|  |
| --- |
| Supplementary **Table 1 Self reported dietary intake and physical activity over 4 months**  |
| Parameter | Baseline | 1 month | 3 month | P-value | 4 month | P-value |
|  |  |  |  |  |  |  |
| Energy(kJ/d) \* |  |  |  | 0.046† |  | 0.765‡ |
| IECR | 8166 (7606-8769) | 5199 (4755-5683 ) | 5188 (4729-5691) | 0.207§ | 5531 (5044-6065) |  |
| IECR+PF | 8568 (7997-9180) | 5940 (5405-6528) | 6065 (5576-6598) | >0.99|| | 6295 (5824-6803) |  |
| DER | 8761 (7889-9728) | 5831 (5343-6390) | 5909 (5436-6423) |  | 6246 (5783-6745) |  |
|  |  |  |  |  |  |  |
| Carbohydrate (g/d) \* |  |  |  | 0.002† |  | 0.999‡ |
| IECR | 225.6 (209.3-243.2) | 130.1 (116.5-145.2) | 128.1 (113.4-144.7) | 0.004§ | 143.1 (128.3-159.7) |  |
| IECR+PF  | 232.4 (214.1-252.2) | 134.7 (118.0-153.6) | 132.5 (116.9-150.2) | 0.008|| | 147.2 (130.8-165.6) |  |
| DER  | 244.5 (220.7-270.8) | 170.1 (154.8-187.1) | 169.3 (156.6-183.1) |  | 177.2 (163.7-191.8) |  |
|  |  |  |  |  |  |  |
| Protein(g/d) \* |  |  |  | 0.005† |  | 0.229‡ |
| IECR  | 83.4 (78.2-88.9) | 71.8 (66.9-77.0) | 71.1 (66.3-76.3) | >0.99§ | 71.6 (66.8-76.7) |  |
| IECR+PF | 82.4 (77.7-87.4) | 79.5 (73.5-85.9) | 81.1 (75.5-87.2) | 0.022|| | 79.9 (74.9-85.2) |  |
| DER  | 85.4 (78.9-92.5) | 74.9 (69.7-80.4) | 73.0 (67.8-78.5) |  | 76.8 (71.9-82.0) |  |
|  |  |  |  |  |  |  |
| Total Fat(g/d) \* |  |  |  | 0.001† |  | 0.878‡ |
| IECR  | 74.1 (67.0-82.0) | 45.1 (40.0-50.9) | 44.0 (38.9-49.7) | >0.99§ | 47.4 (42.0-53.6) |  |
| IECR+PF  | 78.5 (70.4-87.5) | 56.6 (49.8-64.3) | 59.5 (52.9-66.9) | 0.012|| | 60.0 (54.3-66.4) |  |
| DER  | 80.9 (69.7-93.9) | 45.2 (39.7-51.5) | 47.1 (41.3-53.6) |  | 50.8 (45.2-57.0) |  |
|  |  |  |  |  |  |  |
| SFA(g/d) \* |  |  | 0.013† |  | 0.430‡ |
| IECR  | 26.4 (23.3-29.8) | 15.2 (13.3-17.3) | 14.7 (12.8-16.9) | >0.99§ | 15.9 (13.7-18.5) |  |
| IECR+PF  | 28.9 (25.4-33.0) | 18.1 (15.8-20.8) | 19.3 (17.2-21.8) | 0.041|| | 18.8 (16.8-21.1) |  |
| DER  | 29.5 (25.1-34.6) | 15.2 (13.0-17.9) | 15.4 (13.2-17.9) |  | 17.2 (15.0-19.6) |  |
|  |  |  |  |  |  |  |
| MUFA (g/d) \* |  |  |  | <0.001† |  | 0.764‡ |
| IECR  | 24.9 (22.5-27.3) | 15.4 (13.2-17.6) | 15.8 (13.7-17.8) | >0.99§ | 17.0 (15.1-18.9) |  |
| IECR+PF  | 26.2 (23.1-29.4) | 21.3 (18.3-24.3) | 22.7 (19.9-25.5) | 0.001|| | 22.4 (20.0-24.9) |  |
| DER  | 28.4 (24.4-32.5) | 16.7 (14.2-19.2) | 17.2 (14.9-19.6) |  | 18.4 (16.3-20.5) |  |
|  |  |  |  |  |  |  |
| PUFA (g/d) \* |  |  |  | 0.003† |  | 0.594‡ |
| IECR | 12.0 (10.6-13.6) | 8.0 (7.0-9.3) | 7.5 (6.5-8.7) | >0.99§ | 8.1 (6.9-9.5) |  |
| IECR+PF  | 12.6 (11.0-14.5) | 10.0 (8.4-12.0) | 10.7 (9.0-12.7) | 0.03|| | 11.1 (9.6-12.7) |  |
| DER  | 12.7 (10.7-15.0) | 7.8 (6.8-8.9) | 8.3 (7.2-9.5) |  | 8.9 (7.7-10.2) |  |
|  |  |  |  |  |  |  |
| AOAC Fibre (g/d) \* |  |  |  | <0.001† |  | 0.390‡ |
| IECR  | 21.0 (19.2-22.9) | 15.4 (13.7-17.2) | 15.1 (13.5-16.9) | 0.00§ | 15.9 (14.5-17.6) |  |
| IECR+PF  | 19.2 (17.6-20.9) | 16.9 (15.4-18.5) | 16.3 (15.0-17.7) | 0.043|| | 17.7 (16.4-19.0) |  |
| DER  | 21.3 (19.1-23.7) | 19.8 (18.5-21.3) | 19.8 (18.2-21.5) |  | 19.4 (17.7-21.3) |  |
|  |  |  |  |  |  |  |
| Alcohol (g/week) ¶ |  |  |  | 0.524\*\* |  | 0.457†† |
| IECR  | 57.4 (0.0-121.0) | 21.2 (0.0-60.5) | 36.5 (10.2-57.8) |  | 42.4 (0.0-75.8) |  |
| IECR+PF  | 75.6 (25.7-127.1) | 30.3 (0.0-72.6) | 45.4 (1.9-77.7) |  | 39.3 (6.1-90.8) |  |
| DER  | 40.3 (13.2-75.6) | 23.8 (0.0-30.3) | 26.2 (7.9-42.4) |  | 23.8 (0.0-44.4) |  |
|  |  |  |  |  |  |  |
| Duration of vigorous and moderate exercise (min/week) ¶ |  |  |  | 0.085\*\* |  | 0.504†† |
| IECR  | 296 (197–610) | 226 (155–489) | 313 (135–480) |  | 257 (130–384) |  |
| IECR+PF  | 225 (145–350) | 234 (190–324) | 325 (195–432) |  | 260 (210–370) |  |
| DER  | 420 (269–550) | 385 (215–559) | 420 (280–576) |  | 284 (215–465) |  |

