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VO2Max Capacity Level Survey for Futsal Extracurricular Students

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A R T I C L E I N F O

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A B S T R A C T

This study aims to determine the VO2Max capacity of futsal extracurricular students at SMKN 10 Makassar. Through this research, the coach or trainer can directly find out the vo2max capacity of the athlete, so that they have basic guidelines for developing an exercise program. The variable in this study is the independent variable, namely the student's vo2max capacity. The research method uses a quantitative approach by conducting direct tests using the 20 metters bleep test instrument, the sample in this study was male students participating in extracurricular futsal at SMKN 10 Makassar totaling 20 people with varying age categories from 15-18 years. This research can be completed 1 face-to-face. Based on the results of the study, the average VO2Max prediction value for futsal extracurricular students at SMKN 10 Makassar was 42.11 ml/kg/min. Based on the VO2Max table, the average VO2Max prediction value for futsal extracurricular students at SMKN 10 Makassar is in the sufficient category.

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INTRODUCTION

Extracurricular activities are activities carried out outside regular face-to-face hours to support the realization of the curriculum to broaden students' insight, knowledge, and abilities in living what has been learned in extracurricular activities. In addition, through extracurricular activities students' talents and interests are developed to develop students themselves. So the exercise program should be well planned and perfect. The physical condition training program must be planned well and systematically which aims to increase Vo2max, physical fitness, and functional capacity of the body system to enable athletes to achieve better performance. Physical condition is a state or potential and a picture of a person. The situation or picture of a person thinking quickly and precisely by increasing every activity he does, some consider it important so that it determines a person's achievement. Physical condition is something that should be considered for sports teachers who handle futsal extracurricular activities. The condition of each student is not fixed, this is due to the pattern / daily habits, whether it is during practice or in irregular daily activities. The main physical condition to be developed is endurance according to (Joshua & Setijono, 2017).

In this case, it is necessary to monitor the good physical condition or vice versa. Good conditions will help students in carrying out the training program that has been designed so that the objectives of the program can be achieved. To find out if a student is in good physical condition or not, it is necessary to carry out a physical condition parameter test, so that if there are students whose physical condition is not good, steps to improve the condition will immediately be carried out in a better condition. VO2Max is an important component in improving athlete performance, VO2max is an absolute aspect for athletes to improve their performance in their performance, by having a high VO2Max level, the target in training will be achieved optimally (Abdul Gani et al., 2020). In connection with the above description, the physical condition is the most important thing to pay attention to in addition to technique, tactics, and mentality. The excellent physical condition will support the achievement of other training components, but if on the contrary if the physical condition is poor it is impossible to form better techniques, tactics, and mentality. For this reason, it is necessary to do a physical condition test in this case an endurance ability test in the form of a bleep test, so that the results can later be used as a guide in compiling a physical condition training program for futsal extracurricular students at SMKN 10 Makassar.

THEORETICAL REVIEW

The definition of exercise has been defined by various coaching experts,; According to (Harsono, 2018)exercise is a process that is carried out systematically from practicing or working, which is done repeatedly, by increasing the number of training loads and work. Meanwhile, according to Hare (Wiarto, 2013) exercise which comes from the word training is a process of improving the capacity in exercise with a scientific approach, using the principles of planned and regular education, to increase the readiness and capacity of athletes. According to (Wiarto, 2013), training is one part that can form

adaptations to a person's physiological system. Not infrequently the athlete's personality is strongly influenced by the environmental conditions created during the exercise. Understanding exercise (Bompa, 2009); "Training is usually defined as a systematic process of long duration, repetitive, progressive exercise, having the ultimate goal of improving athletic performance. Exercise is intended as a systematic process that is carried out over a long period, repeatedly, and progressively, and has the aim of improving the athlete's performance. Furthermore, according to (Budiwanto, 2017) training is a complex and methodological work process in the practice process using efficient and effective ways that are arranged as an exercise methodology within a predetermined period.

