

SUPPLEMENTARY DATA

**Supplementary Table 1.** Baseline characteristics of study participants \*

	<b>LC Diet (n=58)</b>	<b>HC Diet (n=57)</b>
<b>Demographics</b>		
Age	58 (7)	58 (7)
Sex [n (%)]		
Females	21 (36)	28 (49)
Males	37 (64)	29 (51)
<b>Body weight and Composition</b>		
Body weight (Kg)	101.7 (14.4)	101.6 (15.8)
BMI (kg/ m <sup>2</sup> )	34.2 (4.5)	35.1 (4.1)
Waist Circumference (cm)	112.4 (10.6)	112.5 (10.6)
Total FFM (kg) ‡	62.0 (10.5)	60.1 (11.3)
Total FM (kg) ‡	39.8 (10.5)	41.5 (9.9)
FM:FFM ratio (kg/ kg) ‡	0.7 (0.2)	0.7 (0.2)
<b>Glycaemic control</b>		
HbA1c (%)	7.3 (1.1)	7.4 (1.1)
Fasting Glucose (mmol/ L)	7.8 (2.1)	8.4 (2.1)
Mean Glucose (mmol/ L) ‡	8.4 (2.1)	8.7 (1.7)
Minimum Glucose (mmol/ L) ‡	4.8 (1.5)	4.8 (1.4)
Maximum Glucose (mmol/ L) ‡	14.0 (3.6)	14.3 (3.2)
Glucose Range (mmol/ L) ‡	9.1 (3.5)	9.5 (2.9)
SD <sub>Intraday</sub> (mmol/ L) ‡	2.0 (0.8)	2.1 (0.7)
SD <sub>Interdays</sub> mmol/ L) ‡§	0.5 (0.4)	0.5 (0.4)
MAGE (mmol/ L) ‡	5.2 (2.1)	5.2 (1.9)
CONGA- 1 (mmol/ L) ‡	1.7 (0.6)	1.7 (0.5)
CONGA- 4 (mmol/ L) ‡	3.0 (1.3)	2.9 (1.0)
MODD (mmol/ L) ‡§	1.8 (0.8)	2.1 (0.9)
AUC <sub>Total per min</sub> (mmol/ L) ‡	16.2 (4.9)	17.0 (3.9)
<b>CVD risk markers</b>		
SBP (mmHg)	130.4 (13.1)	132.6 (13.2)
DBP (mmHg)	80.0 (8.9)	80.8 (10.1)
Insulin (mU/L) ††	16.3 (8.3)	15.9 (7.6)
HOMA2-IR ††	2.3 (1.1)	2.2 (1.0)
HOMA2-%B ††	75.5 (38.7)	67.7 (33.4)
Total Cholesterol (mmol/ L)	4.5 (1.0)	4.3 (1.0)
LDL-C (mmol/ L)	2.5 (0.9)	2.4 (0.9)
HDL-C (mmol/ L)	1.2 (0.2)	1.3 (0.3)
TG (mmol/ L)	1.6 (0.7)	1.4 (0.6)
CRP (mg/ L) ††	2.8 (2.3)	2.7 (2.2)
<b>Medications</b>		
<b>Diabetes Medications</b>		
Antiglycemic MES	1.3 (1.0)	1.1 (1.1)
Insulin [n (%)]	6 (10)	6 (11)
Metformin [n (%)]	46 (79)	41 (72)

SUPPLEMENTARY DATA

Sulfonylureas [n (%)]	20 (34)	16 (28)
Thiazolidinediones [n (%)]	3 (5)	3 (5)
GLP-1 agonists [n (%)]	1 (2)	1 (2)
DPP-4 inhibitors [n (%)]	1 (2)	2 (4)
<b>Lipid lowering medications</b> [n (%)]	35 (60)	36 (63)
<b>Antihypertensive medications</b> [n (%)]	41 (71)	35 (61)
<b>Physical activity</b> <sup>#</sup>		
Mean activity count (counts/min)	188.9 (65.9)	182.7 (67.7)
MVPA (min/day)	46.4 (19.2)	44.0 (19.4)
MVPA (% of total wear time)	3.5 (1.4)	3.4 (1.5)

