

SURVEY OF OXYGEN SATURATION OF BALL ATHLETES

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ABSTRACT

The purpose of this study was to find out and examine the oxygen saturation level of volleyball athletes after carrying out a match.

The design of this study uses a quantitative description with a survey method for volleyball athletes. The research data used were tests and measurements using the Oxymeter Fingertip Pulse instrument (a tool used to determine oxygen saturation). The research subjects used volleyball athletes in the male category of Tegalrejo District, Yogyakarta City in the IV DANDIM CUP championship. The population in this study was 16 athletes. The data analysis technique used was descriptive percentage with 5 categories, namely: severe hypoxemia, moderate hypoxemia, mild hypoxemia, normal and normal ranges.

The results of the research analysis illustrate that the level of oxygen saturation of volleyball athletes after carrying out a match, there are 0 athletes (0%) who experience severe hypoxemia, 0 athletes (0%) who experience moderate hypoxemia, 0 athletes (0%) who experience mild hypoxemia, 0 athletes (0%) experienced normal range oxygen saturation and 14 athletes (100%) experienced normal oxygen saturation.

Keywords: *Saturation, Oxygen, Volleyball .*

Introduction

In the era of the COVID-19 pandemic that occurred in this century, it affected various aspects of life. Sports in general and volleyball in particular are one of the activities affected by the COVID-19 pandemic. To enliven sports activities, especially volleyball, the Yogyakarta City government in this case through the Dandim (Military District Commander) Yogyakarta City has held a volleyball championship between sub-districts and agencies throughout the city of Yogyakarta. This championship is a routine championship that was vacuumed in 2019 and 2021. In 2022, the Yogyakarta City Dandim Volleyball Championship enters its 4th event. To enliven

this volleyball championship, the regulations may use 3 athletes outside the city of Yogyakarta but must still be in the same team. Province of the Special Region of Yogyakarta.

Tegalrejo District is located in the Yogyakarta City area which is an obligation to be a participant in the volleyball championship held by the Yogyakarta City Military District Commander in 2021. In the volleyball championship organized by the Yogyakarta City Military District Commander in 2021 Tegalrejo District fielded 2 teams, both male and female teams. women's team. In the men's volleyball team, Tegalrejo District sent 14 athletes with different and varied age levels and physical conditions. The 14 athletes consisted of 4

Outside Hitters, 3 Opposite Hitters, 3 Quicker athletes, 2 Setters and 2 libero athletes.

The level of training and different ages of male volleyball athletes in Tegalrejo District will affect the level of their physical condition. The performance of the athlete's appearance will also have an effect when the competition is held in a marathon. The physical fitness of each athlete will vary according to the level of training possessed by the individual athletes themselves. Physical endurance of athletes is also related to cardiorespiratory endurance both aerobically and anaerobically. Cardiorespiratory endurance related to aerobics really needs oxygen in the glycolysis process of the body's muscles. Whereas in anaerobic cardiorespiratory endurance the process does not require oxygen due to dependence on energy stored in the body. In volleyball competition activities, athletes will use aerobic endurance more than anaerobic endurance because each athlete competing will require a lot of oxygen to increase the athlete's lung cardiorespiratory.

In relation to aerobic cardiorespiratory endurance, volleyball athletes who carry out this competition are directly proportional to the oxygen demand in the body, where hemoglobin in the blood is bound by oxygen in the arteries which is interpreted as oxygen saturation. The level of oxygen saturation possessed by each athlete greatly affects the quality of athletes in carrying out volleyball matches, namely aerobic cardiorespiratory endurance. Aerobic cardiorespiratory endurance of the athlete's body

will be maximized if the oxygen saturation is maximally met as well. The oxygen saturation level of all male volleyball athletes who compete in the volleyball championship organized by the Dandim (Military District Commander) Yogyakarta City in 2021 is normal.

