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The Future of Obesity Management:
From Weight Loss to Health Gain



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BONE MASS AND BODY COMPOSITION 10 YEARS AFTER ROUX-EN-Y GASTRIC BYPASS DURING ADOLESCENCE

AMOS – Adolescent Metabolic Obesity Surgery

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Disclosures

Nothing to disclose.



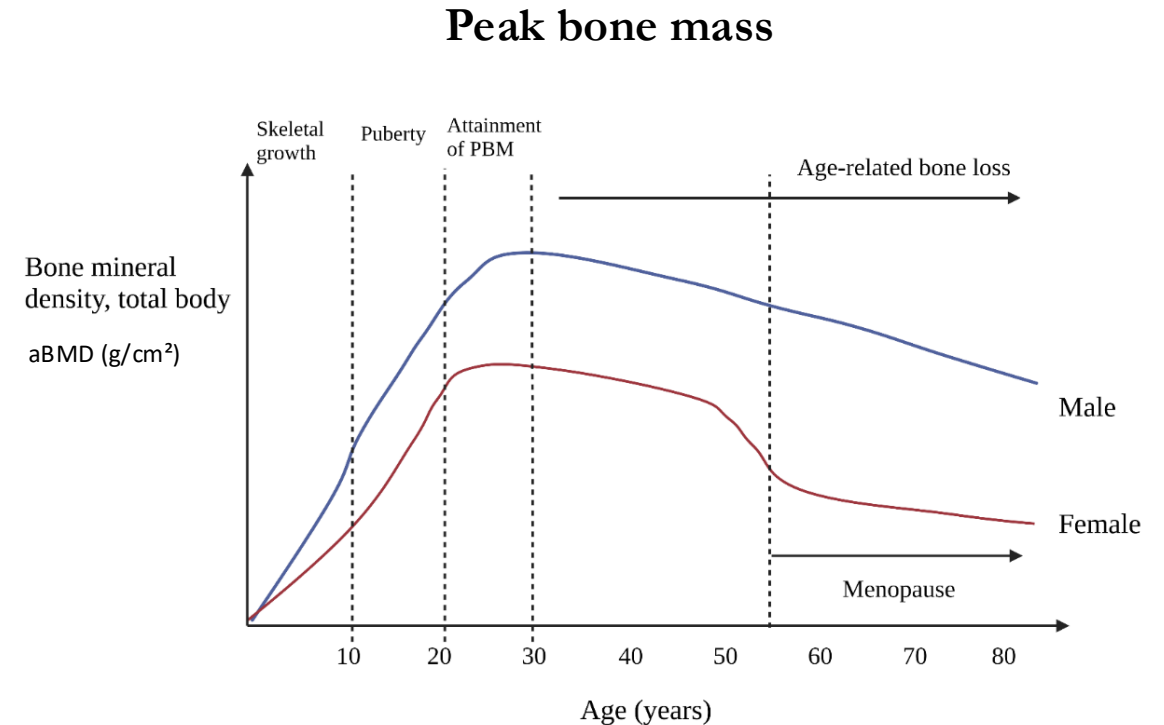
Background

- Impaired bone health in adults after RYGB
 - Increased bone turnover and fracture risk
- Reductions in bone mass and lean mass 2 years after RYGB in adolescents (AMOS)



Objective

- To evaluate bone mass and body composition 10 years after RYGB for severe obesity in adolescence
- To assess bone mass at the age for peak bone mass



