What Are the Most Effective Behavioural Strategies in Changing Postpartum Women's Physical Activity and Healthy Eating Behaviours? A Systematic Review and Meta-Analysis

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**Table S1:** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.

| Section/topic       | Checklist item                                                                 | Reported on page # |
|---------------------|--------------------------------------------------------------------------------|--------------------|
| **TITLE**           |                                                                                  |                    |
| Title               | Identify the report as a systematic review, meta-analysis, or both.              | 1                  |
| **ABSTRACT**        |                                                                                  |                    |
| Structured summary  | Provide a structured summary including, as applicable, background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; and systematic review registration number. | 2                  |
| **INTRODUCTION**    |                                                                                  |                    |
| Rationale           | Describe the rationale for the review in the context of what is already known.   | 3-4                |
| Objectives          | Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS). | 4                  |
| **METHODS**         |                                                                                  |                    |
| Protocol and registration | Indicate if a review protocol exists and if and where it can be accessed (e.g., Web address), and if available, provide registration information including registration number. | 4                  |
| Eligibility criteria | Specify study characteristics (e.g., PICOS and length of followup), and report characteristics (e.g., years considered, language, and publication status) used as criteria for eligibility, giving rationale. | 5; Additional Files |
| Information sources | Describe all information sources (e.g., databases with dates of coverage and contact with study authors to identify additional studies) in the search and date last searched. | 4-5                |
| Search              | Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated. Additional Files |
| Study selection     | State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis). | 5                  |
| Data collection process | Describe method of data extraction from reports (e.g., piloted forms and independently, in duplicate) and any processes for obtaining and confirming data from investigators. | 5-6                |
| Data items          | List and define all variables for which data were sought (e.g., PICOS and funding sources) and any assumptions and simplifications made. | 5-6                |
| Risk of bias in individual studies | Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level) and how this information is to be used in any data synthesis. | 6                  |
| Summary measures    | State the principal summary measures (e.g., risk ratio and difference in means). | 6                  |
| Synthesis of results | Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis. | 6                  |
| Item | Description |
|------|-------------|
| 15   | Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias and selective reporting within studies). |
| 16   | Describe methods of additional analyses (e.g., sensitivity or subgroup analyses and meta-regression), if done, indicating which were prespecified. |

### RESULTS

| Item | Description |
|------|-------------|
| 17   | Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram. |
| 18   | For each study, present characteristics for which data were extracted (e.g., study size, PICOS, and follow-up period), and provide the citations. |
| 19   | Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12). |
| 20   | For all outcomes considered (benefits or harms), present, for each study (a) simple summary data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot. |
| 21   | Present results of each meta-analysis done, including confidence intervals and measures of consistency. |
| 22   | Present results of any assessment of risk of bias across studies (see item 15). |
| 23   | Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses and meta-regression (see item 16)). |

### DISCUSSION

| Item | Description |
|------|-------------|
| 24   | Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers). |
| 25   | Discuss limitations at the study and outcome levels (e.g., risk of bias) and at the review level (e.g., incomplete retrieval of identified research, reporting bias). |
| 26   | Provide a general interpretation of the results in the context of other evidence and implications for future research. |

### FUNDING

| Item | Description |
|------|-------------|
| 27   | Describe sources of funding for the systematic review and other support (e.g., supply of data) and the role of funders for the systematic review. |
Table S2: Search strategies.

1. (MH “Postpartum Period+”)
2. TI (postpartum OR post-partum OR postnatal OR post-natal OR puerperium OR postpartal OR post-partal OR lactating OR lactation OR “nursing women” OR breastfeeding OR breast-feeding OR “after birth” OR “following pregnancy” OR postpregnancy OR “post pregnancy” OR “following childbirth” OR “after delivery” OR “post childbirth”) OR AB (postpartum OR post-partum OR postnatal OR post-natal OR puerperium OR postpartal OR post-partal OR lactating OR lactation OR “nursing women” OR breastfeeding OR breast-feeding OR “after birth” OR “following pregnancy” OR postpregnancy OR “post pregnancy” OR “following childbirth” OR “after delivery” OR “post childbirth”)
3. 1 or 2
4. TI diet* OR AB diet*
5. TI (life*style N2 (chang* OR intervention*)) OR AB (life*style N2 (chang* OR intervention*))
6. TI (“physic* activ*” OR exercis*) OR AB (“physic* activ*” OR exercis*)
7. 4 or 5 or 6
8. 3 and 7
9. (MH “Randomized Controlled Trial+”)
10. (MH “Clinical Trial+”)
11. randomi?ed controlled trial$.tw.
12. RCT.tw.
13. random allocation.tw.
14. randomly allocated.tw.
15. allocated randomly.tw.
16. (allocated adj2 random).tw.
17. or/9–16
18. 8 and 17

