

Voluntary exercise by animals prevents weight gain, despite high-fat diet

May 18 2011

(Medical Xpress) -- University of Cincinnati (UC) researchers have found that animals on a high-fat diet can avoid weight gain if they exercise.

The study, led by Silvana Obici, MD, appears as a rapid electronic publication May 17, 2011, in the journal *Endocrinology*.

Obici and her team found that voluntary [exercise](#) activates leptin-receptor-positive neurons in the brain's hypothalamus. Leptin is a hormone produced and released by fat and interacts with receptors in the hypothalamus known to inhibit appetite. High-fat diet-induced obesity results in the inability of leptin to suppress appetite, which is also known as leptin resistance.

The team tested whether preventing diet-induced [weight gain](#) by either exercise or calorie restriction would improve leptin resistance in mice. They found that leptin was ineffective at reducing body weight in sedentary mice on a restricted [diet](#). However, they found that leptin significantly lowered body weight in active mice on a high-fat diet.

"What we've learned is that exercise helps to maintain a lower body weight—despite a high-fat diet—perhaps through improved leptin action," says Obici, an associate professor in the division of endocrinology, diabetes and metabolism and researcher with UC's Metabolic Diseases Institute.

The results, Obici says, support the idea that exercise helps to keep weight off not only by burning calories through muscle activity, but also by influencing the brain's response to the neural circuitry involved in energy balance.

Provided by University of Cincinnati

Citation: Voluntary exercise by animals prevents weight gain, despite high-fat diet (2011, May 18) retrieved 20 April 2024 from <https://medicalxpress.com/news/2011-05-voluntary-animals-weight-gain-high-fat.html>

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