

Supplementary Material 1: Additional data and results for Chapter 5 (Main clinical results of the trial)

Table 1. Summary of PA (steps) outcome by trial arm: original, non-imputed data.

Time point	Trial Arm			Total (n=1742)
	Group (n=697)	Individual (n=523)	Usual care (n=522)	
Baseline				
<i>n (%)</i>	688 (98.71%)	516 (98.66%)	517 (99.04%)	1721 (98.79%)
<i>Mean (SD)</i>	6662.99 (2839.52)	6800.64 (2903.53)	6735.81 (2892.93)	6726.14 (2873.80)
<i>Median (min., max.)</i>	6256.48 (693.43, 18476.00)	6388.14 (0.00, 16956.71)	6275.80 (1379.00, 21526.29)	6276.75 (0.00, 21526.29)
<i>IQR (lower quartile, upper quartile)</i>	3625.31 (4613.79, 8239.11)	3838.69 (4630.46, 8469.15)	3400.98 (4801.86, 8202.83)	3592.14 (4695.00, 8287.14)
12-month follow-up				
<i>n (%)</i>	557 (79.91%)	418 (79.92%)	443 (84.87%)	1418 (81.4%)
<i>Mean (SD)</i>	6794.61 (3048.03)	6891.68 (2984.24)	6746.61 (3051.61)	6808.23 (3028.90)
<i>Median (min., max.)</i>	6453.50 (879.00, 19930.67)	6424.71 (541.67, 24668.00)	6352.71 (1591.14, 22659.43)	6412.64 (541.67, 24668.00)
<i>IQR (lower quartile, upper quartile)</i>	3956.79 (4610.71, 8567.50)	3522.11 (4813.00, 8335.11)	3471.07 (4782.14, 8253.21)	3707.61 (4737.25, 8444.86)
24-month follow-up				
<i>n (%)</i>	543 (77.91%)	401 (76.67%)	439 (84.1%)	1383 (79.39%)
<i>Mean (SD)</i>	6375.63 (2851.40)	6595.59 (2876.10)	6494.41 (3062.01)	6477.11 (2926.19)
<i>Median (min., max.)</i>	6052.00 (538.83, 19759.86)	6040.29 (526.00, 19378.29)	6128.17 (621.57, 25586.00)	6058.67 (526.00, 25586.00)
<i>IQR (lower quartile, upper quartile)</i>	3599.04 (4410.61, 8009.64)	3505.21 (4568.50, 8073.71)	3317.72 (4534.08, 7851.80)	3546.96 (4456.21, 8003.18)

