

SUPPLEMENTAL MATERIAL

Avoiding Weight Gain in Cardiometabolic Disease: A Systematic Review

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Supporting Tables

Table S1. Participant characteristics in studies of patients with or at risk for diabetes and cardiovascular disease

| Author, year | Total N | Follow-up period | % Women | Mean Age, yrs | Race | Education | % Current Smoking | Comments |
|---|---------|------------------|-------------------------------|----------------------------------|------------|--------------------------------|-------------------|---|
| Abraira, 1980 ¹ | 30 | 24 months | 0 | Arm 1: 49 Arm 2: 52 | | | | Duration of diabetes in years Arm1: mean : 11 Arm2: mean : 12 All participants on insulin |
| Anderssen, 1995 ² Torjesen, 1997 ³ | 97 | 12 months | | | | | | |
| Babazono, 2007 ⁴ | 99 | Not reported | Arm1: 51.1 Arm2: 58 | Arm1: 64.5 Arm2: 64.3 | | | | ~30% with HTN at baseline in each group; 20% in intervention and 14.3% in control group with DM at baseline |
| Clark, 2004 ⁵ | 100 | Not reported | Overall: 42 | Overall: 59.5 | | | | |
| Gram, 2010 ⁶ | 68 | Not reported | Overall: n=31 | Arm1: 61 Arm2: 59 Arm3: 62 | | | | At baseline: statistically significant difference (P=0.04) for hip circumference (in cm): Arm 1 Control: 114 Arm 2 EP: 111 Arm 3 NW: 107 |
| Kumanyika, 2005 ⁷ | 1159 | Not reported | "approx two thirds were male" | | Black: 17% | "about half" college graduates | | |
| Plotnikoff, 2011 ⁸ | 96 | 12 Months | Overall: 60 | Overall: 60 (25-78) | NR | Some post secondary: 65% | NR | |
| Razquin, 2009 ⁹ | 187 | Not reported | Arm1: 54 | Arm1: 69 | | | | |

| | | | | | | | | |
|-------------------------------|------|--------------|--|---|--|--|--|---|
| | | | Arm2: 52 Arm3: 46 | Arm2: 67.48 Arm3: 68.40 | | | | |
| Razquin, 2010 ¹⁰ | 737 | Not reported | Arm1: 57 Arm2: 56 Arm3: 52 | Arm1: 68.3 Arm2: 67.7 Arm3: 67.6 | | | Arm1: 18 Arm2: 16 Arm3: 13 | Diabetes Arm 1: 69% Arm 2: 64% Arm 3: 63% |
| Zazpe, 2008 ¹¹ | 1776 | Not reported | Arm1: 57.7 Arm2: 53.8 Arm3: 49 | Arm1: 68 Arm2: 67.2 Arm3: 67 | Not reported | Less than high school Arm1: 75.9% Arm2: 76.0% Arm3: 72.6% | Arm1: 16.9 Arm2: 19.5 Arm3: 19.0 | Diabetes Arm1: 47.8% Arm2: 51% Arm3: 47.5% |
| Samaras, 1997 ¹² | 26 | 12 months | Overall: n=16 | Arm1: 60.5 Arm2: 60.5 | | | | Excluded current smokers |
| Stefanick, 1998 ¹³ | 367 | Not reported | report characteristics stratified by sex | Arm1: 56.9 Arm2: 47.8 note this is stratified by sex and not intervention | | | | All characteristics and results stratified by sex |
| Toobert, 2011 ¹⁴ | 280 | 6-12 months | Overall: 100% | Arm 1: 58.7 Arm 2: 55.6 Age differs by group P=0.009 | Latina: 100% | HS diploma: Arm 1: 27.1 Arm 2: 20 Some College: Arm 1: 30.1 Arm 2: 28.6 | Arm 1: 12.6 Arm 2: 9.2 | |
| Yates, 2010 ¹⁵ | 74 | Not reported | Overall: 31 | Overall: 65 | Asian/Pacific Islander overall: % : 26 | | Overall: 11 | 49% were taking aspirin, 7% were taking non-steroidal anti-inflammatory medication, 58% were taking statins, 34% were taking beta-blockers, and 19% were taking angiotensin-converting enzyme inhibitors. |