IECR=intermittent energy and carbohydrate restriction, IECR+PF=intermittent energy and carbohydrate restriction + *ad-lib* protein and fat, DER=daily energy restriction, AOAC=association of official analytical chemists. IECR (N=36), IECR+PF (N=37), DER (N=37)

\* Geometric Mean (95% CI) for baseline and LOCF values at 1, 3 and 4 months.

† Analysis of covariance (ANCOVA) between 3 groups for LOCF at 3 months adjusted for baseline values

‡ Analysis of covariance (ANCOVA) between 3 groups for LOCF at 4 months adjusted for 3 month LOCF values

§ Analysis of covariance (ANCOVA) between IECR and DER for LOCF at 3 months adjusted for baseline values

|| Analysis of covariance (ANCOVA) between IECR+PF and DER for LOCF at 3 months adjusted for baseline values

¶ Median (approximate 95% CI) for baseline and LOCF values at 1, 3 and 4 months

\*\* Kruskall Wallis for change between 3 groups from baseline to LOCF 3 months

†† Kruskall Wallis for change between 3 groups from LOCF 3 to LOCF 4 months

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| **Supplementary Table 2 - Appetite and Hunger Scales Questionnaire for completers only** |
| Parameter | BaselineAverage | 1 monthAverage | P – value \* | 1 monthDay 1 | 1 MonthDay 2 | 3 monthAverage | P –value †  | 3 MonthDay 1 | 3 Month Day 2 | 4 monthAverage | P – value ‡ | 4 MonthDay 1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 1 |  |  | 0.14 |  |  |  | 0.57 |  |  |  | 0.62 |  |
| How hungry have you felt over the past day? |
| IECR  | 3.4 (2.2) | 4.1 (2.1) |  | 5.0 (2.3) | 4.7 (2.5) | 3.8 (2.2) |  | 4.0 (2.5) | 4.1 (2.6) | 3.1 (1.8) |  | 3.9 (2.0) |
| IECR+PF  | 3.0 (2.6) | 3.2 (1.9) |  | 3.5 (2.3) | 3.2 (2.4) | 3.1 (1.7) |  | 3.4 (1.9) | 3.8 (2.3) | 3.0 (2.2) |  | 3.4 (2.3) |
| DER  | 3.6 (1.8) | 3.4 (1.7) |  | 3.1 (1.7) | 3.6 (2.2) | 3.4 (2.2) |  | 3.5 (2.4) | 3.5 (2.1) | 3.4 (2.0) |  | 2.9 (1.9) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 2 |  |  | 0.39 |  |  |  | 0.59 |  |  |  | 0.69 |  |
| How full do you feel? |
| IECR  | 5.8 (2.3) | 5.2 (2.0) |  | 4.6 (2.2) | 4.27 (2.4) | 6.0 (2.0) |  | 5.7 (2.3) | 5.6 (2.1) | 6.1 (2.1) |  | 5.9 (2.2) |
| IECR+PF  | 7.0 (1.9) | 5.8 (1.9) |  | 5.7 (2.3) | 5.98 (2.5) | 5.9 (1.7) |  | 5.8 (2.1) | 5.4 (2.3) | 6.6 (1.9) |  | 6.7 (1.9) |
| DER  | 5.9 (2.0) | 5.9 (1.6) |  | 5.9 (2.0) | 5.39 (2.1) | 5.7 (2.1) |  | 5.5 (2.4) | 6.1 (2.1) | 5.8 (1.9) |  | 5.6 (2.3) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 3 |  |  | 0.12 |  |  |  | 0.94 |  |  |  | 0.54 |  |
| How strong is your desire to eat? |
| IECR  | 4.1 (2.4) | 4.3 (2.1) |  | 5.0 (2.2) | 4.9 (2.6) | 3.5 (1.8) |  | 3.4 (2.1) | 4.0 (2.2) | 3.4 (2.0) |  | 3.5 (2.0) |
| IECR+PF  | 3.4 (2.3) | 3.3 (2.0) |  | 3.5 (2.7) | 2.9 (2.3) | 3.7 (2.5) |  | 3.8 (2.7) | 4.4 (2.8) | 2.4 (1.5) |  | 3.0 (2.1) |
| DER  | 4.1 (2.4) | 3.6 (1.9) |  | 3.3 (2.1) | 4.0 (2.4) | 3.6 (2.3) |  | 3.5 (2.7) | 3.8 (2.6) | 3.2 (2.1) |  | 3.4 (2.4) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 4 |  |  | 0.07 |  |  |  | 0.27 |  |  |  | 0.66 |  |
| How much do you think you could eat now? |
| IECR  | 3.3 (2.3) | 4.4 (2.0) |  | 4.6 (2.6) | 4.9 (2.4) | 3.7 (2.0) |  | 3.7 (2.4) | 3.8 (2.3) | 3.4 (1.7) |  | 3.5 (1.9) |
| IECR+PF  | 3.0 (2.3) | 3.1 (1.8) |  | 3.0 (2.4) | 2.9 (2.3) | 3.8 (2.2) |  | 3.8 (2.5) | 4.6 (2.5) | 2.6 (1.8) |  | 3.0 (2.1) |
