

# The Effect of Endurance Exercises Method to Increase VO<sub>2</sub>Max Wrestling Athlete in Indonesia

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**Abstract**— The results showed that VO<sub>2</sub> Max as a whole result of pretest result 46,95%, result of test of Cycle I increased to equal to 49,43%, and result of Cycle II test become more good again reach 50,21%. The conclusion of this study is that the training interval method can to increase the VO<sub>2</sub> Max Atlet Wrestling Program Indonesia Golden Games XXVII Myanmar 2013 so that its durability increases. The study's recommendation is to improve endurance athletes using interval training methods.

**Keywords**—VO<sub>2</sub>Max, endurance, interval training

## I. INTRODUCTION

Sports wrestling is rarely heard echo in Indonesia, but the real fact is not so. Although not as popular as football, badminton or tennis, but this type of hard sport also still exist in Indonesia. Since the entry of new types of sports to Indonesia such as sumo, wushu, or other similar sports, wrestling is seeming abandoned. Though the history until the development of this sport in Indonesia through several stages is quite difficult, including its existence is almost completely eliminated since Japan came to bring sports like Judo and Kempo.

Until finally wrestling again popularized in 1959 with the match in Bandung. This physical exercise was also contested in the grand event of ASIAN GAMES IV in 1962 so that Indonesia should briefly establish a special wrestling association to recruit athletes and provide education / coaching for prospective athletes.

The association is called the All Amateur Wrestling Union of Indonesia or abbreviated as PGSI. The association was founded on February 7, 1960 and has hosted this branch sport until now. PGSI is under KONI and regularly conducts athlete training to participate in various championships both regionally and internationally [11].

The ability to work muscles or organs continuously over a period of time without experiencing excessive fatigue, in addition to endurance, endurance is one component of the physical condition that is highly needed in sports wrestling, for optimal athlete performance,

recovery and body compositions, athletes need diet and synchronous physical activity [3].

Endurance endurance ability / endurance one can do by measuring VO<sub>2</sub>Max, understanding VO<sub>2</sub>Max is a body system that transports oxygen by the blood pumped from the lungs to muscle tissue [1]. VO<sub>2</sub> Max is a measure to determine the endurance of one's Kardiorespiratori. VO<sub>2</sub> Max is the level of oxygen consumption during exercise. the body's need for oxygen is determined by the intensity (weight) of movement or exercise performance [4].

## II. MATERIALS AND METHOD

The method used in this study is the experimental method, Experiments are activities that are planned and executed by researchers to collect data related to the hypothesis. The researcher deliberately and systematically introduces the treatments into natural phenomena and then observes the consequences of the treatment. Data were collected through a 15 minute / balke test to see the aerobic endurance capability of the test performed during preliminary tests, intercultural tests, and final tests, then the data were analyzed to determine the improvement of aerobic endurance. Data analysis using SPSS Program with a significant level of 0.05 to prove whether the action is done on the athlete wrestling is an increase or not.

## III. RESULTS AND DISCUSSION

The results showed that VO<sub>2</sub> Max as a whole result from pretest 46,95%, result of Cycle I test increased to equal to 49,43%, and result of Cycle II test become more good again reach 50,21%. VO<sub>2</sub> Max results For More details can be seen in table 1.

TABLE I. DESCRIPTIVE STATISTICS DEPENDENT VARIABLE: VO2MAX

Test	STYLE	Mean	Std. Deviation	N
Pretest	Gergo Roman	49,6250	1,17333	4
	FreeMan	48,9225	1,99251	4
	FreeWoman	42,3175	5,28747	4
	Total	46,9550	4,57203	12
Test Siklus I	Gergo Roman	51,2875	1,45287	4
	FreeMan	50,9725	2,45490	4
	Free Women	46,0250	1,92787	4
	Total	49,4283	3,09335	12
Test Siklus 2	Gergo Roman	52,1075	1,31206	4
	Free Man	51,8700	2,24643	4
	Free Woman	46,6575	2,07842	4
	Total	50,2117	3,15031	12
Total	Gergo Roman	51,0067	1,60754	12
	Free Man	50,5883	2,40058	12
	Free Woman	45,0000	3,71675	12
	Total	48,8650	3,83112	36

From the data above shows that the highest mean Vo2 Max is the Gergo Roman style exercise, which continues to increase from pretest, test result I and II test results, while the lowest is the women's freestyle exercise, To give a clearer picture can be seen in figure 1.

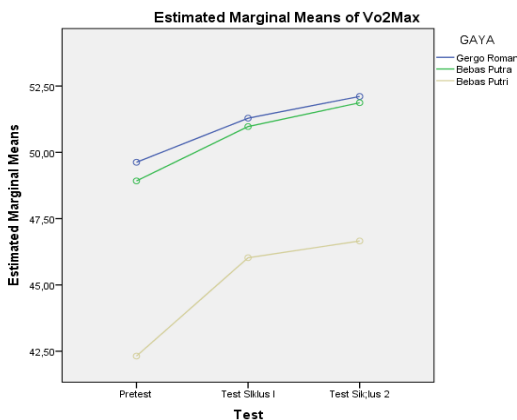


Fig 1. Hypothesis testing

From the calculation of variance analysis obtained summary as in the following table.

TABLE II. TEST OF BETWEEN SUBJECT EFFECTS DEPENDENT VARIABLE: VO2MAX

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	344,973 <sup>a</sup>	8	43,122	6,900	,000
Intercept	85960,376	1	85960,376	13754,651	,000
Test	69,347	2	34,674	5,548	,010
GAYA	269,938	2	134,969	21,597	,000
Test * GAYA	5,687	4	1,422	,228	,921
Error	168,738	27	6,250		
Total	86474,087	36			
Corrected Total	513,711	35			

a. R Squared = ,672 (Adjusted R Squared = ,574)

From the table above can be explained things as follows.

- The value of the Fcorrected model of 6,900 and its significance of 0,000 indicates that there are significant variations of Vo2Max by Test and exercise style at a significance level of 5% (0.05).
- The Ftest value of 5,548 and its significance of 0.010 indicates that there are significant variations of Vo2Max by Test (Pretest, Cycle I Test and Cycle II Test) and exercise style at 5% significance level (0.05).
- The Fgaya value of 21,597 and its significance of 0,000 indicates that there are significant variations of Vo2Max based on exercise style (Gergo Roman, Free Putra, and Free Princess) at a significance level of 5% (0.05).
- The FTest \* style value of 0.228 and its significance of 0.921 indicates there is no significant Test and Style interaction in affecting Vo2Max. This means that the Test and Style each independently affect the variation of Vo2Max not interacting with each other.

The results showed the overall VO2 Max results from pretest 46.95%, the results of the first cycle test increased to 49.43%, and the results of the second cycle test to be better again reached 50.21%. VO2 Max.

Seeing the results of the VO2 Max test above shows that the endurance of the wrestling athlete shows that the training interval endurance training methods and training programs provided to athletes are appropriate, that a high degree of aerobic ability is a prerequisite for enhancing performance [5].

#### IV. CONCLUSION

The conclusion of this study is that endurance training (run interval) can increase VO2 Max Atlet Wrestling Indonesia, VO2 Max increase overall from, result of pretest 46,95%, result of test of Cycle I increased to equal to 49, 43%, and the second cycle test results become more good again reached 50,21%.

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