Supplementary file

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

**Siew Lim [1]*, Briony Hill [1], Stephanie Pirotta [1], Sharleen O'Reilly [2#] and Lisa Moran [1#,]**

[1] Monash Centre for Health Research and Implementation, Monash University, Clayton, Vic, Australia University; briony.hill@monash.edu; stephanie.pirotta@monash.edu; lisa.moran@monash.edu
[2] School of Agriculture and Food Science, University College Dublin, Belfield, Dublin, Ireland; harleen.oreilly@ucd.ie
* Correspondence: siew.lim1@monash.edu
# These authors contributed equally

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

| Section/topic | # | Checklist item | Reported on page # |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a systematic review, meta-analysis, or both. | 1 |
| **ABSTRACT** | | | |
| Structured summary | 2 | 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 | 3 | Describe the rationale for the review in the context of what is already known. | 3-4 |
| Objectives | 4 | Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS). | 4 |
| **METHODS** | | | |
| Protocol and registration | 5 | 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 | 6 | 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 | 7 | 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 | 8 | Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated. | Additional Files |
| Study selection | 9 | 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 | 10 | 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 | 11 | 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 | 12 | 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 | 13 | State the principal summary measures (e.g., risk ratio and difference in means). | 6 |
| Synthesis of results | 14 | 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 |
| **Section/topic** | **#** | **Checklist item** | **Reported on page #** |

| | | | |
|---|---|---|---|
| Risk of bias across studies | 15 | Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias and selective reporting within studies). | 6 |
| Additional analyses | 16 | Describe methods of additional analyses (e.g., sensitivity or subgroup analyses and meta-regression), if done, indicating which were prespecified. | 6 |
| **RESULTS** | | | |
| Study selection | 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. | 7; Figure 1 |
| Study characteristics | 18 | For each study, present characteristics for which data were extracted (e.g., study size, PICOS, and followup period), and provide the citations. | 7; Table 1 |
| Risk of bias within studies | 19 | Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12). | 7-8; Figure 2, Additional Files |
| Results of individual studies | 20 | For all outcomes considered (benefits or harms), presen, for each study (a) simple summary data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot. | Additional Files |
| Synthesis of results | 21 | Present results of each meta-analysis done, including confidence intervals and measures of consistency. | 8-9; Additional Files |
| Risk of bias across studies | 22 | Present results of any assessment of risk of bias across studies (see item 15). | 7; Additional Files |
| Additional analysis | 23 | Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses and meta-regression (see item 16)). | 8-9, Additional Files |
| **DISCUSSION** | | | |
| Summary of evidence | 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). | 9 |
| Limitations | 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). | 11–12 |
| Conclusions | 26 | Provide a general interpretation of the results in the context of other evidence and implications for future research. | 12 |
| **FUNDING** | | | |
| Funding | 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. | 1 |

*Figure 2009.* Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097.

**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".

**Table S3.** Inclusion and exclusion criteria of the systematic review and meta-analysis of lifestyle intervention in postpartum women.

| | 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<br><br>Theoretical framework, type, duration, sessions/contact, location, technology, self-monitoring, intervention provider, behavioural strategies, and group/individual<br><br>Sampling frame, age, baseline BMI inclusion and exclusion criteria, medical history, diet history, physical activity status, breastfeeding status, and withdrawals/losses to followup | Usual care, no intervention, or minimal intervention (single session at baseline) | Weight or weight change<br>BMI or BMI change;<br>total energy intake or change;<br>physical activity or change;<br>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<br><br>Exercise intervention focusing only on pelvic floor exercise and urinary incontinence<br><br>Intervention focusing only on initiating or increasing breastfeeding (without diet or exercise component) | 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<br>N = 60 | USA | 77% African-American; 23% Non-Hispanic White | At least 6 weeks postpartum;<br>BMI > 25 kg/m$^2$ | 6 months<br>In-person: 15 |
| Bertz 2015<br>N = 68 | Sweden | n/a | 10–14 weeks postpartum;<br>Prepregnancy BMI 25–35 kg/m$^2$ | 12 weeks<br>In-person: 4; SMS: 24 |
| Colleran 2012<br>N = 31 | USA | 85% White, Non-Hispanic; 11% African-American;<br>4% Hispanic | 4 weeks postpartum;<br>BMI 25 to 30 kg/m$^2$ | 16 weeks<br>Session number could not be determined |
| Craigie 2011<br>N = 52 | UK | 93–96% Caucasian | 6–18 months postpartum;<br>BMI > 25 kg/m$^2$ | 12 weeks<br>In-person: 3; Phone: 3 |
| Daley 2015<br>N = 94 | UK | 57–68% white | Within 6 months postpartum;<br>depression according to ICD-10 and EPDS | 6 months<br>In-person: 2; Phone: 2 |

