



The Effectiveness of Sport Massage on Blood Lactic Acid Levels Indonesian Kabaddi Athletes

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Abstract

The purpose of this research is to find effectiveness of sport massage in reducing blood lactic acid levels of Indonesian Kabaddi athletes . The research design was a randomized pre and post test control group design with a sample of 20 male athletes who were divided into treatment and control groups. The results showed that there was lowers lactic acid levels in the blood giving sport massage with reduced blood lactic acid levels by 4.6 mmol/L or a decrease of 56.8% for the treatment group. This shows that the provision of sports massage is effective to be given to male athletes of Kabaddi Indonesia to reduce blood lactic acid levels in order to restore physical condition to face the competition.

How to Cite

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INTRODUCTION

Kabaddi is a traditional sport originating from India (Subekti, 2021; Santika, 2020). Kabaddi sport in Indonesia has grown rapidly since this sport first appeared at the 2008 Asian Beach Games (ABG) in Denpasar Bali (Subekti et al., 2021). The bronze medal of the Asian Beach Games I 2008, the bronze medal of the Asian Beach Games II 2012, the silver medal of the Beach Kabaddi Thailand Open 2019 and the bronze medal of the 2019 Korean Kabaddi indoor martial arts were achievements of Kabaddi Indonesia.

Kabaddi matches are conducted in two halves, where each round has a duration of 20 minutes. This means that in 2 rounds the athlete performs physical movements for 40 minutes (Subekti, 2021). With a relatively long match duration, it will have an impact on the performance of the body's muscles which are always moving in the match (Anggriawan, 2015). If the muscles are given physical activity too often, it will have an impact on muscle fatigue caused by an increase in the accumulation of blood lactic acid levels in the blood vessels (Candra et al., 2016; Supriatna, 2019; Syarifudin & Roepajadi, 2020). If we don't deal with this fatigue, it will have an impact on the activity and fighting spirit of athletes in competitions.

The coach should be able to take advantage of the time out in the kabaddi match. Time out is given 2 times in one round of kabaddi matches (Subekti, 2021). Based on observations in the field, when the time out is given by the technical official, the coach only gives water to the athletes. This is not done effectively by coaches in restoring the athlete's condition so that they can compete in a fit condition. The thing that can actually be done besides giving drinks is by giving massage. We know massage plays an important role in relaxing tense muscles due to the high physical activity carried out (Best, 2008).

Sport massage is a massage activity given to athletes to restore body condition from muscle fatigue (Irawan, 2017; Mahardika & Haprabu, 2020). In the world of sports, sports massage can be applied during game breaks and at the end of the game according to the characteristics of the sport we are doing. In general, the goals of sports massage are as follows: 1) accelerate blood circulation, especially blood circulation back to the heart through blood and lymph vessels, thereby accelerating the process of removing combustion residues and spreading food juices to the tissues (blood lactic acid), 2) stimulating innervation, especially peripheral nerves to increase their sen-

sitivity to stimuli, 3) increase muscle tone and increase elasticity (elasticity) their workability and 4) accelerate recovery from fatigue during and after exercise.

Reflecting on the coach's habit of only giving drinks when athletes rest without being interspersed with giving sports massages, concerns arise about the return of athletes' performance when playing kabaddi matches. If the condition of the athlete who is not in top condition continues to be forced to compete, then what happens is indirect persecution by the coach. This is based on the imposition of the athlete's physical condition that is not prime to continue the match.

The The formulation of the problem in this study is as follows effective is sport massage in reducing blood lactic acid levels of Indonesian Kabaddi athletes? Based on the formulation of the problem above, the purpose of this study was to determine the effectiveness of sport massage in reducing blood lactic acid levels of Indonesian Kabaddi athletes.

METHODS

The type of research applied in This research is a quantitative research. This research uses Experimental Randomize Pre-Test and Post-Test Groups Design (Sugiyono, 2013).

