

The Relationship Between Detraining during the Covid-19 Pandemic and the Endurance Ability of Vo₂max Karate Athletes, State University of Malang

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Abstract— Detraining is a condition where the body is no longer healthy and the quality of the body decreases, this is not only happens to athletes but to all sports players, when someone is not routine doing sports detraining will happen. During this pandemic, many activities did not work properly, such as the existence of the PSBB which is implemented, this triggers a lack of physical activity someone. The purpose of this study was to determine the relationship Detraining Resilient VO₂max Athletes Karate at Malang State University, which is where VO₂max is an important component of any person to perform physical activity. The method in this study is purposive sampling, and using a correlational quantitative research design with a causal design, the respondents of this study were 19 athletes of the Karate UKM State University of Malang with certain criteria. The results of the study using the analyst technique Spearman with the help of the IBM SPSS 25.0 computer application obtained a p-value of 0,000, and the value correlation coefficient obtained was 0.866 and interpreted with the strength of the relationship at a very strong level, it can be concluded that there is a relationship detraining at the level of the endurance of vo₂max athletes of UKM Karate, State University of Malang during the pandemic Covid-19, this is due to one of the reasons for the lack of activity of athletes during the pandemic Covid-19.

Keywords— *detraining, vo₂max, karate*

I. INTRODUCTION

In December 2019 pneumonia outbreak caused by *The coronavirus* new occurred in Wuhan, Hubei province, and has spread with rapidly across China at risk of a pandemic. On January 30, 2020, WHO declared the outbreak a SARS-CoV-2Public Health Emergency International. Compared to SARS-CoV which caused the outbreak SARS in 2003, SARS-CoV-2 had more transmission capacity strong. The rapid increase in

confirmed cases makes prevention and control of COVID-19 is becoming very serious. Despite clinical manifestations COVID-19 is dominated by respiratory symptoms, however, some patients experience it severe cardiovascular damage [1].

COVID-19 is currently causing a global pandemic with a very high number of infected people dying. So that at the beginning of 2020 the Indonesian government carried out large-scale social restrictions or so-called PSBB [2]. The impact of this causes restrictions to be able to carry out daily activities. One of the important consequences of this is that it can lead to lifestyle changes, namely reduced physical activity and unhealthy eating patterns which have a negative effect on the body[3]. When a person performs regular physical activity, the physiological system in the body experiences adaptation and can increase the body's physiological capacity, these changes are greatly influenced by the intensity and volume of training sessions and the level of body fitness [4]. This condition is said to be a *detraining* condition where the benefits of regular exercise are lost done, which is usually called a condition in which the body is no longer fit and Decreased body quality, this does not only happen to athletes but also to athletes all sports actors, or a phenomenon that often occurs in the body, namely the loss of efficiency and training capacity, an adaptation that has been achieved when exercise will decrease and even disappear and is caused by unsustainable and irregular training [5].

According to [6] it is said that 2 weeks athletes *detraining* will be lowered sprint ability in the *Yo-yo intermittent recovery test*. Condition this can only be restored after the athlete returns to intensive training for 3 weeks. According to Dr Gauri Jariwala, musculoskeletal physiotherapist, Bhatia Hospital Mumbai, "effect *detraining*" only happened in two weeks after not exercising. *Detraining depth* resulted in a significant reduction in fitness and muscle mass. Usually the four-

week holiday season is defined as the period used in studies related to *detraining* [7].

In addition, *detraining* has also been widely reported to have a very negative impact on body performance during exercise and can cause a decrease in energy in the performance of kinematic motion [7]. This of course greatly affects the health status and performance of a person when carrying out daily activities, one of which has an influence on the performance of an athlete.

VO2MAX is the maximum ability of *all* organisms to transports oxygen from the air to tissues and especially when skeletal muscles exercising, thus depending on the cascade. This cascade includes: 1) pulmonary ventilation, 2) diffusion of oxygen across the pulmonary capillary membrane to the blood, 3) most of the "flux" of oxygen from the lungs through a combination of cardiac output and artery Oxygen content, 4) increased blood flow to the muscles contract, and 5) Oxygen diffusion from the blood to the tissues and its eventual oxidative metabolism in the mitochondria. Although each of the five factors previously described can affect *VO2MAX*, in a large group of healthy humans with a 2 to 3 fold range in *VO2MAX* there is a maximum and total body hemoglobin mass appears to dominate as a determinant of *VO2MAX* [8]. *VO2MAX* is a measure of the functional limit of the cardio-respiratory system and the single most valid index for maximum exercise capacity, and is considered a benchmark measuring the capacity of cardiovascular function and aerobic fitness [9]. levels *VO2MAX* are related to a person's muscle work ability. The amount of muscle involved in the muscle's ability to utilize supplied oxygen is affected by ott mass. If a person performs an activity, the more strenuous the activity carried out, the higher the oxygen consumption, the greater the skeletal muscle mass that is given the workload, the greater the potential to increase oxygen uptake. The ability of the tissue to take in oxygen varies according to its oxygen extraction ability or level *VO2MAX*. The higher the *VO2MAX*, the longer the muscle's ability to work means that the muscles do not tire quickly, conversely the lower the *VO2MAX*, the faster the muscle's ability to work, so the muscles tire quickly, the more oxygen consumption capacity, the more aerobic capacity.

