

Weight Reduction

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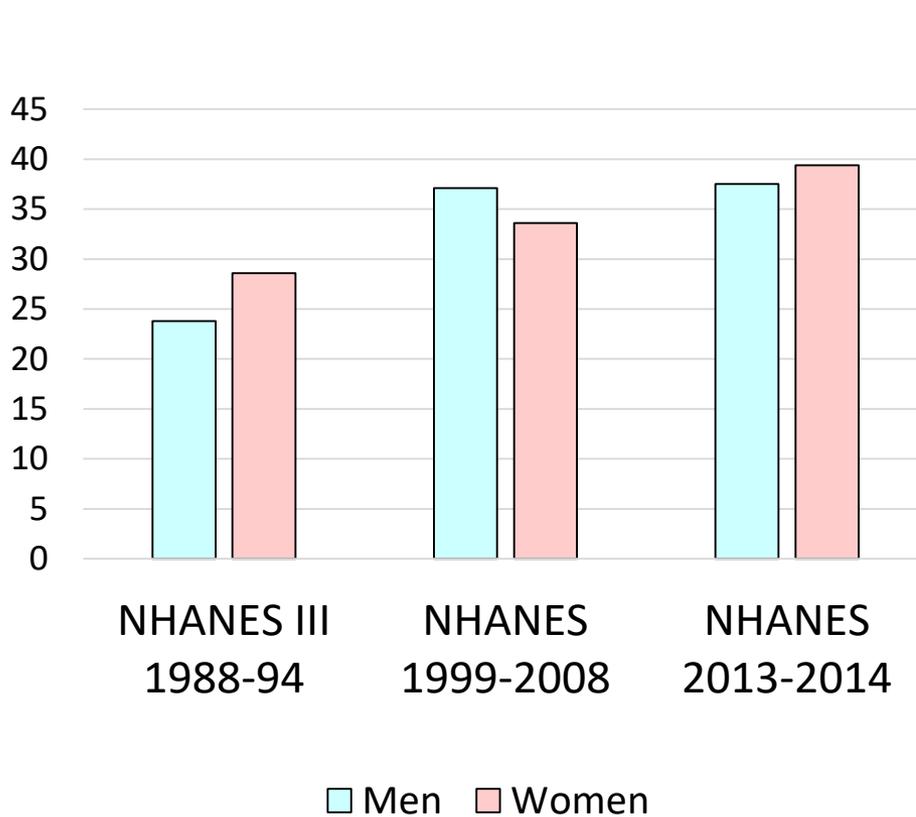
Section on Gerontology and Geriatric Medicine

Department of Internal Medicine

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Trends in obesity* among older adults



Confluence of obesity,
osteoporosis and sarcopenia

* BMI > 30 kg/m²

Evidence shows weight loss improves physical function, metabolic risk factors, and chronic conditions over the short term

