

The Effect of 4-Week Creatine Supplementation on Lipid Profile in Older Adults

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Objectives: Elevated levels of circulating cholesterol, lipids and glucose have been associated with pathologies such as heart disease, hypertension, atherosclerosis, and diabetes. Whilst pharmaceuticals help to manage these diseases, nutraceuticals have also been shown to elicit promising effects upon lipids and glucose sensitivity. Growing evidence also suggests that creatine supplementation, a popular ergogenic aid, may also serve as a therapeutic strategy for various pathologies. In addition to both anti-inflammatory and antioxidant properties, evidence suggests that creatine may also attenuate circulating lipids and blood glucose. Therefore, the aim of this study was to determine the effect of 4 weeks of creatine on lipids and blood glucose levels in older adults.

Methods: Twelve older adults ($M = 6$, $W = 6$, 58 ± 3 years) consumed creatine monohydrate (CM) and placebo for 4 weeks in a randomized, double-blind, crossover design. Pre- and post-supplementation, participants underwent a fasted venous blood draw.

Plasma levels of cholesterol (CHOL), high density lipoprotein (HDL), triglycerides (TG), non-HDL cholesterol (nHDLc), low density lipoprotein (LDL), very LDL (vLDL), and glucose (GLU) were then analyzed using a Piccolo Xpress clinical chemistry analyzer. Results were analyzed by 2×2 Repeated Measures ANOVA, with significance accepted as $p < 0.05$.

Results: Following CM supplementation there were significant improvements in fasted TG (Pre: 99.81 ± 35.35 mg/dL, Post: 83.82 ± 37.65 mg/dL, $p < .05$) and GLU (Pre: 103.64 ± 6.28 mg/dL, Post: 99 ± 4.9 mg/dL, $p < .05$), in comparison to placebo. There were no significant changes following CM in LDL, HDL, nHDLc, or CHOL. There was a significant main effect of time in that vLDL decreased in both groups on average $- 2.46$ mg/dL.

Conclusions: Our findings indicate that 4 weeks of CM supplementation led to a significant improvement in TG and GLU, but failed to improve CHOL, LDL, HDL, or nHDLc. Considering the correlation between triglycerides and glucose and pathologies such as cardiovascular disease and diabetes, these results suggest potential for creatine to serve as an adjuvant therapeutic. However, further research is required to uncover potential mechanisms by which creatine may be exerting these novel benefits.

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