Appendix 12

TREATMENT OF OVERWEIGHT AND OBESITY IN NON-CLINICAL SETTINGS

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EVIDENCE SUMMARY TABLES

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EVIDENCE TABLE 1a: EVIDENCE OF EFFICACY (INTERNAL VALIDITY) FOR THE MANAGEMENT OF OVERWEIGHT AND OBESITY IN ADULTS

All summary data are mean values unless otherwise stated.
Studies are grouped by intervention.
Within each intervention category, studies are listed by study type in the following order: systematic review; randomised trial (RCT); controlled non-randomised trial (CCT), controlled before and after study (CBA), interrupted time series (ITS); other study type.
Within each study type, studies are listed in alphabetical order.

First author, country, study design, research type, quality	**Study population**	**Research aim/question**	**Intervention details, length of follow-up**	**Main results** (include effect size(s)/confidence intervals for each outcome if available)	**Confounders** (potential sources of bias)**/comments**
Evidence of efficacy (internal validity) for the management of overweight and obesity in adults					
Commercial weight-loss programmes					
Ahrens 2003 [3037] USA RCT Individual 1–	**Setting:** A pharmacy in Iowa, USA. **Meal replacement (MR):** *n* = 45 BMI (kg/m^2): 29.5 (SD 2.2) Weight (kg): 81.9 (SD 11.1) Waist circumference (cm): 89.1 (SD 8.5) Age (years): 47.6 (SD 7.9) **Conventional reduced-energy diet (RED):** *n* = 43 BMI (kg/m^2): 29.0 (SD 2.6) Weight (kg): 78.3 (SD 10.1) Waist circumference (cm): 87.0 (SD 8.2)	To compare a meal replacement programme with a conventional RED for weight management using the pharmacy as the setting and the pharmacist as the point of contact for dietary advice.	**MR:** Participants received free liquid meal replacement shakes (Slim-Fast) and were instructed to use these to replace two main meals per day for the first 12 weeks, and one main meal a day for the following 10 weeks. They were also given dietary advice involving instruction on healthy eating, the prescription of a daily energy intake in the first 12 weeks and assistance in self-selecting the rest of their diet. Participants were given physical activity (PA) advice at their initial visit. They returned to the pharmacy every 2 weeks	**Loss to follow-up**: 12-week intervention: *n* = 27/95 (28%) Weight maintenance: *n* = 40/95 (42%) Not reported for individual groups. **Weight (kg):** Over the 12-week intervention period, weight decreased significantly ($p <$ 0.001) in both MR (–4.9 [SE 0.3]) and RED (–4.3 [SE 0.3]) groups. There was no significant difference between the two groups. During the weight maintenance phase, from week 12 to week 22, there was a significant ($p = 0.02$) further loss in the RCD group (–0.9 [SE 0.4]). The change in the MR group (–0.7 [SE 0.4]) was not	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20%. No ITT. Funded by Slim-Fast Nutrition Institute.

	Age (years): 47.8 (SD 9.5) **Other relevant information:** Ninety-five participants (12.6% male) were randomised but data are only provided for participants who remained in the programme at week 2. Participants were required to be free of specific medical conditions and have a BMI of 25–32 kg/m^2.		for a 15 min review to discuss progress and to collect their shakes. **Delivered by:** A registered dietitian reviewed diet plans and was consulted as needed. Two pharmacists provided all other support. The pharmacists received no special training. **RED:** Participants were given dietary advice involving instruction on healthy eating, the prescription of a daily energy intake and assistance in self-selecting their diet using diabetic exchange lists. After 12 weeks they were instructed to return to a healthy diet of their choice. Participants were given the same PA advice and support as the intervention group. **Delivered by:** As intervention group. **Length of follow-up:** 12 and 22 weeks. **Other agencies involved:** None reported. **Other information related to**	statistically significant. There was no significant difference between the two groups. **Waist circumference (% change):** Significant reductions were reported in the intervention group at 12 weeks (–5.31%) and 22 weeks (–8.08%) and in the control group at 12 weeks (–6.10%) and 22 weeks (–7.82%). There was no significant difference between the groups.	

			delivery: None.		
Heshka 2003 [36] USA Individual RCT 1++	**Setting:** Home based. **Self-help:** *n* = 212 BMI (kg/m^2): 33.6 (SD 3.7) Weight (kg): 93.1 (SD 14.4) Waist (cm): 99 (SD 12) Age (years): 44.0 (SD 10) Gender: 13% male **Weight Watchers programme:** *n* = 211 BMI (kg/m^2): 33.8 (SD 3.4) Weight (kg):94.2 (SD 13.1) Waist (cm): 101 (SD 12) Age (years): 45 (SD 10) Gender: 18% male **Other relevant information:** Participants were recruited from clinic records or advertisement. Individuals with a BMI of 27–40, aged 18–65, including persons with health problems for which weight reduction is a medically accepted therapy, were eligible. Potential participants were excluded if already involved	To compare weight loss and health benefits achieved and maintained through self-help weight loss vs. weight loss with a structured commercial programme.	**Self-help:** Participants received a 20 min consultation with a dietitian at baseline and week 12 visits. Participants were given publicly available printed material encouraging dietary principles and exercise guidelines for safe weight loss. Other information resources were brought to their attention (e.g. websites). Two-year intervention. **Delivered by:** Dietitian. **Weight Watchers:** Participants were given vouchers for free attendance at sessions of Weight Watchers. The locations of this programme were reviewed with participants. The programme consists of a food plan, an activity plan, and a behaviour modification plan. There were weekly 1-hour group meetings led by successful programme graduates. They conduct the weekly weigh-in, act as role models, and provide written educational materials and social support.	**Loss to follow-up (at 2 years):** Self-help: *n* = 53 (25%) Weight Watchers: *n* = 61 (28.9%) **BMI (kg/m^2):** Self-help: –0.5 (SD 0.2), Year 1 –0.2 (SD 0.2), Year 2 (from baseline) Weight Watchers: –1.6 (SD 0.2), Year 1 –1.1 (SD 0.2), Year 2 (from baseline) A greater reduction in BMI from baseline was shown in the commercial programme than the self-help programme at year 1 ($p < 0.001$), and at year 2 ($p < 0.001$). The Weight Watchers group demonstrated significant mean change from baseline to follow-up at year 1 ($p < 0.001$), and at year 2 ($p < 0.001$). The self-help group demonstrated significant mean change from baseline to year 1 follow-up ($p < 0.01$), but not at year 2. **Weight (kg)** Self-help: –1.3 (SD 0.4), Year 1 –0.2 (SD 0.4), Year 2 (from baseline)	Randomisation well covered. Adequate allocation concealment. No mention of blinding. Loss to follow-up >20%. ITT analysis performed. Missing values were imputed by last-observation-carried-forward or linear interpolation and participants who made no follow-up visits were assumed to remain at baseline value. Results from ITT, modified ITT and completers only were similar. In the self-help group, 20 participants reported using weight loss medication (including herbal products); ten reported enrolling in some form of structured weight loss programme (including Weight Watchers);

	in a weight loss programme or if they had taken prescription weight loss medications in the previous 90 days.		2-year intervention. **Delivered by:** Weight Watchers programme graduates. **Length of follow-up:** 2 years. **Other agencies involved:** None reported. **Other information related to delivery:** None.	Weight Watchers: –4.3 (SD 0.4), Year 1 –2.9 (SD 0.5), Year 2 (from baseline) Weight loss of participants from baseline in the Weight Watchers programme was significantly greater than that in the self-help programme at year 1 ($p < 0.001$) and at year 2 ($p < 0.001$). The Weight Watchers group demonstrated a significant change from baseline ($p < 0.001$) at year 1 and at year 2. The self-help group demonstrated a significant change from baseline at year 1 ($p < 0.01$), but not at year 2. There was no significant difference between Weight Watchers and self-help groups in the percentage of participants who had lost between 5 and 10% of their original weight at year 1 (17 vs. 11%) or year 2 (18 vs. 15%). Significantly more Weight Watchers participants than self-help participants had lost more than 10% of their original weight at year 1 (21 vs. 9%; $p = 0.002$) and year 2 (16 vs. 6%; $p = 0.005$). **Waist circumference (cm):** Self-help: –1.6 (SD 0.6), Year 1 –0.6 (SD 0.6), Year 2	and nine reported following an alternative diet plan (e.g. Atkins, The Zone) at some point during the 2-year study. Funded by Weight Watchers International.

				Weight Watchers: –4.1 (SD 0.6), Year 1 –2.4 (SD 0.6), Year 2 A greater reduction in waist circumference from baseline was found in the Weight Watchers programme compared with the self-help programme at year 1 ($p = 0.003$) and at year 2 ($p = 0.02$). The Weight Watchers programme demonstrated a significant change from baseline at year 1 ($p < 0.01$) and at year 2 ($p < 0.04$). The self-help programme demonstrated a significant change from baseline at year 1 ($p < 0.02$) but not at year 2. **Other outcomes:** Participants who dropped out of the study were younger, had higher BMI, greater percentage body fat, were more likely to be smokers and reported lower income than completers ($p < 0.05$ for all comparisons). Dropout characteristics did not differ by treatment group. There was no statistically significant difference between men and women in weight loss. There were no statistically significant differences between the groups in the amount of improvement on quality of life	

				scales (Short-Form 36 Health Survey, Impact of Weight on Quality of Life Questionnaire)	
Rippe 1998 [12522] USA RCT Individual 1–	**Setting**: Weight Watchers, Jericho, New York, USA **Intervention:** *n* = 40 Baseline data reported for completers only (*n* = 30) Weight (kg): 81.2 (SD 7.6) % Body fat: 36.8 (SD 2.6) Height (cm): 161.6 (SD 6.7) Age (years): 37.4 (SD 7.9) Gender: 0% male **Control:** *n* = 40 Baseline data reported for completers only (*n* = 14): Weight (kg): 82.1 (SD 5.3) % Body fat: 36.2 (SD 2.7) Height (cm): 167.6 (SD 5.4) Age (years): 35.6 (SD 5.9) Gender: 0% male **Other relevant information:** Women aged 20–49 years who were 20–50% over desirable weight for height (Metropolitan Life Insurance Table 1983) were eligible provided they had not participated in a weight loss/exercise programme in	**Aim:** To assess the effects of a 12-week weight loss strategy in moderately overweight women.	**Intervention:** Subjects were enrolled in a 12-week nationally available weight loss programme (Weight Watchers International). **Nutrition:** Self-selected, hypoenergetic diet with an energy range of 33,258 to 41,462 kJ. **Exercise:** Self-selected exercise plan expending ≥6279 kJ/week by fourth week. **Behaviour:** Education regarding behaviour modification techniques, as well as problem solving and coping skills for weight loss challenges. **Group support:** Weekly meetings. **Delivered by:** Facilitated by a trained lay leader who has lost weight on the programme. **Control**: Subjects were asked to maintain their baseline	**Loss to follow-up:** Intervention: *n* = 10 (25%) Control: *n* = 26 (65%) **Weight (kg):** The intervention group lost significantly more weight than the control group (–6.07 [SD 4.01] and +1.31 [SD 1.28] respectively; $p < 0.001$). **% Body fat:** The intervention group lost significantly more body fat than the controls (–4.3%, and –0.2% respectively; $p < 0.001$). **Other outcomes:** Quality of Life was assessed using SF-36 Health Survey. Intervention group participants achieved significant improvements ($p < 0.006$) in their perception of their physical function, vitality and mental health after the 12-week period. Changes in control group participants were not statistically significant.	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20%. No ITT. Controls were taller and more physically active at baseline ($p < 0.05$). Funding from Weight Watchers International.

	the previous 3 months.		nutritional and PA practices for 12 weeks. **Delivered by:** N/a **Length of follow-up:** 12 weeks. **Other agencies involved:** None reported. **Other information related to delivery:** Unclear whether enrolment to the Weight Watchers programme was free.		
Rothacker 2000 [3952] USA CBA 2–	**Setting**: Intervention: Two rural neighbouring villages, Wisconsin. Control: Residency within a 50-mile (80-km) radius of the study centre. **Intervention:** *n* = 158 Although 158 participants were recruited to the weight loss programme, data for 134 participants (50 men and 84 women) were presented at baseline. **BMI (kg/m^2):** Men 32.5 (SD 4.4)	**Aim**: To assess 5-year weight changes after a self-managed meal-replacement weight loss programme.	**Intervention**: A self-managed meal replacement weight control programme. Participants were instructed to follow the label instructions of a 200–220 kcal (840–920 kJ), fortified, milk-based meal replacement diet (shake). This product replaced two meals each day for the first 3 months, and then 1–2 meals each day thereafter until their ideal weight was achieved. For maintenance participants replaced one meal each day with a shake or monitored their	**Loss to follow-up:** Intervention: *n* = 24 (16%) Control: *n* = ? (unclear) **BMI (kg/m^2):** Intervention: A significant decrease in BMI was found for both males (–1.8, SD 1.8) and females (–1.6, SD 2.6). Control: BMI increased significantly for both males (2.2, SD 3.5) and females (2.5, SD 4.1) The authors do not present *p* values. **Weight (kg):** Intervention:	The authors did not state process for selecting controls. The authors investigated change within groups. They did not assess whether there was a between group difference in the extent of change. Funded by Slim-Fast Nutrition Institute

	Women 30.7 (SD 5.6) **Weight (kg):** Men 102.9 (SD 15.3) Women 81.2 (14.7) **Age (years):** Men 40.3 (SD 10.3) Women 41.4 (SD 10.6) **Gender:** 37.3% Male **Control:** From an unclear number of initial participants, data were provided for *n* = 389 (142 men and 247 women) **BMI (kg/m^2):** Men 31.7 (SD 4.9) Women 30.2 (SD 5.6) **Weight (kg):** Men 96.3 (SD 15.2) Women 80.6 (SD 15.8) **Age (years):** Men 40.3 (SD 10.0) Women 42.0 (SD 10.5) **Gender:** 37% Male		weight daily. If participants gained more than 1–2 kg, they were instructed to return to regular use of the meal replacement product. No medical intervention was provided. Participants were asked to weigh-in each week at the local village centre during the first 3 months, and then twice per year. Meal replacement products were provided free of charge from the local grocers. **Delivered by:** Unclear. **Control:** Control weight data were obtained from three medical clinics within 50 miles (80 km) of the study centre. Self-report weight data was used for baseline for 28% of the participants. Controls were weighed at follow-up. Three controls were selected for each participant and were matched for gender, BMI (within 2 kg/m^2), and age (within 5 years).	A significant decrease in weight was found in both male (–5.8, SD 5.4; $p < 0.001$) and female (–4.2, SD 6.9; $p < 0.001$) participants. Control: A significant increase in weight was shown for both male (6.7, SD 10.2; $p < 0.001$)) and female (6.5, SD 10.7; $p < 0.001$) subjects.	

			Length of follow-up: 5 years **Other agencies involved:** None stated. **Other information related to delivery:** **None.**		
Interventions using computers					
Agras 1990 [11342] USA RCT Individual 1+	**Setting:** Hand-held computer-assisted therapy, California. **Computer alone:** *n* = 30 Weight (kg): 76.9 **Computer plus support:** *n* = 30 Weight (kg): 78.7 **Behaviour therapy:** *n* = 30 Weight (kg): 78.5 **Other relevant information:** Ninety mild to moderately overweight women (BMI 25–35 kg/m^2) were admitted to the study. Age (years): 45.2 (SD 12.4) BMI (kg/m^2): 29.7 (SD 4.3)	To compare the efficacy of hand-held computer therapy alone, computer therapy with support, and therapist-conducted weight loss programmes.	12-week weight loss programme. All three groups aimed to reduce energy intake (not >1200 kcal [5.02 MJ]) so that weight loss occurred and participants exercised 20–45 min, at least three times per week. **Computer alone:** At a 90-min introductory group session participants were given a hand-held computer to use for the duration of the programme. Participants received an oral presentation, and an operational manual, describing the computer and weight loss programme, in addition to a book of energy values. Participants were requested to set daily energy intake and exercise goals and enter these on the computer. Energy intake	**Loss to follow-up (12 months):** Computer alone: *n* = 1 (3.3%) Computer plus support: *n* = 1 (3.3%) Behaviour therapy: *n* = 0 (0%) **Weight (kg):** Computer alone: Post-treatment: 74.6 6 months: 75.5 12 months: 76.6 Computer plus support: Post-treatment: 76.1 6 months: 76.6 12 months: 76.8 Behaviour therapy: Post-treatment: 76.7 6 months: 75.8 12 months: 77.5 Weight loss, from pre- to post-treatment, for all participants combined was 2.19 kg ($p < 0.001$). The authors report that no significant differences	Randomisation well covered. No mention of allocation concealment or blinding. Loss to follow-up <20%. Unclear if ITT used. Supported by National Institute of Arthritis, Diabetes, and Digestive Kidney Diseases.

