

Review Of Vo2max Volleyball Athletes Club Rekita Vc Dikoto Gasib Kabupaten Siak

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Abstract

The aim of this research was to examine the VO2 Max abilities of Rekita VC Club volleyball athletes in Koto Gasib, Kabupaten Siak. Based on the results of observations made on Rekita VC Club volleyball athletes in Koto Gasib, Kabupaten Siak, it was found that several problems arose, on average the athletes had unstable endurance when playing volleyball. This situation is influenced by a lack of time for physical training and a lack of seriousness when doing physical training and being too focused on having fun matches or sparring partners between clubs. Seeing the progress during their training, some athletes have unstable endurance and are less diligent in carrying out physical training so that the athlete's physical condition is still not perfect. The test used in this research was the bleep test to see VO2 Max abilities . The sample in this study was 11 people. From the results of tests carried out on Rekita VC Club volleyball athletes in Koto Gasib, Kabupaten Siak, results were obtained in the " Good " category.

Keywords : Vo2max; Athlete; Volleyball

INTRODUCTION

Sport is physical exercise carried out with the aim of becoming healthy and building stronger muscles. The growth of this exercise has allowed it to be performed as a light and enjoyable pastime or with the aim of improving athletic performance. By establishing sport as one of the development policy orientations and encouraging a sports culture to improve human quality so that people have a certain level of health and physical fitness, the government itself makes sport a supporter of the realization of healthy Indonesian athletes.

In general, volleyball is a well-known sport and is practiced all over the world. Because, both indoor volleyball played by six people and beach volleyball played by two people were fiercely contested. It cannot be denied that the game of volleyball is currently a very exciting sport and is spreading rapidly in schools and outside colleges or universities.

Volleyball is described as a game played between two teams, each team consisting of six players. The basics of volleyball involve playing the ball over the net and keeping it from falling on your own court. The ball may be played or touched by each team a maximum of three times before passing over the net while in play. If the ball bounces exactly according to the rules, then the player's goal when playing is to drop the ball into the opponent's court as quickly as possible through the net with an upright body (A. Candra & Henjilito, 2018)

Physical characteristics can have an impact on the game of volleyball. When discussing physical strength, we will talk about endurance. Aerobic and anaerobic cardiorespiratory endurance are the two main types. Anaerobic exercise, such as weight lifting, focuses on muscle strength, while aerobic exercise is performed continuously and usually involves the use of oxygen. Maximum oxygen consumption can be used to measure cardiorespiratory endurance and aerobic capacity (VO2max).

It is important to measure an athlete's physical endurance to determine how well his heart, lungs, and circulatory system are working. The best way to measure the maximum oxygen consumption capacity per minute is to assess the maximum capacity of the lungs and heart. Vo2max is the rate of oxygen consumption during aerobic metabolism. Vo2max is a person's ability to inhale and utilize oxygen optimally when doing activities or sports, especially

volleyball, without feeling tired. Volleyball players' performance is a little erratic, they can take turns playing in less than ideal conditions. This may happen because athletes do a lot of activity and get tired quickly.

According to (Salman, 2018) *Vo2 max* The body's capacity to take in oxygen, transport it to muscles and other cells to be used as fuel for activities, and eliminate metabolic waste. Apart from stating that *Vo2max* is the maximum level of oxygen uptake by the body, this understanding also explains how the muscles work and how oxygen helps remove metabolic waste. The definition of *VO2 max* is the maximum amount of oxygen and the *Vo2 max value* does not change even though there is a progressive increase in different training loads. (Maulana et al., 2021) There are also those who interpret that. *Vo2max*, which is measured at an altitude equivalent to sea level, is the maximum amount of oxygen that can be used during maximum exercise using the whole body. Genetics, gender, age, and training can all impact *Vo2max* values (Faozi & Rahmawati, 2019) .