Volleyball

The Indonesian people know volleyball from 1928 which was brought by a teacher from the Netherlands who taught in schools in Indonesia. Since the 2nd PON until now, volleyball is one of the official sports that is competed. On January 22, 1955, the All-Indonesian Volleyball Association (PBVSI) and WY Latumenten were officially established as the formators for compiling the board (Herry Koesyanto, 2003: 7). Volleyball is a competitive sport that is played by two different groups of teams in a field that is limited by a net. This volleyball sport can be played by anyone, both children, adults and people with disabilities by using modified volleyball games. Some of the benefits of volleyball include; (1) cooperation, (2) movement speed, (3) high jump to overcome the ball over the net, and creative.

Physical Resistance

In the science of coaching the physical component is the basis of training before technical training, tactical training and mental training. An athlete who has a good physical condition will improve the circulatory system work of the heart or cardiorespiratory endurance. Indirectly someone who has excellent cardiorespiratory physical endurance can also

increase oxygen saturation. In volleyball, physical endurance has a very important role in both the training system and the implementation of matches. Therefore, a physical exercise program, especially for cardiorespiratory endurance, must be adjusted and planned carefully. A volleyball athlete is required to be able to train his physical well in order to be optimal in the match with the aim of achieving maximum achievement. According to Harsono (1988) the benefits of good physical condition exercise, namely: (1) There is an increase in the ability of the circulatory system and the work of the heart, (2) There is an increase in strength, flexibility, stamina and other components of physical condition, (3) There is an increased movement better, (4) There will be a faster recovery in the organs of the body after exercise, (5) There is a rapid response from the body's organism.

Oxygen Saturation

According to Guyton and Hall (2012), the percentage of hemoglobin bound to oxygen is called hemoglobin saturation. This is in line with Kozier (2011), who revealed that oxygen saturation is defined as a measure of how much percent oxygen is carried by hemoglobin. It was concluded that oxygen saturation is the percentage of hemoglobin that has oxygen binding in arteries under normal conditions of 95% to 100%. Saturation levels below 95% and decreasing indicates that the tissues in the human body are not getting sufficient oxygen supply or also referred to as a symptom of

decreased oxygen saturation. This decrease in oxygen saturation is known as cyanosis. Symptoms of cyanosis or decreased oxygen saturation can be marked, among others; anxious face, abnormal breathing and shortness of breath. In addition to the above symptoms, there are other symptoms of decreased oxygen saturation, namely; There are bluish signs on the nail bed, skin, ear lobe, under the tongue and facial area (Kozier, 2011).

A continuous decrease in oxygen saturation is also interpreted as hypoxemia and if it gets worse it will become hypoxia. According to Smelter and Bare (2002), hypoxemia is a state of the body that has decreased saturation below normal and then hypoxia can occur which is described by the body as unable to perform its metabolic functions properly due to oxygen insufficiency in the tissues. Low levels of oxygen in the body will result in the body not being able to carry out its functions properly which will result in impaired function of cells and tissues throughout the body. This hypoxic state can lead to tissue and cell death in the body due to an unmet oxygen supply.

How to measure the body's oxygen saturation can use the fingertip pulse oxymeter. This tool monitors changes in oxygen saturation in the body. How to use the fingertip pulse oxymeter is by pinching your finger on this tool, the tool will automatically read the body's oxygen saturation level with an infrared sensor.

Research methods

The method in this research is descriptive quantitative with survey technique. The research data was collected using tests and measurements using an Oxymeter fingertrip pulse instrument. Analysis of research data using descriptive statistical analysis and then described in the form of percentages. The variable of this research is the level of saturation of volleyball athletes. The research subjects used were male volleyball athletes from Tegalrejo District who competed in the 4th Dandim (Military District Commander) Championship in Yogyakarta in 2021. The population in this study amounted to 14 male volleyball athletes from Tegalrejo District.