| DER  | 3.5 (2.2) | 3.2 (1.8) |  | 3.0 (2.0) | 3.8 (2.0) | 3.2 (2.1) |  | 3.3 (2.2) | 3.0( 2.1) | 3.2 (1.9) |  | 3.6 (2.2) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 5 |  |  | 0.26 |  |  |  | 0.74 |  |  |  | 0.95 |  |
| How thirsty do you feel? |
| IECR  | 3.3 (2.3) | 3.7 (2.0) |  | 3.6 (2.4) | 3.9 (2.3) | 3.0 (2.1) |  | 3.0 (2.5) | 3.2 (2.1) | 3.3 (2.1) |  | 3.4 (2.4) |
| IECR+PF  | 3.2 (2.5) | 2.9 (2.0) |  | 3.2 (2.4) | 2.9 (2.1) | 3.3 (1.9) |  | 4.0 (2.0) | 3.1 (2.0) | 3.2 (2.0) |  | 3.7 (2.2) |
| DER  | 3.4 (2.5) | 2.9 (1.8) |  | 2.7 (1.8) | 3.3 (2.1) | 3.4 (2.0) |  | 3.2 (2.2) | 2.9 (2.0) | 3.4 (2.1) |  | 3.6 (2.5) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 6 |  |  | 0.39 |  |  |  | 0.62 |  |  |  | 0.98 |  |
| Are you preoccupied with thoughts of food? |
| IECR  | 6.7 (2.2) | 6.6 (1.7) |  | 6.4 (2.0) | 6.0 (2.2) | 6.4 (2.0) |  | 6.4 (2.3) | 6.1 (2.3) | 6.9 (1.7) |  | 6.7 (1.9) |
| IECR+PF  | 7.1 (2.4) | 7.0 (1.7) |  | 6.4 (2.7) | 7.4 (2.1) | 6.6 (2.1) |  | 6.3 (2.3) | 6.1 (2.3) | 7.3 (1.5) |  | 7.2 (1.8) |
| DER  | 6.6 (2.3) | 7.0 (1.8) |  | 7.4 (1.9) | 6.6 (2.3) | 6.8 (2.1) |  | 6.8 (2.3) | 6.8 (2.4) | 7.0 (2.2) |  | 6.9 (2.6) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 7 |  |  | 0.31 |  |  |  | 0.82 |  |  |  | 0.23 |  |
| How tired do you feel? |
| IECR  | 5.9 (2.3) | 5.3 (1.7) |  | 4.9 (2.1) | 5.2 (2.6) | 5.0 (2.2) |  | 5.0 (2.8) | 4.8 (2.6) | 4.4 (2.1) |  | 4.1 (2.4) |
| IECR+PF  | 5.8 (2.2) | 4.9 (2.2) |  | 4.0 (2.7) | 4.6 (2.9) | 5.3 (2.0) |  | 5.2 (2.5) | 5.0 (2.2) | 4.3 (2.0) |  | 5.0 (2.1) |
| DER  | 6.1 (2.1) | 5.0 (2.2) |  | 4.9 (2.3) | 5.2 (2.4) | 5.2 (2.4) |  | 5.2 (2.8) | 4.9 (2.8) | 5.5 (2.3) |  | 5.4 (2.5) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 8 |  |  | 0.53 |  |  |  | 0.93 |  |  |  | 0.05 |  |
| How tense do you feel? |
| IECR  | 3.7 (2.8) | 3.3 (2.3) |  | 3.5 (2.3) | 3.4 (2.8) | 3.2 (2.0) |  | 3.1 (2.3) | 3.3 (2.2) | 3.3 (2.2) | 0.62 § | 3.3 (2.3) |
| IECR+PF  | 2.8 (2.5) | 2.4 (2.0) |  | 2.2 (2.5) | 2.1 (1.9) | 3.2 (2.2) |  | 3.0 (2.2) | 3.1 (2.2) | 2.0 (1.5) | 0.01 || | 2.3 (1.9) |
| DER  | 3.4 (2.3) | 2.9 (1.7) |  | 2.7 (1.6) | 3.0 (2.3) | 3.3 (2.3) |  | 3.3 (2.4) | 2.8 (2.0) | 3.8 (1.8) |  | 3.4 (2.4) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Question 9 |  |  | 0.12 |  |  |  | 0.88 |  |  |  | 0.76 |  |
| How contented do you feel? |
| IECR | 6.1 (2.1) | 5.7 (2.2) |  | 5.3 (2.3) | 5.6 (2.6) | 6.5 (1.9) |  | 6.6 (2.1) | 6.2 (2.1) | 6.4 (1.4) |  | 6.5 (2.1) |
| IECR+PF  | 6.6 (2.4) | 6.6 (1.6) |  | 6.4 (2.0) | 6.8 (1.9) | 6.3 (1.9) |  | 6.3 (2.1) | 6.4 (1.8) | 6.6 (1.5) |  | 6.7 (1.9) |
| DER  | 6.5 (1.8) | 6.4 (1.5) |  | 6.3 (1.8) | 5.8 (2.1) | 6.5 (1.9) |  | 6.5 (2.0) | 7.0 (1.9) | 6.2 (2.2) |  | 6.3 (2.4) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

IECR=intermittent energy and carbohydrate restriction, IECR+PF=intermittent energy and carbohydrate restriction + *ad-lib* protein and fat, DER=daily energy restriction

Baseline IECR (N =30), IECR+PF (N=26), DER (N=30); 1 month IECR (N=27), IECR+PF (N=24), DER (N=29); 3 months IECR (N=22), IECR+PF (N=22), DER (N=25); 4 months IECR (N=22), IECR+PF (N=16), DER (N=18)

Mean (SD) for baseline and LOCF values at 1, 3 and 4 months.

