

Supplementary tables

Supplementary Table S1: Drop-out analyses

| | | Dropped out before 12 months postpartum (N=213) | Followed up until 12 months postpartum (N=311) | P-value* |
|--|--------------------------|--|---|----------|
| Age at birth, mean (SD) | | 31.5 (4.1) | 31.4 (3.7) | 0.94 |
| Parity, n (%) | Primiparous | 115 (54) | 180 (57.9) | 0.38 |
| | Multiparous | 98 (46) | 131 (42.1) | |
| Sex of infant, n (%) | Boy | 120 (56.3) | 154 (49.5) | 0.12 |
| | Girl | 93 (43.7) | 157 (50.5) | |
| Method of conception, n (%) | Spontaneous | 192 (90.1) | 281 (93.4) | 0.19 |
| | ART | 21 (9.9) | 20 (6.6) | |
| | Missing | 0 | 10 | |
| Education, n (%) | Up to 18 years of age | 75 (36.9) ^a | 74 (24.1) ^a | 0.003 |
| | Bachelor | 77 (37.9) | 122 (39.7) | |
| | Master or higher | 51 (25.1) ^a | 111 (36.2) ^a | |
| | Missing | 10 | 4 | |
| Employment status, n (%) | Employed | 183 (90.1) | 283 (92.2) | 0.43 |
| | Unemployed | 20 (9.9) | 24 (7.8) | |
| | Missing | 10 | 4 | |
| Ethnicity, n (%) | White European | 179 (88.2) | 283 (92.2) | 0.13 |
| | Other ethnicity | 24 (11.8) | 24 (7.8) | |
| | Missing | 10 | 4 | |
| Pre-pregnancy BMI, n (%) | NW | 86 (40.4) ^a | 170 (54.7) ^a | 0.006 |
| | OW | 88 (41.3) | 99 (31.8) | |
| | OB | 39 (18.3) | 42 (13.5) | |
| Gestational weight gain in kg, median (IQR) | Among NW | 19.2 (17-21.1) | 19 (17-21) | 0.70 |
| | Among OW | 17 (14-20) | 15 (13-17.1) | 0.007 |
| | Among OB | 14.5 (12-17) | 13.7 (11.9-16) | 0.48 |
| Exclusive breastfeeding at 6 weeks PP, n (%) | Yes | 100 (49.8) | 183 (59.8) | 0.03 |
| | No | 101 (50.2) | 123 (40.2) | |
| | Missing | 12 | 5 | |
| PPWR in kg at 6 weeks PP, mean (SD) | Among NW | 7.8 (3.6) | 7.7 (4.1) | 0.83 |
| | Among OW | 6.5 (4.3) | 5.9 (4.2) | 0.37 |
| | Among OB | 6.3 (6.2) | 4.2 (3.7) | 0.07 |
| History of depressive feelings, n (%) | Yes | 42 (21.1) | 37 (12.3) | 0.009 |
| | No | 157 (78.9) | 264 (87.7) | |
| | Missing | 14 | 10 | |

* P-value for differences between drop-outs and followed-up sample at 12 months postpartum.

^a Significant differences after Bonferroni correction.

ART = assisted reproductive treatment; BMI = body mass index; NW = normal weight; OB = obesity; OW = overweight; PP = postpartum; PPWR = postpartum weight retention.

Supplementary Table S2: multivariate mixed model of variables at 6 weeks postpartum associated with evolution of PPWR, %GWGL, fat percentage and waist circumference from 6 weeks to 12 months postpartum.