Table S2. Risk of bias in included studies

| | QUESTION* | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|-----------|---|---|---|---|---|---|---|---|---|-------------------|----|----|------------------------|----|----|----|----|----|--|----|----|----|----|----|-------|----|----|---|
| | Reporting | | | | | | | | | | External validity | | | Internal Validity-bias | | | | | | Internal Validity-confounding and selection bias | | | | | | Power | | | |
| | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | |
| Self Management | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clark, 2004 ⁵ | 100 | Y | N | N | N | Y | N | N | N | Y | Y | U | U | N | U | U | N | Y | Y | Y | Y | Y | Y | U | N | Y | N | Y | |
| Plotnikoff, 2011 ⁸ | 96 | Y | Y | Y | Y | Y | Y | N | N | N | U | U | Y | U | U | U | U | Y | U | Y | Y | Y | Y | U | Y | N | Y | Y | |
| Diet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Abraira, 1980 ¹ | 30 | Y | Y | Y | Y | P | N | Y | Y | N | N | U | U | Y | N | N | U | N | Y | Y | Y | Y | Y | N | N | N | U | N | |
| Razquin, 2010 ¹⁰ | 737 | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | U | U | U | U | U | U | N | Y | Y | Y | Y | U | Y | Y | Y | N | N | |
| Razquin, 2009 ⁹ | 187 | Y | Y | Y | Y | P | Y | Y | Y | N | N | U | U | U | N | U | U | N | Y | N | Y | Y | U | Y | Y | N | N | N | |
| Exercise | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Yates, 2010 ¹⁵ | 74 | Y | Y | Y | Y | P | Y | Y | N | Y | Y | U | U | U | U | U | Y | Y | Y | Y | U | Y | Y | Y | Y | U | N | N | N |
| Torjesen, 1997 ³ | 219 | Y | Y | N | Y | P | Y | Y | N | Y | N | U | U | N | N | N | U | N | Y | Y | Y | Y | Y | Y | U | N | N | N | |
| Combination | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kumanyika, 2005 ⁷ | 115 9 | Y | Y | Y | Y | Y | Y | Y | N | N | N | U | U | U | N | Y | N | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | U | Y |
| Samaras, 1997 ¹² | 26 | Y | Y | Y | Y | Y | N | Y | N | N | N | U | U | Y | U | U | Y | N | Y | Y | Y | Y | U | Y | U | N | U | N | |
| Stefanick, 1998 ¹³ | 367 | Y | Y | Y | Y | P | Y | Y | N | Y | Y | U | U | U | N | U | Y | U | Y | U | Y | U | U | Y | U | U | Y | N | |
| Babazono, 2007 ⁴ | 99 | Y | Y | Y | Y | P | Y | Y | N | N | N | Y | U | Y | N | U | U | N | Y | N | Y | Y | Y | Y | U | N | N | N | |
| Toobert, 2011 ¹⁴ | 280 | Y | Y | Y | Y | Y | Y | N | Y | Y | U | N | Y | N | U | Y | U | Y | N | Y | Y | Y | Y | U | Y | Y | N | Y | |
| Gram, 2010 ¹⁶ | 68 | Y | Y | Y | Y | Y | Y | Y | Y | N | N | U | U | U | U | U | U | N | Y | Y | Y | Y | U | Y | U | Y | Y | Y | |

Table S3. Strength of evidence of studies among adults with or at risk for cardiovascular disease or diabetes mellitus

| Number of Studies, Participants | Domains Pertaining to Strength of Evidence | | | | Strength of evidence Range of between- group mean difference if available (reference = control) |
|------------------------------------|--|--|---|---|---|
| BMI change | | | | | |
| Self-Management interventions | Risk of Bias | Consistency | Directness | Precision | |
| 2 RCTs 196 | Moderate based on lack of reporting on masking of outcome assessors and lack of adequate reporting | Consistent | Indirect (weight maintenance not stated goal) | Imprecise based on lack of reporting on variability | Low Range: -1.76 kg/m ² |
| Diet interventions | Risk of Bias | Consistency | Directness | Precision | |
| 1 RCT 1551 | Moderate based on lack of reporting on masking and lack of internal validity based on q14-27 | Not applicable (one study) | Indirect (weight maintenance not stated goal) | Imprecise (no measure of variability) | Low Range: not available |
| Physical activity interventions | Risk of Bias | Consistency | Directness | Precision | |
| 2 controlled trials 166 | Moderate based on lack of reporting on masking of outcome assessors and completers analysis for 1 | Inconsistent (based on different signs for between group differences) | Indirect | Imprecise | Low Range: -0.2 to -0.7 kg/m ² |

