan village, sawan district and on jalan gajah mada. The ziezoyuki karate academy dojo has produced several outstanding athletes at regional and national levels. However, during the competition process, there were still visible deficiencies in the physical condition of the dojo ziezoyuki karate academy athletes.

From the results of observations and interviews with coaches in the field, it is known that the athletes have mastered the basic techniques, but not the physical condition of the athletes. Dojo ziezoyuki karate academy, the author saw several problems such as the physical condition of athletes getting tired quickly during training and kumite dojo so that the results were less than optimal. Due to the athlete's lack of endurance. This endurance factor is very influential when athletes compete in kumite. This is partly due to a lack of exercise to increase endurance.

Endurance training is the body's ability to fight fatigue so that the body is able to carry out activities or work relatively quickly to get back in shape (rubianto hadi: 73). Endurance is a very important physical factor, which determines an athlete's performance, because with good endurance an athlete will be able to apply techniques and tactics to the maximum, so that with excellent endurance the opportunity to achieve achievement will be easier. Good physical endurance is the maximum ability to meet oxygen consumption which is characterized by the

maximum oxygen volume level (vo2 max). Vo2 max is the maximum amount of oxygen, which can be used in one minute per kilogram of body weight. People who are in good fitness have a higher vo2 max value and can perform stronger activities than those who are not in good condition (Intan Watulingas et al, 2013: 1065). Vo2 max is oxygen uptake during maximum exertion. To increase vo2 max, the training program must be carried out carefully, systematically, regularly and always improving. Follow the principles and accurate training methods to achieve the expected goals.

Based on the problems above, research is needed which aims to provide an exercise that can increase endurance and requires intensive and programmed training. And from the description above, researchers can raise the gap in the problem entitled: the influence of shuttle run training on the results of vo2max physical condition in dojo ziezoyuki karate academy athletes.

Materials and Methods

The method used in this research is experimental research. Experimental research is research that is used to determine whether there is an influence or effect on an object that has been studied. The experimental class uses learning using mind mapping media, while the control class uses learning using the lecture method (ordinary). In this research, data collection was carried out using a multiple choice question type test using an initial test (pretest) and a final test (post-test). The research design used in this research is in the form of a pretest and posttest group, namely experimental research carried out on one group only without any comparison group. In this study, the test was carried out 2 times, namely before and after treatment.

The population in this study were all karate athletes who actively trained at the ZIEZOYUKI KARATE ACADEMY Dojo, totaling 20 karateka. sample of 30 people with a sampling technique using total sampling. The instrument used in this research is the Multistage Fitness Test (MFT). This test is given to all karateka who train at the Ziezoyuki Dojo with the aim of seeing the results of the physical condition of the Ziezoyuki Academy dojo athletes. In this research, data collection was carried out during the pre-test and post-test. The data that has been collected will be analyzed using Paired-test with the help of SPSS at a significance level of 5%. Before carrying out a Paired-test, prerequisite tests must be carried out. The prerequisite tests that must be met so that this Paired-test can be continued are: (a) Normality Test, (b) Homogeneity Test. The data normality test is carried out with the aim of obtaining information regarding the normality of the data distribution. Apart from that, the normality test is a requirement that must be met in determining the statistical analysis used next to test the data hypothesis. The normality test is carried out using IBM SPSS 20 software. To find out whether the data is normally distributed or not, you need to pay attention to the probability value or Sig. (significance) in the ShapiroWilk column. The similarity test of two variants (homogeneity) is used to test whether the two data are homogeneous or not, namely by comparing the two variances. In this research, the homogeneity test was carried out with the

help of IBM SPSS 20 software using the Levene's test with reference to the probability value or Sig. based on mean.

Results and Discussion

Men's Pretest Data Results

The results of the description of the VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY pretest data obtained a minimum value of 22.25, a maximum value of 40.13, a mean of 31.5625, a median of 31.1900, and a standard deviation 5.80528. The following is the frequency distribution table obtained:

Table 1. Frequency distribution of men's pretest Cooper test

| No | Vo2Max(mls/kg/mi) | Frekuensi | Persentase (%) |
|--------|-------------------|-----------|----------------|
| 1 | > 51,0 | 0 | 0 |
| 2 | 45,2 – 50,9 | 0 | 0 |
| 3 | 38,4 – 45,1 | 1 | 8,33 |
| 4 | 35,0 – 38,3 | 3 | 25 |
| 5 | < 35,0 | 8 | 66,67 |
| Jumlah | | 12 | 100 |

Women's Pretest Data Results

The results of the description of the VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY pretest data obtained a minimum value of 6.60, a maximum value of 31.19, a mean of 20.2075, a median of 23.3650, and a standard deviation 8.25331. The following is the frequency distribution table obtained:

Table 2. Frequency distribution of women's pretest Cooper test

| No | Vo2Max(mls/kg/min) | Frekuensi | Persentase (%) |
|--------|--------------------|-----------|----------------|
| 1 | > 51,0 | 0 | 0 |
| 2 | 45,2 – 50,9 | 0 | 0 |
| 3 | 38,4 – 45,1 | 1 | 8,33 |
| 4 | 35,0 – 38,3 | 1 | 25 |
| 5 | < 35,0 | 6 | 66,67 |
| Jumlah | | 8 | 100 |

Men's Posttest Data Results

The results of the description of the VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY posttest data obtained a minimum score of 28.95, a maximum score of 45.72, a mean of 37.7108, a median of 36.2200, and a standard deviation 6.09969. The following is the frequency distribution table obtained:

