Supplemental Table 1: Changes in visceral adiposity relative to control and characteristics of exercise interventions[a]

Author, year	Duration, months	Type of intervention	Frequency	Dietary component?	Change in VAT, exercisers (SD)	Absolute difference relative to control (SD)
Friedenreich, 2011	12	Moderate to vigorous aerobic training	45 minutes/day, 5x/week ≥3 facility-based sessions/week	No	-16.5 (19.7)	-14.9 (44.27)
Hunter, 2010	12	Aerobic training Resistance training	40 minutes/day, 2x/week Not directly supervised	Yes (low density balanced diet)	Aerobic: 0.8 (5.2) Resistance: -0.4 (3.66)	Aerobic: -11.60 (5.28) Resistance: -12.8 (6.23)
Poehlman, 2000	6	Endurance training Resistance training	3 sessions/week supervised by personal trainer	No	Endurance: 1 (3.44) Resistance: 0 (5.3)	Endurance: -4 (1.67) Resistance: -5 (2.49)
Slentz, 2005[b]	8	High amount/vigorous intensity (equivalent to jogging 20 miles a week) Low amount/vigorous intensity (equivalent to jogging 12 miles a week) Low amount/moderate intensity (equivalent to walking 12 miles a week)	Minutes/week at the appropriate intensity Supervision by HR monitor	No	Low/moderate: 2.94 (32.20) Low/vigorous: 3.85 (24.60) High/vigorous: -11.59 (28.62)	Low/moderate: -11.25 (14.11) Low/vigorous: -10.34 (13.54) High/vigorous: -25.78 (13.31)
Stewart, 2005	6	Resistance training	3 sessions/week supervised Total of 78 prescribed sessions	No	Women: -14.52 (23.17) Men: -7.38 (27.88)	Women: 14.81 (10.36) Men: -33.17 (14.49)
Donnelly, 2003	16	Moderate-intensity training	Goal calorie expenditure 2000 cal/week Supervised sessions progressing from 20 to 45 minutes Exercises include walking on treadmill, stationary biking and walking on stationary elliptical	No	Women: -3.2 (6.93) Men: -22.4 (6.07)	Women: -6.30 (4.02) Men: -16.10 (7.82)
Mctiernan, 2007	12	Moderate to vigorous aerobic training	60 minutes/day, 6x/week with additional 5-10 minutes of warm-up, cool down and stretching 3 sessions/week supervised	No	Women: -5.9 (14.12) Men: -12.4 (19.59)	Women: -7.10 (6.29) Men: -6.90 (8.64)
Sigal, 2007	6	Aerobic training Resistance training Combined training	Aerobic: Progress from 15 to 45 minutes/day over study period. Initial goal HR 60% max HR, increased to 75% max HR Resistance: 7 different exercises, 2 to 3 sets at maximum weight. Combined: full program of both of above	No	Combined: -22 (37.18) Aerobic: -13 (37.18) Resistance: -10 (36.47)	Combined: -20.0 (16.23) Aerobic: -11.4 (62.4) Resistance: -8.0 (62.4)
Barone, 2009	6	Combined aerobic and resistance training	45 minutes/session with target HR 60-90% max HR plus 10-15 minutes of warm up, cool down and 7 resistance exercises per session 3 sessions/week, prescribed 62 sessions for 6 months	No	-27 (31)	-23.00 (13.65)
Brochu, 2009	6	Resistance training	3 sessions/week supervised Progressing intensity over 6 months	Yes (caloric restriction)	-23 (34)	0 (14.83)
Dobrosielski, 2012	6	Combined resistance and aerobic training	45 minutes/session 3 sessions/week supervised with progressively increasing resistance	No	-8.1 (5.2)	-6.0 (2.27)

Fujimoto, 2007	12	Moderate intense activity	≥150 minutes/week Monthly contact with an interventionist	Yes, (low dietary fat)	Men: -35.6 (51.3) Women: -25.1 (42.0)	Men: -33.70 (29.83) Women: -24.80 (23.80)

[a] SD = standard deviation, VAT = visceral adipose tissue

[b]All data apart from VAT and SAT are for full pool of participants for which n=95, 90, 93, 93, 95, 98, respectively. VAT and SAT measured in subset of patients for whom n is presented in this table

Supplemental Table 2: Changes in visceral adiposity relative to control and characteristics of pharmacologic interventions[a]