	% Overweight: 125.3 (SD 21.1) Marital status: 15% single, 64% married, 21% divorced/separated. Of the participants in the two computer-based groups, 69% had experience with computers at work, 46% had access to a home computer and 33% used a home computer on a weekly basis. Individuals meeting DSM-IV criteria for bulimia, major depression, alcohol or drug dependence, or psychosis were excluded.		information was added to the computer throughout the course of the day. Meals could be planned on the computer; other options included a trainer to promote slow eating, and messages aimed at motivating or reminding the participant of distorted cognitions related to eating. Reinforcing statements depending on individual progress were also provided Longer-term feedback on energy intake, exercise and weight (based on a 14-day period) could be examined, from which participants were encouraged to set new goals and change behaviour. **Delivered by:** Unclear. **Computer plus support:** In addition to the programme described above, participants attended four group sessions in weeks 2, 4, 6 and 8. Sessions were therapist led. Brief education on weight loss, including diet and exercise, discussed by the group. Any problems regarding the use of the computer were also discussed at these sessions.	between groups were shown at any point from post-treatment to 1-year follow-up (data not presented). **Eating behaviour:** (Assessed using Eating Patterns Questionnaire) Significant changes were seen in eating patterns at both 12 weeks and 12 months, but there were no between-group differences. **Cost-effectiveness** (kg lost/US$100): Computer alone: Post-treatment: 4.12 6 months: 3.02 12 months: 0.52 Computer plus support: Post-treatment: 1.57 6 months: 1.29 12 months: 1.1 Behaviour therapy: Post-treatment: 0.68 6 months: 1.11 12 months: 0.43 A significant post-treatment difference between groups was shown ($p < 0.01$), with the computer alone group demonstrating greater cost-effectiveness than either computer with support ($p < 0.05$) or behaviour therapy (BT) ($p < 0.05$) groups.	

			Delivered by: Therapist. **Behaviour therapy:** Ten sessions over a 12-week period. A treatment manual from the Stanford Eating Disorders Clinic was followed. The programme included education on the problem and treatment of overweight, principles of behaviour change, and enhancement of self-control. Participants were requested to monitor their food intake and the circumstances surrounding that intake as well as activity levels during treatment. **Delivered by:** Psychologist. **Length of follow-up:** 1 year. **Other agencies involved:** None reported. **Other information related to delivery:** Participants were asked to deposit US$75 at the start; US$25 was returned at each of three post-treatment assessments.	**Programme adherence:** (During last week of treatment) Computer alone: 29% Computer plus support: 70% BT: 29% The authors report that this difference was not significant (data not presented). **Other outcomes:** All three groups were equally confident in the treatment group to which they had been assigned, felt that treatment made sense and would recommend their treatment to friend. There was a significant decrease from baseline in the Beck Depression Inventory score in all three groups at both 12 weeks and 12 months, with no between group differences. There were decreases in the number of participants engaging in binge eating and increases in participant satisfaction with weight in all three groups at 12 months, with no between group differences.	

Jones 2002 [3986] USA RCT Individual 1–	**Setting:** University classroom or home, Mesa, AZ, USA. **Classroom:** *n* = 24 BMI (kg/m^2): 28.8 (SD 4.3) Weight (lb): 172.9 (SD 28.4) (78.4 [SD 12.9] kg) Waist-to-hip ratio: 0.77 (SD 0.06) **Computer:** *n* = 25 BMI (kg/m^2): 29.4 (SD 5.6) Weight (lb): 171.9 (SD 32.3) (78.0 [SD 14.6] kg Waist-to-hip ratio: 0.77 (SD 0.08) **Textbook:** *n* = 25 BMI (kg/m^2): 29.8 (SD 4.4) Weight (lb): 173.0 (SD 28.9) (78.5 [SD 13.1] kg) Waist/hip ratio: 0.76 (SD 0.05) **Other relevant information:** All participants were female, with an average age of 42 years (range 22–	To compare the effectiveness of three methods for delivering a weight loss education programme for women.	Three active interventions, all based on the textbook, The LEARN Program for Weight Control by Kelly Brownell (1994). All groups had identical weekly written assignments on which feedback was provided. **Classroom:** 1-hour weekly classes consisting of lectures, group activities, discussion, and assessment, for an unstated number of weeks. **Delivered by:** Not stated. **Computer:** Participants collected a new program disk containing a single lesson each week for an unstated number of weeks. Lessons contained knowledge, tests and feedback on results. Participants were encouraged to communicate with the instructor by phone or email with any questions or problems. **Delivered by:** Not stated. **Textbook:** Participants collected a new reading assignment each week	**Loss to follow-up**: *n* = 19 (26%). Not reported for each group separately. **BMI (kg/m^2):** (At 12-week follow-up) Classroom: 28.2 (SD 4.2) Computer: 28.7 (SD 5.5) Textbook: 29.2 (SD 4.8) All groups: Baseline 29.4 (SD 4.8), 6 weeks 28.6 (SD 4.5), 12 weeks 28.7 (SD 4.8) There was a statistically significant reduction in BMI from baseline to follow-up across all groups ($p < 0.001$). There was no statistically significant difference between groups in the extent of change. **Weight (lb):** At 12 week follow-up: Classroom: 170.5 (SD 28.7) (77.3 [SD 13.0] kg) Computer: 166.6 (SD 30.4) (75.6 [SD 13.8 kg) Textbook: 169.1 (SD 31.1) (76.7 [SD 14.1 kg) All groups: Baseline 172.6 (SD 29.5) (78.3 [SD 13.4] kg) 6 weeks 168.0 (SD 26.8) (76.2 [SD 12.2] kg) 12 weeks 168.9 (SD 29.5) (76.7 [SD 13.4] kg)	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20%. Although there were statistically significant decreases in weight outcomes, the actual changes were small. There were two follow-up points but the authors do not report when the significant change occurred.

	76). Fifty-eight participants were university staff members, five were students, two were faculty members and eight were recruited from the surrounding area. 82% were White. Participants were required to be at least 10 lb (4.5 kg) over ideal weight based on Metropolitan Life tables, be able to attend a class once per week, and have computer access.		for an unstated number of weeks. They were encouraged to communicate with the instructor by phone or email with any questions or problems. **Delivered by:** Not stated. **Length of follow-up:** 12 weeks. **Other agencies involved:** None reported. **Other information related to delivery:** Participants paid US$25 deposit, which was returned along with an additional US$25 upon completion of the course.	There was a statistically significant reduction in weight from baseline to follow-up across all groups ($p < 0.01$). There was no statistically significant difference between groups in the extent of change. **Waist-to-hip ratio:** At 12 week follow-up: Classroom: 0.75 (SD 0.05) Computer: 0.72 (SD 0.05) Textbook: 0.76 (SD 0.08) All groups: Baseline 0.77 (SD 0.06) 6 weeks 0.75 (SD 0.06) 12 weeks 0.75 (SD 0.07) There was a statistically significant reduction in BMI from baseline to follow-up across all groups ($p < 0.05$). There was no statistically significant difference between groups in the extent of change. **Other:** There were no significant differences between groups on weekly attendance.	
Tate 2003 [12537] USA RCT Individual	**Setting:** Rhode Island; setting was wherever participants had computer access. **Internet only:** *n* = 46 BMI (kg/m^2): 33.7 (SD 3.7)	To compare the effects of an Internet weight loss programme alone vs. with the addition of behavioural counselling via	**Internet only:** At an introductory 1-hour group session, participants received instruction on diet, exercise and behaviour change including recommendations on energy intake (1200–1500 kcal [5.02–6.28 MJ]) and PA, and were	**Loss to follow-up:** Internet only: *n* = 7 (15%) Internet + e-counselling: *n* = 8 (17%) **BMI (kg/m^2):** There was a significant difference ($p = 0.03$) at 12 months between BMI change (kg/m^2) in the behavioural e-	Randomisation adequately addressed. No mention of allocation concealment or blinding. Loss to follow-up <20%.

1+	Weight (kg): 89.4 (SD 12.6) Waist circumference (cm): 111 (SD 11.7) Age (years): 47.3 (SD 9.5) Gender: 11% male Ethnicity: 89% White Education: 48% college degree or higher Web/email experience (months): 80 (SD 58) Weekly Internet use (hours): 3.8 (SD 4.9) **Internet + behavioural e-counselling:** *n* = 46 BMI (kg/m^2): 32.5 (SD 3.8) Weight (kg): 86.2 (SD 14.3) Waist circumference (cm): 108 (SD 12.4) Age (years): 49.8 (SD 9.3) Gender: 9% male Ethnicity: 89% White Education: 52% college degree or higher Web/email experience (months): 87 (SD 71) Weekly Internet use (hours): 5.1 (SD 5.5) **Other relevant information:** Participants were required to have computer access and to have one or more other risk factors for type 2	email provided for 1 year to individuals at risk of type 2 diabetes.	encouraged to self-monitor these daily. They were also given access to a secure study website and a demonstration of its use. The website provided a tutorial on weight loss, a new tip and link each week, a directory of weight loss resources and a message board. Participants were required to submit their weight weekly for which they received email reminders. The total duration of the intervention was 12 months. **Delivered by:** Unclear who gave introductory meeting. **+ Behavioural e-counselling:** Participants attended the same introductory meeting with the Internet-only group and were given access to the same website but a different message board. They were also able to communicate via email with a counsellor. During the first month, the counsellor emailed participants five times per week, providing feedback, recommendations for change, answers to questions and general support. For the remaining 11 months emails were sent weekly. The total	counselling group (–1.6 [SD 2.2]) and the Internet only group (–0.8 [SD 2.1]). **Weight (kg):** There was a significant difference (p = 0.04) at 12 months between change in the behavioural e-counselling group (–4.4 [SD 6.2]) and the Internet only group (–2.0 [SD 5.7]). There was also a significant difference (p = 0.03) in the percentage of initial body weight lost by the behavioural e-counselling group (4.8%) and the Internet-only group (2.2%) at 12 months. **Waist circumference (cm):** There was a significant difference (p = 0.05) at 12 months between change in the behavioural e-counselling group (–7.2 [SD 7.5]) and the Internet-only group (–4.4 [SD 5.7]). **Log-in frequency:** There were significantly (p < 0.05) more log-ins to the website by the behavioural e-counselling group than the Internet-only group at all timepoints.	Weight outcomes were analysed using ITT. For those with missing data, change from baseline was assumed to be zero. Funded by American Diabetes Association.

	diabetes as well as being overweight (BMI 27–40 kg/m^2). Individuals with major health problems or recent weight loss ≥4.5 kg were excluded.		duration of the intervention was 12 months. **Delivered by:** Unclear who gave introductory meeting. Counsellors had masters or doctoral degrees in education, nutrition or psychology. **Length of follow-up:** 12 months. **Other agencies involved:** None reported. **Other information related to delivery:** Participants were seen at baseline, 3, 6 and 12 months for measurements, and were paid US$10–25 for attendance.		
Tate 2001 [3942] USA RCT Individual 1+	**Setting:** Participants were employees of a large network of hospitals. The study website was accessible on the organisation's Intranet. **Internet behaviour therapy:** *n* = 46 BMI (kg/m^2): 29.1 (SD 3.0) Weight (kg): 77.4 (SD 9.4) Waist circumference (cm):	To determine whether a structured Internet behavioural weight loss programme produces greater initial weight loss and changes in waist circumference than a weight loss education	**Internet behaviour therapy:** Participants were treated as the comparison group (described below) but they were also instructed to use an electronic diary on the website to record weekly self-monitoring information and to contact a therapist if required. They also received weekly behavioural weight loss lessons and personalised feedback via email, and they had access to a group electronic bulletin board.	**Loss to follow-up**: Behaviour therapy: *n* = 13 (28%) for weight and waist circumference, *n* = 14 (30%) for diet and activity. Education: *n* = 13 (29%) for weight and waist circumference, *n* = 15 (33%) for diet. *n* = 17 (38%) for activity. **Weight (kg):** There was a significant change over time ($p < 0.001$) in both groups. The	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20%. ITT for weight and waist circumference outcomes (using baseline data carried forward) but not for diet and activity

	98.5 (SD 9.4) Age (years): 41.1 (SD 11.6) Gender: 11% male Ethnicity: 89% White Education: 63% college degree or higher Web or email experience (months): 60.9 (SD 47.4) **Internet education:** *n* = 45 BMI (kg/m^2): 28.9 (SD 3.1) Weight (kg): 78.8 (SD 11.6) Waist circumference (cm): 98.4 (SD 10.2) Age (years): 40.6 (SD 9.7) Gender: 11% male Ethnicity: 78% White Education: 55% college degree or higher Web or email experience (months): 60.8 (SD 43.7) **Other relevant information:** Participants were recruited via email and a worksite webpage advertisement. Participants were required to be healthy with a BMI of 25–36 kg/m^2 and to agree not to seek additional weight loss treatment for 1 year.	website.	Participants who did not send a log in were contacted by email. **Delivered by:** A doctoral-level clinical psychologist gave introductory and follow-up meetings. A doctoral-level therapist provided individualised emailed feedback. **Internet education:** Participants were given access to a website providing basic information related to weight loss and a directory of resources about diet, exercise, self-monitoring, and behavioural topics for 24 weeks. They received an introductory 1-hour group lesson on behavioural weight control where they were advised on energy and fat intake and PA and were encouraged to use the self-monitoring web resources. They attended 15 min individual meetings with a clinical psychologist at 3 and 6 months. **Delivered by:** A doctoral-level clinical psychologist gave introductory and follow-up meetings.	weight change from baseline in the BT group was –3.2 (SD 2.9) at 3 months and –2.9 (SD 4.4) at 6 months. In the education group the change from baseline was –1.0 (SD 2.4) at 3 months and –1.3 (SD 3.0) at 6 months. Weight loss was significantly greater in the BT group than the education group at both 3 months ($p < 0.001$) and 6 months ($p = 0.04$). The goal of 5% weight loss was achieved by significantly ($p = 0.07$) more participants in the BT group (35%) than in the education group (18%). **Waist circumference (cm):** There was a significant change over time in both groups ($p = 0.004$). The waist change from baseline in the BT group was –5.3 (SD 4.9) at 3 months and –4.6 (SD 5.5) at 6 months. In the education group the change from baseline was –2.1 (SD 3.9) at 3 months and –2.3 (SD 3.9) at 6 months. The decrease in waist circumference was significantly greater in the BT group than the education group at both 3 months ($p = 0.001$) and 6 months ($p = 0.02$). **Website log-in frequency:** Participants in the BT group logged-on more often than those in the education group. Log-in frequency decreased in	outcomes. Diet and PA were self-reported. Funding was provided by a research division of Knoll Pharmaceutical.

