

patient education program

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Coaches' Perspective: Things to Know about Diabetes & Exercise

These are general guidelines. Please discuss your athlete's plan with parents for specific information.

Exercise is important for people with diabetes. People with diabetes need the cardiovascular workout for a healthy heart and lungs and to maintain a healthy body weight. Exercise also has positive effects on cholesterol levels and blood sugars. Consistent exercise helps to lower blood sugars by allowing the body to better use insulin.

General Facts:

- Normal blood sugar is 70-100 mg/dl. Children and adolescents with diabetes are encouraged to strive for 70-120 mg/dl range before meals.
- Individuals with type 1 diabetes do not make enough insulin to allow blood sugar to be transported from the blood into the muscles and other body cells. Therefore, insulin must be injected into the body multiple times a day or administered via an insulin pump to allow the body to use glucose for its energy source.
- Insulin regimens are individualized for every person with diabetes using different types of insulin. They differ in how they work and, when used together, result in better control of blood sugars throughout the day and night.
- Exercise, insulin, stress, and diet influence blood sugars. Too much or too little of any one of these may cause changes in the blood sugar. Factors that may cause a low blood sugar are: more exercise than normal or an increase in insulin dose. Factors that may increase blood sugars are less exercise than normal, eating more food than normal or less insulin than normal.

How to Exercise Safely:

- People with diabetes should check their blood sugar before exercise. Checking the blood sugar tells them if the blood sugar is high enough to safely exercise. The guidelines below should be used.

Be aware, extra activity may cause a low blood sugar even if steps have been taken to prevent it. Blood sugars may drop during the activity, right after the activity, or up to 24 hours after the activity.

Follow these guidelines:

1. Check blood sugar before the activity, at least hourly during the activity, and after the activity.
2. If before or after the activity the blood sugar is **less than 70** mg/dL, follow the standard hypoglycemia (low blood sugar) treatment guidelines. (See page 2). **Physical activity must stop until blood sugar is over 70.** Once the blood sugar is over 70, give an additional 15 grams of carbohydrate (liquid or solid) and start/resume the activity.
3. If before or during the activity the blood sugar is **between 70 and 120** mg/dL, take 15 grams of carbohydrate and do the activity.
4. If the blood sugar is over 240, check for ketones and drink water.
5. **Your athlete CANNOT EXERCISE IF: he/she has ketones in urine/blood.**
6. Drinking plenty of water is important for all athletes. The blood sugar will tell you if your athlete should drink sugared or non-sugared fluids.

Please note that the carbohydrates in these guidelines are **in addition to** any regularly scheduled snack.

Signs, Symptoms and Treatment of Hypoglycemia (Low Blood Sugar):

- Clammy/cold sweat
 - Inability to concentrate
 - Shaky feeling
 - Hunger
 - Tingling/numbness in lips
 - Headache
 - Nervous/irritable
 - Weak/tired
 - Poor coordination
 - Pale
- A person with a blood sugar less than 70 should be treated with 15 grams of a carbohydrate that is easy to swallow and will get the blood sugar up quickly. Examples of this would include:
 - ½ cup fruit juice or regular soda pop
 - 4 glucose tablets
 - 1 tube of glucose gel
 - The blood sugar needs to be rechecked 15 minutes after treating with the carbohydrate. If the blood sugar at that time is less than 70, then retreat with 15 grams of carbohydrate that is easy to swallow (see above list of options). Keep rechecking and retreating every 15 minutes until the blood sugar is over 70. Once the blood sugar is above 70 on recheck, give an additional 15 grams of carbohydrate (liquid or solid- ex. crackers, fruit etc.).

Signs, Symptoms and Treatment of Hyperglycemia (High Blood Sugar):

- Increased hunger
 - Increased thirst
 - Increased urination
 - Sudden weight loss
 - Fatigue
 - Mood changes
 - Hyperactive
- If blood sugar is over 240, check the urine/blood for ketones. If ketones are present, stop the physical activity, have the athlete drink water and contact parents or guardians for further instructions.
 - If the blood sugar is over 400, stop the physical activity and contact the parents or guardians of the athlete.

Finally:

- Exercising under extreme weather conditions (i.e., excessive humidity or excessive heat or cold) can cause high or low blood sugars. The following should be kept in mind under these conditions:
 - Signs and symptoms of low or high blood sugars may be more difficult to recognize.
 - More frequent blood sugar monitoring may be necessary.
- If you have questions regarding the content of this handout or regarding diabetes and exercise, please contact the diabetes team at Children's Diabetes Center, Children's Hospital and Medical Center at (402) 955-3871.