| | PPWR in kg (N=492) | | | %GWGL (N=492) | | | Fat % (N=471) | | | Waist circumference in cm (N=493) | | |
|-----------------------------------|--------------------|----------|---------|---------------|--------|---------|---------------|----------|---------|-----------------------------------|----------|---------|
| | B | SE | P-value | B | SE | P-value | B | SE | P-value | B | SE | P-value |
| Intercept | 5.5055 | 0.3465 | <0.001 | 66.9 | 1.757 | <0.001 | 30.5038 | 0.4973 | <0.001 | 81.9283 | 0.5843 | <0.001 |
| Months | -0.5395 | 0.06641 | <0.001 | 3.245 | 0.3532 | <0.001 | -0.5135 | 0.04591 | <0.001 | -1.0063 | 0.07514 | <0.001 |
| Monthsminus6*M6 | 0.2549 | 0.08724 | 0.004 | -1.246 | 0.5103 | 0.02 | 0.2096 | 0.06575 | 0.002 | 0.4854 | 0.1116 | <0.001 |
| Overweight | -1.5927 | 0.6882 | 0.02 | | | | 5.7105 | 0.6909 | <0.001 | 5.7585 | 0.6759 | <0.001 |
| Obesity | -3.3951 | 0.9355 | <0.001 | | | | 8.7648 | 0.8441 | <0.001 | 16.2521 | 0.9354 | <0.001 |
| Months*overweight | 0.3699 | 0.08533 | <0.001 | -1.091 | 0.4646 | 0.02 | 0.2607 | 0.07212 | <0.001 | 0.3920 | 0.1008 | <0.001 |
| Months*obesity | 0.6332 | 0.1190 | <0.001 | -2.673 | 0.6698 | <0.001 | 0.4377 | 0.1045 | <0.001 | 0.4848 | 0.1409 | <0.001 |
| Monthsminus6*M6*overweight | -0.2922 | 0.1214 | 0.02 | 1.247 | 0.6895 | 0.07 | -0.1889 | 0.1063 | 0.08 | -0.3088 | 0.1502 | 0.04 |
| Monthsminus6*M6*obesity | -0.4462 | 0.1673 | 0.008 | 2.511 | 0.9651 | 0.01 | -0.2914 | 0.1500 | 0.05 | -0.3830 | 0.2092 | 0.07 |
| Boy | | | | | | | -1.0437 | 0.3002 | <0.001 | | | |
| Months*boy | -0.1517 | 0.06048 | 0.01 | 0.9461 | 0.3656 | 0.01 | | | | -0.1742 | 0.08004 | 0.03 |
| Monthsminus6*M6*boy | 0.2483 | 0.09726 | 0.01 | -1.381 | 0.5756 | 0.02 | | | | 0.3839 | 0.1273 | 0.003 |
| ExcessiveGWG | 0.9814 | 0.06306 | <0.001 | -2.03 | 0.2338 | <0.001 | 0.4507 | 0.07829 | <0.001 | 0.3875 | 0.07811 | <0.001 |
| Months*excessiveGWG | -0.03755 | 0.007668 | <0.001 | | | | | | | | | |
| Overweight*excessiveGWG | -0.1914 | 0.08769 | 0.03 | | | | -0.2641 | 0.1023 | 0.01 | | | |
| Obesity*excessiveGWG | | | | | | | -0.2495 | 0.1267 | 0.05 | | | |
| Obesity*depression | -2.3371 | 1.0229 | 0.02 | 17.53 | 5.163 | 0.001 | | | | | | |
| Overweight*breastfeeding | -1.1175 | 0.5378 | 0.04 | 7.916 | 2.163 | <0.001 | -1.3133 | 0.5326 | 0.01 | | | |
| Obesity*breastfeeding | -2.1614 | 0.8893 | 0.02 | 14.48 | 3.07 | <0.001 | | | | | | |
| Multiparity | | | | -8.04 | 1.603 | <0.001 | | | | | | |
| Sedentarytime | | | | | | | 0.000319 | 0.000127 | 0.01 | | | |
| Emotionaleating | | | | | | | 0.01883 | 0.005310 | <0.001 | 0.03112 | 0.009026 | <0.001 |

GWG = gestational weight gain; M6 = 6 months postpartum; PPWR = postpartum weight retention; %GWGL = percentage gestational weight gain loss

Supplementary Table S3: multivariate mixed model of variables at 6 weeks and 6 months postpartum associated with evolution of PPWR, %GWGL, fat percentage and waist circumference 6 weeks to 12 months postpartum.

