

## Exercise with Type 1 Diabetes Mellitus - Paediatric Summary Clinical Guideline

Reference no.: CH CLIN D11/Feb 21/v005

Plan to avoid: hypo during /hypo after/night time hypo/ high blood sugar during/high blood sugar after

Check blood sugar before exercise, every 30 minutes during and at end. If exercise more intense or longer than usual check at 2-3 am.

### Insulin adjustment

If within two hours of a meal, reduce Novorapid dose at previous meal by 25-75% depending on duration, intensity, previous experience  
Pumps: 50% basal 60-90 mins before, and during (or remove). Run 90% basal 7-12 hrs after. Anaerobic 110% basal 30 mins before to 60 mins after  
Basal insulin reduce by 10%-20% eg if twice a day and if exercise less than every 3 days

### Extra carbohydrates before exercise

Blood sugar before sport	<4mmol	4.0 –4.9mmol/l	5.0- 6.9 mmol/l	7-15 mmol/l	>15.0 mmol/l
Action	Treat hypo  Start exercise once above 5.0 mmol/l	10-20 g carbohydrate Start exercise once above 5.0mmol/l	10g carbs before aerobic Start anaerobic or IHIE	Start aerobic  Start anaerobic or IHIE but blood sugars may rise	If hyperglycaemia is not explained eg not associated with recent meal check ketones* Consider 1/3 usual correction

\* - if Ketones above 0.5mmol/l follow sick day rules and do not begin exercise until less than 0.5 mmol/l.

### Extra carbohydrates during exercise

Check blood sugar every 30 minutes  
Additional carbs 0.5-1.5g/kg/hr depending on blood sugar, intensity and whether circulating insulin. Max 60g  
Anaerobic exercise and blood sugar > 14 mmol/l, check ketones consider small correction with novorapid with caution.

### After exercise: actions to replenish glucose stores and prevent night time hypo

No meal due within next hour	Have mixed snack within 1 hour of finishing exercise : carb (0.5g- 1g/kg) and protein (0.3g/kg) snack Start with 1/2 of usual novorapid dose. Don't correct or cautious correction
Next meal	Novorapid dose for meal reduce by 50% Novorapid dose for correction- cautious with correction
Supper if exercise earlier in day	Have mixed snack: carb (1g/kg) and protein (0.3g/kg) snack without insulin If additional carbs eaten given 50% of usual dose for additional carbs. Don't correct /cautious correction

### Examples of extra carbohydrates

Before/during exercise	10g	15g	20g	Post exercise snack
Isotonic sport drink 6g/100ml	200 ml	300ml	400ml	Standard porridge oats (not sachet) made with milk
Jaffa cake	1	1.5	2	Wholemeal bread with a meat filling
Dried apricots	3	4	6	Crackers (24g) with humous or cream cheese
raisins	1box	1.5 box	2 box	Toast with baked beans or peanut butter
Jelly babies	3	4	6	Plain yoghurt