

Study links inactivity with risk factors for Type 2 diabetes

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79 million American adults have prediabetes and will likely develop diabetes later in life, according to the Centers for Disease Control and Prevention. As the number of people diagnosed with diabetes continues to grow, researchers are focusing on discovering why the prevalence of the disease is increasing. John Thyfault, an assistant professor in MU's departments of Nutrition and Exercise Physiology and Internal Medicine, has found that ceasing regular physical activity impairs glycemic control (control of blood sugar levels), suggesting that inactivity may play a key role in the development of type 2 diabetes.

"We now have evidence that physical activity is an important part of the daily maintenance of [glucose levels](#)," Thyfault said. "Even in the short term, reducing daily activity and ceasing regular exercise causes acute changes in the body associated with diabetes that can occur before weight gain and the development of obesity."

Thyfault studied the relationship between low levels of physical activity and elevated levels of postprandial glucose (PPG), or the spikes in blood sugar that occur after a meal. PPG is a risk factor for the development of type 2 diabetes and has been associated with increased incidences of cardiovascular disease and death. Thyfault found that when healthy individuals reduced their physical activity by about half for three days, their PPG responses to meals doubled.

"A single bout of moderate exercise can improve the way the body maintains [glucose homeostasis](#) (blood [glucose regulation](#)) and reduce

PPG, but becoming inactive for a short period of time quickly disrupts glucose homeostasis," Thyfault said. "This study shows that physical activity directly impacts health issues that are preventable."

In the study, Thyfault monitored the activity levels and diets of healthy and moderately active young adults. Participants then reduced their physical activity by 50 percent for three days while replicating the diet they consumed when they were active. Continuous glucose monitors worn by the subjects during the period of inactivity revealed significantly increased levels of PPG. Spikes in blood glucose after meals can indicate increased risks for type 2 diabetes and cardiovascular disease.

"It is recommended that people take about 10,000 steps each day," Thyfault said. "Recent evidence shows that most Americans are only taking about half of that, or 5,000 steps a day. This chronic inactivity leads to impaired glucose control and increases the risk of developing diabetes."

More information: The study, "Lowering Physical Activity Impairs Glycemic Control in Healthy Volunteers," will be published in *Medicine & Science in Sports & Exercise*.

Provided by University of Missouri-Columbia

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