



Grant Information Summary:

Effects of Creatine Supplementation on Anterior Compartment Pressure During Rest and Exercise

Practical Significance:

Creatine monohydrate (Cr) supplementation increased anterior compartment pressure of the lower leg at rest and following exercise. Individuals should be aware of this potential negative side effect associated with this nutritional supplement.

Background

Chronic compartment syndrome develops when pressure within skeletal muscle increases in an inelastic compartment surrounded by fascia. As the pressure increases within this inelastic compartment, local tissue circulation and function may become impaired. The use of Cr supplementation has become widespread and it is important that the implications and contraindications of this supplement be determined for the health and safety of individual consumers. Based on recent data it would seem prudent to determine the effects of varying doses of Cr supplementation and whether discontinuation of supplementation would influ-

ence anterior compartment pressure in active individuals.

Objective

To determine if 35 days of creatine supplementation followed by 28 days of no supplementation altered lower leg anterior compartment pressure (ACP) at rest and following exercise.

Design

Subjects were divided into two treatment groups: 1) high dose (0.3 g Cr·kg body mass⁻¹·d⁻¹ for 7 days followed by 0.03 g Cr·kg body mass⁻¹·d⁻¹ for 28 days), and 2) low dose (0.03 g Cr·kg body mass⁻¹·d⁻¹ for 35 days). Following 35 days supplementation was terminated.

Subjects

Physically active, healthy, males.

Measurements

At baseline, 7 days and 35 days of supplementation, and 28 days post-supplementation, ACP was measured pre-exercise and immediately, 1, 5, 10, and 15 minutes post-exercise following a treadmill run, at 80% VO₂max.

Results

For both groups, ACP was significantly increased at pre-exercise, immediately post-exercise, 1 minute, 5 minutes, and 10 min-

utes from baseline to 7 days. ACP remained significantly elevated at 35 days for immediate post-exercise, and 1 minute post-exercise. After 28 days of no supplementation, ACP returned to pre-supplementation levels with only the 1 minute post-exercise measurement significantly elevated from baseline.

Conclusions

Cr supplementation increases ACP at rest and following exercise, and pressure begins to return to normal after 28 days of no supplementation.

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Publications & Presentation List

NATA Annual Meeting
Los Angeles, CA, June 19-23, 2001

Schroeder, C.A., J.A. Potteiger, J.R. Randall, D.J. Jacobsen, L.M. Magee, S.F. Benedict, and M. W. Hulver. The effects of creatine dietary supplementation on anterior compartment pressure in the lower leg during rest and following exercise. (in press *Clinical Journal of Sports Medicine*)

Potteiger, J.A., J.C. Randall, C.A. Schroeder, L.M. Magee, and M.W. Hulver. Elevated anterior compartment pressure in the lower leg following creatine supplementation: a controlled case study. *Journal of Athletic Training*, 36 (1), 103-106, 2001



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