

Effects of early, late and self-selected time-restricted eating on visceral adipose tissue and cardiometabolic health in participants with overweight or obesity: a randomized controlled trial

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Supplementary Table 1. Abdominal adipose tissue, body composition, blood pressure, glucose homeostasis, blood lipid profile, and dietary intake endpoints at baseline and after the 12-week intervention in each intervention group.

Endpoint	UC (n=49)	Early TRE (n=49)	Late TRE (n=52)	Self-selected TRE (n=47)
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
<i>Abdominal adipose tissue</i>				
Visceral (cm ³)				
Preintervention	1353 (1185, 1520)	1352 (1181, 1523)	1373 (1211, 1535)	1346 (1173, 1519)
Postintervention	1296 (1127, 1464)	1218 (1047, 1390)	1243 (1079, 1406)	1216 (1042, 1389)
Change	-57 (-122, 8)	-134 (-198, -70) *	-130 (-192, -68) *	-130 (-196, -65) *
Visceral (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	96 (93, 99)	92 (89, 95)	90 (87, 93)	93 (90, 96)
Change	-4 (-8, 0) *	-8 (-12, -4) *	-10 (-14, -6) *	-7 (-12, -3) *
Subcutaneous (cm ³)				
Preintervention	2845 (2625, 3065)	2972 (2745, 3199)	2704 (2490, 2917)	2650 (2423, 2877)
Postintervention	2675 (2454, 2896)	2646 (2419, 2874)	2484 (2269, 2698)	2396 (2168, 2624)
Change	-170 (-239, -102) *	-326 (-393, -258) *	-220 (-285, -155) *	-254 (-324, -184) *
Subcutaneous (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	94 (93, 96)	89 (88, 90)	92 (91, 93)	91 (90, 93)
Change	-6 (-8, -4) *	-11 (-13, -9) *	-8 (-10, -6) *	-9 (-11, -7) *
Intermuscular (cm ³)				
Preintervention	258 (229, 287)	275 (245, 304)	248 (220, 276)	246 (217, 276)
Postintervention	259 (230, 288)	268 (238, 298)	237 (209, 265)	234 (204, 264)
Change	1 (-20, 21)	-7 (-27, 14)	-11 (-31, 9)	-12 (-33, 9)
Intermuscular (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	103 (96, 109)	100 (93, 106)	105 (99, 111)	105 (99, 112)
Change	3 (-6, 12)	0 (-9, 9)	5 (-3, 14)	5 (-4, 15)
<i>Body composition</i>				
Weight (kg)				
Preintervention	96.1 (92.0, 100.3)	97.8 (93.7, 101.9)	93.7 (89.7, 97.7)	93.6 (89.4, 97.8)
Postintervention	94.4 (90.2, 98.5)	93.1 (89.0, 97.2)	89.6 (85.6, 93.6)	88.8 (84.6, 93.0)
Change	-1.8 (-2.7, -0.8) *	-4.7 (-5.6, -3.8) *	-4.2 (-5.1, -3.2) *	-4.8 (-5.8, -3.8) *
Weight (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	98.1 (97.5, 98.8)	95.2 (94.5, 95.8)	95.6 (94.9, 96.2)	95.1 (94.4, 95.8)
Change	-1.9 (-2.8, -1.0) *	-4.8 (-5.7, -3.9) *	-4.4 (-5.3, -3.5) *	-4.9 (-5.9, -4.0) *
Fat-free mass (kg)				
Preintervention	55.5 (52.4, 58.6)	56.3 (53.2, 59.5)	54.0 (51.0, 57.0)	54.0 (50.8, 57.2)
Postintervention	55.5 (52.4, 58.6)	55.2 (52.0, 58.3)	53.4 (50.4, 56.5)	52.8 (49.6, 56.0)
Change	0.0 (-0.8, 0.8)	-1.2 (-1.9, -0.4) *	-0.6 (-1.3, 0.2)	-1.2 (-2.0, -0.4) *
Appendicular lean mass (kg)				
Preintervention	22.0 (20.5, 23.4)	22.4 (20.9, 23.9)	21.4 (20.0, 22.8)	21.4 (19.9, 22.9)
Postintervention	21.6 (20.1, 23.1)	21.1 (19.6, 22.6)	20.3 (18.9, 21.8)	20.3 (18.8, 21.8)
Change	-0.4 (-1.0, 0.2)	-1.3 (-1.9, -0.8) *	-1.1 (-1.6, -0.5) *	-1.1 (-1.7, -0.5) *
Fat mass (kg)				
Preintervention	39.7 (37.4, 42.0)	40.4 (38.1, 42.7)	39.0 (36.8, 41.2)	38.7 (36.4, 41.0)
Postintervention	37.8 (35.5, 40.1)	37.1 (34.8, 39.4)	35.5 (33.3, 37.7)	35.3 (32.9, 37.6)
Change	-1.9 (-2.8, -1.0) *	-3.3 (-4.1, -2.5) *	-3.5 (-4.3, -2.7) *	-3.4 (-4.3, -2.5) *
Fat mass (%)				
Preintervention	41.8 (39.8, 43.7)	42.0 (40.0, 44.0)	42.0 (40.1, 43.9)	41.8 (39.8, 43.8)
Postintervention	40.4 (38.4, 42.4)	40.4 (38.5, 42.4)	40.1 (38.2, 42.0)	40.1 (38.0, 42.1)

Change	-1.4 (-2.1, -0.7) *	-1.6 (-2.2, -0.9) *	-2.0 (-2.6, -1.3) *	-1.8 (-2.5, -1.1) *
<i>Blood pressure</i>				
Systolic BP (mmHg)				
Preintervention	125 (122, 129)	125 (121, 129)	121 (118, 125)	123 (119, 127)
Postintervention	120 (116, 124)	121 (117, 125)	120 (116, 124)	121 (117, 125)
Change	-6 (-9, -3) *	-4 (-7, -1) *	-2 (-4, 1)	-2 (-5, 1)
Diastolic BP (mmHg)				
Preintervention	81 (78, 84)	81 (79, 84)	79 (76, 82)	80 (77, 83)
Postintervention	78 (75, 81)	78 (75, 81)	78 (75, 80)	78 (75, 81)
Change	-3 (-5, -1) *	-3 (-5, -1) *	-2 (-4, 0)	-2 (-4, 0) *
<i>Glucose homeostasis</i>				
Fasting glucose (mg/dL)				
Preintervention	94 (91, 97)	94 (91, 97)	97 (94, 99)	93 (90, 96)
Postintervention	95 (92, 98)	89 (86, 92)	99 (96, 102)	93 (90, 96)
Change	0 (-2, 3)	-5 (-8, -3) *	3 (0, 5)	0 (-3, 2)
Insulin (mU/L)				
Preintervention	12.6 (11.2, 14.0)	11.0 (9.6, 12.4)	11.8 (10.4, 13.2)	11.0 (9.5, 12.4)
Postintervention	11.8 (10.4, 13.3)	10.1 (8.7, 11.5)	10.7 (9.3, 12.1)	8.9 (7.4, 10.4)
Change	-0.8 (-2.1, 0.5)	-0.9 (-2.2, 0.4)	-1.1 (-2.3, 0.2)	-2.1 (-3.4, -0.7) *
HOMA-IR				
Preintervention	2.96 (2.60, 3.31)	2.56 (2.20, 2.92)	2.84 (2.49, 3.19)	2.59 (2.22, 2.96)
Postintervention	2.78 (2.41, 3.15)	2.20 (1.84, 2.57)	2.68 (2.32, 3.03)	2.08 (1.71, 2.46)
Change	-0.17 (-0.50, 0.15)	-0.36 (-0.67, -0.04) *	-0.16 (-0.48, 0.15)	-0.51 (-0.85, -0.17) *
HbA1c (%)				
Preintervention	5.4 (5.3, 5.5)	5.4 (5.3, 5.5)	5.4 (5.3, 5.5)	5.3 (5.2, 5.4)
Postintervention	5.4 (5.3, 5.6)	5.4 (5.3, 5.5)	5.4 (5.3, 5.5)	5.2 (5.1, 5.4)
Change	0.0 (0.0, 0.1)	0.0 (0.0, 0.1)	0.0 (-0.1, 0.1)	-0.1 (-0.1, 0.0)
24h mean glucose (mg/dL)				
Preintervention	105 (102, 108)	108 (105, 111)	104 (101, 107)	106 (103, 109)
Postintervention	106 (102, 109)	106 (103, 109)	107 (104, 110)	106 (103, 109)
Change	0 (-3, 3)	-2 (-4, 1)	3 (0, 5) *	0 (-2, 3)
Diurnal mean glucose (mg/dL)				
Preintervention	107 (104, 110)	109 (106, 112)	105 (102, 108)	108 (105, 111)
Postintervention	108 (104, 111)	110 (107, 114)	107 (104, 110)	108 (105, 111)
Change	0 (-2, 3)	1 (-1, 4)	2 (0, 5)	0 (-3, 3)
Nocturnal mean glucose (mg/dL)				
Preintervention	101 (97, 104)	104 (100, 107)	101 (97, 104)	101 (98, 105)
Postintervention	100 (96, 104)	96 (92, 99)	105 (102, 109)	102 (98, 105)
Change	-1 (-4, 3)	-8 (-11, -5) *	5 (1, 8) *	0 (-3, 4)
24h CV glucose (mg/dL)				
Preintervention	14.6 (13.6, 15.6)	14.3 (13.3, 15.2)	13.7 (12.7, 14.6)	13.1 (12.1, 14.1)
Postintervention	14.8 (13.7, 15.8)	15.7 (14.7, 16.7)	12.1 (11.1, 13.1)	12.2 (11.2, 13.2)
Change	0.1 (-0.8, 1.1)	1.4 (0.5, 2.4) *	-1.6 (-2.5, -0.7) *	-0.9 (-1.9, 0.0)
Diurnal CV glucose (mg/dL)				
Preintervention	14.7 (13.7, 15.7)	14.3 (13.3, 15.4)	13.9 (12.9, 14.9)	13.3 (12.3, 14.4)
Postintervention	14.4 (13.4, 15.5)	15.3 (14.2, 16.3)	12.2 (11.1, 13.2)	12.0 (11.0, 13.1)
Change	-0.2 (-1.2, 0.8)	0.9 (0.0, 1.8)	-1.7 (-2.7, -0.8) *	-1.3 (-2.3, -0.3) *
Nocturnal CV glucose (mg/dL)				
Preintervention	9.1 (8.3, 10.0)	9.4 (8.5, 10.3)	9.0 (8.1, 9.8)	8.5 (7.6, 9.4)
Postintervention	9.4 (8.5, 10.4)	6.8 (6.0, 7.7)	7.9 (7.0, 8.8)	7.8 (6.9, 8.7)
Change	0.3 (-0.8, 1.4)	-2.6 (-3.6, -1.5) *	-1.1 (-2.1, -0.1) *	-0.7 (-1.8, 0.4)
<i>Blood lipid profile</i>				
Total cholesterol (mg/dL)				