The maximum amount of oxygen that can be used each minute is called *Vo2max*. The rate of oxygen consumption at maximum aerobic metabolism is known as *Vo2max*. A measurement known as *Vo2max*, which is used to describe the maximum amount of oxygen a person can consume in a given period of time while exercising or performing a test, is the maximum aerobic capacity (Indrayana & Yuliawan, 2019). The two types of resistance training, aerobic physical training and anaerobic strength training, are differentiated based on the energy system used when doing physical activity and sports. There are many ways to increase *Vo2max*. You can improve physical fitness and the physiological components of the human body by doing regular physical activity. This is because carrying out physical activity depends on the frequency, intensity and duration to achieve the intended goal.

Many variables, such as age, gender, body composition, genetics, physical activity, physical exercise, and lifestyle, can impact cardiorespiratory fitness. *Vo2max* values may be influenced by these variables. The maximum capacity to meet oxygen consumption which can be known and assessed from the level of Maximum Oxygen Volume (*Vo2max*) is a definition of good cardiorespiratory fitness. to determine *VO2 max* . Tests are tools used to measure some performance and to collect data. A test must be valid, which means it measures what it is supposed to measure and must be reliable, which means it can be repeated many times (Gumantan Aditya et al., 2020) .

The determining factors that influence the size of *VO2 max* are as follows: Lung function refers to the capacity or ability of the lungs to hold air. Lung volume can be used to estimate how much respiratory problems will interfere with lung function which will then decrease. To assess whether the condition of the lungs is still optimal, lung volume itself is used as an indicator. (Tumiwa et al., 2016), Cardiovascular system: An athlete can be assumed to have good physical fitness if their circulatory system is functioning well, which is usually tasked with carrying nutrients filtered from food and circulating blood throughout the body. Body composition is the ratio of fat and non-fat tissue to total body weight. Athletes with a healthy body composition can certainly maximize the amount of oxygen they have to carry out long-term activities.

Exercise is needed to increase *Vo2max*. However, because aerobic exercise increases the workload of the heart and lungs, *Vo2max* should be increased through an aerobic exercise program. The high and low *VO2 max* of the players has a big influence on the athlete's physical fitness. Each training assignment is added every week according to the athlete's condition. Exercise is a form of organizing and regularly implementing a series of body movements and psychological forms. This additional load helps a person's body and mind to regain their systems and functions so they can perform at their best during physical activity.

According to (Kharisma & Zakky, 2020) There are four areas that need to be carefully considered and trained, namely physical, technical, tactical and mental training, in order to improve skills and performance as much as possible.

The objectives of the four aspects of the training are as follows: Exercises aimed at improving physical condition are called physique. Technique is an exercise that aims to improve movement control in a sport. Tactics are exercises designed to enhance and encourage improvements in an athlete's interpretive abilities when engaged in relevant sporting activities. When participating in appropriate sporting activities, an athlete should practice tactics to improve his or her interpretation skills

Based on the results of observations that have been made, several problems were found. During the Bleep test, there were several athletes who quickly experienced fatigue when carrying out the test. because by increasing Vo2max training it can improve the body's organ function system and a person's mental state can be calm and stable. Overview of Vo2max that a person has plays an important role in carrying out sports activities or daily activities. By having a good Vo2max, someone is able to play volleyball for a longer time compared to someone who does not have a good VO2max.

The Rekita Vc volleyball club facilitates local people who want to develop their talents in volleyball from an early age to seniors. Creating professional volleyball athletes is one of the goals of the club. So far, no one has conducted research to calculate the Maximum Oxygen Volume (VO2max). This research raises the problem of how Vo2max is for Rekita Vc volleyball athlete students in Koto Gasib, Siak Regency. In connection with this problem, when conducting research, researchers found

RESEARCH METHODS

This research method is descriptive research, namely research that aims to find out and obtain a true picture or reality of the reality of the object being studied without any intention of drawing generally applicable conclusions. According to (Zellatifanny & Mudjiyanto, 2018) the descriptive research type is used if there is knowledge or information about the social phenomena that will be researched or questioned. The descriptive method can be briefly said that the descriptive method is a step in carrying out an objective representation of the symptoms contained in the problem. investigated. Based on the opinion above, the type of research is descriptive in nature where the variables studied are independent regarding the VO2max review of Rekita Vc volleyball athletes in Koto Gasib.