| | | | | | |
|--------------------------------|--|--------------|---|---|--|
| | study | | | | |
| Combination interventions | Risk of Bias | Consistency | Directness | Precision | |
| 4 RCTs 384 | Moderate based on lack of reporting on masking and lack of internal validity based on q14-27 | Consistent | Indirect (weight maintenance not stated goal) | Imprecise based on lack of reporting on variability and width of CI > 0.8 units when provided | Low Range: -0.39 to -0.71 kg/m ² |
| Weight change | | | | | |
| Diet intervention | Risk of Bias | Consistency | Directness | Precision | |
| 2 controlled trials 767 | High based on lack of randomization, lack of reporting on masking, and lack of internal validity by q14-27 | Consistent | Indirect (weight maintenance not stated goal in one study but was in the other) | Imprecise (don't have enough measures of variability) | Low Range: -0.11 to -0.84 kg |
| Physical activity intervention | Risk of Bias | Consistency | Directness | Precision | |
| 2 controlled trials 166 | Moderate based on lack of reporting on masking of outcome assessors and completers analysis for 1 study | Inconsistent | Indirect | Imprecise (on cusp with one study being imprecise and one not based on 2.5 kg width of CI) | Low Range: -0.3 to -2.0 kg |
| Combination intervention | Risk of Bias | Consistency | Directness | Precision | |
| 4 controlled trials | Moderate based on lack | Consistent | Indirect | Imprecise | Low |

| | | | | | |
|--------------------------------|--|----------------------------|---|--|---------------------------------|
| 1719 | of masking | | | | Range: -0.1 to -1.26 kg |
| Waist circumference | | | | | |
| Self-Management interventions | Risk of Bias | Consistency | Directness | Precision | |
| 2 RCTs 196 | Moderate based on lack of reporting on masking of outcome assessors and lack of adequate reporting | Consistent | Indirect (weight maintenance not stated goal) | Imprecise based on lack of reporting on variability and width of CI > 2 cm when provided | Low Range: -3.87 cm |
| Diet intervention | Risk of Bias | Consistency | Directness | Precision | |
| 1 controlled trial 187 | Moderate based on lack of reporting on masking of outcome assessors and lack of adequate reporting | Not applicable (one study) | Indirect (weight maintenance not stated goal) | Imprecise based on CI >2cm | Low Range: -0.34 to -0.74 cm |
| Physical activity intervention | Risk of Bias | Consistency | Directness | Precision | |
| 1 controlled trial 92 | Moderate risk of bias based on lack of masking of outcome assessors | Not applicable (one study) | Indirect | Imprecise | Low Range: -2.8 cm |
| Combination intervention | Risk of Bias | Consistency | Directness | Precision | |
| 1 RCT 68 | Moderate risk of bias based on lack of reporting on masking of | Not applicable (one study) | Indirect | Imprecise | Low Range: -2.38 cm |

| | | | | | |
|--------------------------------|--|--|---|-------------------|-----------------------------|
| | outcome assessors | | | | |
| Adherence | | | | | |
| Physical activity intervention | Risk of Bias | Consistency | Directness | Precision | |
| 1 controlled trial 92 | Moderate risk of bias based on lack of masking of outcome assessors | Not applicable (one study) | Indirect | Imprecise (N<400) | Low Range: 57% |
| Combination | | | | | |
| 3 RCT 191 | Moderate based on lack of reporting on masking and lack of internal validity based on q14-27 | Inconsistent (by magnitude since is adherence, sign is not applicable) | Indirect (weight maintenance not stated goal) | Imprecise (N<400) | Low Range: 46% to 100% |
| Functional Status | | | | | |
| Combination intervention | Risk of Bias | Consistency | Directness | Precision | |
| 1 controlled trial 68 | Moderate risk of bias based on lack of masking of outcome assessors | Not applicable (one study) | Indirect | Imprecise | Low Range: Not available |

