

# DIABETES AND EXERCISE

## ◆ What is it?

Diabetes mellitus is a chronic disease characterized by elevated blood sugar (glucose), inadequate insulin production, and excessive production of blood sugar by the liver. The disease is divided into two types. Type I diabetes was previously referred to as juvenile diabetes and constitutes only about 10% to 20% of all persons with diabetes. In type I diabetes, patients suffer from an inability to make insulin and must give themselves injections to control their blood sugar. In type II diabetes, patients do not make enough insulin or their bodies are less responsive to the insulin that their body does produce and must either control their intake of food or use medications to lower blood sugar or slow absorption of food to control glucose levels. If they are unable to control their blood sugar levels, they must take insulin. Exercise has been recommended as part of the treatment of diabetes. When muscles exercise, muscle uptake of glucose can increase twenty times above baseline. Endurance athletes have been shown to be more sensitive to insulin than sedentary people. However, the effects of any one exercise session last only about 48 hours.



## ◆ Signs and Symptoms of this Condition

Many persons with mild diabetes do not have symptoms. With more severe disease and poorer control of blood sugar, patients have more symptoms. Over time, diabetes can lead to several complications related to control of the disease; these can often be reduced or prevented by proper care. General symptoms of diabetes include:

- Frequent urination
- Frequent thirst and drinking
- Increased food consumption
- Fatigue
- Poor exercise performance
- Blurred vision
- Numbness in feet (secondary to nerve injury)
- Kidney disease

## ◆ Causes

- Type I: Genetic predisposition in which cells in the pancreas fail to produce insulin.
- Type II: Sedentary lifestyle/lack of regular exercise is the most significant factor. There may also be a genetic predisposition.

## ◆ What Can I do to prevent complications from



## Diabetes?

- Begin exercise with blood sugar in a well-controlled state.
- Feet should always be kept clean and dry.
- Avoid sports such as distance swimming, scuba diving, rock climbing, and caving in which episodes of low blood sugar cannot be treated easily.
- Try to anticipate alterations in diet and training to avoid hypoglycemia (low blood sugar) and hyperglycemia (high blood sugar).
- Increase sugar consumption after strenuous exercise to avoid postexercise hypoglycemia.
- Short-acting insulin should not be injected into an actively exercising muscle. The athlete should rest the injection site for about 1 hour after exercise.
- Patients with diabetes should obtain routine checkups of the feet to prevent complications.

### ◆ Prognosis

Exercise provides many benefits to the person with diabetes:

- Reduced body fat.
- Lower blood pressure.
- Improved lipid profile (decreased cholesterol and low-density lipoproteins).
- Lower insulin levels.
- Weight loss.
- Often, reduced need for medications.
- Improved exercise tolerance.

### ◆ Treatment

- Eat about 1 to 3 hours before exercise.
- Check blood sugar immediately before exercise.
- Stop exercise if blood sugar is more than 250 mg/dL.
- Stop exercise if blood sugar is less than 100 mg/dL.
- Do not exercise within 1 hour of taking insulin.
- Be prepared to treat low blood sugar while exercising. Keep some sugar product with you (hard candy, etc.).
- For prolonged exercise, use a sports drink to maintain glucose level.
- Check blood sugar after exercise.
- Consume fluids during and after exercise to avoid dehydration.