SD: standard deviation; min: minimum; max: maximum; IQR: inter-quartile range

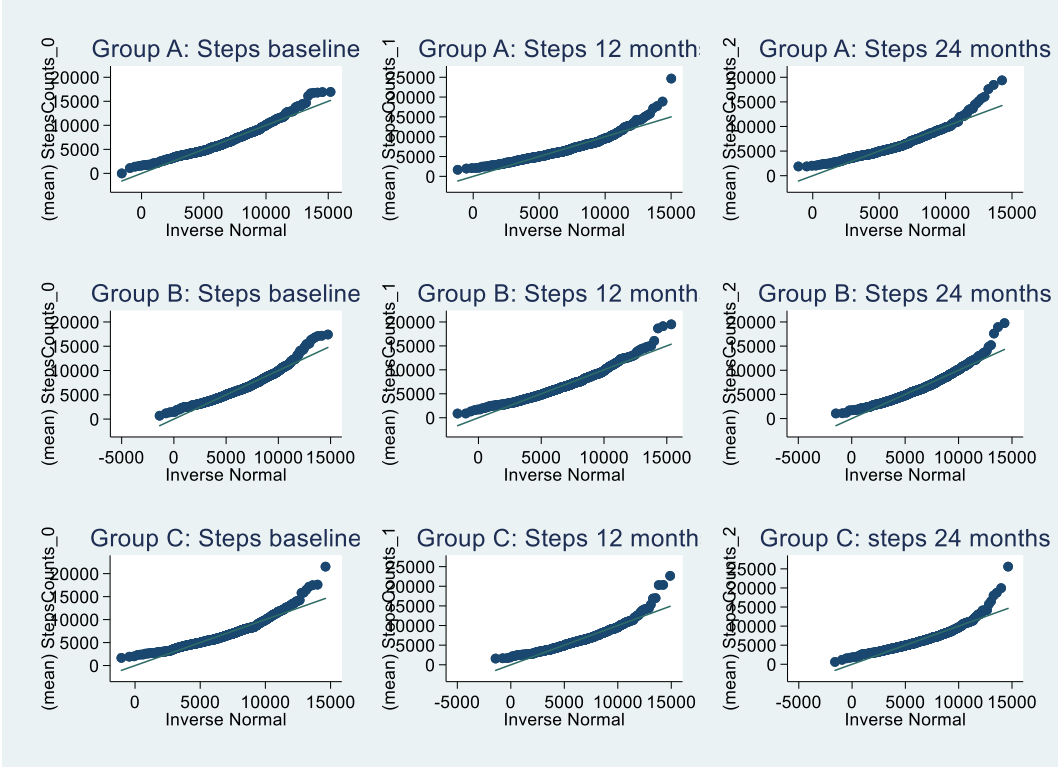


Figure 1A. QQ-plots of PA (steps per day) at baseline, 12 and 24 months follow-up for all three treatment arms.

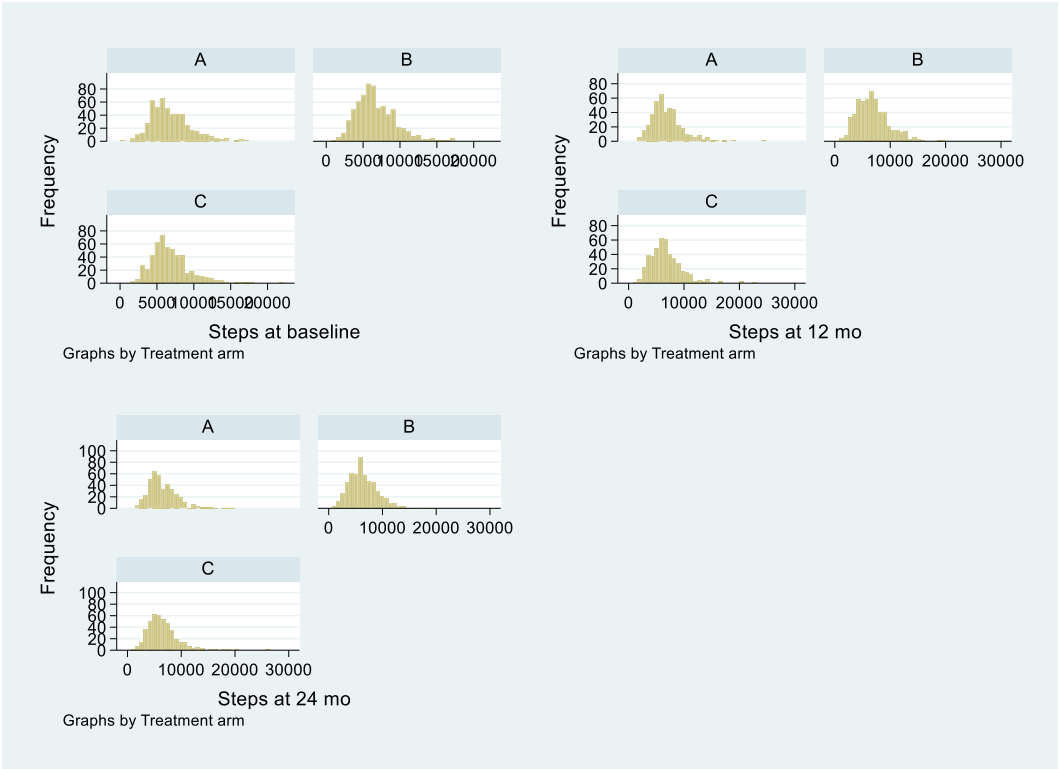


Figure 1B. Histograms of PA (steps per day) at baseline, 12 and 24 months follow-up for all three treatment arms.

