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Impact of energy restriction on eating behaviour traits in individuals with low satiety efficiency



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Introduction: Studies showed that some individuals express weaker satiety efficiency, and thus, may be more susceptible to weight gain or weight loss resistance. This study aimed to evaluate the impact of a weight-loss program on eating behaviour traits in individuals with different satiety efficiency.

Methods: A pooled cohort of obese individuals ($n=100$; aged 38.7 ± 8.7 years) who participated in a 12–16 wk weight-loss program targeting an energy deficit of 500–700 kcal/d were included in this study. The satiety efficiency was determined by median split of mean satiety quotients based on appetite sensations measured in response to a test meal at baseline. Anthropometric variables, eating behaviour traits (TFEQ) and ad libitum energy intake (EI) (buffet) were assessed before and after the intervention.

Results: Similar weight loss was observed between low and normal/high satiety efficiency groups (-3.5 ± 3.2 vs -3.8 ± 2.9 , $p=0.64$). ANOVAs (adjusted for initial weight and behaviour) showed time by group interactions for cognitive restraint, flexible control (FC), strategic dieting behaviour (STB), avoidance of fattening foods (AFF) and situational disinhibition (SD) ($0.02 \geq p \leq 0.01$). *T*-tests showed that individuals with low satiety efficiency experienced a higher increase in cognitive restraint (5.5 ± 4.1 vs. 3.5 ± 3.5 , $p=0.016$), FC (2.5 ± 2.1 vs. 1.6 ± 1.3 , $p=0.019$), SDB (1.6 ± 1.5 vs. 0.9 ± 1.5 , $p=0.02$), AFF (1.0 ± 1.2 vs. 0.4 ± 1.0 , $p=0.015$) and a lower decrease in SD (-0.7 ± 1.1 vs. -1.2 ± 1.3 , $p=0.02$) after the intervention compared to the normal/high satiety efficiency group. Moreover, individuals with lower satiety efficiency had a higher EI at the buffet meal after the intervention compared to the normal/high satiety efficiency group (920 ± 323 vs. 788 ± 291 kcal, $p=0.036$).

Conclusion: This study suggests that energy restriction could have an undesirable impact on eating behaviour traits and energy intake in individuals experiencing lower satiety efficiency. Other studies should evaluate if these changes

could increase their susceptibility to weight regain.

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The effects of increasing dietary protein during energy balance and energy restriction on homeostatic and hedonic processes



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Introduction: Compensatory increases in hunger and changes to food preferences in response to energy restriction may reduce weight loss efficacy. Increasing dietary protein could moderate these adaptive responses. The aim of this study was to determine if adding dietary protein during energy balance and energy restriction reduces compensatory increases in hunger and changes in preferences for energy-dense foods.

Methods: 22 participants (11 M, 11 F) undertook the study. The study involved 4 dietary treatments, each 2 weeks in duration: habitual diet 1 (HD1), habitual diet 2 (HD2), high protein energy balance (HPEBal: energy balance while increasing protein by 0.5 g/kg/day with a protein supplement) and high protein energy restriction (HPER: increasing protein by 0.5 g/kg/day with a protein supplement while reducing energy intake by 33%). Appetite and L & W were measured during 11hr probe days at the end of each treatment.

Results: Total day hunger significantly increased and fullness decreased during HPER compared to HD1, HD2 and HPEBal ($p < 0.01$). Satiety quotient did not differ between the conditions. There was no relationship between protein intake (grams, g/kg/day, or % energy intake) and changes in hunger in response to HPEBal or HPER. There were significant increases in explicit wanting for high fat savoury and high fat sweet foods during HPER compared to HD1 ($p < 0.05$).

Conclusions: Increasing dietary protein by 0.5 g/kg/day did not significantly mediate the compensatory changes in appetite and food