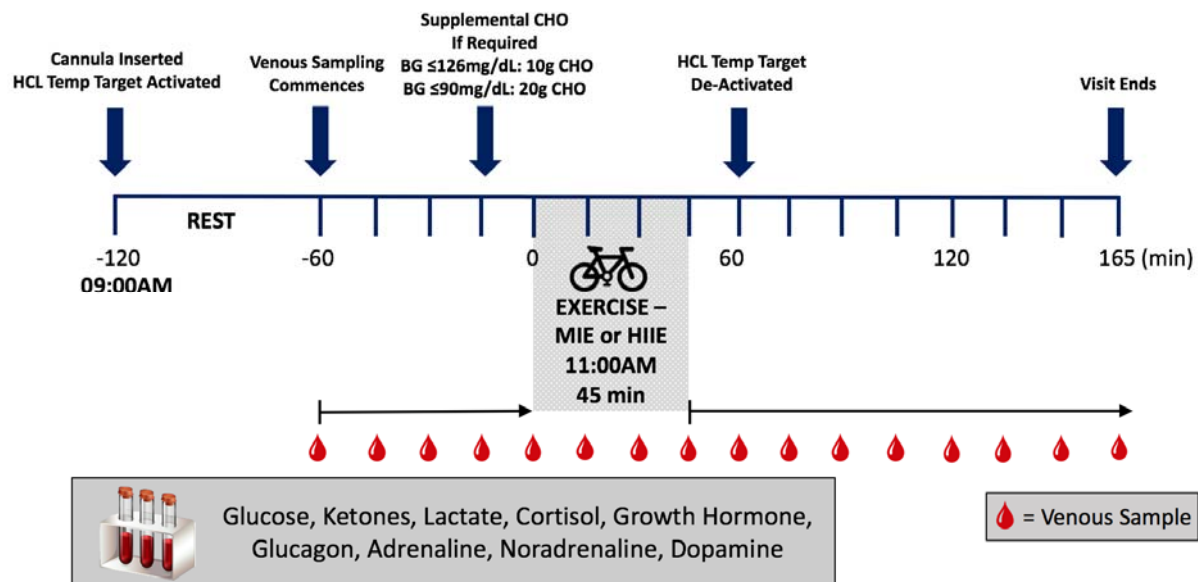


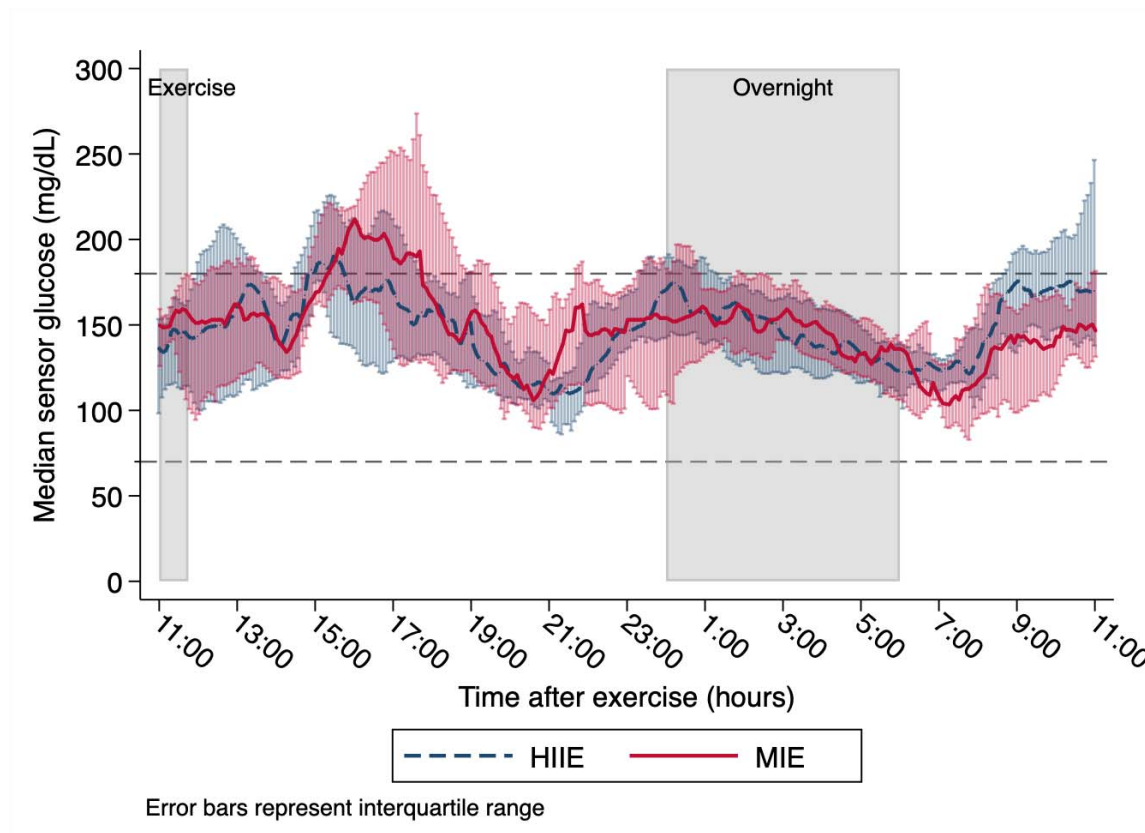
SUPPLEMENTARY DATA

Supplementary Figure 1. Study protocol implemented on exercise day. BG, blood glucose. CHO, carbohydrate. HCL, hybrid closed-loop.



SUPPLEMENTARY DATA

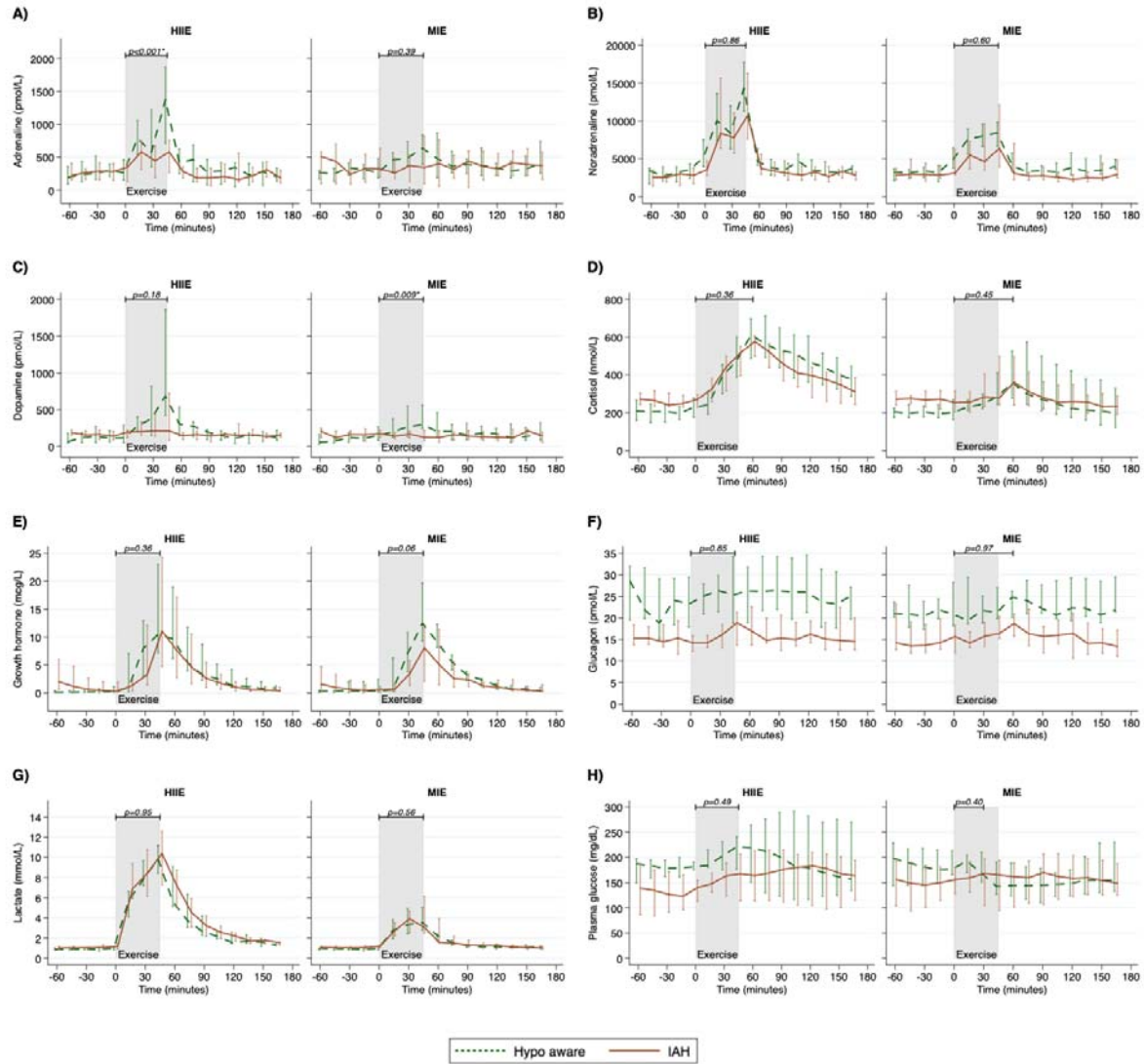
Supplementary Figure 2. CGM values over the 24-hour period following exercise commencement. HIIE, dotted blue line; MIE, solid red line; exercise period (11:00h-11:45h) and overnight period (00:00h-06:00h) represented by shaded boxes. Values are median + IQR.



