King's College Hospital **NHS**

NHS Foundation Trust

Hybrid Closed Loop – Exercise/Activity Management and Tips

Exercise needs to be managed differently with Hybrid Closed Loop systems

Types of Exercise
Aerobic exercise: Cardio and cardio-respiratory exercise. Increase heart rate and use of oxygen. Examples: brisk walking, running, cycling.
Can cause lower glucose levels

Anaerobic exercise: Higher intensity, higher power, breaks down glucose without using oxygen, generally shorter length but high intensity. Examples: weightlifting, sprinting, HIIT
Can cause rise in glucose levels

ADVICE ON MANAGEMENT

Reduce bolus by 20-30% if meal within 1-2 hours prior to exercise.

Aim to start exercise in target range.

Avoid carb loading before exercise - algorithm will respond by increasing insulin delivery (auto corrections + auto basal) that can result in subsequent low glucose / hypoglycaemia

Setting temp target / exercise mode / ease off / Activity feature
Planned activity - Recommend setting temp target / exercise mode / ease off 60-90 mins before
Unplanned activity (<90mins before start) – set as soon as decide to perform activity

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Continue temp target/exercise mode/ease off/activity feature for duration of exercise/activity

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If anaerobic exercise – suggest stopping temp target / exercise mode / ease off 15 mins post exercise
If aerobic exercise – suggest stopping temp target / exercise mode / ease off 15 mins post activity
(will need to assess duration according to glucose levels and control)

TIPS TO REMEMBER

Reduce risk of hypo!!
Recommend 'drizzle effect' during exercise as required (5-15g quick acting carbs every 20 mins) to prevent low glucose events depending on activity and response. Though this is likely not needed with HCL system

Disconnecting pump?

If disconnecting the pump (ie contact sports) remember to suspend insulin delivery to ensure correct calculations

Post exercise bolus…
- For any anaerobic exercise highs → *correct through pump or boost*
- Post exercise meal bolus → *consider 30% insulin reduction if within an hour after*

If high active insulin pre exercise – consider delaying exercise.

Control IQ (Tandem T-Slim)
Exercise mode target range 7.8-8.9.
You might find you need an additional exercise profile, with reduced basal settings for use when exercising

Smartguard (Medtronic 780G)
Temp target BG target is 8.3. You might prefer to come out of Smartguard and use the temporary basal function on the pump.

CamAPS FX
Ease off raises target by 2.5mmol/L. Suspends insulin if glucose <7.7mmol/L. You can adjust your target for exercise in addition to using the ease off function

SmartAdjust (Omnipod 5)
Activity feature target is 8.3

Note that the low glucose suspend function alone is unlikely to prevent exercise related hypo's without additional insulin and carb management adjustment!!