

Exercise may affect food motivation: study

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BYU professors Michael Larson (left) James LeCheminant (right) measured neural responses to food after exercise. Credit: Mark Philbrick, BYU Photo

It is commonly assumed that you can "work up an appetite" with a vigorous workout. Turns out that theory may not be completely accurate – at least immediately following exercise.

New research out of BYU shows that 45 minutes of moderate-to-[vigorous exercise](#) in the morning actually reduces a person's motivation for food.

Professors James LeCheminant and Michael Larson measured the [neural activity](#) of 35 women while they viewed food images, both following a morning of [exercise](#) and a morning without exercise. They found their attentional response to the food pictures decreased after the brisk workout.

"This study provides evidence that exercise not only affects [energy output](#), but it also may affect how people respond to food cues," LeCheminant said.

The study, published online, ahead of print in the October issue of *Medicine & Science in Sports & Exercise*, measured the food motivation of 18 normal-weight women and 17 clinically obese women over two separate days.



A BYU student wears an EEG recording device to demonstrate how researchers measured neural responses to food after exercise. Credit: Mark A. Philbrick, BYU Photo

On the first day, each woman briskly walked on a treadmill for 45 minutes and then, within the hour, had their brain waves measured. Electrodes were attached to each participant's scalp and an EEG machine then measured their neural activity while they looked at 240 images – 120 of plated food meals and 120 of flowers. (Flowers served as a control.)

The same experiment was conducted one week later on the same day of the week and at the same time of the morning, but omitted the exercise.

Individuals also recorded their food consumption and physical activity on the experiment days.

The 45-minute exercise bout not only produced lower brain responses to the food images, but also resulted in an increase in total physical activity that day, regardless of body mass index.

"We wanted to see if obesity influenced food motivation, but it didn't," LeCheminant said. "However, it was clear that the exercise bout was playing a role in their neural responses to the pictures of food."

Interestingly, the women in the experiment did not eat more food on the exercise day to "make up" for the extra calories they burned in exercise. In fact, they ate approximately the same amount of food on the non-exercise day.

Larson said this is one of the first studies to look specifically at neurologically-determined food motivation in response to exercise and that researchers still need to determine how long the diminished food motivation lasts after exercise and to what extent it persists with consistent, long-term exercise.

"The subject of food [motivation](#) and weight loss is so complex," Larson said. "There are many things that influence eating and exercise is just one element."

Bliss Hanlon, a former graduate student at BYU, was the lead author on the study and Bruce Bailey, an associate professor of exercise science, was a co-author on the study.

Provided by Brigham Young University

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