

# Direct link ID'd for sleep deprivation, insulin sensitivity

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(HealthDay)—Even short-term sleep restriction results in an insulin-resistant state in adipocytes, according to research published in the Oct. 16 issue of the *Annals of Internal Medicine*.

Josiane L. Broussard, Ph.D., of the University of Chicago, and colleagues conducted a randomized, two-period crossover study involving seven healthy adults, aged 18 to 30 years, to evaluate whether sleep restriction (4.5 hours sleep per night) causes reduced insulin sensitivity in subcutaneous fat. The intervention comprised four days of 4.5 hours and four days of 8.5 hours in bed, with calorie intake and physical activity controlled. [Adipocytes](#) were collected from subcutaneous fat biopsy samples and were exposed to incremental insulin concentrations after both sleep conditions. The ability of insulin to increase levels of phosphorylated Akt (pAkt) was assessed, and cellular insulin sensitivity was measured based on the insulin concentration for the half-maximal pAkt-Akt ratio.

The researchers found that, during sleep restriction, the insulin concentration for the half-maximal Akt-pAkt was nearly three times higher, and the total area under the receiver operating

curve of the pAkt-Akt response was reduced by 30 percent. The impaired cellular insulin sensitivity was paralleled by a reduction in total body insulin sensitivity.

"In conclusion, our finding of a robust alteration in intracellular insulin signaling in a peripheral tissue that is pivotal in regulating energy balance and metabolism identifies a [molecular mechanism](#) underlying the adverse effect of [sleep disturbances](#) on [insulin sensitivity](#)," the authors write.

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