Methods

Non-randomized, prospective study

2006-2009

3 specialized pediatric obesity treatment units in Sweden

$n=81$; 53 girls, 28 boys

Age 13-18 years

$\text{BMI} \geq 40$, or $\geq 35 \text{ kg/m}^2$ with comorbidity

Pubertal stage Tanner >3

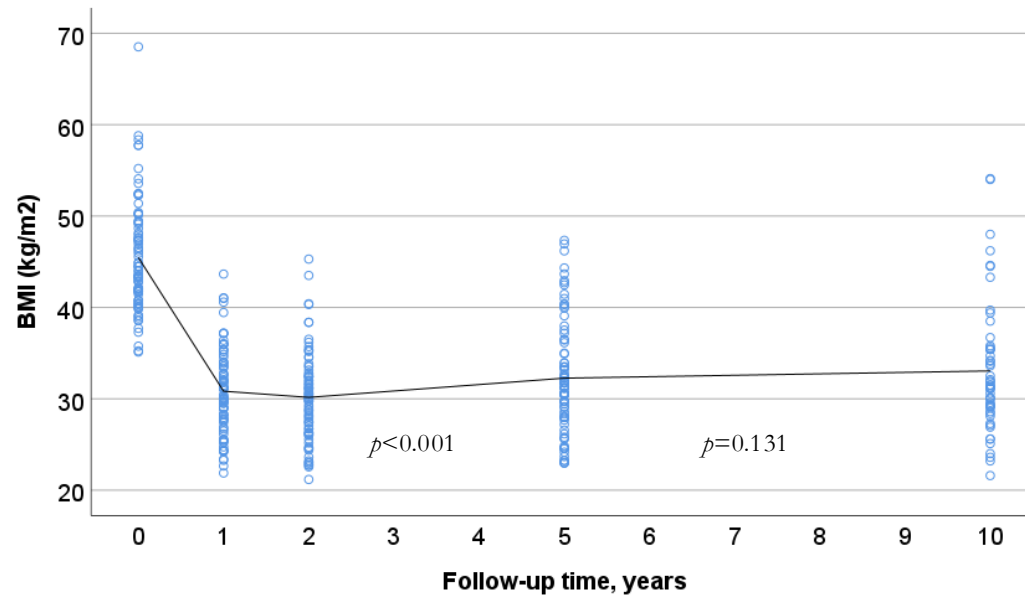
Only RYGB

DXA at baseline, 1, 2, 5 and 10 years

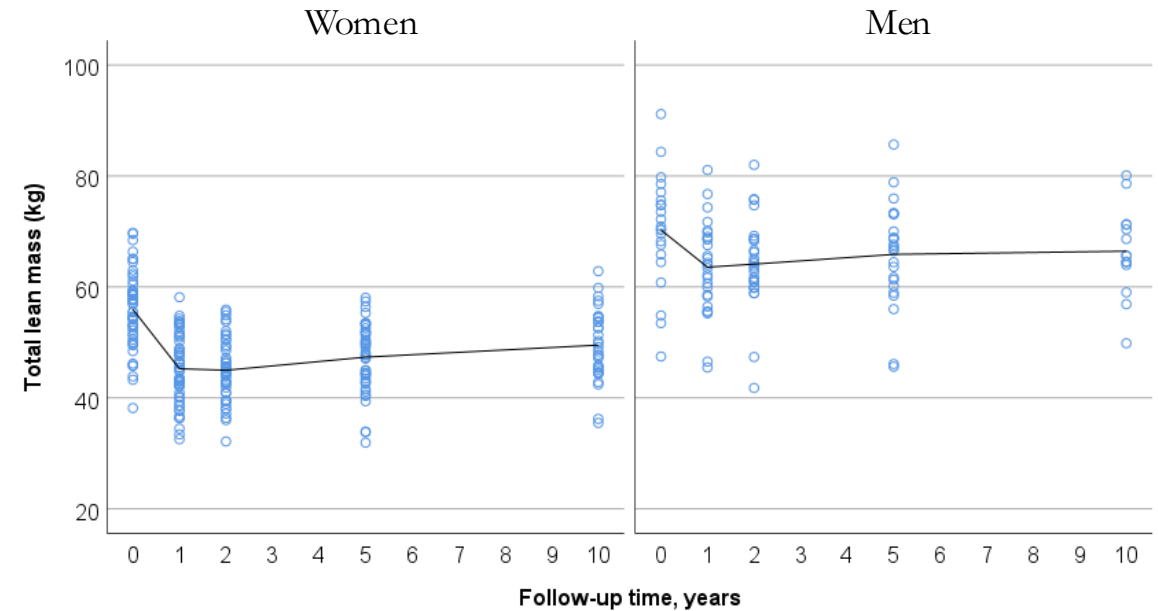


Results

BMI



