

Free-Living Energy Balance Behaviors Are Associated With Greater Weight Loss During a Weight Loss Program

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Supplementary Material

1 Supplementary Data

Supplementary table 1. LOCF hierarchical linear regression analyses predicting change in % BM between baseline and week 14 from early-late change in movement and eating behaviours.

| Model | Variables | B (95% CI) | SE B | β | p | F | R ² | ΔR^2 |
|--|---------------------------------|----------------------|------|---------|--------|-------|----------------|--------------|
| Predictor variable: Early-late change (Δ) in movement and eating behaviours | | | | | | | | |
| 2 | - | - | - | - | - | 28.30 | .71 | .02 |
| | Constant | -2.82 (-3.67, -1.97) | 0.43 | - | < .001 | - | - | - |
| | Programme type | -1.13 (-2.30, 0.05) | 0.59 | -0.13 | = .060 | - | - | - |
| | Δ Vigorous PA (min/d) | -0.48 (-0.62, -0.33) | 0.07 | -0.46 | < .001 | - | - | - |
| | Δ Total EE (kcal/d) | 0.03 (0.03, 0.04) | 0.01 | 1.74 | < .001 | - | - | - |
| | Δ Moderate PA (min/d) | -0.14 (-0.17, -0.10) | 0.02 | -1.12 | < .001 | - | - | - |
| | Δ Light PA (min/d) | -0.05 (-0.07, -0.04) | 0.01 | -0.75 | < .001 | - | - | - |
| | Energy density (kcal/g) | 2.18 (0.21, 4.16) | 0.99 | 0.14 | = .031 | - | - | - |

Unstandardised beta (B), standard error for the unstandardised beta (SE B), standardised beta (β), N = 77.

Model two was conducted using the LOCF sample.

Supplementary table 2. LOCF analyses exploring change in energy expenditure (EE), free-living physical activity (from light to vigorous physical activity [PA]), sedentary behaviour (SB), energy intake and macronutrient composition between week 3 and 12. Data are adjusted $M \pm SD$ (95% confidence intervals).

| | Group | n | Week 3 (early) | Week 12 (late) | Early-late change (Δ) |
|------------------------------|-------|----|--|--|--------------------------------------|
| Total EE (kcal/d) | CWL | 40 | 2605.257 \pm 346.69 (2495.90, 2714.61) | 2553.877 \pm 362.42 (2439.56, 2668.20) | -51.38 \pm 233.36 (-124.98, 22.23) |
| | NWL | 32 | 2572.882 \pm 347.74 (2450.25, 2695.52) | 2541.994 \pm 64.26 (2413.80, 2670.19) | -30.89 \pm 234.06 (-113.43, 51.66) |
| Light PA (min/d) | CWL | 40 | 199.19 \pm 72.26 (176.40, 221.99) | 189.15 \pm 76.74 (164.94, 213.35) | -10.04 \pm 62.28 (-29.69, 9.60) |
| | NWL | 32 | 185.52 \pm 72.49 (159.96, 211.09) | 167.43 \pm 76.97 (140.28, 194.58) | -18.09 \pm 62.46 (-40.12, 3.93) |
| Moderate PA (min/d) | CWL | 40 | 74.64 \pm 47.08 (59.79, 89.48) | 86.80 \pm 53.75 (69.85, 103.76) | 12.17 \pm 37.03 (0.486, 23.85) |
| | NWL | 32 | 65.06 \pm 47.22 (48.41, 81.72) | 63.99 \pm 53.91 (44.98, 83.00) | -1.07 \pm 37.14 (-14.17, 12.03) |
| Vigorous PA (min/d) † | CWL | 40 | 2.10 \pm 3.65 (0.95, 3.25) | 3.99 \pm 4.81 (2.47, 5.51) | 1.89 \pm 4.31 (0.53, 3.25)* |
| | NWL | 32 | 1.20 \pm 3.66 (-0.09, 2.49) | 0.72 \pm 4.83 (-.98, 2.42) | -0.48 \pm 4.32 (-2.00, 1.05) |
| SB (min/d) | CWL | 40 | 719.58 \pm 95.69 (689.40, 749.76) | 710.29 \pm 105.43 (677.03, 743.55) | -9.29 \pm 93.28 (-38.71, 20.13) |

