Sport and Diabetes

Keeping active is an important part of your diabetes management. Having diabetes shouldn’t stop you from performing sports at your best! National guidelines encourage children to participate in physical activity for at least 60 minutes on most days of the week. This can be smaller sessions added together e.g. 30mins of walking plus a 30min tennis lesson.

Limiting your time in front of a screen (e.g. TV, computer, iPad, mobile) to less than two hours a day and walking to school are easy ways to increase your daily activity levels.

Regular activity can help you to:

- Feel good
- Have a healthy heart
- Give you more energy
- Keep your body in good shape
- Improve the action of insulin

Exercise can affect blood glucose levels and insulin requirements. Everyone is individual and the response to exercise can vary from person to person.

How does exercise affect blood glucose levels?

In general, exercise lowers your blood glucose levels (BGLs). This is because your body uses glucose as an energy fuel. Sometimes BGLs can rise just before or during an activity due to the release of a hormone called adrenaline. This is usually short lived, with BGLs returning to target range without requiring extra insulin. If your BGLs are above 15mmol/L and you have ketones then activity should be postponed. Exercising when your BGLs are this high could further raise your levels and increase your ketone production.

Management of your diabetes during exercise will depend on the type, duration and intensity of exercise.

To get a better understanding of your blood glucose response during exercise, it is important to keep a record of your blood glucose levels and types of exercise performed. This includes testing before, during and after exercise. It is important to aim for target blood glucose levels (4-8 mmol/L) to maximise performance during exercise. Hyperglycaemia before exercise can impact on your performance during exercise.

Recommendations

Additional carbohydrate “activity food” should be used for sport/exercise.

Insulin doses may also need to be adjusted because of increased insulin sensitivity from the muscles used during exercise. Your diabetes nurse educator and dietitian will help you work out carbohydrate intake and/or insulin dose adjustment when planning exercise.

Injecting in the lower tummy/abdomen or hips is preferable prior to exercise.

A general guide for managing exercise

As a general rule for every 30-45mins of moderate to intensive physical activity you need to consume one extra serve of carbohydrate (approximately 15-20grams), preferably low GI. This is just a starting point, the amount of carbohydrate you require may differ depending on your level of fitness and the type/length of activity you are doing.
Examples of 1 carb serve activity snacks:

- 1 piece of fruit
- 200g tub of yoghurt
- Glass of milk
- 2 plain sweet biscuits
- 1 slice of bread with spread
- 4-6 crackers
- 125mls of Juice
- 1 Muesli bar

It is usually best to have the extra carbohydrate 30mins before exercising. This is in addition to the carbohydrate you usually have.

You do not need extra carbohydrate during recess and lunch breaks at school (even if you are very active). Your daily insulin doses and carbohydrate serves are based on your usual activity levels.

If you are doing long periods of high intensity activity then you might need to have extra fast acting (high GI) carbohydrate during the activity e.g. sports drink or juice. Your diabetes team can advise you on this.

When swimming, have one extra serve of ‘fast acting’ carbohydrate just before starting (e.g. 5 jelly beans or 125ml glass of lemonade or juice) and for every 30mins you are in the water. This is to ensure BGLs stay above 4mmol/L as hypoglycaemia can be harder to detect in the water.

Delayed hypoglycaemia

Delayed hypo’s can occur, often up to 12-16hours after being active. This is because your muscles continue to use glucose during recovery and your body is more sensitive to insulin after exercise.

Testing BGL’s prior to bed and overnight is necessary after prolonged exercise. If you are experiencing regular hypoglycaemia during or after activity then a reduction in insulin might be necessary.

Importance of monitoring!

Exercise affects everyone differently. Monitor your BGLs carefully to look for patterns and learn how your body responds to different sports. Testing your BGLs before activity is important and can give you an idea as to which direction your BGLs are heading and how much extra carbohydrate you require.

Guide to extra carbohydrate before and during exercise

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Blood glucose level before</th>
<th>Extra carbohydrate (1 serve = approx 15g carbohydrate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All activities</td>
<td>Less than 4mmol/L</td>
<td>Treat hypo and delay exercise until feeling better or BGLs &gt;4mmol/L</td>
</tr>
<tr>
<td>Short duration (less than 30 minutes) or Low intensity exercise (e.g. walking, general play)</td>
<td>Less than 7mmol/L</td>
<td>1 serve before No extra necessary</td>
</tr>
<tr>
<td>More than 7mmol/L</td>
<td>Moderate to High intensity exercises (e.g. basketball, netball, running)</td>
<td>If BGL is less than 12mmol/L</td>
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<tr>
<td></td>
<td>Above 12mmol/l</td>
<td></td>
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</tbody>
</table>

**Exercise should be avoided if ketones are above 1mmol/L on injections or 0.6mmol/L on insulin pump therapy.** Less carbohydrate may be needed if insulin has been reduced before the activity.