Population is the entire research object that functions as a data source. The population is all research subjects. If someone wants to research all the elements in the research area, then the research is population research. Studies or research are also called population studies or census studies. The population in this study was 11 Rekita VC volleyball athletes in Koto Gasib. The sample is part of the number and characteristics possessed by the population. According to if we only want to research a part of the population, then the research is called sample research. A sample is a part or representative of the population being studied, it is called sample research if we intend to generalize the results of sample research. The sampling technique used was total sampling, namely sampling by means of the entire population being sampled, so it is known that the sample in this study consisted of 11 Rekita VC volleyball athletes in Koto Gasib.

RESULT AND DISCUSSION

In this research, we will discuss the Vo2max Review of Volleyball Altet Rekita VC in Koto Gasib, Siak Regency. The benchmark in this test is to take the maximum score. For more details, see the following explanation:

1. Max Test Data (Bleep Test) for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency for Male Students

After processing the VO2 Max (Bleep Test) data for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency. So the maximum value obtained is 49.6 with a minimum value of 26.8 *standard deviation* 11.6913 and *average* value 335.44 Apart from these values, the frequency distribution of *Bleep Test* values can also be explained in the following table:

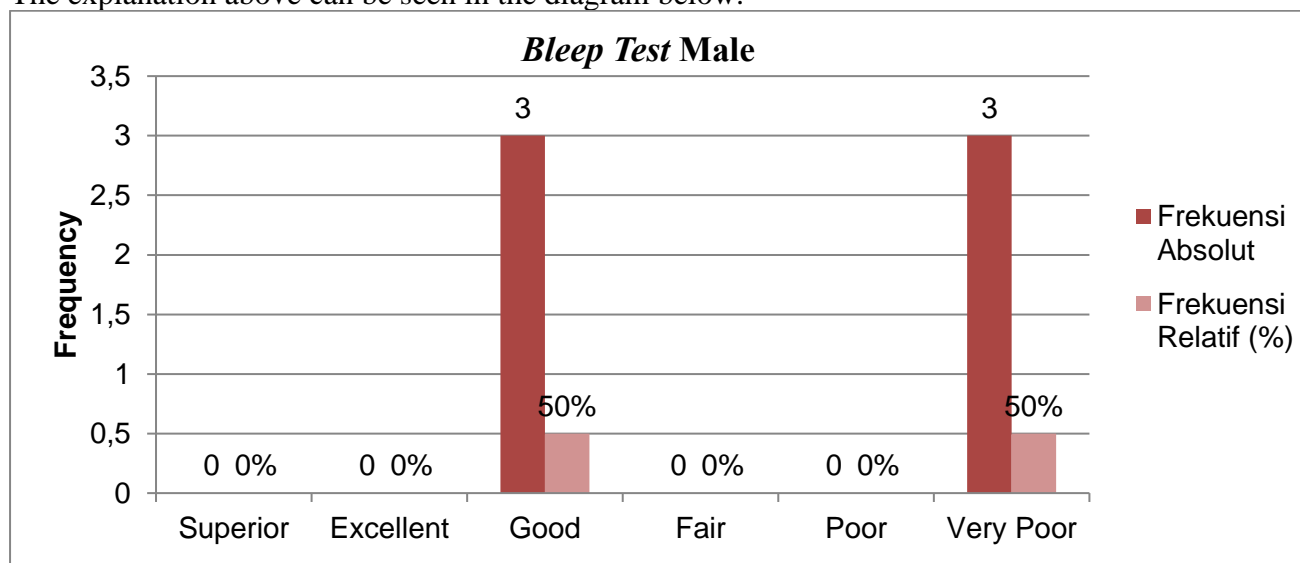
Table 4.1 VO2 Max Test Data (bleep test) for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency for Male Students