			Length of follow-up: 6 months. **Other agencies involved:** None reported. **Other information related to delivery:** All participants received instruction on login procedures and website navigation. Participants were paid US$10 and US$25 for attending the 3- and 6-month follow-up appointments respectively.	both groups over time.	
Taylor 1991 [11346] USA RCT Individual 1–	**Setting:** Hand-held computer-based. **Computer-assisted therapy (CAT):** *n* = 28 Weight (kg): 78.8 Gender: 0% male **Frozen Foods First (FFF) + CAT:** *n* = 27 Weight (kg): 74.5 Gender: 0% male **Other relevant information:** Female participants with BMI between 25 and 35 were recruited via newspaper advertisements.	To investigate factors that might produce greater weight loss using CAT.	**CAT:** For a 12-week period participants were given a hand-held computer onto which they were encouraged to enter details of their diet on a daily basis, as well as exercise after every episode and their weight each week. They were encouraged to enter targets for weight loss and energy intake. The computer provided feedback on progress and a 12-week exercise programme. Participants who were not attaining their weight loss goals were encouraged to use a guided weight loss programme. This programme prescribed frozen meals to provide 1200 kcal (5.02 MJ) per day.	**Loss to follow-up:** At 12 weeks: CAT: *n* = 4 (14%) FFF + CAT: *n* = 1 (4%) At 38 weeks: CAT: *n* = 7 (25%) FFF + CAT: *n* = 2 (7%) **Weight (kg):** At 12 weeks there was a significant difference ($p < 0.001$) between weight change in the CAT group (–3.1 [SD 2.2]) and the FFF + CAT group (–5.3 [SD 2.2]). At 38 weeks the weight loss from baseline was still significantly different ($p < 0.0001$) between the two groups; CAT group –0.9 (SD 3.6), FFF + CAT group –3.8 (SD 2.7). **Adherence:**	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20% in one arm. No intention to treat (ITT) analysis. Analysis of those participants lost to follow-up found them to be significantly heavier and less confident of success than subjects remaining in the study.

	The mean age of all participants was 43.7 (SD 1.1) years.		Participants also attended four 1.5-hour group meetings to introduce them to the computer and then to discuss problems with the programme. **Delivered by:** Not stated. **FFF + CAT:** For a 12-week period participants were given a hand-held computer but were instructed to follow the guided weight loss programme (described above) and only use the computer to record weight and exercise. After they had lost 8–10 lb (3.6–4.5 kg) or after the fifth week of the programme, they proceeded as the CAT group. **Delivered by:** Not stated. **Length of follow-up:** 38 weeks. **Other agencies involved:** None reported. **Other information related to delivery:** All participants were required to give a deposit of US$100,	At week 12, the average number of computer entries per week was not significantly different between the two groups, 3.2 in the FFF + CAT group and 3.6 in the CAT group. This was about 50% of the recommended entries. **Other outcomes:** Participants had positive attitudes about computer-use, which did not change over the course of treatment. The FFF + CAT group found the computer less interesting than the CAT group at the end of the programme. Assuming that dropouts lost no weight, the mean weight loss for participants with BMI (kg/m^2) <31 (n = 43) was 4.3 kg compared with 2.7 kg for those with BMI >31 (n = 14). The difference between the groups was significant ($p < 0.05$).	Baseline weight was taken into consideration in the analysis of weight outcomes.

			which was returned after completion of follow-up assessments.		
Womble 2004 [57] USA RCT Individual 1+	**Setting:** Recruited by University of Pennsylvania. Setting was wherever participants accessed the Internet. **eDiets:** *n* = 23 BMI (kg/m^2): 33.9 (SD 3.2) Weight (kg): 93.4 (SD 12.6) Age (years): 44.2 (SD 9.3) Gender: 0% male **Weight loss manual:** *n* = 24 BMI (kg/m^2): 33.0 (SD 3.0) Weight (kg): 87.9 (SD 10.8) Age (years): 43.3 (SD 11.1) Gender: 0% male **Other relevant information:** Participants were required to have daily access to the Internet. Participants had to be free of specific physical conditions (reported in paper).	To assess the efficacy of eDiets.com (a commercial weight loss programme) in improving weight, cardiovascular health, and quality of life.	**eDiets:** Participants were given free 1-year membership of eDiets.com. They were encouraged to log-on to the programme daily, and met with a psychologist at weeks 8, 16, 26 and 52 for 20 min to review progress. There were also brief assessment visits every 4 weeks to obtain weight and blood pressure. The eDiets.com programme includes a virtual visit with a dietitian, individualised diet prescription and grocery lists, an animated fitness instructor and PA recommendations tailored to participants' self-reported fitness, access to online meetings and bulletin board support groups, a 24-hour helpdesk, email reminders and bi-weekly newsletters. **Delivered by:** Baseline and follow-up meetings were with a psychologist (one of the researchers). Research assistants conducted the assessment visits.	**Loss to follow-up**: eDiets: *n* = 8 (35%) Weight loss manual: *n* = 8 (33%) (One lost participant in the weight loss manual group developed diabetes and was excluded from all analyses.) **Weight (kg):** At week 16, the eDiets group had lost 0.7 (SD 2.7) and the weight loss manual group 3.0 (SD 3.1) and at week 52 the losses were 0.8 (SD 3.6) and 4.0 (5.1) respectively. There was a significant (p = 0.02) weight loss over time for both groups, and the weight loss manual group showed greater weight loss than the eDiets group at both week 16 (p = 0.01) and week 52 (p = 0.04). **Eating-related behaviour:** (Assessed by Eating Inventory; included treatment completers only) There were no statistically significant differences between the groups in self-reported eating restraint, disinhibition and hunger. **Attendance:** Attendance at scheduled visits did not differ significantly between groups. **Other outcomes:** Mood was assessed using the Beck	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20%. Analysis of weight outcomes was performed using last observation carried forward. Analysis using baseline carried forward or completers only gave similar results but differences between groups did not reach statistical significance. Analysis of eating-related behaviour and other outcomes included treatment completers only. Funded by North American Association for the Study of Obesity and National Intitutes of Health.

			Weight loss manual: Participants were given a copy of the weight loss manual 'LEARN Program for Weight Management 2000' and after 16 weeks were given a maintenance guide. They received the same schedule of progress meetings with the psychologist and assessment visits as the intervention group. **Delivered by:** Same as the intervention group. **Length of follow-up:** 1 year (outcomes reported at weeks 16 and 52). **Other agencies involved:** None reported **Other information related to delivery:** Participants were paid US$50 for completing the 52-week assessment.	Depression Inventory-II. At week 52 treatment completers reported significantly ($p < 0.004$) fewer symptoms of depression than at baseline. There were differences between the groups. Quality of Life was evaluated using the Short Form-36 Health Survey. At week 52 treatment completers reported significant improvements in physical functioning ($p < 0.05$) and vitality ($p < 0.003$) compared with baseline. There were no differences between the groups.	
Dennison 1996 [11287] USA CBA 2–	**Setting:** Two sites of a large car-manufacturing firm, New York. **Intervention:** Ninety-three participants enrolled, but data are for completers only.	To determine whether a computer-assisted instruction nutrition program would assist employees in maintaining	**Computer instruction program:** Eight weekly classes of 'Weigh To Go' computer-based program, consisting of nutrition information and computerised food intake and activity analysis, delivered in a worksite computer laboratory.	**Loss to follow-up**: Weight outcome: Intervention (both groups): *n* = 71 (76%) Control: *n* = 32 (80%) Diet outcomes: Intervention (both groups): *n* = 76 (82%) Control: *n* = 33 (83%)	Data reported for completers only.

	Computer instruction program: *n* = 11 Weight (lb): 238.8 (108.3 kg) **Non-computer instruction programme:** *n* = 11 Weight (lb): 203.6 (92.4 kg) **Control:** Forty participants enrolled from the second factory site, but data are for completers only (*n* = 8). Weight (lb): 233.5 (105.9 kg) **Other relevant information:** The 30 completers (all groups combined) had the following characteristics: Mean age (years): 47 Gender: 90% male Ethnicity: 90% White They were described as being mainly blue collar workers. Participants were required to be between 20–35% above their desirable	weight loss and dietary intake improvements for a 1-year period.	Additionally, activities such as power walking and cycling were conducted (no details provided). **Non-computer instruction programme:** Eight weekly classes with the same content as the computer instruction intervention but participants had no computer interaction. Additionally, activities such as power walking and cycling were conducted (no details provided). **Delivered by:** The intervention team consisted of a certified health educator, a registered dietitian and an exercise technician. **Control:** No intervention. **Delivered by:** N/a **Length of follow-up:** 1 year **Other agencies involved:** None reported. **Other information related to delivery:**	**Weight (lb):** Change at follow-up: Computer instruction program: –20.2 (–9.2 kg) Non-computer instruction programme:–2.7 (–1.2 kg) Control: +2.0 (+0.9 kg) There was no statistically significant difference between the three groups, nor between intervention groups combined and control.	

	weight using standard weight tables.		The Activated Health Education model was used as the basis of the intervention.		
Interventions in a work-based setting					
Dennis 1999 [4011] USA RCT Individual 1–	**Setting:** Onboard a US Navy aircraft carrier, the participants' place of work for a 6-month period. **Intervention:** Twenty-seven were randomised to the group, but data are for completers only (*n* = 21). BMI (kg/m^2): 33.9 (SD 2.7) Weight (kg): 108.1 (SD 10.2) Waist circumference (cm): 111.5 (SD 4.8) Age (years): 31.9 (SD 7.1) Gender: 100% male Previous weight loss attempts (*n*): 5.4 (SD 6.0) **Control:** Twenty were randomised to the group but data are for completers only (*n* = 18). BMI (kg/m^2): 33.0 (SD 2.9) Weight (kg): 106.7 (SD 12.0) Waist circumference (cm): 111.3 (SD 6.8) Age (years): 30.4 (SD 5.7)	To determine whether a multi-faceted approach to weight loss and physical readiness could be implemented onboard a deployed US Navy ship.	**Intervention:** Participants attended weekly 1-hour lecture and discussion sessions in small groups (7–12 individuals) for 16 weeks. They were given food exchange lists from which to make dietary choices falling within NCEP Step I (Heart Healthy) guidelines and they were taught behaviour modification techniques. They also took part in the standard Navy exercise programme consisting of 1 hour of exercise 4 days per week. **Delivered by:** Weekly sessions were conducted by a Navy dietitian. **Control:** Participants were provided with nutrition fact sheets and brochures if requested, but no other assistance for weight management. They also took part in the same standard Navy exercise programme as the intervention group. **Delivered by:**	**Loss to follow-up**: Intervention: *n* = 6/27 (22%) Control: *n* = 2/20 (10%) **BMI (kg/m^2):** Intervention: 31.3 (SD 3.3) Control: 31.2 (SD 3.0) There was a significant ($p < 0.001$) reduction in BMI in both groups over time and the reduction was significantly greater ($p < 0.05$) in the intervention group than control. **Weight (kg):** Intervention: 99.6 (SD 9.7) Control: 101.1 (SD 12.5) There was a significant ($p < 0.001$) reduction in weight in both groups over time and the reduction was significantly greater ($p < 0.05$) in the intervention group than control. **Waist circumference (cm):** Intervention: 100.1 (SD 5.6) Control: 102.7 (SD 7.8) There was a significant ($p < 0.001$) reduction in waist circumference in both groups over time, but no statistically	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20% in one arm. No ITT. The authors state that the publication of articles about the treatment programme in onboard newspapers may have contaminated the control group and led to competition between the two groups.

	Gender: 100% male Previous weight loss attempts (*n*): 2.1 (SD 2.4) **Other relevant information:** All service members stationed on the ship who were classified as not meeting body composition standards (*n* = 47) were invited to take part in the study. All consented and were randomised. However data are only presented for those who completed the study (*n* = 39).		N/a **Length of follow-up:** 16 weeks **Other agencies involved:** None reported. **Other information related to delivery:** **None.**	significant difference between the groups. **Other outcomes:** There were no significant differences between the groups in self-esteem (The Cooper Self-Esteem Inventory) and mood (Profile of Mood State). There was an improvement in depression (Center of Epidemiologic Studies Depression Scale) for the treated group versus the controls. There were significant differences between the groups at baseline on the eating behaviour measures (Binge Eating Scale, Eating Behaviour Inventory and Eating Self-Efficacy Scale) with the intervention group scoring more poorly. The intervention group improved on these measures so that following the intervention they were similar to the control group.	
Follick 1984 [11709] USA RCT Individual 1–	**Setting:** The participants' worksite, a general hospital. **Incentive:** *n* = 24 % Overweight: 31.6 **Control:** *n* = 24 % Overweight: 28.9% **Other relevant**	To examine the effects of an incentive procedure designed to decrease attrition in a behavioural worksite weight-loss intervention.	**Incentive:** Participants attended 14 30-min group behavioural weight-loss sessions. The first ten sessions were held weekly and focussed on losing weight, and the final four sessions were held fortnightly and focussed on the maintenance of weight loss. Before the programme started participants were required to give a US$5 deposit for each session. One US$5 deposit was	**Loss to follow-up:** Non-completers were defined as those attending fewer than 11 sessions and/or not completing all required assignments: Incentive: *n* = 10 (42%) Control: *n* = 19 (79%) **% Overweight:** (completers only) Repeated measures analysis of variance (ANOVA) showed that both groups lost weight over the course of	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20%. No ITT. Outcome data was only reported for participants defined as completers.

	information: All participants (*n* = 48): Age (years): range 20 to 69 Gender: 15% male % Overweight: range 10–113		returned at each session provided the subject attended (three 'excused absences' were allowed provided all other requirements were fulfilled), submitted completed daily food and energy intake records, and weighed in. At the end of the programme forfeited deposit money was divided between participants who attended at least 11 sessions and met all other requirements. **Delivered by:** Two psychologists led the sessions. **Control:** Participants followed the same behavioural weight-loss programme as the incentive group, and were required to give the same pre-programme deposits. The deposits were returned to the participants at the first session. **Delivered by:** Two psychologists led the sessions. **Length of follow-up:** 6 months. **Other agencies involved:**	the intervention but there was no significant difference between the groups. The incentive group were 23.60 (SD 12.00)% overweight at baseline, 17.57 (SD 12.97)% overweight after the 18 week programme and 22.30 (SD 16.91)% overweight at 6 month follow-up. The control group were 27.64 (SD 13.12)% overweight at baseline, 22.70 (SD 10.32)% overweight after the 18 week programme and 28.20 (SD 14.96)% overweight at 6 month follow-up. **Attendance:** There was a significant difference ($p < 0.01$) in the number of sessions attended by the incentive group (9.42 [SD 4.04]) and the control group (6.04 [SD 2.68]).	

