



**The Influence of Acute Exercise Following Doxorubicin
Administration on Skeletal Muscle Nitric Oxide Concentration**

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ABSTRACT:

Doxorubicin (DOX) is an effective anti-tumor agent which leaves patients with debilitating side effects such as fatigue and muscle weakness. The purpose of this study was to examine the influence of both DOX and acute exercise on the formation of nitric oxide (NO) in skeletal muscle. Thirty male rats were randomly assigned to 5 groups (A through E, n=6 per group). All rats received an intraperitoneal injection of 4.5 mg/kg DOX. Rats in group A and E did not perform any exercise and were sacrificed 24 and 48 hours post injection respectively. Groups B and C swam for 60 minutes 24 hours post injection, and were sacrificed at 25 and 48 hours respectively. Group D swam for 60 minutes at 24 and 48 hours post injection and were sacrificed at 49 hours. The red and white gastrocnemius, soleus and plantaris muscles were immediately excised at each end point. Overall, no differences ($P>0.05$) in NO levels were observed in any of the muscles between any of the groups. However, consistently lower NO concentrations were observed in all muscles in the exercised versus non-exercised groups. For example, NO concentration in the plantaris muscles were 18.4 ± 1.6 , 17.5 ± 1.4 and 17.0 ± 1.3 $\mu\text{mol}/\text{mg}$ in groups B, C and D respectively versus 31.5 ± 9.7 and 25.3 ± 4.5 $\mu\text{mol}/\text{mg}$ for groups A and E respectively. These data suggest that acute exercise may play an important role in regulating NO metabolism post DOX administration, however exercise intensity and duration need to be better elucidated to maximize its effects. Supported by NOSMFA