| | | | | |
|---|---|---|---|---|
| Davenport 2011<br>N = 47 | Canada | 85–90% Caucasian | 7–9 weeks postpartum;<br>BMI ≥ 25.0 kg/m$^2$ and/or had retained ≥5.0 kg from pregnancy | 16 weeks<br>48–64 walking sessions |
| deRosset 2013<br>N = 24 | USA | 100% Hispanic | 6 weeks postpartum;<br>overweight or obese by self-report according to prepregnancy BMI | 12 weeks<br>In-person: 12 |
| Dritsa 2009<br>N = 88 | Canada | n/a | 4–38 weeks postpartum;<br>EPDS ≥ 10 | 12 weeks<br>In-person: 4 |
| Fjeldsoe 2010<br>N = 88 | Australia | 2–6% identified as an Aboriginal or Torres Strait Islander | Less than 12 months postpartum;<br>general population | 12 weeks<br>In-person: 2; SMS: 47–71 |
| Holmes et al. 2018 | USA | Caucasian | 24 weeks postpartum;<br>postnatal overweight with PH of GDM | 3 months |
| Huang 2009<br>N = 240 | Taiwan | n/a | 24–48 hours to 6 months postpartum;<br>general population | 6 months<br>In-person: 3 |
| Huseinovic 2016<br>N = 110 | Sweden | n/a | 6–15 weeks postpartum;<br>BMI ≥ 27 kg/m$^2$ | 12 weeks<br>In-person: 1; Text message: 12; Phone: 12 |
| Keller 2014<br>N = 139 | USA | 100% Latina | 6 weeks to less than 6 months postpartum;<br>BMI ≥ 25 kg/m$^2$ | 12 months<br>In-person: 52 |
| Kernot et al. 2019 | Aust | n/a | 6 week to 6 month postpartum;<br>postpartum (facebook) | 6 weeks<br>Weekly emails |
| Khodabandeh 2017<br>N = 220 | Iran | 99–100% Azeri | Day of discharge postpartum;<br>general population | 6 weeks<br>In-person: 2; Text message: ~ 8 |
| Krummel 2010<br>N = 151 | USA | 90% Caucasian | Up to 2 years postpartum;<br>general population | 12 months<br>In-person: 11 |
| Leermakers 1998<br>N = 90 | USA | 95–98% Caucasian | 3–12 months postpartum;<br>exceeded their prepregnancy weight by at least 6.8 kg | 6 months<br>In-person: 2; Phone: 12–24 |
| Lioret 2012<br>N = 542 | Australia | Country of Birth, 79% Australia; 21% Other | 18 months postpartum;<br>general population | 15 months<br>In-person: 6 |
| Lovelady 2000<br>N = 48 | USA | 80–84% White; 16–19% Black | 4 weeks postpartum;<br>BMI 25 to 30 kg/m$^2$ | 10 weeks<br>In-person: 40 |
| Lovelady 1995<br>N = 38 | USA | n/a | 6 weeks postpartum;<br>general population | 12 weeks<br>In-person: 60 |
| Lovelady 2009 | USA | 95% Non-Hispanic White; 5% Asian | 3 weeks postpartum; | 16 weeks |