Author, year	Duration, months	Participant characteristics	Pharmacologic agent	Dose	Behavioral component?	Change in VAT, intervention (cm^2, SD)	Absolute difference relative to control (cm^2, SD)
Kelley, 2004	6	Type 2 diabetics ≤ 5 years Prior antidiabetic medications withdrawn	Orlistat	120 mg before each meal	Yes, both groups. Healthy eating and portion control Weekly meetings with nutritionist	-67 (14)	-1.0 (7.09)
Takase, 2012	6	Outpatients with metabolic syndrome and elevated LDL	Ezetimibe	10 mg daily	No	-12.9 (14.27)	-20.20 (6.29)
Fujimoto, 2007	12	Participants of the Diabetes Prevention Program BMI ≥ 24, fasting glucose 5.3-7 mmol/l, and 2h glucose level of 7.8-11.1 mmol/l Excludes diabetics	Metformin	850 mg twice daily	No	-3.1 (30.26) -8.7 (23.26)	Men: -1.20 (13.22) Women: -8.40 (10.27)
Dumont, 2001	6	Viscerally obese men Excluded men with known CV disease, diabetes or endocrine disorders	Gemfibrozil	1200 mg daily	Yes, both groups Dietary recommendations	-20 (13.71)	3.0 (6)
Despres, 2009	12	Obese patients with dyslipidemia (elevated TGs or reduced HDL)	Rimonabant	20 mg daily	Yes, both groups Mildly hypocaloric diet with a deficit of 600 kcal a day relative to estimated energy needs	-36 (42.4)	-20.10 (19.81)
Jansson, 2011	6	Male patients with dyslipidemia Excludes diabetics, HTN and known CV disease	Rosuvastatin	10 mg daily	Not reported	-1.5 (27)	-4.30 (11.89)
Astrup, 2012	5	Diabetics excluded	Liraglutide Orlistat	1.2 mg daily 1.8 mg daily 2.4 mg daily 3.0 mg daily	Yes, both groups Diet and exercise counseling during 2 week run-in	-19.0 (6.3) -19.4 (6.0) -23.0 (5.7) -20.3 (6.0)	1.2: -5.1 (CI -21.2 to 11) 1.8: -5.6 (CI -21.8 to 10.6) 2.4: -9.2 (-24.7 to 6.4) 3.0: -6.4 (-22.1 to 9.2)
Ridderstrale, 2014	26	Type 2 diabetics	Empagliflozin + Metformin versus Glimepiride + Metformin	Empagliflozin: 25 mg daily Glimepiride: 1-4 mg daily	No	-11.0 (31.86)	-22.2 (64.7)

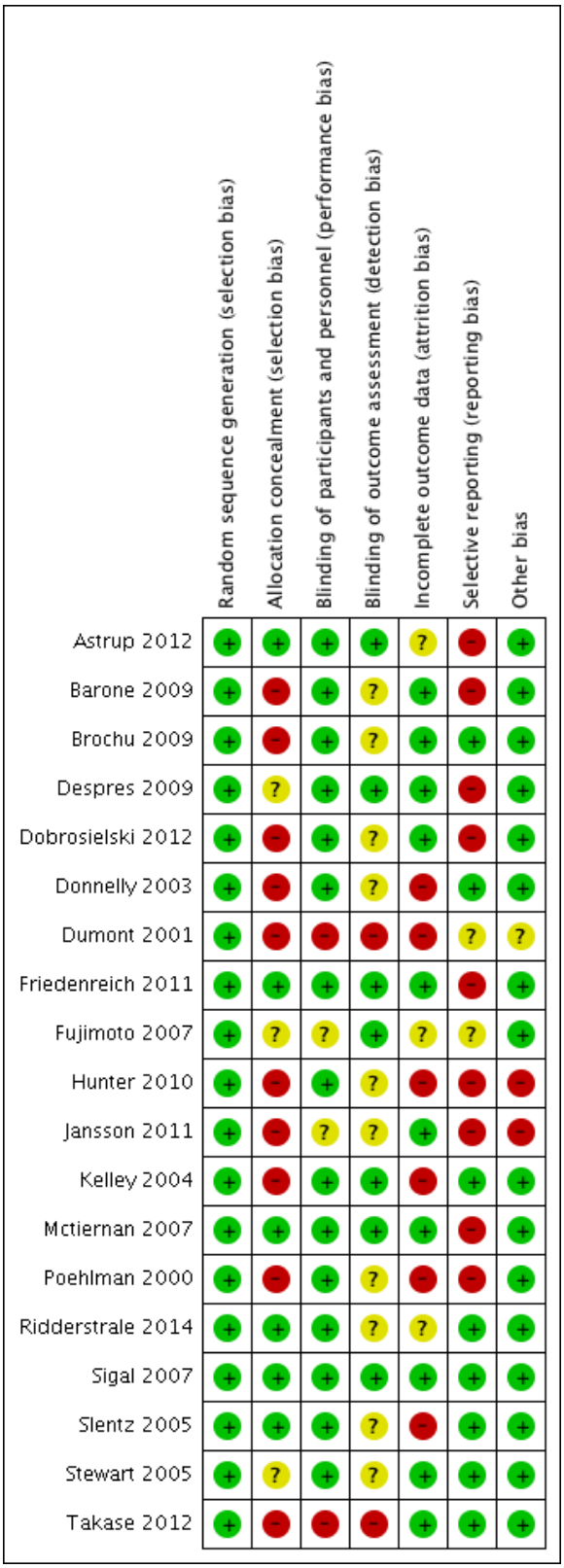
[a] BMI = body mass index, SD = standard deviation, VAT = visceral adipose tissue