No	Interval Class	Category	Absolute Frequency	Relative Frequency (%)
1	> 55.9	Superior	0	0%
2	51.0 – 55.9	Excellent	0	0%
3	45.2 – 50.9	Good	3	50%
4	38.4 – 45.1	Fair	0	0%
5	35.0 – 38.3	Poor	0	0%
6	< 35.0	Very Poor	3	50%
			6	100%

Source: Processed Data 2023

In the table above, from the VO2 Max *Bleep Test* for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency for male students, data was obtained including in the first class at intervals > 55.9 with the *superior* category, 0 athletes were obtained with a percentage of 0 %, in the second class in the interval 51.0 – 55.9 with the *excellent* category there were 0 athletes with a percentage of 0%, in the third class in the interval 45.2 – 50.9 with the *good* category there were 3 athletes with a percentage of 50%, in the in the fourth class in the interval 38.4 – 45.1 with the *fair* category there were 0 athletes with a percentage of 0%, in the fifth class in the interval 35.0 – 38.3 with the *poor* category there were 0 athletes with a percentage of 0%, and in the sixth class in the interval < 35.0 in the *very poor* category , there were 3 athletes with a percentage of 50%.

The explanation above can be seen in the diagram below:



Graph 4. 1 Diagram of the VO2 Max *Bleep Test* for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency for Male Students.

2. Max Test Data (Bleep Test) for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency for Female Students

After processing the VO2 Max (*Bleep Test*) data for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency. So the maximum value obtained is 40.8 with a minimum value of 31.8 *standard deviation* 3.27139 and *average* value 36.22 . Apart from these values, the frequency distribution of *Bleep Test* values can also be explained in the following table:

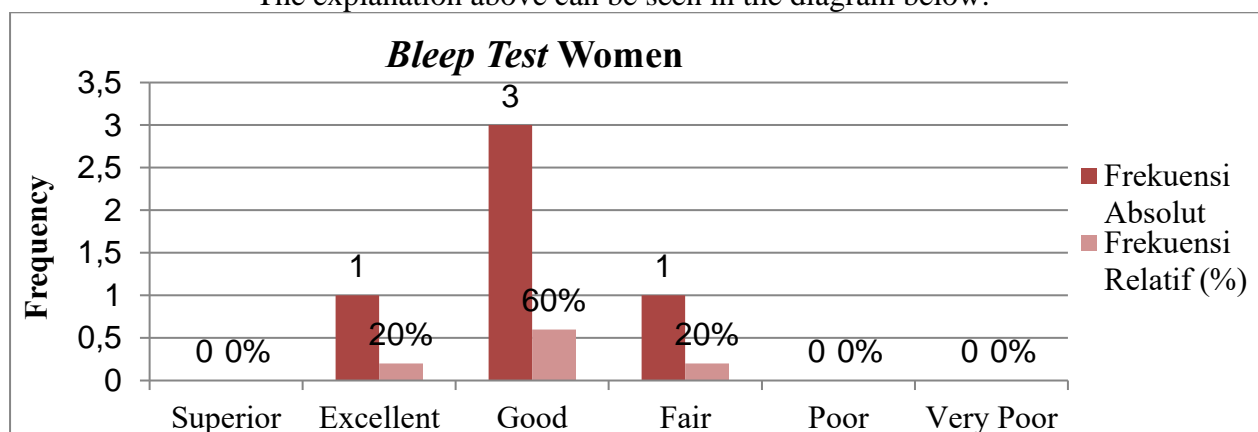
Table 4. 2 VO2 Max Bleep Test Data Rekita VC Club Volleyball Athlete Test in Koto Gasib, Siak Regency on Female Students

No	Interval Class	Category	Absolute Frequency	Relative Frequency (%)
1	> 41.9	Superior	0	0%
2	39.0 – 41.9	Excellent	1	20%
3	35.0 – 38.9	Good	3	60%
4	31.0 – 34.9	Fair	1	20%
5	25.0 – 30.9	Poor	0	0%
6	< 25.0	Very Poor	0	0%
			5	100%

