

# Fit Facts

FROM THE AMERICAN COUNCIL ON EXERCISE

## Exercise and Type I Diabetes

Type I diabetes is a disease that affects your body's ability to use sugars, starches, fats and proteins. Because your body needs various fuels for energy, 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, which is carried to various tissues. For glucose to enter skeletal muscle, insulin (a hormone produced by the pancreas) must be present. Once glucose enters the body's muscle cells, it can be broken down and used for energy or stored for later use.

Individuals with type I diabetes are unable to produce enough insulin for this process to occur. Consequently, glucose is unable to enter muscle cells and builds up in the blood.

Because type I diabetics have insufficient insulin production, daily insulin injections are required to maintain glucose levels as close to normal as possible. Thus, type I diabetics are insulin dependent.

It is imperative for type I diabetics to regulate their glucose levels to help reduce the onset of complications from this disease. If glucose levels go unchecked for extended periods, type I diabetics are very susceptible to heart disease, kidney failure, blindness and nerve dysfunction. Therefore, type I diabetics must be careful about the quantity and quality of foods that are eaten, as well as the physical activity that is performed.

### **HOW DOES EXERCISE HELP?**

Because exercise uses glucose for movement, it is an excellent way to maintain stable levels of glucose. Exercise cannot normalize glucose levels, but it can effectively counteract elevated levels that occur after eating. For type I diabetics, exercise does not regulate glucose to normal levels. However, exercise acts very much like insulin on skeletal muscle cells, so the amount of insulin injected for



controlling glucose can be lowered in type I diabetics who exercise. Also, many health-related benefits of physical activity (e.g., lowering blood pressure, favorable lipid and lipoprotein changes, body weight maintenance) are part of the exercise therapy.

### **WHAT EXERCISE IS RECOMMENDED?**

Type I diabetics should exercise a minimum of four to five times per week at a low-to-moderate intensity, for about 30 to 40 minutes. Most activities are recommended for type I diabetics unless medical complications prohibit such activities.

In addition to aerobic exercise, it is important for type I diabetics to engage in strength training and flexibility exercises as well.

### **WHAT ARE THE PRECAUTIONS?**

Type I diabetics should monitor their glucose before and after exercise to understand how they respond to certain types of exercise. Also, exercising with a partner and wearing an ID bracelet indicating one's diabetic condition are important. Because type I diabetics are at risk for low glucose levels (referred to as hypoglycemia), they should also carry with them food that is high in carbohydrates in case energy is needed. Finally, type I diabetics should see their physician regularly to minimize the onset of diabetic complications. If complications of the eye, kidney or heart are present, it is important that their physicians give clear boundaries regarding the intensity of any physical activity.

For more information, please call the Massachusetts Department of Public Health Physical Activity Hotline: **1-800-952-6637**

If you are interested in information on other health and fitness topics, contact:

American Council on Exercise, 5820 Oberlin Drive, Suite 102, San Diego, CA 92121, 800-529-8227