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The Safety and Efficacy of Creatine Supplementation in the General Public

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Abstract
The purpose of this study was to determine whether supplementation with creatine monohydrate is efficacious beyond the realm of its most popular use, which is in athletics. This study investigated the safety of creatine supplementation in the general population. References were collected through a review of PubMed and Scopus databases. Initial keywords searched were creatine supplementation and creatine safety. Where possible, trials with human subjects were utilized. Studies focused on creatine’s effects in athletes or weightlifting parameters were eliminated. Topics were examined with the most amount of research and medical concerns recognized as common to primary care. Creatine supplementation showed potential benefits in treatment for major depressive disorder, diabetes, bone density, and osteoarthritis. Mild weight gain due to the osmotic effect of creatine was the only side effect noted in the evidence. Kidney function is not affected by creatine supplementation. Creatine supplementation has potential benefits for many different patient populations, with the only side effect of creatine supplementation being mild weight gain due to the osmotic effect of increased creatine saturation in the body. Clinicians should consider creatine supplementation without fear of potential serious adverse effects based on the available evidence.

Introduction
Creatine is a naturally occurring compound composed of three amino acids: glycine, arginine, and methionine. Creatine is made in the kidneys and in the brain and throughout the body. Creatine supplementation increases muscle phosphocreatine concentration, reduces muscle acidosis and oxidative metabolism, and increases lean body mass.

Research Questions
Does creatine supplementation provide benefit in any patient populations besides athletes?
Is creatine supplementation safe?

Literature Review
A search of the literature showed creatine has been studied for multiple common disease processes including depression, type 2 diabetes mellitus, and osteoarthritis.

Depression
Lyoo et al. (2012) found that adding creatine to escitalopram resulted in a faster treatment response compared to escitalopram and placebo.

Diabetes
Gualano et al. (2011a) reported 5g creatine/day combined with exercise lowered HbA1c by 1.1% compared to no change in the placebo group.

Osteoarthritis
Increased lean mass, muscle strength, and physical function.

Safety
Only potential side effect is mild weight gain due to increases in lean mass. Studies going as long as five years and with doses up to 30g/day identify no other adverse effects.

Applicability to Clinical Practice
Depression, diabetes, and osteoarthritis are common diseases encountered by all primary care practitioners.

References