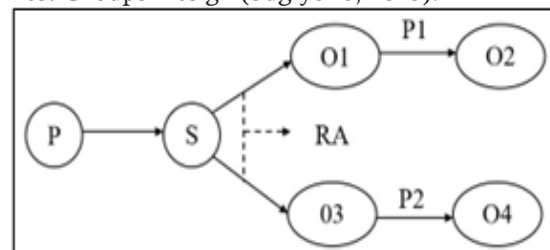


Figure 1 . Experimental Randomize Pre-Test and Post-Test Groups Design

Information :

P :Population

S :Sample

O1 : Initial observation and measurement lactic acid level in blood the treatment group

O2 : Observation and final measurement lactic acid level in blood the treatment group

O3 : Initial observation and measurement lactic acid level in blood the control group

O4 : Observation and final measurement lactic acid level in blood the control group

P1 : Giving sports massage to Indonesian Kabaddi athletes

P2 : Giving conventional massage to Indonesian Kabaddi athletes

RA : Random Allocation

The subjects of this study were Indonesian Kabaddi athletes. The object of this research is athletes who are identified by saturated sampling technique, which is taking the entire population as athletes.. The total population sampled amounted to 20 male athletes who were divided into two groups. 10 people in the treatment group (intervention through sport massage) and 10 people in the control group (conventional massage) .

Data analysis was carried out with the help of SPSS 22 software. The following steps were carried out in data analysis: 1) Descriptive statistics to analyze the mean, SB, minimum, and maximum variance; 2) Test the normality of the data with the Shapiro Wilk Test , which aims to determine the normality of the blood lactic acid level data for each treatment and control group both before and after the intervention ; 3) The homogeneity test using Levene's Test aims to determine the homogeneity of the blood lactic acid level measurement data for each group; 4) The T- Paired Test was used to analyze the average change in the results of measuring blood lactic acid levels between before and after the intervention in each group; 5) Different test of mean blood lactic acid level measurement with T-Independent Test was used to analyze the mean change between the treatment group and control group before and after the intervention.

RESULTS AND DISCUSSION

Table 1. Descriptive Data of Lactic Acid Measurement Before and After Giving Treatment

	N	Minimum (mmol/L)	Maximum (mmol/L)	Mean (mmol/L)	Std. Deviation
Initial Test Klp. Treatment	10	7.5	8.9	8.1	0.4528
Final Test Klp. Treatment	10	3.1	4.3	3.5	0.3929
Initial Test Klp. Control	10	6.8	8.4	7.7	0.5116
Klp. Control Final Test	10	5.1	6.8	5.7	0.6488

Information :

Klp . Treatment : Giving sports massage

Klp.Control : Conventional massage

Based on **Table 1** above, data on blood lactic acid levels were obtained in the treatment group before being given a sport massage with an average of 8.1 ± 0.4528 mmol/L and after being given a sport massage an average of 3.5 ± 0.3929

mmol/L. Meanwhile, data on blood lactic acid levels in the control group before being given conventional massage obtained an average of 7.7 ± 0.5116 mmol/L and after being given conventional massage , an average of 5.7 ± 0.6488 mmol/L was obtained.

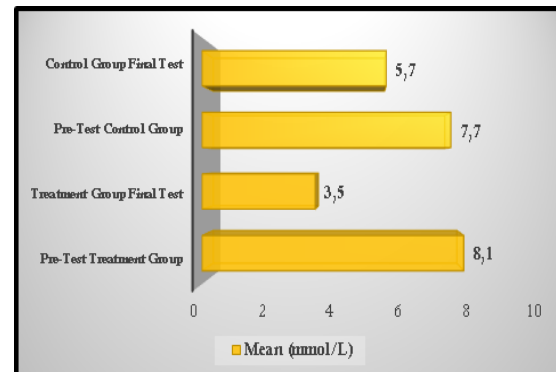


Figure 2. Descriptive Data of Lactic Acid Measurement Before and After Giving Treatment In treatment and control groups

Table 2. Data on Normality and Homogeneity of Blood Lactic Acid Levels in

	Shapiro-Wilk			Homo-geneity
	Statist-ics	df	Sig.	
Initial Test Klp. Treatment	0.972	10	0.91	0.77
Initial Test Klp. Control	0.949	10	0.65	
Final Test Klp. Treatment	0.936	10	0.50	0.09
Klp.Control Final Test	0.893	10	0.18	

Information :

Klp . Treatment : Giving sports massage

Klp.Control : Giving conventional massage

Sig. : Significance

In **Table 2**, the significance data for the initial measurement of the treatment group is 0.91 and the initial measurement of the control group is 0.65 with homogeneity for the initial measurement of 0.77. Meanwhile, the final measurement of the treatment group obtained data of 0.50 and the final measurement of the control group was 0.18 with a homogeneity of 0.09. If the resulting significance is greater than 0.05 or ($p > 0.05$) then the data is said to be normally distributed and homogeneous. Related to this statement, the data obtained according to **Table 2** are normally distributed and homogeneous.