Table S4. Waist circumference results in studies of populations with or at risk for diabetes and cardiovascular disease

| Author, yr Arm | Baseline N | Baseline waist circumference (SD), cm | 12 mo N | Waist circumference at 12 months (SD), cm | Change from baseline at 12 mo, cm | Between-group difference at 12 months (95% CI), cm |
|--|---------------|---|---------|--|---|---|
| Self-management intervention | | | | | | |
| Clark, 2004⁵ | | | | | | |
| Usual care | 50 | 101.25 (11.4) | NR | 103.6 (10.63) | 2.35, P=0.001 | reference |
| Goal-setting - diet and physical activity | 50 | 104.22 (10.46) | NR | 102.7 (10.25) | -1.52, P=0.002 | -3.87 (-2.1 to 9.9) |
| Plotnikoff, 2011⁸ | | | | | | |
| Diabetes education | 49 | 110.4 (12.7) | 49 | | -3.2 ^a , P<0.01 | P>0.01 |
| Diabetes education + physical activity supplement | 47 | 111.8 (16.7) | 47 | | -5.2 ^a , P<0.01 | |
| Physical activity intervention¹⁷ | | | | | | |
| Anderssen, 1995² | | | | | | |
| Usual care | 43 | 102.3 (SE: 1.4) | 43 | 103.2 | 0.9 (SE: 0.4) | |
| Endurance exercise | 52 | 102.6 (SE: 1.4) | 52 | 100.7 | -1.9 (SE: 0.6) | -2.8, P<0.05 |
| Diet interventions | | | | | | |
| Razquin, 2009^{9b} | | | | | | |
| Minimal intervention | 59 | 93.79 (9.78) | | | | |
| Mediterranean diet - Virgin olive oil | 65 | 98.83 (10.14) | | | | |
| Mediterranean diet - Mixed nuts | 63 | 96.67 (9.30) | | | | |
| Combination interventions | | | | | | |
| Gram, 2010⁶ | | | | | | |
| Minimal intervention | 22 | 113 (10) | 20 | 112 (SE: 2) | | |
| Self-mgmt + aerobic exercise + strength training | 24 | 110 (10) | 24 | 108 (SE: 2) | -2.38 (95% CI: -4.73 to -0.03; SE: 1.2; P=0.012) | |
| Self-mgmt + Nordic walking | 22 | 109 (11) | 21 | 108 (SE: 2) | -1.62 (95% CI: -3.76 to 0.52; SE: 1.1) | |

^a Adjusted but covariates unclear

^b Results at 36 months: Minimal intervention, n=59, mean change from baseline (SD), 0.11 (4.56) cm; Mediterranean - virgin olive oil, n=65, mean change from baseline (SD), -0.63 (4.76), Mediterranean – mixed nuts, n=63, mean change from baseline (SD), -0.23 (3.60) cm

Table S5. Effects of self management, diet, and combination interventions on HbA1c in studies including patients with diabetes

| Author, year | Baseline N | Baseline HbA1c, mean (SE), % | N at 12 months | HbA1c at 12 months, mean (SE), % | Between-group difference in change from baseline at 12 months, % | Notes |
|---|------------|------------------------------|----------------|-----------------------------------|--|---|
| Self Management | | | | | | |
| Clark M, 2004⁵ | | | | | | |
| Control | | | | | | |
| Self management | | | | | | No significant interaction between time and intervention for the combination of five laboratory measurements (cholesterol, HDL, LDL, TG, HbA1c) |
| Plotnikoff, 2011⁸ | | | | | | |
| Diabetes education | 49 | 7.8 (2.0) ^a | 49 | 7.2 (1.6) ^a | | |
| Diabetes education + physical activity supplement | 47 | 7.3 (1.3) ^a | 47 | 7.2 (1.4) ^a | +0.1 (P>0.05) versus diabetes education | Difference in adjusted change from baseline reported |
| Diet | | | | | | |
| Abraira, 1980¹ | | | | | | |
| Razquin, 2009⁹ | | | | | | |
| Combination | | | | | | |
| Samaras K, 1997¹² | | | | | | |
| Control | 13 | 6.8 (0.6) | 13 | Change from baseline: 0.86 (0.27) | | |
| Self management + physical activity | 13 | 5.6 (0.3) | 13 | Change from baseline: 0.86 (0.29) | 0 | |
| Toobert D, 2011^{14b} | | | | | | |
| Usual Care | 138 | 8.4 (0.02) | 138 | 7.8 (0.02) | | |
| Self management + diet + physical activity | 142 | 8.4 (0.03) | 142 | 8.4 (0.03) | 0.6% versus usual care | No significant interaction between time and intervention in GEE model |