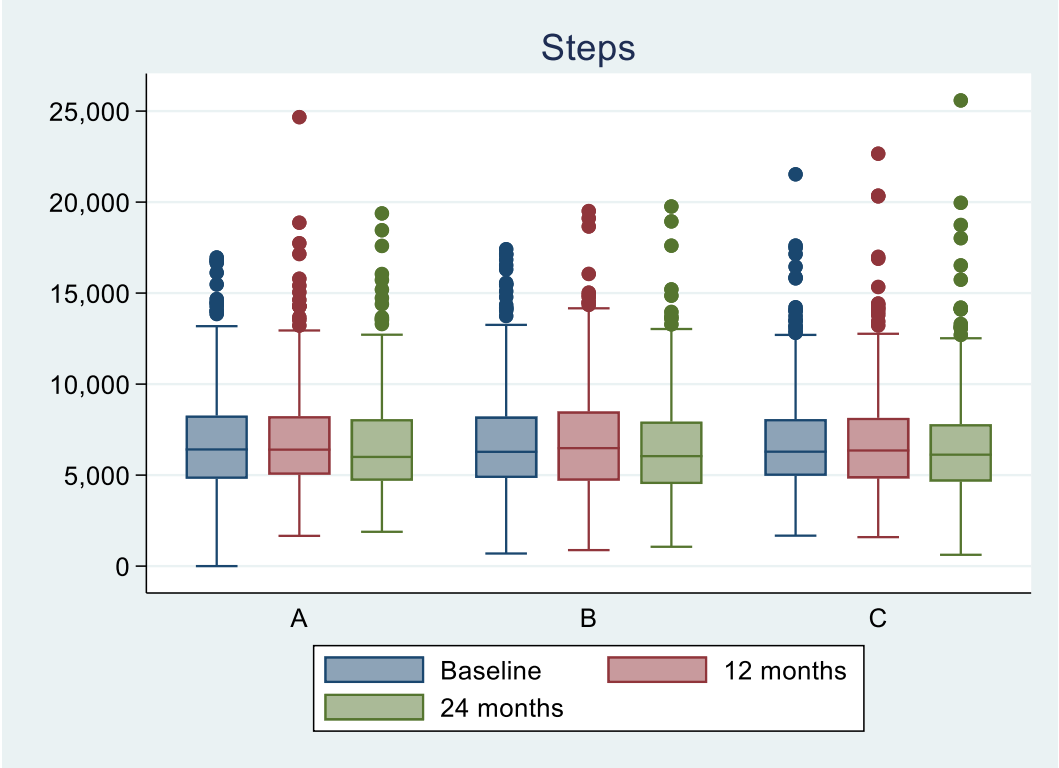


Figure 1C. Boxplots of PA (steps per day) at baseline, 12 and 24 months follow-up for all three treatment arms.

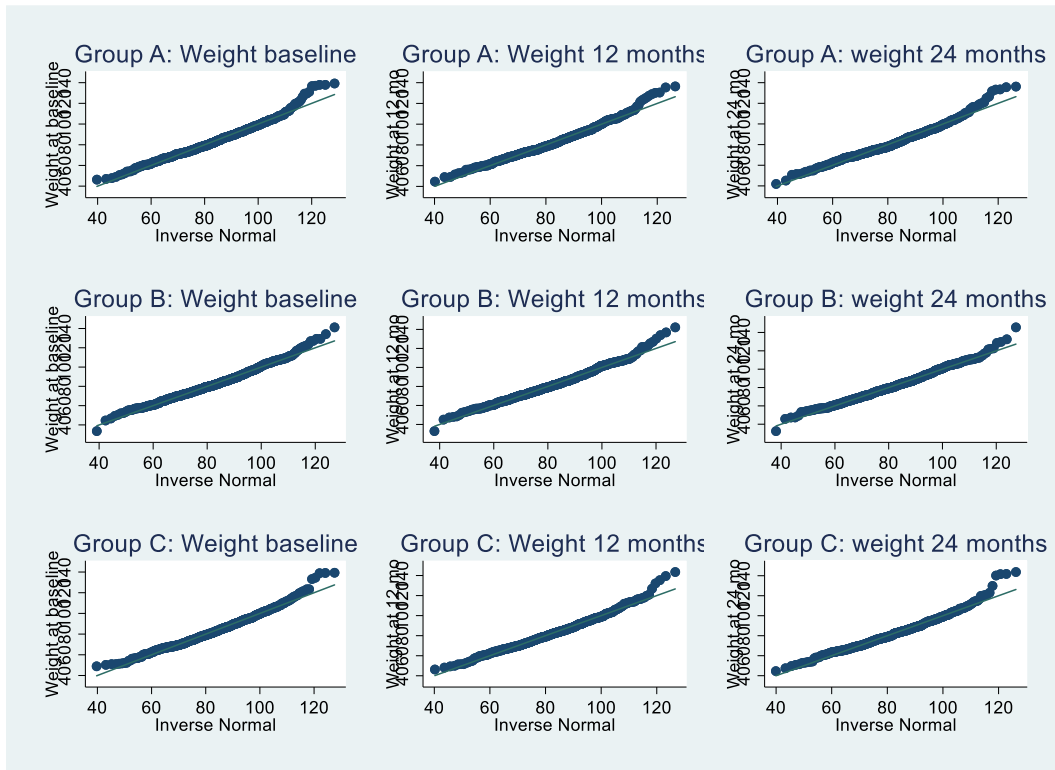


Figure 2A. QQ-plots of weight in kg at baseline, 12 and 24 months follow-up for all three treatment arms.