Supplemental Table 3: Mechanism of Action of Included Weight Loss Agents

Agent:	Mechanism of Action in weight loss:	Approved for use:
Rimonabant	CB1 receptor blocker[1]	Denied by the FDA
Metformin	Centrally acting appetite suppressant. Has been hypothesized to also have effects on fat metabolism and hormonal signaling around satiety and adiposity via mediation of leptin and ghrelin[2]	FDA approved for blood sugar lowering. Not approved for weight loss.
Gemfibrozil	Possibly mediated by fat malabsorption, though this mechanism has not been proven[3]	FDA approved for lipid regulation. Not approved for weight loss.
Rosuvastatin	No proven mechanism[a]	FDA approved as lipid-lowering therapy. Not approved for weight loss.
Ezetimibe	No proven mechanism, but may be related to reduction in intestinal fat absorption[4]	FDA approved as lipid-lowering therapy. Not approved for weight loss.
Orlistat	Irreversible pancreatic and gastric lipase inhibitor[5]	FDA approved for weight loss with prescription in 1999 and over-the-counter use in 2012.
Liraglutide	Glucagon-like peptide (GLP-1) agonist that reduces gastric emptying and glucagon secretion. Also shown to act centrally on the hypothalamus to alter appetite[5]	FDA approved for weight loss in 2014.
Empagliflozin	SGLT2 inhibitor thought to impact weight loss by inducing glucosuria[6]	FDA approved for diabetes and cardiovascular risk reduction. Not approved for weight loss.

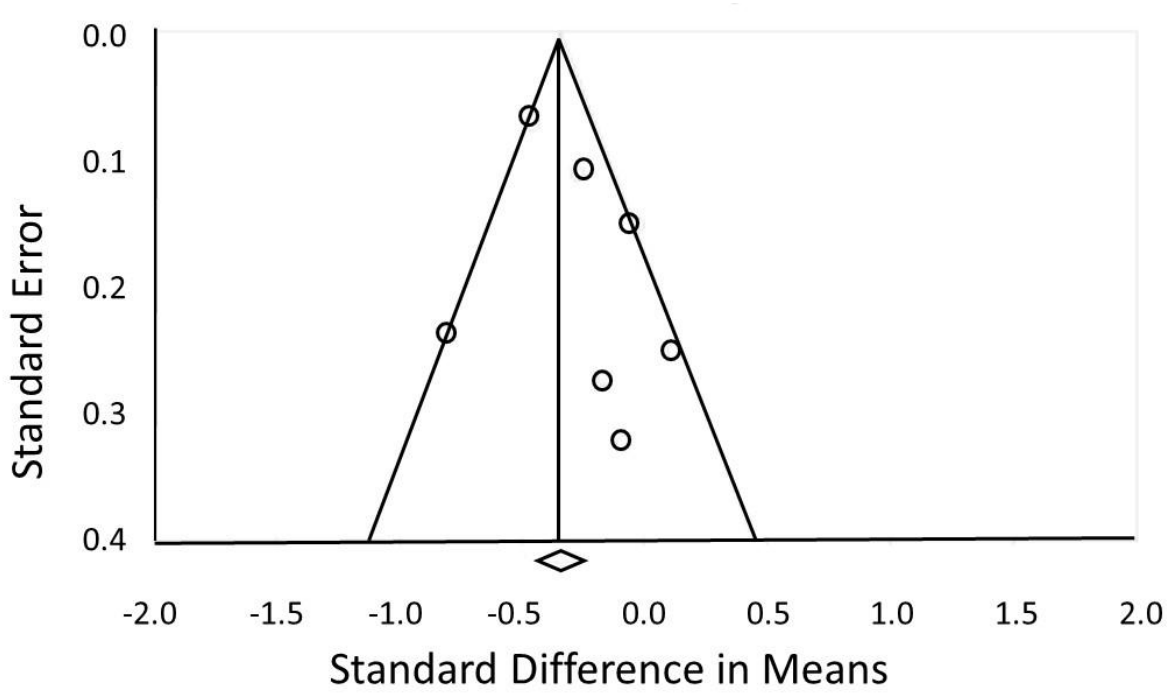
[a]Ongoing clinical trial where authors have hypothesized indirect effects of statins may include effects on visceral adipose deposition and weight