^a Standard deviation reported

^b HbA1c at 24 months: Usual care, 7.8%; Self management + diet + physical activity, 8.4% (0.6% vs usual care)

Table S6. Effects of self management, diet, physical activity, and combination interventions on blood pressure

| Author, year | Baseline N | Baseline BP, mean (SD), mmHg | N at 12 months | BP at 12 months, mean (SD), mmHg | Between-group difference in change from baseline at 12 months (95% CI), mmHg | BP at 36 months, mean (SD), mmHg | Between-group difference in change from baseline at 36 months (95% CI), mmHg |
|---|------------|-------------------------------|----------------|---|--|----------------------------------|--|
| <i>Self Management</i> | | | | | | | |
| Clark, 2004^{5a} | | | | | | | |
| Plotnikoff, 2011⁸ | | | | | | | |
| Diabetes education | 49 | SBP: 134.0 (16.1) | 49 | SBP: -9.3 (-12.9 to -5.6) ^b | | | |
| | | DBP: 76.4 (9.3) | | DBP: -4.4 (-7.2 to -1.6) ^b | | | |
| Diabetes education + physical activity supplement | 47 | SBP: 134.0 (17.6) | 47 | SBP: -10.9 (-14.7 to -7.1) ^b | -1.6; P>0.05 versus diabetes education | | |
| | | DBP: 76.5 (9.5) | | DBP: -5.6 (-8.6 to -2.7) ^b | -1.2; P>0.05 versus diabetes education | | |
| <i>Diet</i> | | | | | | | |
| Abraira, 1980^{1a} | | | | | | | |
| Zazpe, 2008^{11a} | | | | | | | |
| <i>Physical Activity Interventions</i> | | | | | | | |
| Yates, 2010^{15a} | | | | | | | |
| Anderssen, 1995² | | | | | | | |
| Control | 43 | SBP: 128.7 (1.5) ^c | 43 | SBP: -0.5 (1.7) ^c | | | |
| | | DBP: 87.0 (1.1) ^c | | DBP: -0.7 (1.3) ^c | | | |
| Exercise | 49 | SBP: 132.1 (1.6) ^c | 49 | SBP: -2.2 (1.1) ^c | -1.7 (P>0.05) versus control | | |
| | | DBP: 89.2 (1.1) ^c | | DBP: -2.7 (1.0) ^c | -2.0 (P>0.05) versus control | | |

| Combination | | | | | | |
|---|-----|----------------------|----|--------------------------------|-----------------------|--|
| Toobert, 2011 ^{14 a} | | | | | | |
| Samaras, 1997 ^{12 a} | | | | | | |
| Babazono, 2007 ⁴ | | | | | | |
| Control | 41 | SBP: 132.0 (17.8) | 41 | SBP: 123.3 (15.2) | | |
| | | DBP: 79.3 (11.8) | | DBP: 75.0 (10.2) | | |
| Self management + diet + physical activity | 46 | SBP: 127.6 (15.7) | 46 | SBP: 122.1 (16.3) ^d | | |
| | | DBP: 78.2 (9.0) | | DBP: 74.5 (10.2) ^d | 0.6 versus control | |
| Stefanick ML, 1998 ¹³ | | | | | | |
| Men | | | | | | |
| All men | 190 | SBP: 114.3 (11.4) | | | | |
| | | DBP: 76.1 (7.4) | | | | |
| Control | 46 | | 46 | SBP: 0.3 (7.9) ^e | | |
| | | | | DBP: 1.8 (6.1) ^e | | |
| Diet | 49 | | 49 | SBP: -1.7 (6.4) ^e | | |
| | | | | DBP: -0.3 (5.2) ^e | | |
| Physical activity | 47 | | 47 | SBP: -0.6 (7.3) ^e | | |
| | | | | DBP: -1.1 (7.1) ^e | | |
| Diet + physical activity | 48 | | 48 | SBP: -3.0 (6.8) ^{ef} | P<0.01 versus control | |
| | | | | DBP: -3.0 (6.6) ^{eg} | P<0.01 versus control | |
| Women | | | | | | |
| All women | 177 | SBP: 115.5 (12.8) | | | | |
| | | DBP: 73.2 (7.4) | | | | |
| Control | 45 | | 45 | SBP: -2.4 (7.6) ^e | | |
| | | | | DBP: -0.6 (5.9) ^e | | |
| Diet | 46 | | 46 | SBP: -3.5 (9.2) ^e | | |
| | | | | DBP: -1.9 (5.0) ^e | | |
| Physical activity | 43 | | 43 | SBP: -1.1 (8.9) ^e | | |
| | | | | DBP: -1.4 (5.9) ^e | | |
| Diet + physical activity | 43 | | 43 | SBP: -3.1 (8.4) ^{eh} | | |
| | | | | DBP: -2.7 (4.6) ^{ei} | | |