\* ANCOVA for change in average score for the week for all groups between baseline and 1 month adjusted for baseline values

† ANCOVA for change in average score for the week for all groups between baseline and 3 months adjusted for baseline values

‡ ANCOVA for change in average score for the week for all groups between 3 and 4 months adjusted for LOCF 3 month values

§ ANCOVA for change in average score for the week between IECR and DER between 3 and 4 months adjusted for LOCF 3 month values with Bonferroni adjustment

|| ANCOVA for change in average score for the week between IECR+PF and DER between 3 and 4 months adjusted for LOCF 3 month values with Bonferroni adjustment

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| **Supplementary Table 3 - Profile of Mood States, Mood Factors and Total Mood Disturbance** |
| Parameter | Baseline | 1 month | 3 month | P-value \* | 4 month | P-value † |
| Tension  |  |  |  | 0.857 |  | 0.288 |
| IECR  | 7.0 (6.0-10.0) | 6.0 (5.0-6.0) | 6.0 (4.0-9.0) |  | 6.0 (5.0-7.0) |  |
| IECR+PF  | 7.5 (5.0-12.0) | 6.5 (4.0-9.0) | 7.5 (4.0-9.0) |  | 5.5 (4.0-10.0) |  |
| DER  | 7.0 (5.0-8.0) | 6.5 (5.0-7.0) | 6.0 (5.0-7.0) |  | 6.0 (4.0-8.0) |  |
|  |  |  |  |  |  |  |
| Depression  |  |  |  | 0.493 |  | 0.358 |
| IECR  | 6.0 (3.0-8.0) | 3.0 (1.0-5.0) | 5.0 (2.0-6.0) |  | 4.0 (2.0-5.0) |  |
| IECR+PF  | 4.0 (3.0-14.0) | 4.5 (1.0-7.0) | 4.0 (0.0-8.0) |  | 1.5 (0.0-2.0) |  |
| DER  | 2.0 (2.0-6.0) | 2.5 (1.0-5.0) | 2.0 (1.0-6.0) |  | 3.0 (2.0-5.5) |  |
|  |  |  |  |  |  |  |
| Anger  |  |  |  | 0.523 |  | 0.553 |
| IECR  | 5.0 (3.0-7.0) | 2.0 (1.5-4.0) | 3.0 (1.0-6.0) |  | 4.0 (2.0-6.0) |  |
| IECR+PF | 6.5 (2.0-11.0) | 3.5 (2.0-7.0) | 3.0 (1.0-6.0) |  | 3.0 (1.0-7.0) |  |
| DER  | 4.0 (2.0-7.0) | 2.0 (1.0-6.0) | 2.5 (1.0-7.0) |  | 2.3 (0.0-5.0) |  |
|  |  |  |  |  |  |  |
| Fatigue  |  |  |  | 0.961 |  | 0.733 |
| IECR  | 8.0 (7.0-11.0) | 5.0 (3.0-6.0) | 6.0 (3.0-8.0) |  | 5.0 (3.0-7.0) |  |
| IECR+PF  | 7.0 (5.0-13.0) | 4.5 (3.0-8.0) | 5.0 (3.0-7.0) |  | 3.0 (1.0-7.0) |  |
| DER  | 8.5 (6.0-13.0) | 6.5 (4.0-11.0) | 5.5 (3.0-10.0) |  | 6.0 (2.0-8.0) |  |
|  |  |  |  |  |  |  |
| Vigour  |  |  |  | 0.542 |  | 0.659 |
| IECR  | 16.0 (13.0-18.0) | 17.0 (15.0-19.0) | 17.0 (16.0-21.0) |  | 18.0 (15.0-19.0) |  |
| IECR+PF  | 13.0 (9.0-17.0) | 14.5 (13.0-19.0) | 16.0 (14.0-19.0) |  | 17.0 (15.0-19.0) |  |
| DER  | 14.0 (11.0-17.0) | 17.0 (14.0-20.0) | 17.0 (12.5-19.0) |  | 17.0 (14.0-19.0) |  |
|  |  |  |  |  |  |  |
| Confusion  |  |  |  | 0.915 |  | 0.296 |
| IECR  | 6.0 (4.0-7.0) | 5.0 (4.0-6.0) | 5.0 (4.0-7.0) |  | 5.0 (4.0-7.0) |  |
| IECR+PF  | 7.0 (5.0-8.0) | 6.0 (4.0-8.0) | 6.0 (5.0-7.0) |  | 6.0 (4.0-7.0) |  |
| DER  | 6.0 (4.0-8.0) | 5.0 (4.0-7.0) | 5.5 (4.0-7.0) |  | 5.0 (4.0-7.0) |  |
|  |  |  |  |  |  |  |
| Total Mood Disturbance  |  |  |  | 0.899 |  | 0.924 |
| IECR  | 17.0 (11.5-31.0) | 2.0 (-1.0-12.0) | 5.0 (-2.0-14.0) |  | 7.0 (-2.0-14.0) |  |
| IECR+PF  | 22.0 (5.0-35.0) | 8.5 (2.0-21.0) | 8.5 (-2.0-27.0) |  | 7.0 (-6.0-22.0) |  |
| DER  | 19.0 (8.0-39.0) | 6.0 (-1.0-14.0) | 5.0 (0.0-20.0) |  | 5.0 (-1.0-19.0) |  |
|  |  |  |  |  |  |  |

IECR=intermittent energy and carbohydrate restriction, IECR+PF=intermittent energy and carbohydrate restriction + *ad-lib* protein and fat, DER=daily energy restriction

IECR (N=37), IECR+PF (N=34), DER (N=34)