Limit: Humans

*As a parallel body of work, these were included in another paper previously published at Obesity Reviews. “A systematic review and meta-analysis of intervention characteristics in postpartum weight management using the TIDieR framework: A summary of evidence to inform implementation. Lim S, Liang X, Hill B, Teede H, Moran LJ, O’Reilly S. Obesity Reviews. 2019, 20(7):1045-1056”.*
| **Participants (P)** | **Intervention (I)/ Exposure** | **Comparison (C)** | **Outcomes (O)** | **Study type** | **Limits** |
|---------------------|-------------------------------|--------------------|------------------|----------------|-----------|
| Inclusion criteria  | Postpartum women (2 years post delivery). | Dietary, physical activity, or behavioral interventions; Theoretical framework, type, duration, sessions/contact, location, technology, self-monitoring, intervention provider, behavioural strategies, and group/individual | Usual care, no intervention, or minimal intervention (single session at baseline) | Weight or weight change; BMI or BMI change; total energy intake or change; physical activity or change; attrition; and compliance | RCT | All languages; translation will be obtained whenever possible; and not limited by year |
| Exclusion criteria  | Pregnant women | Allergen avoidance studies, acute studies, and supplement trials; intervention that recruited during pregnancy | Any dietary or physical activity intervention in the control arm that provides more contact than a single baseline information session | Studies without relevant outcomes | Editorial, narrative review, conference abstract, letters, commentaries, uncontrolled trials, study protocol, and non-randomized controlled trials; studies with pregnant women will only be included if subgroup data is available for postpartum women |
Table S4: Behavioural strategies consistent with Control Theory.

1. Goals and planning
   1.1. Goal setting (behaviour)
   1.2. Problem solving
   1.3. Goal setting (outcome)
   1.4. Action planning
   1.5. Reviewing behaviour goal(s)
   1.6. Discrepancy between current behaviour and goal
   1.7. Reviewing outcome goal(s)
   1.8. Behavioral contract
   1.9. Commitment

2. Feedback and monitoring
   2.1. Monitoring of behaviour by others without feedback
   2.2. Feedback on behaviour
   2.3. Self-monitoring of behaviour
   2.4. Self-monitoring of outcome(s) of behaviour
   2.5. Monitoring of outcome(s) of behaviour without feedback
   2.6. Biofeedback
   2.7. Feedback on outcome(s) of behaviour