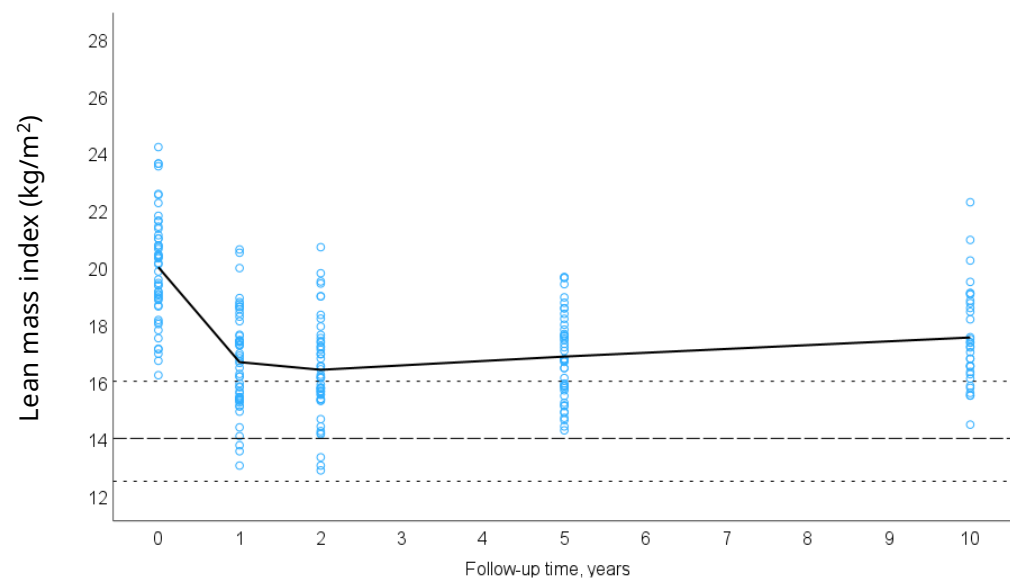
Total lean mass



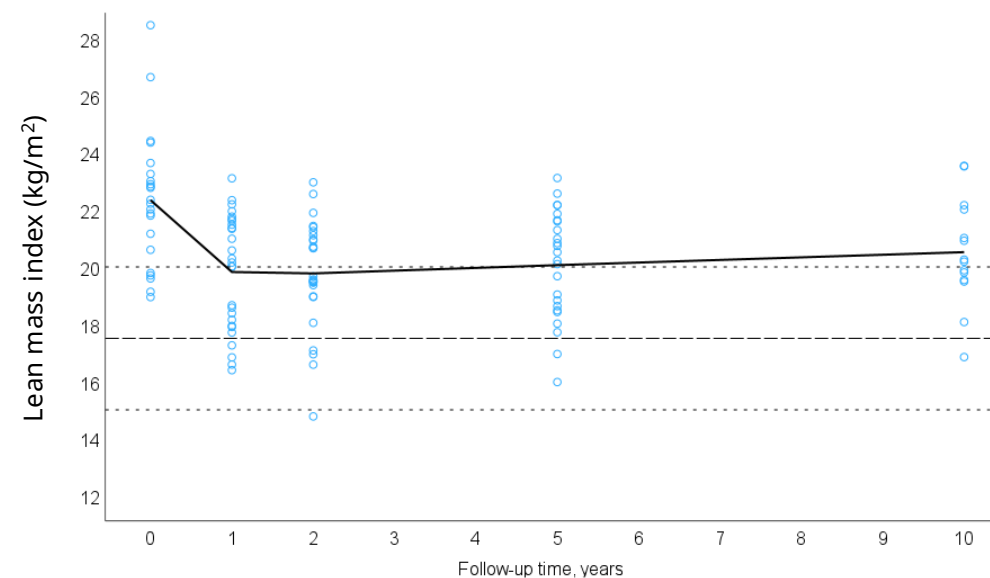
Results

Lean mass index

Women



Men

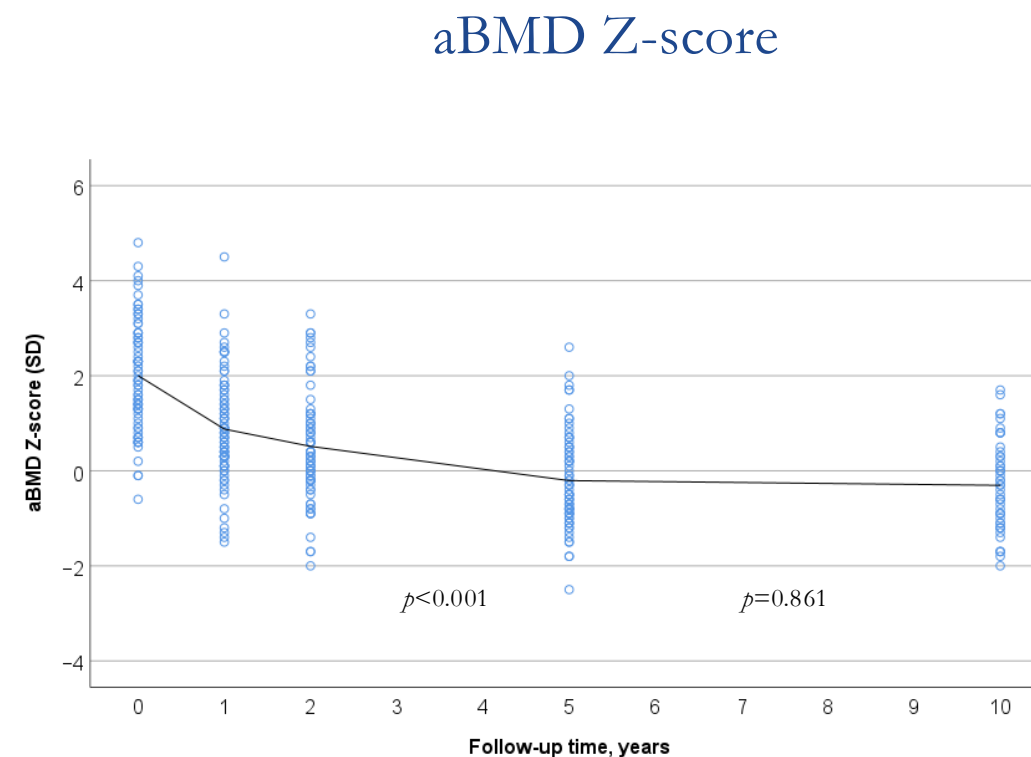
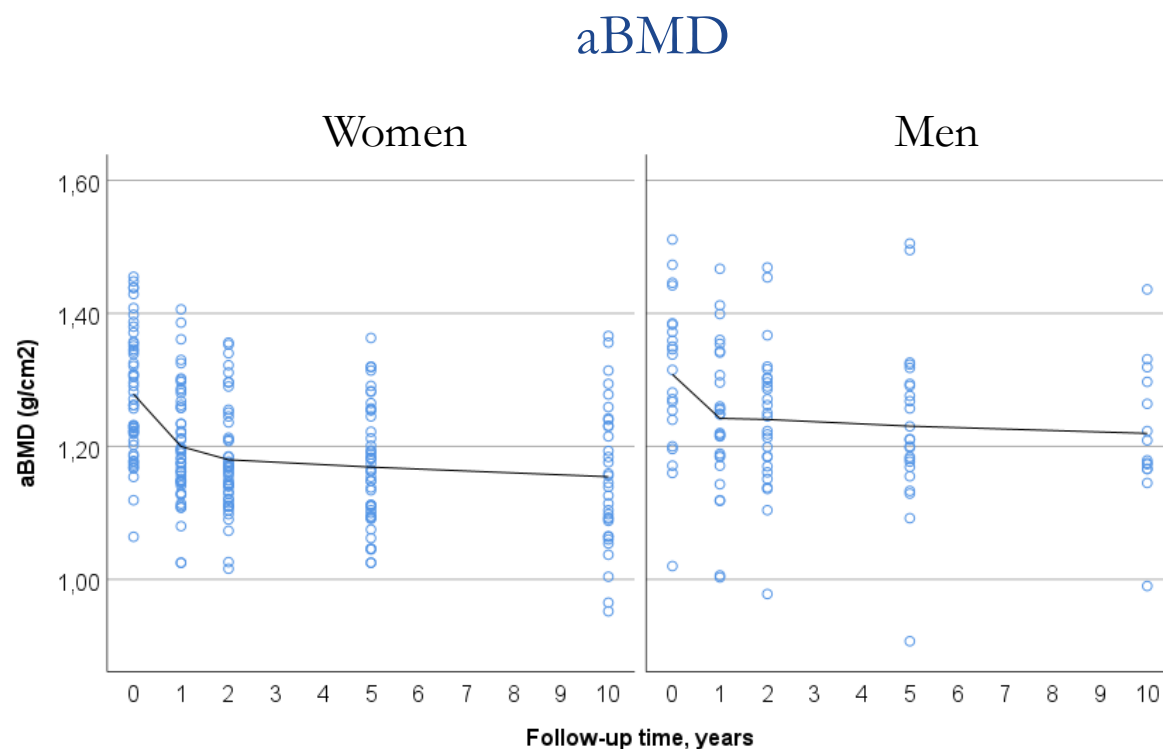