| | | | | |
|---|---|---|---|---|
| N = 24 | | | BMI 20 to 30 kg/m$^2$ | In-person: 48 |
| Maturi 2011<br>N = 70 | Iran | n/a | 6 weeks to 6 months postpartum;<br>BMI > 19.8 and < 29 kg/m$^2$ | 12 weeks<br>In-person: 1; Text message: 12; Phone: 6 |
| McCrory 1999<br>N = 68 | USA | 77–82% Non-Hispanic White; 9–14% Hispanic; 0–13% Black; 0–9% Asian | 12 ± 4 weeks postpartum;<br>general population | 11 days |
| McIntyre 2012<br>N = 28 | Australia | n/a | 6 weeks postpartum;<br>post-gestational diabetes | 12 weeks<br>In-person: 1; Phone: 8 |
| Nicklas 2014<br>N = 75 | USA | 51–64% White; 25–36% African American; 11–13% Asian; 15–25% Hispanic or Latina | 6 weeks postpartum;<br>post-gestational diabetes | 12 months;<br>cannot be determined |
| Ostbye 2009<br>N = 450 | USA | 52-53% White; 45% Black; 2–3% Asian/Other | 6 weeks postpartum;<br>prepregnancy BMI ≥ 25 kg/m$^2$ | 9 months<br>In-person: 18<br>Phone: 6 |
| O'Toole 2003<br>N = 40 | USA | 98% Caucasian; 3% African American | 6 weeks to 6 months postpartum;<br>prepregnancy BMI 25–29.9 kg/m$^2$ | Cannot be determined |
| Parsa 2017<br>N = 120 | Iran | n/a | 3–20 days postpartum;<br>general population | 3 weeks<br>In-person: 3 |
| Tripette 2014<br>N = 34 | Japan | 100% Japanese | 3 months to 1 year postpartum;<br>BMI > 22 kg/m$^2$ | 40 days<br>In-person: 2 |
| Wiltheiss 2012<br>N = 400 | USA | 75% white; 22% black; 4% other races; 5% Hispanic | Within 6 months postpartum;<br>BMI ≥ 25 kg/m$^2$ | 8 months<br>In-person: 1; Mail: 8; Phone: 8 |
| Youngwanichsetha 2013<br>N = 69 | Thailand | n/a | 6–12 weeks postpartum;<br>type 2 diabetes | 12 weeks<br>In-person: 3 |
| Zourladani 2015<br>N = 42 | Greece | 100% Greek | 4–6 weeks postpartum;<br>general population | 12 weeks<br>In-person: 36 |
| Zilberman et al. 2018 | Israel | Jewish and Bedouin | 3–4 months postpartum;<br>general population | 24 months<br>3 individual sessions<br>4 groups |

**Table S6:** Risk of bias of included studies*.

| 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 MyPyramid | Low | High | Low | High | Low | High |
| 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 | High | Low | 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 | Low | High | Low | 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 | High | 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 $R^2$ = adjusted proportion of heterogeneity accounted for by moderator

