

Exercise pivotal in preventing and fighting type II diabetes

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One in three American children born in 2000 will develop type II diabetes, according to the U.S. Centers for Disease Control and Prevention (CDC). A new study at the University of Missouri-Columbia says that acute exercise -- as little as 15 minutes a day -- can have a profound influence on preventing and fighting the disease.

This research adds to the body of evidence that indicates exercise can fight type II diabetes, one of the most widespread self-inflicted healthcare struggles in the United States, and could save Americans millions of dollars in pills, injections and medical treatment. Acute exercise is a bout of activity in which people actively participate, as opposed to activity resulting from everyday activities.

"Many people can fight type II diabetes through diet and exercise alone," said John Thyfault, professor in the MU College of Human Environmental Sciences' Department of Nutritional Sciences. "It is important to ward off diabetes early. Exercise has proven to be effective at all levels. At any stage of type II diabetes, from an obese child to a person dependent for 20 years on insulin injections, exercise could have a dramatic effect on improving insulin sensitivity."

Type II diabetes results from a lack of insulin production and insulin resistance in skeletal muscle cells. Insulin is necessary to help drive glucose out of the blood and into the tissues of the body. As a result of insulin resistance, cells do not respond appropriately to insulin, causing more insulin to be released to have a measurable effect and ultimately causing insulin and glucose to build up dangerously in the blood.

Thyfault's study found that relatively short periods of acute muscle exercise in diabetic Zucker rats significantly increased insulin sensitivity in the previously insulin resistance skeletal muscles. Since 80 to 90 percent of all glucose goes into

muscle after a meal, it is reasonable that more active muscles on a day-to-day basis will result in increased insulin sensitivity, Thyfault said.

"In relation to a person with type II diabetes, this would mean that they could lessen their dependence on insulin therapy to control their blood glucose levels or potentially control glucose levels without any drug by just increasing their daily activity levels in addition to the right diet," Thyfault said.

The study, "Contraction of insulin resistant muscle normalizes insulin action in association with increased mitochondrial activity and fatty acid catabolism," will be published in the American Journal of Physiology-Cell.

Source: University of Missouri-Columbia

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