

Even modest exercise can reduce negative effects of belly fat

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A new University of Illinois study suggests that moderate amounts of exercise alone can reduce the inflammation in visceral fat—belly fat, if you will—that has been linked with metabolic syndrome, a group of risk factors that predict heart disease and Type 2 diabetes.

"In the study, the benefits of exercise were apparent, even without a change in diet. We saw improvements in insulin sensitivity, less [fat](#) in the liver, and less inflammation in belly fat," said Jeffrey Woods, a U of I professor of kinesiology and community health and faculty member in the U of I Division of Nutritional Sciences and the Integrative Immunology and Behavior Program.

Belly fat is particularly dangerous because it produces inflammatory molecules that enter the bloodstream and increase the risk of [heart disease](#) and diabetes, he said.

"Scientists now know that obesity is associated with a low-grade systemic inflammation. Obese people have higher levels of circulating inflammatory markers, such as C-reactive protein (CRP), which are produced and secreted by fat tissue. This inflammation then triggers the systemic diseases linked with metabolic syndrome, such as [Type 2 diabetes](#) and heart disease," he said.

In the study, Woods and his colleagues examined the effects of diet and exercise on the inflammation of visceral fat tissue in mice. A high-fat diet was first used to induce obesity in the animals. After 6 weeks, mice

were assigned to either a sedentary group, an exercise group, a low-fat diet group, or a group that combined a low-fat diet with exercise for 6 or 12 weeks so the scientists could compare the effects in both the short and long term.

"The surprise was that the combination of diet and exercise didn't yield dramatically different and better results than diet or exercise alone," said Vicki Vieira, the lead author of the study.

"Unexpectedly, the only significant increase from 6 to 12 weeks in belly fat—the type of fat that triggers these inflammatory diseases--was in the mice who were sedentary, which suggests that exercise is an effective behavioral approach to reduce the accumulation of visceral fat even when fat in the diet is high," she said.

Woods says that is a promising finding. "The benefits of exercise were apparent even if the animals were still eating a high-fat [diet](#). That tells me that exercise could decrease or prevent these life-threatening diseases by reducing inflammation even when obesity is still present."

"The good news is that this was a very modest exercise program. The mice ran on a treadmill only about one-fourth of a mile five days a week. For humans, that would probably translate into walking 30 to 45 minutes a day five days a week," he noted.

"Even if you struggle with dieting, we believe you can still reduce the likelihood of developing obesity-related inflammatory diseases, such as Type 2 diabetes and heart disease, by adding a modest amount of exercise to your life," said Woods.

These results were reinforced by the scientists' study of sedentary older adults published in a recent issue of Brain, Behavior and Immunity (BBi).

In that 10-month study, one group of sedentary older adults participated in three 45- to 60-minute cardiovascular [exercise](#) sessions per week, while another group focused on exercises to improve non-cardiovascular flexibility and balance for 75 minutes twice a week.

"At the end of the study, the 'cardio' group had lower levels of C-reactive protein (CRP), less [belly fat](#), and improved general fitness than the 'flex' group," said Ph.D. candidate Vieira.

"The lower CRP levels were partially mediated by the reduction in trunk fat," she explained.

More information: The mouse study was published in the *American Journal of Physiology, Endocrinology and Metabolism*.

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