SUPPLEMENTARY DATA

Supplementary Figure 3. Post-hoc comparison of counter-regulatory responses to HIIE and MIE stages between groups with (1) hypoglycemia awareness (hypo aware) and (2) impaired awareness of hypoglycemia (IAH), from 60-mins prior to exercise commencement to 120-mins following exercise completion. Hypo aware group, dotted green line; IAH group, solid orange line; exercise period represented by shaded box. Values are median + IQR. P values represent the incremental change from baseline to peak value, hypo aware vs. IAH group. Statistically significant results represented with *.

SUPPLEMENTARY DATA



SUPPLEMENTARY DATA

Supplementary Table 1. Clinical Characteristics of Study Participants (N=12). Continuous data are presented as median (inter-quartile range). Categorical data are presented as frequency (%). BMI, body mass index.

Baseline characteristics	N = 12
Age (years)	53 (42, 57)
Sex (male)	6 (50%)
BMI (kg/m ²)	25 (22, 28)
Duration of diabetes (years)	28 (18, 38)
Duration of insulin pump therapy (years)	8 (5, 11)
HbA _{1c} (% mmol/mol)	7.2 (6.5, 7.4) 55 (48, 57)
Gold Score	6 (5, 7)
Clarke Score	6 (6, 7)
No. of severe hypoglycemic episodes in last year	2 (1, 3)
Microvascular diabetes complications	7 (58%)
Macrovascular diabetes complications	2 (17%)
Autonomic diabetes complications	1 (8%)
Total daily insulin dose (units)	36 (33, 42)
Insulin sensitivity (units/kg/day)	0.47 (0.45, 0.61)
Daily physical activity <30 min 30-60 min >60 min	3 (25%) 7 (58%) 2 (17%)

SUPPLEMENTARY DATA

VO ₂ max (mL/kg/min)	25.6 (22.4, 34.0)
Maximal power (Watts)	167 (145, 202)
Anaerobic threshold (Watts)	113 (96, 150)

SUPPLEMENTARY DATA

Supplementary Table 2. CGM metrics 1-week pre-exercise, 24-hours pre-exercise, and 24-hours post-exercise commencement in HIIE and MIE groups. Data are expressed as median and IQR. SD, Standard Deviation. CV, Coefficient of Variation.

CGM Metrics	1-week pre-exercise		24-hours pre-exercise		24-hours post-exercise	
	HIIE	MIE	HIIE	MIE	HIIE	MIE
Time	78.0	77.9	79.8	80.4	76.1	79.5
70-180mg/dL (%)	(70.6, 83.5)	(75.0, 80.5)	(60.5, 90.1)	(73.0, 89.3)	(70.3, 83.9)	(73.2, 87.6)
Time	48.8	51.0	45.7	54.5	38.8	49.1
70-140mg/dL (%)	(45.2, 52.9)	(46.6, 53.4)	(37.0, 59.1)	(44.3, 58.8)	(32.8, 47.1)	(31.4, 56.1)
Time	2.8	2.4	2.6	2.6	0.4	0.0
<70mg/dL (%)	(1.7, 5.3)	(1.0, 3.8)	(0.2, 7.0)	(0.2, 4.9)	(0.0, 3.4)	(0.0, 0.0)
Time	0.8	0.5	0.0	0.0	0.0	0.0
<54mg/dL (%)	(0.2, 1.0)	(0.1, 1.0)	(0.0, 0.9)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)
Time	20.7	20.5	16.1	14.2	22.3	20.5
>180mg/dL (%)	(11.5, 26.0)	(17.5, 22.6)	(7.1, 34.3)	(10.7, 24.3)	(12.2, 28.1)	(12.4, 26.1)
Time	2.8	2.3	1.6	2.4	0.5	0.0
>250mg/dL (%)	(0.8, 4.2)	(1.3, 4.6)	(0.0, 7.8)	(0.2, 5.6)	(0.0, 6.2)	(0.0, 1.9)
Mean glucose (mg/dL)	146 (135, 151)	148 (140, 151)	144 (131, 155)	142 (133, 153)	149 (137, 160)	146 (139, 157)
SD of glucose (mg/dL)	47 (40, 50)	45 (41, 52)	41 (31, 61)	45 (34, 52)	42 (34, 45)	37 (29, 40)
CV of glucose (%)	32.3 (30.5, 34.3)	30.6 (28.7, 34.9)	30.2 (23.1, 38.9)	31.5 (26.7, 33.5)	27.0 (24.0, 30.7)	23.3 (20.2, 27.7)