			None reported. **Other information related to delivery:** **None.**		
Leslie 2002 [3977] UK RCT Individual 1–	**Setting:** Large petrochemical worksite (BP Grangemouth), Scotland. **Energy-deficient diet (ED):** *n* = 61 BMI (kg/m^2): 31.5 (SD 3.7) Weight (kg): 98.2 (SD 13.9) Waist (cm): 108.4 (SD 9.3) Age (years): 41.3 (SD 8.1) Gender: 100% male **Generalised low-energy diet (GLE):** *n* = 61 BMI (kg/m^2): 30.4 (SD 3.7) Weight (kg): 94.6 (SD 13.3) Waist (cm): 105.9 (SD 9.3) Age (years): 42.1 (SD 7.8) Gender: 100% male **Control:** Forty-four of the above 122 participants were randomised to an initial control period prior to receiving dietary advice. The baseline characteristics of this subgroup, and non-	To compare the effectiveness of a 600 kcal (2.51 MJ) daily deficit diet and a generalised low calorie (1500 kcal [6.28 MJ]) diet for weight loss, and to compare the inclusion and exclusion of meat in the weight loss diets.	Randomisation was to four different groups, the two diets each with or without meat. However, data are only presented separately for the two diet groups. **ED (meat):** Participants received individualised daily energy prescriptions of 600 kcal (2.51 MJ) less than their estimated daily energy requirement to maintain their initial weight (prescriptions ranged from 1700 to 2600 kcal [7.11 to 10.89 MJ]). They were given eating plans to match their prescriptions based on a food exchange system. They were advised to consume lean cuts of red meat at least five times per week. The initial dietetic consultation took a minimum of 60 min. Participants received individual 15–20 min consultations every 2 weeks for the first 12 weeks. After this, participants' individualised energy prescriptions were recalculated	**Loss to follow-up:** At 12 weeks: ED: *n* = 12 (20%) GLC: *n* = 19 (31%) At 24 weeks: ED: *n* = 16 (26%) GLC: *n* = 21 (34%) **Weight (kg):** An analysis of participants in the control group for the first 12 weeks (*n* = 44) vs. ED (*n* = 40) vs. GLE (*n* = 38) found that there were statistically significant ($p < 0.0001$) weight changes with ED (–4.6 [SD 3.4]) and with GLE (–5.6 [SD 3.7]) but not in the control group (+0.5 [SD 2.2]). There was no significant difference between weight loss in ED and GLE groups, but both diet groups were significantly different ($p < 0.0001$) from the control group. Analysis (including control participants within their allocated diet groups) of completers only found significant increases in weight between weeks 12 and 24 (to levels significantly lower than baseline) in both ED (+0.9 [SD 2.0]) and GLE (+1.4 [SD 1.6]) groups. There was no significant difference between the	No description of randomisation method. Allocation concealment adequately addressed. No mention of blinding. Loss to follow-up >20%. ITT reported for 12-week analysis but not at 24 weeks. Zero weight loss was assumed where only the baseline measure was available. Baseline data and loss to follow-up are not reported for the control vs. intervention groups comparison. Funded by the Meat and Livestock Commission.

	control subgroups, are not provided. **Other relevant information:** Participants were recruited via workplace email. Participants were required to have a BMI >25 kg/m^2. Exclusion criteria included intentional weight loss >3 kg in the previous 3 months.		for weight maintenance and contact was via email every 2 weeks for 12 weeks. **ED (no meat):** Participants received the same intervention as ED (meat) but red meat was not included in their food plans; alternatives included fish, eggs and cheese. **Delivered by:** Not stated. **GLE (meat):** Participants received a 1500 kcal (6.28 MJ) eating plan based on a food exchange system. They were advised to consume lean cuts of red meat at least five times per week. Participants received individual 15–20 min consultations every 2 weeks for the first 12 weeks. Then healthy eating advice was reviewed for weight maintenance and contact was via email every 2 weeks for a further 12 weeks. **GLE (no meat):** Participants received the same intervention as GLE (meat) but red meat was not included in their food plans; alternatives included fish, eggs and cheese.	groups. Inclusion/exclusion of meat had no significant effect on weight loss.	

			Delivered by: Not stated. **Control:** Before receiving dietary advice and starting their assigned diet programme, participants underwent a 12-week control period. No further details were provided. **Delivered by:** Not stated. **Length of follow-up:** 24 weeks. **Other agencies involved:** None reported. **Other information related to delivery:** During the maintenance period, face-to-face consultations were discouraged.		
Muto 2001 [3967] Japan RCT Individual 1–	**Setting**: Building maintenance company, Japan. Health promotion programme. **Intervention:** *n* = 163 total participants, *n* = 70 overweight BMI (kg/m^2): 27.2 (SD 1.5)	**Aim:** To assess the long-term effectiveness of a multi-component worksite health promotion programme targeting cardiovascular	**Intervention:** The main programme was conducted over 4 days at a hot springs resort. Participants were given lectures, practical sessions, individual counselling, and group discussions on nutrition, PA, stress and cardiovascular disease risk factors. The main focus was on	**Loss to follow-up:** (whole group) Intervention: *n* = 11 (6.7%) Control: *n* = 13 (7.9%) The authors do not report loss to follow-up for the overweight sub-group. **BMI (kg/m^2):** Mean change at 6 months follow-up	Randomisation poorly addressed. No mention of allocation concealment or blinding. Loss to follow-up <20% for whole group, unclear for subgroup of interest.

	Weight (kg): 77.2 (SD 6.8) **Control:** *n* = 163 total participants, *n* = 60 overweight BMI (kg/m^2): 27.4 (2.0) Weight (kg): 79.3 (SD 7.9) **Other relevant information:** The authors state that approximately 80% of participants in each group were blue collar workers and 20% were white collar workers. Male employees were recruited from a national company, across its seven branches. Participants were required to have at least one abnormality in BMI (≥25 kg/m^2), blood pressure, cholesterol or blood glucose. All participants were recruited from those who had attended one of six health promotion seminars conducted twice per year over a 3-year period.	disease risk factors.	nutrition and PA. At the end of the programme participants were required to define goals on diet, PA, and other health goals. Self-evaluation of these goals at 3-month intervals for 1 year after the programme was required. Comments on this evaluation were provided by the participants' supervisor and spouse/family member. **Delivered by:** Physician, dietitian, exercise trainer and the programme co-ordinators, who were outside the occupational health service. **Control:** Received an annual health examination in compliance with Industrial Safety and Health Law. If cardiovascular risk factors were identified they were written to by physician or nurse and advised to make changes in their lifestyle. **Length of follow-up:** 18 months. **Other agencies involved:** None reported. **Other information related to delivery:**	Intervention: –0.8 (SD 0.9) Control: –0.1 (SD 0.6) Mean change (from baseline) at 18 months follow-up Intervention: –0.6 (SD 1.1) Control: 0.1 (SD 0.7) The intervention group demonstrated significantly greater BMI reduction compared with the control group at 6 months ($p < 0.001$), and at 18 months ($p < 0.001$). **Weight (kg):** Mean change at 6 months follow-up: Intervention: –2.5 (SD 2.7) Control: –0.1 (SD 1.8) Mean change at 18 months follow-up: Intervention: –1.9 (SD 3.3) Control: +0.2 (SD 2.1) The intervention group demonstrated significantly greater weight loss compared with the control group at 6 months ($p < 0.001$), and at 18 months ($p < 0.001$).	No ITT analysis.

			None.		
Peterson 1985 [11331] USA RCT Individual 1-	**Setting:** Blue-collar company, Texas Instruments Inc, MA, USA. **Professionally led:** *n* = 30 Weight (kg): 82.9 **Volunteer led:** *n* = 33 Weight (kg): 81.6 **Other relevant information:** Participants were at least 10% over their ideal body weight (IBW). **Baseline data for all participants grouped together (*n* = 63):** Age (years): 46.2 (range 22 to 65) Gender: 24% male % Overweight (according to Metropolitan Life Insurance (1959): 36.6%	**Aim:** To determine the effectiveness of a professionally led, and a volunteer-led, self-help worksite weight loss programme.	**Professionally led:** The weight loss programme 'Learn to be Lean' was used. The programme consisted of 12 1-hour group meetings held weekly for the first 8 weeks and then bi-weekly for the next 8 weeks (focussing on maintenance). Workbooks were provided to all participants. Each session consisted of one learning module. Topics included: energy balance, group support skills, self-control skills, choosing a lean cuisine, eating and inactivity triggers, getting other to help, losing weight through aerobic exercise, etc. Maintenance strategies dealt with relapse and lifestyle transition. The programme built on problem solving skills and the use of social support systems at work (buddy system) and at home. **Delivered by:** Pawtucket Heart Health Programme health professionals: one physiologist, and one nutritionist. These health professionals were trained and supervised by two clinical psychologists.	**Loss to follow-up:** Professional-led: Post-intervention (16 weeks) *n* = 12 (40%); 8-month follow-up *n* = 23 (77%) Volunteer-led: Post-intervention (16 weeks): *n* = 7 (21%); 8-month follow-up *n* = 16 (48%). **Weight (kg):** Professional-led: 77.1, post-intervention; 72.1, 8-month follow-up. Volunteer-led: 75.3, post-intervention; 74.0, 8-month follow-up. **Mean Weight Reduction Quotient (WRQ):** (Takes into account baseline weight and ideal weight) Professional-led: Post-intervention 46.6, 8-month follow-up 69.7 Volunteer-led: Post-intervention 20.2, 8-month follow-up 40.6 The authors report that participants in both conditions lost weight over time ($p < 0.01$) but there was no difference between the groups. **Cost-effectiveness:**	Randomisation adequately addressed. No mention of allocation concealment or blinding. Loss to follow-up > 20%. ITT analysis used baseline data for lost participants. Analysis with completers only gave the same results as ITT.

			Volunteer-led: The same protocol and treatment manual as in the professionally led condition was followed. Elected volunteers facilitated the meetings. Volunteer leaders were selected on a 'double endorsement system'. **Delivered by:** Temporarily (meetings 1 and 2) led by health professionals. After which, elected volunteers facilitated the programme. **Length of follow-up:** 8 months. **Other agencies involved:** None reported. **Other information related to delivery:** Volunteer training consisted of a 1 hour weekly session for 5 weeks.	(Based on cost per kg-lost index) Professional-led: Post-intervention US$7.88, 8-month follow-up US$12.55 Volunteer-led: Post-intervention US$4.38, 8-month follow-up US$5.56 (No further details provided.)	
Pritchard 1997 [3959] Pritchard 2002 [3958] Australia RCT	**Setting:** Worksite of a national business corporation. **Diet:** *n* = 22 randomised, data only reported for completers (*n* = 18)	To compare the effects of weight loss through diet with weight loss through exercise on changes in fat and lean tissue in a long-term	**Diet:** Participants were instructed to follow a personalised low-fat diet, and were provided with the Australian Heart Foundation booklet, 'The Weight Loss Guide'.	**Loss to follow-up:** Diet: *n* = 4/22 (18.2%) Exercise: *n* = 1/22 (4.5%) Control: *n* = 1/20 (5.0%) **BMI (kg/m^2):** Percentage change in BMI was significantly different ($p < 0.05$) in both	Some inconsistency between tables in the two papers. Randomisation poorly addressed. No mention of allocation concealment or

Individual 1+ Note: both papers report randomised data on the same participants. All the extracted data was taken from Pritchard 1997, and some additional information was from Pritchard 2002.	BMI (kg/m^2): 29.0 (SD 2.8) Weight (kg): 88.1 (SD 10.5) Age (years): 43.6 (SD 6.0) Gender: 100% male **Exercise:** *n* = 22 randomised, data only reported for completers (*n* = 21). BMI (kg/m^2): 29.2 (SD 2.8) Weight (kg): 87.8 (SD 10.1) Age (years): 44.9 (SD 6.5) Gender: 100% male **Control:** *n* = 20 randomised, data only reported for completers (*n* = 19) BMI (kg/m^2): 28.6 (SD 2.8) Weight (kg): 87.0 (SD 10.9) Age (years): 42.3 (SD 4.5) Gender: 100% male **Other relevant information:** Male employees with BMI 26–35 kg/m^2 and of satisfactory medical and cardiovascular fitness were eligible to participate. Data were only provided for completers (*n* = 58).	worksite programme.	**Delivered by:** Not stated. **Exercise:** Participants were instructed to avoid changing their diet, but to follow an aerobic exercise regimen in their leisure time; at least three 30-min sessions per week. They were prescribed a personal heart rate target (65–75% maximum heart rate) but could select the type of exercise (walking, cycling, swimming, jogging, gym). **Delivered by:** Not stated. **Control:** Participants were instructed to follow their usual pattern of activity and to avoid changes in diet. They were told they would move on to a weight-loss programme on completion of 12 months. **Delivered by:** Not stated. **Length of follow-up:** 12 months **Other agencies involved:** None reported.	diet (–8.2% [SD 0.9%]) and exercise (–4.4% [SD 0.7%]) groups compared with control (+1.0% [SD 0.7%]). **Weight (kg):** Percentage change in weight was significantly different ($p < 0.05$) in both diet (–7.2 [SD 0.9]) and exercise (–3.0 [SD 0.8]) groups compared with control (+1.03 [SD 0.6]). **Total fat mass (kg):** Percentage change from baseline was significantly different ($p < 0.05$) in the diet (–19.4 [SD 2.3] from 19.6 [SD 4.3]) and exercise (–11.0 [SD 2.6] from 18.8 [SD 5.0]) groups compared with control (–0.4% [SD 1.6] from 19.2 [SD 3.5]). **Total lean mass (kg):** Percentage change from baseline was significantly different ($p < 0.05$) in the diet (–3.9% [SD 0.5] from 66.7 [SD 6.7]) and exercise (–1.0% [SD 0.5] from 66.3 [SD 7.8]) groups compared with control (+0.2 [SD 0.4] from 64.9 [SD 7.7]).	blinding. Loss to follow-up <20%. No ITT analysis.

			Other information related to delivery: All participants were invited to attend bimonthly motivational group breakfast or lunch meetings at which diet, exercise and health information was delivered by guest speakers or video films. All participants completed 24-hour food recall records at monthly sessions and provided 3-day food diaries at 6 and 12 months. The diet and control group completed activity logs at monthly sessions and the exercise group completed daily activity records.		
Furuki 1999 [8838] Japan CBA 2–	**Setting**: Automobile parts manufacturer, Kyoto Prefecture and other worksite settings. **Intervention:** Whole group *n* = 507, overweight subgroup *n* = 60 BMI (kg/m^2): men 26.3 (SD 1.4), women 26.3 (SD 1.0) Gender: 90% male. **Control:** Whole group *n* = 507; overweight subgroup *n* = 81	**Aim:** To evaluate the effect of a work-based health promotion programme on BMI.	**Intervention:** Four-year (June 1992 – June 1996) THP programme, sponsored by Japan's ministry of Labour. Workers were screened and individuals identified as 'at risk' based on elevated BMI (≥25 kg/m^2), blood pressure, cholesterol or oxygen uptake received health guidance (no further details provided). **Delivered by:** Unclear. **Control:**	**Loss to follow-up:** Not reported. **BMI (kg/m^2):** Change at follow-up: Men Intervention: +0.25 (SD 1.24) Control: +0.02 (SD 1.34), $p < 0.01$ Women Intervention: –1.28 (SD 1.87) Control: +0.45 (SD 1.60) No statistically significant significance between intervention and control group was shown.	Control group selected from those who completed all annual health checks. Unclear how comparable control and intervention groups were at baseline other than BMI.

	BMI (kg/m^2): men 26.8 (SD 1.9); women, 26.2 (SD 1.2) Gender: 79% male Workers in an automobile parts company were offered the 'Total Health Promotion Plan' (THP). In total, 507 employees, aged between 26 and 55 years old entered the programme. Control subjects were matched by gender and age. Control subjects were selected from 20,000 employees in companies across the same region not employing the THP health programme. A subgroup of overweight participants (BMI ≥25 kg/m^2) was identified at the start of the study in both groups. Although the paper provides results for all participants, it is this overweight subgroup that forms the basis of the results presented here. Individuals undergoing medical treatment were excluded from the study.		Participants attended health checks over the study period. **Length of follow up:** 4 years. **Other agencies involved:** None reported. **Other information related to delivery:** None.		