| | PPWR in kg (N=353) | | | %GWGL (N=353) | | | Fat % (N=354) | | | Waist circumference in cm (N=369) | | |
|-----------------------------------|--------------------|----------|---------|---------------|----------|---------|---------------|---------|---------|-----------------------------------|---------|---------|
| | B | SE | P-value | B | SE | P-value | B | SE | P-value | B | SE | P-value |
| Intercept | 5.3419 | 0.4043 | <0.001 | 0.6728 | 0.02019 | <0.001 | 30.4290 | 0.5562 | <0.001 | 81.8438 | 0.6298 | <0.001 |
| Months | -0.5410 | 0.07004 | <0.001 | 0.03236 | 0.003742 | <0.001 | -0.5016 | 0.04697 | <0.001 | -0.9889 | 0.07635 | <0.001 |
| Monthsminus6*M6 | 0.2681 | 0.09090 | 0.004 | - | 0.005285 | 0.01 | 0.1945 | 0.06682 | 0.004 | 0.4618 | 0.1122 | <0.001 |
| | | | | 0.01311 | | | | | | | | |
| Overweight | -1.5280 | 0.8357 | 0.07 | | | | 5.7218 | 0.8173 | <0.001 | 6.1251 | 0.7500 | <0.001 |
| Obesity | -3.7140 | 1.2495 | 0.003 | | | | 8.8583 | 0.9801 | <0.001 | 14.6878 | 1.0267 | <0.001 |
| Months*overweight | 0.3681 | 0.09018 | <0.001 | - | 0.004957 | 0.05 | 0.2510 | 0.07506 | 0.001 | 0.3677 | 0.1044 | <0.001 |
| | | | | 0.00972 | | | | | | | | |
| Months*obesity | 0.6621 | 0.1249 | <0.001 | - | 0.007083 | <0.001 | 0.4760 | 0.1076 | <0.001 | 0.5416 | 0.1434 | <0.001 |
| | | | | 0.02951 | | | | | | | | |
| Monthsminus6*M6*overweight | -0.3176 | 0.1256 | 0.01 | 0.01315 | 0.007127 | 0.07 | -0.1898 | 0.1090 | 0.08 | -0.3058 | 0.1530 | 0.05 |
| Monthsminus6*M6*obesity | -0.4858 | 0.1723 | 0.005 | 0.02838 | 0.009935 | 0.005 | -0.3413 | 0.1520 | 0.03 | -0.4386 | 0.2095 | 0.04 |
| Boy | | | | | | | -1.1399 | 0.3469 | 0.001 | | | |
| Months*boy | -0.1577 | 0.06483 | 0.02 | 0.01067 | 0.003926 | 0.007 | | | | -0.1805 | 0.08168 | 0.03 |
| Monthsminus6*M6*boy | 0.2440 | 0.1019 | 0.02 | - | 0.005964 | 0.02 | | | | 0.3946 | 0.1289 | 0.002 |
| | | | | 0.01377 | | | | | | | | |
| ExcessiveGWG | 1.0109 | 0.07688 | <0.001 | - | 0.002934 | <0.001 | 0.4210 | 0.08914 | <0.001 | 0.3377 | 0.08858 | <0.001 |
| | | | | 0.01916 | | | | | | | | |
| Months*excessiveGWG | - | 0.008187 | <0.001 | | | | | | | | | |
| | 0.03956 | | | | | | | | | | | |
| Overweight*excessiveGWG | -0.3071 | 0.1085 | 0.005 | | | | -0.2196 | 0.1199 | 0.07 | | | |
| Obesity*excessiveGWG | | | | | | | -0.3153 | 0.1632 | 0.05 | | | |
| Obesity*depression | -3.1860 | 1.3035 | 0.02 | 0.2192 | 0.06251 | <0.001 | | | | | | |
| Overweight*breastfeeding | -0.6095 | 0.6858 | 0.38 | 0.06743 | 0.02575 | 0.009 | -1.0562 | 0.6685 | 0.12 | | | |
| Obesity*breastfeeding | -1.7540 | 1.2027 | 0.15 | 0.1474 | 0.03693 | <0.001 | | | | | | |

| | | | | | | | | | | | |
|---|---------|---------|-------|---------|----------|--------|----------|----------|-------|---------|----------------|
| Multiparity | | | | - | 0.01928 | <0.001 | | | | | |
| | | | | 0.08697 | | | | | | | |
| Sedentarytime | | | | | | | 0.000332 | 0.000141 | 0.02 | | |
| Emotionaleating | | | | | | | 0.01628 | 0.006149 | 0.009 | 0.03297 | 0.009924 0.001 |
| M6*Δemotionaleating¹ | 0.03927 | 0.01300 | 0.003 | - | 0.000803 | 0.003 | | | | | |
| | | | | 0.00241 | | | | | | | |
| M6*overweight*Δuncontroledeating¹ | 0.03227 | 0.01564 | 0.04 | - | 0.000966 | 0.01 | 0.02928 | 0.01045 | 0.006 | 0.02730 | 0.01455 0.06 |
| | | | | 0.00239 | | | | | | | |