Preintervention	210 (201, 220)	209 (199, 218)	216 (206, 225)	208 (198, 218)
Postintervention	206 (196, 216)	207 (198, 217)	220 (211, 230)	210 (199, 220)
Change	-5 (-13, 4)	-1 (-9, 7)	5 (-4, 13)	2 (-7, 10)
HDL-C (mg/dL)				
Preintervention	56 (53, 59)	52 (49, 55)	55 (51, 58)	53 (49, 56)
Postintervention	52 (49, 55)	50 (47, 53)	53 (50, 56)	51 (48, 54)
Change	-4 (-6, -1) *	-2 (-4, 0) *	-2 (-4, 0)	-2 (-4, 1)
LDL-C (mg/dL)				
Preintervention	130 (122, 139)	132 (124, 140)	137 (129, 146)	132 (124, 141)
Postintervention	131 (122, 139)	136 (128, 144)	144 (136, 152)	139 (130, 148)
Change	0 (-7, 7)	4 (-3, 11)	7 (0, 13) *	7 (0, 14)
Triglycerides (mg/dL)				
Preintervention	133 (114, 151)	138 (119, 156)	133 (115, 151)	128 (109, 147)
Postintervention	115 (96, 134)	116 (98, 135)	119 (100, 137)	104 (85, 123)
Change	-17 (-34, 0) *	-22 (-38, -5) *	-15 (-31, 2)	-24 (-41, -7) *
APOA1 (mg/dL)				
Preintervention	165 (156, 173)	152 (144, 160)	158 (150, 165)	158 (149, 166)
Postintervention	162 (154, 171)	155 (147, 163)	157 (149, 165)	154 (145, 162)
Change	-2 (-11, 6)	3 (-5, 12)	-1 (-9, 7)	-4 (-13, 5)
APOB (mg/dL)				
Preintervention	102 (96, 109)	102 (95, 109)	107 (100, 113)	101 (94, 108)
Postintervention	100 (93, 106)	104 (97, 110)	111 (105, 118)	103 (97, 110)
Change	-3 (-8, 3)	2 (-4, 7)	5 (-1, 10)	2 (-3, 8)
<i>Dietary intake</i>				
Energy intake by 24HR (kcal/day)				
Preintervention	2012 (1886, 2139)	1997 (1871, 2123)	1855 (1732, 1977)	1972 (1843, 2101)
Postintervention	1806 (1677, 1936)	1482 (1355, 1610)	1483 (1356, 1610)	1519 (1385, 1653)
Change	-206 (-345, -67) *	-515 (-652, -378) *	-372 (-507, -236) *	-453 (-596, -310) *

*Represent significant differences within groups as determined by two-sided t-test ($P < 0.05$). No adjustments were made for multiple comparisons within groups. Primary analysis (visceral adipose tissue changes in percentage) within the usual care group (UC, $P = 0.048$), early time-restricted eating group (TRE, $P < 0.001$), late TRE group ($P < 0.001$), and self-selected TRE group ($P < 0.001$). Changes were calculated as the difference between postintervention and preintervention values. Abdominal adipose tissues and body weight percentages indicate changes relative to preintervention values. APOA1, apolipoprotein A; APOB, apolipoprotein B; BP, blood pressure; CI, confidence interval; CV, coefficient of variation; HbA1c, glycated haemoglobin; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostasis model assessment of insulin resistance; LDL-C, low-density lipoprotein cholesterol; 24HR, 24-hour dietary recalls.

Supplementary Table 2. CONSORT 2010 checklist of information to include when reporting a randomised trial –

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	1
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	6
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	7-8
	2b	Specific objectives or hypotheses	8
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	32
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	-
Participants	4a	Eligibility criteria for participants	32
	4b	Settings and locations where the data were collected	33-35
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	33-35
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	33-35
	6b	Any changes to trial outcomes after the trial commenced, with reasons	-
Sample size	7a	How sample size was determined	36-37
	7b	When applicable, explanation of any interim analyses and stopping guidelines	-
Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	33
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	33
Allocation	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	33
Concealment mechanism			
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	33
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	33
	11b	If relevant, description of the similarity of interventions	33-35
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	36-37
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	36-37
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	9
	13b	For each group, losses and exclusions after randomisation, together with reasons	9
Recruitment	14a	Dates defining the periods of recruitment and follow-up	9
	14b	Why the trial ended or was stopped	-
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	29
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	9
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	9-13
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	-
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	9-13
Harms	19	All-important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	-
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	18-19
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	19

Interpretation	22	Interpretation consistent with results, balancing benefits, and harms, and considering other relevant evidence	14-19
Other information			
Registration	23	Registration number and name of trial registry	32
Protocol	24	Where the full trial protocol can be accessed, if available	32
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	20

Supplementary Table 3. Baseline characteristics of participants by sex and intervention group.

<i>Men</i>	UC (n=25)	Early TRE (n=25)	Late TRE (n=27)	Self-selected TRE (n=22)
Age (years)	47.7 (6.4)	47.8 (7.5)	47.8 (6.6)	45.7 (5.3)
<i>Anthropometry</i>				
Weight (kg)	101.8 (14.9)	106.3 (13.6)	101.6 (14.8)	99.8 (12.5)
Height (cm)	176.6 (5.8)	176.5 (7.1)	176.3 (6.8)	176.7 (6.2)
Body mass index (kg/m ²)	32.5 (3.2)	34.0 (2.9)	32.6 (3.6)	31.9 (3.0)
<i>Abdominal adipose tissue</i>				
Visceral (cm ³)	1488 (1244 – 2097)	1532 (1296 – 1932)	1478 (1260 – 1946)	1637 (1200 – 1924)
Subcutaneous (cm ³)	2641 (2041 – 3243)	2653 (2283 – 3306)	2530 (1992 – 3235)	2255 (1832 – 3025)
Intermuscular (cm ³)	274 (228 – 340)	319 (243 – 367)	242 (195 – 288)	296 (197 – 402)
<i>Body composition</i>				
Fat-free mass (kg)	63.2 (8.3)	65.8 (7.6)	63.2 (7.2)	63.3 (6.5)
Appendicular lean mass (kg)	25.7 (3.9)	26.9 (4.0)	25.4 (3.7)	26.0 (3.7)
Fat mass (kg)	37.4 (7.5)	39.5 (8.0)	37.6 (9.4)	35.3 (7.1)
Fat mass (%)	37.0 (3.9)	37.3 (4.1)	36.8 (5.1)	35.6 (4.0)
<i>Blood pressure</i>				
Systolic BP (mmHg)	130 (13)	130 (14)	125 (11)	126 (14)
Diastolic BP (mmHg)	85 (10)	84 (8)	81 (8)	82 (9)
<i>Glucose homeostasis</i>				
Fasting glucose (mg/dL)	92 (90 – 101)	93 (90 – 101)	96 (90 – 104)	95 (90 – 100)
Insulin (mU/L)	13 (9 – 13)	11 (8 – 13)	10 (8 – 14)	9 (7 – 14)
HOMA-IR	2.89 (2.10 – 3.40)	2.46 (1.97 – 3.27)	2.25 (1.80 – 3.90)	2.13 (1.74 – 3.10)
HbA1c (%)	5.4 (5.3 – 5.6)	5.3 (5.0 – 5.6)	5.4 (5.2 – 5.6)	5.2 (5.1 – 5.5)
24h mean glucose (mg/dL)	108 (101 – 114)	110 (105 – 115)	109 (101 – 110)	107 (102 – 117)
Diurnal mean glucose (mg/dL)	110 (103 – 117)	111 (106 – 116)	110 (101 – 112)	110 (103 – 121)
Nocturnal mean glucose (mg/dL)	101 (95 – 108)	106 (100 – 114)	105 (95 – 108)	105 (101 – 109)
24h CV glucose (%)	15.1 (11.7 – 17.6)	14.4 (11.8 – 15.9)	14.4 (12.1 – 16.0)	12.4 (11.2 – 14.1)
Diurnal CV glucose (%)	14.7 (12.1 – 18.8)	14.6 (11.9 – 16.2)	14.7 (12.1 – 16.0)	12.4 (10.6 – 15.0)
Nocturnal CV glucose (%)	8.4 (7.1 – 10.1)	9.0 (7.3 – 11.8)	9.7 (6.5 – 10.7)	7.9 (7.2 – 8.6)
<i>Blood lipid profile</i>				
Total cholesterol (mg/dL)	222 (198 – 233)	201 (186 – 223)	222 (189 – 252)	196 (184 – 224)
HDL-C (mg/dL)	53 (43 – 64)	47 (43 – 56)	54 (42 – 58)	50 (44 – 53)
LDL-C (mg/dL)	141 (123 – 154)	126 (119 – 147)	140 (118 – 165)	124 (104 – 147)
Triglycerides (mg/dL)	140 (89 – 159)	120 (82 – 172)	129 (90 – 155)	128 (100 – 194)
APOA1 (mg/dL)	155 (145 – 183)	141 (128 – 161)	141 (128 – 172)	162 (128 – 178)
APOB (mg/dL)	110 (92 – 121)	100 (97 – 110)	110 (98 – 126)	98 (88 – 118)
<i>Dietary intake</i>				
Energy intake by 24HR (kcal/day)	2025 (476)	2080 (439)	2029 (475)	2124 (500)
<i>Women</i>	UC (n=24)	Early TRE (n=24)	Late TRE (n=25)	Self-selected TRE (n=25)
Age (years)	45.7 (5.6)	46.5 (4.5)	48.2 (7.3)	44.8 (6.3)
<i>Anthropometry</i>				
Weight (kg)	90.3 (11.4)	88.9 (11.7)	85.2 (11.1)	88.2 (12.7)
Height (cm)	162.2 (5.1)	162.7 (5.4)	162.2 (6.0)	163.8 (5.3)
Body mass index (kg/m ²)	34.3 (4.0)	33.5 (3.8)	32.3 (3.2)	32.8 (3.6)
<i>Abdominal adipose tissue</i>				
Visceral (cm ³)	846 (633 – 1305)	931 (730 – 1142)	1007 (779 – 1301)	996 (804 – 1308)
Subcutaneous (cm ³)	2805 (2628 – 3313)	3001 (2470 – 3941)	2844 (2174 – 3242)	2758 (2308 – 3180)
Intermuscular (cm ³)	220 (190 – 258)	229 (194 – 248)	250 (148 – 306)	181 (135 – 232)
<i>Body composition</i>				
Fat-free mass (kg)	47.5 (6.9)	46.4 (5.4)	44.1 (4.9)	45.9 (5.8)
Appendicular lean mass (kg)	18.1 (3.2)	17.7 (3.1)	17.1 (2.7)	17.4 (2.5)

