

Question 14A: What is the evidence that dietary interventions in obese adults effect a change in fitness?

Reference	Design	Overweight defined as:	Adjuvant therapy	Intervention	Drop-out Total	Mean weight change	VO ₂ Max baseline (n) mean (95%CI)	VO ₂ Max change (n) mean (95%CI)	Side effects/ comments
Wood 406	Randomization: yes Self-selected: yes Included: 120-160% IBW Mean age: 44.5 Mean weight: 94.1 Female/Total: 0/155	120-160% IBW	Diet: for group 2 Exercise: Yes 40-50 min 5x/w Max HR: 60-80% Behavioral: No	1. No intervention 2. Diet alone 3. Exercise alone Duration: 52 weeks	1. 3/52 (6%) 2. 2/51 (4%) 3. 1/52 (2%)	1. +0.6 2. -7.2 3. -4.0 <u>2vs1</u> -7.8 (-8.9, -6.6) <u>3vs2</u> 4.6 (3.6, 5.59) <u>3vs1</u> 3.2 (1.96, 4.44)	<u>VO₂Max</u> 1. (42) 33.6 (95%CI 32.2, 35.0) 2. (41) 33.9 (95%CI 32.7, 35.1) 3. (46) 35.4 (95%CI 34.0, 36.8)	<u>VO₂Max</u> 12 months 1. (40) -2.4 (95%CI -3.4, -1.4) 2. (41) 0 (95%CI -1.0, 1.0) 3. (46) 4.1 (95%CI 2.3, 5.9) <u>2vs1</u> p<0.001 <u>3vs1</u> p<0.001 <u>3vs2</u> p<0.001	
Dengel 399	Randomized: unclear Self-selected: unclear Included: BMI >25 Mean age: 61 Mean weight: 90.5 Female/Total: 0/77	BMI >25	Diet: Yes AHA step I Exercise: No Behavioral: Yes Format: unclear Frequency: qw	1. AHA diet followed by weight maintenance 2. AHA diet followed by weight loss	1. 10/24 2. 25/53	<u>Weight in kg</u> 1. (14) 0 2. (28) -11 <u>2vs1</u> -11.0 (-15.6, -6.4)	<u>VO₂Max</u> 1. (14) 2.5 (2.2, 2.8) 2. (28) 2.5 (2.3, 2.7)	<u>VO₂Max</u> 1. (14) 2.0 (2.2, 2.8) 2. (28) 2.5 (2.3, 2.7) <u>2vs1</u> 0.5 (0.3, 0.7)	
Anderssen 346	Randomized: unclear Self-selected: no Included: BMI >24 kg/m ² Mean age: 44.9 Mean Weight: 28.8 kg/m ² Female/Total: 21/212	BMI >24	Diet: Yes low-calorie to lose 0.5-1.0 kg/month Behavioral: No	1. Control (no diet or exercise) 2. Diet alone 3. Exercise alone 4. Diet and exercise	1. 0/43 2. 3/55 3. 5/54 4. 2/67	<u>BMI</u> 1a. (12) 0.2 (-0.46, 0.86) 2a. (16) -1.7 (-2.55, -0.85) 3a. (20) -0.4 (-1.03, 0.23) 4a. (24) -2.2 (-2.61, -1.79) <u>BMI</u> 1b. (16) 0.4 (-0.03, 0.83) 2b. (17) -1.4 (-2.46, -0.34) 3b. (16) 0 (-0.64, 0.64) 4b. (20) -2 (-2.84, -1.16) <u>BMI</u> 1c. (15) 0.4 (0.19, 0.61) 2c. (19) -0.7 (-1.12, -0.28) 3c. (13) -0.5 (-1.37, 0.37) 4c. (21) -1.2 (-2.03, -0.37)	Not given	<u>VO₂Max, ml/kg/min</u> 1a. (12) -2.3 (-4.50, -0.10) 2a. (16) -0.5 (-2.42, 1.42) 3a. (20) 1.6 (-0.91, 4.11) 4a. (24) 4.4 (2.95, 5.85) <u>VO₂Max, ml/kg/min</u> 1b. (16) -2.5 (-4.21, -0.79) 2b. (17) -0.3 (-2.42, 1.82) 3b. (16) 2.5 (0.37, 4.63) 4b. (20) 4.9 (2.60, 7.20) <u>VO₂Max, ml/kg/min</u> 1c. (15) -1.3 (-2.37, -0.23) 2c. (19) -0.1 (-1.78, 1.58) 3c. (13) 2 (-1.27, 5.27) 4c. (21) 4.9 (3.23, 6.57)	

