



Creatine Supplementation Prior to Strength Exercise Training Is Not Superior in Preventing Muscle Mass Loss Compared with Standard Nutritional Recommendations in Females After Bariatric Surgery: A Pilot Study

Marcelo Diaz-Pizarro¹ · Johanna Pino-Zúñiga^{1,2} · Mariela Olivares Gálvez² · Carolina Rendon Vesga² · Rafael Luengas Tello² · Juan Camilo Duque Seguro² · Jorge Cancino-Lopez¹

Received: 25 July 2024 / Revised: 5 August 2024 / Accepted: 8 August 2024
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2024

Abstract

Background This study examines whether creatine supplementation combined with strength training mitigates muscle mass loss in women during early rehabilitation post-bariatric surgery, as its effectiveness remains untested in this context.

Methods Fifteen women (37.8 ± 9.6 years; BMI, 38.8 ± 5.6 kg/m²) completed the intervention (creatine group = 7; placebo group = 8). Both groups followed a strength training program three times a week for 8 weeks. The dosage for both the creatine and placebo was 8 g prior to each exercise session. Body weight, skeletal muscle mass, fat mass, handgrip strength, and physical activity levels were measured before and after the intervention.

Results The creatine group showed a reduction of 9.5 ± 1.5 kg in body weight, with a 0.72 ± 0.6 kg decrease in muscle mass and an 8.64 ± 1.2 kg reduction in fat mass. The placebo group had a reduction of 9.6 ± 3.5 kg in body weight, with a 0.6 ± 1.2 kg decrease in muscle mass and an 8.88 ± 3.2 kg reduction in fat mass, without significant differences between groups ($p > 0.05$).

Conclusion The pre-session strength exercise training creatine supplementation is not superior to placebo regarding body weight and fat mass losses and the attenuation of muscle mass loss during the first weeks of rehabilitation following bariatric surgery.

Keywords Early rehabilitation · Creatine · Strength training · Body composition · Weight loss

Key Points

- All participants initiated strength-based exercise and supplementation 10 days after bariatric surgery.
- There was a good acceptability and non-side effects of creatine intake in the Cr group.
- Creatine intake after bariatric surgery did not have superior effects than the PLA group.

✉ Johanna Pino-Zúñiga
johannakine@gmail.com

✉ Jorge Cancino-Lopez
jcancino@uft.cl

Marcelo Diaz-Pizarro
marcelo.dpizarro95@gmail.com

Mariela Olivares Gálvez
malevox@gmail.com

Carolina Rendon Vesga
nutricarolinarendon@gmail.com

Introduction

This study examines whether creatine supplementation combined with strength training mitigates muscle mass loss in women during early rehabilitation post-bariatric surgery, as its effectiveness remains untested in this context. Creatine supplementation has shown evidence of increasing muscle

Rafael Luengas Tello
contacto@obesidadydigestiva.cl

Juan Camilo Duque Seguro
drcamiloduques@gmail.com

¹ Exercise Physiology and Metabolism Laboratory, School of Kinesiology, Universidad Finis Terrae, Santiago, Chile

² Centro BIO, Santiago, Chile