Fat mass (kg)	42.0 (7.9)	41.4 (7.8)	40.5 (7.3)	41.7 (7.9)
Fat mass (%)	46.8 (5.2)	46.9 (4.2)	47.7 (4.1)	47.3 (4.0)
<i>Blood pressure</i>				
Systolic BP (mmHg)	120 (12)	120 (15)	118 (13)	120 (18)
Diastolic BP (mmHg)	77 (11)	79 (13)	77 (9)	78 (11)
<i>Glucose homeostasis</i>				
Fasting glucose (mg/dL)	93 (88 – 102)	92 (83 – 95)	94 (90 – 97)	89 (86 – 94)
Insulin (mU/L)	11 (9 – 14)	10 (7 – 12)	11 (10 – 14)	9 (7 – 14)
HOMA-IR	2.50 (2.20 – 3.42)	2.20 (1.60 – 2.97)	2.45 (2.10 – 3.01)	1.95 (1.50 – 3.16)
HbA1c (%)	5.3 (5.2 – 5.6)	5.3 (5.1 – 5.5)	5.4 (5.2 – 5.5)	5.3 (5.1 – 5.6)
24h mean glucose (mg/dL)	105 (97 – 110)	102 (100 – 111)	100 (98 – 106)	102 (96 – 106)
Diurnal mean glucose (mg/dL)	106 (99 – 111)	105 (101 – 113)	103 (98 – 107)	104 (97 – 107)
Nocturnal mean glucose (mg/dL)	101 (91 – 109)	97 (95 – 105)	96 (91 – 104)	95 (91 – 102)
24h CV glucose (%)	14.0 (11.5 – 15.7)	14.5 (11.4 – 16.8)	13.0 (10.4 – 15.4)	14.0 (11.0 – 14.9)
Diurnal CV glucose (%)	13.2 (11.2 – 15.6)	13.3 (11.7 – 16.1)	12.9 (9.9 – 16.1)	14.1 (10.9 – 15.6)
Nocturnal CV glucose (%)	9.5 (8.6 – 11.2)	7.9 (6.6 – 10.3)	8.2 (6.7 – 9.7)	8.8 (7.9 – 10.1)
<i>Blood lipid profile</i>				
Total cholesterol (mg/dL)	196 (175 – 212)	209 (183 – 233)	204 (188 – 226)	213 (184 – 233)
HDL-C (mg/dL)	196 (175 – 212)	209 (183 – 233)	204 (188 – 226)	213 (184 – 233)
LDL-C (mg/dL)	58 (48 – 62)	56 (48 – 61)	57 (49 – 67)	53 (49 – 61)
Triglycerides (mg/dL)	108 (95 – 131)	128 (106 – 152)	131 (114 – 140)	133 (118 – 156)
APOA1 (mg/dL)	114 (83 – 143)	108 (89 – 146)	103 (89 – 123)	103 (79 – 134)
APOB (mg/dL)	167 (145 – 192)	158 (143 – 169)	166 (141 – 190)	166 (142 – 176)
<i>Dietary intake</i>				
Energy intake by 24HR (kcal/day)	2000 (535)	1911 (456)	1666 (393)	1839 (412)

Data are presented as mean (standard deviation) when normally distributed, or medians (first quartile – third quartile) when not. Appendicular lean mass, which refers to the combined lean mass of the arms and legs, was measured using dual-energy X-ray absorptiometry. Visceral and subcutaneous adipose tissues were assessed using magnetic resonance imaging. 24-hour, diurnal, and nocturnal mean glucose levels and their coefficients of variation (CV) were measured using continuous glucose monitoring. APOA1, apolipoprotein A; APOB, apolipoprotein B; BP, blood pressure; HbA1c, glycated haemoglobin; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostasis model assessment of insulin resistance; LDL-C, low-density lipoprotein cholesterol; TRE, time-restricted eating; UC, usual care; 24HR, 24-hour dietary recalls.

Supplementary Table 4. Changes in abdominal adipose tissue, body composition, blood pressure, glucose homeostasis, blood lipid profile, and dietary intake endpoints in the time–restricted eating groups compared to the usual–care group after the 12–week intervention, divided by sex.