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Katzel 369	Randomized: yes Self-selected: yes Included: 120-160% IBW, nonsmokers Mean age: 61 Mean weight: 91.07 Female/Total: 0/170	120-160% IBW	Diet: Yes 1260-2100 kcal Exercise: Yes 45 min x3 Behavioral: No	<u>Group description</u> 1. Control 2. Weight loss 3. Aerobic exercise Duration: 9 months	1. 8/26 (31%) 2. 25/73 (34%) 3. 19/71 (27%)	<u>Weight in kg</u> 2. (44) -9.5 (95%CI 8.1, 10.9)	not given	<u>VO₂Max increase from baseline</u> 2. (49) +17% 3. (49) +18%, estimate p<0.01	
Fortmann 363	Randomization: unclear Self-selected: yes Included: >120-150% IBW Mean age: 44.3 Mean weight: 93.6 Female/Total: 0/115	>120-150% of IBW	Diet: only for group 2 Exercise: Yes 3-5 x/wk Max HR: 70-80% Behavioral: No	1. Control (no intervention) 2. Low-calorie diet 3. Exercise only Duration: 52 weeks	not given	1. +0.5 2. -6.9 3. -4.6 <u>3vs2 Weight kg</u> 2.30 (1.07, 3.53) <u>3vs1 Weight kg</u> -5.10 (-6.27, -3.93) <u>2vs1 Weight kg</u> -7.40 (-8.73, -6.07)	<u>VO₂Max</u> 1. (35) 34 (95%CI 32.6, 35.4) 2. (38) 34 (95%CI 32.7, 35.3) 3. (42) 35 (95%CI 33.4, 36.6)	<u>VO₂Max</u> 1. (35) -2.5 (95%CI -3.7, -1.3) 2. (38) -0.2 (95%CI -1.4, 1.0) 3. (42) 4.4 (95%CI 2.8, 6.0) <u>3vs2 VO₂Max</u> 4.60 (3.20, 6.00) <u>3vs1 VO₂Max</u> 6.90 (5.49, 8.31) <u>2vs1 VO₂Max</u> 2.30 (1.12, 3.48)	
Frey-Hewitt 432	Randomization: unclear Self-selected: unclear Included: 120-160% IBW Mean age: ng Mean weight: ng Female/Total: 0/121	120-160% IBW	Diet: Yes 300-500 kcal less than usual diet Exercise: Yes 50 min/3-5 wk Behavioral: No	1. No intervention 2. Diet (no exercise) 3. Exercise (no diet)	5% overall	<u>3vs1 Weight kg</u> -4.48 (-5.59, -3.37) <u>3vs2 Weight kg</u> 2.58 (1.38, 3.78) <u>2vs1 Weight kg</u> -7.06 (-8.29, -5.83)	<u>VO₂Max</u> 1. (41) 33.72 (32.3, 35.1) 2. (36) 33.81 (95%CI 32.4, 35.2) 3. (44) 35.33 (95%CI 33.8, 36.8)	<u>VO₂Max 12 months</u> 1. (41) -2.41 (95%CI -3.4, -1.4) 2. (36)-0.27 (95%CI -1.3, 0.7) 3. (44) 4.16 (95%CI 2.3, 6.0) <u>3vs1 VO₂Max</u> 6.57 (5.09, 8.05) <u>3vs2 VO₂Max</u> 4.43 (2.92, 5.94) <u>2vs1 VO₂Max</u> 2.14 (1.16, 3.12)	
Wood 380	Randomization: unclear Self-selected: yes Included: BMI 28-34 for	BMI >24	Diet: NCEP I Exercise: Yes	1. No intervention 2. Diet alone 3. Diet and exercise	overall 27/264 (10%)	<u>Weight in kg, men</u> 1. (40) 1.7 (95%CI 0.2, 3.2)		<u>VO₂Max, men</u> 1. (40) -0.2 (95%CI -1.5, 1.1)	