VO2max is the maximum level of oxygen that the body can use during exercise. VO2max is measured in milliliters (ml) of oxygen consumed in one minute, per kilogram of body weight (ml/kg/minute). Oxygen is the most important part of the respiratory process. When oxygen is inhaled, the lungs will absorb it and convert it into energy called adenosine triphosphate (ATP). ATP activates the body's cells and helps release carbon dioxide (CO2) created during the respiratory process. The higher a person's VO2max, the more oxygen the body can consume and the more effectively the body uses that oxygen to produce the maximum amount of ATP energy (Rachman, 2021) VO2max is an important factor contributing to the aerobic endurance of athletes. VO2max reflects a person's cardiorespiratory capacity, so the more oxygen that can be transported and consumed by muscles that are in activity, the better the athlete's endurance will be (Uliyandari, 2009).

METHODOLOGY

This research is a descriptive research with survey method. According to (Sugiyono, 2013) descriptive method is a method used to describe or analyze a research result but is not used to make broader conclusions. The VO2Max capacity in question is the maximum volume capacity or the maximum oxygen consumption capacity as an indicator of cardiovascular and respiratory work. To determine the VO2Max capacity, a bleep test is used, which is a test that is getting faster and faster according to the number of paths taken. The number of feedbacks and levels determines the capacity of the VO2Max capacity.

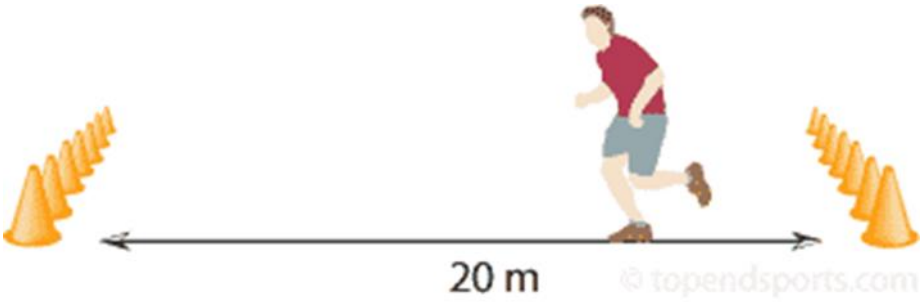

Figure 1. Running Back and Forth Bleep Test

The reference in making the track length is by calculating the time between two "bleep" sounds on the cassette (which is used as a benchmark). If the sound between two "bleeps" for 55 seconds then the length of the field that becomes the track is 18,333 meters. Meanwhile, if the sound between two "bleeps" for 60 seconds then the length of the field that becomes the track is 20 meters. Count the sound between two "bleeps" and make the appropriate pitch (Hairy, 2009).

RESULTS

The results of descriptive data analysis of the VO2Max capacity of futsal extracurricular students at SMKN 10 Makassar can be seen in the following table.

Table 1. The Descriptive Capacity of VO2Max Futsal Extracurricular Students at SMKN 10 Makassar

NO	**NAME**	**AGE (Year)**	**TEST**	
			Level/Return	Prediction VO2Max
1	NIZAR	18	6/9	36.0
2	ADAM	16	9/10	46.5
3	MUH. IBNU	15	8/10	42.9
4	MUH. AIDIL ARDANY	17	10/2	47.4
5	RAHWAN	15	7/9	39.6
6	ACHMAD GHANI	17	8/9	42.6
7	ADRIAN	17	10/5	48.3
8	CHAERUL RASKHA	17	7/9	39.6
9	MARIANTO	17	7/8	39.2
10	FAISAL	17	9/10	46.5
11	RISKY	16	10/6	48.7
12	RIAN PRATAMA RIDWAN	16	7/5	38.2
13	MUH. ALFAHREZY	16	8/5	41.5
14	MUH. REZA SAPUTRA	18	7/7	38.9
15	FATHIR	15	7/10	39.9
16	ICAL	16	7/9	39.6
17	CHAIRUN	17	8/10	42.9
18	AKIF	15	8/7	42.0
19	ADRIAN MAULANA	17	8/8	42.2
20	GUFRAN	16	7/9	39.6
	Average			**42.11**

