

Voluntary exercise and energy balance

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Physical exercise alone generally fails to produce meaningful weight loss in obese individuals, and reduced non-exercise activity has been suggested to explain this observation.

Daniel Lark, PhD, and colleagues explored how interactions between exercise (voluntary wheel running) and non-exercise activity ("off-wheel" activity) affect [energy balance](#) in mice.

They continuously monitored mouse behavior, energy intake and [energy expenditure](#) with locked running wheels (no exercise) for four days, followed by unlocked running wheels for nine days.

The researchers reported in the journal *Diabetes* that when running wheels were unlocked, mice engaged in voluntary exercise, which increased their energy expenditure and resulted in a negative energy balance. However, wheel running caused mice to decrease their off-wheel activity, such as roaming behavior. This reduction in non-exercise activity blunted the negative energy balance.

The study is the first to report an independent contribution of non-exercise physical activity to energy expenditure and energy balance in mice. By doing so, the study provides a model to further study mechanisms that regulate body weight.

More information: Daniel S. Lark et al. Reduced Nonexercise Activity Attenuates Negative Energy Balance in Mice Engaged in Voluntary Exercise, *Diabetes* (2018). [DOI: 10.2337/db17-1293](https://doi.org/10.2337/db17-1293)

Provided by Vanderbilt University

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