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	premenopausal women and 24-30 for men Mean age: 39.7 Mean weight: 86.7 Female/Total: 132/264		45 min x3 Max HR: 60-80% Behavioral: No			2. (40) -5.1 (95%CI -7.0, -3.2) 3. (39) -8.7 (95%CI -10.5, -6.9) <u>2vs1 Weight kg, men</u> -6.80 (-8.48, -5.12) <u>3vs1 Weight kg, men</u> -10.40 (-12.03, -8.77) <u>EPO 3vs2 Weight kg, men</u> -10.40 (-12.03, -8.77) <u>Weight in kg, women</u> 1. (39) 1.3 (95%CI -0.4, 3.0) 2. (31) -4.1 (95%CI -6.1, -2.1) 3. (42) -5.1 (95%CI -6.8, -3.4) <u>2vs1 Wgt kg, women</u> -5.40 (-7.20, -3.60) <u>3vs1 Wgt kg, women</u> -6.40 (-29.61, 16.01) <u>3vs2 Wgt kg, women</u> -1.00 (-25.27, 23.27)		2. (40) 1.6 (95%CI 0.0, 3.2) 3. (39) 8.6 (95%CI 6.8, 10.4) <u>2vs1 VO₂Max, men</u> 1.80 (0.37, 3.23) <u>3vs1 VO₂Max, men</u> 8.80 (7.26, 10.34) <u>3vs2 VO₂Max, men</u> 7.00 (5.33, 8.67) <u>VO₂Max, ml/kg/min, women</u> 1. (39) 0 (95%CI -1.4, 1.4) 2. (31) 1.4 (95%CI -0.1, 2.9) 3. (42) 6.4 (95%CI 4.9, 7.9) <u>2vs1 VO₂Max, women</u> 1.40 (-0.22, 2.82) <u>3vs1 VO₂Max, women</u> 6.60 (5.22, 7.98) <u>3vs2 VO₂Max, women</u> 5.00 (3.53, 6.47)	
Anderssen 346	Randomized: unclear Self-selected: no Included: BMI >24 kg/m ² Mean age: 44.9 Mean Weight: 28.8 kg/m ² Female/Total: 21/212	BMI >24	Diet: Yes low-calorie to lose 0.5 -1.0 kg/month Exercise: Yes aerobic 60-80% max HR 60 min 3x/week Behavioral: No	1. Control (no diet or exercise) 2. Diet alone 3. Exercise alone 4. Diet and exercise	1. 0/43 2. 3/55 3. 5/54 4. 2/67	BMI 1a. (12) 0.2 (-0.46, 0.86) 2a. (16) -1.7 (-2.55, -0.85) 3a. (20) -0.4 (-1.03, 0.23) 4a. (24) -2.2 (-2.61, -1.79) BMI 1b. (16) 0.4 (-0.03, 0.83) 2b. (17) -1.4 (-2.46, -0.34) 3b. (16) 0 (-0.64, 0.64) 4b. (20) -2 (-2.84, -1.16) BMI 1c. (15) 0.4 (0.19, 0.61) 2c. (19) -0.7 (-1.12, -0.28) 3c. (13) -0.5 (-1.37, 0.37) 4c. (21) -1.2 (-2.03, -0.37)	not given	<u>VO₂Max, ml/kg/min</u> 1a. (12) -2.3 (-4.50, -0.10) 2a. (16) -0.5 (-2.42, 1.42) 3a. (20) 1.6 (-0.91, 4.11) 4a. (24) 4.4 (2.95, 5.85) <u>VO₂Max, ml/kg/min</u> 1b. (16) -2.5 (-4.21, -0.79) 2b. (17) -0.3 (-2.42, 1.82) 3b. (16) 2.5 (0.37, 4.63) 4b. (20) 4.9 (2.60, 7.20) <u>VO₂Max, ml/kg/min</u> 1c. (15) -1.3 (-2.37, -0.23) 2c. (19) -0.1 (-1.78, 1.58)	Groups were divided for results presentation into tertiles for blood pressure Group a: with DBP >91 Group b: with DBP 84-9 mmHg Group c: with DBP <84