Men			
End point	Early TRE vs. UC	Late TRE vs. UC	Self-selected TRE vs. UC
	Mean difference (95% CI)	Mean difference (95% CI)	Mean difference (95% CI)
<i>Abdominal adipose tissue</i>			
Visceral (cm ³)	-112 (-326, 102)	-55 (-262, 153)	-119 (-338, 100)
Visceral (%)	-5 (-18, 7)	-4 (-16, 8)	-8 (-20, 5)
Subcutaneous (cm ³)	-162 (-341, 16)	-56 (-229, 118)	-198 (-384, -12) *
Subcutaneous (%)	-6 (-12, 0) *	-2 (-8, 3)	-7 (-13, -1) *
Intermuscular (cm ³)	-11 (-70, 48)	-3 (-60, 54)	-16 (-77, 45)
Intermuscular (%)	-3 (-25, 20)	3 (-19, 25)	4 (-19, 27)
<i>Body composition</i>			
Weight (kg)	-3.4 (-6.2, -0.6) *	-2.0 (-4.7, 0.8)	-4.4 (-7.3, -1.5) *
Weight (%)	-3.1 (-5.7, -0.5) *	-1.8 (-4.4, 0.8)	-4.3 (-7.0, -1.6) *
Fat-free mass (kg)	-1.3 (-3.7, 1.0)	-0.4 (-2.8, 2.0)	-1.5 (-4.0, 0.9)
Appendicular lean mass (kg)	-1.1 (-2.7, 0.5)	-0.4 (-1.9, 1.2)	-1.1 (-2.7, 0.5)
Fat mass (kg)	-2.0 (-4.5, 0.5)	-1.6 (-4.1, 0.9)	-2.2 (-4.8, 0.4)
Fat mass (%)	-0.6 (-2.6, 1.5)	-0.7 (-2.7, 1.4)	-0.9 (-3.0, 1.2)
<i>Blood pressure</i>			
Systolic BP (mmHg)	4 (-4, 12)	7 (0, 15)	4 (-4, 12)
Diastolic BP (mmHg)	0 (-6, 5)	1 (-4, 7)	-1 (-6, 5)
<i>Glucose homeostasis</i>			
Fasting glucose (mg/dL)	-6 (-13, 2)	3 (-5, 10)	-1 (-8, 6)
Insulin (mU/L)	-0.2 (-3.9, 3.5)	0.3 (-3.4, 3.9)	-1.9 (-5.7, 1.9)
HOMA-IR	-0.16 (-1.10, 0.77)	0.15 (-0.78, 1.08)	-0.46 (-1.42, 0.51)
HbA1c (%)	0.0 (-0.3, 0.2)	0.0 (-0.3, 0.2)	-0.1 (-0.4, 0.1)
24h mean glucose (mg/dL)	-1 (-8, 6)	4 (-3, 11)	0 (-7, 7)
Diurnal mean glucose (mg/dL)	2 (-5, 8)	3 (-3, 10)	0 (-7, 6)
Nocturnal mean glucose (mg/dL)	-7 (-16, 2)	7 (-2, 17)	0 (-9, 10)
24h CV glucose (%)	1.4 (-0.8, 3.5)	-1.8 (-4.0, 0.4)	-1.2 (-3.3, 1.0)
Diurnal CV glucose (%)	1.1 (-1.3, 3.4)	-1.7 (-4.1, 0.7)	-1.1 (-3.5, 1.3)
Nocturnal CV glucose (%)	-3.3 (-6.2, -0.4) *	-1.1 (-4.0, 1.8)	-1.6 (-4.6, 1.4)
<i>Blood lipid profile</i>			
Total cholesterol (mg/dL)	7 (-18, 31)	9 (-15, 33)	2 (-23, 28)
HDL-C (mg/dL)	3 (-3, 9)	4 (-2, 10)	2 (-5, 8)
LDL-C (mg/dL)	9 (-11, 28)	6 (-13, 25)	4 (-16, 23)
Triglycerides (mg/dL)	-20 (-70, 31)	6 (-44, 55)	-18 (-70, 33)
APOA1 (mg/dL)	7 (-17, 30)	3 (-20, 26)	-4 (-28, 20)
APOB (mg/dL)	5 (-10, 20)	5 (-9, 20)	2 (-13, 17)
<i>Dietary intake</i>			
Energy intake by 24HR (kcal/day)	-317 (-707, 73)	-246 (-630, 139)	-434 (-837, -31) *
Women			
End point	Early TRE vs. UC	Late TRE vs. UC	Self-selected TRE vs. UC
	Mean difference (95% CI)	Mean difference (95% CI)	Mean difference (95% CI)
<i>Abdominal adipose tissue</i>			
Visceral (cm ³)	-37 (-139, 65)	-96 (-198, 6)	-33 (-135, 69)
Visceral (%)	-3 (-12, 6)	-8 (-17, 1)	1 (-8, 10)
Subcutaneous (cm ³)	-143 (-334, 47)	-42 (-232, 149)	29 (-162, 219)
Subcutaneous (%)	-4 (-10, 1)	-2 (-7, 3)	1 (-4, 7)
Intermuscular (cm ³)	-4 (-57, 49)	-20 (-73, 32)	-12 (-65, 41)
Intermuscular (%)	-4 (-31, 24)	2 (-25, 29)	0 (-27, 27)

<i>Body composition</i>			
Weight (kg)	-2.4 (-4.5, -0.2) *	-2.9 (-5.1, -0.6) *	-1.7 (-3.9, 0.6)
Weight (%)	-2.8 (-5.0, -0.5) *	-3.4 (-5.7, -1.2) *	-1.7 (-4.0, 0.6)
Fat-free mass (kg)	-1.0 (-2.7, 0.7)	-0.8 (-2.6, 0.9)	-1.0 (-2.7, 0.8)
Appendicular lean mass (kg)	-0.7 (-2.1, 0.7)	-1.0 (-2.5, 0.4)	-0.2 (-1.7, 1.2)
Fat mass (kg)	-0.7 (-2.7, 1.3)	-1.6 (-3.7, 0.5)	-0.7 (-2.7, 1.4)
Fat mass (%)	0.3 (-1.5, 2.1)	-0.4 (-2.2, 1.4)	0.3 (-1.5, 2.1)
<i>Blood pressure</i>			
Systolic BP (mmHg)	0 (-7, 8)	1 (-6, 9)	4 (-4, 11)
Diastolic BP (mmHg)	-1 (-6, 5)	0 (-5, 6)	2 (-4, 7)
<i>Glucose homeostasis</i>			
Fasting glucose (mg/dL)	-6 (-13, 1)	2 (-5, 9)	0 (-8, 7)
Insulin (mU/L)	0.0 (-3.4, 3.3)	-0.8 (-4.2, 2.6)	-0.7 (-4.2, 2.8)
HOMA-IR	-0.20 (-1.02, 0.62)	-0.15 (-0.98, 0.67)	-0.22 (-1.07, 0.63)
HbA1c (%)	0.0 (-0.2, 0.2)	0.0 (-0.2, 0.2)	-0.1 (-0.3, 0.1)
24h mean glucose (mg/dL)	-3 (-11, 5)	1 (-7, 9)	0 (-8, 8)
Diurnal mean glucose (mg/dL)	0 (-8, 8)	1 (-7, 8)	-1 (-9, 8)
Nocturnal mean glucose (mg/dL)	-8 (-18, 2)	3 (-7, 12)	1 (-9, 11)
24h CV glucose (%)	1.6 (-1.5, 4.7)	-1.3 (-4.3, 1.8)	-0.9 (-4.1, 2.3)
Diurnal CV glucose (%)	1.5 (-1.5, 4.5)	-0.9 (-3.9, 2.0)	-0.9 (-4.0, 2.2)
Nocturnal CV glucose (%)	-2.5 (-5.4, 0.4)	-1.8 (-4.6, 1.1)	-0.5 (-3.5, 2.4)
<i>Blood lipid profile</i>			
Total cholesterol (mg/dL)	1 (-20, 22)	10 (-11, 32)	11 (-11, 33)
HDL-C (mg/dL)	-1 (-6, 4)	0 (-5, 4)	2 (-3, 7)
LDL-C (mg/dL)	-1 (-18, 17)	8 (-10, 26)	10 (-8, 27)
Triglycerides (mg/dL)	12 (-27, 51)	0 (-40, 39)	4 (-36, 43)
APOA1 (mg/dL)	4 (-18, 27)	0 (-23, 22)	1 (-22, 24)
APOB (mg/dL)	4 (-11, 18)	10 (-5, 24)	8 (-7, 23)
<i>Dietary intake</i>			
Energy intake by 24HR (kcal/day)	-296 (-653, 62)	-79 (-438, 280)	-57 (-419, 305)

Sample size: usual care (UC) = 25 men and 24 women; early time-restricted eating (TRE) = 23 men and 23 women; late TRE = 27 men and 25 women; self-selected TRE = 22 men and 25 women. *Represent significant differences between each TRE group and the UC group as determined by post-hoc Bonferroni correction for multiple comparisons ($P < 0.05$). The P values reported are two-sided and Bonferroni-adjusted P values. Primary analysis (visceral adipose tissue changes in percentage) between early TRE and UC (men: $P \geq 0.99$; women: $P \geq 0.99$), late TRE and UC (men: $P \geq 0.99$; women: $P = 0.13$), and self-selected TRE and UC (men: $P = 0.66$; women: $P \geq 0.99$). Data are presented as estimated mean differences and 95% CI between groups and were calculated by first computing the difference between the postintervention and the preintervention values within each group. Then, differences between the groups were computed as early TRE minus UC, late TRE minus UC, and self-selected TRE minus UC. Intervention effects on primary and secondary outcomes at 3 months after the intervention were assessed based on repeated-measures linear mixed-effects multilevel models, which included random cluster (site) effects. Individual measures of change were therefore modelled as the function of randomly assigned group, site, assessment time, and their interaction terms, stratifying the analysis by sex (i.e., separately for men and women). Model-based estimations were performed with an intention-to-treat approach using the restricted maximum-likelihood method, the model assuming that missing values were missing-at-random. Abdominal adipose tissues and body weight percentages indicate changes relative to preintervention values. APOA1, apolipoprotein A; APOB, apolipoprotein B; BP, blood pressure; CI, confidence interval; CV, coefficient of variation; HbA1c, glycated haemoglobin; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostasis model assessment of insulin resistance; LDL-C, low-density lipoprotein cholesterol; 24HR, 24-hour dietary recalls.

Supplementary Table 5. Changes in abdominal adipose tissue, body composition, blood pressure, glucose homeostasis, blood lipid profile, and dietary intake endpoints in the time–restricted eating groups compared to each other after the 12–week intervention, divided by sex.

