**Supplementary material**

Statistical analysis

The effects of the 4-month exercise intervention and counselling group on plasma glucose, lipid profile, C reactive protein concentrations, blood pressure, and heart rate were assessed with regression analyses (supplementary table 1). The analysis included the 150 women based on the assigned intervention at the time of randomisation, regardless of adherence to the exercise program and missing data (i.e., intention-to-treat), with a multiple imputation made for the missing values. Changes (post-pre values) in all the outcome variables were calculated. Subsequently, the changes (post-pre) of these outcomes were included in the linear regression analyses as dependent variables in separate models, whereas the group (counselling=0 and exercise=1) was included as an independent variable. Different potential confounders were employed in these analyses. We analysed the potential confounders that could overestimate the results or influence the effects of exercise, and we finally included the most relevant. Depending on the model, the data provided was unadjusted for any confounder, adjusted for the baseline value of each variable, adjusted for the baseline values and Mediterranean Diet Score, adjusted for baseline value and heart rate, and adjusted for BMI, total cholesterol, triglycerides and systolic blood pressure.

Repeated measures ANOVA was used to compare between pre and post values for each variable and for both counselling and exercise groups in per-protocol data (supplementary table 2) and in intention-to-treat data (supplementary table 3). All the variables were checked for normality of distribution before the analyses. Different potential confounders were employed in these analyses showing results in different models (P values). We analysed the potential confounders that could overestimate the results or influence the effects of exercise with partial correlations, and we finally included the most relevant. Depending on the model, the data provided was unadjusted for any confounder, adjusted for MDS, adjusted for heart rate and adjusted for BMI, total cholesterol, triglycerides and systolic blood pressure.

**Supplementary table 1. Intention-to-treat analyses showing the effect of a 4-month concurrent exercise program on plasma glucose, lipid profile, blood pressure and heart rate in perimenopausal women (n=150).**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | **Unadjusted difference** | | | **Model adjusted for baseline values of each variable** | | | **Model adjusted for baseline values and MDS** | | | **Model adjusted for baseline values and HR** | | | **Model adjusted for baseline values, BMI, total holesterol, tryglicerides, and SBP** | | |
|  | **Changes in counselling group (n=75)** | **Change in exercise group (n=75)** | **B** | **CI (95%) for B** | **p** | **B** | **CI (95%) for B** | **p** | **B** | **CI (95%) for B** | **p** | **B** | **CI (95%) for B** | **p** | **B** | **CI (95%) for B** | **p** |
| Glucose, ml/dl | -7,36 (8,99) | -4,10 (8,56) | 3.261 | (0.43, 6.09) | 0.024 | 3.752 | (0.97, 6.54) | 0.009 | 3.793 | (1.00, 6.59) | 0.008 | 3.343 | (0.53, 6.15) | 0.020 | 3.368 | (0.68, 6.05) | 0.014 |
| Total cholesterol, ml/dl | -17,4 (18,9) | -21,7 (28,6) | -4.229 | (-12.1, 3.60) | 0.287 | -2.944 | (-9.40, 3.51) | 0.369 | -3.281 | (-9.64, 3.08) | 0.310 | -2.875 | (-9.46, 3.72) | 0.390 | -3.020 | (-9.46, 3.42) | 0.355 |
| LDL cholesterol, ml/dl | -20,4 (15,4) | -22,6 (20,9) | -2.218 | (-8.13, 3.70) | 0.460 | -1738 | (-6.52, 3.04) | 0.473 | -2.054 | (-6.71, 2.60) | 0.385 | -1.533 | (-6.41, 3.34) | 0.535 | -1.268 | (-6.24, 3.71) | 0.615 |
| HDL cholesterol, ml/dl | -0,80 (10,2) | 2,10 (9,04) | 2.898 | (-0.21, 6.01) | 0.067 | 2.854 | (-0.01, 5.72) | 0.051 | 2.750 | (-0.10, 5.60) | 0.058 | 3.142 | (0.23, 6.05) | 0.034 | 3.166 | (0.17, 6.16) | 0.038 |
| Tryglicerides, ml/dl | 16,9 (63,7) | 3,66 (78,6) | -13.21 | (-36.3, 9.87) | 0.260 | -13.33 | (-36.0, 9.32) | 0.247 | -13.08 | (-35.7, 9.72) | 0.260 | -19.51 | (-42.0, 2.94) | 0.088 | -13.94 | (-35.9, 8.01) | 0.211 |
| CRP, ml/dl | -1,33 (3,52) | -0,56 (3,35) | 0.768 | (-0.34, 1.88) | 0.173 | 0.689 | (0.08, 1.30) | 0.027 | 0.692 | (0.08, 1.31) | 0.027 | 0.609 | (-0.01, 1.23) | 0.054 | 0.805 | (-0.31, 1.91) | 0.154 |
| SBP, mmHg | -8.12 (12.8) | -6.34 (12.3) | 1.783 | (-2.28, 5.84) | 0.387 | 1.934 | (-1.53, 5.40) | 0.272 | 1.957 | (-1.52, 5.44) | 0.268 | 1.253 | (-2.23, 4.74) | 0.478 | 1.843 | (-1.46, 5.15) | 0.272 |
| DBP, mmHg | -3.57 (7.36) | -5.09 (6.11) | -1.513 | (-3.70, 0.67) | 0.173 | -1.402 | (-3.47, 0.67) | 0.183 | -1.334 | (-3.40, 0.73) | 0.204 | -1.516 | (-3.63, 0.57) | 0.158 | -1.525 | (-3.60, 0.55) | 0.148 |
| HR, beats/min | 1.56 (6.78) | -0.53 (9.72) | -2088 | (-4.79, 0.62) | 0.129 | -1.091 | (-3.70, 1.52) | 0.410 | -1.092 | (-3.72, 1.53) | 0.412 | -1.091 | (-3.70, 1.52) | 0.410 | -1.966 | (-4.62, 0.68) | 0.145 |