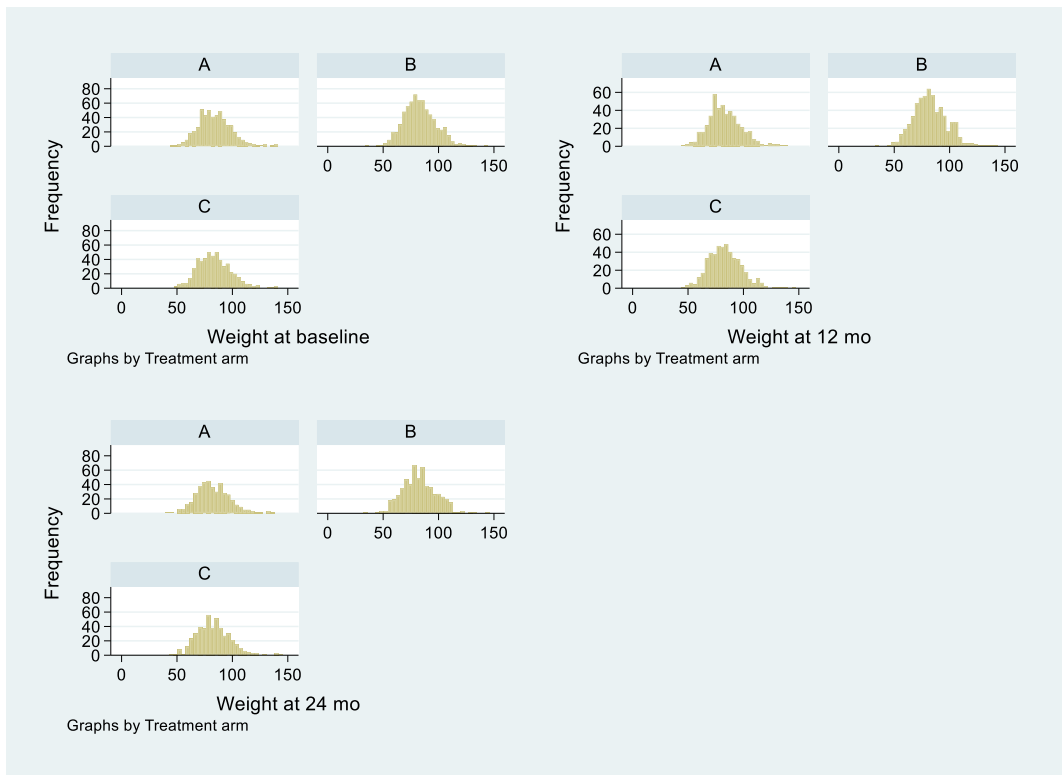


Figure 2B. Histograms of weight in kg at baseline, 12 and 24 months follow-up for all three treatment arms.