Table S5: Characteristics of included studies

| Study; sample size | Country | Ethnicity | Postpartum age; postpartum population | Duration; number of sessions |
|-------------------|---------|-----------|---------------------------------------|-----------------------------|
| Berry 2015 N = 60 | USA     | 77% African-American; 23% Non-Hispanic White | At least 6 weeks postpartum; BMI > 25 kg/m² | 6 months In-person: 15 |
| Bertz 2015 N = 68 | Sweden  | n/a       | 10–14 weeks postpartum; Prepregnancy BMI 25–35 kg/m² | 12 weeks In-person: 4; SMS: 24 |
| Colleran 2012 N = 31 | USA | 85% White, Non-Hispanic; 11% African-American; 4% Hispanic | 4 weeks postpartum; BMI 25 to 30 kg/m² | 16 weeks Session number could not be determined |
| Craigie 2011 N = 52 | UK      | 93–96% Caucasian | 6–18 months postpartum; BMI > 25 kg/m² | 12 weeks In-person: 3; Phone: 3 |
| Daley 2015 N = 94 | UK      | 57–68% white | Within 6 months postpartum; depression according to ICD-10 and EPDS | 6 months In-person: 2; Phone: 2 |
| Study                | Country | % Ethnicity | Timeframe | Population Characteristics | Intervention | Follow-up |
|---------------------|---------|-------------|-----------|----------------------------|--------------|-----------|
| Davenport 2011      | Canada  | 85–90% Caucasian | 7–9 weeks postpartum; BMI ≥ 25.0 kg/m² and/or had retained ≥5.0 kg from pregnancy | 16 weeks 48–64 walking sessions |
| deRosset 2013       | USA     | 100% Hispanic | 6 weeks postpartum; overweight or obese by self-report according to prepregnancy BMI | 12 weeks In-person: 12 |
| Dritsa 2009         | Canada  | n/a         | 4–38 weeks postpartum; EPDS ≥ 10 | 12 weeks In-person: 4 |
| Fjeldsoe 2010       | Australia | 2–6% identified as an Aboriginal or Torres Strait Islander | Less than 12 months postpartum; general population | 12 weeks In-person: 2; SMS: 47–71 |
| Holmes et al. 2018  | USA     | Caucasian   | 24 weeks postpartum; postnatal overweight with PH of GDM | 3 months |
| Huang 2009          | Taiwan  | n/a         | 24–48 hours to 6 months postpartum; general population | 6 months In-person: 3 |
| Huseinovic 2016     | Sweden  | n/a         | 6–15 weeks postpartum; BMI ≥ 27 kg/m² | 12 weeks In-person: 1; Text message: 12; Phone: 12 |
| Keller 2014         | USA     | 100% Latina | 6 weeks to less than 6 months postpartum; BMI ≥ 25 kg/m² | 12 months In-person: 52 |
| Kernot et al. 2019  | Aust    | n/a         | 6 week to 6 month postpartum; postpartum (facebook) | 6 weeks Weekly emails |
| Khodabandeh 2017    | Iran    | 99–100% Azeri | Day of discharge postpartum; general population | 6 weeks In-person: 2; Text message: 8 |
| Krummel 2010        | USA     | 90% Caucasian | Up to 2 years postpartum; general population | 12 months In-person: 11 |
| Leermakers 1998     | USA     | 95–98% Caucasian | 3–12 months postpartum; exceeded their prepregnancy weight by at least 6.8 kg | 6 months In-person: 2; Phone: 12–24 |
| Lioret 2012         | Australia | Country of Birth, 79% Australia; 21% Other | 18 months postpartum; general population | 15 months In-person: 6 |
| Lovelady 2000       | USA     | 80–84% White; 16–19% Black | 4 weeks postpartum; BMI 25 to 30 kg/m² | 10 weeks In-person: 40 |
| Lovelady 1995       | USA     | n/a         | 6 weeks postpartum; general population | 12 weeks In-person: 60 |
| Lovelady 2009       | USA     | 95% Non-Hispanic White; 5% Asian | 3 weeks postpartum; | 16 weeks |
| Study               | N    | Country       | Ethnicity Description        | Time Postpartum          | Location          | BMI          | Postparticular Data |
|---------------------|------|---------------|-----------------------------|--------------------------|------------------|--------------|---------------------|
| Maturi 2011         | 24   | Iran          | n/a                         | 6 weeks to 6 months postpartum | BMI 20 to 30 kg/m² | In-person: 48  |
| McCrory 1999        | 68   | USA           | 77–82% Non-Hispanic White; 9–14% Hispanic; 0–13% Black; 0–9% Asian | 12 ± 4 weeks postpartum; general population | BMI > 19.8 and < 29 kg/m² | In-person: 1; Text message: 12; Phone: 6 |
| McIntyre 2012       | 28   | Australia     | n/a                         | 6 weeks postpartum; post-gestational diabetes | BMI > 19.8 and < 29 kg/m² | In-person: 1; Phone: 8 |
| Nicklas 2014        | 75   | USA           | 51–64% White; 25–36% African American; 11–13% Asian; 15–25% Hispanic or Latina | 6 weeks postpartum; post-gestational diabetes | BMI > 19.8 and < 29 kg/m² | Cannot be determined |
| Ostbye 2009         | 450  | USA           | 52–53% White; 45% Black; 2–3% Asian/Other | 6 weeks postpartum; prepregnancy BMI ≥ 25 kg/m² | BMI > 19.8 and < 29 kg/m² | Cannot be determined |
| O'Toole 2003        | 40   | USA           | 98% Caucasian; 3% African American | 6 weeks to 6 months postpartum; prepgregnancy BMI 25–29.9 kg/m² | BMI > 19.8 and < 29 kg/m² | Cannot be determined |
| Parsa 2017          | 120  | Iran          | n/a                         | 3–20 days postpartum; general population | BMI > 19.8 and < 29 kg/m² | In-person: 3  |
| Tripette 2014       | 34   | Japan         | 100% Japanese               | 3 months to 1 year postpartum; BMI > 22 kg/m² | BMI > 19.8 and < 29 kg/m² | In-person: 2  |
| Wiltheiss 2012      | 400  | USA           | 75% white; 22% black; 4% other races; 5% Hispanic | Within 6 months postpartum; BMI ≥ 25 kg/m² | BMI > 19.8 and < 29 kg/m² | In-person: 1; Mail: 8; Phone: 8 |
| Youngwanichsetha 2013 | 69  | Thailand      | n/a                         | 6–12 weeks postpartum; type 2 diabetes | BMI > 19.8 and < 29 kg/m² | In-person: 3  |
| Zourladani 2015     | 42   | Greece        | 100% Greek                  | 4–6 weeks postpartum; general population | BMI > 19.8 and < 29 kg/m² | In-person: 36 |
| Zilberman et al. 2018 | 42  | Israel        | Jewish and Bedouin          | 3–4 months postpartum; general population | BMI > 19.8 and < 29 kg/m² | In-person: 36 |