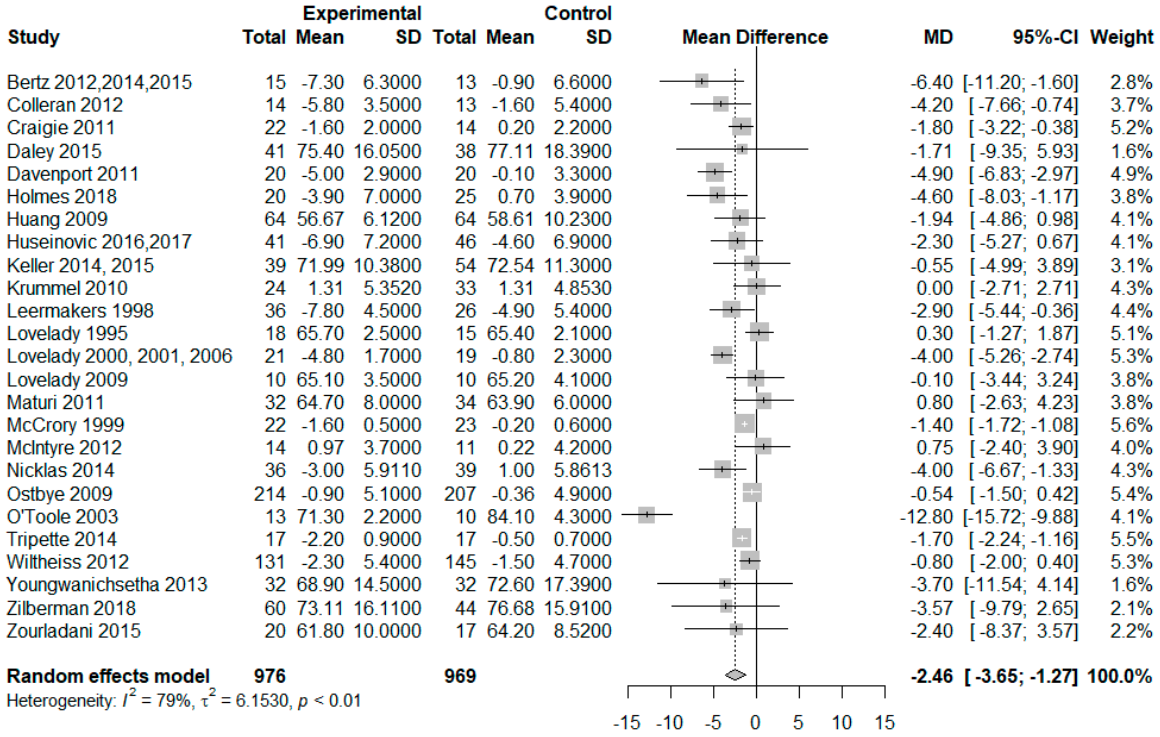
**Table S8.** Univariate meta-regression for physical activity in lifestyle interventions for postpartum women by behavioural strategies (k = 24).

| 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 |

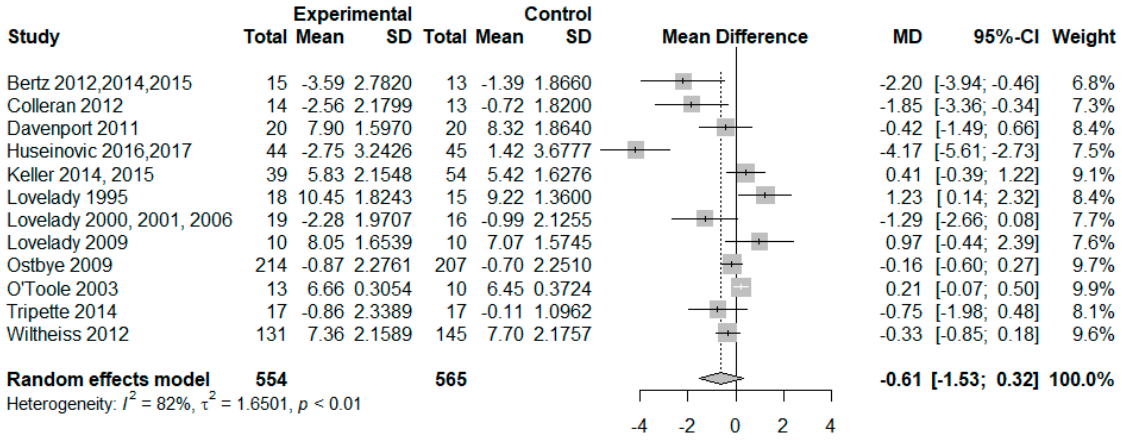
β = regression coefficient, CI = confidence interval; k = number of evaluations; adjusted $R^2$ = adjusted proportion of heterogeneity accounted for by moderator