Lines indicate 10th, 50th, and 90th percentile for 30-year old women and men. Ofenheimer et al. 2019.



Results

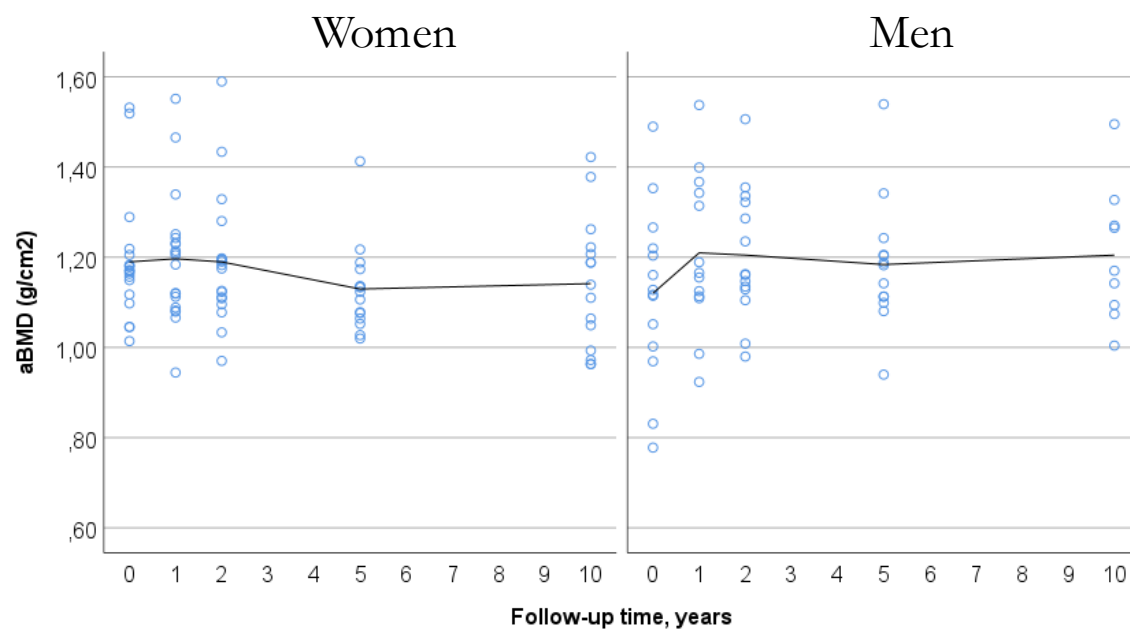
Total body areal bone mineral density, aBMD