Note: BMI = Body Mass Index; n/a = not available.
| Author           | Randomisation process | Deviations from intended interventions | Missing outcome data | Measurement of the outcome | Selection of the reported result | Overall bias |
|------------------|-----------------------|----------------------------------------|----------------------|---------------------------|----------------------------------|--------------|
| Berry 2015       | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| Bertz 2015       | Low                   | High                                   | Low                  | Low                       | Low                              | High         |
| Colleran 2012    | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| MyPyramid        |                       |                                        |                      |                           |                                  |              |
| Craigie 2011     | Low                   | High                                   | Low                  | Low                       | Low                              | High         |
| Davenport 2011   | Some concerns         | High                                   | Low                  | High                      | Low                              | High         |
| deRosset 2013    | Low                   | High                                   | Some concerns        | High                      | Low                              | High         |
| Dritsa 2009      | Some concerns         | High                                   | Some concerns        | High                      | Low                              | High         |
| Fjeldsoe 2010    | Low                   | High                                   | Low                  | Low                       | High                              | High         |
| Holmes 2018      | Low                   | High                                   | High                 | High                      | Low                              | High         |
| Huang 2011       | Some concerns         | High                                   | Low                  | High                      | Low                              | High         |
| Huseinovic 2016  | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| Keller 2014      | Some concerns         | High                                   | High                 | Low                       | Low                              | High         |
| Kernot 2019      | Low                   | High                                   | Some concerns        | High                      | High                              | High         |
| Khodabandeh 2017 | Low                   | High                                   | High                 | Low                       | High                              | High         |
| Krummel 2010     | Some concerns         | High                                   | Low                  | High                      | Low                              | High         |
| Leermakers 1998  | Some concerns         | High                                   | Low                  | High                      | Low                              | High         |
| Lioret 2012      | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| Lovelady 2000    | Some concerns         | High                                   | High                 | Low                       | Low                              | High         |
| Lovelady 1995    | Some concerns         | High                                   | Low                  | Low                       | Low                              | High         |
| Lovelady 2009    | Some concerns         | High                                   | Low                  | High                      | Low                              | High         |
| Maturi 2011      | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| McCrory 1999     | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| McIntyre 2012    | Some concerns         | High                                   | Low                  | High                      | Low                              | High         |
| Nicklas 2014     | Low                   | Low                                    | Low                  | Low                       | Low                              | Low          |
| Ostbye 2009      | Some concerns         | High                                   | Low                  | Low                       | Low                              | High         |
| O’Toole 2003     | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| Parsa 2017       | Low                   | High                                   | Low                  | High                      | Low                              | High         |
| Tripette 2014    | Some concerns         | Some concerns                          | Low                  | High                      | Low                              | High         |
| Wiltheiss 2013   | Low                   | High                                   | Some concerns        | High                      | Low                              | High         |
| Youngwanichsetha 2013 | Low     | High                                   | Low                  | Low                       | Low                              | High         |
| Zilberman 2018   | Some concerns         | High                                   | Some concerns        | Some concerns             | High                              | High         |
| Zourdalani 2015  | Low                   | High                                   | Low                  | Low                       | Low                              | High         |

1 Based on the Revised Cochrane risk of bias tool for randomized trials (RoB 2.0)
2 Low: The study is judged to be at low risk of bias for all domains; Some concerns: The study is judged to be at some concern in at least one domain for this result; High: The study is judged to be at high risk of bias in at least one domain
for this result, or the study is judged to have some concerns for multiple domains in a way that substantially lowers confidence in the result.
Table S7. Univariate meta-regression for body weight in lifestyle interventions for postpartum women by behavioural strategies (k = 25).