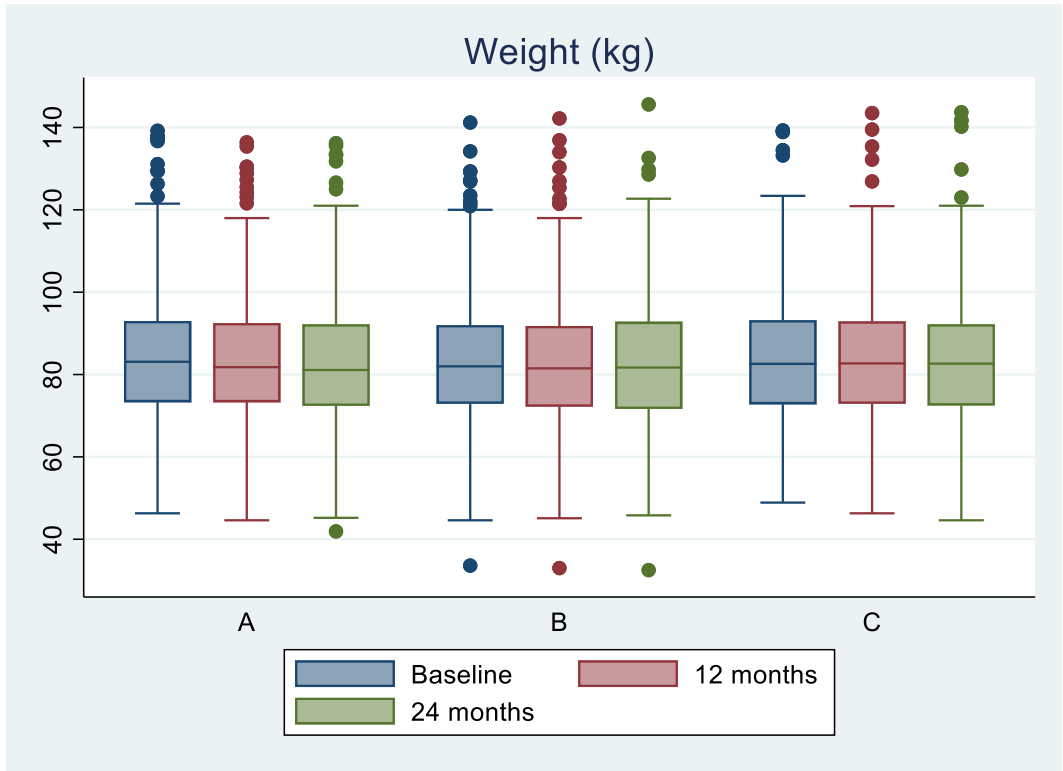


Figure 2C. Boxplots of weight in kg at baseline, 12 and 24 months follow-up for all three treatment arms.

Table 2. Fixed effects of treatment on PA (steps) and weight (kg).				
	<i>PA</i>		<i>Weight</i>	
	Estimate (95% CI)	p	Estimate (95% CI)	p
Arm x Time				
Individual x 12 month	0		0	
Individual x 24 month	-400.7 (-585.32--216.08)	<0.0001	-0.07 (-0.35--0.20)	0.60
Group x 12 month	-79.12 (-315.98--157.73)	0.51	0.03 (-0.37--0.43)	0.89
Group x 24 month	-477.99 (-711.77--244.21)	<0.0001	0.32 (-0.10--0.74)	0.13
UC x 12 month	-210.22 (-439.91--19.46)	0.073	0.55 (0.14--0.95)	0.008
UC x 24 month	-407.94 (-642.31--173.58)	0.001	0.35 (-0.12--0.81)	0.14
Time x Baseline PA (centered)				
12 month	0.81 (0.78--0.85)	<0.0001	0.98 (0.97--0.99)	<0.0001
24 month	0.76 (0.73--0.79)	<0.0001	0.98 (0.97--1.00)	<0.0001
Gender, female	-416.09 (-657.24--174.94)	0.001	-0.12 (-0.59--0.35)	0.63
Age (centered)	-34.2 (-54.49--13.91)	0.001	-0.04 (-0.08--0.00)	0.052
Baseline borough				
Bexley	0		0	
Bromley	-17.64 (-386.86--351.59)	0.923	-0.51 (-1.21--0.19)	0.16
Lewisham	-106.37 (-524.07--311.32)	0.62	-0.33 (-1.13--0.47)	0.42
Southwark	150.07 (-354.48--654.61)	0.56	-0.94 (-1.9--0.01)	0.052
Croydon	-136.7 (-533.47--260.07)	0.50	-0.35 (-1.11--0.41)	0.36
Richmond	-27.21 (-590.03--535.62)	0.93	-0.8 (-1.89--0.29)	0.15
Sutton & Merton	-27.63 (-432.61--377.35)	0.89	-0.5 (-1.28--0.27)	0.20
Kingston	155.58 (-398.23--709.38)	0.58	-1.03 (-2.1--0.05)	0.06

<i>follow-up</i>														
Individual – UC	7.24 (- 224. 01 to 238. 5)	0.9 5	7.22 (- 223. 93 to 238. 36)	0.9 5	2.42 (- 235. 48 to 240. 32)	0.9 8	9.26 (- 217. 4 to 235. 92)	0.9 36	- 50.7 8 (- 302. 04 to 200. 47)	0.6 92	69.3 7 (- 180. 85 to 319. 58)	0.5 87	188. 76 (- 74.3 9 to 451. 91)	0.1 6
Group – UC	70.0 5 (- 288 to 147. 9)	0.5 3	- 24.3 8 (- 299. 64 to 250. 87)	0.8 6	- 87.8 2 (- 316. 3 to 140. 65)	0.4 5	- 70.6 9 (- 283. 6 to 142. 22)	0.5 15	- 34.7 3 (- 276. 26 to 206. 81)	0.7 78	11.4 4 (- 238. 3 to 261. 18)	0.9 28	102. 37 (- 145. 96 to 350. 69)	0.4 19
Individual – Group	77.2 9 (- 153. 37 to 307. 95)	0.5 1	31.6 (- 253. 97 to 317. 18)	0.8 3	90.2 5 (- 143. 39 to 323. 88)	0.4 5	79.9 5 (- 145. 24 to 305. 14)	0.4 87	- 16.0 6 (- 272. 29 to 240. 18)	0.9 02	57.9 3 (- 219. 98 to 335. 84)	0.6 83	86.4 (- 148. 18 to 320. 97)	0.4 7