Median (approximate 95% CI) for baseline and LOCF values at 1, 3 and 4 months

\* Kruskall Wallis for change from baseline to LOCF 3 months

† Kruskall Wallis for change from LOCF 3 months to LOCF 4 months

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| --- |
| **Supplementary Table 4a - Dietary Vitamin and Mineral Intake Changes over 4 months for completers only** |
| Parameter | Baseline | 1 month | 3 month | 4 month |
|  | Average Week | Average Week | Average Restricted Days | Average Week | Average Restricted Days | Average Week | Restricted Day |
| Calcium (mg/d) |  |  |  |  |  |  |  |
| IECR  | 951.2 (217.3) | 733.7 (189.2) | 693.6 (215.2) | 757.3 (232.6) | 727.4 (263.1) | 810.0 (246.4) | 708.3 (262.3) |
| IECR+PF  | 967.7 (262.9) | 785.1 (205.4) | 738.8 (218.5) | 781.2 (191.9) | 738.3 (195.2) | 766.0 (197.0) | 758.5 (236.5) |
| DER | 1072.1 (410.4) | 805.3 (239.4) |  | 804.0 (193.5) |  | 834.2 (169.0) |  |
|  |  |  |  |  |  |  |  |
| Magnesium (mg/d) |  |  |  |  |  |  |  |
| IECR  | 274.4 (53.2) | 205.8 (36.1) | 156.5 (46.8) | 208.8 (36.0) | 160.8 (45.0) | 225.9 (52.6) | 158.1 (43.3) |
| IECR+PF  | 258.2 (52.6) | 240.0 (56.0) | 220.4 (85.8) | 244.3 (59.5) | 238.7 (102.6) | 240.1 (55.8) | 191.8 (64.2) |
| DER | 290.0 (75.0) | 257.8 (58.8) |  | 265.1 (49.3) |  | 259.3 (53.6) |  |
|  |  |  |  |  |  |  |  |
| Phosphorous (mg/d) |  |  |  |  |  |  |  |
| IECR  | 1396.5 (267.9) | 1153.8 9149.5) | 1065.3 (198.2) | 1158.2 (184.6) | 1115.7 (234.2) | 1227.5 (285.6) | 1086.5 (252.8) |
| IECR+PF  | 1330.4 (221.7) | 1303.6 (275.1) | 1292.7 (361.5) | 1338.7 (237.0) | 1391.3 (295.9) | 1257.3 (176.6) | 1244.1 (274.5) |
| DER | 1485.6 (354.4) | 1275.2 (271.6) |  | 1288.9 (204.8) |  | 1310.1 (222.8) |  |
|  |  |  |  |  |  |  |  |
| Iron (mg/d) |  |  |  |  |  |  |  |
| IECR  | 13.1 (4.1) | 8.7 (2.7) | 5.9 (4.5) | 8.6 (2.0) | 6.0 (2.0) | 10.4 (5.3) | 6.4 (2.4) |
| IECR+PF  | 12.2 (2.9) | 9.5 (2.9) | 7.4 (2.4) | 9.6 (2.1) | 8.0 (3.4) | 9.8 (2.5) | 7.0 (2.5) |
| DER | 13.2 (3.6) | 11.0 (3.6) |  | 11.6 (2.3) |  | 10.5 (2.3) |  |
|  |  |  |  |  |  |  |  |
| Zinc (mg/d) |  |  |  |  |  |  |  |
| IECR  | 9.1 (2.2) | 7.1 (1.4) | 5.2 (1.4) | 7.2 (1.7) | 6.4 (2.0) | 7.8 (1.8) | 6.3 (2.6) |
| IECR+PF  | 8.6 (1.8) | 8.1 (2.2) | 8.0 (4.1) | 8.5 (2.0) | 8.8 (3.3) | 8.0 (1.7) | 7.5 (2.9) |
| DER | 10.2 (2.9) | 8.3 (1.8) |  | 8.7 (1.8) |  | 8.5 (1.6) |  |
|  |  |  |  |  |  |  |  |
| Selenium (µg/d) |  |  |  |  |  |  |  |
| IECR  | 49.6 (16.0) | 46.6 (15.0) | 50.9 (29.1) | 44.5 (10.3) | 44.7 (17.5) | 46.6 (14.5) | 61.7 (39.8) |
| IECR+PF  | 50.9 (14.4) | 58.0 (22.5) | 76.2 (48.8) | 58.3 (18.0) | 76.1 (44.1) | 49.0 (18.9) | 68.8 (66.6) |
| DER | 51.2 (18.5) | 50.7 (21.0) |  | 51.9 (18.5) |  | 49.3 (14.9) |  |
|  |  |  |  |  |  |  |  |
| Retinol (µg/d) |  |  |  |  |  |  |  |
| IECR  | 357.7 (291.3) | 300 (622.7) | 241.2 (133.2) | 408.1 (758.6) | 242.4(135.3) | 243.3 (117.2) | 263.5 (135.1) |
| IECR+PF  | 334.6 (173.4) | 232.5 (100.7) | 261.3 (140.6) | 398.8 (825.4) | 844.6 (2911.9) | 241.1 (170.0) | 297.8 (171.7) |
| DER | 498.1 (770.2) | 212.4 (161.7) |  | 402.6 (1139.7) |  | 238.5 (153.2) |  |
|  |  |  |  |  |  |  |  |
| Carotene (µg/d) |  |  |  |  |  |  |  |
| IECR  | 3524 (2189) | 2810 (1664) | 3024 (3366) | 3147 (1600) | 2774 (2904) | 2840 (1621) | 3951 (4684) |