| Behavioural strategies | β     | 95% Confidence interval | P-value | Adjusted R-squared (%) |
|------------------------|-------|-------------------------|---------|------------------------|
| Total number of behavioural strategies | −0.19 | −0.68, 0.31 | 0.45 | 0 |
| Behavioural strategies consistent with control theory | −0.40 | −1.12, 0.33 | 0.27 | 1.98 |
| 1.2 Problem solving | 0.48 | −1.97, 2.92 | 0.69 | 0 |
| 1.3 Goal setting (outcome) | −1.88 | −5.06, 1.31 | 0.24 | 4.05 |
| 1.4 Action planning | 0.31 | −2.17, 2.78 | 0.80 | 0 |
| 1.7 Reviewing outcome goal | 0.17 | −5.98, 6.32 | 0.95 | 0 |
| 2.2 Feedback on behaviour | −1.79 | −5.66, 2.08 | 0.35 | 0 |
| 2.3 Self-monitoring of behaviour | −1.99 | −4.26, 0.29 | 0.63 | 14.99 |
| 2.4 Self-monitoring of outcome of behaviour | −1.06 | −4.06, 1.93 | 0.47 | 0 |
| 2.5 Monitoring of outcome of behaviour without feedback | −2.34 | −6.57, 1.89 | 0.26 | 2.80 |
| 2.7 Feedback on outcome(s) of behavior | 0.55 | −5.58, 6.67 | 0.85 | 0 |
| 3.1 Social support (unspecified) | 1.69 | −0.65, 4.03 | 0.15 | 5.30 |
| 3.2 Social support (practical) | −1.68 | −4.52, 1.15 | 0.23 | 4.42 |
| 4.1 Instructions on how to perform the behaviour | 0.48 | −1.99, 2.95 | 0.69 | 0 |
| 5.1 Information about health consequences | −2.87 | −8.35, 2.60 | 0.29 | 1.35 |
| 5.3 Information about social and environmental consequences | 0.61 | −4.00, 5.22 | 0.79 | 0 |
| 6.1 Demonstration of the behaviour | −1.77 | −4.91, 1.38 | 0.26 | 0.87 |
| 7.1 Prompts/cues | 2.57 | −3.34, 8.48 | 0.38 | 0 |
| 8.1 Behavioural practice/rehearsal | 0.57 | −2.15, 3.28 | 0.67 | 0 |
| 8.2 Behaviour substitution | −1.64 | −6.38, 3.09 | 0.48 | 0 |
| 8.7 Graded tasks | −1.34 | −3.71, 1.03 | 0.26 | 4.28 |
| 9.1 Credible source | −0.16 | −2.65, 2.33 | 0.90 | 0 |
| 9.2 Pros and cons | 2.57 | −3.34, 8.48 | 0.38 | 0 |
| 11.2 Reducing negative emotions | 0.98 | −2.59, 4.54 | 0.58 | 0 |
| 12.5 Adding objects to the environment | 0.57 | −2.06, 3.19 | 0.66 | 0 |
| 13.1 Identifying self as a role model | 1.76 | −3.66, 7.17 | 0.51 | 0 |

β = regression coefficient, CI = confidence interval; k = number of evaluations; adjusted R² = adjusted proportion of heterogeneity accounted for by moderator
Table S8. Univariate meta-regression for physical activity in lifestyle interventions for postpartum women by behavioural strategies (k = 24).

| Behavioural strategies                              | β     | 95% Confidence interval | P-value | Adjusted R-squared (%) |
|-----------------------------------------------------|-------|-------------------------|---------|------------------------|
| Total number of behavioural strategies              | -0.10 | -0.21, 0.02             | 0.09    | 11.88                  |
| Behavioural strategies consistent with control theory| -0.14 | -0.34, 0.06             | 0.16    | 6.70                   |
| 1.1 Goal setting (behaviour)                        | 0.0560| -1.28, 1.17             | 0.93    | 0                      |
| 1.2 Problem solving                                 | -0.06 | -1.28, 1.17             | 0.93    | 0                      |
| 1.3 Goal setting (outcome)                          | -0.51 | -1.34, 0.32             | 0.22    | 3.13                   |
| 1.4 Action planning                                 | -0.47 | -1.98, 1.03             | 0.52    | 0                      |
| 1.5 Reviewing behavior goal(s)                      | -0.26 | -1.12, 0.59             | 0.53    | 0                      |
| 1.7 Reviewing outcome goal                          | -0.56 | -2.58, 1.46             | 0.57    | 0                      |
| 2.2 Feedback on behaviour                           | -0.38 | -2.42, 1.65             | 0.70    | 0                      |
| 2.3 Self-monitoring of behaviour                    | -0.56 | -1.55, 0.43             | 0.25    | 2.17                   |
| 2.4 Self-monitoring of outcome of behaviour         | -0.44 | -1.27, 0.38             | 0.28    | 0                      |
| 2.5 Monitoring of outcome of behaviour without feedback | -0.54 | -1.63, 0.56             | 0.32    | 0                      |
| 3.1 Social support (unspecified)                    | -0.54 | -2.69, 1.62             | 0.61    | 0                      |
| 3.2 Social support (practical)                      | -0.78 | -1.62, 0.05             | 0.07    | 12.96                  |
| 4.1 Instructions on how to perform the behaviour    | -0.33 | -1.36, 0.71             | 0.52    | 0                      |
| 5.1 Information about health consequences            | -0.33 | -1.18, 0.52             | 0.43    | 0                      |
| 5.3 Information about social and environmental consequences | -0.12 | -1.66, 1.42             | 0.87    | 0                      |
| 5.6 Information about emotional consequences         | -0.21 | -1.32, 0.90             | 0.70    | 0                      |
| 6.1 Demonstration of the behaviour                  | 0.11  | -2.00, 2.22             | 0.91    | 0                      |
| 7.1 Prompts/cues                                    | -0.15 | -1.20, 0.90             | 0.77    | 0                      |
| 8.1 Behavioural practice/rehearsal                  | -0.56 | -1.78, 0.66             | 0.35    | 0                      |
| 8.2 Behaviour substitution                          | 0.30  | -0.67, 1.27             | 0.53    | 0                      |
| 8.7 Graded tasks                                    | -0.06 | -1.10, 0.97             | 0.90    | 0                      |
| 9.1 Credible source                                 | 0.38  | -0.48, 1.25             | 0.37    | 0                      |
| 9.2 Pros and cons                                   | -0.46 | -1.32, 0.40             | 0.28    | 0.17                   |
| 10.9 Self-reward                                    | -0.17 | -1.67, 1.33             | 0.82    | 0                      |
| 11.2 Reducing negative emotions                     | -0.56 | -2.58, 1.46             | 0.57    | 0                      |
| 12.5 Adding objects to the environment              | -0.51 | -1.99, 0.97             | 0.48    | 0                      |
| 13.1 Identifying self as a role model               | -0.50 | -1.59, 0.58             | 0.35    | 0                      |
| 13.2 Framing/reframing                              | -0.69 | -2.65, 1.28             | 0.48    | 0                      |
| 15.4 Self-talk                                      | -0.21 | -1.71, 1.29             | 0.78    | 0                      |