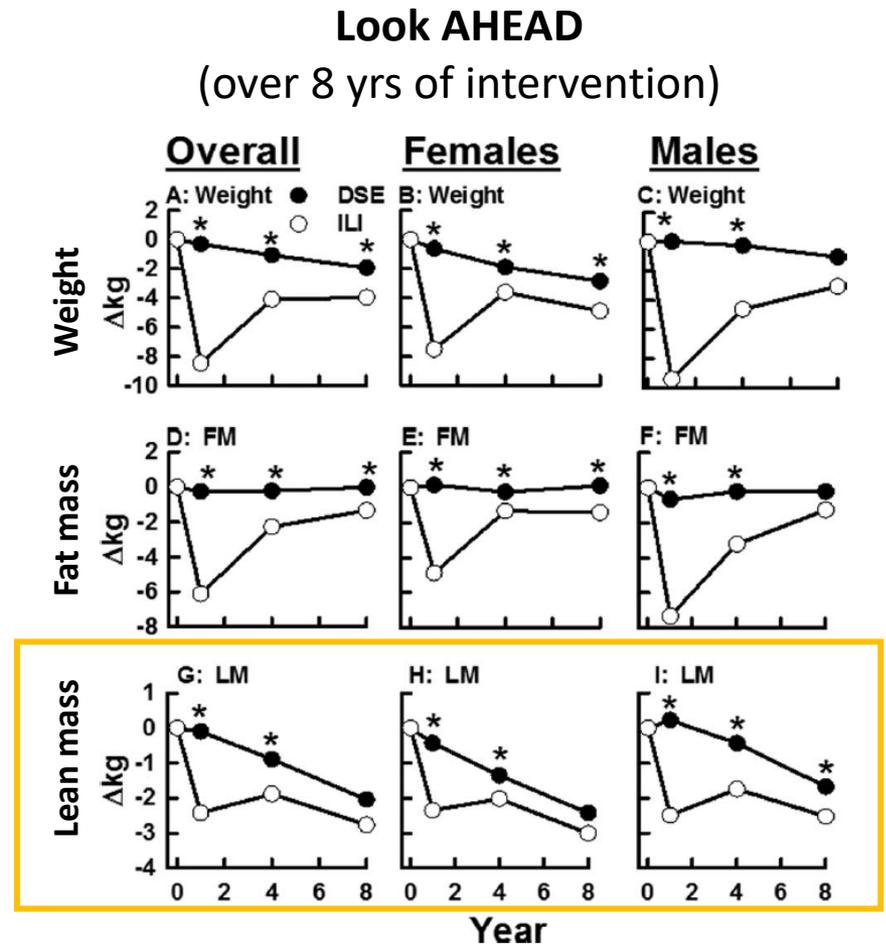
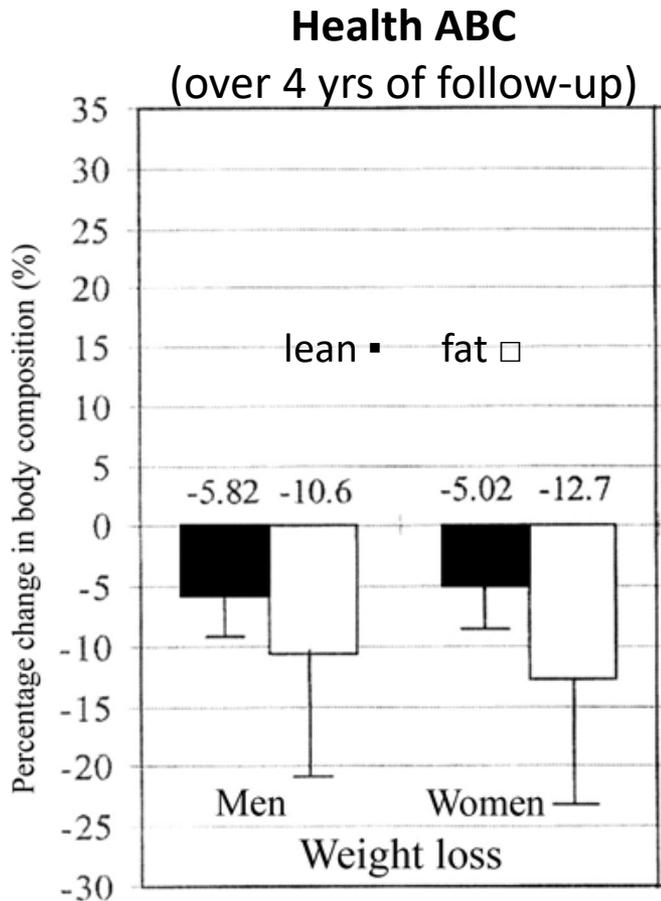
In obese older adults with chronic conditions or functional limitations, supervised, short-term, behavioral weight-loss interventions:

- Improve physical function
- Reduce systemic markers of inflammation
- Improve cardiovascular risk factors
- Improve diabetes symptoms and risk factors
- Improve arthritis and pain symptoms

Despite this evidence, there are concerns regarding weight loss in older adults

- **Nutritional inadequacy**
 - Caloric restriction during weight loss may exacerbate already low nutrient intakes
- **Exacerbate age-related losses in lean mass**
 - Sarcopenic obesity
 - Initiate/worsen functional decline

