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(No relationships reported)

ABSTRACT

Ghrelin is a gastric hormone that plays a role in stimulating hunger and fat accumulation because the hyperinsulinemia associated with obesity fails to suppress ghrelin. High intensity exercise has been shown to acutely decrease plasma acylated ghrelin concentrations in normal weight individuals. However, the evidence for how exercise affects ghrelin in obese individuals is lacking. PURPOSE: To compare the effects of high intensity interval exercise on acute plasma acylated ghrelin levels in an obese and non-obese male population.

METHODS: Eighteen subjects with a mean age of 29.8 yr. (± 7.6), including 9 non-obese men (BF% mean = 13.7 ± 3.6) and nine obese men (BF% mean = 31.7 ± 4.7) participated in this study. Using a crossover design, participants were randomly assigned to an exercise or control condition, with each subject acting as their own control. The exercise trial consisted of participants cycling in high intensity intervals for 20 minutes (not including warmup and cool down) at a rate of 60% to 85% of their heart rate reserve on a cycle ergometer followed by sixty minutes of rest. The control trial consisted of ninety minutes of rest. Blood samples (3-4ml) were collected at baseline, 0.5, 1, and 1.5 hours post-intervention. Acylated ghrelin concentrations were determined from plasma. Hunger was assessed while blood samples were being drawn using a 10-point Likert-type scale. Group means for plasma ghrelin concentrations between groups were analyzed using an independent t-test. The effect of exercise on ghrelin was analyzed using paired t-test and the relationship between perceived hunger and ghrelin were determined using Pearson correlations.

RESULTS: Baseline plasma ghrelin levels were significantly higher in the non-obese group (t = 3.43, p = .036) when compared to the obese group. Exercise was effective in reducing plasma acylated ghrelin levels in the non-obese group (t = 2.34, p = .047), however no significant changes were found in the obese group.

CONCLUSIONS: The low resting levels of plasma ghrelin concentrations exhibited by the obese population when compared to non-obese subjects may lead to long fasting periods. Furthermore, the lack of reduction in ghrelin following exercise may cause an overconsumption of energy. Both of these occurrences may result in increased fat storage in obese populations. 