Other non-clinical settings					
Jason 1991 [11310] USA RCT Individual 1–	**Setting**: Television-based programme. All pre-programme and follow-up interviews and/or measurements completed at DePaul University, Chicago, IL, USA. **Support group:** *n* = 38 Scale weight (lb): 208.03 (SD 55.91) (94.7 [SD 25.4] kg) Gender: 14% Male, 76% Female Ethnicity: 86.5% White, 13.5% Black. Socio-economic status (SES)*: 43.00 (SD 10.99) **Non support group:** *n* = 36 Scale Weight (lb) = 199.92 (SD 44.51) Gender: 19% male, 81% female Ethnicity: 83.8% White, 10.8% Black, 2.7% Hispanic, 2.7% other. SES*: 47.91 (SD 9.81) *Using the Hollingshead Scale.	**Aim:** To evaluate the effect of a media-based weight-loss and nutrition programme with, and without, group support.	**Support group:** Weight-loss and nutrition television programme, self-help book and self-help group. Each participant was assigned a 'buddy' (research assistant), to help find appropriate self-help groups. Participants also received telephone support; once a week during the programme. This decreased in frequency after the first few months. **Delivered by:** News-reader, research assistant and support groups. **Non-support group:** Weight loss and nutrition television programme, and self-help booklet. **Programme:** A well-known news-reporter provided step-by-step instructions on how to lose weight and improve nutrition during fifteen 2–4 min broadcasts. Broadcasts were aired Monday–Friday, during the mid-day and evening (9 pm) news programme, for 3 weeks	**Loss to follow-up:** (3-month follow-up) Support group: *n* = 8 (21%). Non-support group: *n* = 8 (22%) **Weight (self reported weight, lb):** Support group: Baseline 204.95 (SD 52.84) (93.0 [SD 24.0] kg) Follow-up 192.96 (SD 54.05) (87.5 [SD 24.5] kg) Non-support group: Baseline 199.00 (SD 42.91) (90.3 [SD 19.5] kg) Follow-up 189.80 (SD 40.05) (86.1 [SD 18.2] kg) A decrease from baseline was found for the non-support group on self-reported measures of weight ($p < 0.05$). **Other outcomes:** 83.8% of the support group attended a self-help group during the intervention compared with none of the comparison group. 97.3% of support group members and 88.9% of non-support group members said they would recommend the programme to others (not statistically significant).	No description of randomisation method. No mention of allocation concealment. Loss to follow-up >20%. No ITT. Measures of weight, nutrition and exercise were based on self-reported data at 3 months. The non-support group had a slightly higher protein intake at baseline than the support group ($p < 0.05$).

	Other relevant information: Study participants were recruited from the respondents to two television announcements, aired on Channel 9, asking for volunteers. Individuals selected to participate in the study met the following inclusion criteria: overweight (at least 50% over IBW); no history of intestinal problems; not currently taking psychoactive drugs.		in November 1986. Manuals were provided to all study participants before the start of the programme. All study participants were encouraged to watch the programme. **Length of follow-up:** 3 months. **Other agencies involved:** None reported. **Other information related to delivery:** **None.**	Based on the Master Questionnaire, from baseline to follow-up, the amount of hopelessness experienced by the support group decreased ($p < 0.05$) and their motivation increased ($p < 0.05$). Stimulus control increased in both groups ($p < 0.05$). It is not reported whether there were statistically significant differences between the groups.	
Kennedy 2005 [259 update] USA RCT 1–	**Setting:** African American church in Baton Rouge, LA, USA. **Group intervention:** *n* = 20 BMI (kg/m^2): 37.5 (SD 6) Weight (kg): 103.7 (SD 17.5) Body fat (%): 47.4 (SD 8.1) Fat free mass (kg): 54 (SD 9.3) Age (years): 44 (SD 10) **Individual intervention:** *n* = 20 BMI (kg/m^2): 39.3 (SD 7.8) Weight (kg): 103.4 (SD 24)	To evaluate a church-based weight loss programme.	**Group intervention:** Nutrition education was delivered during six, monthly group meetings, which involved group discussion. The importance of increasing PA was emphasised. **Individual intervention:** Nutrition education was delivered during 15 one-to-one sessions over 6 months. The first six sessions covered the same topics as the group intervention. There were then additional sessions on diet activity and self-monitoring and assessment. Participants were	**Loss to follow-up**: Group intervention: *n* = 4, 10% Individual intervention: *n* = 0, 0% **BMI, mean change (kg/m^2)** Group intervention: –1.0 (SD 1) Individual intervention: –1.3 (SD 1.3) **Weight (kg)** Group intervention: –3.1 (SD 3.5) Individual intervention: –3.4 (3.5) **Body fat (%) (assessed using dual-emission X-ray absorptiometry [DEXA])** Group intervention: –0.4 (SD 1.1) Individual intervention: –0.5 (SD 1.6)	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up <20%. No ITT analysis. Baseline data provided only on participants who completed the study.

	Body fat (%): 48.8 (SD 6.6) Fat free mass: 52 (SD 9.5) Age (years): 44 (10) **Other relevant information:** There were three male participants across both groups. Participants were recruited using posters, flyers and personal communication from church leaders and members. African American individuals >19 years, who were overweight or obese but otherwise healthy, were eligible.		encouraged to keep a 7-day food diary each month and there was basic dietary assessment using a computer programme. The importance of increasing PA was emphasised. **Delivered by:** Two church members with some background in nutrition and/or health education. They received two days training and were provided with education material. **Length of follow-up:** 24 weeks. **Other agencies involved:** Training was provided by the investigators at a biomedical research centre. **Other information related to delivery:** Each educator worked with ten participants from each intervention group. Participants were paid US$100 for taking part in the study.	**Fat free mass (kg)** Group intervention: –1.2 (SD 1.3) Individual intervention: –1.4 (SD 1.8) There were no statistically significant differences between the two groups in change from baseline to follow-up. There was a statistically significant weight loss (kg), body fat (kg) and fat free mass (kg) from baseline to follow-up in both groups ($p < 0.05$).	
McNabb 1997 [3972] USA	**Setting:** Three urban African American churches **Intervention:**	To test the effectiveness of PATHWAYS, a weight loss programme	**Intervention:** Weekly 1.5-hour facilitator-led group sessions for 14 weeks held in each of the churches. The programme involved	**Loss to follow-up**: Intervention: *n* = 4 (21%) Control: *n* = 2 (10%) (For waist circumference, diet, exercise and behaviour outcomes loss to follow	No description of randomisation method. Outcome assessors were blinded to group

RCT Individual 1+	*n* = 19 BMI (completers only) (kg/m^2): *n* = 15, 33.9 (SD 5.07) Weight (lb, completers only *n* = 15): 199.0 (90.3 kg) Waist circumference (inches, completers only *n* = 12): 38.2 (SD 3.62) (92.0 [SD 9.2] cm) Age (years): 56.5 (SD 14.5) 0% male 42% unemployed 11% education less than high school **Control:** *n* = 20 BMI (kg/m^2) (completers only, *n* = 18): 33.1 (SD 3.70) Weight (lb, completers only *n* = 18): 196.9 (89.3 kg) Waist circumference (inches, completers only *n* = 16): 37.7 (SD 3.75) (95.9 [SD 9.5] cm) Age (years): 56.6 (SD 13.0) 0% male 50% unemployed 15% education less than high school **Other relevant information:** Participants were required	designed specifically for urban African American women, administered in urban churches by trained lay facilitators	assisting participants in eating and behaviour change goal-setting, discussion of progress, problem-solving techniques and instruction in at-home exercise such as walking. **Control:** On waiting list to receive intervention. **Delivered by:** Site co-ordinator and two lay facilitators for each church. The lay facilitators had some health education experience. They had 9 hours of training and ongoing training and feedback from the researchers who attended each session. **Length of follow-up:** 15 weeks. **Other agencies involved:** None reported. **Other information related to delivery:** None reported.	up was: intervention *n* = 7 [37%]; control *n* = 4 [20%]) **BMI (kg/m^2):** Intervention: 32.5 (SD 5.41) Control: 33.7 (SD 4.07) There was a significant reduction ($p < 0.0001$) in BMI (kg/m^2) with the intervention (–1.4 [SD 1.61]) compared with control (+0.6 [SD 0.73]). **Weight (lb):** Intervention: 189.0 (SD 27.69) (85.7 [SD 12.56] kg) Control: 198.8 (SD 27.32) (90.2 [SD 12.39] kg) There was a significant ($p < 0.0001$) reduction in weight with the intervention (–10.0 [SD 10.28]) (–4.5 [SD 4.66] kg) compared with control (+1.9 [SD 4.25]) (+0.86 [SD 1.93] kg). There was no statistically significant difference between the weight loss of high attendees (attended <75% sessions) and low attendees. **Waist circumference (inches):** At follow-up: Intervention: 35.7 (SD 4.46) (90.7 [SD 11.3] cm) Control: 37.3 (SD 3.68) (94.7 [SD 9.3] cm) Waist circumference decreased significantly ($p < 0.02$) with the	allocation. Loss to follow-up >20% in one arm. ITT analysis for weight outcomes only. Eating and exercise behaviours were self-reported.

	to be African American female church members with BMI between 30 and 45 kg/m^2.			intervention (–2.5 [SD 2.39] inches [–6.3 {SD 6.1} cm]) compared with control (–0.4 [SD 1.84] inches [–1.0 {SD 4.7} cm]). **Behaviour and attitude:** (Assessed using the PATHWAYS Weight Loss Behaviour Index) There was a significant ($p < 0.001$) increase in positive eating behaviours and significant ($p < 0.002$) decrease in negative eating behaviours in intervention compared with control. **Attendance:** 75% of participants attended nine or more sessions.	
Perri 1997 [3961] USA RCT Individual 1+	**Setting:** A clinic (for group intervention) or participants' homes, Florida. **Group-based exercise:** *n* = 25 BMI (kg/m^2): 34.04 (SD 4.54) Weight (kg): 89.81 (SD 11.71) Age (years): 48.72 (SD 6.18) **Home-based exercise:** Twenty-four participants were randomised, but baseline data provided for *n* = 23	To compare group- vs. home-based exercise for the treatment of obese women undergoing behavioural weight loss therapy.	**Group-based exercise:** Participants attended weekly 2-hour group BT sessions (12–14 members per group) for 26 weeks, involving behavioural weight management techniques. They were also instructed to follow a 1200 kcal (5.02 MJ)/day diet. For the next 26 weeks they attended biweekly sessions focussing on the maintenance of changes in behaviours. Participants were given individual exercise prescriptions (target level 60–70% maximum heart rate) with a target of exercising 30 min per day 5	**Loss to follow-up:** Group: *n* = 7/25 (28%) Home: *n* = 2/24 (8%) One of the participants lost from the home group was excluded from all analyses. **Weight (kg):** There were significant ($p < 0.0001$) changes over time in both groups. Change from baseline to 6 months was –9.35 (SD 5.24) with group-based exercise and –10.40 (SD 6.29) with home-based exercise. At 15 months the weight change from baseline with home-based exercise (–11.65 [SD 8.99]) was significantly greater than with group-based exercise (–7.01 [SD 8.23]). This analysis took pre-	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20% in one arm. Weight and activity analyses included all participants except one from the home-based exercise group. Missing data were imputed using last observation carried forward or self-reported data

	BMI (kg/m^2): 33.10 (SD 2.85) Weight (kg): 87.14 (SD 10.91) Age (years): 48.91 (SD 4.97) **Other relevant information:** Participants were required to be female, aged between 40 and 60 years, have BMI between 27 and 45 kg/m^2, and were not engaged in a regular routine of aerobic exercise.		days per week. They were instructed to complete three group exercise (walking) sessions per week for the first 26 weeks and two sessions per week for weeks 27–52. Participants were encouraged to exercise in groups of two to seven individuals. Treadmill sessions could be taken at a clinic facility on weekdays between 4 pm and 7 pm. Supervised sessions were scheduled for immediately before the behavioural sessions. Equivalent outdoor walking was also allowed. **Delivered by:** Behavioural sessions were conducted by pairs of clinical psychology graduate students with no previous experience in the behavioural treatment of obesity, supervised by a researcher. The clinic exercise facility was staffed by the graduate students, supervised by an exercise physiologist. **Home-based exercise:** Participants attended the same BT sessions as the group-based exercise group	treatment weight into consideration. **Adherence to programme:** There were no differences between the groups for the first 6 months. The number of weeks of full adherence to the exercise programme was significantly greater with home-based exercise than with group-based exercise in the last 6 months of the programme. Adherence to the BT programme, measured as completion of daily self-monitoring records, was also significantly greater with home-based exercise than group-based exercise. **Therapists:** The authors report that analyses examining the effects of therapists did not show any significant effect on outcomes.	given via telephone. Analyses using completers only gave similar results.

			(described above). Participants were given individual exercise prescriptions and were instructed to complete 30 min of exercise (walking) on 5 days per week in their home (or work) environment. Exercise progress was reviewed at behavioural sessions. **Delivered by:** Behavioural sessions were delivered as described for group-based exercise. Group leaders reviewed exercise progress at these sessions. **Length of follow-up:** 15 months. **Other agencies involved:** None reported. **Other information related to delivery:** **None.**		
Harvey-Berino 1998 [3998] USA CBA 2–	**Setting:** Six television studios at sites representing a mix of rural and urban locations in Vermont and a university classroom. **Interactive television (IT):** *n* = 133	To determine if interactive video-conferencing is a feasible, acceptable, effective and cost-efficient vehicle for delivering a	**Interactive television:** Participants received a 12-week BT programme. This was delivered in weekly 1-hour group sessions held at several television studios. One group were in the same studio as the therapist and other groups at remote sites participated via	**Loss to follow-up:** IT: *n* = 30 (23%) ST: *n* = 6 (18%) **Weight (kg):** There were significant ($p < 0.001$) weight changes with both IT (–7.6 [SD 4.1]) and ST (–7.9 [SD 5.4]). There was no significant difference between	No ITT analysis. Analysis uses baseline data from all participants and follow-up data from completers only. Although participants from one of the sites

	BMI (kg/m^2): 34.5 (SD 5.4) Weight (kg): 97.7 (SD 18.4) Age (years): 45.8 (SD 8.0) Gender: 19% male Ethnicity: 97% White Education: 47% college degree or higher Previous weight loss: 70% had participated in a previous weight –loss programme. **Standard therapy (ST):** *n* = 33 BMI (kg/m^2): 35.4 (SD 5.7) Weight (kg): 102.1 (SD 18.7) Age (years): 44.4 (SD 6.6) Gender: 25% male Ethnicity: 100% White Education: 51% college degree or higher Previous weight loss: 81% had participated in a previous weight loss programme. **Other relevant information:** Recruitment was through newspaper adverts at the six locations. Participants were required to be at least 20% over IBW based on Metropolitan Life Insurance Tables (1983).	behavioural weight-control intervention.	interactive television. They could see and hear the therapist and each other at all times. The programme included behaviour modification and instruction in diet and exercise. Participants were each prescribed a target energy intake, and were required to record daily intake in a diary. They were also given exercise goals and they recorded their activity on a daily basis (The programme was similar to the LEARN programme). **Delivered by:** The behavioural programme was delivered by a trained behavioural therapist. The therapist reviewed weight and self-monitoring diaries of participants at the local site. Each remote site had a site facilitator who was not a trained behaviour therapist but who was trained in how to weigh participants and review diaries. Facilitators included Local Extension Educators and one local dietitian. **Standard therapy:** Participants received the same BT programme as the IT group, but this was delivered in person	the groups. **Cost-effectiveness:** The cost per participant of running the groups was calculated as US$34.71 for IT and US$24.65 for ST. The average price per pound of weight loss was calculated as US$2.56 for IT and US$2.00 for ST.	were randomised to IT and ST groups, randomised data were not reported separately.

			in a university campus classroom. Weight and self-monitoring diaries were monitored by the therapist. Further details are not provided. **Delivered by:** The same trained behavioural therapist as the IT programme. **Length of follow-up:** 12 weeks **Other agencies involved:** None reported. **Other information related to delivery:** **None.**		

EVIDENCE TABLE 1b: EVIDENCE OF EFFICACY (INTERNAL VALIDITY) FOR THE MANAGEMENT OF OVERWEIGHT AND OBESITY IN CHILDREN

All summary data are mean values unless otherwise stated.
Studies are grouped by intervention.
Within each intervention category, studies are listed by study type in the following order: systematic review; randomised trial (RCT); controlled non randomised trial (CCT), controlled before and after study (CBA), interrupted time series (ITS); other study type.
Within each study type, studies are listed in alphabetical order.