Effects of weight loss on lean mass

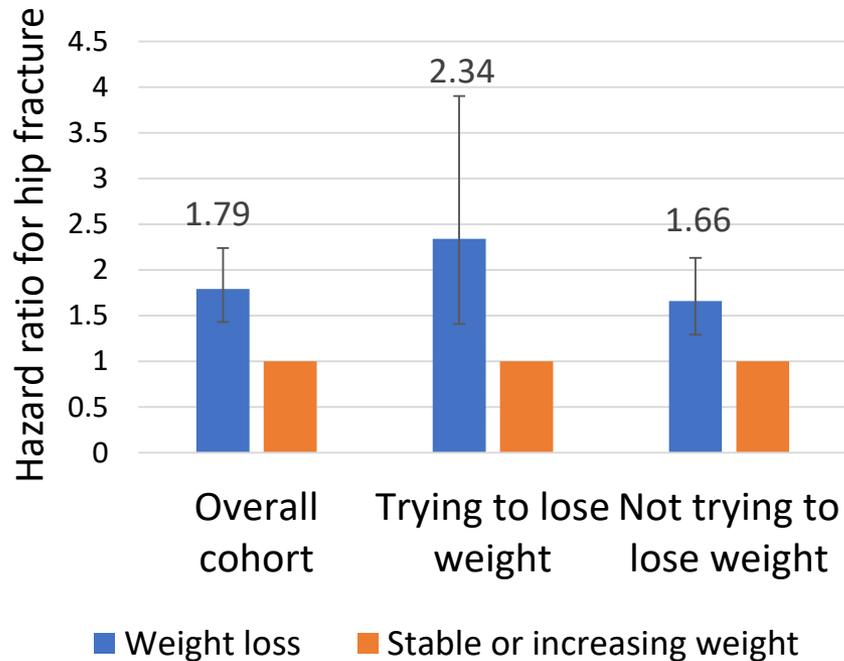


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 - Caloric restriction during weight loss may exacerbate already low nutrient intakes
- **Exacerbate age-related losses in lean mass**
 - Sarcopenic obesity
 - Initiate/worsen functional decline
- **Exacerbate age-related losses in bone mineral density**
 - Increase risk of fractures

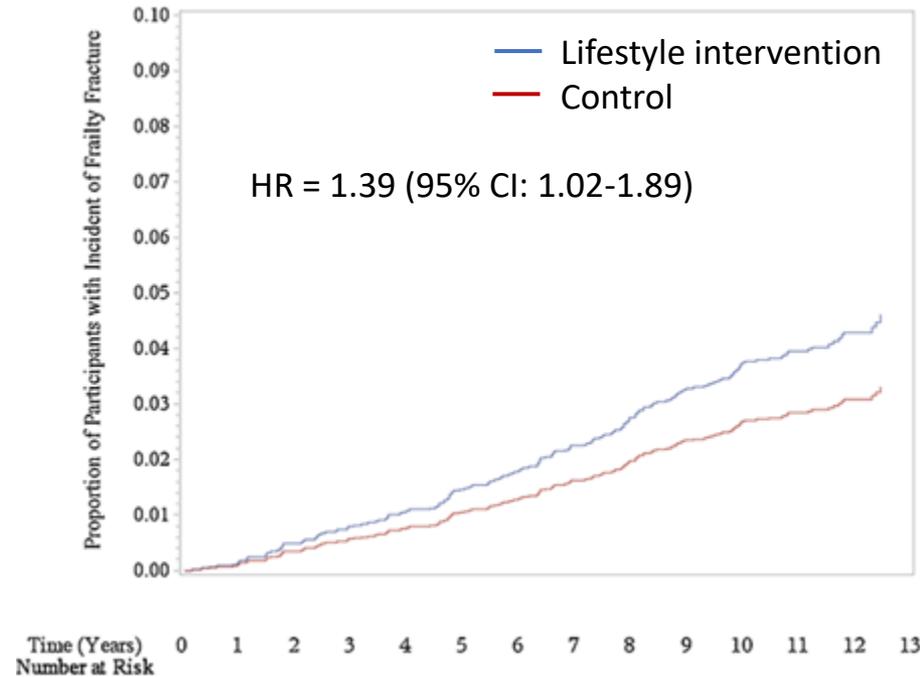
Effects of weight loss on bone mineral density and risk of fractures

Study of Osteoporotic Fractures
(over ~6.6 yrs of follow-up)



