

Study: Single episode of intense exercise reduces physical activity and body temperature, contributing to weight gain

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Exercise is often recommended as an effective strategy for weight loss.

However, a recent animal study at University of Tsukuba revealed that intense exercise sessions can decrease subsequent physical activity levels and body temperature, ultimately contributing to weight gain. This observation may be linked to disruptions in the circadian rhythm of the stress hormone corticosterone and may disturb the synchronous effects of physical activity and body temperature.

Exercise provides numerous health benefits, but its effects on weight loss are sometimes less than expected. This phenomenon may be secondary to reduced physical activity following exercise, but the mechanism is not yet fully understood.

The stress hormone corticosterone follows a circadian rhythm, being low at bedtime and at its peak upon waking, and it regulates physical and mental activity levels. Therefore, researchers hypothesized that even a single session of high-intensity exercise can disrupt this rhythm, leading to decreased physical activity and heat production and diminishing the weight loss effect.

To test this hypothesis, mice were divided into three groups as follows: high-intensity exercise, [moderate-intensity exercise](#), and rest. The physical activity and core body temperature, which serve as an index of heat production before and after exercise, of the mice were monitored. The study is published in [Medicine & Science in Sports & Exercise](#).

In the high-intensity exercise group, both physical activity and [core body temperature](#) after exercise significantly decreased, despite the absence of changes in [food intake](#), leading to body weight gain.

Furthermore, the researchers observed the disruption in the synchrony between physical activity and body temperature. Together, they confirmed a positive correlation that relatively low blood corticosterone levels during wake times were associated with less physical activity.

The findings indicate that a single session of [high-intensity exercise](#) can disrupt the circadian rhythm of corticosterone, leading to reduced physical activity and body temperature and body [weight gain](#).

This study highlights the importance of considering not only the calories burned during exercise but also the subsequent activity levels and circadian rhythm when designing exercise regimens for effective [weight loss](#).

More information: Daisuke Funabashi et al, Acute Vigorous Exercise Decreases Subsequent Non-Exercise Physical Activity and Body Temperature Linked to Weight Gain, *Medicine & Science in Sports & Exercise* (2024). [DOI: 10.1249/MSS.0000000000003487](https://doi.org/10.1249/MSS.0000000000003487)

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