First author, country, study design, research type, quality	**Study population**	**Research aim/question**	**Intervention details/length of follow-up**	**Main results** (include effect size(s)/confidence intervals for each outcome if available)	**Confounders** (potential sources of bias)**/comments**
Evidence of efficacy (internal validity) for the management of overweight and obesity in children					
School-based interventions with family involvement					
Figueroa-Colon 1996 [11292] USA RCT Cluster 1+	**Setting:** Two suburban public schools in New Orleans, serving low to middle socio-economic-level families. **Intervention:** *n* = 12 BMI (kg/m^2): 30.9 (SD 5.4) Weight (kg): 69.6 (SD 21.1) % IBW for height: 171.8 (SD 20.7) Age (years): 10.4 (SD 1.3) Gender: 58% male **Control:** *n* = 7 BMI (kg/m^2): 28.8 (SD 4.2) Weight (kg): 62.2 (SD 15.9)	To test the effectiveness of a hypoenergetic dietary intervention for superobese children in a school setting.	**Intervention:** 1.5-hour sessions held at school weekly for the first 10 weeks and then fortnightly for the following 16 weeks. At least one parent was required to attend with each child. Sessions were held after 5 pm. Sessions involved dietary and exercise instruction, discussion and monitoring, and behavioural modification. Diet for the first 10 weeks was protein-sparing modified fast (PSMF). For the following 16 weeks a hypoenergetic balanced diet was used, with gradual increase in energy content. Individual activity	**Loss to follow-up**: Intervention: *n* = 1 (8%) Control: *n* = 0 (0%) **BMI (kg/m^2):** There was a significant ($p < 0.002$) reduction in BMI in the intervention group (–3.8 [SD 3.2]). There was no significant change in control group BMI (+0.2 [SD 0.9]). **Weight (kg):** There was a significant ($p < 0.02$) reduction in weight in the intervention group (–5.6 [SD 7.1]). There was a significant ($p < 0.0001$) increase in weight in the control group (+2.8 [SD 3.1]).	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up <20%. Of those children invited to participate in the study at screening, enrolment rates were 27% for the intervention school and 37% for the control school. Baseline characteristics of those who enrolled

	% IBW: 164 (SD 20.3) Age (years): 10.8 (SD 1.2) Gender: 57% male **Other relevant information:** Of 755 children screened, 63 were defined by the authors as superobese (>140% IBW) and were invited to participate in the study.		programmes were devised, consisting of five 45-min sessions per week at school and at home. **Delivered by:** The group leaders included a paediatrician, a psychologist, a nutritionist, a physical education instructor and a nurse. **Control:** No intervention control. **Delivered by:** N/a **Length of follow-up:** 6 months. **Other agencies involved:** None reported. **Other information related to delivery:** None.	**% IBW:** There was a significant ($p < 0.002$) decrease in the intervention group (–24.3 [SD 20]). There was no significant change in the control group (–0.3 [SD 5.9]).	and those who refused were compared for each school. At the intervention school % IBW was significantly ($p < 0.002$) lower in those who refused treatment. There were no significant differences at the control school. Statistical analysis reported for within group change only.
Grey 2004 [3054] USA RCT School 1+	**Setting**: Two middle schools in the New Haven, CT, area. **Intervention group:** *n* = 22 BMI (kg/m^2): 35.8 (SD 5.8) Weight (lb): 203.3 (SD 43.1) (92.2 [SD 19.5] kg)	**Aim**: To evaluate the preliminary effects of a school-based nutrition education, PA, and coping skills training (CST) programme on	**Intervention:** Nutrition, PA and CST for 16 weeks. **Nutrition education:** Programme was designed to be family centred, culturally sensitive and interactive. It focused on slowing weight gain and improving glucose	**Loss to follow-up:** There were no dropouts from the programme. The authors report that nine participants did not complete metabolic data, and five participants did not complete psychosocial or behavioural data at 12-month follow-up. The authors do not report which group these individuals	Randomisation adequately addressed. No mention of allocation concealment. Blinding poorly addressed. Loss to follow-up <20% for weight outcomes.

	Central adiposity (inches): 44.7 (SD 6.2) (113.5 [SD 15.7] cm) Age (years): 12.4 (SD 1.2) Gender: 36.4% male Ethnicity: 11 (50%) African American; 10 (45.5%) Hispanic; 1 (4.5%) White. Income: 11 (50%) <US$19,900; 9 (41%) US$20,000–59,999; 1 (5%) ≥$60,000. **Comparison group:** *n* = 19 BMI (kg/m^2): 37.0 (SD 7.1) Weight (lb): 214.9 (SD 54.2) (97.5 [SD 24.6] kg) Central adiposity (inches): 45.0 (SD 3.9) (114.3 [SD 9.9] cm Age (years): 12.6 (SD 0.8) Gender: 36.8% Male Ethnicity: 10 (52.6%) African American, 8 (42.1%) Hispanic, 1 (5.3%) White. Income: 7 (36.8%) <US$19,900; 8 (42%) US$20,000–59,999; 1 (5%) ≥US$60,000. **Other relevant information:** Adolescents screened at	insulin resistance, self-management, and psychosocial well being among inner city youth at risk for type 2 diabetes.	metabolism. Classes were provided weekly, lasting 45 min. A 'non-diet' approach was taught, encouraging regular and nutritious meals with a reduced portion size. Parents were also invited to participate in the nutrition education programme. **Physical activity:** After-school activity of 45 min. Adolescents were included in designing the activity programme. Participants were encouraged to increase their physical activities, and decrease their sedentary behaviours, at home for an additional three days. Parents were encouraged to collaborate with the PA programme. **Coping skills training:** This was taught during nutrition classes. Training included culturally sensitive weight management materials. CST was also reinforced opportunistically during the PA sessions. There was weekly telephone support during the summer in the form of reinforcement and positive feedback.	were assigned to. **BMI (kg/m^2):** At follow-up: Intervention: 35.9 (SD 6.8) Comparison: 37.8 (SD 7.7) **Weight (lb):** At follow-up: Intervention: 214.6 (SD 49.1) (97.3 [SD 22.3] kg) Comparison: 230.3 (SD 58.8) (104.5 [SD 26.7] kg) **Central adiposity (inches):** At follow-up: Intervention: 44.5 (SD 6.7) (113.0 [SD 17.0] cm) Comparison: 46.8 (SD 7.0) (118.9 [SD 17.8] cm) There was no statistically significant difference between groups in change from baseline to 12-month follow-up.	

	school by the by the school nurse practitioner. Families of youths with a BMI ≥95th percentile and a family history of diabetes were contacted regarding the study.		**Delivered by:** Dietitian, licensed personal trainer and research assistant. **Comparison:** Participants received the education and PA programme (as described above), but not the CST for 16 weeks, and monthly telephone contact. **Length of follow-up:** 12-month follow-up. **Other agencies involved:** None reported. **Other information related to delivery:** **None.**		
Lansky 1983 [11322] USA RCT Individual 1–	**Setting:** Three junior high schools. **Intervention:** *n* = 30 Weight (kg): 68.42 % Overweight (% deviation from mean weight for height and age): 43.93 Age (years): 12.9 (SD 1.3*) Gender: 47% male **Control:** *n* = 25 Weight (kg): 71.01 % Overweight: 47.47%	To evaluate the effectiveness of a school-based intervention for adolescent obesity.	**Intervention:** Twelve weekly 45-min group meetings. Children were excused from class to attend meetings. Children were taught self-monitoring of diet and exercise, problem solving, a food-exchange plan and eating behaviour techniques. Half of the sessions involved aerobic activities and the discussion of ways to increase out-of-session exercise levels. Weight was recorded every 3 weeks and children received a lottery ticket for each 0.23 kg lost. Lottery	**Loss to follow-up:** Not stated. **Weight (kg):** There was a significant ($p < 0.01$) difference between weight change in the intervention group (+0.57 [SD 2.94*]) and the control group (+3.29 [SD 3.32*]). **Height (cm):** There was a significant ($p < 0.01$) increase in height from baseline in both groups. The intervention group increased by 1.83 (SD 1.42*) and the control group by 2.03 (SD 1.65*).	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up not stated. Data were also reported on a self-selected control group (data not extracted).

	Age (years): 13.3 (SD 1.3*) Gender: 44% male **Other relevant information:** 114 children were identified as being 10% or more overweight through screening in the schools. 55 (48%) received parental permission to participate in the trial and were randomised. *The authors do not explicitly state whether this is a standard deviation.		prizes included passes for bowling or to a local YMCA. On four different evenings 1.5 hour meetings were held for parents to attend in a group at which the instructor provided feedback and advice regarding the programme. **Delivered by:** A female physical education teacher. **Control:** No intervention (no further details provided). **Delivered by:** N/a **Length of follow-up:** 12 weeks. **Other agencies involved:** None reported. **Other information related to delivery:** **None.**	**% Overweight:** There was a significant ($p < 0.01$) difference between change in % overweight in the intervention group (–5.71 [SD 9.04*]) and the control group (+2.41% [SD 7.57*]). **Attendance:** Only one-third of parents attended a parent meeting. *The authors do not explicitly state whether this is a standard deviation	
Graf 2005 [30] Germany CBA	**Setting:** Seven primary schools randomly selected from schools in the Cologne region. **Intervention:**	**Aim:** To evaluate the effect of a school and family based intervention for overweight and obese children in	**Intervention:** A 9-month programme covering four main areas (diet, PA, parental education and family events). **Diet:**	**Loss to follow-up:** Intervention group: n = 81 (66.9%) Control group: n = 10 (6.5%) **BMI (kg/m^2):** Change at follow-up: Intervention: +0.27 (SD 0.19)	Unclear loss to follow-up for intervention group. 121 children were selected to participate but the

2+	121 children were invited to participate, but baseline data are for completers only (*n* = 40). Age (years): 8.70 (SD 1.26) BMI (kg/m^2): 22.81 (SD 3.60) Weight (kg): 43.58 (SD 10.21) **Control group:** *n* = 155 Age (years):8.47 (SD 1.27) BMI (kg/m^2): 21.77 (SD 2.66) Weight (kg): 40.84 (SD 9.62) **Other relevant information:** Participants were selected from subjects enrolled in a large study aiming to prevent overweight and obesity in primary schools (*n* = 1678). Of these children 17.7% were obese/overweight. It is from this obese/overweight group that participants for the described study were recruited.	grades 1 through 4 (STEP TWO programme).	Diet based on the OPTIMAX pyramidal programme. Specialists cooked and ate with the participants twice per week. **Physical activity:** Participants undertook 60–90 min of PA (aerobic dance, relay, soccer, etc.) after each supervised meal. **Education:** Information was given to children on healthy foods and the importance of exercise. Parents were involved in events about healthy nutrition (two evening sessions) and importance of physical exercise (one evening session). **Family events:** Two inline skating sessions for participants and their parents were organised. **Delivered by:** Nutritionists, gymnasts, psychologists and medical doctors at the selected schools. **Control:** Did not receive any intervention other than their regular school programme.	Control: +0.66 (SD 0.10) No significant difference between groups was detected at follow-up (*p* = 0.069). BMI standard deviation score (SDS) change at follow-up: Intervention: –0.15 (SD 0.04) Control: –0.05 (SD 0.02) A statistically significant difference between groups was found at follow-up (*p* = 0.028), with the intervention group demonstrating the greatest reduction. **Weight (kg):** At follow-up: Intervention: 46.90 (SD 11.44) Control: 44.66 (SD 10.32) No significant difference between groups was detected at follow-up. **Waist circumference:** The authors state that no significant difference in change of waist circumference was shown between groups (data not reported).	number who agreed to participate was not reported, therefore loss to follow-up may be over-estimated. No ITT analysis. The intervention group had a slightly higher BMI at baseline than the control group (*p* = 0.042).

			Length of follow-up: 9 months. **Other agencies involved:** None reported. **Other information related to delivery:** **None.**		
School-based interventions without specified family involvement					
Carrel 2005 [93 update] USA RCT 1–	**Setting:** Rural school in Wisconsin **Intervention:** *n* = 27 BMI (kg/m^2): 32 (SD 6) Body fat (%): 36.5 (SD 4.7) Age (years): 12.5 (SD 0.5) Gender: 48% male **Control:** *n* = 26 BMI (kg/m^2): 30 (SD 4) Body fat (%): 36.4 (SD 4.6) Age (years): 12.5 (SD 0.7) Gender: 57% male **Other relevant information:** Children with a BMI above the 95th percentile for age were eligible for inclusion.	To investigate whether a school-based fitness programme makes a difference in fitness, fatness and insulin sensitivity.	**Intervention:** Nine-month lifestyle-focused, fitness-oriented physical education classes with 14 students per class. Lifestyle activities such as walking and cycling were emphasised and competitive games de-emphasised. Emphasis was on moving rather than watching and children did not change clothes for the class. Handouts were provided on healthy eating habits. There were five classes every 2 weeks of 45 min. The typical amount of movement time in class was 42 min. **Control:** Nine-month standard physical education classes with 35 to 40 students per class. Students changed clothes for the class. There were five classes every 2 weeks of 45 min. The typical	**Loss to follow-up**: Intervention: *n* = 0 Control *n* = 3 (12%) **BMI (kg/m^2):** Mean score at follow-up Intervention: 33 (SD 10) Control: 30 (SD 5) There was no statistically significant difference between groups in change from baseline to follow-up. **Body fat (%):** (Assessed using DEXA) Mean change Intervention: –4.1% (SD 3.4) Control: –1.9% (SD 2.3) There was a statistically significant greater decrease in body fat in the intervention group compared with control (p = 0.04).	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up <20%. No ITT analysis. Baseline data provided only on participants who completed the study.

			amount of movement time in class was 25 min. **Delivered by:** Not stated. **Length of follow-up:** 9 months. **Other agencies involved:** Assessments were conducted at a University exercise laboratory. **Other information related to delivery:** **None.**		
Donnelly 1996 [11289] USA CBA 2–	**Setting**: Elementary schools (grades 3 to 5) from two school districts in rural Nebraska. **Intervention:** *n* = 11 BMI (kg/m^2): 20.3 (SD 4.1) Weight (kg): 91.5 (SD 23.1) % Body fat: 27.8 (SD 5.5) **Intervention school:** Ethnicity: 94.3% White Free/reduced cost lunches: 42% **Control:** *n* = 25 BMI (kg/m^2): 19.9 (SD 2.5)	**Aim**: To implement and assess the effectiveness of a nutrition and activity programme on reducing obesity and improving physical fitness in elementary school children.	**Intervention**: Multi-component programme consisting of nutrition education, modified school lunches, and increased PA. **Nutrition:** Meals were planned, with the existing kitchen staff, to reflect the 'Lunchpower!' programme; Lunchpower! is a reduced energy, fat and sodium lunch, developed by the National Livestock and Meat Board. Nutrition education was delivered in 18 modules, nine per year. These modules looked at basic nutrition,	**Loss to follow-up:** Intervention: *n* = unclear Control: *n* = unclear **BMI (kg/m^2):** At 2-year follow-up: Intervention: 21.6 (SD 4.5) Control: 21.3 (SD 3.4) Within-group differences were shown for both the control group and the intervention group ($p < 0.05$) from baseline to 2-year follow-up. There were no statistically significant differences between groups at either time point. **Weight (kg):** At 2-year follow-up:	Supported by the National Livestock and Meat Board, Health Management Resources, and Research Services Council.

