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Canadian team uncovers help for people with diabetes in controlling blood sugar

A University of Calgary diabetes specialist has found that aerobic or weight training improves blood sugar levels for people with diabetes, and that the improvements are twice as good with combined aerobic and weight training. University of Calgary endocrinologist Dr. Ron Sigal and colleagues from the University of Ottawa have published findings of the largest clinical study of its kind on the effectiveness of aerobic exercise and weight training in the September 18 issue of the *Annals of Internal Medicine*.

"Our study demonstrates that people with Type 2 diabetes who want to maximize their glucose control, and reduce their risk of long-term complications, should consider a combination of both aerobic and resistance training like weight lifting," said Sigal, associate professor in the faculties of medicine and kinesiology at the University of Calgary. "I suspected that high intensity weight training could help improve blood sugar levels in people with diabetes, and might also improve vitality and quality of life. That's why we decided to do this study."

251 people with Type 2 diabetes participated in the six-month randomized control trial in Ottawa, Ontario, titled *Effects of Aerobic Training, Resistance Training, or Both on Glycemic Control in Type 2 Diabetes.* They were randomized to aerobic exercise only (walking, cycling or jogging), resistance exercise only (weight lifting), both aerobic and resistance exercise, or a control group that did not exercise.

Each participant was evaluated on changes in A1c value, a number that reflects blood sugar concentrations over the previous two or three months. A1c in people without diabetes is 4 to 6%, and an A1c of 7% or lower is considered good in people with diabetes.

The combined aerobic and weight training group experienced a 0.97% absolute drop in A1c value compared to the non-exercising group. The aerobic training group experienced a smaller but still significant absolute drop of about 0.5% and the weight training group saw an absolute drop of about 0.5% as well.

"The improvements we found might seem small, but they are clinically significant," said Sigal, a member of the Libin Cardiovascular Institute of Alberta and the Julia McFarlane Diabetes Research Centre at the University of Calgary Faculty of Medicine. "A one-percent drop in A1c levels reduces the risk of a major cardiovascular event such as stroke or heart attack by 15 to 20% and blindness, kidney failure, or amputations by 25 to 40%. People with diabetes fight an uphill battle trying to control their blood sugar, so any help we can offer is vital."

"We know without a doubt that exercise is beneficial to our health - but it's often easier to say than do. This important paper shows us that not only aerobic exercise, but also resistance training helps people with diabetes control their blood sugar. And if a person does both they can control their blood sugar even better," said Diane Finegood, PhD, scientific director of CIHR's Institute of Nutrition, Metabolism and Diabetes.

"The benefits of exercising are tremendous," said Calgarian Jack Vitalis, whose blood sugar levels have dropped two points since he started an exercise program including aerobic and weight training. "I'm tickled pink because my sugar levels have fallen more than two points, putting me in normal range, since I started exercising and lifting weights."

The Diabetes Aerobic Resistance Exercise (DARE) trial was supported by the Canadian Institutes of Health Research, Canadian Diabetes Association, OHRI Research Chair in Lifestyle Research, Ontario Ministry of Health and Long Term Care, Social Sciences and Humanities Research Council of Canada, and Natural Sciences and Engineering Research Council of Canada.

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