



Lean tissue loss and relative calorie deficit post bariatric surgery



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Introduction

- Bariatric surgery (BS) is an effective treatment for complex obesity, but incurs some loss of lean tissue alongside reductions in adiposity ¹.
- Bioelectrical Impedance Analysis (BIA) allows assessment of lean tissue, adipose tissue and has a validated tool for use in people living with obesity ².
- There are limited references to relative calorie deficit post bariatric surgery in the literature.
- Aim:** 1. To assess changes in muscle and fat mass after significant weight loss post BS
2. To assess the correlation between relative calorie deficit and changes in body composition.

Methods

- BIA was measured prior to BS (Sleeve gastrectomy or gastric bypass) following recommended procedure, using the Bodystat (Quadscan4000), weight was measured on a Tanita scales and height with an electronic stadiometer. Repeat measurements were assessed at routine post BS clinic at approximately 1 year post BS. Data was analysed in Microsoft Excel.
- Relative energy deficit was calculated as energy deficit resulting from average post op energy intake at a year (800-1500kcal) intake as a percentage of total energy requirements (Mifflin St Jeor + 20% activity factor -30% Weight loss factor).

Results

N=25 (6 male, 19 female)	Mean ± Standard Deviation
Age (years)	47.11±7.12
Weight loss (kg)	28.4±13.4
Fat loss (kg)	22.2±12.4 *
Loss of baseline fat mass (%)	28.8±15.31*
Lean mass loss (kg)	7.8 ± 8.7*
Loss of baseline lean mass (%)	10.1±23.1*
Relative Energy Deficit ((MSJ +20%Activity Factor – 30% Weight loss factor)– average intake at 1 year post op)	434±359*

Table 1: Mean change and standard deviation of the changes pre and 1 year post BS. * p <0.05

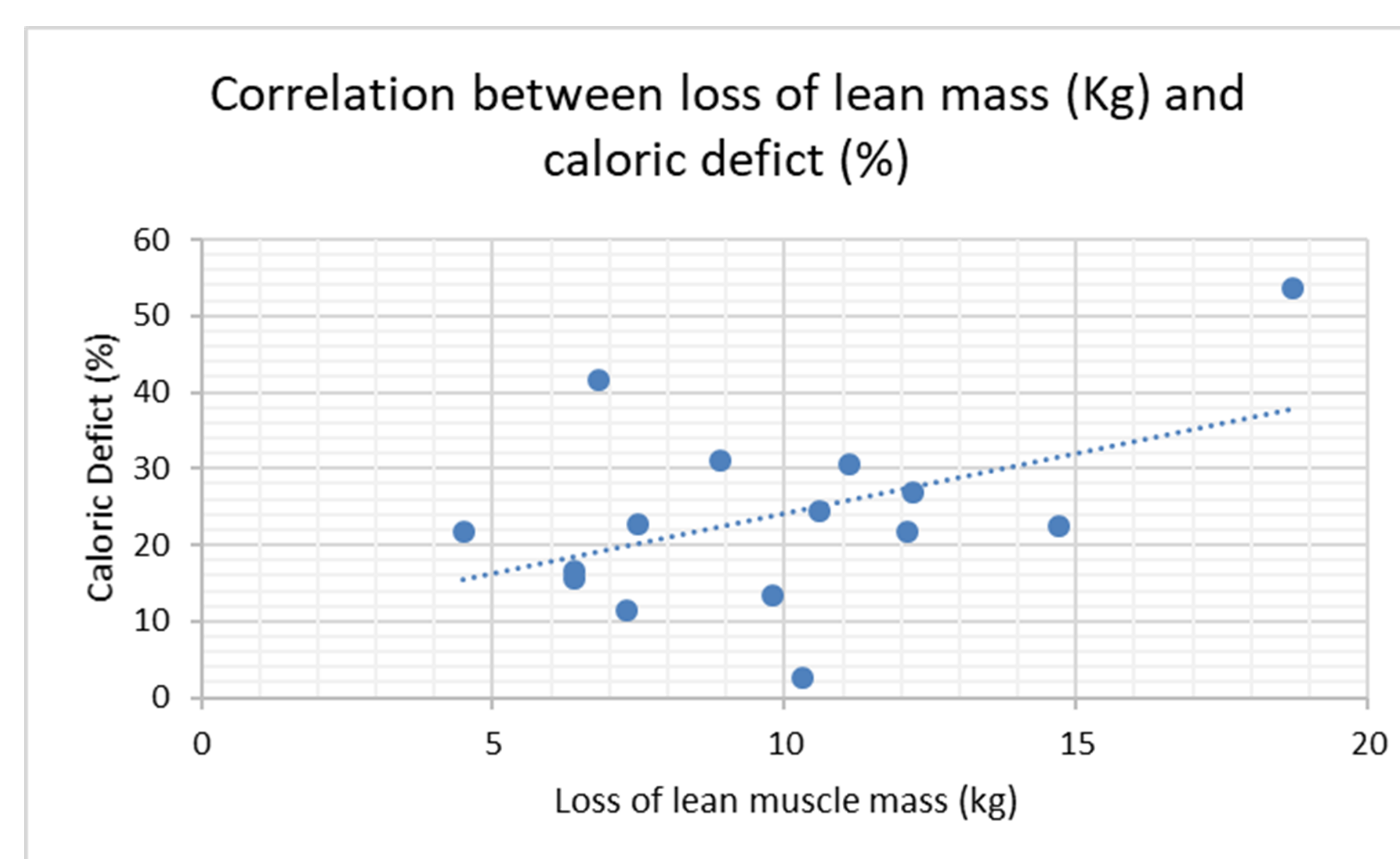


Figure 2: Relative calorie deficit correlated weakly (X2, p=0.26) with lean mass loss.

