

# Exercise induces hypothalamic cell proliferation in mice

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(HealthDay)—Exercise training induces hypothalamic cell proliferation in adult mice and improves insulin sensitivity, but blocking cell proliferation does not prevent insulin action, according to an experimental study published online June 4 in *Diabetes*.

Melissa L. Borg, from Monash University in Australia, and colleagues examined whether exercise training causes hypothalamic neurogenesis in a study conducted in [adult mice](#). They also assessed whether the hypothalamic neurogenesis contributes to exercise-induced improvements in [insulin action](#).

The researchers found that acute exercise induced a pro-neurogenic transcriptional program, which involved growth factors, [cell proliferation](#), and neurogenic regulators in the hypothalamus. Hypothalamic cell proliferation was increased 3.5-fold with daily

exercise training for seven days, compared with sedentary mice, and this cell proliferation was maintained in diet-induced obese mice. Sedentary and exercise-trained mice had negligible neurogenesis in the hypothalamic arcuate nucleus. Neither food intake nor body mass was affected by blocking cell proliferation via administration of the mitotic blocker cytosine-1- $\beta$ -D-arabinofuranoside (AraC). Whole-body insulin sensitivity was improved with four weeks of exercise training versus sedentary mice, but AraC administration did not affect insulin action.

"These data suggest that regular [exercise training](#) induces significant non-neuronal cell proliferation in the hypothalamus of obese mice, but this proliferation is not required for enhanced insulin action," the authors write.

**More information:** [Abstract](#)  
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