Men			
End point	Early TRE vs. Late TRE	Early TRE vs. Self-selected TRE	Late TRE vs. Self-selected TRE
	Mean difference (95% CI)	Mean difference (95% CI)	Mean difference (95% CI)
<i>Abdominal adipose tissue</i>			
Visceral (cm ³)	-58 (-267, 152)	7 (-215, 228)	64 (-151, 280)
Visceral (%)	-2 (-14, 11)	2 (-11, 15)	4 (-9, 17)
Subcutaneous (cm ³)	-107 (-282, 68)	36 (-152, 223)	142 (-40, 325)
Subcutaneous (%)	-4 (-9, 2)	2 (-4, 8)	5 (-1, 11)
Intermuscular (cm ³)	-8 (-66, 50)	5 (-58, 67)	13 (-47, 73)
Intermuscular (%)	-6 (-28, 16)	-7 (-31, 17)	-1 (-24, 22)
<i>Body composition</i>			
Weight (kg)	-1.5 (-4.2, 1.3)	1.0 (-1.9, 3.8)	2.4 (-0.5, 5.3)
Weight (%)	-1.3 (-3.9, 1.3)	1.2 (-1.6, 3.9)	2.5 (-0.2, 5.2)
Fat-free mass (kg)	-0.9 (-3.3, 1.4)	0.2 (-2.2, 2.6)	1.1 (-1.3, 3.5)
Appendicular lean mass (kg)	-0.7 (-2.3, 0.9)	0.0 (-1.6, 1.7)	0.7 (-0.9, 2.4)
Fat mass (kg)	-0.4 (-2.9, 2.1)	0.2 (-2.4, 2.8)	0.6 (-1.9, 3.2)
Fat mass (%)	0.1 (-1.9, 2.1)	0.3 (-1.8, 2.5)	0.2 (-1.9, 2.3)
<i>Blood pressure</i>			
Systolic BP (mmHg)	-4 (-11, 4)	0 (-8, 8)	3 (-4, 11)
Diastolic BP (mmHg)	-2 (-7, 4)	0 (-5, 6)	2 (-3, 7)
<i>Glucose homeostasis</i>			
Fasting glucose (mg/dL)	-8 (-16, -1) *	-5 (-12, 3)	4 (-4, 11)
Insulin (mU/L)	-0.4 (-4.1, 3.2)	1.7 (-2.1, 5.5)	2.2 (-1.6, 5.9)
HOMA-IR	-0.31 (-1.24, 0.61)	0.29 (-0.66, 1.25)	0.61 (-0.35, 1.56)
HbA1c (%)	0.0 (-0.2, 0.3)	0.1 (-0.1, 0.4)	0.1 (-0.2, 0.3)
24h mean glucose (mg/dL)	-5 (-12, 2)	-1 (-8, 6)	4 (-3, 11)
Diurnal mean glucose (mg/dL)	-2 (-8, 5)	2 (-5, 9)	4 (-3, 11)
Nocturnal mean glucose (mg/dL)	-15 (-24, -6) *	-8 (-17, 1)	7 (-2, 16)
24h CV glucose (%)	3.2 (1.0, 5.3) *	2.5 (0.4, 4.7) *	-0.6 (-2.9, 1.6)
Diurnal CV glucose (%)	2.8 (0.4, 5.1) *	2.2 (-0.2, 4.5)	-0.6 (-3.0, 1.8)
Nocturnal CV glucose (%)	-2.2 (-5.2, 0.7)	-1.7 (-4.7, 1.2)	0.5 (-2.5, 3.5)
<i>Blood lipid profile</i>			
Total cholesterol (mg/dL)	-2 (-27, 22)	4 (-21, 30)	7 (-18, 32)
HDL-C (mg/dL)	-1 (-7, 5)	1 (-5, 8)	2 (-4, 8)
LDL-C (mg/dL)	3 (-16, 21)	5 (-15, 24)	2 (-17, 21)
Triglycerides (mg/dL)	-25 (-74, 23)	-2 (-52, 49)	24 (-26, 74)
APOA1 (mg/dL)	3 (-19, 26)	11 (-13, 35)	7 (-16, 31)
APOB (mg/dL)	0 (-15, 14)	3 (-12, 17)	3 (-11, 18)
<i>Dietary intake</i>			
Energy intake by 24HR (kcal/day)	-71 (-456, 313)	117 (-286, 519)	188 (-210, 586)
Women			
End point	Early TRE vs. Late TRE	Early TRE vs. Self-selected TRE	Late TRE vs. Self-selected TRE
	Mean difference (95% CI)	Mean difference (95% CI)	Mean difference (95% CI)
<i>Abdominal adipose tissue</i>			
Visceral (cm ³)	59 (-41, 158)	-4 (-104, 95)	-63 (-163, 36)
Visceral (%)	5 (-4, 14)	-4 (-13, 5)	-9 (-18, 0)
Subcutaneous (cm ³)	-101 (-287, 85)	-172 (-358, 14)	-71 (-256, 115)
Subcutaneous (%)	-2 (-7, 3)	-5 (-11, 0) *	-3 (-9, 2)
Intermuscular (cm ³)	16 (-35, 68)	8 (-44, 59)	-8 (-60, 43)
Intermuscular (%)	-5 (-32, 21)	-4 (-30, 23)	2 (-25, 28)
<i>Body composition</i>			

Weight (kg)	0.5 (-1.7, 2.6)	-0.7 (-2.9, 1.5)	-1.2 (-3.4, 1.0)
Weight (%)	0.7 (-1.6, 2.9)	-1.0 (-3.3, 1.2)	-1.7 (-3.9, 0.6)
Fat-free mass (kg)	-0.2 (-1.8, 1.5)	0.0 (-1.7, 1.6)	0.2 (-1.5, 1.8)
Appendicular lean mass (kg)	0.3 (-1.0, 1.7)	-0.5 (-1.8, 0.9)	-0.8 (-2.2, 0.6)
Fat mass (kg)	0.9 (-1.1, 2.8)	-0.1 (-2.0, 1.9)	-0.9 (-2.9, 1.1)
Fat mass (%)	0.7 (-1.0, 2.4)	0.0 (-1.7, 1.7)	-0.7 (-2.5, 1.0)
<i>Blood pressure</i>			
Systolic BP (mmHg)	-1 (-9, 6)	-4 (-11, 4)	-3 (-10, 5)
Diastolic BP (mmHg)	-1 (-7, 5)	-2 (-8, 3)	-1 (-7, 4)
<i>Glucose homeostasis</i>			
Fasting glucose (mg/dL)	-7 (-14, 0) *	-5 (-12, 2)	2 (-5, 9)
Insulin (mU/L)	0.8 (-2.6, 4.1)	0.7 (-2.8, 4.1)	-0.1 (-3.6, 3.3)
HOMA-IR	-0.05 (-0.86, 0.76)	0.02 (-0.82, 0.85)	0.06 (-0.78, 0.90)
HbA1c (%)	0.0 (-0.1, 0.2)	0.1 (-0.1, 0.3)	0.0 (-0.1, 0.2)
24h mean glucose (mg/dL)	-4 (-11, 3)	-3 (-10, 5)	1 (-6, 9)
Diurnal mean glucose (mg/dL)	-1 (-8, 6)	1 (-7, 8)	1 (-6, 9)
Nocturnal mean glucose (mg/dL)	-11 (-20, -2) *	-9 (-18, 0)	2 (-7, 11)
24h CV glucose (%)	2.9 (0.0, 5.7) *	2.5 (-0.5, 5.5)	-0.4 (-3.3, 2.6)
Diurnal CV glucose (%)	2.5 (-0.3, 5.3)	2.4 (-0.5, 5.3)	0.0 (-2.9, 2.8)
Nocturnal CV glucose (%)	-0.7 (-3.5, 2.0)	-2.0 (-4.8, 0.8)	-1.3 (-4.0, 1.5)
<i>Blood lipid profile</i>			
Total cholesterol (mg/dL)	-9 (-30, 12)	-10 (-31, 11)	-1 (-22, 20)
HDL-C (mg/dL)	-1 (-5, 4)	-3 (-8, 2)	-2 (-7, 2)
LDL-C (mg/dL)	-9 (-26, 9)	-10 (-28, 7)	-2 (-19, 16)
Triglycerides (mg/dL)	12 (-26, 51)	8 (-31, 47)	-4 (-43, 35)
APOA1 (mg/dL)	5 (-18, 27)	3 (-19, 26)	-1 (-24, 21)
APOB (mg/dL)	-6 (-20, 8)	-4 (-19, 10)	2 (-13, 16)
<i>Dietary intake</i>			
Energy intake by 24HR (kcal/day)	-217 (-570, 136)	-239 (-595, 118)	-22 (-380, 336)

Sample size: early time-restricted eating (TRE) = 25 men and 24 women; late TRE = 27 men and 25 women; self-selected TRE = 22 men and 25 women. *Represent significant differences among TRE groups as determined by post-hoc Bonferroni correction for multiple comparisons ($P < 0.05$). The P values reported are two-sided and Bonferroni-adjusted P values. Primary analysis (visceral adipose tissue changes in percentage) between early TRE and late TRE (men: $P \geq 0.99$; women: $P \geq 0.99$), early TRE and self-selected TRE (men: $P \geq 0.99$; women: $P \geq 0.99$), and late TRE and self-selected TRE (men: $P \geq 0.99$; women: $P = 0.06$). Data are presented as estimated mean differences and 95% CI between groups and were calculated by first computing the difference between the postintervention and the preintervention values within each group. Then, differences between the groups were computed as early TRE minus late TRE, early TRE minus self-selected TRE, and late TRE minus self-selected TRE. Intervention effects on primary and secondary outcomes at 3 months after the intervention were assessed based on repeated-measures linear mixed-effects multilevel models, which included random cluster (site) effects. Individual measures of change were therefore modelled as the function of randomly assigned group, site, assessment time, and their interaction terms, stratifying the analysis by sex (i.e., separately for men and women). Model-based estimations were performed with an intention-to-treat approach using the restricted maximum-likelihood method, the model assuming that missing values were missing-at-random. Abdominal adipose tissues and body weight percentages indicate changes relative to preintervention values. APOA1, apolipoprotein A; APOB, apolipoprotein B; BP, blood pressure; CV, coefficient of variation; CI, confidence interval; HbA1c, glycated haemoglobin; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostasis model assessment of insulin resistance; LDL-C, low-density lipoprotein cholesterol; 24HR, 24-hour dietary recalls.

Supplementary Table 6. Abdominal adipose tissue, body composition, blood pressure, glucose homeostasis, blood lipid profile, and dietary intake endpoints at baseline and after the 12-week intervention in men.

