

# Physiological Predictors of Weight Regain at 1-Year Follow-Up in Weight-Reduced Adults with Obesity.

## Abstract

### OBJECTIVE:

This study aimed to assess whether changes in resting metabolic rate (RMR), exercise-induced energy expenditure (EIEE), and appetite following weight loss (WL) are associated with weight regain at 1 year.

### METHODS:

Thirty-six adults with obesity underwent 8 weeks of a very-low-energy diet, followed by 4 weeks of refeeding and a 1-year maintenance program. RMR, EIEE, appetite ratings, and active ghrelin, peptide YY, glucagon-like peptide-1, cholecystokinin, and insulin concentrations were measured at baseline, week 13, and 1 year.

### RESULTS:

A 17% WL ( $-20 \pm 5$  kg [mean  $\pm$  SD]; range:  $-11.7$  to  $-32.2$  kg;  $P < 0.001$ ) was achieved at week 13. After 1 year, weight regain was  $2.5 \pm 9.0$  kg (not significant), ranging from  $-18.2$  to  $22.5$  kg. Both fat mass and fat-free mass were reduced at week 13 ( $-17.9 \pm 4.8$  and  $-2.9 \pm 2.7$  kg, respectively;  $P < 0.001$ ), while only loss of fat mass was sustained at 1 year. WL was associated with reduced RMR, EIEE, and fasting/postprandial insulin (all  $P < 0.001$ ), as well as increased fasting hunger ( $P < 0.01$ ) and fasting/postprandial active ghrelin ( $P < 0.001$ ). There were no significant correlations between changes in RMR, EIEE, or appetite with WL and weight regain at 1 year.

### CONCLUSIONS:

No clear evidence emerged that changes in RMR, EIEE, or appetite following WL can predict weight regain at 1 year, but larger studies are needed to confirm these results.