β = regression coefficient; CI = confidence interval; k = number of evaluations; adjusted R² = adjusted proportion of heterogeneity accounted for by moderator
**Figure S1:** Forest plots and funnel plots for weight, energy intake, and physical activity.

Forest plot for body weight

| Study               | Experimental Total | Control Total | Mean Difference | MD   | 95%-CI         | Weight |
|---------------------|-------------------|---------------|----------------|------|----------------|--------|
|                     | Mean SD           | Mean SD       |                |      |                |        |
| Bertz 2012, 2014, 2015 | 15 -7.30 6.3000 | 13 -0.90 6.6000 | -6.40 [-11.20, -1.60] | 2.6% |
| Collarain 2012      | 14 -5.80 3.5000 | 13 -1.60 5.4000 | -4.20 [-7.60, -0.74] | 3.7% |
| Craigie 2011        | 22 -1.60 2.0000 | 14 0.20 2.2000 | -1.80 [-3.22, -0.38] | 5.2% |
| Daley 2015          | 41 75.40 10.0500 | 38 77.11 18.3000 | -1.71 [-9.35, 5.93] | 1.6% |
| Davenport 2011      | 20 -5.60 2.9000 | 20 -0.10 3.3000 | -4.90 [-8.83, 2.97] | 4.9% |
| Holmes 2016         | 20 -3.90 7.0000 | 25 0.70 3.9500 | -4.60 [-8.03, -1.17] | 3.6% |
| Huang 2009          | 64 56.67 6.1200 | 64 58.61 10.2300 | -1.94 [-4.66, 0.88] | 4.1% |
| Husseinov 2018, 2017 | 41 4.90 7.2000 | 46 -4.60 6.9000 | -2.90 [-5.27, 0.07] | 4.1% |
| Keller 2014, 2015   | 39 71.99 10.3800 | 54 72.54 11.3000 | -0.55 [-4.99, 3.89] | 3.1% |
| Krummel 2010        | 24 1.31 5.3520 | 33 1.31 4.8530 | 0.00 [-2.71, 2.71] | 4.3% |
| Leemakers 1998      | 36 -7.80 4.5000 | 26 -4.90 5.4000 | -2.90 [-5.44, 0.06] | 4.4% |
| Lovelady 1995       | 18 65.70 2.5000 | 15 65.40 2.1000 | 0.30 [-1.27, 1.87] | 5.1% |
| Lovelady 2000, 2001, 2006 | 21 -4.80 1.7000 | 19 -0.80 2.3000 | -4.00 [-5.26, 2.74] | 5.3% |
| Lovelady 2009       | 10 65.10 3.5000 | 10 65.20 4.1000 | -0.10 [-3.44, 3.24] | 3.8% |
| Maturi 2011         | 32 64.70 6.0000 | 34 63.90 6.0000 | 0.80 [-2.63, 4.23] | 3.8% |
| McCrory 1999        | 22 -1.60 0.5000 | 23 -0.20 0.6000 | -1.10 [-1.72, -0.18] | 5.6% |
| Mchrye 2012         | 14 0.97 3.7000 | 11 0.22 4.2000 | 0.75 [-2.40, 3.90] | 4.0% |
| Nicklas 2014        | 36 -3.00 5.9110 | 39 1.00 5.8613 | -4.00 [-6.67, 1.13] | 4.3% |
| Ostbye 2009         | 214 -0.90 5.1000 | 207 -0.36 4.8000 | -0.54 [-1.30, 0.24] | 5.4% |
| O'Tools 2003        | 13 71.30 2.2000 | 10 64.10 4.3000 | -12.80 [-15.72, -9.88] | 4.1% |
| Trefete 2014        | 17 2.20 0.9000 | 17 0.30 0.7000 | -1.10 [-2.24, 0.04] | 5.6% |
| Wilhess 2012        | 131 -2.30 5.4000 | 145 -1.50 4.7000 | -0.60 [-2.00, 0.80] | 5.3% |
| Youngwonzsetha 2013 | 32 68.90 14.5000 | 32 72.60 17.2000 | -3.70 [-11.54, 4.14] | 1.6% |
| Zilberman 2018      | 60 73.11 16.1100 | 44 76.68 15.9100 | -3.57 [-9.79, 2.63] | 2.1% |
| Zoulidani 2015      | 20 61.80 10.0000 | 17 64.20 8.5200 | -2.40 [-8.37, 3.57] | 2.2% |