	Weight (kg): 86.9 (SD 13.3) % Body fat: 28.8 (SD 6.6) **Control school:** Ethnicity: 93.6% White Free/reduced cost lunches: 44% **Other relevant information:** Programme was initiated across participating schools regardless of an individual's weight status. An overweight subgroup (participants with body fat ≥22%) was identified in both control and intervention schools, and the results presented related to this subgroup. Grades 3 to 5 include children aged between 8 and 11 years old.		relationship between diet and health, nutrition for healthy growth and development, healthy food choices, snack alternatives, reducing fat in the diet, and food safety. **Physical activity:** Activities were designed to promote energy expenditure and decrease time-off-task using guidelines of 'Physical Best'.* Activities were designed to use large muscle groups for 30 to 40 min, 3 days per week. Aerobic activities that could be easily incorporated into lifestyle were emphasized, such as hopping, skipping and aerobic games. *Reston (1988), American Alliance for Health, Physical Recreation and Dance. **Delivered by:** Classroom teachers, doctoral student, graduates and a registered dietitian. **Control:** Participants received usual school lunch and physical education programmes. **Length of follow-up:**	Intervention: 111.6 (SD 28.0) Control: 105.5 (SD 19.5) Within group differences were shown for both the control group and the intervention group ($p < 0.05$) from baseline to 2-year follow-up. There were no statistically significant differences between groups at either time point. **% Body fat:** At 2-year follow-up: Intervention: 25.4 (SD 8.7) Control: 26.1 (SD 7.7) There were no statistically significant within group differences from baseline to follow-up, or differences between groups.	

			2 years. **Other agencies involved:** None reported. **Other information related to delivery:** None.		
Nuutinen 1991 [11329] Finland CBA 2–	**Setting**: Group 1: Clinical setting Group 2: School healthcare setting Group 3: School-based **Intervention (Group 1):** *n* = 32 Weight (kg): 69.3 (SD 21.6) % IBW for height: 160.9 (SD 20.1) Age (years): 11.3 (SD 2.6) Gender: 23 (72%) male **Intervention (Group 2):** *n* = 16 Weight (kg): 54.3 (SD 13.5) % IBW for height: 142.1 (SD 12.8) Age (years): 11.0 (SD 2.3) Gender: 12 (75%) male **Control:** *n* = 29 Weight (kg): 39.6 (SD 14.3) % IBW for height: 100.1 (SD 7.9) Age (years): 11.4 (SD 2.9)	**Aim:** To determine the effects of dietary counselling during an intensive programme of weight control.	**Intervention (group 1):** Clinical setting. Children received BT either individually or in a group setting. These groups were combined for the analysis. **Individually treated group:** Children, accompanied by at least one parent, were seen by a physician once a month during active treatment (year 1), and twice during year 2 (observation year). Participants received five meetings with a nutritionist, each session lasting 30–60 min. Dietary counselling was based on problems identified from food records. Individual meal plans were provided (energy level between 1400 and 2200 kcal [5.86 to 9.21 MJ]). Topics discussed with parents included dietary habits within the family, purchasing of foods, and food preparation.	**Loss to follow-up:** Group 1: *n* = 4 (12.5%) Group 2: appeared to be none Group 3: *n* = 3 (9.4%) **Weight (kg):** The % IBW for height decreased by 16.2% during the treatment year in the intensive treatment group ($p < 0.001$), and at two years was 12.8% lower than baseline ($p < 0.001$). For participants in the school setting % IBW for height was 7.3% lower than baseline at 2 years (not statistically significant).	**At baseline:** The group treated in a clinical setting had proportionally more energy from protein than the normal-weight group ($p < 0.05$). Group treated in a clinical setting consumed less sucrose than either school healthcare group or the normal weight group. Group treated in a clinical setting were heavier ($p < 0.05$), had higher relative weight ($p < 0.001$), and more fat tissue ($p < 0.001$) than the school healthcare group.

	Gender: 22 (76%) male Intervention group 1 was initially divided into two groups of 16 (group 1A, individual treatment, and group 1B, behaviour modification), but subsequently aggregated. Control group comprised of normal weight children from recruited from the same school as group 2.		**Group treatment:** Children, accompanied by at least one parent, were seen by a physician once per month during year 1, and twice during year 2. Children and parents separately received seven group sessions, each lasting 1 hour. Group discussions were aimed at activating participants to make their own decisions with regard to dietary changes. Principles of the dietary counselling were similar to the individually treated group. **Delivered by:** Physician, dietitian, psychologist and psychiatrist. **Intervention (group 2):** School healthcare setting. Children visited the school nurse, without their parents, once a month during year 1, and twice in year 2. Each visit lasted 20–40 min. The nurse encouraged the participant to find their own solution to the dietary problems identified in previous discussions. Children were asked to complete a 7-day food diary before each session. The intervention was individualised according to each child's interest in weight control.		

			Children were not persuaded to do more than they were interested in doing. **Delivered by:** School nurse. **Control**: No intervention. The control group were normal weight children from the same school. **Length of follow-up:** 2 years. **Other agencies involved:** None reported. **Other information related to delivery:** **None.**		
Home setting					
Jiang 2005 [243 update] China RCT 1–	**Setting:** Family and school setting in Beijing. **Intervention:** *n* = 36 BMI (kg/m^2): 26.6 (SD 1.7) Weight (kg): 70.1 (SD 5.7) Height (cm): 161.2 (SD 4.1 Age (years): 13.3 (SD 0.6) Gender: 61% male **Control**: *n* = 39	To evaluate the impact of a family-based behavioural treatment intervention on obese schoolchildren	**Intervention:** Two-year family-based behavioural treatment. There was individualised targeting of each child's dietary and exercise patterns based on baseline assessment. Adherence to the target behaviours was recorded by the children and monitored by the parents. PA 20–30 min per day, four days per week was advised. A detailed dietary	**Loss to follow-up**: Intervention *n* = 3 (8%) Control: *n* = 4 (10%) **Height** Mean change Intervention: +8.2 (SD 4.3) Control: +8.0 (SD 3.9) **BMI (kg/m^2):** Mean change Intervention: –2.6 (SD 1.6) Control: –0.1 (SD 1.1)	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up <20%. No ITT analysis. Baseline data provided only on participants who completed the study.

	BMI (kg/m^2): 26.1 (SD 1.5) Weight (kg): 71.2 (6.4) Height (cm): 162.7 (SD 3.4) Age (years): 13.2 (0.7) Gender: 60% male **Other relevant information:** Obese children in Grades 7–9 were eligible for inclusion. Obesity was defined as weight-for-height ≥120% of the Chinese reference.		modification plan was developed for each family. Paediatricians visited the families once per month. Daily food intake was recorded in a diary for each child. **Control:** No intervention (usual school and family life) **Delivered by:** Paediatricians. **Length of follow-up:** Two years. **Other agencies involved:** None stated. **Other information related to delivery:** There were follow-up assessments every 6 months.	**Weight (kg)** Mean change Intervention: –0.3 (SD 4.3) Control: +5.5 (SD 3.5) There was a similar increase in height in both groups. There was a statistically significant difference between groups in weight change and in BMI from baseline to follow-up at 2 years ($p < 0.001$).	
White 2004 [55] USA RCT Individual 1+	**Setting:** Geographical area is unclear. Setting was participants' homes. **Intervention (Internet-based behavioural programme):** *n* = 28 Children: BMI (kg/m^2): 35.31	To assess the process variables involved in a family-based weight loss programme presented over the Internet for African American adolescent girls.	**Intervention:** Participants were provided with a personal computer for the home and free Internet access with which to access the Health Improvements Programme for teens (HIP-Teens) intervention website. This website was only accessible to intervention participants, and the readability of its content was set at 6th grade reading level. They	**Loss to follow-up**: Intervention: *n* = 5 (18%) Comparison: *n* = 2 (7%) **BMI (kg/m^2):** Children: There was a significant difference ($p < 0.01$) between the change in the intervention group (–0.24 [SD 1.38]) and the comparison group (+0.71 [SD 1.19].	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up <20%. Missing data were imputed using mean of other participants in each group.

	(SD 7.60) % Body fat (DEXA): 45.46 (SD 8.34) Age (years): 13.14 (SD 1.59) Gender: 0% male Parents: BMI (kg/m^2): 37.90 (SD 7.62) % Body fat (DEXA): 47.68 (SD 7.07) Age (years): 43.53 (SD 6.24) **Comparison (Internet-based educational programme):** *n* = 29 Children: BMI (kg/m^2): 37.34 (SD 8.16) % Fat (DEXA): 46.22 (SD 6.45) Age (years): 13.23 (SD 1.16) Gender: 0% male Parents: BMI (kg/m^2): 39.03 (SD 6.81) % Body fat (DEXA): 48.99 (SD 5.24) Age (years): 42.87 (SD 6.18)		accessed new behavioural modification material on a weekly basis and communicated with a case manager via email, on topics including self-monitoring, goal setting, problem solving, contracting and relapse prevention. The website also featured links to recipes hobbies and activities, and chat rooms for study participants. Participants were required to submit daily food records and received automated feedback. **Delivered by:** Case manager had at least graduate-level clinical psychology training specialising in weight management. **Comparison:** Participants also received a computer and free Internet access. They accessed a control version of the HIP-Teens website and their programme was primarily educational involving basic information about nutrition and PA. **Delivered by:** Case manager was a registered dietitian.	Parents: There was a significant difference (p = 0.03) between the change in the intervention group (–0.90 [SD 2.01]) and the comparison group (–0.12 [SD 0.83]). **Weight (kg):** Children: There was a significant difference (p = 0.03) between the change in the intervention group (+0.55 [SD 3.26]) and the comparison group (+2.40 [SD 2.86]). Parents: Changes in the intervention group (–2.16 [SD 4.95]) and the comparison group (–0.52 [SD 2.55]) were not significantly different. **% Body fat (DEXA):** Children: There was a significant difference (p = 0.02) between the change in the intervention group (–1.04 [SD 2.00]) and the comparison group (+0.38 [SD 2.95]). This effect remained significant when a regression analysis was conducted taking into consideration baseline adiposity. Parents: Changes in the intervention group (–0.51 [SD 2.02]) and the comparison group (+0.13 [SD 1.59]) were not significantly different.	

	Other relevant information: Sixty-one participants were randomised but only 57 completed baseline assessment. Participants were required to have at least one obese parent.		**Length of follow-up:** 6 months. **Other agencies involved:** None reported. **Other information related to delivery:** The length of both programmes appeared to be 6 months.	**Website visits:** Both children and parents in the intervention group visited the website significantly more times over the 6 months than those in the control group.	
Williamson 2005 [2005 update] USA RCT 1+	**Setting:** Home-based using Internet **Intervention:** Adolescents (*n* = 28): BMI (kg/m^2): 35.3 (SD 7.6) Body fat (%): 45.5 (SD 8.3) Age (years): 13.1 (SD 1.6) Gender: 100% female Parents (*n* = 28): BMI (kg/m^2): 37.9 (SD 7.6) Body fat (%): 47.7 (SD 7.1) Age (years) 43.5 (SD 6.2) **Control:** Adolescents (*n* = 29) BMI (kg/m^2): 37.3 (SD 8.2) Body fat (%): 46.2 (SD 6.5) Age (years) 13.3 (SD 1.2) Gender: 100% female Parents (*n* = 29) BMI (kg/m^2): 39 (SD 6.8) Body fat (%): 49.0 (SD 5.2)	To assess the efficacy of an Internet-based lifestyle behaviour modification programme for weight management in African American girls.	**Intervention:** Six months of interactive BT plus nutrition education via the Internet. Lifestyle nutrition and PA habits were targeted. **Control:** Six months of passive education on nutrition and exercise delivered via the Internet. **Delivered by:** Not stated. **Length of follow-up:** Six months. **Other agencies involved:** None stated. **Other information related to delivery:** Both groups received four face-to-face therapy sessions over a	**Loss to follow-up**: Intervention: *n* = 5 (18%) Control: *n* = 2 (7%) **BMI (mean change) (kg/m^2):** Adolescents: Intervention: –0.19 (SE 0.24) Control: +0.65 (SE 0.23) There was a statistically significant difference between groups in the change from baseline to follow-up ($p < 0.05$). **BMI (mean change) (kg/m^2):** Parents: Intervention: –1.03 (SE 0.28) Control: –0.06 (SE 0.77) There was a statistically significant difference between groups in the change from baseline to follow-up ($p < 0.05$)	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up <20%. ITT analysis using baseline value carried forward. Baseline data were not reported for dietary intake. However, baseline scores were treated as covariates in the statistical analyses.

	Age (years): 42.9 (SD 6.2) **Other relevant information:** African American girls aged 11 to 15 years with a BMI >85th percentile with at least one biological parent with a BMI >30 kg/m^2 were eligible. Participants with significant co-morbidities such as diabetes were excluded. Only one overweight parent could participate. Participants had to be willing to pay US$300 towards the cost of a computer with US$700 provided by the researchers. Sixty-one participants were randomised but baseline assessments were not completed by four individuals.		12-week period. The websites for both groups were designed to be culturally specific. Parents received US$30 for completing the 6-month follow-up assessments and the adolescents received a gift worth US$10.	**% Body fat (DEXA):** Adolescents: Intervention: –1.12 (SE 0.47) Control: 0.43 (SE 0.47) There was a statistically significant difference between groups in the change from baseline to follow-up ($p < 0.05$). Parents: Intervention: 0.58 (SE 0.34) Control: +0.18 (SE 0.34) No statistically significant difference.	

EVIDENCE TABLE 2a: EVIDENCE OF EFFICACY (INTERNAL VALIDITY) FOR IMPROVED BEHAVIOURS (DIET AND ACTIVITY) IN ADULTS

All summary data are mean values unless otherwise stated.
Studies are grouped by intervention.
Within each intervention category, studies are listed by study type in the following order: systematic review; randomised trial (RCT); controlled non randomised trial (CCT), controlled before and after study (CBA), interrupted time series (ITS); other study type.
Within each study type, studies are listed in alphabetical order.

First author, country, study design, research type, quality	**Study population**	**Research aim/question**	**Intervention details/length of follow-up**	**Main results** (include effect size(s)/confidence intervals for each outcome if available)	**Confounders** (potential sources of bias)**/comments**
Evidence of efficacy (internal validity) for improved behaviours (diet and activity) in adults					
Commercial weight loss programmes					
Rippe 1998 [12522] USA RCT Individual 1–	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet (energy intake per day):** Intervention: 1723 (SD 448) kcal (7.21 [SD 1.88] MJ) at baseline. Control: 1905 (SD 436) kcal (7.97 [SD 1.83] MJ) at baseline. The intervention group showed the greatest reduction in their daily energy intake compared with the controls (482 [SD 536] and 164 [SD 353] kcal [2.02 {SD 2.24} and 0.69 {SD 1.48} MJ]) respectively; $p = 0.03$, which did not reach prespecified significance level of $p < 0.01$). **Activity:** Activity level (using the Physical Activity Scale of Ross and Jackson, a seven-point scale where 0 represents minimal	As above in Table 1a.

				daily activity and 7 represents the equivalent of running more than 10 miles/week): Intervention: 0.8 (SD 0.5) at baseline. Control: 1.1 (SD 0.6) at baseline. The intervention group significantly increased their activity compared with controls (+4.4 [SD 2.3] and +0.7 [SD 0.3] respectively; $p \leq 0.0001$). VO_{2max} (ml/kg per min): Intervention: 28.9 (SD 4.1) at baseline. Control: 32.2 (SD 3.3) at baseline. The intervention group significantly increased their VO_{2max} compared with the controls (+3.8 [SD 3.3] and –2.7 (SD 3.5) respectively; $p \leq 0.001$).	
Interventions using computers					
Tate 2003 [11287] USA RCT Individual 1+	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet:** (Assessed using Block FFQ) Both groups showed significant reductions ($p < 0.001$) in energy intake at 12 months. The energy consumed from fat decreased by 1% in the Internet-only group and 4% in the behavioural e-counselling group, but there was not a statistically significant difference between the groups. **Activity:** (Assessed using Paffenbarger Activity Questionnaire) There was no significant change in	As above in Table 1a.

				exercise energy expenditure at 12 months in either group.	
Tate 2001 [3942] USA RCT Individual 1+	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet (energy intake per day):** (Assessed using Block FFQ; included only participants who completed all three assessments, *n* = 62.) There was a significant reduction in daily energy intake in both groups over time ($p = 0.004$), but no significant differences between the groups. The change in the BT group was from 1558 (SD 654) kcal (6.52 [SD 2.74] MJ) at baseline to 1062 (SD 395) (4.44 [SD 1.65] MJ) at 3 months and 1146 (SD 450) kcal (4.80 [SD 1.88] MJ) at 6 months. In the education group the change was from 1757 (SD 857) kcal (7.35 [SD 3.59] MJ) at baseline to 1256 (SD 696) kcal (5.28 [SD 2.91] MJ) at 3 months and 1286 (SD 564) kcal (5.38 [SD 2.36] MJ) at 6 months. **Activity (energy expenditure per week):** (Assessed using Paffenbarger Activity Questionnaire; included only participants who completed all three assessments, *n* = 60) There was a significant increase in PA in both groups over time ($p = 0.03$) but no significant differences between the groups.	As above in Table 1a.