* ≥5% weight change

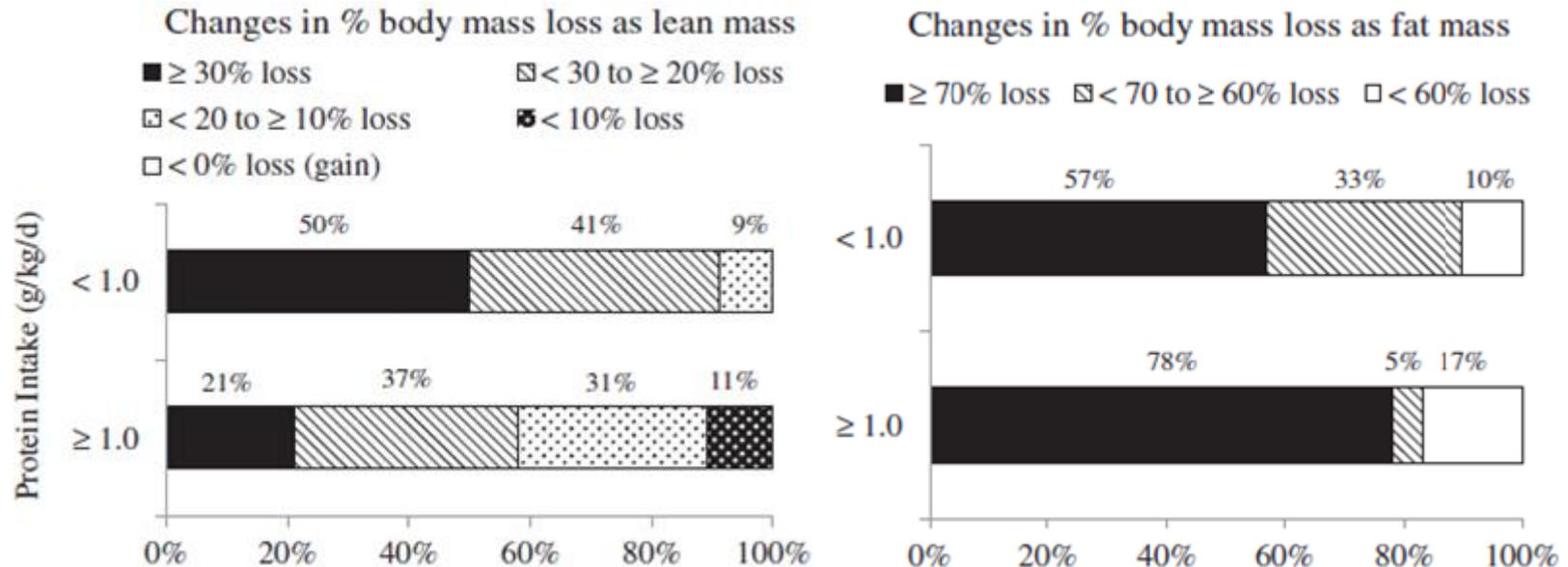
Look AHEAD
(over ~11.3 yrs of intervention)



Frailty fracture = hip, pelvis, upper arm or shoulder fracture

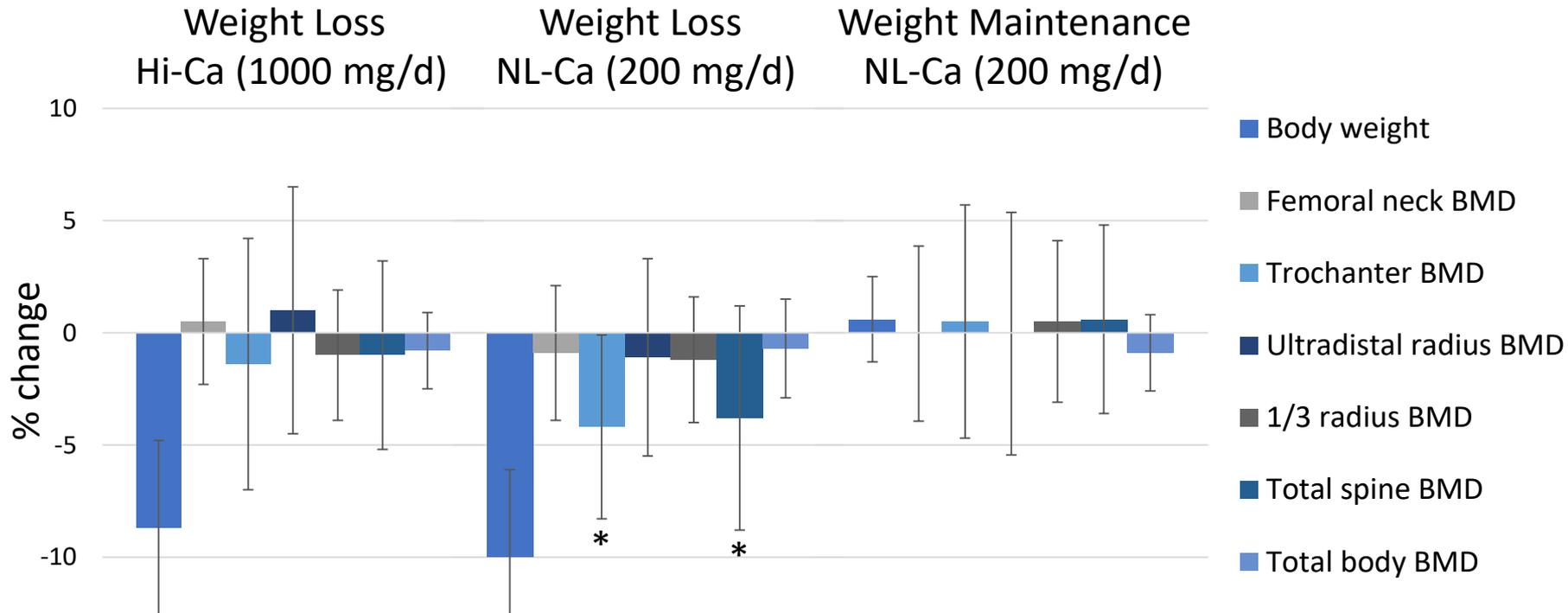
Potential strategies to mitigate the loss of lean mass and bone mineral density during weight loss