Supplemental Figure 1. Cochrane Risk of Bias Summary



Criteria assessed by Cochrane Risk of Bias according to each included study.
+ = meets criterion, ? = unknown if meets criterion, - = does not meet criterion

Supplemental Figure 2. Funnel Plot and Egger's test for Publication Bias

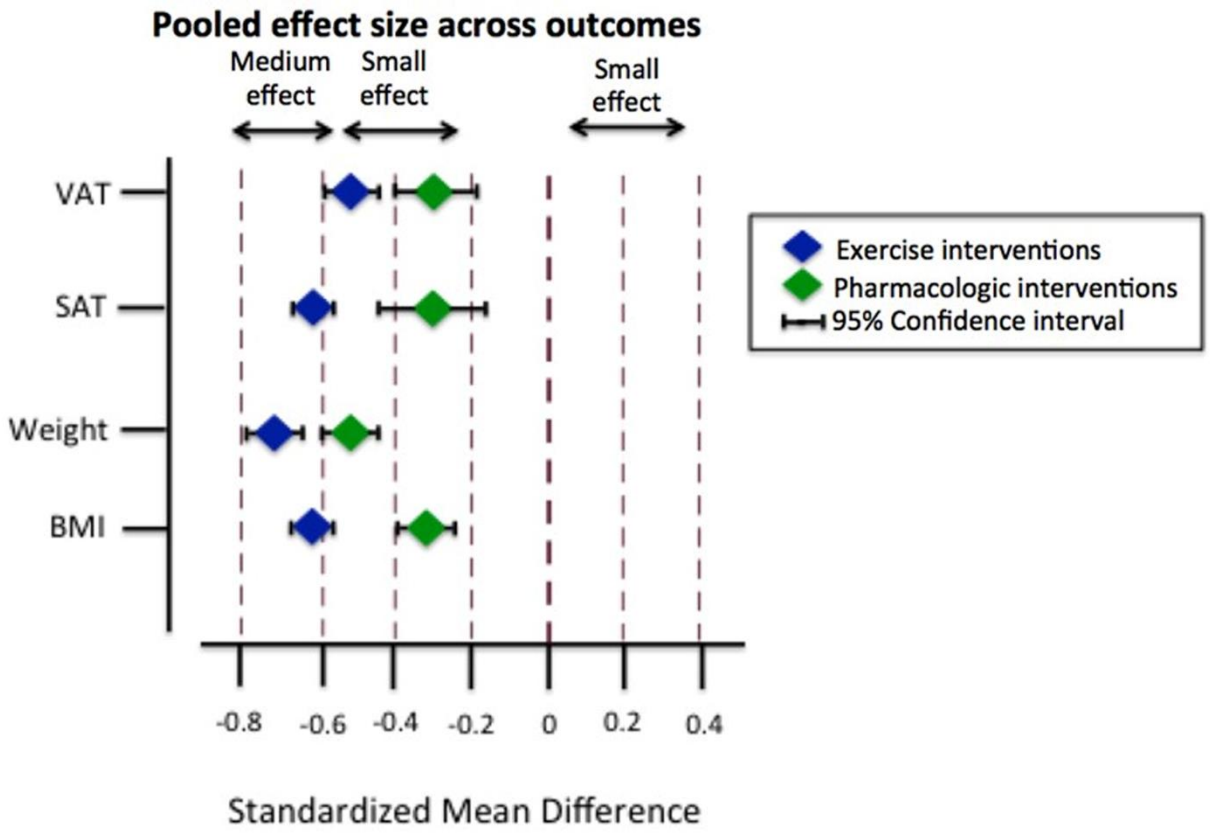


Egger's regression intercept:

Intercept	1.34
Standard error	1.21
95% lower limit (2-tailed)	-1.78
95% upper limit (2-tailed)	4.45
t-value	1.10
df	5
P-value (1-tailed)	.16
P-value (2-tailed)	.32

Symmetry of the funnel plot along with a non-significant p-value in Egger's test suggest together that there was no significant publication bias.

Supplemental Figure 3. Pooled effect sizes for each intervention across all study outcomes[a]



[a]BMI = body mass index, SAT = abdominal subcutaneous adipose tissue, VAT = visceral adipose tissue

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