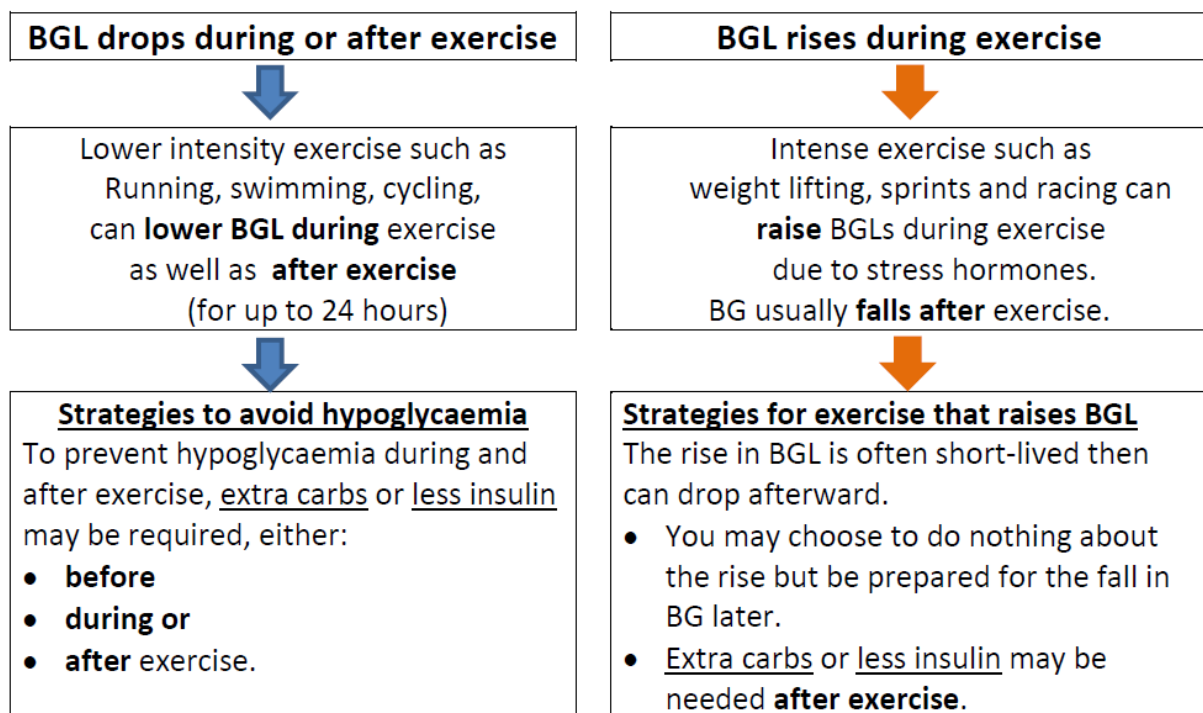


Blood glucose levels (BGLs) and Exercise

This resource is for people with diabetes and helps to explain how your blood glucose levels (BGLs) can change with exercise.

How does exercise change my blood glucose levels (BGLs)?

Exercise and movement are important and fun ways to stay active and healthy. Exercise can cause your BGLs to increase or decrease. How your BGL's change depends on the type and duration of the exercise you are doing. It is important to learn how different types of exercise change your BGLs, so that you can exercise safely.



Low Intensity Exercise or Aerobic exercise

This type of exercise includes running, swimming, and cycling and can:

- Lower your BGLs during or after activity
- Decrease your BGL's for up to 24hours after exercise.



Low Intensity Exercise may lower BGL's during or after activity

To prevent low BGLs (hypos) **during** and **after** exercise, your child may need:

- Extra carbohydrate food before, during or after (without rapid acting insulin)
- Less rapid acting insulin, or
- Both extra carbohydrates AND less insulin may be needed.

Extra carbohydrates in low intensity exercise:

- **before** exercise if your BGL is less than 7mmol/L.
- **during** exercise if your BGL is less than 7mmol/L.
- **after** exercise if your BGL is less than 7mmol/L.

How do I adjust rapid acting insulin for low intensity exercise?

How to change your insulin for exercise depends on your fitness level, the duration and intensity of the exercise and your insulin pattern.

- Rapid acting insulin can be reduced in the meal before **or** after the exercise if the meal is within 2 hours of the exercise. You can reduce the rapid acting insulin at the meal before **and** after exercise if required.

