

Diabetes and Exercise **By Scott DiNardo**

Defining Diabetes

Diabetes is a disease that is associated with impaired blood sugar (glucose) metabolism within the human body. Two distinct types of diabetes exist as supported by the current literature on the subject. They are categorized as Type I (Juvenile Diabetes) and Type II (Adult Onset Diabetes).

Type I diabetes, commonly referred to as juvenile diabetes, is characterized by the body's inability to produce the insulin needed in everyday life. Insulin needs to be present in order to transport glucose to the cells for utilization. Type I diabetes is usually diagnosed in children and young adults. Type I diabetes comprises only 10 percent of all the cases of diabetes in America.

The second and most common form of the disease is referred to as Type II diabetes or adult onset diabetes. This form of the disease usually presents itself in the middle age years. Type II diabetes (adult onset) is characterized by the body's inability to use the insulin that is already present. This condition usually results from insulin resistance syndrome that often time exacerbated by excess body fat. Type II diabetes is more common in African Americans, Latinos, and Native Americans. According to the American Diabetes Association, 16 to 17 million Americans suffer from Type II diabetes.

Symptoms and Warning Signs

For the sake of this article, let us focus in on Type II diabetes as it affects the greatest number of individuals. Some of the warning signs of diabetes are blurred vision, excessive fatigue, irritability, unusual weight loss, frequent urination, extreme hunger and thirst. If you are experiencing more than one of these symptoms, the American Diabetes Association has a Diabetes Risk Test that may be taken online at their website listed in the resources section of this article. Early detection is the key to preventing complications that may occur with diabetes. Long-term effects of untreated diabetes can include heart disease, loss of vision (retinopathy), kidney disease, nerve damage, stroke, and vascular disease.

Physicians diagnose diabetes by what is commonly referred to as a fasting glucose test. After the individual suspected of having the disease fasts for 12 hours, blood is extracted and the amount of glucose in the blood is measured. Normally, a person with elevated levels of glucose (140 mg/dl) on two separate occasions will be diagnosed with diabetes.

Treatment Options

Treatment for diabetes starts with the regulation of blood sugar (glucose) levels on a daily basis. Keeping your blood sugar levels under control can help an individual with diabetes feel better and avoid complications that may come with the disease. Nutrition for the diabetic individual is so vital to maintaining good health. It is important for an individual with the disease to eat a balanced diet in accordance to the food pyramid. As mentioned above, diabetic individuals should limit their intake of sugars. Foods high in sugar include cakes, honey, some breakfast cereals, and most desserts. Because people with diabetes have a higher risk of developing cardiovascular disease, one should limit the amount of fats in their diet. Too much fat in an individual's diet may increase the risk of developing heart disease. Also, remember to limit salt intake as too much salt in one's diet may contribute to high blood pressure a risk proposition for someone with diabetes.

The most common approach to treat diabetes focuses on weight reduction, meal planning around blood sugar levels, and exercise. The Diabetes Prevention Program of the American Diabetes Association found that diet coupled with exercise worked best for reducing the onset of diabetes in those considered to be pre-diabetic. Just 30 minutes a day of physical activity, coupled with a 5-10% reduction in body weight, produced a 58% reduction in diabetes.

If this approach does not work then physician may prescribe oral medications that may help control blood sugar. There are five different classes of oral medications that your physician may prescribe to aid in controlling blood glucose levels. Because each medication acts in a different way to decrease blood glucose levels more than one of these medications may be prescribed by your physician (oral combination therapy). These medications are usually less effective than diet and exercise and may have side effects associated with their usage. Diabetes is in large part a lifestyle related disease that can be controlled and often time prevented by leading a healthy lifestyle.

Strength Training Research

Diabetes can be exacerbated by physical inactivity. Therefore, it is important for individuals with diabetes to participate in some type of exercise program. Recent studies suggest that strength training is just as effective as aerobic exercise for improving glucose metabolism.

Resistance training can be very beneficial for those with diabetes. “The major benefits of resistance training in individuals with diabetes are: 1) improved blood cholesterol profiles, 2) increased heart function, 3) decreased blood pressure, 4) improved insulin sensitivity and blood glucose control, 5) improved muscular strength, power, and endurance, and, 6) increased bone strength (Soukup et al. 1994). The results of one study found that glucose uptake increased by an average of 23% after just four months of strength training. Eriksson et al. found that repeated bouts of intense activity can result in muscle glycogen depletion and that this depletion of glycogen increases post-activity insulin sensitivity. The researchers found that those individuals who had been involved in a strength training program had much greater insulin sensitivity than those who had been involved in just aerobic training or no training at all.

Therefore, research supports the role of strength training as an effective modality for the management of diabetes. The amount and intensity of exercise will differ from person to person depending upon the number and severity of complications arising from the disease. General guidelines set forth by the American College of Sports Medicine for resistance training include at least one set of 8-10 different exercises utilizing the major muscle groups to be performed 2-3 days per week. An individual should be lifting a weight that allows them to complete between 8-12 repetitions. If more than 12 repetitions can be completed with good form then the weight should be increased slightly. For those age 50 or older or those with pre-existing health conditions more repetitions performed at a slightly lower weight may be more suitable.

Precautions/Limitations

Before engaging in any exercise program, an individual should have a medical evaluation to screen for any complications that may arise from diabetes. The medical evaluation should cover symptoms and signs of the disease affecting the heart, kidneys, nervous system, eyes, and blood vessels.

For those individuals with the disease that have cardiovascular symptoms present a graded exercise test may be helpful in diagnosing any underlying cardiovascular disease caused by the diabetes. Diabetics with proliferative diabetic retinopathy (PDR) need to be concerned with participating in any exercise that causes straining, jarring, or Valsalva-like maneuvers as hemorrhaging or retinal detachment may occur. For clients with diabetes special attention should be paid to hypoglycemia (low blood sugar) during

exercise. Possible warning signs of hypoglycemia include shaking, dizziness, and anxiety. Diabetic individuals can help to prevent hypoglycemia from occurring by eating 1-2 hours before exercise, snacking during the exercise session, and testing their blood sugar before and after exercise. Those individuals suffering from the cardiovascular or peripheral vascular complications that may accompany diabetes should consult their physician regarding the type, intensity, and duration of exercise.

Resources

There is a plethora of resources available for those inflicted with diabetes. Having diabetes does not mean that one has to stop living an active lifestyle. For more information about diabetes, you may refer to the websites listed below.

American Diabetes Association
www.diabetes.org

National Institute of Diabetes & Digestive & Kidney Diseases
www.niddk.nih.gov

WebMD Health
www.diabetes.com

Aventis DiabetesWatch
www.diabeteswatch.com