

Exercise alone shown to improve insulin sensitivity in obese sedentary adolescents

September 1 2009

A moderate aerobic exercise program, without weight loss, can improve insulin sensitivity in both lean and obese sedentary adolescents, according to a new study accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology & Metabolism* (JCEM). Insulin is a hormone produced in the pancreas that permits glucose to enter cells to be used for energy or stored for future use by the body.

Because obese adolescents are resistant to insulin, in order to maintain normal blood sugar levels, they have to increase their production of insulin. Increased insulin production however, places higher demands on the pancreas. These higher demands can exhaust pancreatic beta cells to the point that they no longer produce sufficient amounts of insulin to keep blood sugar levels normal, which might subsequently lead to type 2 diabetes.

"Because weight loss can be difficult to achieve and maintain in obese sedentary children, the purpose of this study was to determine whether a controlled [exercise](#) program, without any diet intervention and with no intention of [weight loss](#), would improve fat distribution and sensitivity to insulin," said Agneta Suneag, MD, PhD, of Baylor College of Medicine and senior author of the study. "We found that a 12-week moderate aerobic exercise program consisting of four 30-minute workouts a week increased fitness and improved insulin sensitivity in both lean and obese adolescents."

In this study, 29 adolescents (14 lean and 15 obese) completed the

12-week moderate aerobic exercise program. During the exercise sessions, subjects worked out on a treadmill, elliptical or bicycle. The goal of each exercise session was to get the participants' heart rate to increase to at least 70 percent of their maximum capacity. Glucose and insulin concentrations were measured both before and after the exercise program. Cardiovascular fitness was determined using an oxygen consumption test which consists of measuring oxygen uptake of the participant during a treadmill exercise where speed and incline is increased every three minutes until the subject reaches his maximum exercise capacity.

"Many studies include both diet and exercise interventions, which makes it difficult to determine which intervention is most effective and best accepted by adolescents," said Sunehag. "Our findings show that exercise alone can increase fitness and improve insulin sensitivity, making an aerobic program like the one used in this study a potential useful tool in preventing obesity-related illnesses."

More information: The article, "[Aerobic exercise](#) increases peripheral and hepatic [insulin sensitivity](#) in sedentary [adolescents](#)," will appear in the November 2009 issue of *JCEM*.

Source: The Endocrine Society ([news](#) : [web](#))

Citation: Exercise alone shown to improve insulin sensitivity in obese sedentary adolescents (2009, September 1) retrieved 4 May 2024 from <https://medicalxpress.com/news/2009-09-shown-insulin-sensitivity-obese-sedentary.html>

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