Table 3. Paired Sample Test to determine the effect of the given treatment

	Mean (mmol/L)	Std. Deviation	Differen Average (mmol/L)	t	p
Pretest treatment group	8.1	0.4528			
Final Test Treatment Group	3.5	0.3929	4.6	31,027	0.000
Pretest control group	7.7	0.5116			
Control Group Final Test	5.7	0.6488	2	7,344	0.000

Based on **Table 3** above, the mean difference for the treatment group is 4.6 mmol/L which is obtained from the difference between the initial test of the treatment group of 8.1 ± 0.4528 mmol/L and the final test result of the treatment group of 3.5 ± 0.3929 mmol. /L. for the effect of the treatment given to the treatment group, namely by giving a sport massage, the value of t = 31.027 with a significance of 0.000 (p = 0.000) was obtained. Based on these data, it means that the value (p <0.05) means that there is a significant difference or a significant effect of giving sport massage to the decrease in blood levels of lactic acid of male Kabaddi Indonesian athletes.

Table 4. Independent Test to Determine Differences in the Effects of Giving Treatment

	Group	mean	t	p
Post Test	Treatment	3.5 ± 0.3929	9.172	0.09
	Control	5.7 ± 0.6488		

Based on **Table 4**, the independent test results obtained for the post test value of p = 0.09 (p > 0.05), which means that there is no significant difference in post-test results between treatment and control groups, but if we relate it to the impact resulting from the provision of sports massage in the treatment group and conventional massage in the control group, there was a significant difference according to the results obtained in **Table 3** which showed the value (p <0.05). This is also evidenced by the decrease in blood lactic acid levels of male Kabaddi Indonesian athletes

after the treatment was given to each group. The difference in the effect of the treatment given can be seen in **Table 5**.

Table 5. Level of Reduction in Lactic Treatment acid level and Control Groups And Percentage

Result Analysis	Klp.Treatment	Klp.Control
Pre-Test Lactic Acid Measurement (mmol/L)	8,1	7,7
Final Test of Lactic Acid Measurement (mmol/L)	3,5	5,7
Differences in Post and Final Test Results (mmol/L)	4,6	2
Percentage (%)	56,8	25,9

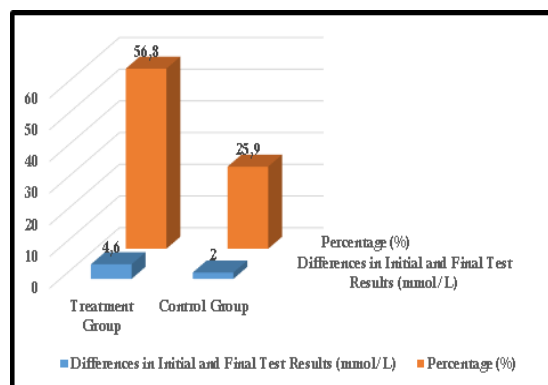


Figure 3 . Graph of Decrease in Lactic Acid Levels in Treatment and Control Groups And Percentage

Based on the analysis data above, it was found that the use of sport massage was effective in reducing blood lactic acid levels of male athletes of Kabaddi Indonesia. This is because sports massage is technically implemented by relaxing tired muscles. Sport massage in its implementation can accelerate blood circulation which is hampered as a result of metabolic burning in the form of blood lactic acid levels (Ningsih et al., 2016). The same thing was also expressed by Ismanda et al. (2019) and Hasibuan & Jutalo (2020) which revealed that the working system of sports massage can have an effect on the blood circulation and the nervous system so that smooth blood circulation will make it easier for blood, in this case hemoglobin, to circulate O2 throughout muscle tissue. With optimal circulation of O2 will restore muscle condition.

CONCLUSION

Based on the above discussion, sports massage has been proven to reduce blood lactic acid levels of Indonesian Kabaddi male athletes. This is certainly very useful and a positive input for the team in facing the match. The coach not only gave instructions but also involved the massage team in helping to restore the athletes' physical condition to face the next match.

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