1. Adjusting for partially nested random effect for therapist.
2. Adding therapist and general practice as random factors and exchangeable residual covariance matrix.
3. Removing potential outliers (removed n=6).
4. Only including patients with BMI>25kg/m² (analysed n=2159).
5. Adjusting for treatment compliance (including patients in arms A/B that attended at least one intervention session; analysed n=2305).

6. Adjusting for the delay in intervention start (continuous variable).

Table 5. Pairwise comparisons of trial arms of treatment effect on PA (steps): sensitivity analyses 7-15.

	SA7		SA8		SA9		SA10		SA11		SA12		SA13		SA14		SA15	
	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p
<i>12-month follow-up</i>																		
Individual – UC	232.51 (-3.13 to 468.15)	0.053	209.97 (-19.3 to 439.72)	0.073	209.24 (-7.4 to 439.17)	0.074	180.32 (-1.44 to 405.11)	0.061	203.39 (-8.26 to 432.87)	0.082	217.25 (-6.12 to 447.35)	0.064	210.97 (-7.18 to 440.74)	0.077	210.17 (-7.21 to 442.09)	0.076	209.80 (-19.90 to 439.51)	0.073
Group – UC	157.32 (-63.2 to 326.15)	0.062	130.84 (-35.6 to 285.12)	0.036	131.51 (-33.4 to 284.44)	0.034	152.17 (-7.69 to 326.27)	0.077	130.03 (-86.9 to 306.83)	0.033	133.52 (-82.7 to 308.69)	0.027	134.6 (-81.3 to 310.3)	0.022	120.66 (-98.1 to 310.78)	0.028	131.51 (-84.95 to 310.93)	0.024

	04 to 377 .68)		62 to 347 .3)		97 to 347 .98)		to 373 .33)		31 to 346 .37)		94 to 349 .98)		91 to 351 .11)		93 to 340 .26)		347.9 7)	
Indi vidu al – Gro up	75. 19 (- 163 .85 to 314 .22)	0. 5 3 8	79. 05 (- 157 .89 to 316)	0. 5 1 3	77. 73 (- 159 .22 to 314 .68)	0. 5 2	28. 15 (- 203 .26 to 259 .57)	0. 8 1 2	73. 36 (- 163 .2 to 309 .92)	0. 5 4 3	83. 73 (- 153 .41 to 320 .86)	0. 4 8 9	76. 37 (- 160 .73 to 313 .47)	0. 5 2 8	89. 5 (- 150 .65 to 329 .66)	0. 4 6 5	78.29 (- 158.6 2 to 315.2 0)	0. 5 1 7
24- mo nth foll ow- up																		
Indi vidu al – UC	29. 19 (- 202 .36 to 260 .75)	0. 8 0 5	7.7 1 (- 223 .57 to 238 .99)	0. 9 4 8	7.4 9 (- 223 .68 to 238 .65)	0. 9 4 9	- 11. 27 (- 252 .43 to 229 .89)	0. 9 2 7	- 0.0 3 (- 231 .34 to 231 .28)	1. 0 0	13. 61 (- 217 .34 to 244 .55)	0. 9 0 8	7.6 2 (- 223 .7 to 238 .95)	0. 9 4 8	13. 43 (- 220 .15 to 247)	0. 9 1	6.51 (- 224.8 6 to 237.8 8)	0. 9 5 6