Can higher protein intake mitigate the loss of lean mass (and augment fat mass loss) during caloric restriction?



Older adults (50+ yrs) consuming a higher protein diet during caloric restriction retained more lean mass while losing more fat mass

Can calcium supplementation attenuate bone loss during caloric restriction?

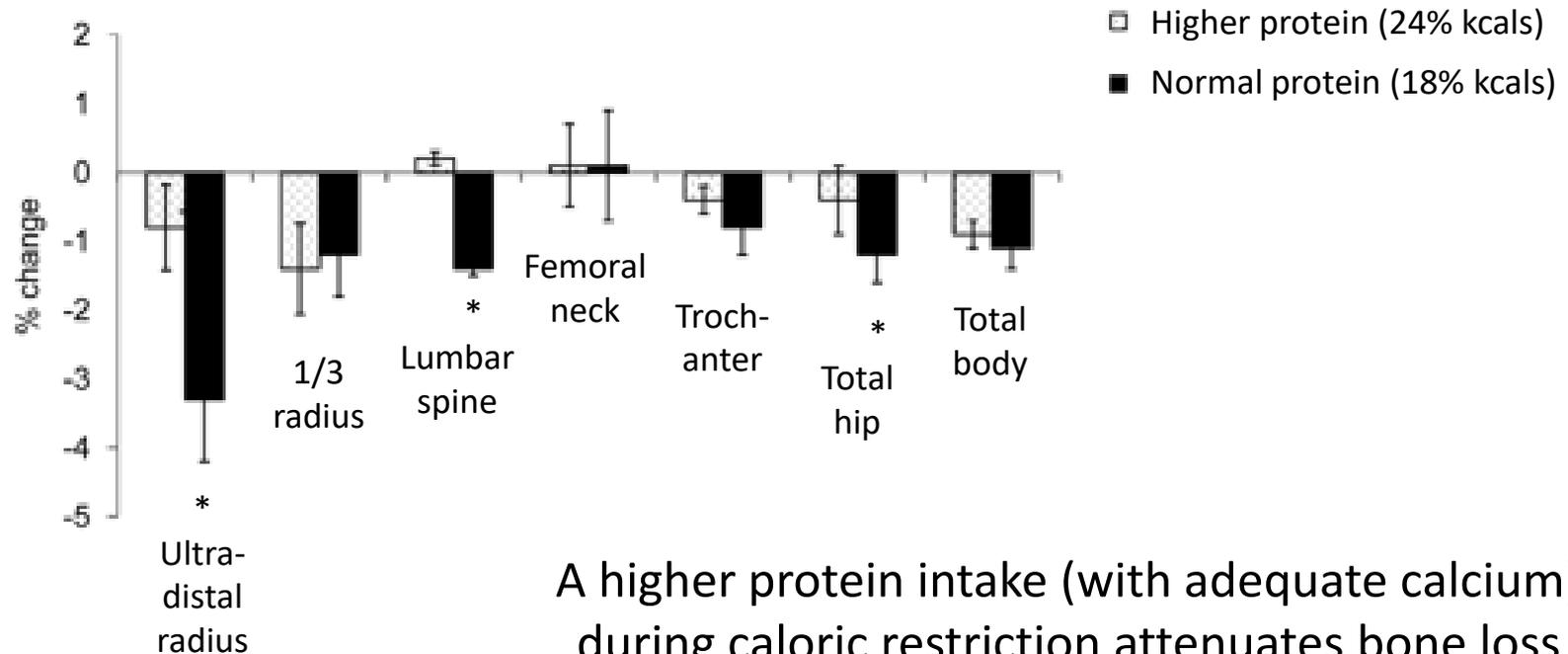


High calcium intake during caloric restriction can attenuate bone loss to the extent of normal age-related bone loss in postmenopausal women