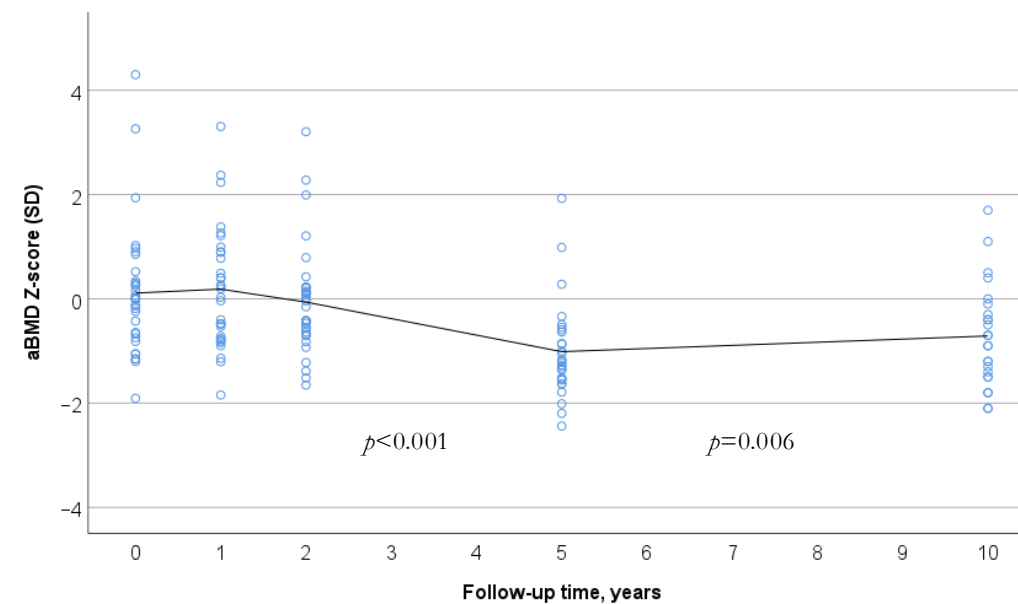
Results

Lumbar spine (L1-L4) aBMD

aBMD



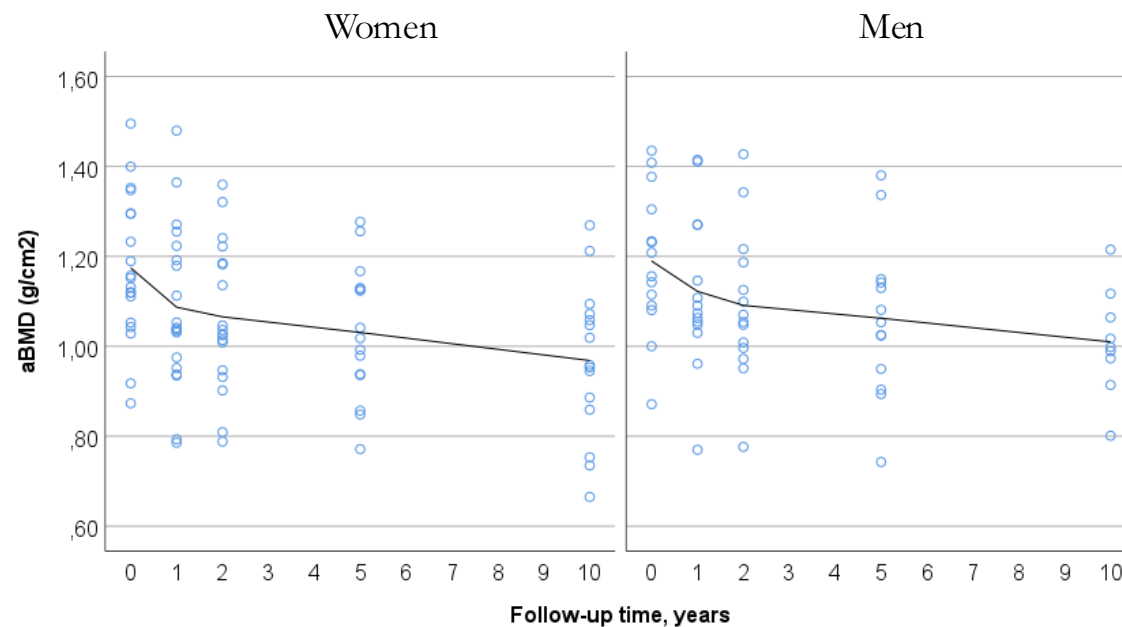
aBMD Z-score



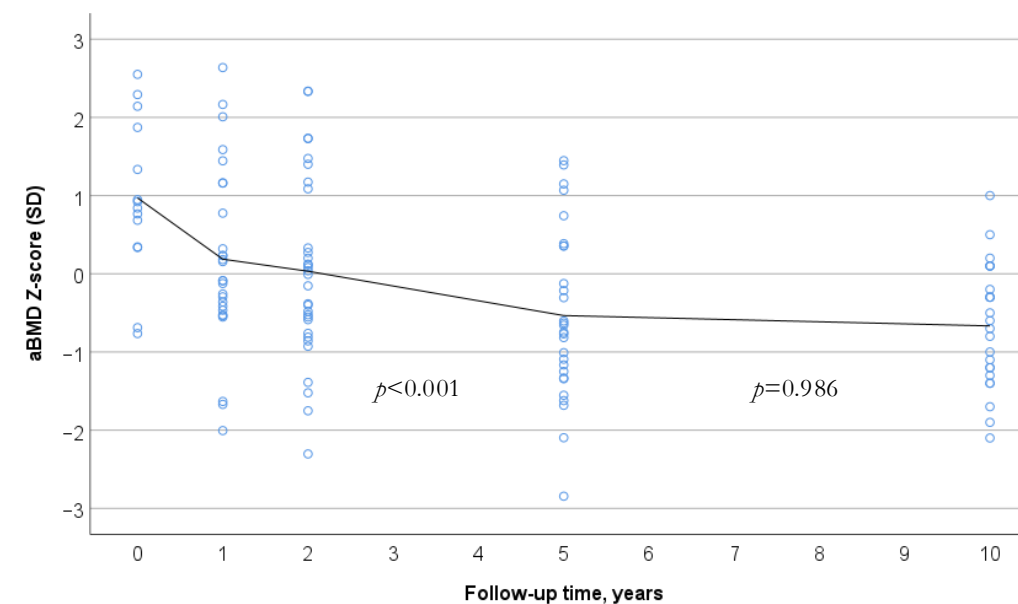
Results

Total hip aBMD

aBMD

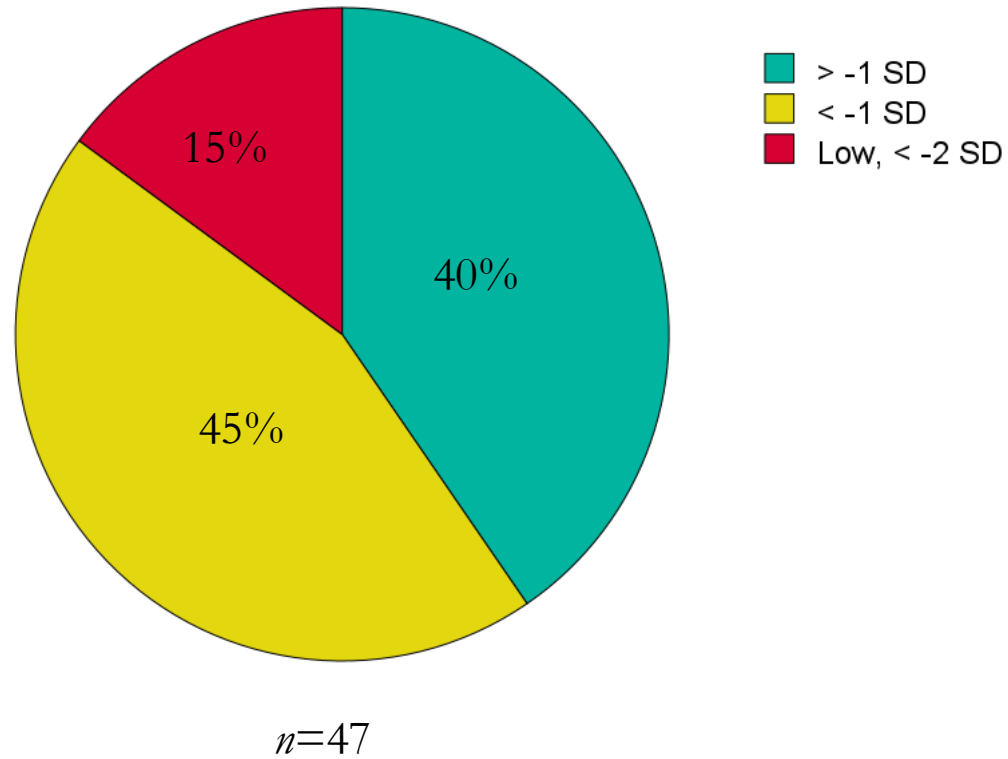


aBMD Z-score



Results

Z-scores 10 years after RYGB



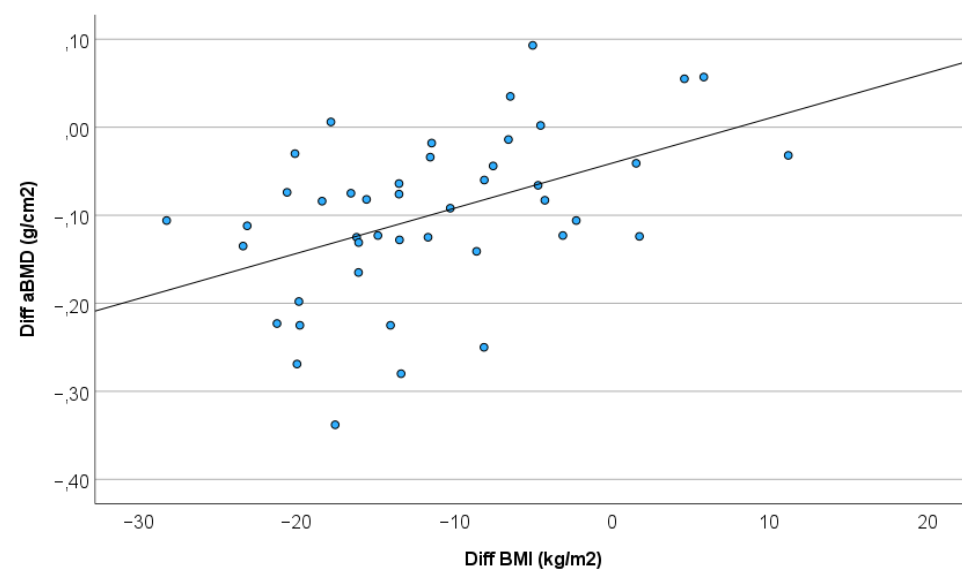
