



REVIEW ARTICLE

THE EFFECT OF LACTATE BUILDUP AS AN OUTFLOWING ENERGY ON BOXERS PERFORMANCE

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Background: Lactate buildup and out flowing energy is one of the most important physiological phenomena used to explain athletes' response to better performance, especially in activities that depend on the lactic system for energy production. This is in light of the recent trend that lactate is not the main source of fatigue and is an energy production system, the reason for the increase in acidic muscles and poor ability to perform is dissociation into lactate and the H⁺ ion. **Aim:** Design a training program identify performance changing while increasing in blood lactate. **Methods:** Experimental study on 8 boxers from the of Mini a University team. Data were collected by using Accusport Lactate Analyzer, Arm pedometer. **Results:** Increased blood lactate post the program as it reached (0.042) p<0.05, Increased punching rate as it reached (0.043) p<0.05 where statistically significant differences. **Conclusion:** better physical performance with high rates of blood lactate, Boxers can withstand high concentration of blood lactate during physical exertion. Increased blood lactate to increase the tolerance of performance in boxers, H⁺ ion is the cause of fatigue and not blood lactate.

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INTRODUCTION

Lactic acid is a byproduct of anaerobic glycolysis and its increase in blood is associated with improved performance in short-term sports activities. (Krnjajic, Davor, 2011). The concentration of blood lactate in boxers varies depending on several factors, age, competition time, weight and muscle mass (Smith, Marcus S, 2006). Increased fat-free mass may be the determining factor in lactate production in the body, it indicates the body's ability to produce more ability to perform, Blood during physical performance (Khanna, Gulshan Lal, 2006). Some research suggests that lactic acid is a cause of muscle fatigue, this research indicates that lactic acid is an indicator of increased physical performance.

MATERIALS AND METHODS

Subjects: The training program was applied to 8 male boxers from Mini a University team for an interval of 12 weeks in the interval from 28/9/2018 to 20/12/2018 in Minya Sports Club Egypt, 3 training units per week Unit time 120 minutes, Pre and post measurement were used for one experimental group.

Sample selection condition: The desire of boxers and their willingness to participate in the implementation of the research experiment, the training age should not be less than (5) years, that the boxer holds at least the third place in the Republic.

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Instrumentation: Accusport Lactate Analyzer, Model-1488767 (Boehringer Mannheim, Germany). Arm pedometer Model (Foxnovo U8 1.48-in).

Procedure: Each boxer pays the largest number of punches on the wall cushions in a time of 1.5 minutes and is calculated the number of punches on Arm pedometer device and blood Lactate Accusport device after 4 minutes of the end of performance.

Statistics

Independent variable: The training program, perform the maximum number of punches.

Dependent Variable: Blood lactate level, Number of punches.

Statistical method used: Mean, Median, Standard deviation, Skewness, Wilcoxon test, Use of SPSS for statistical processors version (22).

RESULTS

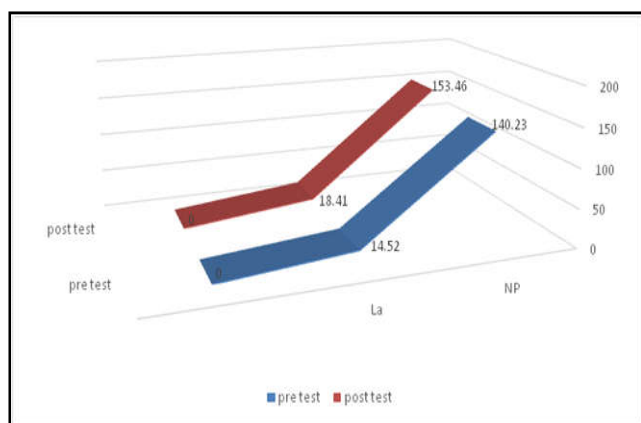
The presence of statistically significant differences between the pre and post measurements in the level of blood lactate and the number of punches, That's where Sig p.value p<0.05. Table 2 and Figure 1 show an increase in blood lactate level and number of punches after application of the training program, the results showed that increased blood lactate increased the number of punches and improved physical performance.

Table 1. Description of the research sample

N=8	Age (yrs)	Height (cm)	Weight (kg)
Mean	20.0	173.8	65.2
Median	20.0	174.0	64.0
SD	1.22±	3.03±	3.83±
Skewness	1.361	0.226	0.254

Table 2. The significance of differences between the pre and post measurements blood lactate level (La), number of punches (NP)

N=8	Pre test		Post test		Change ratio	Z	Sig p. value
	mean	SD	mean	SD			
La (mmol/l)	14.52	0.80	18.41	0.51	26.79%	2.032	0.042
NP (punch/m)	140.23	3.48	153.46	2.87	9.44%	2.023	0.043

**Figure 1. Average differences between pre and post measurements**

DISCUSSION

Increased blood lactate and number of punches index to improve anaerobic glycolysis. Increased blood lactate does not cause muscle fatigue, H⁺ ion is the cause of pH increase and low physical performance. Boxing players in the intermediate weight category recorded an increase in blood lactate compared with the lighter and heavier weight categories. This result highlights the development of anaerobic ability to withstand a larger volume of blood lactate until the end of the fighting (Hanon, Christine, 2015). Blood lactate responds to specific exercises where the concentration of blood lactate is 12.81 mmol / L and that response during competition depends on the level of the competitor (Bouhleb, 2006).

The rate of punching increases with increasing heart rate as the physical load tends to anaerobic work (Kravitz, Len, 2003). High-intensity training works to increase blood lactate and remove hydrogen ion to maintain pH by Buffer system, (Bishop, D, 2008).

Conclusion

Increased punching rate is associated with an increase in blood lactate, so boxers should be trained to tolerate a higher concentration of blood lactate to improve motor performance through lactate buildup exercises used in this study.

Acknowledgement

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