**Figure S1:** Forest plots and funnel plots for weight, energy intake, and physical activity.

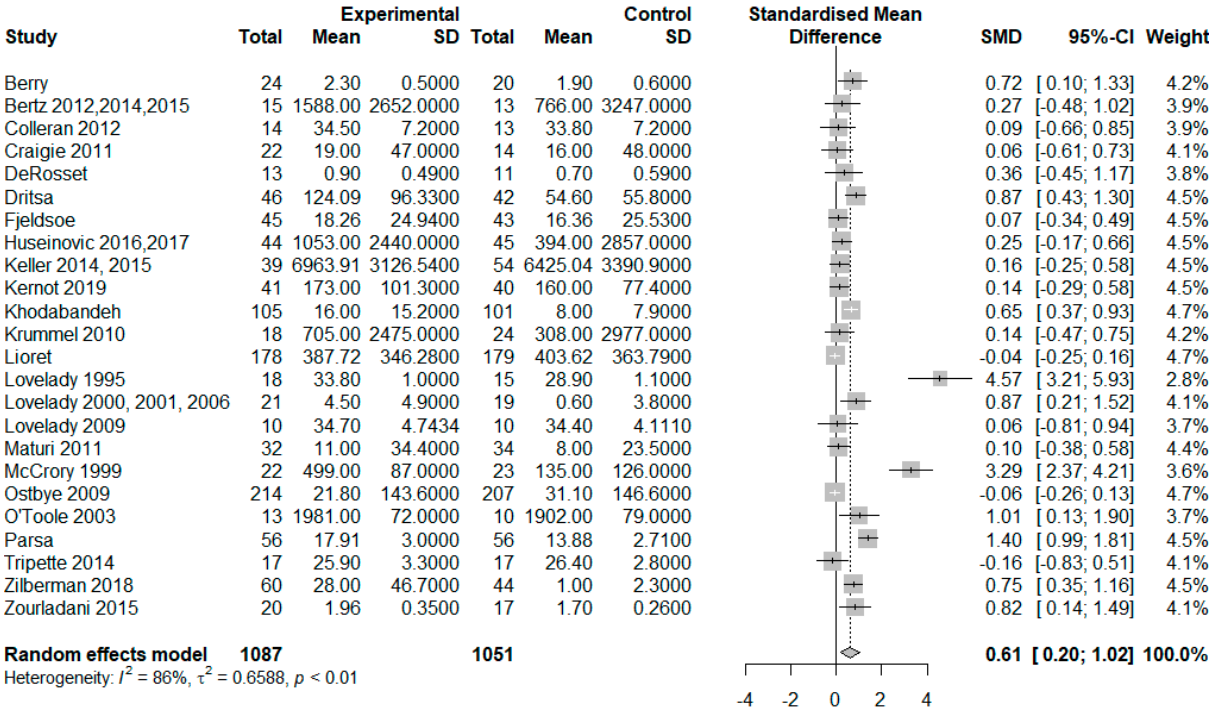
Forest plot for body weight



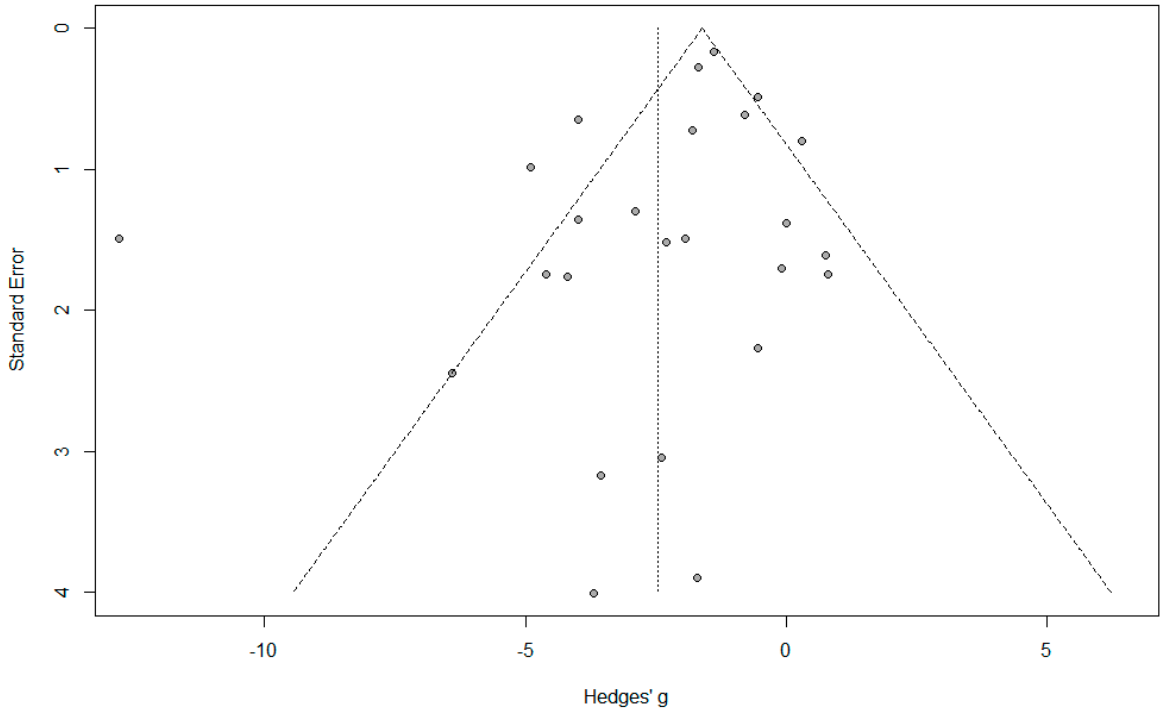