Endpoint	UC (n=25)	Early TRE (n=25)	Late TRE (n=27)	Self-selected TRE (n=22)
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
<i>Abdominal adipose tissue</i>				
Visceral (cm ³)				
Preintervention	1668 (1426, 1910)	1696 (1449, 1943)	1647 (1414, 1879)	1611 (1348, 1874)
Postintervention	1585 (1343, 1826)	1501 (1254, 1748)	1509 (1276, 1742)	1408 (1144, 1673)
Change	-83 (-193, 27)	-195 (-308, -83) *	-138 (-243, -32) *	-202 (-320, -84) *
Visceral (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	95 (91, 100)	90 (85, 95)	92 (87, 96)	88 (83, 92)
Change	-5 (-11, 2)	-10 (-17, -4) *	-8 (-15, -2) *	-12 (-19, -6) *
Subcutaneous (cm ³)				
Preintervention	2675 (2357, 2993)	2800 (2469, 3131)	2624 (2318, 2930)	2466 (2119, 2812)
Postintervention	2535 (2217, 2853)	2498 (2166, 2829)	2428 (2122, 2734)	2128 (1780, 2476)
Change	-140 (-232, -48) *	-302 (-396, -208) *	-195 (-284, -107) *	-338 (-439, -236) *
Subcutaneous (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	95 (93, 97)	89 (87, 91)	93 (91, 95)	87 (85, 90)
Change	-5 (-8, -2) *	-11 (-14, -8) *	-7 (-10, -4) *	-13 (-16, -9) *
Intermuscular (cm ³)				
Preintervention	291 (248, 334)	321 (277, 366)	249 (208, 291)	309 (262, 356)
Postintervention	283 (240, 326)	303 (258, 348)	239 (198, 280)	286 (238, 333)
Change	-7 (-37, 23)	-18 (-50, 13)	-10 (-39, 19)	-23 (-56, 10)
Intermuscular (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	98 (89, 106)	95 (86, 104)	101 (93, 109)	102 (93, 111)
Change	-2 (-14, 9)	-5 (-17, 7)	1 (-10, 12)	2 (-11, 15)
<i>Body composition</i>				
Weight (kg)				
Preintervention	101.8 (96.2, 107.3)	106.3 (100.7, 111.9)	101.6 (96.3, 107.0)	99.8 (93.9, 105.8)
Postintervention	99.9 (94.3, 105.5)	101.0 (95.4, 106.6)	97.8 (92.4, 103.2)	93.6 (87.6, 99.5)
Change	-1.9 (-3.3, -0.4) *	-5.3 (-6.8, -3.9) *	-3.9 (-5.3, -2.4) *	-6.3 (-7.8, -4.7) *
Weight (%)				
Preintervention				
Postintervention	98.1 (97.1, 99.0)	95.0 (94.0, 95.9)	96.3 (95.3, 97.2)	93.8 (92.8, 94.8)
Change	-1.9 (-3.3, -0.6) *	-5.0 (-6.4, -3.7) *	-3.7 (-5.1, -2.4) *	-6.2 (-7.7, -4.7) *
Fat-free mass (kg)				
Preintervention	63.2 (60.3, 66.1)	65.8 (62.9, 68.8)	63.2 (60.4, 66.0)	63.3 (60.1, 66.4)
Postintervention	63.0 (60.1, 65.9)	64.3 (61.4, 67.2)	62.6 (59.8, 65.4)	61.5 (58.4, 64.7)
Change	-0.2 (-1.4, 1.1)	-1.5 (-2.8, -0.3) *	-0.6 (-1.8, 0.6)	-1.7 (-3.0, -0.4) *
Appendicular lean mass (kg)				
Preintervention	25.7 (24.3, 27.1)	26.9 (25.5, 28.3)	25.4 (24.1, 26.8)	26.0 (24.5, 27.5)
Postintervention	25.2 (23.8, 26.6)	25.4 (23.9, 26.8)	24.6 (23.2, 26.0)	24.4 (22.9, 25.9)
Change	-0.5 (-1.3, 0.4)	-1.5 (-2.4, -0.7) *	-0.8 (-1.6, 0.0) *	-1.6 (-2.4, -0.7) *
Fat mass (kg)				
Preintervention	37.4 (34.2, 40.7)	39.5 (36.2, 42.7)	37.6 (34.5, 40.7)	35.3 (31.8, 38.7)
Postintervention	35.7 (32.5, 39.0)	35.8 (32.5, 39.0)	34.3 (31.2, 37.4)	31.4 (27.9, 34.8)
Change	-1.7 (-3.0, -0.4) *	-3.7 (-5.0, -2.4) *	-3.3 (-4.5, -2.0) *	-3.9 (-5.3, -2.5) *
Fat mass (%)				
Preintervention	37.0 (35.2, 38.8)	37.3 (35.5, 39.1)	36.8 (35.1, 38.5)	35.6 (33.7, 37.4)
Postintervention	35.8 (34.0, 37.6)	35.5 (33.7, 37.3)	35.0 (33.3, 36.7)	33.4 (31.6, 35.3)

Change	-1.2 (-2.3, -0.1) *	-1.8 (-2.8, -0.7) *	-1.9 (-2.9, -0.8) *	-2.1 (-3.3, -1.0) *
<i>Blood pressure</i>				
Systolic BP (mmHg)				
Preintervention	130 (126, 135)	130 (125, 135)	125 (120, 129)	126 (121, 131)
Postintervention	122 (117, 127)	125 (120, 130)	123 (119, 128)	121 (116, 126)
Change	-9 (-13, -4) *	-5 (-9, -1) *	-1 (-5, 3)	-5 (-9, 0) *
Diastolic BP (mmHg)				
Preintervention	85 (81, 89)	83 (80, 87)	81 (78, 85)	82 (78, 86)
Postintervention	82 (78, 85)	80 (76, 84)	80 (76, 83)	78 (74, 82)
Change	-3 (-6, 0) *	-3 (-6, -1) *	-2 (-4, 1)	-4 (-7, -1) *
<i>Glucose homeostasis</i>				
Fasting glucose (mg/dL)				
Preintervention	94 (90, 99)	96 (92, 101)	99 (95, 104)	96 (91, 101)
Postintervention	94 (89, 99)	91 (86, 95)	102 (97, 106)	95 (90, 100)
Change	0 (-4, 4)	-6 (-10, -2) *	3 (-1, 6)	-1 (-5, 3)
Insulin (mU/L)				
Preintervention	12.8 (10.8, 14.8)	11.2 (9.2, 13.2)	11.6 (9.6, 13.5)	11.5 (9.3, 13.7)
Postintervention	12.3 (10.2, 14.3)	10.5 (8.5, 12.5)	11.3 (9.3, 13.2)	9.1 (6.9, 11.2)
Change	-0.5 (-2.5, 1.4)	-0.7 (-2.6, 1.2)	-0.3 (-2.2, 1.6)	-2.4 (-4.5, -0.4) *
HOMA-IR				
Preintervention	3.00 (2.46, 3.55)	2.67 (2.13, 3.22)	2.89 (2.36, 3.43)	2.80 (2.21, 3.39)
Postintervention	2.86 (2.30, 3.42)	2.37 (1.82, 2.92)	2.90 (2.38, 3.43)	2.20 (1.62, 2.78)
Change	-0.14 (-0.63, 0.35)	-0.30 (-0.78, 0.18)	0.01 (-0.47, 0.49)	-0.60 (-1.11, -0.08) *
HbA1c (%)				
Preintervention	5.4 (5.2, 5.6)	5.4 (5.2, 5.6)	5.4 (5.2, 5.6)	5.3 (5.1, 5.5)
Postintervention	5.5 (5.3, 5.6)	5.4 (5.2, 5.6)	5.4 (5.2, 5.6)	5.2 (5.0, 5.4)
Change	0.1 (-0.1, 0.2)	0.0 (-0.1, 0.1)	0.0 (-0.1, 0.1)	-0.1 (-0.2, 0.0)
24h mean glucose (mg/dL)				
Preintervention	107 (103, 112)	110 (106, 115)	106 (102, 111)	111 (106, 116)
Postintervention	106 (101, 110)	107 (103, 112)	109 (104, 113)	109 (104, 114)
Change	-1 (-5, 2)	-3 (-6, 1)	3 (-1, 6)	-1 (-5, 2)
Diurnal mean glucose (mg/dL)				
Preintervention	109 (105, 114)	111 (107, 116)	107 (103, 111)	113 (108, 117)
Postintervention	108 (103, 113)	112 (107, 116)	109 (105, 114)	111 (106, 116)
Change	-1 (-5, 2)	0 (-3, 4)	2 (-2, 6)	-2 (-5, 2)
Nocturnal mean glucose (mg/dL)				
Preintervention	102 (96, 107)	107 (102, 113)	104 (99, 109)	107 (101, 112)
Postintervention	99 (94, 105)	98 (92, 103)	109 (104, 114)	105 (99, 111)
Change	-2 (-7, 3)	-9 (-14, -5) *	5 (0, 10) *	-2 (-6, 3)
24h CV glucose (mg/dL)				
Preintervention	15.5 (14.1, 16.9)	14.5 (13.1, 15.9)	14.5 (13.2, 15.9)	13.1 (11.6, 14.6)
Postintervention	15.5 (14.0, 16.9)	15.8 (14.4, 17.3)	12.7 (11.3, 14.2)	11.9 (10.4, 13.4)
Change	0.0 (-1.2, 1.1)	1.3 (0.2, 2.5) *	-1.8 (-3.0, -0.7) *	-1.2 (-2.3, 0.0) *
Diurnal CV glucose (mg/dL)				
Preintervention	15.7 (14.2, 17.1)	14.8 (13.3, 16.3)	14.7 (13.2, 16.1)	13.2 (11.7, 14.8)
Postintervention	15.4 (13.9, 16.9)	15.6 (14.1, 17.0)	12.7 (11.2, 14.2)	11.8 (10.3, 13.4)
Change	-0.3 (-1.5, 0.9)	0.8 (-0.4, 2.0)	-2.0 (-3.2, -0.7) *	-1.4 (-2.7, -0.2) *
Nocturnal CV glucose (mg/dL)				
Preintervention	8.6 (7.3, 10.0)	10.0 (8.7, 11.4)	9.6 (8.3, 10.9)	8.4 (7.0, 9.8)
Postintervention	9.0 (7.6, 10.4)	7.0 (5.7, 8.4)	8.9 (7.5, 10.3)	7.2 (5.8, 8.6)
Change	0.4 (-1.2, 1.9)	-3.0 (-4.5, -1.5) *	-0.7 (-2.3, 0.8)	-1.2 (-2.8, 0.3)
<i>Blood lipid profile</i>				
Total cholesterol (mg/dL)				

