



Section 8: Physical Activity for Students with Diabetes

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General Overview

Physical activity is fundamental to a healthy lifestyle for all children and adolescents. Participation in physical education class and school-sponsored activities promotes a healthy lifestyle and preserves health. Physical activity is essential for students with diabetes and critical in assisting with diabetes management. Benefits of regular physical activity for students with diabetes include:

- Improved blood glucose control
- Increased insulin sensitivity
- Decreased heart disease risk factors (e.g., high blood pressure, high cholesterol)
- Effective weight management (if needed)
- Increased physical endurance
- Reduced stress

Numerous studies show long-term consequences of inactivity lead to health problems in students. Overweight and obesity, influenced by inactivity and poor diet, are increasing. Children and adolescents do not usually develop chronic diseases, such as heart disease, high blood pressure, type 2 diabetes, or osteoporosis. However, risk factors for these diseases can begin to develop early in life. Regular physical activity can reduce risk for developing chronic disease.

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Children and adolescents can achieve substantial health benefits by participating in moderate- and vigorous-intensity physical activity consisting of 60 minutes (1 hour) or more of daily physical activity. The 60 minutes do not have to be all at one time. Activity can be divided into several shorter periods of physical activity. Physical activity includes aerobic activity as well as muscle- and bone-strengthening activities. Encouraging children and adolescents to participate in physical activities that are appropriate for their age, enjoyable, and offer variety is important.

- **Aerobic:** Most of the 60 or more minutes a day should include moderate- or vigorous-intensity aerobic and vigorous-intensity general physical activity at least 3 days a week (e.g., running, hopping, skipping, jumping rope, swimming, dancing, and bicycling).
- **Muscle-strengthening:** Part of the 60 or more minutes of daily physical activity should include muscle-strengthening physical activity on at least 3 days of the week. Unstructured muscle-strengthening activities, such as playing on playground equipment, climbing trees, and playing tug-of-war, are acceptable. Structured activities can also be structured, such as lifting weights or working with resistance bands, are also acceptable.
- **Bone-strengthening:** As part of their 60 or more minutes of daily physical activity, students should include bone-strengthening physical activity on at least 3 days of the week. Running, jumping rope, basketball, tennis, and hopscotch are all examples of bone-strengthening activities illustrating that bone-strengthening activities are also aerobic and muscle-strengthening.

For more information on physical activity guidelines for children and adolescents, refer to *Section 15: Resources*. An activity pyramid for children and adolescents can help teach strategies for becoming more physically active on a regular basis. This “MyActivity Pyramid” is included in *Section 14: Tools*.

Physical Activity and Diabetes

Participation in physical activity or school-sponsored activities is safe for all students with diabetes. In general, physical activity (exercise) lowers blood glucose levels. Participating in school-sponsored physical activities is exciting and rewarding. Diabetes must not keep a student from participating. Pre-planning is essential to prevent low blood glucose from interfering with any activity. Physical education teachers and coaches can prepare for assisting a student with diabetes by having fast-acting carbohydrates readily available at all times (e.g., tape glucose tablets to clipboard). Students may be at risk for post-exercise low blood glucose (also known as delayed hypoglycemia) after engaging in physical activity. Strategies to reduce risk of low blood glucose include:

- Increasing frequency of self-monitoring of blood glucose (before, during, and after physical activity)
- Decreasing amount of insulin taken for planned physical activity
- Increasing carbohydrate intake for planned physical activity
- Keeping fast-acting carbohydrates readily available for treatment of low blood glucose
- Knowing risk for low blood glucose episodes can last for up to twenty-four hours after participating in physical activity, especially in students with type 1 diabetes

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The student's Diabetes Medical Management Plan (DMMP) should provide the guidance necessary to implement accommodations needed for full participation in activities. Advance planning can include adjustments to insulin/oral medication and adjustments to food intake. During scheduled or school-sponsored physical activity, any student with diabetes on insulin or oral medication should have fast-acting carbohydrates, glucose monitor, insulin (when appropriate), and water available. It is essential to inform and train coaches and others to ensure that they are aware of the student's diabetes. **Due to increased risk for low blood glucose during physical activity, school personnel must know how to assist in the event of low blood glucose levels.** School personnel must be trained to provide the necessary assistance when a low blood glucose occurs. *Section 4: Type 1 Diabetes* and *Section 5: Type 2 Diabetes* provide more specific information on physical activity as it relates to the type of diabetes.

Supporting Physical Activity at School

A school can enhance the physical education (PE) curriculum beyond the minimum standards to emphasize active time versus classroom activities. This could include using a PE curriculum that has proven benefits and using PE homework and extra credit to supplement PE time. Schools should encourage active recess and allow access to recreation facilities after school and during evening hours.

School districts, parent-teacher organizations, local nutrition and physical activity coalitions, and other community groups can work together to encourage safe walking and biking to school. For resources on incorporating physical activity lessons into the school day, refer to the "Supporting Healthy Lifestyles in the Schools" area in *Section 15: Resources*.