Table 3. Frequency distribution of men's posttest Cooper test

| No | Vo2Max(mls/kg/m) | Frekuensi | Persentase (%) |
|--------|------------------|-----------|----------------|
| 1 | > 51,0 | 0 | 0 |
| 2 | 45,2 – 50,9 | 1 | 12,5 |
| 3 | 38,4 – 45,1 | 0 | 0 |
| 4 | 35,0 – 38,3 | 3 | 37,5 |
| 5 | < 35,0 | 4 | 50 |
| Jumlah | | 8 | 100 |

Women's Posttest Data Results

The results of the description of the VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY posttest data obtained a minimum value of 11.07, a maximum value of 37.90, a mean of 23.0863, a median of 23.9250, and a standard deviation of 8.79715. The following is the frequency distribution table obtained:

Table 4. Frequency distribution of women's posttest Cooper test

| No | Vo2Max(mls/kg/min) | Frekuensi | Persentase (%) |
|--------|--------------------|-----------|----------------|
| 1 | > 51,0 | 0 | 0 |
| 2 | 45,2 – 50,9 | 2 | 16,67 |
| 3 | 38,4 – 45,1 | 4 | 33,33 |
| 4 | 35,0 – 38,3 | 0 | 0 |
| 5 | < 35,0 | 6 | 50 |
| Jumlah | | 12 | 100 |

Normality Test

The normality test is carried out to test whether the sample comes from a normally distributed population or not. The distribution that will be tested for normality is two pretest and posttest data. After calculating the normality test from the test participant data, the following results were obtained:

Table 5. Kolmogorov-Smirnov Normality Test Data

| Data | significance level (<i>p</i>) | conclusion |
|----------|---------------------------------|------------------------------|
| Pretest | 0,642 | Data is normally distributed |
| Posttest | 0,497 | Data is normally distributed |

Data obtained from the Karatek pretest and posttest results as shown in table 6 above, shows that the pretest and posttest results have a significance level of more than 0.05, this means that the pretest and posttest data have a normal distribution.

Homogeneity Test

The homogeneity test aims to find out whether the samples come from the same variance or not. The results of pretest and posttest data analysis can be seen in table 6.

Table 6. Homogeneity Test Data

| Data | significance level (<i>p</i>) | conclusion |
|----------------------|---------------------------------|-------------|
| Pretest dan Posttest | 0,467 | Homogeneous |

Based on table 6, the results of the research homogeneity test are known to have a significance level (p) of 0.467, meaning $p > 0.05$. So it can be concluded that the pretest and posttest data have homogeneous variance.

Hyphotesis Test

Data analysis used to answer the proposed hypothesis is whether or not there is an influence of the shuttle run on increasing VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY, namely by conducting a t-test. The t-test results are summarized in table 7 below:

Table 7. Uji-t

| Kelompok | Mean | Mean Difference | thitung | ttabel | Sig. |
|-----------------|-------------|------------------------|----------------|---------------|-------------|
| <i>Pretest</i> | 27,0205 | 4,84 | 6,04 | 2,093 | 0,000 |
| <i>Posttest</i> | 31,8610 | | | | |

From the table above, the results of data analysis show that the t value is 6.04 with a significant value of 0.000. Then the tcount value is compared with ttable at a significance level of 5%, resulting in a ttable of 2.093. This shows that the tcount value is greater than ttable ($6.04 > 2.093$). When compared with a significance value of 0.000 which is smaller than a significance value of 0.05 ($0.000 < 0.05$), then the hypothesis in this study is declared accepted. This means that there is a significant influence from Shuttle Run training on increasing VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY in 2023.

Furthermore, to determine the increase in VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY can be determined by calculating the difference between the pretest average and posttest average, the results of the percentage increase are as follows:

Table 8. Calculation of Percentage Improvement

| <i>Mean Pretest</i> | <i>Mean Posttest</i> | <i>Mean Difference</i> | <i>Persentase</i> |
|---------------------|----------------------|-------------------------------------|-------------------------------------|
| | | <i>(Mean Posttest-Mean Pretest)</i> | <i>(Mean Df/Mean Pretest x100%)</i> |
| 27,0205 | 31,8610 | 4,84 | 17,91 |

Based on the table above, it can be seen that the percentage increase in VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY in 2023 is 17.91%.

Discussion

Based on the results of data analysis on the hypothesis in the research, it is known that there is a significant influence of shuttle run training on increasing VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY in 2023. This is shown by the tcount value being greater than the t table ($6.04 > 2.093$) with a value a significance of 0.000 is smaller than a significance of 0.05 ($0.000 < 0.05$). The results of data analysis showed that the average score on the posttest was greater than the pretest ($31.8610 > 27.0205$). This means that shuttle run training can be applied to increase VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY. Next, to determine the percentage increase in VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY, a calculation was carried out (Mean difference/mean pretest x 100%), namely

(4.84 / 27.0105 x 100%). Based on the percentage calculation results, the result was that the increase in VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY was 17.91%.

Based on the results of the data analysis above, it can be concluded that efforts to increase VO2 Max through shuttle run training have an influence on increasing VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY in 2023, and have a big influence on performance when Karateka competes directly. With good cardiorespiratory endurance, Karateka will not quickly experience fatigue while playing and will be able to optimize the techniques they have.

Conclusions

Based on the results of data analysis, hypothesis testing and the discussion presented in the previous chapter, the conclusion of this research is that there is an influence of Shuttle Run on increasing VO2 Max Karateka Dojo ZIEZOYUKI KARATE ACADEMY in 2023

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