Preintervention	223 (209, 238)	207 (193, 222)	219 (205, 232)	204 (189, 219)
Postintervention	215 (200, 229)	205 (191, 220)	219 (205, 233)	198 (183, 213)
Change	-8 (-21, 5)	-2 (-15, 11)	1 (-12, 13)	-6 (-20, 7)
HDL-C (mg/dL)				
Preintervention	55 (50, 59)	49 (44, 53)	51 (47, 55)	50 (45, 54)
Postintervention	51 (46, 55)	48 (44, 52)	51 (47, 55)	48 (44, 52)
Change	-4 (-7, -1) *	-1 (-4, 3)	0 (-3, 3)	-2 (-5, 1)
LDL-C (mg/dL)				
Preintervention	144 (132, 155)	132 (121, 144)	141 (130, 152)	129 (117, 142)
Postintervention	140 (128, 152)	137 (126, 149)	143 (132, 154)	130 (117, 142)
Change	-3 (-14, 7)	5 (-5, 15)	2 (-7, 12)	0 (-10, 11)
Triglycerides (mg/dL)				
Preintervention	139 (109, 169)	151 (121, 181)	144 (115, 173)	150 (119, 182)
Postintervention	120 (89, 151)	112 (82, 142)	130 (101, 159)	113 (81, 145)
Change	-19 (-46, 8)	-39 (-65, -13) *	-13 (-38, 11)	-37 (-64, -10) *
APOA1 (mg/dL)				
Preintervention	162 (151, 173)	144 (132, 155)	150 (139, 161)	157 (145, 169)
Postintervention	162 (150, 173)	150 (139, 162)	153 (142, 164)	152 (140, 164)
Change	0 (-12, 12)	6 (-6, 19)	3 (-9, 15)	-4 (-17, 8)
APOB (mg/dL)				
Preintervention	112 (103, 121)	103 (94, 113)	111 (103, 120)	101 (91, 111)
Postintervention	107 (98, 117)	104 (95, 113)	112 (104, 121)	99 (89, 108)
Change	-5 (-12, 3)	0 (-7, 8)	1 (-6, 8)	-2 (-10, 6)
<i>Dietary intake</i>				
Energy intake by 24HR (kcal/day)				
Preintervention	2025 (1845, 2204)	2080 (1900, 2259)	2029 (1857, 2202)	2124 (1933, 2315)
Postintervention	1866 (1687, 2045)	1604 (1425, 1783)	1625 (1450, 1801)	1532 (1341, 1723)
Change	-158 (-361, 45)	-476 (-678, -273) *	-404 (-602, -206) *	-592 (-809, -376) *

*Represent significant differences within groups for men as determined by two-sided t-test ($P < 0.05$). No adjustments were made for multiple comparisons within groups. Primary analysis (visceral adipose tissue changes in percentage) within the usual care group (UC, $P = 0.14$), early time-restricted eating group (TRE, $P = 0.003$), late TRE group ($P = 0.008$), and self-selected TRE group ($P < 0.001$). APOA1, apolipoprotein A; APOB, apolipoprotein B; BP, blood pressure; CI, confidence interval; CV, coefficient of variation; HbA1c, glycated haemoglobin; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostasis model assessment of insulin resistance; LDL-C, low-density lipoprotein cholesterol; 24HR, 24-hour dietary recalls.

Supplementary Table 7. Abdominal adipose tissue, body composition, blood pressure, glucose homeostasis, blood lipid profile, and dietary intake endpoints at baseline and after the 12-week intervention in women.

Endpoint	UC (n=24)	Early TRE (n=24)	Late TRE (n=25)	Self-selected TRE (n=25)
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
<i>Abdominal adipose tissue</i>				
Visceral (cm ³)				
Preintervention	1012 (848, 1175)	977 (810, 1145)	1066 (906, 1226)	1114 (954, 1274)
Postintervention	982 (817, 1147)	911 (743, 1078)	940 (779, 1101)	1052 (890, 1213)
Change	-30 (-84, 25)	-67 (-119, -15) *	-126 (-177, -74) *	-63 (-114, -11) *
Visceral (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	97 (93, 100)	93 (90, 97)	89 (85, 92)	97 (94, 101)
Change	-3 (-8, 1)	-7 (-11, -2) *	-11 (-16, -7) *	-3 (-7, 2)
Subcutaneous (cm ³)				
Preintervention	3028 (2728, 3329)	3152 (2845, 3459)	2792 (2498, 3086)	2811 (2517, 3105)
Postintervention	2822 (2519, 3125)	2802 (2494, 3110)	2544 (2248, 2839)	2634 (2338, 2929)
Change	-206 (-308, -105) *	-350 (-446, -253) *	-248 (-345, -152) *	-178 (-274, -81) *
Subcutaneous (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	93 (91, 95)	89 (87, 91)	91 (89, 93)	94 (93, 96)
Change	-7 (-10, -4) *	-11 (-14, -8) *	-9 (-12, -6) *	-6 (-8, -3) *
Intermuscular (cm ³)				
Preintervention	223 (191, 255)	226 (193, 258)	247 (215, 278)	192 (160, 223)
Postintervention	233 (199, 266)	231 (198, 264)	236 (203, 268)	189 (157, 221)
Change	9 (-19, 37)	5 (-22, 32)	-11 (-38, 16)	-3 (-29, 24)
Intermuscular (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	108 (98, 119)	105 (95, 115)	110 (100, 120)	109 (99, 119)
Change	8 (-6, 23)	5 (-9, 19)	10 (-3, 24)	9 (-5, 22)
<i>Body composition</i>				
Weight (kg)				
Preintervention	90.3 (85.6, 94.9)	88.9 (84.2, 93.5)	85.2 (80.6, 89.7)	88.2 (83.6, 92.8)
Postintervention	88.6 (83.9, 93.3)	84.8 (80.2, 89.5)	80.6 (76.0, 85.2)	84.8 (80.3, 89.4)
Change	-1.7 (-2.8, -0.5) *	-4.1 (-5.1, -3.0) *	-4.5 (-5.7, -3.4) *	-3.4 (-4.5, -2.2) *
Weight (%)				
Preintervention	Reference	Reference	Reference	Reference
Postintervention	98.2 (97.3, 99.0)	95.4 (94.6, 96.2)	94.7 (93.9, 95.6)	96.4 (95.6, 97.3)
Change	-1.8 (-3.0, -0.7) *	-4.6 (-5.8, -3.5) *	-5.3 (-6.4, -4.1) *	-3.6 (-4.8, -2.4) *
Fat-free mass (kg)				
Preintervention	47.5 (45.2, 49.8)	46.4 (44.1, 48.7)	44.1 (41.8, 46.3)	45.9 (43.6, 48.1)
Postintervention	47.7 (45.4, 50.1)	45.6 (43.3, 48.0)	43.4 (41.2, 45.7)	45.1 (42.8, 47.4)
Change	0.2 (-0.7, 1.1)	-0.8 (-1.6, 0.0)	-0.6 (-1.5, 0.2)	-0.8 (-1.7, 0.1)
Appendicular lean mass (kg)				
Preintervention	18.1 (17.0, 19.2)	17.7 (16.7, 18.8)	17.1 (16.0, 18.1)	17.4 (16.3, 18.4)
Postintervention	17.7 (16.6, 18.8)	16.7 (15.6, 17.7)	15.7 (14.6, 16.8)	16.8 (15.7, 17.9)
Change	-0.4 (-1.1, 0.4)	-1.1 (-1.8, -0.4) *	-1.4 (-2.1, -0.7) *	-0.6 (-1.3, 0.1)
Fat mass (kg)				
Preintervention	42.0 (38.9, 45.1)	41.4 (38.4, 44.5)	40.5 (37.5, 43.5)	41.7 (38.7, 44.7)
Postintervention	39.8 (36.7, 42.9)	38.5 (35.4, 41.6)	36.7 (33.7, 39.8)	38.8 (35.8, 41.9)
Change	-2.2 (-3.3, -1.1) *	-2.9 (-3.9, -1.9) *	-3.8 (-4.8, -2.7) *	-2.8 (-3.9, -1.8) *
Fat mass (%)				
Preintervention	46.8 (45.0, 48.6)	46.9 (45.1, 48.7)	47.7 (45.9, 49.4)	47.3 (45.6, 49.1)
Postintervention	45.1 (43.3, 47.0)	45.6 (43.8, 47.4)	45.6 (43.8, 47.4)	46.0 (44.2, 47.8)

