

## Obesity and Relaxation

If you're having a hard time persuading people of the value of relaxation, let them know that recent research shows stress and depression may alter metabolic responses to high-fat meals in ways that can promote weight gain.

Researchers from Ohio State University in Columbus, Ohio, wanted to test whether stressors and a history of depression could be associated with lower post-meal calorie burning, as well as elevated levels of triglycerides, cortisol and insulin. They designed a randomized crossover study with 58 healthy women (mean age, 53). Investigators asked subjects about their stress levels the day before. The women then ate a 930-calorie meal with 60 grams of fat. Measures of post-meal resting energy expenditure, fat oxidation, insulin, cortisol and triglyceride levels were collected.

Data analysis showed that women who had experienced one or more stressful events in the 24 hours before the high-fat meal burned, on average, 104 *fewer* calories in the 6–7 hours after eating than women who were stress-free. In other words, stressed women had lower resting metabolic rates than those who were not stressed, and therefore burned fewer calories for the same level of activity. Study authors noted that this difference could add up to almost 11 pounds of extra weight per year.

“This means that, over time, stressors could lead to weight gain,” said lead study author Janice K. Kiecolt-Glaser, PhD, professor of psychiatry and psychology, in an Ohio State University news release. “We know from other data that we're more likely to eat the wrong foods when we're stressed, and our data say that when we eat the wrong foods [while stressed], weight gain becomes more likely because we are burning fewer calories.”

Another interesting finding from the study was that people with a history of depression reacted differently. “With depression, we found there was an additional layer. In women who had stress the day before and a history of depression, triglycerides after the meal peaked the highest,” said Kiecolt-Glaser. So women with depression and high stress not only burned fewer calories than other diners but also had higher fat levels in the bloodstream.

The study is available in *Biological Psychiatry* (2014; doi: 10.1016/j.biopsych.2014.05.018).