

Activity and Type 1 Diabetes

It is important to be active when you have diabetes. Activity includes things like exercising, shopping, doing housework or yard work, and sexual activity

How does physical activity affect diabetes?

Exercise makes the body more sensitive to insulin. This can cause your blood sugar to drop during or after the activity—sometimes for up to 24 hours.

Any type of activity can affect your blood sugar. Different activities can have different effects on your blood sugar even though you might have used the same effort.

Blood Sugar Tips:

- Don't inject insulin into your arms or legs before doing an activity that uses those muscles.
- Reduce your insulin dose(s) when you know you will be active to prevent a low blood sugar (see *Adjusting Your Insulin for Activity* on the next page).
- Always carry a fast-acting sugar, like glucose tablets.
- Test your blood sugar:
 - before and after any activity
 - once in a while when you are doing longer activities
 - around 3 a.m. if you have a very active day or evening

Exercising Tips:

- Make sure you wear your medical alert identification.
- Wear shoes that fit well.
- Stay well hydrated. Drink water before you start your activity. Drink about 250 mL of water for every 20 minutes you are active.
- It's a good idea to work out with someone else, especially if your activity is intense (like running a marathon).
- Don't exercise:
 - if you don't feel well
 - if you are showing ketones

Adjusting Your Insulin Dose for Activity

Follow the guidelines below for any activity that is going to last for at least 30 minutes.

- Cut your total meal dose of rapid-acting insulin (correction and meal dose) in half (by 50%) if you are going to be active within 2 hours of your meal insulin dose, even if your blood sugar is high.

You may find you need to cut your rapid-acting insulin dose by more or less than half if your blood sugar is too low or too high during or after the activity. Your healthcare team can help you figure this out.

- If your activity wasn't planned and your insulin dose wasn't cut back in time, check your blood sugar. Have a snack that has at least 15 to 30 grams carbohydrate if:
 - your insulin dose was given within the last 2 hours
 - your blood sugar is under 7 mmol/L
 - you are worried that your blood sugar may drop too much with the activity, even if your blood sugar is over your target when you start
- Cut your bedtime long-acting insulin by 10% to 20% if you:
 - were active in the afternoon or evening
 - were active for a long time during the day (e.g., skiing, hiking, spring cleaning, painting a room)
 - did an intense activity for a short time (e.g., 30 minutes) but are usually not active
 - are planning to be active before noon the next day

Example 1:

Mary plans to go for a run after breakfast. Her pre-breakfast reading is 12.8 mmol/L. Her correction factor is 3 (1 unit drops her 3 mmol/L), and her insulin to carbohydrate ratio is 1:15.

She plans to eat 45 grams of carbohydrate at breakfast. Her usual dose at breakfast is 5 units: 2 units as correction, and 3 units to cover her meals. To prevent a low blood sugar, she cuts this dose in half and gives 2.5 units rapid-acting insulin before she eats her breakfast. Mary will test her blood glucose during and after her exercise to see how this dose worked.

Example 2:

John tests his blood sugar, gives his usual dose of rapid-acting insulin, and eats breakfast at 9:00 am. His friend calls and invites him to go for a bike ride at 10:30 a.m. John's blood sugar is 6.7 mmol/L before the ride. He eats 30 grams carbohydrate as he knows that he still has some insulin working from his breakfast dose.

Since this is the first time he has exercised at this time of the day, he's not sure what his blood sugar will do. He plans to cut his lunch dose of rapid-acting insulin in half to prevent a low blood sugar in the afternoon.

Example 3:

Mary plans to go for a long run right after supper. She has not run before at this time of day. She cuts her supper dose of rapid-acting insulin in half. At bedtime, her blood sugar is 8.2 mmol/L. She cuts her long-acting insulin by 10% and takes 9 units instead of 10 units. She tests her blood sugar at 3 a.m. to make sure her blood sugar isn't too low: Her blood sugar is 7.5 mmol/L. In the morning her blood sugar is 4.4 mmol/L. If she hadn't cut back on her evening insulin, she would have had a low blood sugar by the morning.

Example 4:

John is going skiing for the whole day. He decides to take half his morning basal insulin. He tests before each meal and reduces his meal dose by 50% at each meal. At bedtime, his blood sugar is 5.8 mmol/L. He eats an apple (about 20 grams carbohydrate) with cheese, and reduces his long-acting insulin by 20%.

At 3 a.m. his blood sugar is 5.6 mmol/L. He has 30 grams carbohydrate because he knows that activity can affect blood sugar for up to 24 hours. In the morning his blood sugar is 5.8 mmol/L.

Speak with your diabetes healthcare team if you have questions or concerns about exercise and activity.

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.