Low bone mass for age =
 $Z\text{-score} \leq -2 \text{ SD}$



Results

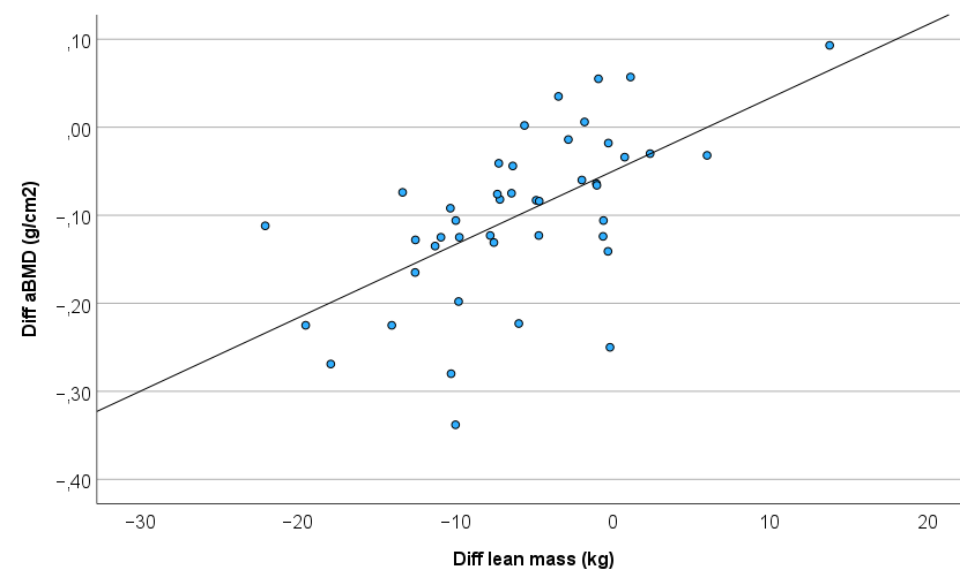
Correlations over 10 years

BMI – total body aBMD



$$r=0.46, p=0.002$$

Total lean mass – total body aBMD



$$r=0.61, p<0.001$$



Conclusions

- BMI was stable from 5 to 10 years after RYGB during adolescence
- Lean mass was well preserved in men but lower in women after 10 years
- Reduction in bone mass until 5 years after surgery, but then stabilized
- Low bone mass (≤ -2 SD) in 15% after 10 years, highlighting the need for continued monitoring of these individuals' bone health



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