

## Type 2 Diabetes Exercise Action Plan (on Insulin and/or Sulphonylureas)

This resource is designed to be used by an Exercise Specialist with diabetes knowledge.

### Guidelines for Starting Exercise

<b>Glucose Level:</b>	<b>OK to exercise</b>	
* Ensure medication taken as prescribed.	* Have blood glucose level monitor	* If previous foot or nerve problems check feet before and after exercise.
* Ensure adequate fluid intake	* Avoid exercise in extremes of temperature	* If taking sulphonylureas, risk of hypoglycaemia is increased when exercising after a meal
<b>Establish glucose trend by measuring glucose levels 2-3 times (e.g. every 30 mins) before exercise.</b> If glucose level is falling and it has been >90 min since eating, then consider one serve of slow acting carbohydrate – dependent on duration and intensity of exercise, the carbohydrate intake and glucose level prior to starting exercise.		
<b>5.5 – 15.0mmol/L</b>	If on insulin – carry one serve of fast acting carbohydrate when exercising, especially when > 60min. If on a sulphonylurea – carry one serve of slow acting carbohydrate when exercising, especially when > 60min.	
<b>Glucose Level:</b>	<b>Below target glucose – Delay exercise or do not exercise</b>	
<b>4.0 – 5.4mmol/L</b>	Delay Exercise – Consume one to two serves of fast acting carbohydrate. - If accustomed to exercise and their own glucose response to this starting level = may start exercising. Follow with slow acting carbohydrate if exercise duration >30 min and/or next meal is more than 30 min away. Monitor glucose trend during exercise. - If unaccustomed to exercise and/or glucose response to starting level, wait 15 min after consuming the carbohydrate and then re-test. OK to exercise when glucose ≥5.5mmol/L and feeling well. Follow with slow acting carbohydrate if exercise duration >30 min and/or next meal is more than 30 min away. Monitor glucose trend during exercise.	
<b>Glucose Level:</b>	<b>Hyperglycaemia, but feel well – Exercise with caution</b>	
<b>&gt;15.0mmol/L</b>	<b>If Likely Due to Food</b> – If feeling well and usual medications have been taken - perform exercise with caution (may be beneficial in lowering glucose). Monitor the glucose level during exercise and increase fluid intake. <b>If Likely Due to Missed Medication</b> – If feeling well - low-intensity exercise only and catch up on missed medications as soon as possible and increase fluid intake.	
<b>Glucose Level:</b>	<b>Hypoglycaemia or Hyperglycaemia - Do not exercise or delay exercise</b>	
DO NOT EXERCISE – If hypoglycaemic event within the previous 24 h that required assistance from another individual to treat the event. DO NOT EXERCISE – If hypoglycaemic event within the previous 24 h that did not require assistance but the intended exercise is potentially unsafe (e.g. swimming, skiing, surfing, etc.). DO NOT EXERCISE UNTIL SYMPTOMS IMPROVE – If feeling unwell (e.g. abnormal sweating, trembling, anxiety, hunger, weakness, dizziness, inability to think straight)		
<b>&lt;4.0mmol/L</b>	Delay Exercise – Treat hypoglycaemia: Consume one serve of fast acting carbohydrates and re-test after 15 min. If still wishing to exercise, ensure glucose level is ≥5.5mmol/L and follow up with one serve of slow acting carbohydrate. Do low to moderate intensity exercise and closely monitor glucose, re-test every 15 min. DO NOT EXERCISE – If alone or type of exercise is potentially unsafe (e.g. swimming, skiing, surfing, etc.). <b>If glucose level is frequently &lt;4.0mmol/L, schedule review with a Diabetes Healthcare Professional.</b>	
<b>&gt;15.0mmol/L</b>	DO NOT EXERCISE – If feeling unwell, tired, weak, thirsty and/or frequently urinating. <b>If glucose level is frequently &gt;15.0mmol/L, schedule review with a Diabetes Healthcare Professional.</b>	
<b>Fast Acting Carbohydrate (15g=one serve) examples: One serve as initial treatment</b>		
- 100mL Lucozade	- 7 small or 4 large jelly beans	
- 3 teaspoons honey, jam or sugar	- 150mL fruit juice or soft drink	
- 3 glucose tablets	- 30mL cordial (non diet) mixed with 150mL water	
<b>Slow Acting Carbohydrate (15g=one serve) examples: One serve as follow up treatment</b>		
- 250mL plain milk	- 1 tub (200g) yoghurt	- 1 slice of bread
- 2 sweet plain biscuits	- 1 piece of fruit	- next meal (if served within 30 min)

