

Overfeeding Obesity-Prone and Obesity-Resistant Individuals

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A few years ago, results of a small experiment¹ comparing self-described (easy) weight gainers with non-gainers came across my desk. I meant to write about it then, but somehow never did. Recently, while going through some notes for a lecture, I stumbled on it again.

The Study

Fourteen obesity-prone (OP) and 20 obesity-resistant (OR) subjects were studied for three weeks. In the first week, dietary intakes were established by questionnaires and activity levels were measured with pedometers.

On week two, the subjects either overfed by 40 percent for three days or consumed exactly 100 percent of their established normal levels for three days. For the next three days thereafter, the subjects were allowed to "free feed," meaning they were not given controlled portions. During the third week, subjects received the opposite treatment from what they had received in week 2. Pedometers were used to [track activity](#) throughout both intervention weeks of the study.

Results

The OP subjects showed no change in activity levels between the week characterized by three overfeeding days plus three free-feeding days and the week of three eucaloric days plus three free-feeding days. The OR subjects took an extra 1,000 steps per day during the week of three overfeeding days plus three free-feeding days compared to their week of three eucaloric days plus three free-feeding days. Then researchers focused on the three [overfeeding](#) days only and discovered that the 14 OP subjects averaged approximately 775 fewer steps per day when they were overfed.

Comment

In this study, the OR group took 1,000 extra steps a day during the six-day period that began with the three overfeeding days, while the OP subjects took ~775 fewer steps during the three days they were overfed. This calculates to 6,000 more steps for the OR group versus 2,300 fewer steps for the OP group.

This *does not* mean all OP and OR people will react the same way when they overeat, because a single 34-person study is not large enough to establish anything by itself. Moreover, when I was researching to support this comment, I stumbled upon a new paper² that repeated the protocol with a few more subjects and improved activity measurements. This time, they did not see an activity increase when OR people were overfed, but did record an activity reduction when OP individuals overate.

References

1. Sharp TA, Horton TJ, Kealey E, et al. Effects of short-term overfeeding on physical activity in obesity-prone and obesity-resistant adults. *Med Sci Sports Exer*, 2007;39(5):S385, A-2157.
2. Schmidt SL, Harmon KA, Sharp TA, Kealey EH, Bessesen DH. The effects of overfeeding on spontaneous physical activity in obesity prone and obesity resistant humans. *Obesity*. 2012 Apr 23. [Epub ahead of print].

OCTOBER 2012