Random effects model: 976

Heterogeneity: $I^2 = 79\%$, $t^2 = 6.1530$, $p < 0.01$
Forest plot for energy intake

| Study                | Experimental Total | Experimental Mean | Experimental SD | Control Total | Control Mean | Control SD | Mean Difference | MD   | 95%-CI      | Weight |
|----------------------|--------------------|-------------------|-----------------|---------------|--------------|------------|-----------------|-------|-------------|--------|
| Bertz 2012, 2014, 2015 | 15                 | -3.59             | 2.7820          | 13            | -1.39        | 1.8960     | -2.20 [-3.94; -0.46] | 6.8%  |             |
| Colleran 2012         | 14                 | -2.56             | 2.1799          | 13            | -0.72        | 1.8200     | -1.85 [-3.36; -0.34] | 7.3%  |             |
| Davenport 2011        | 20                 | 7.90              | 1.5970          | 20            | 6.32         | 1.8640     | -0.42 [-1.49; 0.66]  | 6.4%  |             |
| Huseinovic 2010, 2017 | 44                 | -2.75             | 3.2426          | 45            | 1.42         | 3.0777     | -4.17 [-5.01; -2.23] | 7.5%  |             |
| Koller 2014, 2015     | 39                 | 5.83              | 2.1548          | 54            | 5.42         | 1.6276     | 0.41 [0.39; 1.22]   | 9.1%  |             |
| Lovelady 1995         | 18                 | 10.45             | 1.8243          | 15            | 9.22         | 1.3600     | 1.23 [0.14; 2.32]   | 8.4%  |             |
| Lovelady 2000, 2001, 2006 | 19              | -2.26             | 1.9707          | 16            | -0.99        | 2.1255     | -1.29 [-2.68; 0.06]  | 7.7%  |             |
| Lovelady 2009         | 10                 | 8.05              | 1.8539          | 10            | 7.07         | 1.5745     | 0.97 [0.44; 2.39]   | 7.8%  |             |
| Ostbye 2009           | 214                | -0.87             | 2.2761          | 207           | -0.70        | 2.2310     | -0.10 [-0.60; 0.27]  | 9.7%  |             |
| O'Toole 2003          | 13                 | 6.66              | 0.3054          | 10            | 6.45         | 0.3724     | 0.21 [0.07; 0.50]    | 9.9%  |             |
| Tripette 2014         | 17                 | -0.88             | 2.3389          | 17            | -0.11        | 1.0962     | -0.75 [-1.98; 0.48]  | 8.1%  |             |
| Willhois 2012         | 131                | 7.36              | 2.1569          | 145           | 7.70         | 2.1757     | -0.61 [-1.53; 0.32]  | 100.0%|             |

