

Supplementary Material

S.1.1 Materials: Objectively-Quantified Physical Activity and Diet

Daily mean time spent performing physical activity, steps, and total energy expenditure were measured with a triaxial accelerometer (SenseWear, BodyMedia Inc., PA, USA). Participants were asked to wear the monitor for 7 days and 24 hours per day, except during water-based activities. Participants were instructed to continue with their habitual routine during this period. Physical activity levels were quantified as “moderate” activity (3 to < 6 METs) and “vigorous” activity (6 to < 9 METs). Data were included if the monitor was worn for >85% of a 24-hour day. All participants were asked at commencement and reminded fortnightly to not alter their dietary or physical activity behaviours throughout the trial.

S.2.1 Results: Objectively-Quantified Physical Activity and Diet

There were no significant differences between groups at baseline for time spent performing moderate physical activity, steps, total energy expenditure ($p > 0.05$) (Table 2). Post-intervention data were only available for five, seven, and two participants in the MICT, HIIT, and PLA groups, respectively, therefore statistical analyses of change in habitual physical activity levels were not undertaken.

ST.2.1: Baseline and post-intervention objectively quantified physical activity

	MICT		HIIT		PLA	
	Baseline	Post	Baseline	Post	Baseline	Post
Total energy expenditure (kJ/day)	11398 (800)	10686 (668)	12392 (609)	12401 (566)	22009 (9430)	21366 (9156)
Steps/day	7303.8 (934)	6557.3 (740)	6737 (793)	6324.1 (859)	6326 (662)	6055 (633)
Moderate activity, < 3-6 METS (Hours/day)	0:45 (0:08)	0:27 (0:05)	0:31 (0:09)	0:41 (0:10)	0:42 (0:12)	0:47 (0:14)

Presented as Mean (SE). PLA, sham-exercise placebo group; MICT, moderate-intensity continuous training group; HIIT, high-intensity interval training group; METS, metabolic equivalents. Baseline data for objectively quantified physical activity, MICT n = 10, HIIT n = 11, PLA n = 7; Post-intervention data for objectively quantified physical activity, MICT n = 5, HIIT n = 7, PLA n = 2.

ST.2.2: Reported Medication Usage Per Group at Baseline (B) and at study end (E)

	MICT (B)	MICT (E)	HIIT (B)	HIIT (E)	PLA (B)	PLA (E)
<i>Glycemia-related medication</i>	11	11	11	11	11	11
Metformin	4	4	8	8	8	8
Sulfonylurea	1	1	0	0	0	0
Sulfonylurea + metformin	4	4	2	2	1	1
DPP-4 Inhibitors	1	1	2	2	0	0
DPP-4 + Metformin	2	2	2	2	3	3
GLP-1 agonist	1	1	0	0	0	0
SGLT-2 Inhibitor	1	1	1	1	2	2
Insulin	1	1	2	2	3	3
<i>Lipid-lowering medication</i>	9	9	5	5	6	7
<i>Hypertension-related medication</i>	7	7	9	9	2	2

DPP-4, Dipeptidyl peptidase-4; GLP-1, Glucagon-like peptide 1; SGLT-2, Sodium-glucose co-transporter

ST.2.3 Per protocol analysis of primary and secondary cardiometabolic outcomes

	MICT (n = 10)			HIIT (n = 11)			PLA (n = 9)			p
	Baseline	Post	ES (95% CI)	Baseline	Post	ES (95% CI)	Baseline	Post	ES 95% CI)	
<i>Ectopic Fat</i>										
Liver Fat (%)	7.6 (1.5)	6.9 (1.8)	-0.12 (-2.25 to 2.49)	10.3 (2.5)	8.5 (2.4)	-0.22 (-3.15 to 3.58)	9.8 (1.9)	10.8 (2.4)	0.15 (-2.29 to 3.20)	0.125
<i>Fitness</i>										
VO ₂ peak (ml/kg/min)	22.1 (2.0)	24.5 (1.7)	0.39 (-2.20 to 2.98)	20.7 (0.7)	21.8 (0.8)	0.41 (-0.66 to 1.48)	20.8 (1.8)	19.3 (1.8)	-0.26 (-2.79 to 2.27)	0.020*
<i>Biochemistry</i>										
HbA1c (%)	7.4 (0.5)	7.1 (0.4)	-0.25 (-0.85 to 0.36)	7.3 (0.4)	7.0 (0.2)	-0.27 (-0.70 to 0.17)	7.2 (0.4)	7.6 (0.4)	0.31 (-0.23 to 0.86)	0.094
HbA1c (mmol/L)	57.8 (5.4)	54.0 (4.0)	-0.24 (-6.88 to 6.34)	55.8 (4.4)	52.7 (2.0)	-0.26 (-5.04 to 4.53)	55.4 (3.9)	59.6 (4.7)	0.30 (-5.68 to 6.28)	0.105
FBG (mmol/L)	8.1 (0.7)	7.9 (0.8)	-0.07 (-1.10 to 0.97)	7.8 (0.9)	7.5 (0.5)	-0.12 (-1.09 to 0.86)	8.4 (1.2)	9.5 (1.3)	0.29 (-1.46 to 2.04)	0.107
Insulin [^] (mU/L)	9.7 (1.2)	11.2 (2.2)	0.28 (-2.18 to 2.7)	9.3 (1.0)	13.1 (1.6)	0.91 (-0.93 to 2.74)	12.9 (1.8)	11.3 (1.7)	-0.33 (-2.67 to 2.05)	0.139
<i>HOMA</i>										
HOMA2-%S [^]	81.9 (9.8)	76.7 (9.6)	-0.17 (-13.65 to 13.31)	82.8 (5.6)	61.2 (7.8)	-1.01 (-10.40 to 8.37)	64.8 (15.2)	67.1 (13.9)	-0.06 (-20.25 to 20.14)	0.114
HOMA2-%β [^]	52.0 (7.4)	61.8 (14.7)	0.27 (-15.92 to 16.45)	52.3 (9.2)	66.7 (11.5)	0.44 (-13.95 to 14.83)	70.7 (25.4)	47.7 (13.0)	-0.40 (-28.37 to 27.56)	0.118
HOMA2-IR [^]	1.4 (0.2)	1.6 (0.3)	0.26 (-0.07 to 0.587)	1.2 (0.1)	1.8 (0.2)	1.11 (0.88 to 1.35)	2.0 (0.9)	1.8 (0.7)	-0.22 (-0.63 to 0.18)	0.192

Presented as Mean (SE). Abbreviations: VO₂, peak oxygen consumption; HbA1c, glycosylated haemoglobin; FBG, fasting blood glucose; HOMA, homeostasis model assessment; [^], non-insulin dependent participants (n = 9/9/7 for MICT/HIIT/PLA respectively); p, between-group p value; ES, standardised difference in means expressed as Hedge's g; CI: confidence interval. * Significant between-group difference (p < 0.05). ** Significant between-group difference (p < 0.001).