The effect of creatine monohydrate supplementation on exercise performance

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1. This single-blind, randomized, placebo-controlled study was performed to determine if creatine supplementation over one week affects oxidative phosphorylation so that the ATP requirement of exercise can be met faster.

2. Eight healthy young university students (5 males, 3 females, mean age = 21 years) performed two maximal graded exercise tests on a cycle ergometer. The first graded exercise test was performed in a non-supplemented condition, and the second graded exercise test was done following six days of supplementation. The supplementation consisted of either 5 g of creatine four times per day for five days or the same amount of icing sugar.

3. The rate of oxygen uptake (VO\textsubscript{2}) was measured and recorded every 10 seconds throughout the test as an indirect measure of oxidative phosphorylation.

4. The results indicate that creatine supplementation did not have a significant effect on the rate of oxygen uptake (\(p = 0.66\)), and therefore did not affect oxidative phosphorylation. As well, no change was observed in the respiratory exchange ratio indicating there was not a change in substrate utilization. There was no significant effect on mean peak VO\textsubscript{2} values, basal levels of oxygen uptake (\(p = 0.58\)) or the mean rate of oxygen uptake with increasing work rate (\(p = 0.64\)).

5. Healthy, young university students may have high creatine levels that cannot be increased significantly by supplementation. This hypothesis could be confirmed by analysis of appropriate muscle biopsies.