

EXERCISE AND TYPE 1 DIABETES

Type 1 diabetes is a disease that affects the body's ability to use sugars, starches, fats and proteins. Because the body needs various fuels for energy, this disease disrupts normal energy metabolism both at rest and during physical exercise.

Following digestion, a hormone called insulin is released into the blood from the pancreas. Among insulin's primary roles is its ability to allow carbohydrates (absorbed in the form of glucose) and proteins to enter muscle cells, where they are stored or used for energy. Individuals with type 1 diabetes are unable to produce enough—or even any—insulin to allow this process to occur. Consequently, glucose is unable to enter cells and builds up in the blood. Because people with type 1 diabetes have insufficient insulin production, daily insulin injections are required to maintain glucose levels as close to normal as possible. Thus, individuals with type 1 diabetes are considered insulin-dependent.

It is imperative for those with type 1 diabetes to regulate their blood glucose (blood sugar) levels to help reduce complications associated with this disease. If glucose levels remain unchecked for extended periods, people with type 1 diabetes run the risk of developing heart disease, kidney failure, blindness and nerve dysfunction.

Therefore, people with type 1 diabetes must always be careful about the amounts and types of foods they eat, as well as when they exercise and what types of physical activity they perform.

How does exercise help?

Because exercise uses glucose as a fuel, it is an effective way to control blood sugar levels. Exercise has an insulin-like effect on glucose, enhancing its uptake into cells and counteracting elevated blood glucose levels that frequently occur after eating. With exercise, the amount of insulin injected for controlling blood glucose can be lowered in those in type 1 diabetes.

Also, many health-related benefits of physical activity (e.g., lowering blood pressure, managing body weight, improving self-efficacy and confidence, and improving blood lipids) are part of the exercise therapy.

What exercise is recommended?

Under a doctor's care, individuals with type 1 diabetes should exercise a minimum of three to four times per week at a low-to-moderate intensity, for about 20 to 60 minutes. Most aerobic activities are recommended for those with type 1 diabetes unless restricted due to medical complications.

In addition to aerobic exercise, it is important for individuals with type 1 diabetes to engage in flexibility and strength-training exercises. Resistance training should be performed

at least two days per week, with a minimum of one set of 10 to 15 repetitions of each exercise at a low-to-moderate intensity.

What are the precautions?

People with type 1 diabetes should monitor their glucose before and after exercise to understand how it responds to certain types of exercise. Also, exercising with a partner and wearing an ID bracelet indicating one's condition are very important.

Because individuals with type 1 diabetes take insulin medication, exercise may place them at risk for low glucose levels (referred to as hypoglycemia). Consequently, they should also carry a light snack that is high in carbohydrates in case energy is needed immediately.

Finally, those with type 1 diabetes should see their physicians regularly to minimize the potential for 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.

Additional Resources

American Diabetes Association—Exercise: www.diabetes.org/weightloss-and-exercise/exercise/overview.jsp

Centers for Disease Control—Exercise and Diabetes: www.cdc.gov/diabetes/faq/exercise.htm

Mayo Clinic—Diabetes and Exercise: www.mayoclinic.com/health/diabetes-and-exercise/DA00036

If you are interested in information on other health and fitness topics, contact: American Council on Exercise, 4851 Paramount Drive, San Diego, CA 92123, 800-825-3636; or, go online at www.acefitness.org/GetFit and access the complete list of ACE Fit Facts.™



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