Karate is a type of sport that requires it a good level of Endurance *VO2MAX*, Endurance is *VO2MAX* also influential on the performance of Karate athletes, in addition to speed, flexibility, agility and power. Therefore if there is *detraining* in Karate athletes, especially Daya Hold *VO2MAX* at the time of the Pandemic *Covid-19* which was in the state the PSBB or prohibition for sports in public places, not only interfere with the performance of athletes but will also be fatal and will interfere Athletes health before competing, because *VO2MAX* is one of the provisions Athletes to compete [10]

II. METHODS

This research was conducted on 11 and 13 November 2020 at the Tennis Court, State University of Malang, using a sample of 19 Karate athletes State University of Malang, who met the inclusion criteria, namely 19-22 years old, and willing to fill out the *informed consent*.

The method used in this research is *purposive sampling method*. *Purposive sampling* is a data technique based on certain considerations [11].

Data was collected using a questionnaire to determine the level of *detraining* karate athletes, by conducting interviews with respondents if there are not readily understood by respondents to the research model is quantitative correlational design using *causal*, this research design using causal (reciprocal) that is, a variable becomes the cause as well as the effect of other variables, a causal relationship occurs if one causes the other variable.

The causal design of research here is the relationship between *detraining* (X) and the level of endurance *vo2max* (Y). The high level of *detraining* during the pandemic *Covid-19* can affect the endurance level of *vo2max* Karate athletes, State University of Malang.

This study uses 2 variables, for the first variable, namely *detraining*, a phenomenon that often occurs in a person's body, namely the loss or reduction of training capacity obtained during training, this happens if someone is exercising that is not sustainable and irregular, for research indicators using a questionnaire, The second variable is *vo2max* which is the maximum ability of a person to transport oxygen from the air to the tissues and especially the skeletal muscles when exercising, the indicator on this variable uses the *bleep test*, a very popular fitness test, one of which is among sportsmen, because this test can be used to measure and can be used to determine the fitness of an athlete, the endurance *vo2max* as a reference before competing. The data analysis method used in this study is univariate and bivariate analysis using statistical test *the Spearman coefficient*.

III. RESULT

Based on all the data and research that has been done, the following results were obtained:

TABLE 1. DESCRIPTION OF THE CHARACTERISTIC OF RESPONDENTS *DETRAINING*

No.	<i>Detraining</i> Category	Quantity	Percentage
1.	Very Low	-	-
2.	Low	3	16 %
3.	Normal	5	26 %
4.	High	9	47 %
5.	Very High	2	11 %
TOTAL :		19	100 %

Based on table 1. Results obtained from Respondent *Detraining*, the highest presentation is in the high category with a percentage of (47 %), and with the number of respondents 9.

TABLE 2. DESCRIPTION OF CHARACTERISTICS OF RESPONDENTS ENDURANCE *VO2MAX*

No.	<i>VO2MAX</i> Category	Quantity	Percentage
1.	Poor	10	53 %
2.	Bad	6	32 %
3.	Moderate	2	10 %
4.	Good	1	5%
5.	Great	-	-
6.	Excelent	-	-
TOTAL :		19	100 %

Based on table2. The show results Respondent Characteristics Durability *VO2max*, the highest percentage is in the category of less Once with the number of respondents 10 and with a percentage of (52.6). And correlated using the analysis technique *Spearman* with the help of the IBM SPSS 25.0 application, the *p-value* is 0.000. This value states that there is a significant relationship between the incidence of *detraining* and *VO2MAX* in UKM karate athletes at State University of Malang and the value *correlation coefficient* obtained is 0.866 and is interpreted as the strength of the relationship at a very strong level.

IV. DISCUSSION

Researcher got from the results of the test, *spearment* namely the *p-value* = 0,000 < α = 0.05, so that in this data H_0 was rejected and H_1 was accepted, which means that there is a significant relationship between *detraining* and *VO2MAX endurance* that has been carried out by researchers. The results obtained indicate that the higher the incidence of *detraining*, the lower the *VO2MAX endurance level* for each athlete. This study shows that there is a significant relationship between *detraining* and *VO2MAX endurance* for Karate athletes, State University of Malang.

The *correlation coefficient* of these results shows a positive direction of relationship (+) which means that the higher the level of *detraining*, there will be a significant decrease in the ability of *enduranceVO2MAX* in UKM Karate UM athletes. The *correlation coefficient* value obtained is 0.866 and interpreted as the strength of the relationship at a very strong level, it has been shown in table 4.7 that 6 respondents who experienced *detraining* high levels of resulted in a decrease in endurance *vo2max* at a less level, and 1 respondent experienced very high *detraining* resulting in a decrease in *vo2max*. at a very less level. Based on these results it can be said that the higher the level of *detraining*, there will be a significant decrease in the ability of *endurance vo2max* in UM Karate athletes. It also cannot be denied that the level of awareness of athletes is also lacking, and there is also a lack of direction from UKM coaches.

Physically and mentally healthy humans are good humans, daily activities can be supported by the presence of a healthy body, one of which is the need for or having a good level of endurance *vo2max* to support performance when carrying out activities, especially in an athlete. Endurance can also be said to be the ability of the circulatory system which includes the lungs, heart and

blood vessels. Those who are said to have *vo2max* lower will experience fatigue to carry out activities than someone who has *vo2max* a better or higher [12], this will significantly influence the activities carried out

CONCLUSION

Based on the results of the research that has been done, it can be concluded that there is a relationship between *detraining* and the endurance level of *vo2max* Karate athletes, State University of Malang.

During the pandemic *Covid-19*, this was due to one of the reasons for lack of activity during the pandemic *COVID-19*, the relationship *detraining* that occurred was very significant at the *vo2max* endurance level, *detraining* in karate athletes was in the high category, while for the endurance *vo2max level*, karate athletes experienced decrease, namely entering at a very low level, thus it can also be said that the higher a level of *detraining*, person's there will be a decrease in endurance his *vo2max level*.

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