Table 2. Frequency Distribution of VO2Max Capacity Levels for Extracurricular Futsal Students at SMKN 10 Makassar

No	Classification	Prediction Vo2max	Test	
			Frequency	Percentage (%)
1	Very poor	< 35.0	-	-
2	Poor	35.0 – 38.3	2	10 %
3	Fair	38.4 – 45.1	13	65 %
4	Good	45.2 – 50.9	5	25 %
5	Exellent	51.0 – 55.9	-	-
6	Superior	>55.9	-	-
Amount			20	100 %

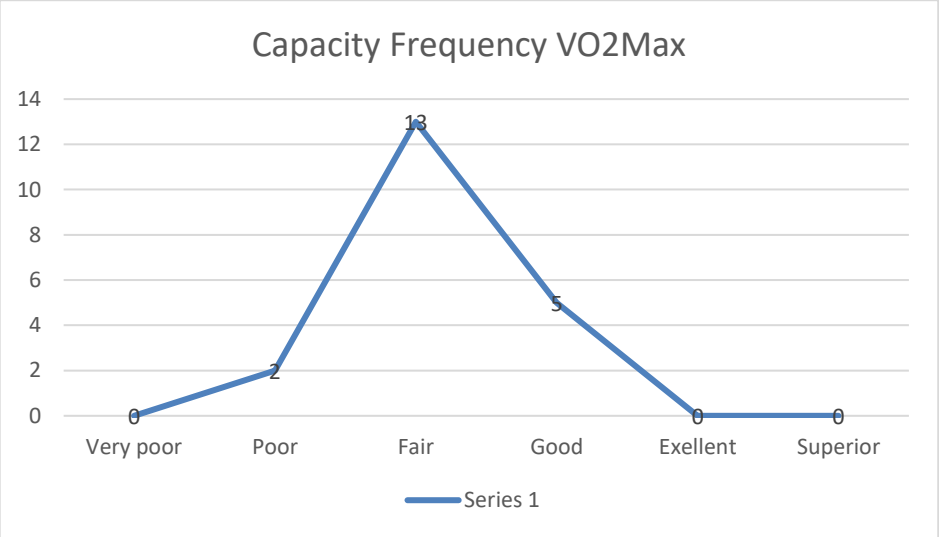

Figure 2. Vo2max Capacity Frequency Chart Futsal Extracurricular Student at SMKN 10 Makassar

DISCUSSIONS

Based on the results of the study by observing the table above, the average predictive value of the VO2max capacity of futsal extracurricular students at SMKN 10 Makassar was 42.11 ml/kg/min. This value is in the range of 38.4 – 45.1 with the "fair" category in the VO2Max capacity prediction table for ages 13-19 years. Among 20 students, 2 of them fall into the "poor" category this may be because they are not ready to do this bleep test or it can be said that they don't have enough rest. Then 13 people were included in the "fair" category and it was evident that they were ready to take the test. Furthermore, 5 of them are in the "good" category, according to information from their coach, these five students are indeed diligent in training and often participate in competitions, even among them, apart from futsal training, they are also active in football. Then the VO2Max capacity of futsal extracurricular students of SMKN 10 Makassar based on the largest number of frequencies, which is 65%, is in the "fair" category.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that the average predictive value of the VO2max capacity of futsal extracurricular students at SMKN 10 Makassar is 42.11 ml/kg/min. The VO2Max capacity of futsal extracurricular students of SMKN 10 Makassar based on the largest number of frequencies, 65% is in the "fair" category. The results of this study, it can be used as a basic guideline for developing an exercise program, especially endurance training. In addition to the predicted VO2Max capacity of 42.11 ml/kg/min for ages 13-19 years, it can be used as a minimum requirement to form an outstanding futsal athlete.

FURTHER STUDY

Furthermore, it is necessary to monitor the good physical condition or vice versa. Good conditions will help students in carrying out the training program that has been designed so that the objectives of the program can be achieved. To find out if a student is in good physical condition or not, it is necessary to carry out a physical condition parameter test, so that if there are students whose physical condition is not good, steps to improve the condition will immediately be carried out in a better condition.

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