Mean results show the differences between post-pre intervention results for each variable. LDL, Low-density-lipoprotein; HCL, High-density-lipoprotein; CRP, C-Reactive Protein; SBP, systolic blood pressure; DBP, diastolic blood pressure, HR, resting heart rate, MDS, Mediterranean Diet Score; BMI, Body Mass Index, CI, confidence interval.

**Supplementary table 2. Repeated measures ANOVA showing differences between counselling and exercise for pre and post values of blood glucose, lipid profile, blood pressure and heart rate. Results for per-protocol data base** ¶.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Counselling** | | **Exercise** | | **Unadjusted model** | **Model adjusted for MDS** | **Model adjusted for HR** | **Model adjusted for BMI, Total Cholesterol, Triglycerides, SBP** |
|  | Pretest | Postest | Pretest | Postest | p | p | p | p |
|  | **n=20** | | **n=41** | |  |  |  |  |
| Glucose, ml/dl | 85.95 (8.93) | 79.67 (8.46) | 89.71 (15.59) | 86.02 (17.37) | 0.152 | 0.146 | 0.220 | 0.119 |
| Total cholesterol, ml/dl | 219.7 (35.52) | 207.6 (26.75) | 226.4 (36.72) | 205.4 (34.52) | 0.895 | 0.945 | 0.901 | 0.706 |
| LDL cholesterol, ml/dl | 144.0 (28.45) | 129.5 (17.69) | 144.08 (33.51) | 120.6 (33.19) | 0.497 | 0.395 | 0.474 | 0.073 |
| HDL cholesterol, ml/dl | 58.05 (15.87) | 58.84 (13.60) | 61.66 (13.17) | 62.29 (13.10) | 0.360 | 0.360 | 0.299 | 0.438 |
| Tryglicerides, ml/dl | 110.3 (55.63) | 118.0 (57.74) | 111.4 (55.48) | 123.2 (69.52) | 0.874 | 0.857 | 0.990 | 0.981 |
| CRP, ml/dl | 3.26 (3.73) | 2.56 (2.73) | 3.68 (3.90) | 2.94 (2.34) | 0.600 | 0.490 | 0.606 | 0.607 |
|  | |  | | --- | | **n=54** | | | **n=58** | |  |  |  |  |
| Systolic blood pressure, mmHg | 120.9 (12.95) | 113.2 (13.17) | 121.9 (14.02) | 114.9 (14.74) | 0.566 | 0.573 | 0.905 | 0.646 |
| Dyastolic blood pressure, mmHg | 75.87 (9.23) | 72.43 (10.60) | 76.14 (8.43) | 70.48 (8.96) | 0.612 | 0.575 | 0.245 | 0.313 |
| Resting heart rate, beats/min | 72.11 (7.95) | 74.78 (9.20) | 77.90 (11.31) | 55.52 (11.37) | 0.033 | 0.032 | - | 0.280 |