| IECR+PF  | 2758 (1765) | 3233 (1845) | 1996 (2190) | 3273(1393) | 1663 (1624) | 3161 (1826) | 1240 (541) |
| DER | 3435 (2554) | 3848 (2641) |  | 4214 (2634) |  | 4232(2686) |  |
|  |  |  |  |  |  |  |  |
| Retinol Activity Equivalent (µg/d) |  |  |  |  |  |  |  |
| IECR  | 945.1 (443.6) | 768.8 (722.2) | 693.4 (398.5) | 932. 7 (817.9) | 687.1 (358.2) | 716.6 (283.0) | 921.9 (765.6) |
| IECR+PF  | 794.3 (314.7)) | 771.5 (306.0) | 648.2 (416.5) | 944.4 (860.0) | 1202.0 (2900.8) | 768.0 (351.2) | 504.4 (172.7) |
| DER | 1070.8 (925.6) | 853.8 (540.4) |  | 1105 (1154.8) |  | 943.7 (513.7) |  |
|  |  |  |  |  |  |  |  |
| Vitamin E (µg/d) |  |  |  |  |  |  |  |
| IECR  | 8.3 (2.8) | 6.1 (1.8) | 4.6 (1.8) | 5.7 (2.1) | 4.6 (2.0) | 6.3 (2.8) | 5.0 (2.5) |
| IECR+PF  | 8.3 (3.1) | 6.5 (2.5) | 6.6 (3.3) | 6.9 (2.9) | 7.1 (3.8) | 6.5 (2.6) | 5.4 (3.2) |
| DER | 9.7 (8.4) | 6.2 (2.2) |  | 6.5 (1.8) |  | 6.4 (2.6) |  |
|  |  |  |  |  |  |  |  |
| Thiamin (mg/d) |  |  |  |  |  |  |  |
| IECR  | 1.8 (0.5) | 1.3 (0.3) | 0.9 (0.6) | 1.3 (0.7) | 1.0 (0.4) | 2.0 (1.9) | 1.7 (4.3) |
| IECR+PF  | 1.9 (0.9) | 1.7 (1.6) | 2.2 (5.6) | 2.3 (4.3) | 1.6 (2.2) | 1.5 (0.6) | 1.2 (0.6) |
| DER | 1.9 (0.9) | 1.7 (1.0) |  | 1.8 (1.0) |  | 1.6 (0.3) |  |
|  |  |  |  |  |  |  |  |
| Riboflavin (mg/d) |  |  |  |  |  |  |  |
| IECR  | 1.9 (0.6) | 1.6 (0.4) | 1.6 (0.5) | 1.7 (0.5) | 1.6 (0.5) | 1.7 (0.6) | 1.7 (0.6) |
| IECR+PF  | 1.8 (0.6) | 1.7 (0.4) | 1.6 (0.3) | 1.7 (0.4) | 1.8 (0.6) | 1.7 (0.4) | 1.7 (0.5) |
| DER | 2.0 (0.7) | 1.8 (0.5) |  | 1.7 (0.4) |  | 1.6 (0.4) |  |
|  |  |  |  |  |  |  |  |
| Niacin (mg/d) |  |  |  |  |  |  |  |
| IECR  | 22.7 (6.7) | 18.8 (5.3) | 17.4 (9.5) | 17.8 (4.2) | 17.1 (6.9) | 19.0 (7.4) | 16.8 (11.2) |
| IECR+PF  | 20.4 (6.0) | 22.0 (9.3) | 21.5 (13.1) | 21.3 (5.8) | 21.1 (10.3) | 19.4 (4.9) | 17.8 (14.9) |
| DER | 22.2 (6.6) | 22.1 (8.5) |  | 22.0 (5.9) |  | 21.5 (7.0) |  |
|  |  |  |  |  |  |  |  |
| Vitamin B6 (mg/d) |  |  |  |  |  |  |  |
| IECR  | 2.3 (0.7) | 1.8 (0.4) | 1.5 (0.7) | 1.8 (0.4) | 1.6 (0.4) | 1.9 (0.6) | 1.5 (0.5) |
| IECR+PF  | 2.1 (0.6) | 2.0 (0.5) | 1.8 (0.7) | 2.0 (0.4) | 1.8 (0.6) | 1.9 (0.4) | 1.6 (0.7) |
| DER | 2.2 (0.6) | 2.1 (0.5) |  | 2.0 (0.3) |  | 2.0 (0.4) |  |
|  |  |  |  |  |  |  |  |
| Vitamin B12 (µg/d) |  |  |  |  |  |  |  |
| IECR  | 5.1 (1.5) | 5.6 (3.1) | 5.9 (4.4) | 5.9 (3.6) | 5.7 (2.7) | 5.4 (2.4) | 7.1 (4.0) |
| IECR+PF  | 5.0 (2.1) | 5.8 (2.0) | 8.1 (4.9) | 6.7 (4.8) | 9.6 (13.0) | 5.5 (2.0) | 8.8 (5.1) |
| DER | 5.8 (2.7) | 5.9 (2.1) |  | 6.4 (2.6) |  | 5.3 (1.3) |  |
|  |  |  |  |  |  |  |  |
| Folate (µg/d) |  |  |  |  |  |  |  |
| IECR  | 284.6 (74.0) | 237.1 (63.4) | 219.8 (94.7) | 232.0 (48.6) | 220.0 (53.9) | 251.3 (65.0) | 223.0 (67.0) |
| IECR+PF  | 257.8 (78.5) | 247.7 (53.2) | 235.4 (63.9) | 242.6 (49.3) | 228.8 (51.7) | 242.3 (61.2) | 231.8 (77.4) |
| DER | 283.5 (76.0) | 273.4 (65.9) |  | 275.2 (46.9) |  | 262.8 (59.2) |  |
|  |  |  |  |  |  |  |  |
| Vitamin C (mg/d) |  |  |  |  |  |  |  |
| IECR  | 93.1 (41.7) | 91.3 (34.7) | 96.0 (52.1) | 94.0 (42.2) | 105.4 (54.2) | 92.3 (45.6) | 97.3 (54.0) |
| IECR+PF  | 95.7 (69.0) | 92.6 (37.0) | 94.6 (45.6) | 79.9 (25.1) | 86.6 (49.6) | 88.8 (27.4) | 101.6 (52.3) |
| DER | 92.3 (44.8) | 89.0 (35.1) |  | 100.7 (49.0) |  | 88.9 (31.6) |  |

