

THE EFFECTS OF CREATINE SUPPLEMENTATION ON SPRINT RUNNING PERFORMANCE AND SELECTED HORMONAL RESPONSES

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ABSTRACT

The purpose of this study was to determine the influence of short-term creatine supplementation on sprint running performance (100 and 200 m) and circulating hormone [growth hormone (GH), testosterone and cortisol] concentrations. Twenty amateur male runners were randomly divided into a creatine supplementation group, or placebo group. Subjects were provided with capsules containing either creatine monohydrate or identical powdered cellulose placebo. Daily creatine monohydrate supplementation was 20 g/day parceled into three equal dosages to be consumed with each major meal. Subjects were tested for performance and resting blood hormone concentrations before and after six days. A double-blind research design was employed in this study. After this creatine loading, the mean running performance time of the creatine supplementation group decreased significantly in the 100 m, but not the 200 m. Serum GH, testosterone, and cortisol concentrations were not affected by creatine supplementation. It can therefore be concluded that although short-term creatine supplementation was found to improve sprint performance in the 100 m in amateur runners, this performance improvement did not appear to be hormonally mediated.

Key words: Sprint performance; Creatine supplementation; Hormonal responses; Creatine loading.

INTRODUCTION

Creatine is a popular dietary supplement that is used by athletes to increase muscle mass and strength and especially to improve sports performance (Kreider, 2003; Rawson & Persky, 2007). Supplementation thereof has been demonstrated to increase resting concentrations of creatine and phosphocreatine in skeletal muscle (Navratil *et al.*, 2009).

Gotshalk *et al.* (2008) reported that creatine supplementation (0.3 g/kg/day for seven days) resulted in a significant increase in the amount of work performed during five sets of bench press and jump squats in comparison to a placebo group. Mujika *et al.* (2000) found that creatine supplementation (20 g/day for six days) improved repeated sprint performance (6×15 m sprints with 30 sec. recovery) and jumping ability in soccer players. In a study by Skare