Blood Lactate Response to Different Workload Patterns in Female Weight Lifters

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Abstract

The purpose of this study was to observe the effects of different workloads (i.e. volume patterns-3 RM, 6 RM, 9 RM) of power clean on blood lactate production in female weight lifters. A total of six weight lifters with mean age, height, weight and BMI of 20.50 ±2.88 years, 161± 6.55 cm,70±7.45Kg and 26.81±1.78 respectively volunteered to participate in this study. Each subject's blood lactate was measured at rest and after 3RM, 6RM & 9RM with the help of a digital portable lactate analyzer (Lactate Scout) and the data were analyzed using Mean ±SD, ANOVA and Scheffe. It was found that the maximum mean of relative absolute and percent increase value of blood lactate was 8.71±2.38 mmol and 370.06±109.38 % (3RM) followed by 7.45±2.02 mmol & 349.81±112.09 % (6RM) and 5.33±1.96 mmol & 33.31±81.32% (9RM).The difference in blood lactate at rest and after the execution of different work load pattern was statistical significantly ($p < .05$). It was concluded that the blood lactate response depends upon the maximum absolute load lifted by the weight lifters as compared to the volume of load lifted. In other words, we can say that in this study it was observed that blood lactate response was largely dependent on percentage of 1RM.

Key words: Lactate, Power Clean, 1RM, Olympic Style

Introduction

Typically, lactate production takes place in the presence of anaerobic energy production while lactate utilization requires oxygen *(Bridges et al., 1991).* Hence, training for improvement in lactate tolerance typically includes activities which facilitate enough stimuli for concurrent lactate production and utilization. Current training practices for improving lactate tolerance in athletes is highly influenced by aerobic activities and the combination of aerobic and resistance training *(Dudley & Fleck, 1987).*Thus, the risk of muscle loss is greater when aerobic training is used as a tool for improving lactate tolerance *(Eniseler, 2005).* This obstacle can be avoided if resistance training is modified and used as an intermittent activity to enhance concurrent lactate production and clearance, without exposing an athlete to the negative effects of excessive aerobic training. A study was conducted to evaluate the effects of high intensity resistance training on the performance of distance runners *(Hamilton et al., 2006).* The participants were divided in to two groups. In this 5-week long study, the control group performed their usual competitive-phase training while the experimental group replaced part of their training with explosive jumps and short treadmill sprints. This study observed an improvement in 1500 m speed; 800 m speed, 5 km outdoor time trial speed and lactate threshold speed without compromising baseline muscle strength. It is necessary to recite that, lactate production is higher in type II muscle fibers and during the recruitment of large to intermediate motor units *(Jones & Ehrsam, 1982)* as can occur in the