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								3c. (13) 2 (-1.27, 5.27) 4c. (21) 4.9 (3.23, 6.57)	
Marks 435	Randomized: unclear Self-selected: yes Included: >20-50% IBW Mean age: 38.5 Mean weight: 78.7 completers Female/Total: all/67	>20-50% IBW	Diet: Yes >1200 kcal/d to lose 0.9 kg/week Exercise: Yes groups 3 and 5 aerobic 30 min 3-5 times a week groups 4 and 5 isotonic 2 sets with 12 rep 30 min 3 times a week Behavioral: No	1. Control (no diet, no exercise) 2. Diet only (low-fat, calorie-restricted diet) 3. Diet and cycling (low-fat, calorie-restricted diet and exercise on stationary ergometer) 4. Diet and resistance training (low-fat, calorie-restricted and resistance training) 5. Diet and resistance training and cycling	1. 2/10 (20%) 2. 2/12 (17%) 3. 8/16 (50%) 4. 4/15 (27%) 5. 4/14 (28%)	<u>Weight in kg</u> 1. (6) 1.5 (-0.18, 3.18) 2. (10) -3.7 (-6.85, -0.55) 3. (8) -4.5 (-6.76, -2.24) 4. (11) -3.5 (-5.78, -1.22) 5. (9) -5.4 (-8.09, -2.71) <u>2vs1</u> -5.20 (-7.74, -2.66) <u>3vs2</u> -0.80 (-3.39, 1.79) <u>3vs1</u> -6.0 (-7.84, -4.16) <u>4vs3</u> 1.0 (-1.10, 3.10) <u>4vs1</u> -5.0 (-6.95, -3.05) <u>4vs2</u> 0.2 (-2.34, 2.74) <u>5vs1</u> -6.9 (-9.06, -4.74)	<u>VO₂Max, l/min</u> 1. (ng) 1.7 2. (ng) 1.73 3. (ng) 1.87 4. (ng) 1.9 5. (ng) 1.79	<u>VO₂Max, l/min</u> 1. (ng) 1.79 2. (ng) 1.79 3. (ng) 2.16 4. (ng) 2 5. (ng) 2.21 significance not given	
Svendsen 384	Randomization: unclear Self-selected: unclear Included: BMI>25 Mean age: ng Mean weight: 77.8 Female/Total:121/121	BMI>25	Diet: 4.2 MJ/d Exercise: Yes 90 min x3 Max HR: ng Behavioral: No	1. Control (no diet, exercise) 2. Diet alone 3. Diet + exercise	none	<u>Weight in kg</u> 1. (20) 0.5 (95%CI -0.3, 1.3) 2. (50) -9.5 (95%CI -10.3, -8.7) 3. (48) -10.3 (95%CI -11.2, -9.4) <u>3vs2 Weight kg</u> -0.80 (-1.64, 0.04) <u>2vs1 Weight kg</u> -10.00 (-10.79, -9.21) <u>3vs1 Weight kg</u> -10.80 (-11.66, -9.94)	<u>VO₂Max, ml/kg/min</u> 1. (21) 21.1 (95%CI 19.7, 22.5) 2. (51) 19.5 (95%CI 18.5, 20.5) 3. (49) 20.6 (95%CI 19.5, 21.7)	<u>VO₂Max, ml/kg/min</u> 1. (20) 1.8 (95%CI -3.1, 6.7) 2. (50) 2.3 (95%CI 1.7, 2.9) 3. (48) 6.9 (95%CI 4.1, 9.7) <u>VO₂Max, ml/kg/min 9 mo</u> 1. (16) -2.7 (95%CI -4.2,-1.2) 2. (47) 0.8 (95%CI -0.8, 2.4) 3. (47) 0.2 (95%CI -0.9, 1.3) <u>3vs2 VO₂Max</u>	There was no significant difference in changes in parameters between the 2 intervention groups at follow-up. However, 47% of the women in the diet plus exercise group had stopped exercising at the follow-up.

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								-0.60 (-1.95, 0.75) <u>2vs1 VO₂Max</u> 3.50 (1.95 5.05) <u>3vs1 VO₂Max</u> 2.90 (1.72, 4.08) <u>3vs2 VO₂Max</u> 4.60 (2.62, 6.58) <u>2vs1 VO₂Max</u> 0.50 (-2.02, 3.02) <u>3vs1 VO₂Max</u> 5.10 (1.67, 8.53)	
Colman 415	Randomized: unclear Self-selected: unclear Included: includes non-overweight Mean age: 60.5 Mean weight: 90.4 Female/Total: 0/99	includes non-overweight	Diet: Yes AHA step I goal to lose 0.25-0.5 kg/wk Exercise: No Behavioral: Yes format: group, weekly	1. Control 2. Low-fat diet	1. 11/26 (42%) 2. 38/73 (52%)	<u>Weight in kg</u> 1. (15) 1.0 2. (35) -9.0 <u>2vs1</u> -10.0 (-14.7, -5.3)	<u>VO₂Max, L/min</u> 1. (15) 2.6 (95%CI 2.3, 2.9) 2. (35) 2.6 (95%CI 2.4, 2.8)	<u>VO₂Max, L/min</u> 1. (15) 2.5 (95%CI 2.2, 2.8) 2. (35) 2.5 (95%CI 2.3, 2.7) <u>2vs1</u> 0.0 (-0.24, 0.24)	

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