Derajat Hipoksemia berdasarkan Nilai PaO2 dan SaO2

Derajat Hipoksemia	PaO2 (mmHg)	SaO2 (%)
Normal	97-100	95-97
Kisaran normal	>79	>94
Hipoksemia ringan	60-79	90-94
Hipoksemia sedang	40-59	75-89
Hipoksemia berat	<40	<75

Results and Discussion

After conducting research and having research data then analyzed using descriptive statistics in the form of percentages. The data obtained from the measurement of the saturation level of volleyball athletes in Tegalrejo District who took part in the 4th Dandim (Military District Commander) Yogyakarta City Championship in 2021 using an Oxymeter fingertrip pulse.

Table 1: Research Data

Number	Age (Years)	Saturation Rate (%)
1	23	97
2	25	97
3	25	96
4	27	97
5	28	95
6	30	95
7	30	95
8	35	96
9	38	96
10	38	97
11	39	97
12	40	96
13	41	96
14	41	97

Tabel 2. Distribution of Research Frequency

No	Category	Frequency	Relative Frequency
1	Normal	14	100%
2	Normal Range	0	0%
3	Mild Hypoxemia	0	0%
4	Moderate Hypoxemia	0	0%
5	Severe Hypoxemia	0	0%
Amount		14	100.00%

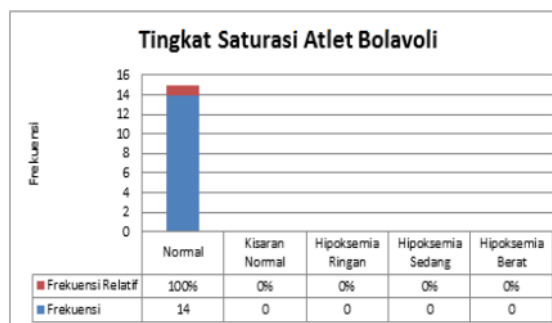


Figure 1. Research Histogram

From the research data on the frequency distribution and histogram above, it was found that the oxygen saturation level of the male volleyball athletes in Tegalrejo District was 100% in the normal category with 14 athletes, 0% in the normal range category, mild hypoxemia, moderate hypoxemia, severe hypoxemia with 0 athletes. Kozier (2011), who revealed that oxygen saturation is defined as a measure of how much percent oxygen is carried by hemoglobin. Oxygen saturation is the percentage of hemoglobin that has oxygen binding in the arteries under normal conditions of 95% to 100%. Oxygen saturation in the body affects the cardiorespiratory endurance of athletes. The level of oxygen saturation possessed by each athlete will affect the appearance and cardiorespiratory physical endurance of volleyball athletes who carry out matches. The physical activity of each male volleyball athlete in Tegalrejo District is different, especially in the age difference of the athlete. Physical conditions in volleyball include both aerobic and anaerobic cardiorespiratory endurance. In this volleyball match, the physical aerobics of every volleyball athlete is widely used, this will affect the oxygen saturation level of each athlete. In preparation for the 4th DANDIM Cup volleyball championship, all male volleyball athletes from Tegalrejo District have prepared well for physical, technical, tactical and mental exercises. From this study, it is possible that the saturation level of male volleyball athletes in Tegalrejo District is in

normal condition after carrying out the 4th DANDIM Cup volleyball match in Yogyakarta City.

Conclusion

From the research that has been carried out, it is concluded that the oxygen saturation level of male volleyball athletes in Tegalrejo District is 100% in the normal category with a total of 14 athletes, 0% in the normal range category, mild hypoxemia, moderate hypoxemia, severe hypoxemia with 0 athletes. the oxygen saturation of male volleyball athletes in Tegalrejo District is in normal condition. The implication of this study is that data on the oxygen saturation level of male volleyball athletes in Tegalrejo District who participated in the competition and the results of this study were taken into consideration by both coaches and athletes in improving physical exercise programs related to the physical condition of aerobic and anaerobic cardiorespiratory endurance related to oxygen saturation. The limitations of this study include; Researchers cannot control the physical activity of athletes outside of research activities and data collection is only limited to male volleyball athletes in Tegalrejo District.

Suggestion

Suggestions from this research include; conduct a wider study with more subjects and research population, develop oxygen saturation studies by increasing the research variables.

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