### Guidelines for During Exercise

- Trained individuals have greater reductions in glucose during aerobic exercise than individuals with reduced cardiorespiratory fitness.
- High-intensity exercise or resistance exercise before aerobic exercise will attenuate the decrease in glucose compared to aerobic exercise alone.
- Completing an aerobic exercise cool down after high-intensity or resistance exercise will attenuate the glucose rise compared to performing high-intensity or resistance exercise alone.

<b>Glucose Level:</b>	<b>Below target glucose - Exercise with caution</b>
<b>&lt;5.5mmol/L</b>	<ul style="list-style-type: none"> <li>- Consume fast acting carbohydrates if next meal not planned within 30 min – one serve per hour with gentle exercise, two serves per hour with moderate-intensity exercise, four serves per hour with vigorous or high-intensity exercise. Alternative approach = 0.3-0.5g carbohydrate per kg of body mass per hour activity with reduced insulin.</li> </ul> <p><b>If this occurs frequently, schedule review with Diabetes Healthcare Professional.</b></p>
<b>Glucose Level:</b>	<b>Rising glucose - Exercise with caution</b>
<b>Rises above pre-exercise level</b>	<ul style="list-style-type: none"> <li>- Ensure medications have not been missed.</li> <li>- Rise is more likely with higher intensity exercise such as weight lifting, sprints and racing.</li> <li>- Rise may also be due to food consumed within the last 90 min.</li> <li>- Monitor the rise but be prepared for the fall in the glucose later – may require correction in carbohydrate consumption and/or insulin after exercise.</li> </ul>
<b>Glucose Level:</b>	<b>Hypoglycaemia - Not safe to continue exercise</b>
<b>&lt;4.0mmol/L</b>	<p><b>STOP EXERCISING</b> – Consume one serve of fast acting carbohydrate and re-check after 15 min. If glucose is still &lt;4.0mmol/L repeat one serve fast acting carbohydrate. Once glucose is ≥4.0mmol/L consume one serve slow acting carbohydrate if next meal is more than 30 min away.</p> <ul style="list-style-type: none"> <li>- Only resume exercise when glucose is ≥5.5mmol/L.</li> </ul> <p><b>- If this occurs frequently, schedule review with a Diabetes Healthcare Professional.</b></p>

### Guidelines for After Exercise

- Risk of hypoglycaemia is elevated for at least 12 h after exercise. Monitor glucose after exercise if there has been an increase in exercise or when performing new exercise.
- If post-exercise hypoglycaemia occurs, treat and confirm resolution then check the glucose level at least every 2 h up to 6 h post exercise.
- Additional monitoring (e.g. for night-time hypoglycaemia) is required when exercising in extreme heat, cold or high altitude, changing exercise type/duration/intensity, and if post-exercise hypoglycaemia has previously occurred.
- If exercising in the afternoon, monitor for the risk of night-time hypoglycaemia.
- If night-time hypoglycaemia occurs, check the glucose level before sleep, once during the night (e.g. 2:00 am), and immediately upon waking.
- If glucose level <7mmol/L before bed, extra carbohydrates should be consumed.
- Adjustment of insulin with post exercise meal or additional carbohydrates following exercise may be required.

**If the glucose level is of concern and/or is within orange or red areas of the Action Plan recurrently, the following should be discussed and reviewed with a Diabetes Healthcare Professional.**

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| <ul style="list-style-type: none"> <li>• Type of medications to lower glucose</li> <li>• Timing of medications</li> <li>• Glucose trend prior to exercise</li> <li>• Timing and amount of previous food intake</li> </ul> | <ul style="list-style-type: none"> <li>• Presence and severity of diabetes complications</li> <li>• Use of other medications secondary to diabetes</li> <li>• Intensity, duration and type of exercise</li> <li>• Time of day conducting exercise</li> </ul> |
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