



## Let's Talk Running... Controlling Blood Sugar Levels

### **“Take control of your blood sugar while continuing to train safely for long distance events”**

It is well established that diabetes mellitus alters the metabolic response to exercise, thus runners who have diabetes must pay special attention to how they train and what they eat. Therefore, it is necessary to follow several precautions to avoid adverse reactions during exercise.

With well-controlled Type I diabetes (insulin dependent) and Type II diabetes (non-insulin dependent, usually adult onset), excessive amount of insulin in the blood stream can result in increased muscle glucose uptake and diminished liver glucose production. This results in decreased blood glucose levels. On the other hand, with poorly controlled Type I diabetes, there can be diminished muscle glucose uptake and increased liver glucose production owing to inadequate insulin in the blood stream. This results in increased blood glucose.

Symptoms of hyperglycemia (high blood sugar/inadequate insulin available) are typically gradual in onset and include, but not limited to, polyuria (frequent urination), glucouria (sugar in urine), thirst, lethargy, blurred vision, confusion, flushed face, nausea, “fruity” breath, and deep sighing (Kussmaul) breathing. In severe cases, diabetic coma is a medical concern.

Symptoms of hypoglycemia (low blood sugar/excessive insulin present) are typically sudden in onset and include, but not limited to, shakiness, sweating, trembling, confusion, irritability, hunger, weakness, lethargy, headaches, and pale moist skin. In severe cases, insulin or hypoglycemic shock (below 60 mg/dL) is a medical concern.

The optimal range for blood sugar levels while exercising is between 150-180 mg/dL. The following are some guidelines for exercise in relation to blood sugar levels, **but should always be reviewed with your physician:**

**Below 70 mg/dL:** Do not exercise. Eat 25-50g of carbohydrates (CHO) and recheck in 20 minutes.

**70-100 mg/dL:** Eat 25-50g of CHO before exercise and 10-15g every hour of exercise.

**100-170 mg/dL:** Eat 10-15 g of CHO every hour of exercise.

**170-300 mg/dL:** Monitor glucose after an hour of exercise.

**Above 300 mg/dL:** Hold exercise and check for ketones in urine.

Some general tips for the diabetic athlete include:

- ✓ Never exercise alone
- ✓ Carry I.D. that identifies you as diabetic
- ✓ Have fast acting glucose available (for hypoglycemia)
- ✓ Monitor glucose levels before, every hour during, and after exercise
- ✓ Allow proper warm-up and cool-down
- ✓ Pay close attention to footwear
- ✓ Stay hydrated
- ✓ Avoid exercise at peak insulin times

- ✓ Regularity of exercise is important to minimize glucose instability
- ✓ Injections should be done approximately 1 hour before exercise in the abdomen
- ✓ Avoid injections in large muscle groups (e.g., thigh muscle)
- ✓ Eat 10g of CHO every 30-60 minutes

Regularity of exercise is extremely important in minimizing glucose instability and providing the opportunity for appropriate adjustment in insulin dosages in the Type I diabetic. If hypoglycemia repeatedly occurs during regularly scheduled exercise, the appropriate insulin component should be reduced as necessary. The Type I diabetic exercising regularly may require as much as a 10-20 unit reduction in daily dose.

Frequent glucose testing and individual modifications to this plan are necessary. Guidelines should be considered a starting point, not a complete treatment guide. Particularly for the River Bank Run, changes will likely need to be made every 1-2 weeks as the intensity of workouts increases.

Continued consultation with your medical doctor is necessary. Despite the medical concerns associated with diabetes, individuals who properly manage their condition are able to exercise efficiently and safely, and be able to maintain a level of fitness consistent with their lifestyle.

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