| Kumanyika SK, 2005⁷ | | | | | | | |
|---|----|-----------------|----|----------------|--|------------------------------|------------------------------------|
| Usual Care | | | | | | SBP: 0.6 (8.5) ^e | |
| | | | | | | DBP: -2.4 (7.0) ^e | |
| Self management + Diet | | | | | | SBP: -0.7 (9.0) ^e | SBP: -1.35 (P=0.0165) ^j |
| | | | | | | DBP: -3.0 (6.5) ^e | DBP: -0.61 (P=0.16) ^j |
| Gram B, 2010⁶ | | | | | | | |
| Control | 22 | SBP: 152 (18.3) | 20 | SBP: 145 (5.0) | | | |
| | | DBP: 89 (10.7) | | DBP: 88 (2.0) | | | |
| Self management + Nordic walking | 22 | SBP: 153 (25.1) | 21 | SBP: 148 (5.0) | SBP: 1.39 (-11.14 to 13.93) versus control | | |
| | | DBP: 88 (11.2) | | DBP: 84 (2.0) | DBP: -3.95 (-8.73 to 0.83) versus control | | |
| Self management + exercise prescription | 24 | SBP: 152 (19.4) | 24 | SBP: 142 (3.0) | SBP: -3.73 (-14.54 to 7.08) versus control | | |
| | | DBP: 85 (10) | | DBP: 83 (2.2) | DBP: -4.23 (-9.64 to 1.17) | | |

^a Blood pressure not reported

^b Adjusted value at 12 months - baseline

^c Standard error reported

^d Statistical significance of between-group difference in SBP and DBP not reported

^e Change from baseline reported

^f P=0.13 for overall difference in SBP between groups from analysis of variance

^g P=0.003 for overall difference in DBP between groups from analysis of variance

^h P=0.59 for overall difference in SBP between groups from analysis of variance

ⁱ P=0.33 for overall difference in DBP between groups from analysis of variance

^j Adjustment for baseline variables: ethnicity, gender, age, BP, BMI, sodium excretion

Table S7. Effects of self management, diet, physical activity, and combination interventions on blood pressure in race-sex subgroups