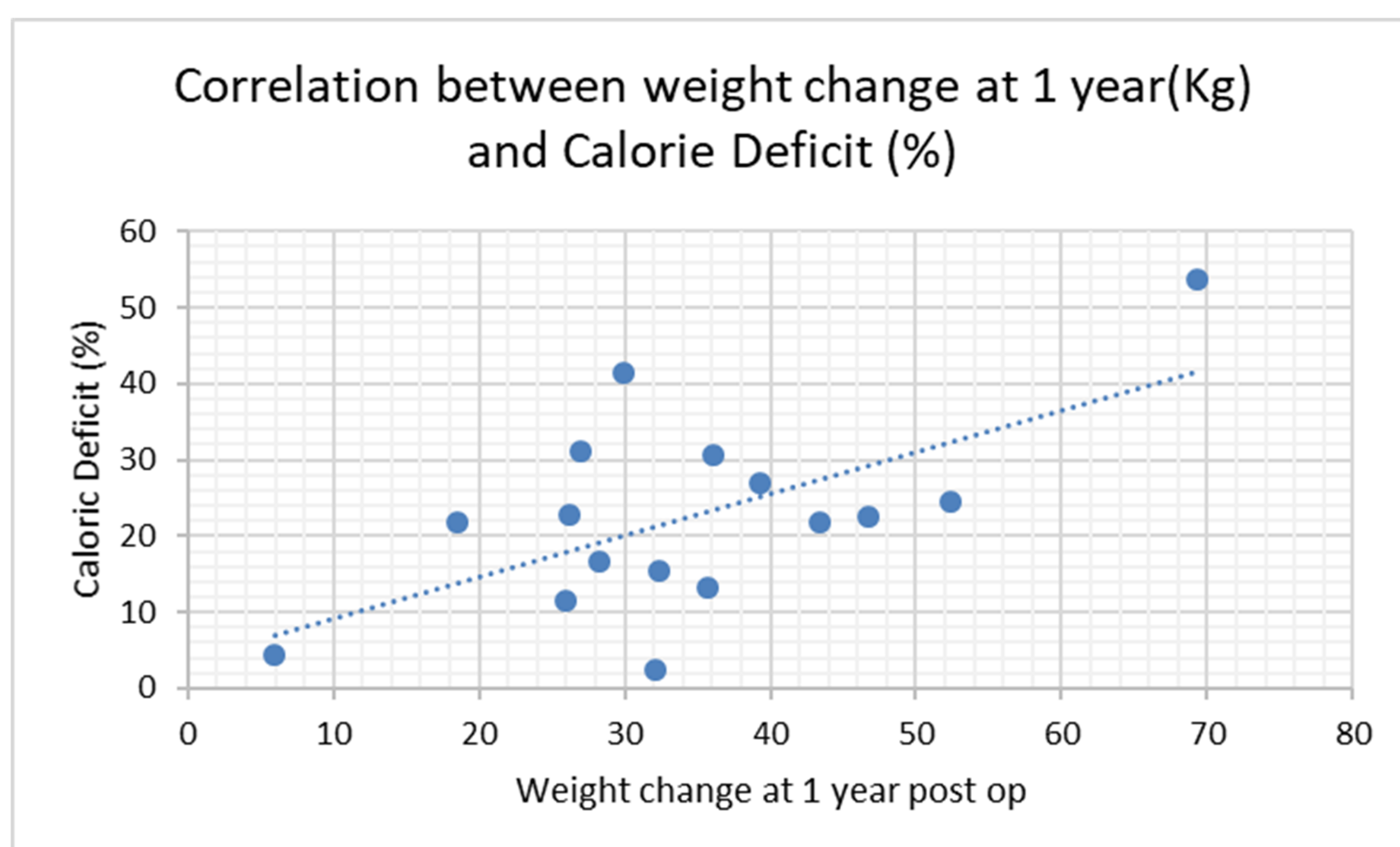


Figure 1: Relative calorie deficit correlated moderately (X2, p= 0.5) with weight change

Discussion:

These findings are comparable to previous studies where the average lean muscle mass loss was 10kg post RYGB and 9.5kg post sleeve 1 year after surgery ³.

Such muscle loss impacts the improvement in functional abilities achieved post BS ⁴.

Strategies recommended for post – bariatric surgical patients to promote muscle mass retention include adequate protein intake and activity:

- 60g protein intake daily
 - 150 minutes to 300 minutes of activity weekly
 - Incorporating strength training 2 to 3 times per week is recommended¹
- Patients with a higher body weight pre BS have higher energy requirements and experience a greater relative calorie deficit when following the standard post BS dietary protocol.

Conclusion

Relative calorie deficit is a concept that could be explored as a strategy to identify those most at risk of losing lean mass post BS and to put strategies in place to protect muscle mass and function post operatively.

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