IECR=intermittent energy and carbohydrate restriction, IECR+PF=intermittent energy and carbohydrate restriction + *ad-lib* protein and fat, DER=daily energy restriction

Baseline IECR (N=36), IECR+PF (N=37), DER (N=37); 1 month IECR (N=31), IECR+PF (N=34), DER (N=32); 3 months IECR (N=28), IECR+PF (N=27), DER (N=26); 4 months IECR (N=26), IECR+PF (N=23), DER (N=22)

|  |
| --- |
| **Supplementary Table 4b – Proportion of diet groups meeting UK RDA for Vitamin and Mineral and Fibre Intake over 4 months for completers only**  |
| Parameter | Baseline | 1 month | 3 month | 4 month |
|  | Average Week | Average Week | Average Restricted Days | Average Week | Average Restricted Days | Average Week | Restricted Day |
| RDA Calcium 700 mg/d |  |  |  |  |  |  |  |
| IECR  | 33 (91.7%) | 15 (48.4%) | 15 (48.4%) | 18 (64.3%) | 13 (46.4%) | 18 (69.2%) | 12 (46.2%) |
| IECR+PF  | 31 (83.8%) | 21 (61.8%) | 17 (50.0%) | 17 (63.0%) | 16 (59.3%) | 14 (60.9%) | 12 (52.2%) |
| DER | 28 (75.7%) | 22 (68.8%) |  | 18 (69.2%) |  | 15 (71.4%) |  |
|  |  |  |  |  |  |  |  |
| RDA Magnesium 270 mg/d |  |  |  |  |  |  |  |
| IECR  | 20 (55.6%) | 1 (3.2%) | 1 (3.2%) | 1 (3.6%) | 1(3.6%) | 2 (7.7%) | 0 (0.0%) |
| IECR+PF  | 14 (37.8%) | 11 (32.4%) | 8 (23.5%) | 7 (25.9%) | 9 (33.3%) | 7 (30.4%) | 4 (17.4%) |
| DER | 21 (56.8%) | 9 (28.1%) |  | 15 (57.7%) |  | 8 (38.1%) |  |
|  |  |  |  |  |  |  |  |
| RDA Phosphorous 550 mg/d |  |  |  |  |  |  |  |
| IECR  | 36 (100%) | 31 (100%) | 31 (100%) | 28 (100%) | 28 (100%) | 26 (100%) | 26 (100%) |
| IECR+PF  | 37 (100%) | 34 (100%) | 34 (100%) | 27 (100%) | 27 (100%) | 23 (100%) | 23 (100%) |
| DER | 37 (100%) | 32 (100%) |  | 28 (100%) |  | 21 (100%) |  |
|  |  |  |  |  |  |  |  |
| RDA IronAge<50=14.8 mg/dAge>50=8.7 mg/d |  |  |  |  |  |  |  |
| IECR  | 15 (41.7%) | 4 (12.9%) | 1 (3.2%) | 3 (10.7%) | 2 (7.1%) | 3 (11.5%) | 1 (3.8%) |
| IECR+PF  | 17 (45.9%) | 11 (32.4%) | 2 (5.9%) | 8 (29.6%) | 4 (14.8%) | 7 (30.4%) | 1 (4.3%) |
| DER | 19 (51.4%) | 6 (18.8%) |  | 10 (38.5%) |  | 6 (28.6%) |  |
|  |  |  |  |  |  |  |  |
| RDA Zinc 7.0 mg/d |  |  |  |  |  |  |  |
| IECR  | 30 (83.8%) | 17 (54.8%) | 3 (9.7%) | 17 (60.7%) | 10 (35.7%) | 16 (61.5%) | 8 (30.8%) |
| IECR+PF  | 31 (83.8%) | 14 (45.2%) | 16 (47.1%) | 20 (74.1%) | 14 (51.9%) | 18 (78.3%) | 11 (47.8%) |
| DER | 30 (81.1%) | 31 (100%) |  | 21 (80.8%) |  | 17 (81.0%) |  |
|  |  |  |  |  |  |  |  |
| RDA Selenium 60 µg/d |  |  |  |  |  |  |  |
| IECR  | 10 (27.8%) | 6 (19.4%) | 11 (35.5%) | 2 (7.1%) | 6 (21.4%) | 3 (11.5%) | 9 (34.6%) |
| IECR+PF  | 9 (24.3%) | 13 (38.2%) | 19 (55.9%) | 10 (37.0%) | 16 (59.3%) | 6 (26.1%) | 10 (43.5%) |
| DER | 7 (18.9%) | 10 (31.3%) |  |  8 (30.8%) |  | 4 (19.0%) |  |
|  |  |  |  |  |  |  |  |
| RDA Retinol Activity Equivalent 600 µg/d |  |  |  |  |  |  |  |
| IECR  | 25 (69.4%) | 17 (54.8%) | 13 (41.9%) | 21 (75.0%) | 12 (42.9%) | 17 (65.4%) | 17 (65.4%) |
| IECR+PF  | 25 (67.6%) | 23 (67.6%) | 13 (38.2%) | 19 (70.4%) | 13 (48.1%) | 15 (65.2%) | 5 (21.7%) |
| DER | 23 (62.2%) | 19 (59.4%) |  | 19 (73.1%) |  | 16 (76.2%) |  |
|  |  |  |  |  |  |  |  |
| RDA Vitamin E 3 mg/d |  |  |  |  |  |  |  |
| IECR  | 36 (100%) | 30(96.8%) | 23 (74.2%) | 28 (100%) | 22 (78.6%) | 25 (96.2%) | 19 (73.1) |