| Author, year | N | Baseline BP | Change in BP at 36 months | Between-group difference in BP change at 36 mo |
|-------------------------------------|-----|---|--|---|
| Kumanyika, 2005 ⁷ | | | | |
| White Men | | | | |
| Usual care | 345 | Mean SBP (SD): 127.1 (6.3) Mean DBP (SD): 85.9 (1.9) | Mean change in SBP from baseline (SD): -0.3 (7.8) Mean change in DBP from baseline (SD): -2.7 (7.7) | Reference |
| Diet | 336 | Mean SBP (SD): 127.2 (6.5) Mean DBP (SD): 86.2 (2.0) | Mean SBP (SD): -1.3 (8.5) Mean DBP (SD): -3.0 (6.2) | Mean SBP (95% CI): -1.1 (-2.4 to 0.2) Mean DBP (95% CI): -0.3 (-1.4 to 0.8) |
| Black Men | | | | |
| Usual care | 47 | Mean SBP (SD): 126.2 (6.6) Mean DBP (SD): 85.7 (1.9) | Mean change in SBP from baseline (SD): 1.7 (7.4) Mean change in DBP from baseline (SD): -1.9 (7.0) | Reference |
| Diet | 39 | Mean SBP (SD): 128.0 (6.1) Mean DBP (SD): 86.2 (2.0) | Mean SBP (SD): 2.2 (10.3) Mean DBP (SD): -0.6 (8.1) | Mean SBP (95% CI): 0.5 (-3.8 to 4.9) Mean DBP (95% CI): 1.4 (-2.2 to 4.9) |
| White Women | | | | |
| Usual care | 129 | Mean SBP (SD): 127.8 (6.5) Mean DBP (SD): 85.7 (1.9) | Mean change in SBP from baseline (SD): 2.1 (10.4) Mean change in DBP from baseline (SD): -1.9 (6.8) | Reference |
| Diet | 129 | Mean SBP (SD): 128.2 (6.9) Mean DBP (SD): 85.8 (1.9) | Mean SBP (SD): 0.5 (8.9) Mean DBP (SD): -3.4 (5.8) | Mean SBP (95% CI): -1.5 (-4.0 to 0.9) Mean DBP (95% CI): -1.4 (-3.1 to 0.2) |
| Black Women | | | | |
| Usual care | 56 | Mean SBP (SD): 128.0 (6.6) Mean DBP (SD): 85.7 (2.0) | Mean change in SBP from baseline (SD): 2.0 (9.2) Mean change in DBP from baseline (SD): -1.6 (7.5) | Reference |
| Diet | 61 | Mean SBP (SD): 129.0 (6.8) Mean DBP (SD): 86.0 (1.8) | Mean SBP (SD): -1.0 (11.1) Mean DBP (SD): -4.0 (8.2) | 36 mo Mean SBP (95% CI): -3.0 (-7.2 to 1.3) Mean DBP (95% CI): -2.4 (-5.7 to 0.8) |

Table S8. Effects of self management, diet, physical activity, and combination interventions on LDL and HDL cholesterol

| Author, year | Baseline N | Baseline cholesterol, mean (SD), mg/dl | N at 12 months | 12 months, mean (SD), mg/dl | Between-group difference in change from baseline at 12 months (95% CI), mg/dl |
|---|------------|---|----------------|---|---|
| Self Management | | | | | |
| Clark M, 2004 ^{5a} | | | | | |
| Plotnikoff RC, 2011 ⁸ | | | | | |
| Diabetes education | 49 | LDL: 112 (1.7) HDL: 46.3 (11.6) | 49 | LDL: -15.4 (-27.0 to -7.7) ^b HDL: 3.9 (0.0 to 7.7) ^b | |
| Diabetes education + physical activity supplement | 47 | LDL: 104.2 (46.3) HDL: 42.5 (11.6) | 47 | LDL: -15.4 (-27.0 to -7.7) ^b HDL: 3.9 (3.9 to 7.7) ^b | P>0.05 versus diabetes education P>0.05 versus diabetes education |
| Diet | | | | | |
| Abraira C, 1980 ^{1c} | | | | | |
| Zazpe I, 2008 ^{11c} | | | | | |
| Physical Activity Interventions | | | | | |
| Yates T, 2010 ¹⁵ | | | | | |
| Control | 26 | HDL: 50.2 [42.5 to 54.0] ^d | 26 | HDL: 0.0 (-3.9 to 3.9) ^e | |
| Exercise | 24 | HDL: 50.2 [42.5 to 57.9] | 24 | HDL: 0.0 (-30.9 to 30.9) | HDL: -0.0 (-3.9 to 3.9); P= 0.808 |
| Exercise + pedometer | 24 | HDL: 46.3 [42.5 to 54.0] | 24 | HDL: 0.0 (-3.9 to 3.9) | HDL: -0.0 (-3.9 to 3.9); P=0.569 |
| Anderssen, 1995² | | | | | |
| Control | 43 | LDL: 176.4 (5.0) ^f HDL: 40.2 (1.2) ^f | 43 | LDL: -8.5 (3.5) ^f HDL: 0.6 (0.6) ^f | |
| Exercise | 49 | LDL: 162.9 (3.9) ^f HDL: 39.0 (0.8) ^f | 49 | LDL: -5.0 (2.7) ^f HDL: 1.5 (0.8) ^f | P>0.05 versus control P>0.05 versus control |
| Combination | | | | | |
| Toobert, 2011 ^{14c} | | | | | |
| Samaras K, 1997 ¹² | | | | | |