Group – UC	- 63.02 (-281.55 to 155.5)	0.57 (-288.72 to 147.2)	- 70.52 (-288.72 to 146.9)	0.52 (-288.72 to 146.9)	- 70.52 (-288.72 to 146.9)	0.52 (-288.72 to 146.9)	- 44.72 (-272.39 to 182.96)	0.72 (-290.64 to 145.22)	- 71.13 (-286.11 to 149.91)	0.51 (-286.11 to 149.91)	- 68.44 (-284.61 to 151.63)	0.54 (-284.61 to 151.63)	- 71.56 (-290.8 to 147.58)	0.52 (-290.8 to 147.58)	- 69.77 (-287.76 to 148.23)	0.53
	Indi-vidual – Group	92.22 (-138.29 to 322.73)	0.43 (-152.19 to 309.13)	78.05 (-151.98 to 308.89)	0.45 (-151.98 to 308.89)	78.05 (-151.98 to 308.89)	0.33 (-205.96 to 272.84)	0.72 (-157.97 to 303.33)	0.81 (-148.7 to 311.92)	0.74 (-148.7 to 311.92)	81.47 (-156.76 to 304.99)	0.74 (-156.76 to 304.99)	85.04 (-147.25 to 317.33)	0.44 (-147.25 to 317.33)	76.28 (-154.59 to 307.15)	0.517

7. Adjusting for the unblinding of the research assistant at each follow-up appointment (binary variable).
8. Adjusting for the number of accelerometer wear days at baseline (>3 days, binary variable).
9. Adjusting for the number of accelerometer wear days at baseline (>5 days, binary variable).
10. Adjusting for the number of valid accelerometer wear days at baseline (≥ 540 minutes, continuous variable).
11. Adjusting for the number of accelerometer wear days at each follow-up appointment (continuous variable).
12. Adjusting for a BMI score $< 25 \text{ kg/m}^2$ at baseline (binary variable).
13. Adjusting for a QRisk2 score $\geq 20.0\%$ at baseline (binary variable).
14. Adjusting for predictors (PHQ-9, smoking status, education) of missing outcome data.

15. Adjusting for accelerometer rewear at 24-month follow-up (binary variable).

Table 6. Pairwise comparisons of trial arms of treatment effect on weight (kg): primary analysis and sensitivity analyses 1–6.

	Primary analysis		SA1		SA2		SA3		SA4		SA5		SA6	
	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p
<i>12-month follow-up</i>														
Individual – UC	-0.55 (-0.95 to -0.14)	0.008	-0.55 (-0.95 to -0.14)	0.08	-0.55 (-1.00 to -0.10)	0.017	-0.56 (-0.96 to -0.17)	0.005	-0.55 (-0.96 to -0.15)	0.007	-0.65 (-1.15 to -0.15)	0.011	-0.50 (-0.96 to -0.03)	0.036
Group – UC	-0.52 (-0.90 to -0.13)	0.009	-0.61 (-1.07 to -0.15)	0.009	-0.52 (-0.95 to -0.08)	0.019	-0.53 (-0.90 to -0.16)	0.005	-0.50 (-0.89 to -0.12)	0.001	-0.53 (-1.01 to -0.05)	0.031	-0.41 (-0.87 to -0.04)	0.073
Individual – Group	-0.03 (-0.43 to -0.37)	0.89	0.07 (-0.41 to -0.54)	0.78	-0.03 (-0.47 to -0.41)	0.89	-0.04 (-0.43 to -0.35)	0.85	-0.05 (-0.45 to -0.35)	0.81	-0.12 (-0.61 to -0.37)	0.63	-0.08 (-0.49 to -0.32)	0.687

24-month follow-up														
Individual – UC	-0.42 (-0.93 to 0.09)	0.104	-0.42 (-0.93 to 0.09)	0.103	-0.42 (-0.88 to 0.04)	0.076	-0.47 (-0.96 to 0.02)	0.059	-0.43 (-0.94 to 0.08)	0.099	-0.51 (-1.12 to 0.1)	0.103	-0.38 (-0.94 to 0.18)	0.108
Group – UC	-0.03 (-0.49 to 0.44)	0.91	-0.13 (-0.66 to 0.41)	0.64	-0.01 (-0.45 to 0.43)	0.97	-0.09 (-0.54 to 0.36)	0.69	-0.01 (-0.48 to 0.45)	0.95	0.05 (-0.52 to 0.61)	0.87	0.08 (-0.44 to 0.6)	0.771
Individual – Group	-0.40 (-0.86 to 0.07)	0.096	-0.30 (-0.83 to 0.23)	0.27	-0.41 (-0.85 to 0.04)	0.074	-0.38 (-0.84 to 0.08)	0.101	-0.41 (-0.88 to 0.05)	0.082	-0.56 (-1.11 to 0)	0.005	-0.46 (-0.93 to 0.01)	0.056

1. Adjusting for partially nested random effect for therapist.
2. Adding therapist and general practice as random factors and exchangeable residual covariance matrix.
3. Removing potential outliers (removed n=12).
4. Only including patients with BMI>25kg/m² (analysed n=2298).
5. Adjusting for treatment compliance (including patients in arms A/B that attended at least one intervention session; analysed n=2427).
6. Adjusting for the delay in intervention start (continuous variable).