Change	-1.6 (-2.6, -0.7) *	-1.3 (-2.2, -0.5) *	-2.1 (-3.0, -1.2) *	-1.4 (-2.3, -0.4) *
<i>Blood pressure</i>				
Systolic BP (mmHg)				
Preintervention	120 (114, 126)	120 (114, 126)	118 (112, 123)	120 (114, 126)
Postintervention	117 (111, 123)	117 (111, 123)	116 (110, 122)	121 (115, 127)
Change	-3 (-7, 1)	-3 (-7, 1)	-2 (-6, 2)	1 (-3, 5)
Diastolic BP (mmHg)				
Preintervention	77 (73, 82)	79 (75, 84)	77 (73, 81)	78 (73, 82)
Postintervention	75 (71, 80)	77 (72, 81)	75 (71, 80)	77 (73, 82)
Change	-2 (-5, 1)	-3 (-6, 0)	-2 (-5, 1)	0 (-3, 3)
<i>Glucose homeostasis</i>				
Fasting glucose (mg/dL)				
Preintervention	94 (91, 98)	92 (88, 95)	93 (90, 97)	91 (87, 95)
Postintervention	95 (91, 99)	87 (83, 90)	96 (92, 100)	91 (88, 95)
Change	1 (-3, 5)	-5 (-9, -1) *	2 (-1, 6)	0 (-3, 4)
Insulin (mU/L)				
Preintervention	12.4 (10.4, 14.4)	10.7 (8.7, 12.7)	12.0 (10.0, 13.9)	10.5 (8.6, 12.5)
Postintervention	11.4 (9.3, 13.4)	9.6 (7.6, 11.7)	10.1 (8.1, 12.1)	8.8 (6.7, 10.9)
Change	-1.0 (-2.8, 0.8)	-1.1 (-2.8, 0.6)	-1.9 (-3.6, -0.1) *	-1.7 (-3.6, 0.1)
HOMA-IR				
Preintervention	2.91 (2.43, 3.38)	2.44 (1.97, 2.91)	2.77 (2.31, 3.24)	2.41 (1.94, 2.88)
Postintervention	2.70 (2.21, 3.19)	2.03 (1.55, 2.51)	2.41 (1.93, 2.89)	1.98 (1.49, 2.48)
Change	-0.21 (-0.64, 0.23)	-0.41 (-0.83, 0.01)	-0.36 (-0.79, 0.06)	-0.43 (-0.88, 0.02)
HbA1c (%)				
Preintervention	5.4 (5.2, 5.5)	5.4 (5.2, 5.5)	5.4 (5.2, 5.5)	5.3 (5.2, 5.4)
Postintervention	5.4 (5.3, 5.6)	5.4 (5.3, 5.6)	5.4 (5.2, 5.5)	5.3 (5.2, 5.4)
Change	0.0 (0.0, 0.2)	0.0 (0.0, 0.2)	0.0 (-0.1, 0.1)	0.0 (-0.1, 0.1)
24h mean glucose (mg/dL)				
Preintervention	103 (100, 107)	105 (101, 109)	101 (98, 105)	101 (97, 105)
Postintervention	105 (101, 110)	105 (101, 109)	104 (101, 108)	103 (99, 107)
Change	2 (-2, 6)	-1 (-5, 3)	3 (-1, 7)	2 (-2, 6)
Diurnal mean glucose (mg/dL)				
Preintervention	105 (101, 109)	107 (103, 111)	103 (99, 106)	103 (100, 107)
Postintervention	107 (103, 112)	109 (105, 113)	105 (102, 109)	105 (101, 109)
Change	2 (-2, 7)	2 (-2, 6)	3 (-1, 7)	2 (-3, 6)
Nocturnal mean glucose (mg/dL)				
Preintervention	100 (95, 104)	100 (95, 104)	98 (93, 102)	96 (92, 101)
Postintervention	101 (96, 106)	93 (89, 98)	102 (97, 106)	98 (94, 103)
Change	1 (-4, 6)	-7 (-11, -2) *	4 (-1, 9)	2 (-3, 7)
24h CV glucose (mg/dL)				
Preintervention	13.7 (12.4, 15.0)	14.0 (12.7, 15.3)	12.7 (11.4, 14.0)	13.3 (12.0, 14.6)
Postintervention	13.7 (12.1, 15.3)	15.6 (14.2, 17.0)	11.4 (10.1, 12.7)	12.3 (10.9, 13.8)
Change	0.0 (-1.7, 1.7)	1.6 (0.1, 3.1) *	-1.3 (-2.8, 0.2)	-0.9 (-2.5, 0.7)
Diurnal CV glucose (mg/dL)				
Preintervention	13.7 (12.3, 15.0)	13.9 (12.5, 15.2)	13.1 (11.7, 14.4)	13.5 (12.1, 14.8)
Postintervention	13.2 (11.6, 14.8)	14.9 (13.5, 16.3)	11.6 (10.3, 13.0)	12.1 (10.6, 13.6)
Change	-0.5 (-2.1, 1.2)	1.1 (-0.4, 2.5)	-1.4 (-2.8, 0.0)	-1.4 (-2.9, 0.2)
Nocturnal CV glucose (mg/dL)				
Preintervention	9.6 (8.6, 10.7)	8.8 (7.7, 9.9)	8.3 (7.2, 9.4)	8.6 (7.5, 9.6)
Postintervention	10.0 (8.6, 11.3)	6.6 (5.5, 7.8)	6.9 (5.8, 8.0)	8.4 (7.2, 9.6)
Change	0.3 (-1.2, 1.9)	-2.2 (-3.6, -0.7) *	-1.4 (-2.8, 0.0) *	-0.2 (-1.7, 1.3)
<i>Blood lipid profile</i>				
Total cholesterol (mg/dL)				

Preintervention	197 (184, 210)	210 (197, 223)	213 (200, 226)	212 (199, 225)
Postintervention	196 (183, 210)	210 (197, 223)	222 (209, 235)	222 (208, 235)
Change	-1 (-12, 10)	0 (-11, 11)	9 (-2, 20)	10 (-1, 21)
HDL-C (mg/dL)				
Preintervention	57 (53, 62)	56 (51, 60)	59 (54, 63)	55 (51, 59)
Postintervention	54 (50, 59)	51 (47, 56)	55 (51, 60)	54 (50, 59)
Change	-3 (-5, -1) *	-4 (-6, -2) *	-3 (-6, -1) *	-1 (-3, 1)
LDL-C (mg/dL)				
Preintervention	117 (105, 128)	132 (120, 143)	134 (123, 145)	135 (124, 146)
Postintervention	120 (108, 132)	135 (123, 147)	146 (134, 157)	148 (136, 160)
Change	4 (-6, 13)	3 (-6, 12)	12 (3, 21) *	13 (4, 23) *
Triglycerides (mg/dL)				
Preintervention	126 (105, 147)	124 (103, 145)	122 (101, 142)	108 (88, 128)
Postintervention	111 (89, 133)	120 (99, 142)	106 (84, 127)	96 (75, 118)
Change	-16 (-36, 5)	-4 (-23, 16)	-16 (-36, 4)	-12 (-32, 9)
APOA1 (mg/dL)				
Preintervention	167 (156, 179)	160 (149, 171)	166 (155, 177)	158 (147, 170)
Postintervention	163 (151, 175)	160 (148, 171)	161 (150, 173)	155 (143, 167)
Change	-4 (-16, 8)	0 (-12, 11)	-5 (-16, 7)	-3 (-15, 8)
APOB (mg/dL)				
Preintervention	92 (83, 102)	100 (91, 110)	102 (92, 111)	102 (92, 111)
Postintervention	91 (81, 101)	103 (94, 113)	110 (101, 120)	109 (99, 119)
Change	-1 (-9, 7)	3 (-4, 10)	9 (1, 16) *	7 (-1, 15)
<i>Dietary intake</i>				
Energy intake by 24HR (kcal/day)				
Preintervention	2000 (1829, 2170)	1911 (1741, 2082)	1666 (1499, 1833)	1839 (1672, 2006)
Postintervention	1735 (1555, 1915)	1351 (1178, 1525)	1323 (1147, 1499)	1517 (1338, 1697)
Change	-264.5 (-454, -76) *	-560 (-743, -377) *	-343 (-528, -158) *	-322 (-510, -134) *

*Represent significant differences within groups for women as determined by two-sided t-test ($P < 0.05$). No adjustments were made for multiple comparisons within groups. Primary analysis (visceral adipose tissue changes in percentage) within the usual care group (UC, $P = 0.17$), early time-restricted eating group (TRE, $P = 0.007$), late TRE group ($P < 0.001$), and self-selected TRE group ($P = 0.27$). APOA1, apolipoprotein A; APOB, apolipoprotein B; BP, blood pressure; CI, confidence interval; CV, coefficient of variation; HbA1c, glycated haemoglobin; HDL-C, high-density lipoprotein cholesterol; HOMA-IR, homeostasis model assessment of insulin resistance; LDL-C, low-density lipoprotein cholesterol; 24HR, 24-hour dietary recalls.