OPTIMAL LEVELS OF CREATINE MONOHYDRTATE SUPPLEMENTATION FOR INCREASES IN ANAEROBIC PERFORMANCE

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Abstract

Introduction: Creatine monohydrate is a commonly used supplement amongst athletes in the hopes to improve upon their athletic performance. The theory behind supplementing creatine monohydrate is to add to the body's own creatine stores so that more is available to be used during high intensity exercise. Creatine is stored as creatine phosphate in skeletal muscles and is used during the initial onset of exercise for about 30 seconds while other fuel systems are increasing their contribution to energy production. Some studies have shown the creatine supplementation can be beneficial to anaerobic performance while other studies have shown no differences between supplement groups and control groups.

Purpose: The purpose of this study was to find the optimal dosage of creatine supplementation needed to increase anaerobic performance in the Wingate anaerobic power test (WAnT).

Methods: 10 college-aged men (age 20.67 ±1.5 yrs; weight 78.22 ±9.82 kg) from the University of Texas at Arlington were recruited to participate in this study. Each subject performed a 30 second repeat bout using the Wingate protocol on a stationary bicycle with 2 minutes of active recovery between bouts. Using the Wingate protocol, the subjects warmed up for 1 minute cycling before giving "all out" effort for 30 seconds. This was repeated after the 2 minute recovery phase. Data was analyzed through the computer software installed in the Kinesiology lab. The subjects then were put into groups (high, moderate, low, control) which received a predetermined amount of creatine monohydrate that corresponded to the subjects' body weight. The subjects then ingested that amount of creatine monohydrate for 6 days before doing the Wingate protocol testing again.

Results: The data that was analyzed using t-tests which was used to look for any statistically significant difference between pre-supplementation exercise testing and post-supplementation exercise testing. The variables analyzed were mean power, peak power, minimum power and rate to fatigue. The emphasis of this study was to analyze the rate to fatigue variable. The high dosage group's rate of fatigue was not significantly different (p = .15) neither were the rates of fatigue values amongst the other groups (control: p = .43, low: p = .88, moderate: p = .75). The other variables measured among the groups were also not significantly different (p > 0.05).

Conclusion: The results of this study indicate that the creatine monohydrate supplementation does not have a significant effect on anaerobic performance. This lack of difference may be further attributed to the small study size or specific protocol procedures.

Purpose

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Methods

10 college-aged men (age 20.67 ±1.5 yrs; weight 78.22 ±9.82 kg) from the University of Texas at Arlington were recruited to participate in this study. Each subject performed a 30 second repeat bout using the Wingate protocol on a stationary bicycle with 2 minutes of active recovery between bouts. Using the Wingate protocol, the subjects warmed up for 1 minute cycling before giving "all out" effort for 30 seconds. This was repeated after the 2 minute recovery phase. Data was computed with the computer software installed computer attached to the Lode stationary bicycle in the Kinesiology lab. The subjects then were put into groups (high, moderate, low, control) which received a predetermined amount of creatine monohydrate that corresponded to the subjects' body weight. The subjects then ingested that amount of creatine monohydrate for 6 days before doing the Wingate protocol testing again.

Methods (cont'd)

The study was randomized and each group had a specific amount of creatine monohydrate that was ingested. The creatine was mixed with 16 oz. of Gatorade and given to the subjects once per day for 6 days. The low group was given .15g x kg of body weight; the moderate group was given .35g x kg of body weight; the high group was given .5g x kg of body weight; and the control group was given the Gatorade mix without creatine.

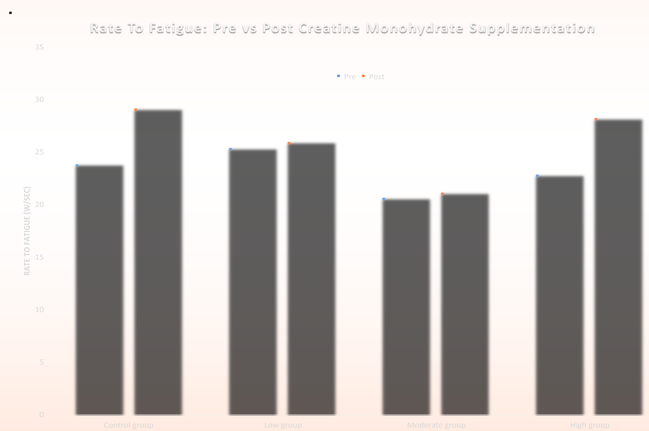
t-tests were used to analyze the data provided by the subjects in order to determine any significant difference between the groups from the pre-supplementation testing vs. the post-supplementation testing.

Results

The data that was analyzed using t-tests which were used to look for any statistically significant difference between pre-supplementation exercise testing and post-supplementation exercise testing. The variables analyzed were mean power, peak power, minimum power and rate to fatigue. The emphasis of this study was to analyze the rate to fatigue variable. Rate of fatigue was analyzed via the laboratory software installed in the research computers and was measured in Watts/second. The high dosage group's rate of fatigue was not significantly different (p = .15) neither were the rates of fatigue values

Results (cont'd)

determined from software installed in the research computers and measured in Watts/second. The high dosage group's rate of fatigue was not significantly different (p = .15) neither were the rates of fatigue values amongst the other groups (control: p = .43, low: p = .88, moderate: p = .75). The other variables measured among the groups were also not significantly different (p > 0.05).



Conclusions

The results of this study indicate that the creatine monohydrate supplementation did not have a significant effect on anaerobic performance. This lack of difference may be further attributed to the small study size or specific protocol procedures that were adhered to. In regards to the use of creatine as a performance enhancer, questions still remain as to the efficacy of the supplement, and researchers must take into account individual responses to the supplement.