

Fit Facts™

FROM THE AMERICAN COUNCIL ON EXERCISE®

Exercise and Type 2 Diabetes

The incidence of type 2 diabetes is on the rise, which experts largely attribute to the rise in obesity. According to the American Diabetes Association, the number of Americans with diabetes is expected to increase to more than 30 million by 2030. Type 2 diabetes, responsible for more than 90 percent of diabetes cases, is more common in adults, although an increase in childhood obesity may be the reason more young children are being diagnosed with the disease. The good news is that simple lifestyle changes can prevent and, in some cases, reverse the course of this disease.

Type 2 Diabetes Explained

Type 2 diabetes affects the body's ability to use sugars, starches, fats and proteins. Your body needs various fuels for energy and this disease disrupts normal energy metabolism both at rest and during physical exercise.

Our bodies normally change sugars and starches into a usable form called glucose.

Glucose is carried by the blood to various tissues, such as skeletal muscle. Insulin (a hormone made by the pancreas) must be present for glucose to enter skeletal muscle. Once glucose enters the muscle cell, it can be broken down and used for energy or stored for later use.

With type 2 diabetes, some insulin is produced but the body does not make effective use of it. This is known as insulin resistance and it prohibits glucose from entering the muscle cells. In turn, glucose rises to abnormal levels in the blood. If unchecked for extended periods, elevated glucose levels lead to heart disease, kidney failure, blindness and nerve dysfunction.

Unlike type 1 diabetes, which appears to be an auto-immune disease, type 2 diabetes is strongly linked to lifestyle factors, especially diet and exercise. People at highest risk of developing type 2 diabetes have a family history, as well as other cardiovascular risk factors such as high blood pressure, high cholesterol, obesity and a sedentary lifestyle. However, the same techniques that are used for prevention of this dis-

Here are some ideas to help make exercise enjoyable:

- Emphasize variety. For example, a 30-minute cardio workout can be shared among the elliptical, recumbent bike and walking track.
- Set goals that are fun to achieve, whether it's logging 10,000 steps on a pedometer, walking or jogging a 5K, or beating a friend in a game of tennis.
- Reward yourself for a hard effort, a job well done or a goal met. Going to a movie, visiting the spa, buying a new book, or simply relaxing are just a few ideas.
- Build an exercise network. Exercise is more fun when done with someone else and support from an exercise buddy or trainer, such as e-mails of encouragement and calls after missed appointments, can help keep you on track.

ease—a healthy diet and regular exercise—can be used to control and possibly reverse its progression.

Exercise Can Help

The latest research has put exercise at the forefront in the prevention, control and treatment of diabetes because it decreases insulin resistance. Following regular exercise training, cells can better respond to insulin and appropriately take up glucose out of the blood. Exercise also helps to decrease risk of cardiovascular disease by decreasing blood pressure, cholesterol levels and body fat. And for every 10 pounds of weight an individual loses, they will experience a 20 percent improvement in insulin sensitivity.

Exercise Recommendations

If you have type 2 diabetes you should follow the following exercise guidelines:

- Cardiovascular: Aim for three to four days per week of moderate-intensity exercise for 20 to 60 minutes (walking and other

non-weightbearing activities such as water aerobics and cycling are good choices). Daily exercise, however, is highly recommended.

- Resistance training: Follow a lower-resistance, lower-intensity program with one set of exercises for the major muscle groups, with 10 to 15 repetitions at least two days per week.
- Flexibility: At least two to three days per week, stretch major muscle groups to the point of tightness (not pain) for 15 to 30 seconds two to four times per stretch.

The ultimate goal is to expend a minimum of 1,000 calories per week with physical activity for health benefits, or 2,000 calories per week for weight loss. Keep in mind that these are goals that you should work up to gradually over time.

What are the Precautions?

If you have type 2 diabetes, you must monitor your glucose before and after exercise to understand how you respond to certain types of activities. Be sure to wear an ID bracelet that indicates your diabetic condition and, whenever possible, exercise with a partner.

Finally, don't forget to check with your physician prior to beginning a physical activity program and return regularly to assess the diabetic complications. If complications of the eye, kidney or heart are present, your physician should provide you with clear boundaries regarding the intensity of any physical activity.

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