

During Fasting does Extra Protein Protect Aging Muscle

A recent randomized controlled trial (RCT) published suggests that four weeks of alternate-day fasting was associated with changes in some cardiometabolic and [physical-function](#) measures in older men. The researchers also found that body mass-scaled protein and leucine supplementation did not prevent lean mass loss or confer additional benefits as compared with a control supplement.

Based on these findings and previous studies, the researchers suggest combining nutritional supplementation with resistance training to improve muscle-related outcomes among older adults during [weight loss](#).



Study

In this three-arm, double-blind RCT, researchers examined the effects of body mass-adjusted protein and leucine supplementation on cardiometabolic [biomarkers](#) and body composition during weight loss among older men practicing ADF.

The researchers recruited 80 men aged 60-89 years with a body mass index (BMI) of at least 23 kg/m², 61 of whom completed the four-week intervention and were included in the analysis. Participants were recruited through word of mouth, newspaper advertisements, and [social media](#) posts between November 2022 and May 2023.

Eligibility criteria excluded smokers, vegetarians and vegans, people with dairy allergies or intolerance, and people with health conditions that could make fasting or physical testing unsuitable, including diabetes, uncontrolled [hypertension](#), and kidney or liver conditions.

The researchers assigned participants to three groups using a minimization procedure that balanced baseline body mass, BMI, age, and physical activity. Supplements provided to all three groups were calorie-matched per kilogram of [body mass](#).

The leucine group received 0.08 g per kg of leucine/serving, whereas the protein group received 0.4 g per kg of protein and 0.04 g per kg of leucine per serving. Control group participants received a calorie-matched chocolate supplement without added [protein](#) or leucine.

All participants consumed three supplement servings on feeding days and one serving on [fasting days](#), when they were permitted a self-selected meal of no more than 600 kcal between noon and 2 PM. They also completed the Global Physical Activity Questionnaire (GPAQ) at baseline and maintained daily records of physical exercise and sleep patterns throughout the study.

Researchers analyzed dual-energy X-ray absorptiometry (DXA) scans to evaluate body composition. The researchers also evaluated sarcopenia and blood-based cardiometabolic markers, including lipid profile, glycemic markers, and [blood pressure](#).

Cognitive function was assessed using the Montreal Cognitive Assessment (MoCA). The Asian Working Group for [Sarcopenia](#) (AWGS) 2019 criteria were used for sarcopenic assessments, including handgrip strength (HGS), appendicular lean mass index (ALMI), short physical performance battery (SPPB), five times sit-to-stand (5STS), and 6-meter gait speed (6mGS); data collection concluded by June 2023.

Findings

Over the four-week intervention, SBP and several body composition measures decreased significantly, while bone mineral density (BMD) remained unchanged. Several lipid measures changed favorably over time, including low-density lipoprotein cholesterol (LDL-C), total cholesterol (TC), total/HDL-C ratio, and [triglycerides](#) (TG). However, HDL cholesterol decreased slightly in the protein group.

Along with a significant reduction of approximately 2.2 kg in body mass (1.3 kg fat mass and 0.9 kg lean mass) over four weeks, average MoCA cognitive-screening scores increased modestly. Eleven participants gained lean mass while losing weight, including five in the control group, four in the protein group, and two in the [leucine group](#).

In addition to improved muscle strength, the participants demonstrated time-based improvements in functional sarcopenic outcomes. While ALMI fell by 0.10 kg/m², indicating a small loss of appendicular lean mass, 5STS time improved by 0.92 seconds. HGS increased by 1.44 kg, 6mGS by 0.05 m/s, and SPPB by 0.08, with no significant differences in these changes between supplementation groups. Fasting glucose, fasting insulin, glycated hemoglobin (HbA1c), and homeostatic model assessment of [insulin](#) resistance (HOMA-IR) did not change significantly.

Participants generally followed the study requirements well. About 93% reported adherence to fasting-day meal timing, while only 63% adhered to the ≤600 kcal fasting-day limit. Overall, participants completed 99% of the provided [supplement regimens](#). The interventions were also generally well tolerated.

Two participants experienced weakness and light-headedness on the first fasting day, while one reported bloating and constipation along with slight [joint discomfort](#) after consuming the supplements.

Conclusion

The four-week ADF intervention was associated with changes in several cardiovascular, cognitive, and physical-function measures. Nevertheless, the current study cannot establish that ADF itself caused these changes because every group followed the fasting regimen and there was no non-ADF control group. Adding leucine or protein and leucine did not appear to offer further benefits

for [body composition](#), muscle-related outcomes, cardiometabolic markers, or cognition compared with the control supplement.

The findings also show the challenge of preserving lean mass while pursuing weight loss in older adults. Drawing on the present findings and prior research, the authors suggest that a resistance-training stimulus may be needed for higher protein or leucine intake to produce clearer muscle-related benefits during weight loss. The findings may not extend to older women, frail adults, or people with sarcopenia because the study involved relatively [healthy](#), community-dwelling older men. Future research could test dietary supplementation alongside structured resistance training in broader populations and across sexes.

Source:

<https://www.news-medical.net/news/20261007/Does-extra-protein-protect-aging-muscle-during-fasting.aspx>