Abbreviations: LC diet, Very low carbohydrate, high unsaturated/ low saturated fat diet; HC diet, High carbohydrate, low fat diet; BMI, Body Mass Index; FM, Fat mass; FFM, Fat Free Mass; LDL-C, Low density lipoprotein cholesterol; HDL-C, High density lipoprotein cholesterol; TG, Triglycerides; HOMA2-IR, Homeostasis model of assessment index 2- insulin resistance; HOMA2-%B, Homeostasis model of assessment index 2-  $\beta$  cell function; CRP, C-reactive protein; MAGE, Mean amplitude of glycaemic excursions; CONGA- 1, Continuous overall net glycemic action of observations 1 hour apart; CONGA- 4, Continuous overall net glycemic action of observations 4 hours apart; MODD, Mean of daily blood glucose differences; AUC<sub>Total per min</sub>, Total area under the curve standardised by valid wear time; SBP, Systolic blood pressure; DBP, Diastolic blood pressure; MES, Medication Effect Score; DPP-4 inhibitors, Dipeptidyl-peptidase-4 inhibitors; GLP-1 agonists, Glucagon-like peptide-1 agonists; MVPA, Moderate to vigorous intensity physical activity.

Data are means (SD), unless otherwise stated.

To convert mmol/ L to mg/ dL, multiply by 18 (for glucose), 38.7 (for cholesterol), and 88.6 (for triglycerides).

\* Total analysed n=115 (LC:58, HC:57) for all data unless otherwise stated. All baseline characteristics were not significantly different between diet groups ( $p > 0.05$ ) by independent samples t- test (continuous variables) or  $\chi^2$  test (categorical variables).

‡ Computed from continuous glucose monitoring (CGM) data

§ Total analysed n=109 (LC:54, HC:55) that met requirement of 48-hours valid CGM data collection to calculate comparisons between 2 successive days.

|| Total analysed n=103 (LC:52, HC:51) for insulin and HOMA2 data; 12 participants on insulin medication at baseline were excluded from analyses.

¶ Total analysed n=105 (LC:54, HC:51) for CRP data; 10 participants with CRP  $> 10$  mg/L at baseline were excluded from these analyses.

# Computed from accelerometry data.

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**Supplementary Table 2.** Macronutrient composition of diets.

	<b>LC (n=46)</b>		<b>HC (n=47)</b>		<b>P Value *</b>
Total Energy (Kcal)		1563 (225)		1587 (171)	0.56
Carbohydrate (g)		56.7 (8.0)		204.9 (22.8)	<0.001
Carbohydrate (% energy)		13.9 (1.6)		50.1 (2.0)	<0.001
Protein (g)		102.8 (14.7)		73.6 (8.3)	<0.001
Protein (% energy)		26.7 (1.3)		18.8 (0.9)	<0.001
Total Fat (g)		96.5 (16.5)		44.3 (7.4)	<0.001
Total Fat (% energy)		54.1 (2.6)		24.5 (2.5)	<0.001
Saturated Fat (g)		17.7 (3.1)		13.6 (2.9)	<0.001
Saturated Fat (% energy)		10.0 (0.9)		7.5 (1.1)	<0.001
Monounsaturated Fat (% energy)		30.4 (1.8)		11.5 (1.3)	<0.001
Polyunsaturated Fat (% energy)		12.2 (1.1)		4.1 (0.6)	<0.001
Total Cholesterol (mg)		243 (42)		138 (25)	<0.001
Dietary Fibre (g)		24.7 (3.5)		31.1 (3.2)	<0.001

Data are means (SD)

LC diet - Very low carbohydrate, high unsaturated/ low saturated fat diet, HC diet - High carbohydrate, low fat diet

\* P value refers to between group differences by independent t- tests