

# A Guide for Exercise and Diabetes

## Benefits of Exercise

- Builds muscle and burns fat
- Maintains strong bones
- Improves blood lipid profile
- Increases insulin sensitivity
- Decreases blood glucose (short term and in longer term)
- Increases life expectancy
- Improves mood

## Common Exercise Challenges in Type 1 diabetes

1. Too little carbohydrate or too much insulin leading to hypoglycemia
2. Too much carbohydrate or not enough insulin leading to hyperglycemia
3. Too little fluid and/or fuel leading to fatigue and poor performance

### Before Exercise

<b>Check</b>	<ul style="list-style-type: none"><li>✓ Blood glucose levels should be between 5-14 mmol/L to begin exercise.</li><li>✓ If &lt; 5 mmol/L, consume 15 g carbohydrate and follow hypoglycemia protocol.</li><li>✓ If &gt; 14 mmol/L with ketones, take insulin to correct. Once ketones are not present exercise can begin cautiously. If &gt; 14 mmol/L without ketones exercise can begin cautiously.</li></ul>
<b>Hydrate</b>	<ul style="list-style-type: none"><li>✓ Drink 1 cup (250 mL) of fluid 20-30 minutes before activity.</li></ul>
<b>Insulin</b>	<ul style="list-style-type: none"><li>✓ Inject insulin away from the exercising muscle.</li><li>✓ Insulin may need to be adjusted for moderate to high intensity activity lasting longer than 30 minutes.</li></ul>
<b>Snack</b>	<ul style="list-style-type: none"><li>✓ Always plan ahead and carry your own fluids, snacks, and a fast acting carbohydrate for treatment of hypoglycemia.</li><li>✓ A carbohydrate-electrolyte sports drink of 6-8% carbohydrate may be used to cover some or all of your carbohydrate needs (i.e. sports drinks such as Gatorade).</li><li>✓ Snack before exercise according to your blood glucose level and type of activity.</li></ul>

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## During Exercise

- Check** ✓ Check blood glucose every 30 minutes during long periods of exercise.  
✓ Blood glucose may rise with high intensity exercise.
- Hydrate** ✓ Maintain fluid intake of 1 cup (250 mL) for every 20-30 minutes of exercise.  
✓ Dehydration can lead to hyperglycemia and fatigue.
- Insulin** ✓ Adjustments may be needed during long duration activities.
- Snack** ✓ Carry fluids and carbohydrate foods with you – always carry more than you think you may need (see Carbohydrate Adjustment below).  
✓ Higher glycemic index foods are preferred just prior to or during exercise.

## After Exercise

- Check** ✓ Check blood glucose levels after exercise. Check blood glucose overnight if activity was intense or long as hypoglycemia may occur up to 24-48 hours after exercise.
- Hydrate** ✓ Replace fluids with either water or sports drink.
- Insulin** ✓ Insulin may need to be adjusted for up to 12-24 hours after activity.  
✓ Caution taking a correction after exercise. Use only ½ of the usual dose.
- Snack** ✓ Snack within 30 minutes after the activity (high glycemic index carbohydrate plus protein).

## Common carbohydrate foods used for sports:

Choices	Serving	Approximate Net Carb	Glycemic Index
Banana	1 small	20 g	Low
Low fat yogurt	¾-1 cup	15-30 g	Low
Low fat white milk	1 cup (250 ml)	12 g	Low
Chocolate milk	1 cup (250 ml)	28 g	Low
Oatmeal cookie	1 cookie	10-20 g	Med
Granola bar	1 bar (28g)	15-25 g	Med
Sports gels	1 package	23-26 g	High
Sports drinks	1 cup (250 ml)	15 g	High

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