* p<0.05 from Weight Maintenance NL-Ca

Background dietary
Ca intake ~600 mg/d

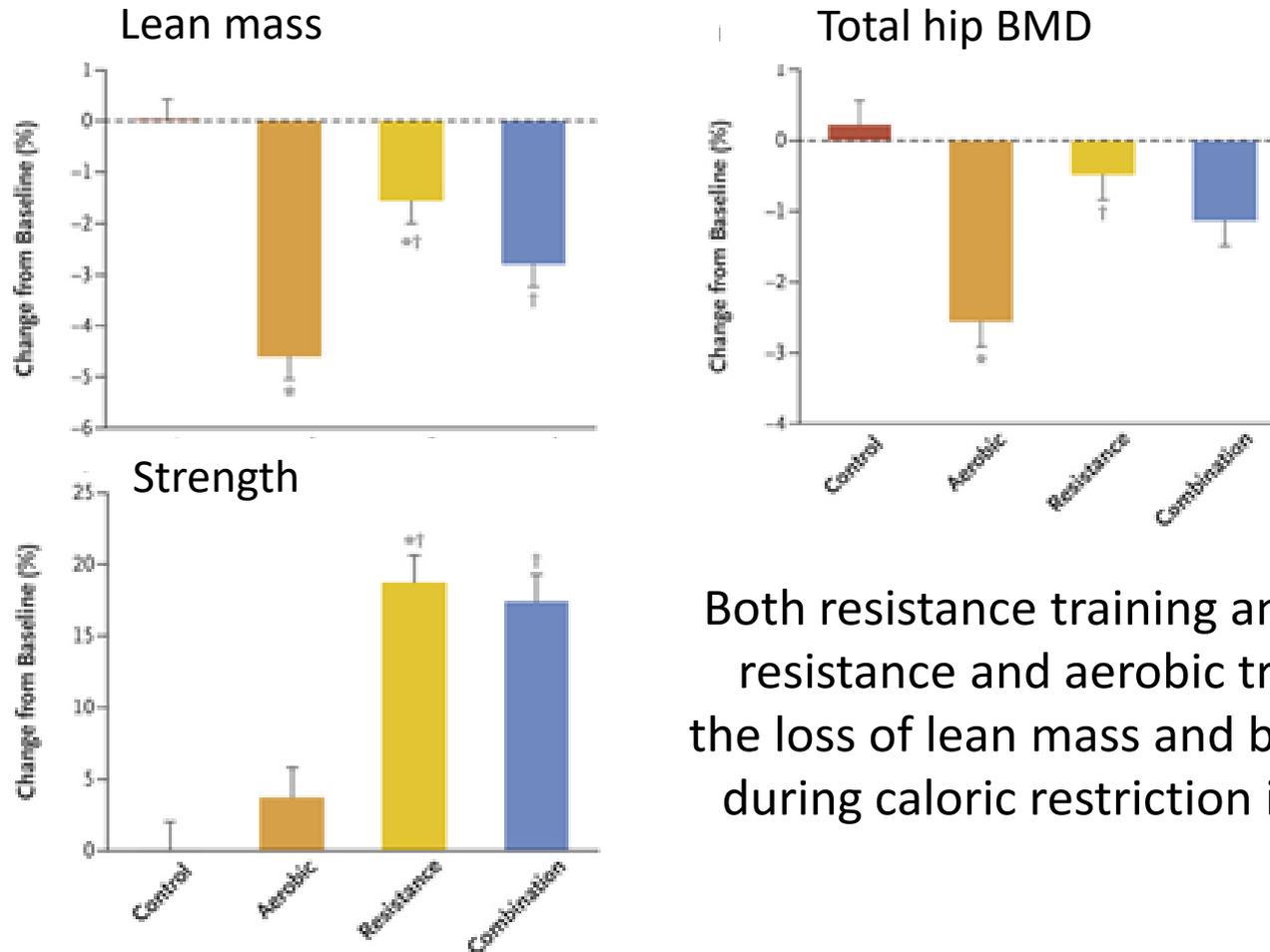
Can higher protein intake attenuate bone loss during caloric restriction?