Source: Processed Data 2023

In the table above, from the VO2 Max *Bleep Test* of Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency for female students, data was obtained including in the first class at intervals > 41.9 with the *superior* category, 0 athletes were obtained with a percentage of 0%, in the second class in the interval 39.0 – 41.9 with the *excellent* category there was 1 athlete with a percentage of 20%, in the third class in the interval 35.0 – 38.9 with the *good* category there were 3 athletes with a percentage of 60%, in the fourth class in interval 31.0 – 34.9 in the *fair* category , there was 1 athlete with a percentage of 20%, in the fifth class, in the interval 25.0 – 30.9, in the *poor* category , there were 0 athletes with a percentage of 0%, and in the sixth class, the interval < 25 .0 in the *very poor* category , there were 0 athletes with a percentage of 0%.

The explanation above can be seen in the diagram below:



Graph 4. 2 Diagrams of the VO2 Max *Bleep Test* for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency for Female Students.

C. Discussion

Volleyball is a sport that is known to the public from children to adults, both men and women (Supriyanto & Martiani, 2019) . Volleyball is a game where the ball is dropped into the

opponent's area which is bounded by a net by hitting the ball in the air, so that the opponent cannot return the ball to find points (Kumbara et al., 2020) . In the game of volleyball, there are several basic techniques that a player must master in order to play volleyball well. The basic techniques of playing volleyball include: *servicing* , *passing* , *smashing* and *blocking* (Kamadi, 2020) . Volleyball is a fast tempo game, so playing ball is very limited (Achmad et al., 2019) so playing volleyball requires high intensity and it is recommended to have excellent physical condition.

Physical condition is one of the most important aspects in playing volleyball. Physical condition is a special unity of components that cannot be separated simply, either in improving or maintaining them (Prasetyo & Umar, 2020) . The main aim in developing special physical conditions is to deepen the development of more specific physical condition elements in accordance with sports guidelines (Saputra & Aziz, 2020) . Excellent physical condition is certainly a measure of an athlete's success in playing their role in sports.

One of the physical conditions needed in volleyball is endurance (*VO2 Max*). *Vo2 Max* is one of the most important factors in exercising (O. Candra, 2020) . *VO2 Max* is defined as the amount of oxygen used in the body achieved in exercise (Ashfaq et al., 2022) . Apart from that, *VO2 Max* is a person's maximum condition within a certain period (Buttar et al., 2019) . So *VO2 Max* is defined as the body's ability to process oxygen used in sports activities in a certain period so that the better an athlete's *VO2 Max* , the more optimal the results will be.

This research was carried out to determine the *VO2 Max level* of Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency in Male and Female Students. The results obtained indicate that the athlete's *VO2 Max* is included in the " **Good** " category. This is certainly a note for all parties to maintain *VO2 Max* levels and improve them in a better direction.

Previous research on *VO2 Max levels* has been carried out by many previous researchers, including those carried out by (Qin et al., 2020), in this study the *VO2 Max* value was found to be Good. In addition, previous research conducted by (Santisteban et al., 2022) in his research explained that *VO2 Max* has a big influence on the body's consumption of oxygen according to gender.

CONCLUSION

Based on the results of the research and data analysis that have been presented, the *VO2 Max* results were obtained for Rekita VC Club Volleyball Athletes in Koto Gasib, Siak Regency, which are in the category " Good " . The conclusions obtained by the researchers from the results of this research are several suggestions, including: Athletes are advised to continue to train and improve their physical condition in the *VO2 Max* category by carrying out various forms of physical training to support achievement.

Coaches are advised to continue providing physical training to athletes to remain stable and better in the future and when facing *an event* , athletes are ready to compete on the field with excellent physical condition and get maximum results. To the next researcher as a reference and comparison material to continue research with the same study or other similar aspects in the future.

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