

Exercise and Activity When a Child has Type 1 Diabetes

An active lifestyle can be fun and is important for good health. It helps control weight, improves physical fitness, self-esteem, helps with sleep, and reduces stress. It can also make managing blood sugars more challenging.

How does exercise and activity affect blood sugar?

Exercise or activity usually lowers blood sugar—it makes insulin work harder. During exercise, more sugar moves into the muscle cells, leaving less behind in the bloodstream. This can cause a low blood sugar during exercise and/or several hours after (delayed lows). Strenuous or extended activity late in the day or in the evening can lead to low blood sugar in the middle of the night.

Injecting into an exercising arm or leg may cause the insulin to be absorbed faster, causing a low blood sugar.

Sometimes exercise can cause high blood sugar (post-exercise highs). Doing sports can cause the release of stress hormones that raise the blood sugar. If the blood sugar is high when the exercise is started, the exercise acts as a stressor, causing the blood sugar to go higher. Not drinking enough fluids during exercise can also lead to a high blood sugar.

What are some guidelines for my child to follow?

- Teach coaches and gym teachers about low blood sugar—the signs and symptoms, treatment, and how to prevent it.
- Carry rapid-acting carbohydrate to treat low blood sugar.
- Drink lots of fluids during exercise.
- Don't inject insulin into an arm or leg that was just exercised or is going to be exercised.
- Check the blood sugar before, during, and after exercise.
- Check the blood sugar at 3 a.m. after a long active day or evening activity.
- Think about decreasing the insulin for a **planned** activity (see guidelines).
- Think about giving extra food for **increased** activity (see guidelines).
- Record the insulin and food changes in the logbook to see if they're working.
- If your child has a high blood sugar after exercise, **don't** correct it using the usual dose. Try using only half the correction.
- If blood sugar is greater than 14 mmol/L, check for ketones. **Don't** exercise if ketones are positive.

What are the guidelines for decreasing insulin?

If certain activities cause low blood sugar, then think about giving less insulin. The insulin that's having the greatest effect at the time of exercise is the one that's decreased. For example, supper rapid-acting insulin is decreased for evening soccer.

The insulin is **decreased** by:

- 10% for light activity (walking, baseball)
- 20% for moderate activity (biking, down-hill skiing)
- 30% to 50% for strenuous or day-long activity (soccer, hiking)

If a low blood sugar happens after a very active day, decrease the bedtime intermediate-acting insulin (N or NPH) by 10 to 20%.

What are the guidelines for giving extra food?

If the blood sugar is high at the time of the activity, it will either drop or go higher. Don't give extra food. Check the blood sugar 30 to 60 minutes into the activity. Give extra food if the blood sugar is below 10 mmol/L and the activity will be continuing.

If the blood sugar is below 10 mmol/L before moderate or strenuous activity, give 10 to 15 grams of carbohydrate for every 30 to 60 minutes of activity.

Check the blood sugar during and after the activity to see how well the food adjustments worked. Record the changes you made in the logbook.

This material is for information purposes only. It should not be used in place of medical advice, instruction and/or treatment. If you have questions, speak with your doctor or appropriate healthcare provider.