SURVIVE & THRIVE · EXERCISE SERIES

Exercise on AID Systems — what each algorithm does, what you still do

EXERCISE FRAMEWORK

AID handles some of the work. You still do the rest.

IOB

IOB is still variable #1

Every AID algorithm works by modulating basal delivery - but they don't cancel insulin already delivered. Pre-meal bolus reductions still apply.

PRE-EXERCISE LEAD	BOLUS REDUCTION	POST-EXERCISE
60-90 min	25-50%	up to 4-14 h
activate target / Ease-off	meal within 90 min of exercise	late drop risk window

Ref: Moser/Zaharieva 2024 (EASD/ISPAD AID consensus) · Royston & Hovorka 2024 CamAPS · Campbell 2015 · Rabasa-Lhoret 2001.

THE THREE MAJORS (AID CONTEXT)

- ✓ **1 · IOB.** AID can reduce future basal but cannot reclaim delivered insulin. Pre-meal bolus matters.
- ✓ **2 · Starting glucose.** Same as MDI and pump - where you start shapes where you land.
- ✓ **3 · Trend arrows.** Arrows tell you what the algorithm is seeing. Read them, don't wait.
- ✓ **Activate exercise mode *before* the session.** 60-90 min of lead time lets IOB drop to working range.
- ✓ **Don't turn it off during.** Algorithm behaviour is designed for full session coverage.

AID SYSTEM · EXERCISE MODE REFERENCE

What each system does, what you still do

SYSTEM	EXERCISE MODE	WHAT CHANGES
Omnipod 5	Activity Mode	Target → 8.3 mmol/L, basal reduced
Control-IQ	Exercise Mode	Target 7.8-8.9 mmol/L, no auto-correct
MiniMed 780G	Temp Target	Target → 8.3 mmol/L, less basal, no auto-correct
CamAPS FX	Ease-off	Reduces insulin delivery broadly

All four do similar things. Raise target, reduce basal, disable aggressive corrections. The timing advice is the same: activate *before*, not during.

PRE-MEAL BOLUS · STILL YOURS

What the algorithm doesn't cover

- **Meal within 90 min of exercise:** reduce bolus 25-50% (moderate session), 50-75% (longer / harder).
- **Exercise > 90 min after meal:** bolus is largely cleared - switch to carb intake during exercise.
- **AID will auto-correct a rise** - but post-meal excursions that are too big for the algorithm push you out of working range.

PRE-EXERCISE STARTING GLUCOSE · AID-ADJUSTED

The target has shifted - use it

GLUCOSE AT START	ACTION (EXERCISE MODE ALREADY ON)
< 5.0 mmol/L	15-30 g carb, delay starting 15 min.
5.0-7.0	10-15 g carb. Algorithm target is above this - it will reduce basal.
7.0-10.0	Start as planned. Inside most exercise-mode targets.
10.0-15.0	Start. Algorithm will auto-correct if target is exceeded.
> 15.0	Check ketones. If present, delay. If not, light session only.

CAMAPS BOOST + EASE-OFF · REAL-WORLD DATA

A note on Boost, not just Ease-off

Royston & Hovorka 2024 (n=7,464 CamAPS users): Boost (for illness, growth, persistent highs, pregnancy) had **0.0% time below 3.9 mmol/L** vs 2.1% outside Boost. Ease-off **reduced** hyperglycaemia during exercise.

Both are safe across all ages. Boost does not cause hypoglycaemia. Ease-off does not cause hyperglycaemia. Use them.

SURVIVE & THRIVE · EXERCISE SERIES

Exercise on AID Systems — during, after, and overnight

DURING EXERCISE

Carbs + what the algorithm is doing

AID is already reducing insulin delivery - but algorithm response lags physiology. Carbs still bridge the gap.

- **Light 30-60 min:** 5-15 g every 30 min if glucose drifts down.
- **Moderate 30-60 min:** 15-20 g every 30 min.
- **Heavy / prolonged > 60 min:** 30-60 g/hour, higher if aerobic.
- **Intermittent high-intensity:** glucose often rises from sprints. AID will auto-correct - don't fight it with carbs.

The algorithm can't see carbs you eat. For mid-session carbs, don't bolus them if they're there to prevent hypo. Do enter them if they're a planned fuel source during extended sessions.

NON-CARB COUNTER-REGULATION

10-second sprint + AID

Bussau 2006: 10-sec maximal sprint at the end of moderate exercise attenuates post-exercise glucose drop. On AID the effect is additive - the algorithm responds to the sprint-induced rise by briefly increasing delivery, smoothing what would otherwise be a spike.

Iscoe & Riddell show the same for intermittent high-intensity intervals within continuous moderate exercise - AID handles the variability well.

POST-EXERCISE & OVERNIGHT

The late drop is still real - algorithms help, don't fix

Post-exercise glucose dip arrives 4-14 hours later. AID algorithms reduce delivery during the dip - but don't always catch a fast fall quickly enough.

- **Keep exercise mode on 60 min post-session.** Let the algorithm reduce basal while IOB still high.
- **Bedtime snack 0.4 g/kg** slow carbs (Campbell 2015) even on AID. Don't bolus if glucose is in range.
- **Mixed-macronutrient snack** (milk + oat biscuit) outperforms quick carbs for overnight stability (Kalergis 2003).
- **CamAPS Ease-off** can run overnight to reduce overall delivery. Review with your team.
- **First few sessions of a new activity:** set a 3am alarm until you know your pattern, even on AID.

MAJOR IN THE MAJORS · THE TWO ACTIONS

Model before you act

ACTION 1 — **Exercise Planning Explorer - AID-aware**
Pick your AID system - explorer models exercise-mode timing + bolus + carbs for that algorithm. →

ACTION 2 — **Exercise IOB - carbs for 30 min exercise**
IOB on AID still matters. Calculates what the algorithm cannot claw back. →

GO DEEPER

GNL explorers, guides & podcasts

GUIDE — **Full Exercise Guide - 5-part series**
Including Part 4 - AID + exercise, Part 5 - Mastering Top 10. →

GUIDE — **Full AID Guide - 5-part series**
How every algorithm handles exercise differently. →

ASK — **Grace - evidence-backed Q&A**
Moser/Zaharieva 2024, Royston & Hovorka CamAPS, pregnancy. →