| | | | | | |
|----------------------------------|-----|----|---------------------------------------|-------------------------------------|-----------------------------------|
| | NWL | 32 | 740.60 ± 95.98 (706.76, 774.45) | 756.26 ± 105.75 (718.96, 793.55) | 15.65 ± 93.56 (-17.34, 48.65) |
| | CWL | 41 | 1558.50 ± 464.34 (1413.91, 1703.10) | 1558.96 ± 455.11 (1417.24, 1700.69) | 0.46 ± 388.72 (-120.59, 121.51) |
| Total EI (kcal/d) | NWL | 33 | 1710.02 ± 465.97 (1548.28, 1871.75) | 1606.19 ± 456.71 (1447.66, 1764.72) | -103.83 ± 390.10 (-239.23, 31.58) |
| | CWL | 41 | 46.15 ± 6.29 (44.19, 48.10) | 44.85 ± 8.13 (42.32, 47.39) | -5.91 ± 45.65 (-20.13, 8.30) |
| Carbohydrate intake (%) | NWL | 33 | 43.38 ± 6.31 (41.19, 45.57) | 41.99 ± 8.16 (39.17, 44.83) | -12.43 ± 45.81 (-28.33, 3.47) |
| | CWL | 41 | 31.96 ± 4.62 (30.52, 33.40) | 32.73 ± 5.89 (30.90, 34.57) | 1.88 ± 19.83 (-4.30, 8.05) |
| Fat intake (%) † | NWL | 33 | 33.68 ± 4.64 (32.07, 35.29) | 35.74 ± 5.92 (33.68, 37.79) | -1.75 ± 19.90 (-8.66, 5.16) |
| | CWL | 41 | 19.08 ± 3.00 (18.15, 20.02) | 18.96 ± 3.59 (17.84, 20.08) | -0.83 ± 17.63 (-6.32, 4.66) |
| Protein intake (%) | NWL | 33 | 19.53 ± 3.02 (18.48, 20.57) | 19.88 ± 3.60 (18.63, 21.13) | 0.36 ± 4.13 (-1.12, 1.84) |
| | CWL | 41 | 1.24 ± 0.29 (1.15, 1.33) ^a | 1.36 ± 0.32 (1.25, 1.45) | 0.11 ± 0.30 (0.02, 0.21) |
| Energy density (kcal/g) † | NWL | 33 | 1.42 ± 0.30 (1.31, 1.52) ^a | 1.49 ± 0.32 (1.38, 1.60) | 0.08 ± 0.30 (-0.03, 0.18) |

Data from the SenseWear Armband were missing for 2 participants because they did not want to wear the SWA or they did not comply with the wear procedure. Asterisks indicates early-late change is significant (* $p < .05$); † indicates main effect of group is significant; and when necessary superscript letters are used to indicate differences between groups, i.e., the same letter is used for any pair when there is a significant difference observed (if bold $p < 0.01$, otherwise $p < 0.05$).

2 Supplementary data

2.1 Between group comparison of changes in body mass index and body composition

BMI significantly differed between all three time points [$\eta p^2 = 0.256$; $p < .001$; post hoc results all $p < .001$], see table 3. There was also a week x group interaction [$\eta p^2 = 0.511$; $p < .001$] that revealed that compared with NWL, CWL had a significantly greater reduction in BMI at all three timepoints: baseline and week 2 [CWL: $-1.16 \pm 0.43 \text{ kg/m}^2$ (-1.29, -1.03 kg/m^2); NWL: $-0.57 \pm 0.43 \text{ kg/m}^2$ (-0.72, -0.43 kg/m^2), $\eta p^2 = 0.321$; $p < .001$]; baseline and week 14 [CWL: $-2.68 \pm 0.97 \text{ kg/m}^2$ (-2.98, -2.38 kg/m^2); NWL: $-0.43 \pm 0.98 \text{ kg/m}^2$ (-0.77, -0.09 kg/m^2), $\eta p^2 = 0.570$; $p < .001$]; and weeks 2 and 14 [CWL: $-1.52 \pm 0.90 \text{ kg/m}^2$ (-1.80, -1.24 kg/m^2); NWL: $0.15 \pm 0.90 \text{ kg/m}^2$ (-0.17, -0.46 kg/m^2), $\eta p^2 = 0.459$; $p < .001$]. There was a significant interaction between week and programme type for BMI [$p = .04$].

On average, FM was higher early in the intervention (week 2 [$41.91 \pm 7.26 \text{ kg}$ (39.35, 44.48 kg)] compared to late in the intervention (week 14 [$40.00 \pm 6.99 \text{ kg}$ (37.45, 42.56 kg), $\eta p^2 = 0.157$; $p = .01$]). CWL experienced a significant early-late decrease in FM [$-3.83 \pm 2.14 \text{ kg}$ (-4.60, -3.06 kg)] whereas NWL did not [$0.01 \pm 2.18 \text{ kg}$ (-0.79, 0.81 kg), $\eta p^2 = 0.438$; $p < .001$]. The main effect of group was not significant [$\eta p^2 = 0.052$; $p = .08$]. Similarly, for FFM the main effect of week and group and the week x group interaction were not significant [largest $\eta p^2 = 0.044$; smallest $p = .11$].