GWG = gestational weight gain; M6 = 6 months postpartum; PPWR = postpartum weight retention; %GWGL = percentage gestational weight gain loss

¹ Change between 6 weeks and 6 months postpartum

Supplementary file S4: Example cases to illustrate table 3

To illustrate table 3, two fictive postpartum women are compared, 'A' and 'B'. Both women A and B had a normal weight pre-pregnancy BMI, gave birth to a girl (reference), started exclusive breastfeeding, had no history of depression (reference), and were primiparous (reference). However, woman A and woman B differ in terms of kilograms of excessive weight gain in pregnancy, sedentary time and emotional eating score. Woman A gained 2 kg's in excess of the GWG guidelines, reported sitting 4 hours per day, and had an emotional eating score of 11. Woman B gained 6 kg's in excess of the GWG guidelines, reported sitting 8 hours per day, and had an emotional eating score of 56.

The evolution of PPWR for woman A is calculated as follows:

- Starting point at six weeks postpartum:
 $5.5 \text{ kg [for normal pre-pregnancy BMI]} + 1 \text{ kg} * 2 \text{ [for 2 kg EGWG]} = 7.5 \text{ kg}$
- Monthly evolution from six weeks to six months postpartum:
 $-0.5 \text{ kg [for normal pre-pregnancy BMI]} - 0.04 \text{ kg} * 2 \text{ [for 2 kg EGWG]} = -0.58 \text{ kg per month}$
- Monthly evolution from six months to twelve months postpartum:
 $-0.3 \text{ kg [for normal pre-pregnancy BMI]} - 0.04 \text{ kg} * 2 \text{ [for 2 kg EGWG]} = -0.38 \text{ kg per month}$

The evolution of PPWR for woman B would be calculated as follows:

- Starting point at six weeks postpartum:
 $5.5 \text{ kg [for normal pre-pregnancy BMI]} + 1 \text{ kg} * 6 \text{ [for 6 kg EGWG]} = 11.5 \text{ kg}$
- Monthly evolution from six weeks to six months postpartum:
 $-0.5 \text{ kg [for normal pre-pregnancy BMI]} - 0.04 \text{ kg} * 6 \text{ [for 6 kg EGWG]} = -0.74 \text{ kg per month}$
- Monthly evolution from six months to twelve months postpartum:
 $-0.3 \text{ kg [for normal pre-pregnancy BMI]} - 0.04 \text{ kg} * 6 \text{ [for kg EGWG]} = -0.54 \text{ kg per month}$

Figure S1 displays the expected PPWR of woman A and woman B based on these calculations.

