

## Protein-rich breakfasts prevent unhealthy snacking in the evening

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The consumption of the high-protein breakfast led to increased fullness or "satiety" along with reductions in brain activity that is responsible for controlling food cravings. Credit: University of Missouri

Breakfast might be the most important meal of the day, but up to 60 percent of American young people consistently skip it. Now, Heather Leidy, an assistant professor in the Department of Nutrition and Exercise Physiology, says eating a breakfast rich in protein significantly

improves appetite control and reduces unhealthy snacking on high-fat or high-sugar foods in the evening, which could help improve the diets of more than 25 million overweight or obese young adults in the U.S.

Leidy is the first to examine the impact of breakfast consumption on daily appetite and evening snacking in young people who habitually skip breakfast. In her study, 20 overweight or obese [adolescent females](#) ages 18-20 either skipped breakfast, consumed a high-protein breakfast consisting of eggs and lean beef, or ate a normal-protein breakfast of ready-to-eat cereal. Every breakfast consisted of 350 calories and was matched for dietary fat, fiber, sugar and energy density. The high-protein breakfast contained 35 grams of protein. Participants completed questionnaires and provided blood samples throughout the day. Prior to dinner, a brain scan using functional [magnetic resonance imaging](#) (fMRI) was performed to track [brain signals](#) that control food motivation and reward-driven eating behavior.

The consumption of the high-protein breakfast led to increased fullness or "satiety" along with reductions in brain activity that is responsible for controlling food cravings. The high-protein breakfast also reduced evening snacking on high-fat and high-sugar foods compared to when breakfast was skipped or when a normal protein, ready-to-eat cereal breakfast was consumed, Leidy said.

"Eating a protein-rich breakfast impacts the drive to eat later in the day, when people are more likely to consume high-fat or high-sugar snacks," Leidy said. "These data suggest that eating a protein-rich breakfast is one potential strategy to prevent overeating and improve [diet quality](#) by replacing unhealthy snacks with high quality breakfast foods."

People who normally skip breakfast might be skeptical about consuming food in the morning, but Leidy says it only takes about three days for the body to adjust to eating early in the day. Study participants ate egg and

beef-based foods such as burritos or egg-based waffles with applesauce and a beef sausage patty as part of a high-protein breakfast; Leidy also suggests eating plain Greek yogurt, cottage cheese or ground pork loin as alternatives to reach the 35 grams of protein.

Future research will examine whether regularly consuming high-protein breakfasts improves body weight management in young people.

**More information:** The article, "Beneficial effects of a higher-protein breakfast on the appetitive, hormonal, and neural signals controlling energy intake regulation in overweight/obese, 'breakfast skipping,' late-adolescent girls," was published in *The American Journal of Clinical Nutrition*.

Provided by University of Missouri-Columbia

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