| IECR+PF  | 37 (100%) | 32 (94.1%) | 27 (79.4%) | 26 (96.3%) | 24 (88.9%) | 22 (95.7%) | 15 (65.2%) |
| DER | 37 (100%) | 31 (96.9%) |  | 25 (96.2%) |  | 20 (95.2%) |  |
|  |  |  |  |  |  |  |  |
| RDA Thiamin 0.8 mg/d |  |  |  |  |  |  |  |
| IECR  | 36 (100%) | 29 (93.5%) | 8 (25.8%) | 27 (96.4%) | 17 (60.7%) | 25 (96.2%) | 11 (42.3%) |
| IECR+PF  | 37 (100%) | 33 (97.1%) | 24 (70.6%) | 26 (96.3%) | 19 (70.4%) | 23 (100%) | 14 (60.9%) |
| DER | 36 (100%) | 32 (100%) |  | 26 (100%) |  | 21 (100%) |  |
|  |  |  |  |  |  |  |  |
| RDA Riboflavin 1.1 mg/d |  |  |  |  |  |  |  |
| IECR  | 34(94.4%) | 29 (93.5%) | 26 (83.9%) | 24 (85.7%) | 26 (92.9%) | 24 (92.3%) | 24 (92.3%) |
| IECR+PF  | 33 (89.2%) | 33 (97.1%) | 33 (97.1%) | 25 (92.6%) | 27 (100%) | 23 (100%) | 23 (100%) |
| DER | 34 (91.9%) | 29 (90.6%) |  | 24 (92.3%) |  | 19 (90.5%) |  |
|  |  |  |  |  |  |  |  |
| RDA NiacinAge<50=13 mg/dAge>50=12 mg/d |  |  |  |  |  |  |  |
| IECR  | 35 (97.2%) | 28 (90.3%) | 21 (67.7%) | 25 (89.3%) | 19 (67.9%) | 23 (88.5%) | 14 (53.8%) |
| IECR+PF  | 34 (91.9%) | 28 (82.4%) | 24 (70.6%) | 26 (96.3%) | 20 (74.1%) | 22(95.7%) | 14 (60.9%) |
| DER | 35 (94.6%) | 32 (100%) |  | 26 (100%) |  | 19 (90.5%) |  |
|  |  |  |  |  |  |  |  |
| RDA Vitamin B6 1.2 mg/d |  |  |  |  |  |  |  |
| IECR  | 36 (100%) | 29 (93.5%) | 20 (64.5%) | 27 (96.4%) | 25 (89.3%) | 24 (92.3%) | 17 (65.4%) |
| IECR+PF  | 36 (97.3%) | 32 (94.1%) | 25 (73.5%) | 27 (100%) | 22 (81.5%) | 22 (95.7%) | 16 (69.6%) |
| DER | 36(97.3%) | 32 (100%) |  | 26 (100%) |  | 21 (100%) |  |
|  |  |  |  |  |  |  |  |
| RDA Vitamin B12 1.5 µg/d |  |  |  |  |  |  |  |
| IECR  | 36 (100%) | 31 (100%) | 31 (100%) | 28 (100%) | 28 (100%) | 26 (100%) | 26 (100%) |
| IECR+PF  | 37 (100%) | 34 (100%) | 34 (100%) | 27 (100%) | 27 (100%) | 23 (100%) | 22 (95.7%) |
| DER | 37 (100%) | 32 (100%) |  | 26 (100%) |  | 21 (100%) |  |
|  |  |  |  |  |  |  |  |
| RDA Folate 200 µg/d |  |  |  |  |  |  |  |
| IECR  | 31 (86.1%) | 21 (67.7%) | 18 (58.1%) | 20(71.4%) | 17 (60.7%) | 21 (80.8%) | 18 (69.2%) |
| IECR+PF  | 26 (70.3%) | 27 (79.4%) | 25 (73.5%) | 22 (81.5%) | 17 (63.0%) | 16 (69.6%) | 14 (60.9%) |
| DER | 31 (83.8%) | 28 (87.5%) |  | 23 (88.5%) |  | 19 (90.5%) |  |
|  |  |  |  |  |  |  |  |
| RDA Vitamin C 40 mg/d |  |  |  |  |  |  |  |
| IECR  | 33 (91.7%) | 30 (96.8%) | 27 (87.1%) | 25 (89.3%) | 26 (92.9%) | 25 (96.2%) | 23 (88.5%) |
| IECR+PF  | 31 (83.8%) | 33 (97.1%) | 32 (94.1%) | 26 (96.3%) | 23 (85.2%) | 22 (95.7%) | 20 (87.0 %) |
| DER | 34 (91.9%) | 32 (100%) |  | 26 (100%) |  | 21 (100%) |  |
|  |  |  |  |  |  |  |  |
| RDA AOAC Fibre 24 g/d |  |  |  |  |  |  |  |
| IECR  | 12 (33.3%) | 1 (3.2%) | 1 (3.2%) | 0 (0%) | 0 (0%) | 1 (3.8%) | 0 (0%) |
| IECR+PF  | 9 (24.3%) | 1 (2.9%) | 1 (2.9%) | 0 (0%) | 0 (0%) | 1 (4.3%) | 0 (0%) |
| DER | 13 (35.1%) | 5 (15.6%) |  | 7 (26.9%) |  | 7 (33.3%) |  |

IECR=intermittent energy and carbohydrate restriction, IECR+PF=intermittent energy and carbohydrate restriction + *ad-lib* protein and fat, DER=daily energy restriction, AOAC= association of official analytical chemists

Baseline IECR (N=36), IECR+PF (N=37), DER (N=37); 1 month IECR (N=31), IECR+PF (N=34), DER (N=32); 3 months IECR (N=28), IECR+PF (N=27), DER (N=26); 4 months IECR (N=26), IECR+PF (N=23), DER (N=22)

N (%)

