

Can you exercise away your diabetes symptoms?

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Take a balanced approach to exercise with a mix of activities to build muscle, improve cardiovascular fitness and flexibility, says Greg Wells. Credit: Bigstock photo

In this story writer Jenny Hall talks with Greg Wells about the relationship between type 2 diabetes and exercise.

A professor in the Faculty of [Kinesiology](#) and [Physical Education](#) and an associate scientist in [physiology](#) and exercise medicine at the Hospital for Sick Children, Wells is at the forefront of the new field of exercise medicine, which investigates the use of physical activity to treat and prevent chronic disease.

What's the relationship between type 2 diabetes and

physical activity?

[Type 2 diabetes](#) and obesity are closely linked. We know that if we intervene with physical activity there is an improvement in physiology. If we intervene with nutrition and physical activity, the combined effect appears to be amplified. That's a critical factor in the successful treatment of type 2 [diabetes](#). It isn't exercise alone, it isn't diet alone, it's the combination of exercise and good nutrition.

In terms of physical activity, there are two components. One is habitual physical activity—movement as part of daily life. Gardening, house chores, walking to and from school, playing in the playground. The more you move the better. This is where we're having a lot of success with children with obesity and other chronic diseases.

The other component is exercise, which we define as structured [physical activity](#) that is a little more intense. It's harder to incorporate exercise into life. It's extremely effective, but adherence to it in the long term is challenging.

It also appears when we talk about exercise that a multi-faceted approach is good. If we can incorporate aerobic or cardiovascular exercise, that's really important. Strength training also has benefits. The nice thing is that it looks like a whole bunch of different things work. And when we combine them, they're even more effective, which is great, because people get bored of the same exercise routine. It means you don't have to do the same thing all the time. You don't have to worry so much about what it is exactly that you're doing. Just do something. If you get bored, change it up and do something else.

How important is this? We know the incidence of type 2 diabetes is up. What are the consequences of this for

our society?

If a child is diagnosed with type 2 diabetes at age 10, they will live on average 19 years less than a healthy person. Because of the rapidly accumulating instance of obesity in our population and all the diseases associated with it—type 2 diabetes, but also cardiovascular disease, psychological disorders and inflammatory diseases—it may be that the generation coming up will be the first generation that does not live as long as the one before it. Thousands of years of progress have been wiped out because of North America's problem with high-calorie, low-nutrient foods and lack of exercise.

When we talk about exercise having a positive effect on the physiology of type 2 diabetes, what does that mean?

You can reverse the effects of type 2 diabetes by doing exercise. It doesn't cure it, but you can temporarily alleviate the physiological problems associated with it. For example, exercise can reduce the insulin resistance that is associated with type 2 diabetes for up to 72 hours.

Consider interval training, where you do some higher intensity work. It's turning out to be really, really important. This may be because higher intensity exercise works the sugar processing system in the muscles, which is what's affected in type 2 diabetes.

So in theory if you exercised every couple of days you could halt the effects of diabetes in your body?

Yes.

How much exercise are we talking about?

We're looking for people to take part in about six hours of activity a week. It seems like a lot, and it's hard to incorporate that into our lives, but that seems to be the threshold where most chronic diseases can be avoided and treated. But, remember, it can be anything. It can be walking to and from the subway station, it can be gardening in your back yard, it can be going for a run or a walk.

It doesn't have to be an hour at a time?

It's better if it is, but if you accumulate the six hours in any way, shape, or form, that's fantastic.

You mentioned that you see best results when you combine exercise and dietary interventions. Earlier, we spoke with Thomas Wolever of nutritional sciences about the relationship between food and type 2 diabetes, but can you give us an overview of what you'd recommend in terms of food?

The simplest thing to do is avoid high-calorie, low-nutrient foods and shift to nutrient-dense food. For example, a soft drink is very high in calories and has essentially no nutrients, whereas blueberries are extremely high in nutrients and very low in calories.

You have to go back and think about what works. What has worked forever is a balanced approach. Any time that humans get into extreme anything, it never works. In the 1970s and 1980s low-fat was all the rage. It worked for a while but then it ended up causing problems. Then the trend was low-carb. Both approaches failed when long term results were

examined.

We have to adopt a balanced approach. We're looking for high-quality fats, high-quality carbohydrates and high-quality proteins against a background of lots of fruits and vegetables and being very well hydrated. Try to get as many nutrients as you can in a reasonable amount of calories.

The same principle applies to exercise. We want to be doing as many different types of things as we possibly can. If you only do yoga, you get extremely flexible, but your cardiovascular fitness will deteriorate. If you only lift weights, you build a lot of muscle tissue, but you lose out on the cardiovascular side.

The human body is amazing. It adapts extremely well and it responds well to variety and change and movement. If we adopt those simple principles, anyone can make positive changes in their lives.

We're talking about type 2 diabetes specifically, but your own work focuses more on other diseases. What other diseases can we prevent or treat with diet and exercise?

Pretty much everything: obesity, cystic fibrosis, inflammatory diseases like arthritis, maybe even cancer. Almost every psychological disease: ADHD, Alzheimer's, anxiety, depression.

Tell us a bit about your research.

I'm in a field of investigation called exercise medicine. We look at how [chronic diseases](#) cause exercise intolerance. For example, obesity damages muscle tissue, which causes people to have difficulty

exercising. Then we look at how [exercise](#) and nutrition can be used to treat and reverse that chronic disease without the use of pharmaceuticals.

My research is on muscle and lung. I deal a lot with cystic fibrosis. We have a huge study going on right now on obesity in children. I use advanced imaging techniques to look at metabolism. So I use MRI to investigate muscle function and lung function.

Provided by University of Toronto

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