Forest plot for energy intake



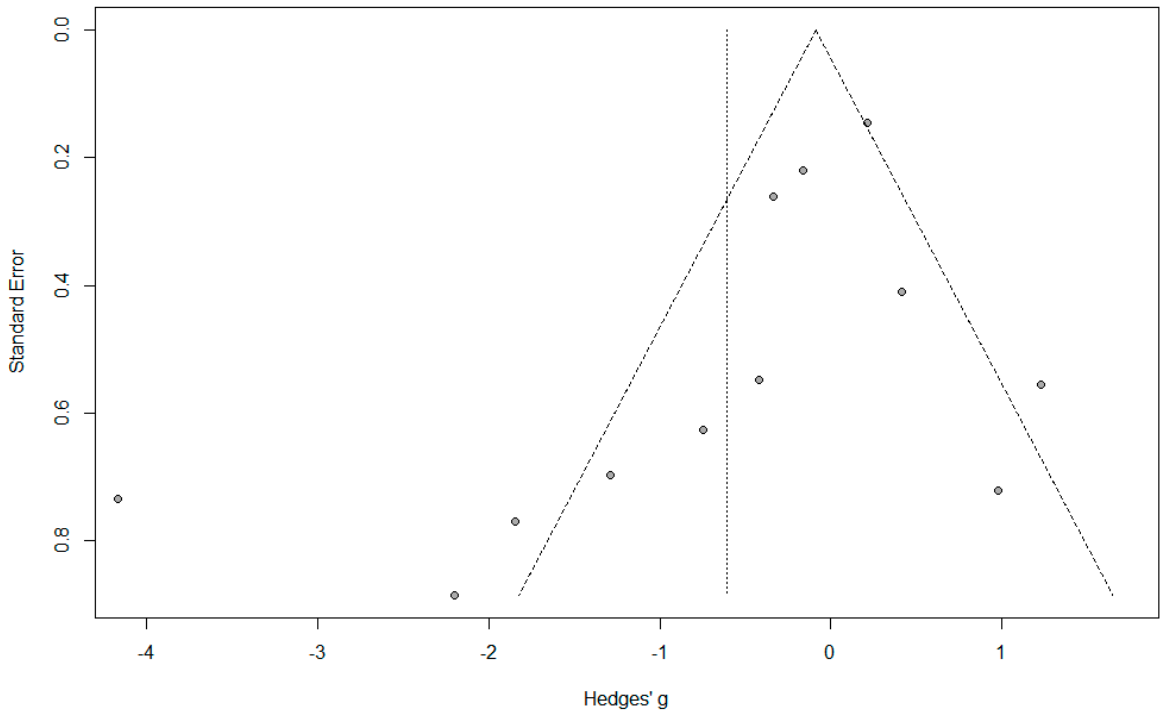
Forest plot for physical activity



Funnel plot for body weight



Funnel plot for energy intake



Funnel plot for physical activity