Table 7. Pairwise comparisons of trial arms of treatment effect on weight (kg): sensitivity analyses 7-14.

	SA7		SA8		SA9		SA10		SA11		SA12		SA13		SA14	
	Esti mate (95 % CI)	p	Esti mate (95 % CI)	p	Esti mate (95 % CI)	p	Esti mate (95 % CI)	p	Esti mate (95 % CI)	p	Esti mate (95 % CI)	p	Esti mate (95 % CI)	p	Esti mate (95 % CI)	p
<i>12- mont h follo w-up</i>																
Indiv idual – UC	- 0.02 (- 0.86 to 0.82)	0. 9 6	- 0.55 (- 0.96 to - 0.15)	0.0 07	- 0.55 (- 0.96 to - 0.15)	0.0 07	--	-	--	-	- 0.55 (- 0.96 to - 0.14)	0.0 08	- 0.55 (- 0.95 to - 0.14)	0.0 08	- 0.58 (- 0.98 to - 0.17)	0.0 06
Grou p – UC	0.09 (- 0.81 to 0.98)	0. 8 5	- 0.50 (- 0.89 to - 0.12)	0.0 1	- 0.51 (-0.9 to - 0.12)	0.0 1	--	-	--	-	- 0.52 (- 0.91 to - 0.13)	0.0 08	- 0.52 (-0.9 to - 0.13)	0.0 09	- 0.51 (-0.9 to - 0.12)	0.0 11
Indiv idual –	- 0.11 (- 0.11 to 0.11)	0. 7 1	- 0.05 (- 0.05 to 0.05)	0.8 1	- 0.04 (- 0.04 to 0.04)	0.8 37	--	-	--	-	- 0.03 (- 0.03 to 0.03)	0.8 85	- 0.03 (- 0.03 to 0.03)	0.8 87	- 0.07 (- 0.07 to 0.07)	0.7 42

Group	0.65 to 0.44)		0.45 to 0.35)		0.44 to 0.36)						0.43 to 0.37)		0.43 to 0.37)		0.47 to 0.34)	
24- month follow-up																
Individual – UC	0.1 (- 0.83 to 1.02)	0. 8 4	- 0.43 (- 0.94 to 0.08)	0.0 99	- 0.43 (- 0.94 to 0.08)	0.1 01	--	-	--	-	- 0.43 (- 0.94 to 0.08)	0.1 01	- 0.42 (- 0.93 to 0.09)	0.1 04	- 0.45 (- 0.97 to 0.06)	0.0 83
Group – UC	0.61 (- 0.39 to 1.6)	0. 2 3	- 0.01 (- 0.48 to 0.45)	0.9 5	- 0.02 (- 0.48 to 0.45)	0.9 37	--	-	--	-	- 0.03 (-0.5 to 0.44)	0.9	- 0.03 (- 0.49 to 0.44)	0.9 14	- 0.07 (- 0.54 to 0.41)	0.7 87
Individual – Group	- 0.51 (- 1.14 to 0.12)	0. 1 1	- 0.41 (- 0.88 to 0.05)	0.0 82	- 0.41 (- 0.87 to 0.06)	0.0 87	--	-	--	-	-0.4 (- 0.86 to 0.07)	0.0 95	-0.4 (- 0.86 to 0.07)	0.0 95	- 0.39 (- 0.86 to 0.08)	0.1 05

7. Adjusting for the unblinding of the research assistant at each follow-up appointment (binary variable).
8. Adjusting for the number of accelerometer wear days at baseline (>3 days, binary variable).
9. Adjusting for the number of accelerometer wear days at baseline (>5 days, binary variable).
10. Adjusting for the number of valid accelerometer wear days at baseline (≥ 540 minutes, continuous variable). Not completed for weight.
11. Adjusting for the number of accelerometer wear days at each follow-up appointment (continuous variable). Not completed for weight.
12. Adjusting for a BMI score $< 25 \text{ kg/m}^2$ at baseline (binary variable).
13. Adjusting for a QRisk2 score $\geq 20.0\%$ at baseline (binary variable).
14. Adjusting for predictors (PHQ-9, smoking status, education) of missing outcome data.