A higher protein intake (with adequate calcium) during caloric restriction attenuates bone loss at certain sites in postmenopausal women

*p < 0.05; All participants received 1200 mg calcium/d

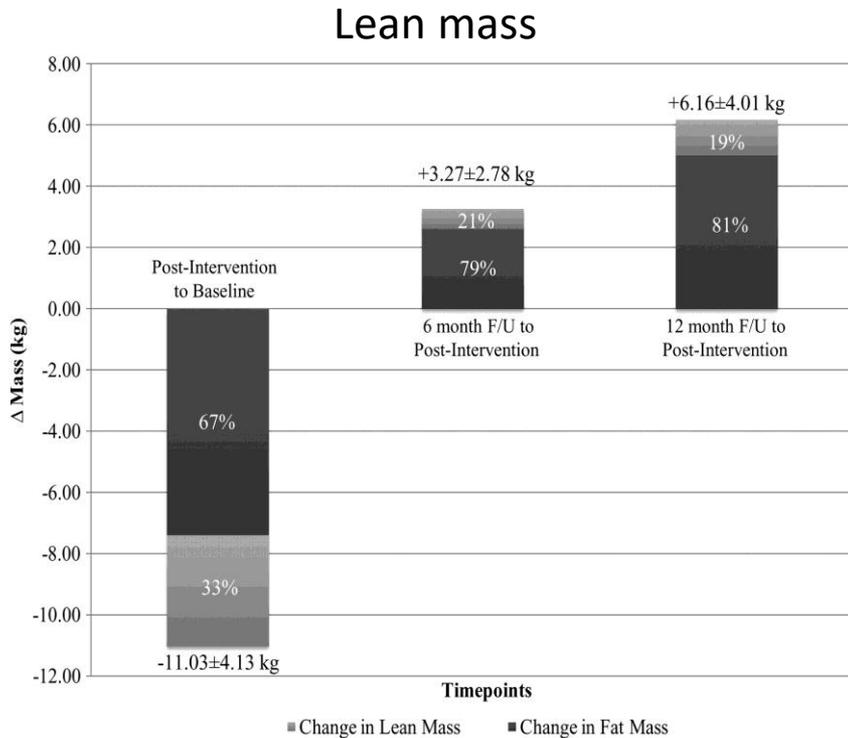
Can exercise mitigate the loss of lean mass and bone during caloric restriction?



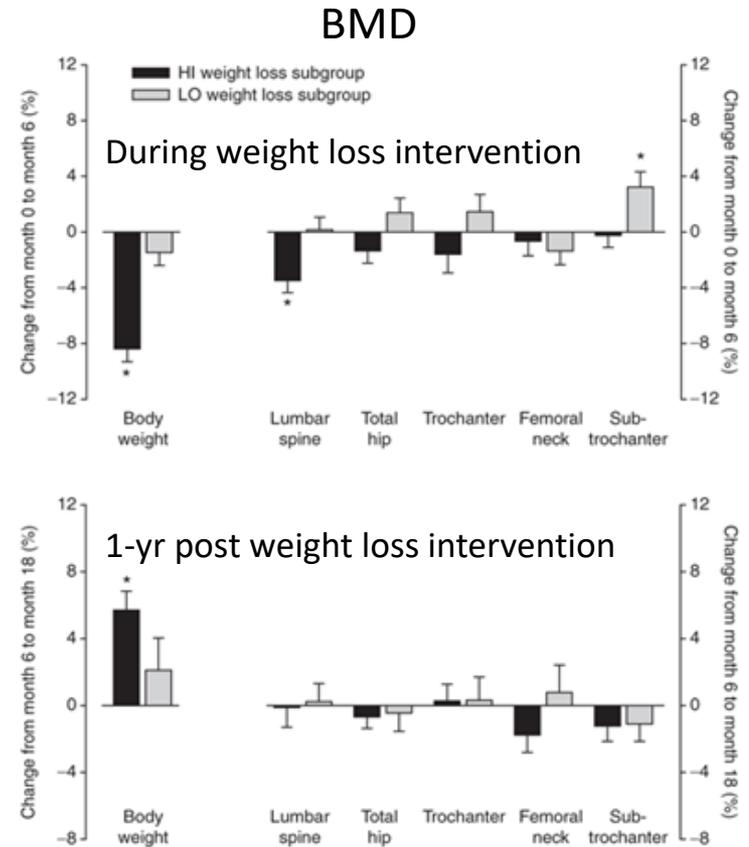
Both resistance training and a combination of resistance and aerobic training attenuated the loss of lean mass and bone mineral density during caloric restriction in frail older adults

* $p < 0.05$ for the comparison with the control group; † $p < 0.05$ for the comparison with the aerobic group

Does weight regain restore lost lean mass and bone following caloric restriction?