| | | | | | |
|--|-----|------------------------------|----|---------------------------------|--|
| Control | 13 | HDL: 42.5 (3.9) ^f | 13 | HDL: -2.7 (1.5) ^{hf} | |
| Self management + physical activity | 13 | HDL: 42.5(3.9) ^f | 13 | HDL: -0.4 (1.5) ^{hf} | |
| Babazono A, 2007⁴ | | | | | |
| Control | 41 | LDL: 123.8. (28.2) | 41 | LDL: 123.9 (26.6) | |
| | | HDL: 55.7 (12.9) | | HDL: 56.5 (15.6) | |
| Self management + diet + physical activity | 46 | LDL: 121.0 (29.2) | 46 | LDL: 119.6 (28.0) ^g | |
| | | HDL: 54.5 (13.4) | | HDL: 56.7 (14.2) ^g | |
| Stefanick ML, 1998¹³ | | | | | |
| Men | | | | | |
| All men | 190 | LDL: 155.8 (14.2) | | | |
| | | HDL: 35.8 (4.4) | | | |
| Control | 46 | | 46 | LDL: -4.6 (21.1) ^h | |
| | | | | HDL: -0.2 (4.3) ^h | |
| Diet | 49 | | 49 | LDL: -10.8 (18.8) ^h | |
| | | | | HDL: -0.8 (4.4) ^h | |
| Physical activity | 47 | | 47 | LDL: -3.6 (18.8) ^h | |
| | | | | HDL: 1.2 (4.4) ^h | |
| Diet + physical activity | 48 | | 48 | LDL: -20.0 (17.3) ^{hi} | P<0.001 versus control and physical activity |
| | | | | HDL: 0.4 (5.3) ^{hj} | |
| Women | | | | | |
| All women | 177 | LDL: 160.7 (18.4) | | | |
| | | HDL: 47.0 (6.7) | | | |
| Control | 45 | | 45 | HDL: -2.5 (16.6) ^h | |
| | | | | LDL: 1.0 (6.1) ^h | |
| Diet | 46 | | 46 | LDL: -7.3 (18.9) ^h | |
| | | | | HDL: 0.3 (6.0) ^h | |
| Physical activity | 43 | | 43 | LDL: -5.6 (19.4) ^h | |
| | | | | HDL: 2.3 (6.7) ^h | |
| Diet + physical activity | 43 | | 43 | LDL: -14.5 (22.2) ^{hk} | P<0.05 versus control |
| | | | | HDL: -1.1 (6.4) ^{hl} | |
| Kumanyika SK, 2005^{7c} | | | | | |

| Gram B, 2010 ⁶ | | | | | |
|---|----|-------------------|----|--------------------------------|---|
| Control | 22 | LDL: 98.8 (25.87) | 20 | LDL: 100.4 (19.3) ^f | |
| | | HDL: 42.5 (14.3) | | HDL: 92.7 (7.7) ^f | |
| Self management + Nordic walking | 22 | LDL: 98.8 (32.8) | 21 | LDL: 69.5 (7.7) ^f | LDL: -15.8 (-39.4 to 7.7) versus control ^m |
| | | HDL: 42.5 (11.2) | | HDL: 88.8 (7.7) ^f | HDL: -6.2 (-22.4 to 10.4) versus control |
| Self management + exercise prescription | 24 | LDL: 99.2 (23.6) | 24 | LDL: 100.4 (15.4) ^f | LDL: 12.0 (-23.2 to 46.7) versus control |
| | | HDL: 44.8 (16.6) | | HDL: 104.2 (7.7) ^f | HDL: 7.3 (-5.0 to 26.6) versus control |

^a No significant interaction between time and intervention for the combination of five laboratory measurements (cholesterol, HDL, LDL, TG, HbA1c)

^b Adjusted value at 12 months - baseline

^c LDL and HDL cholesterol not reported

^d Median [interquartile range]

^e Mean change from baseline (95% confidence interval)

^f Standard error reported

^g Statistical significance of between-group difference in SBP and DBP not reported

^h Change from baseline reported

ⁱ P<0.001 for overall difference in LDL between groups from analysis of variance

^j P=0.21 for overall difference in HDL between groups from analysis of variance

^k P=0.03 for overall difference in LDL between groups from analysis of variance

^l P=0.09 for overall difference in HDL between groups from analysis of variance

^m Adjusted for baseline value of LDL or HDL

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