Values are mean (standard deviation). LDL, low density lipoprotein; HDL, high density lipoprotein; CRP, C-Reactive Protein; MDS, Mediterranean Diet Score; HR, resting heart rate; BMI, Body Mass Index, SBP, systolic blood pressure. ¶ Only women with available data and participants in the exercise group who attended ≥75% of the exercise sessions were included.

**Supplementary table 3. Repeated measures ANOVA showing differences between counselling and exercise for pre and post values of blood glucose, lipid profile, blood pressure and heart rate. Results for intention-to-treat data base (n=150).**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | |
|  | | **Counselling** | | **Exercise** | | **Unadjusted model** | **Model adjusted for MDS** | **Model adjusted for HR** | **Model adjusted for BMI, Total Cholesterol, Triglycerides, SBP** | |
|  | | Pretest | Postest | Pretest | Postest | p | p | p | p | |
| Glucose, ml/dl | | 87.3 (9.17) | 80.0 (10.9) | 90.2 (13.4) | 85.6 (14.4) | 0.023 | 0.031 | 0.051 | 0.018 | |
| Total cholesterol, ml/dl | | 222.9 (21.9) | 205.0 (21.2) | 224.8 (35.2) | 203.4 (27.8) | 0.892 | 0.995 | 0.806 | 0.891 | |
| LDL cholesterol, ml/dl | | 142.1 (17.6) | 121.6 (16.4) | 143.1 (31.2) | 120.5 (23.7) | 0.997 | 0.918 | 0.937 | 0.400 | |
| HDL cholesterol, ml/dl | | 60.7 (15.0) | 59.7 (13.0) | 60.1 (11.21) | 62.3 (12.6) | 0.543 | 0.596 | 0.398 | 0.624 | |
| Tryglicerides, ml/dl | | 107.2 (51.4) | 124.0 (67.0) | 106.4 (48.7) | 110.3 (88.3) | 0.434 | 0.454 | 0.217 | 0.337 | |
| CRP, ml/dl | | 3.80 (4.25) | 2.43 (2.25) | 3.53 (4.04) | 3.07 (2.02) | 0.569 | 0.626 | 0.917 | 0.598 | |
| Systolic blood pressure, mmHg | | 121.7 (15.9) | 113.6 (12.9) | 122.1 (14.3) | 115.7 (14.5) | 0.561 | 0.573 | 0.722 | 0.598 | |
| Dyastolic blood pressure, mmHg | | 75.6 (9.71) | 72.1 (10.1) | 76.3 (8.69) | 71.0 (8.89) | 0.839 | 0.779 | 0.479 | 0.665 | |
| Resting heart rate, beats/min | | 73.7 (9.26) | 75.4 (10.4) | 78.2 (11.5) | 77.2 (11.7) | 0.085 | 0.080 | - | 0.069 | |

Values are mean (standard deviation). LDL, low density lipoprotein; HDL, high density lipoprotein; CRP, C-Reactive Protein; MDS, Mediterranean Diet Score; HR, resting heart rate; BMI, Body Mass Index, SBP, systolic blood pressure.