More lean mass is lost during weight loss than is gained during weight regain



Weight regain does not restore weight loss-induced bone loss

Obesity in Older Adults: Position Statement of the American Society for Nutrition and the Obesity Society, 2005

- **“Weight-loss therapy that minimizes muscle and bone losses is recommended for older persons who are obese and who have functional impairments or medical complications that can benefit from weight loss”**
 - Primary approach - lifestyle intervention involving diet, physical activity, and behavior modification
 - Goal – 5-10% weight loss followed by weight maintenance

2013 AHA/ACC/TOS Guidelines for the Management of Overweight and Obesity in Adults

“The overall safety of weight loss interventions for patients aged 65 and older remains controversial.

Although older participants tend to respond well to comprehensive behavioral weight loss treatments and they experience the same improvements in CVD risk factors as do middle-age participants, the effect of weight loss treatment on risk for CVD, longevity, and osteoporosis has not been extensively studied.”

Treatment of obesity in older adults

- Diet plan: reduce energy intake (500-750 kcal/d) while assuring adequate intake of protein (1.0-1.2 g/kg body weight/d) and essential micronutrients (1200 mg/d calcium and 800-1000 IU/d vitamin D)
- Choose more nutrient-dense and less energy-dense foods
- Engage in weight-bearing and/or resistance exercise

MyPlate for Older Adults

Fruits & Vegetables

Whole fruits and vegetables are rich in important nutrients and fiber. Choose fruits and vegetables with deeply colored flesh. Choose canned varieties that are packed in their own juices or low-sodium.

Healthy Oils

Liquid vegetable oils and soft margarines provide important fatty acids and some fat-soluble vitamins.

Herbs & Spices

Use a variety of herbs and spices to enhance flavor of foods and reduce the need to add salt.



Fluids

Drink plenty of fluids. Fluids can come from water, tea, coffee, soups, and fruits and vegetables.

Grains

Whole grain and fortified foods are good sources of fiber and B vitamins.

Dairy

Fat-free and low-fat milk, cheeses and yogurts provide protein, calcium and other important nutrients.

Protein

Protein rich foods provide many important nutrients. Choose a variety including nuts, beans, fish, lean meat and poultry.



Remember to Stay Active!

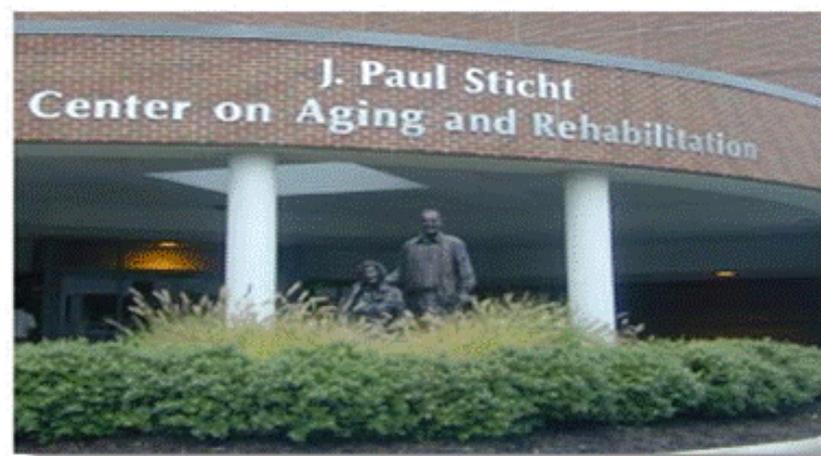
Knowledge gaps

- Are there weight loss treatments that preferentially target fat while preserving lean and bone mass?
- What are the underlying mechanisms regulating lean and bone mass during weight loss and weight regain?
- If weight is regained, do health benefits of the past weight loss persist?
- Which obese older adults should be targeted?
 - Those with indications for weight loss (e.g., mobility disability, metabolic disease)?
 - Those with sarcopenia?
 - Those with osteopenia/osteoporosis?

Research Opportunities

- Identification of:
 - Weight loss interventions designed to target fat but preserve lean and bone mass
 - Optimal weight loss interventions for obese patients with sarcopenia and/or osteopenia/osteoporosis
 - Underlying mechanisms that regulate lean and bone mass during weight loss/regain
 - Weight loss interventions designed to optimize weight and fat loss maintenance
- Weight loss studies in men
- Long-term follow up of weight loss interventions

Questions?



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