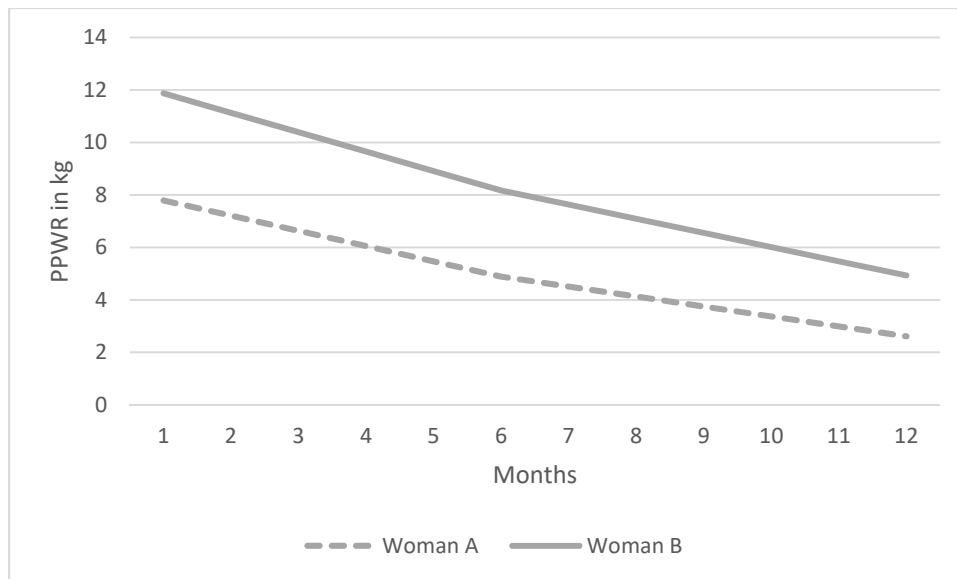


Figure S1. Evolution of PPWR in the first year postpartum for example cases A and B

Sedentary time, emotional eating score and starting exclusive breastfeeding did not significantly contribute to the model for PPWR and did thus not play a role in this calculation. However, sedentary time and emotional eating score did contribute to the model for fat percentage.

The evolution of fat percentage for woman A is calculated as follows:

- Starting point at six weeks postpartum:
 30.5 [for normal pre-pregnancy BMI] + $0.5 * 2$ [for 2 kg EGWG] + $0.1 * 4$ [for 4 sedentary hours per day] + $0.2 * 1.1$ [for an emotional eating score of 11] = 32.12 %
- Monthly evolution from six weeks to six months postpartum:
 -0.5 % [for normal pre-pregnancy BMI]
- Monthly evolution from six months to twelve months postpartum:
 -0.3 % [for normal pre-pregnancy BMI]

The evolution of fat percentage for woman B is calculated as follows:

- Starting point at six weeks postpartum:
 30.5 [for normal pre-pregnancy BMI] + $0.5 * 6$ [for 6 kg EGWG] + $0.1 * 8$ [for 8 sedentary hours per day] + $0.2 * 5.6$ [for an emotional eating score of 56] = 35.42 %
- Monthly evolution from six weeks to six months postpartum:
 -0.5 % [for normal pre-pregnancy BMI]
- Monthly evolution from six months to twelve months postpartum:
 -0.3 % [for normal pre-pregnancy BMI]

Besides pre-pregnancy BMI, none of the other variables significantly contributed to the slope of the monthly evolution in the model for fat percentage. Figure S2 displays the expected evolution of fat percentage of woman A and woman B based on these calculations.

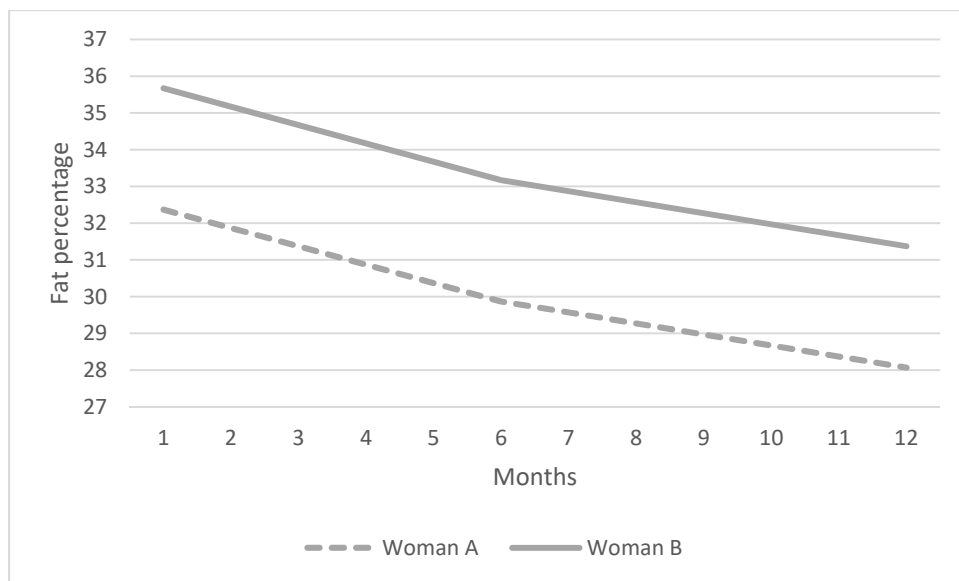


Figure S2. Evolution of fat percentage in the first year postpartum for example cases A and B