Athletes With Diabetes: The Athletic Therapist’s Role

W. KENT GUION, MD
Department of Health and Kinesiology
Georgia Southern University

MODERN MEDICAL interventions have allowed many individuals who have what was once thought to be debilitating diseases to achieve high-level athletic accomplishments. Case in point: diabetes mellitus. Although there is still no cure for diabetes, modern treatment strategies and a better understanding of the disease process have allowed many to pursue professional sport careers as well as achieve extraordinary personal athletic accomplishments.

Individuals with diabetes assume primary responsibility for the medical management of their disease. However, when they wish to compete in sports, their personal physician, the team physician, the coach, and the athletic therapist all need to be involved in the treatment program.

This paper gives a brief overview of diabetes and discusses recognition and management of the acute complications that are likely to arise during moderate to high intensity activities.

Key Points
- Individuals with diabetes can excel in sports as long as their disease is managed properly.
- Long-term exercise yields several indirect benefits to those with diabetes.
- Athletic therapists play a role by recognizing the symptoms of diabetes and ensuring consistency in the athlete’s training schedule.

Diabetes
According to the National Center for Health Statistics, in 1994 there were approximately 8 million individuals in the U.S. diagnosed with diabetes and another 19 million who were undiagnosed (NCHS, 1996). Diabetes has consistently remained among the top 10 causes of death in the U.S., usually ranking 6th or 7th. Although its exact cause is still unknown, heredity is a major determinant of risk.

The hallmark of diabetes mellitus is an absolute or relative insufficiency of the hormone insulin. An absolute insulin insufficiency results from dysfunction or absence of the insulin-producing Beta cells of the pancreas. This is known as Type I or insulin dependent diabetes mellitus (IDDM) (Harris, 1995).

When there is adequate insulin production but the cells of the body are not responding to it, this leads to a relative insulin insufficiency known as Type II or non-insulin-dependent diabetes mellitus (NIDDM) (Harris, 1995). Other differences between the two variants of diabetes mellitus are listed in Table 1. Although the vast majority of diabetes cases are Type II, many diabetic athletes have Type I since this is the variant that occurs in younger, nonobese individuals.

The primary action of insulin is to enhance glucose uptake by the cells of the body, thereby causing a decrease in blood glucose levels. Insulin insufficiency leads to excess blood glucose (hyperglycemia), the condition most of...
is critical for persons with diabetes to frequently monitor their blood glucose levels and keep these levels close to normal range (<120 mg/dl, fasting) (American Diabetes Assoc., 1993).

Each person has a unique response to abnormal glucose levels, so it is important to know the symptoms of each individual. Also, since either hypo- or hyperglycemia can lead to decreases in performance, blood glucose levels must be carefully monitored before, during, and after participation in activities.

The Impact of Exercise

Exercising at moderate to vigorous intensity increases the body’s need to utilize glucose for energy production. Exercise also causes the cells of the body to have an increased insulin sensitivity—a heightened response to insulin (Heath et al., 1983). Both of these responses tend to lower blood glucose. If not carefully balanced with proper diet and blood glucose monitoring, this could lead to hypoglycemia.

In addition, exercise may act to increase insulin by causing the working muscles to pump more insulin from an injection site into the bloodstream at a higher than normal rate, which may also make an individual more prone to hypoglycemia.

On the other hand, long-term exercise has many indirect benefits for the person with diabetes: it can lower the insulin requirement by increasing insulin sensitivity; increase HDL-cholesterol levels and thus provide protection against some of the chronic complications; improve strength and endurance; and enhance one’s overall sense of well-being (Leon, 1992).

Finally, in instances when there is elevated blood glucose and inadequate insulin, exercise may spur the liver to produce glucose, resulting in a more hyperglycemic state.

The Role of the Athletic Therapy Staff

The role of the athletic therapy staff should consist of six main principles: (a) recognition of symptoms, (b) consistency, (c) planning, (d) management, (e) education, and (f) communication.

Recognition of Symptoms

It is important to be familiar with the symptoms of hypo- and hyperglycemia so that timely interventions can be made. The severity of symptoms differs from person to person and may also change with maturation. Oftentimes the first symptom may be a decrease in performance. This symptom needs to be assessed by checking the blood glucose level.