Random effects model 554 565 556 565

Heterogeneity: $I^2 = 82\%$, $t^2 = 1.6501$, $p < 0.01$
Forest plot for physical activity

| Study                  | Total | Experimental | Mean | SD  | Total | Mean | Control | Mean | Standardised Mean Difference | SMD     | 95%-CI     | Weight |
|------------------------|-------|--------------|------|-----|-------|------|---------|------|-----------------------------|---------|------------|--------|
| Berry                  | 24    | 2.30         | 0.500| 0.00| 26    | 1.90 | 0.600   |      |                             | 0.72    | 0.10; 1.33 | 4.2%   |
| Birtz 2012, 2014, 2015| 15    | 15.86        | 2.62 | 0.00| 13    | 7.66 | 3.247   | 0.00 |                             | 0.27    | -0.48; 1.02 | 3.9%   |
| Colleran 2012          | 14    | 34.50        | 7.200| 1.00| 13    | 33.80| 7.200   |      |                             | 0.09    | -0.68; 0.85 | 3.9%   |
| Craigie 2011           | 22    | 19.00        | 4.700| 1.00| 14    | 16.00| 4.400   |      |                             | 0.06    | -0.61; 0.73 | 4.1%   |
| DeRosset              | 13    | 0.90         | 0.490| 1.00| 11    | 0.70 | 0.590   |      |                             | 0.36    | -0.45; 1.17 | 3.8%   |
| Dirda                  | 46    | 124.09       | 96.330| 1.00| 42    | 54.60| 55.800   |      |                             | 0.87    | -0.43; 1.30 | 4.5%   |
| Fjeldsoe               | 45    | 18.26        | 24.940| 1.00| 43    | 16.36| 25.530   |      |                             | 0.07    | -0.34; 0.49 | 4.5%   |
| Husseinovic 2016, 2017 | 44    | 1053.00      | 2440.000| 1.00| 45    | 394.00| 2657.000  |      |                             | 0.25    | -0.17; 0.66 | 4.5%   |
| Keller 2014, 2015      | 39    | 6935.91      | 3126.540| 1.00| 54    | 6425.04| 3390.900  |      |                             | 0.16    | -0.25; 0.56 | 4.5%   |
| Kornot 2019            | 41    | 173.00       | 161.500| 1.00| 40    | 100.00| 77.400   |      |                             | 0.14    | -0.29; 0.58 | 4.5%   |
| Khodakandeh            | 105   | 16.00        | 15.200| 1.00| 101   | 8.00 | 7.900   |      |                             | 0.65    | 0.37; 0.93 | 4.7%   |
| Krammel 2010           | 18    | 705.00       | 2475.600| 1.00| 24    | 308.00| 2977.000  |      |                             | 0.14    | -0.47; 0.75 | 4.2%   |
| Lioret                 | 178   | 387.72       | 340.280| 1.00| 179   | 403.62| 363.790   |      |                             | -0.04   | -0.25; 0.16 | 4.7%   |
| Lovelady 1995          | 18    | 33.80        | 1.600| 1.00| 15    | 28.90| 1.100   |      |                             | 4.57    | 3.21; 5.93 | 2.8%   |
| Lovelady 2000, 2001, 2006 | 21 | 4.50        | 4.900| 1.00| 19    | 0.60 | 3.800   |      |                             | 0.67    | 0.21; 1.52 | 4.1%   |
| Lovelady 2009          | 10    | 34.70        | 4.7430| 1.00| 10    | 34.40| 4.1110   |      |                             | 0.06    | -0.81; 0.94 | 3.7%   |
| Matun 2011             | 32    | 11.00        | 34.400| 1.00| 34    | 8.00 | 23.500   |      |                             | 0.10    | -0.38; 0.58 | 4.4%   |
| McCrory 1999          | 22    | 499.00       | 87.600| 1.00| 23    | 135.00| 120.000   |      |                             | 3.29    | 2.37; 4.21 | 3.6%   |
| Ostbye 2009            | 214   | 21.80        | 143.600| 1.00| 207   | 31.10| 140.600   |      |                             | -0.06   | -0.26; 0.13 | 4.7%   |
| O’Toole 2003           | 13    | 1981.00      | 72.600| 1.00| 10    | 1902.00| 79.000   |      |                             | 1.01    | 0.13; 1.90 | 3.7%   |
| Parsa 2013             | 56    | 17.91        | 3.600| 1.00| 56    | 13.88 | 2.7100   |      |                             | 1.40    | 0.99; 1.81 | 4.5%   |
| Trepeta 2014           | 17    | 25.90        | 3.3000| 1.00| 17    | 26.40| 2.8000   |      |                             | -0.16   | -0.83; 0.51 | 4.1%   |
| Zilberman 2016         | 60    | 28.00        | 46.700| 1.00| 44    | 1.00 | 2.3000   |      |                             | 0.75    | 0.35; 1.16 | 4.5%   |
| Zourlidani 2015        | 20    | 1.96         | 0.3500| 1.00| 17    | 1.70 | 0.2000   |      |                             | 0.82    | 0.14; 1.49 | 4.1%   |

Random effects model 1087 1051

Heterogeneity: $I^2 = 86\%$, $t^2 = 0.6589$, $p < 0.01$
Funnel plot for body weight
Funnel plot for energy intake
Funnel plot for physical activity