For planned exercise within 2 hours of a meal that you give rapid acting insulin

- Start by reducing the rapid acting insulin by 50%
- If this is too much of a reduction, try 30% less rapid acting insulin the next time you do the same activity.

Basal or long acting insulin

- If you are participating in a long duration or all-day exercise, long acting insulin doses can be reduced. Your diabetes team can help to guide you with these changes.

High Intensity Exercise or Anaerobic exercise

This type of exercise includes sprinting, racing and weights or competitive sports and can:

- Raise BGLs. This is due to the release of stress hormones.
- BGLs will usually fall after the exercise.
- Extra carbohydrate or less insulin might be needed **after** exercise.



BGLs may go up during or after the activity

To prevent low BGLs (hypos) **after** high intensity exercise, your child may need:

- Extra carbohydrate food after exercise (without rapid acting insulin)
- Less rapid acting insulin at a meal within 2 hours of the exercise, or
- Both extra carbohydrates AND less rapid acting insulin after the exercise may be needed.

Extra carbohydrate in high intensity exercise:

- **after** exercise if your BGL is less than 7mmol/L.

How do I adjust rapid acting insulin for high intensity exercise?

How to change your insulin for exercise depends on your fitness level, the duration and intensity of the exercise and your insulin pattern.

- For high intensity exercise this strategy can be used in the meal after the exercise if the meal is within 2 hours of the exercise.

For planned exercise within 2 hours of a meal that you give rapid acting insulin

- Start by reducing the rapid acting insulin by 50%
- If this is too much of a reduction, try 30% less rapid acting insulin the next time you do the same activity.

Basal or long acting insulin

- If you are participating in a long duration or all-day exercise, long acting insulin doses can be reduced. Your diabetes team can help to guide you with these changes.

How much extra carbohydrate do I need?

Extra carbohydrate may be needed for exercise lasting more than 30 minutes.

If you haven't reduced your insulin dose, as a general guide consider:

- 1 x carb portion (15g) carbohydrate serve for each hour of gentle exercise
 - Gentle exercise includes walking slowly or playing an instrument.
- 2 x carb portion (30g) carbohydrate serve for each hour of moderate exercise
 - Moderate intensity exercise includes walking briskly or jog- walk intervals.
- 3 x carb portion (45g) carbohydrate serve for each hour of intense exercise
 - Intense exercise includes running, playing competitive soccer or basketball

What type of carbohydrates should I choose?

If you are having extra carbohydrates just before or during exercise, use fast acting carbohydrates.

Fast-acting carbohydrate 1 serve (15g carbohydrate)

If you are less than 4 years of age, you may only need 7g or ½ carb portion.

- 100mls Lucozade
- 7 small jellybeans
- 150ml soft drink (non-diet) or 150ml fruit juice
- 1 tablespoon sugar or honey
- 4 dried dates or 2 fresh dates.
- 20g sultanas
- Glucose gel or glucose tablets equal to 15g (talk with your diabetes team)

Longer acting carbohydrates can also be helpful in the meal (1-4 hours) before and (1-4 hours) after exercise.

Longer- acting carbohydrate 1 serve carbohydrate (15g)

If you are less than 4 years of age, you may only need 7g or ½ carb portion.

- 1 slice of bread
- 1 piece of fruit (e.g. banana, apple)
- 1 cup (250mls) plain milk
- 1 tub (150-200g) yoghurt
- 1 muesli bar
- 2 plain sweet biscuits (e.g. Nice, Arrowroot)

Exercise tips

- Checking BGLs **before, during and after** exercise, every 30 minutes is recommended to learn what strategy works best for you. Your continuous glucose monitoring device (CGM) can also be used to check your levels, if you think you are low always confirm this with a finger prick.
- If BGL is below 7 mmol/L
 - Before exercise → consider 1 carb portion or 15g at the start of exercise
 - During exercise → consider 1 carb portion each time BGL is less than 7mmol/L
- Always carry fast acting carbohydrate to treat a hypo if needed.
- Intensive exercise at the start of an exercise event can reduce the risk of low BGL during exercise, however extra carbs or reduced insulin may still be required after the event.
- You may also reduce long acting insulin for long duration exercise.
- Your diabetes team can work with you to create an exercise plan that suits you best.

For further information, contact your Dietitian: _____