				The change in the intervention group was from 1360 (SD 1415) kcal (5.69 [SD 5.92] MJ) at baseline to 1903 (SD 1757) kcal (7.97 [7.35] MJ) at 3 months and 1289 (SD 919) kcal (5.40 [3.85] MJ] at 6 months. In the control group the change was from 1031 (SD 981) kcal (4.32 [4.11] MJ) at baseline to 1500 (SD 1513) kcal (6.28 [6.33] MJ) at 3 months and 1125 (SD 1320) kcal (4.71 [5.53] MJ) at 6 months.	
Taylor 1991 [11346] USA RCT Individual 1–	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Activity (weekly min of exercise):** At 38 weeks, exercise (reported over the phone) was significantly greater in the FFF + CAT group (154 min) than the CAT group (37 min).	As above in Table 1a.
Womble 2004 [57] USA RCT Individual 1+	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Eating-related behaviour:** (Assessed by Eating Inventory; included treatment completers only) There were no statistically significant differences between the groups in self-reported eating restraint, disinhibition and hunger.	As above in Table 1a.
Dennison 1996 [11287] USA	As above in Table 1.	As above in Table 1.	As above in Table 1.	**Diet:** (Assessed using Nutrition Coordinating Centre's Nutrition Data System software package)	As above in Table 1.

CBA 2–				There was a significant (p = 0.004) reduction in total daily energy intake in the intervention groups combined, from 2180 kcal (9.13 MJ) at baseline to 1822 kcal (7.63 MJ) at 1 year. There was no significant change in the control group, which was 2217 kcal (9.28 MJ) at baseline and 2263 kcal (9.47 MJ) at 1 year (further details on diet outcomes are available in the paper).	
Work-based setting					
Pritchard 1997 [3959] Pritchard 2002 [3958] Australia RCT Individual 1+ Note: both papers report randomised data on the same participants. All the extracted data was taken from Pritchard 1997, and some additional information was	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet:** (Assessed from analysis of monthly 24-hour food recalls and 3-day food diaries) **Energy intake per day:** Percentage change from baseline was significantly different (p < 0.05) in the diet group (–30.4 [SD 3.8]% from 2594 [SD 577] kcal [10.86 {SD 2.42} MJ/]) compared with both exercise (+3.1 [SD 2.7]% from 2486 [SD 379] kcal [10.41 {SD 1.59} MJ) and control (+5.5 [SD 4.7]% from 2225 [SD 444] kcal [9.31 {SD 1.86} MJ]). **% Energy intake as fat:** Percentage change from baseline was significantly different (p < 0.05) in the diet group (–32.0 [SD 4.8] from 38.2 [SD 5.8]) compared with both exercise (+1.0 [SD 3.8] from 38.9 [SD 6.8]) and control (+0.4 [SD 1.0] from 38.5 [SD 6.0]).	As above in Table 1a.

from Pritchard 2002.				**Activity:** (Assessed from 24-hour activity logs and 3-day activity diaries) **Energy expenditure per day:** Percentage change from baseline was significantly greater ($p < 0.05$) in the exercise group (+14.6 [SD 2.0]% from 2570 [SD 312] kcal [10.76 {SD 1.31}] MJ]) compared with both diet (+5.9 [SD 1.9]% from 2407 [SD 161] kcal [10.08 {SD 0.67}] MJ) and control (+6.5 [SD 1.5]% from 2508 [SD 294] kcal [10.50 {SD 1.23} MJ]). **Index of activity:** Percentage change from baseline was significantly greater ($p < 0.05$) in the exercise group (+15.6 [SD 10.1]% from 1.35 [SD 0.10]) compared with both diet (+3.4 [SD 1.2]% from 1.30 [SD 0.17]) and control (+6.4 [SD 1.7]% from 1.34 [SD 0.11]).	
Furuki 1999 [8838] Japan CBA 2–	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet and activity:** Outcome data for diet and activity were reported for men in the intervention group only. No data were reported for the control group.	As above in Table 1a.
Other non-clinical settings					
Jason 1991 [11310]	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet:** (Baseline based on 3-day diaries 1–4	As above in Table 1a.

USA RCT Individual 1–				weeks before intervention.) **Mean total energy:** Support group Baseline: 1838 (SD 642) kcal (7.69 [SD 2.69] MJ) Follow-up: 1204 (SD 651) kcal (5.04 [SD 2.73] MJ) Non-support group Baseline: 1843 (SD 615) (7.71 [SD 2.57] MJ) Follow-up: 1320 (SD 544) (5.53 [SD 2.28] MJ) **Mean % energy from protein in diet:** Support group Baseline: 15.86 kcal (SD 3.03) Follow-up: 20.93 kcal (SD 6.23) Non-support group Baseline: 18.37 kcal (SD 4.71) Follow-up: 22.24 kcal (SD 7.88). **Mean % energy from carbohydrate in diet:** Support group Baseline: 47.39 kcal (SD 8.76) Follow-up: 47.72 kcal (SD 11.69) Non-support group Baseline: 45.03 (SD 9.14) Follow-up: 43.10 (SD 10.15) **Mean % energy from fat in diet:** Support group	

				Baseline: 35.25 (SD 7.22) Follow-up: 31.17 (SD 10.87) No-support group Baseline: 35.66 (SD 8.00) Follow-up: 32.38 (SD 7.05) Both support group and non-support group reduced their overall energy intake ($p < 0.05$ and $p < 0.05$), as well as increasing their % of energy as protein ($p < 0.05$ and $p < 0.05$) at follow-up. The support group were also shown to have significantly reduced the % of energy from fat ($p < 0.05$) at follow-up. **Activity:** (Baseline based on 3-day diaries 1–4 weeks prior to intervention) Aerobic exercise (mean number of min over a 3-day period) Support group Baseline: 13.63 (SD 27.93) Follow-up: 32.18 (SD 47.26) Non-support group Baseline: 15.39 (SD 29.18) Follow-up: 34.59 (SD 56.19). Non-aerobic exercise (mean number of min over a 3-day period): Support group Baseline: 55.97 (SD 58.23) Follow-up: 82.07 (SD 80.39)	

				Non-support group Baseline: 47.12 (SD 63.78) Follow-up: 48.79 (SD 74.80). Both the support group ($p < 0.05$) and the non-support group ($p < 0.05$) significantly increased their aerobic exercise from pre-testing to follow-up.	
McNabb 1997 [3972] USA RCT Individual 1+	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet:** (Assessed using Food Behaviour Checklist) The amount of high-fat foods eaten decreased significantly ($p < 0.05$) in intervention compared with control, but change in consumption of high-fibre foods was not significantly different between the two groups. **Activity (min of exercise per week):** Intervention baseline: 5.0 (SD 17.3) Control baseline: 23.8 (SD 36.7) Changes in levels of exercise were not significantly different between intervention (+36.7 [SD 42.5]) and control (+21.3 [SD 22.5]).	As above in Table 1a.
Perri 1997 [3961] USA RCT Individual 1+	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet:** (Assessed using Eating Pattern Assessment Tool (EPAT) Questionnaire; analysis was of completers only) The consumption of high-fat foods decreased significantly ($p < 0.0001$) in both groups over time, with no between group differences. With group-based	As above in Table 1a.

				exercise the change in EPAT score was from 25.94 (SD 5.32) at baseline to 17.67 (SD 3.94) at 6 months and 20.72 (SD 5.56) at 12 months. With home-based exercise the change in EPAT score was from 26.05 (SD 6.36) at baseline to 18.27 (SD 3.59) at 6 months and 20.95 (SD 5.42) at 12 months. The consumption of low-fat foods did not change significantly in either group over the 12 months. **Activity (min of exercise per week):** Activity during months 0–6 was similar in both groups: 104.4 (SD 39.5) for group-based exercise and 104.0 (SD 25.5) for home-based exercise. There were significant decreases in activity in both groups for months 7–12, but activity with home-based exercise (66.2 [SD 21.6]) was significantly higher than with group-based exercise (45.4 [SD 30.5]).	
Harvey-Berino 1998 [3998] USA CBA 2–	As above in Table 1a.	As above in Table 1a.	As above in Table 1a.	**Diet:** (Assessed from 3-day food diaries) There were significant decreases (*p* values not reported) in energy intake and fat intake (% of energy) with both IT and ST. There were no between group differences for either measure. The change in energy intake was –607 (SD 632) kcal (–2.54 [SD 2.65] MJ) from 1959 (SD 692) kcal (8.20 [SD 2.90] MJ) at baseline for IT, and –638 (SD 521) kcal (–2.67 [SD 2.18] MJ)	As above in Table 1a.

				from 2176 (SD 794) kcal (9.11 [SD 3.32] MJ) at baseline for ST. The change in fat intake (% of energy) was –3.4 (SD 7.9)% from 32.2 (SD 6.3)% at baseline for IT, and –2.1 (SD 6.6)% from 32.3 (SD 6.8)% at baseline for ST. **Activity (energy expended):** (Assessed using Paffenbarger Physical Activity Questionnaire) There were significant increases (*p* values not reported) with both IT and ST, but no between group differences. The change was +664 (SD 1346) kcal (+2.28 [SD 5.63] MJ) from 857 (SD 1174) kcal (3.59 [SD 4.91] MJ) at baseline with IT and +245 (SD 943) kcal (+1.02 [SD 3.95 MJ] from 1083 (SD 1202) kcal (4.53 [SD 5.03] MJ) at baseline with ST.	

EVIDENCE TABLE 2b: EVIDENCE OF EFFICACY (INTERNAL VALIDITY) FOR IMPROVED BEHAVIOURS (DIET AND ACTIVITY) IN CHILDREN

All summary data are mean values unless otherwise stated.
Studies are listed by study type in the following order: systematic review; randomised trial (RCT); controlled non randomised trial (CCT), controlled before and after study (CBA), interrupted time series (ITS); other study type.
Within each study type, studies are listed in alphabetical order.

First author, country, study design, research type, quality	**Study population**	**Research aim/question**	**Intervention details/length of follow-up**	**Main results** (include effect size(s)/confidence intervals for each outcome if available)	**Confounders** (potential sources of bias)**/ Comments**
Evidence of efficacy (internal validity) for improved behaviours (diet and activity) in children					
Grey 2004 [3054] USA RCT School 1+	As above in Table 1b.	As above in Table 1b.	As above in Table 1b.	**Diet:** No statistically significant difference in terms of usual food choices, dietary knowledge, dietary self-efficacy, or intake of energy, carbohydrate and saturated fat was shown between groups at follow-up. **Physical activity:** There was no statistically significant difference between groups in change from baseline to 12-month follow-up for PA levels or activity self-efficacy.	As above in Table 1b.
Nuutinen 1991 [11329] Finland CBA 2–	As above in Table 1b.	As above in Table 1b.	As above in Table 1b.	**Food consumption:** In group 1 the consumption of edible fats ($p < 0.001$) and milk products ($p < 0.05$) was reduced after 1 year, and maintained until the end of the observation period ($p < 0.01$ and $p < 0.05$, respectively):	As above in Table 1b.

				Edible fats (butter, margarine, oil): Baseline: 43 (SD 22) g Mean change from baseline: Year 1: –10 (SD 12) g Year 2: –1 (SD 17) g **Milk and milk products:** Baseline: 818 (SD 293) g Mean change from baseline: Year 1: –192 (SD 307) g Year 2: –17 (SD 254) g **Daily nutrient intake** (using four day food record): Children in group 1 decreased their mean daily fat intake at year 1 ($p < 0.001$), and maintained this to the end of the observation period ($p < 0.001$): **Fat:** Baseline: 86 (SD 29) g Mean change from baseline: Year 1: –19 (SD 21) g Year 2: –22 (SD 28) g There was no significant change in school group. Group 1 had a lower level of sucrose consumption than group 2 at year 1 ($p < 0.05$) and at year 2 ($p < 0.001$), but there was no significant change in the	

				school group. No statistically significant changes across the study in nutrient intake were shown in the conventionally treated group.	

EVIDENCE TABLE 3: EVIDENCE OF EFFICACY (INTERNAL VALIDITY) FOR MAINTENANCE OF WEIGHT LOSS AND CONTINUATION OF IMPROVED BEHAVIOURS (DIET AND ACTIVITY)

All summary data are mean values unless otherwise stated.
Studies are listed by study type in the following order: systematic review; randomised trial (RCT); controlled non randomised trial (CCT), controlled before and after study (CBA), interrupted time series (ITS); other study type.
Within each study type, studies are listed in alphabetical order.

First author, country, study design, research type, quality	**Study population**	**Research aim/question**	**Intervention details/length of follow-up**	**Main results** (include effect size(s)/confidence intervals for each outcome if available)	**Confounders** (potential sources of bias)**/comments**
Evidence of efficacy (internal validity) for maintenance of weight loss and continuation of improved behaviours (diet and activity)					
Harvey-Berino 2004 [34] USA RCT Individual 1+	**Setting:** Internet-based intervention was wherever participants had Internet access. In person support was set in several television studios in Vermont. **Internet support:** *n* = 77 BMI (kg/m^2): 29.3 (SD 5.2) Weight (kg): 82.7 (SD 16.3) Age (years): 46.5 (SD 9.8) Gender: 19% male Education: 64% college degree or higher **Frequent in person support:** *n* = 77 BMI (kg/m^2): 28.9 (SD 3.8)	To compare the efficacy of an Internet-based weight maintenance programme with frequent and minimal in-person support programmes.	**Intervention:** 12-month weight loss maintenance programme. During this maintenance phase all participants were told to continue with the dietary and exercise prescriptions provided in the treatment phase: to reduce energy intake to 4186–10,465 kJ/d, depending on baseline weight, and to expend at least 1000 kJ/week. **Internet support:** An initial technical orientation session was provided. Participants attended pre-arranged bi-weekly maintenance meetings, held in the form of an Internet chat	**Loss to follow-up:** Internet support: *n* = 25 (32.5%) Frequent in person support: *n* = 16 (20.8%) Minimal in person support: *n* = 15 (19.2%) **Weight (kg):** There was no significant difference in weight change, relative to pre-treatment weight, between the groups: Internet support: -4.7 (SD 6.9) Frequent in-person support: -3.9 (SD 5.9) Minimal in-person support: -4.2 (SD 7.9) There was no significant difference between groups in the number of participants who were able to sustain at least a 5% weight loss (completers only):	No description of randomisation method. No mention of allocation concealment. Blinding poorly addressed. Loss to follow-up >20% in two arms. ITT was used for absolute weight change; analysis of completers only gave the same overall finding, though the actual weight loss was greater when completers only were included in the analysis.

	Weight (kg): 81.2 (SD 14.2) Age (years): 45.2 (SD 8.9) Gender: 16% male Education: 63% college degree or higher **Minimal in person support:** *n* = 78 BMI (kg/m^2): 29.0 (SD 4.3) Weight (kg): 80.5 (SD 14.4) Age (years): 46.5 (SD 7.7) Gender: 14% male Education: 65% college degree or higher **Other relevant information:** All participants received an identical 6-month behavioural weight loss programme conducted over interactive television (ITV). Only those completing the weight loss programme were randomised to a maintenance condition. There was no significant difference among the groups in the amount of weight lost during the initial treatment programme (7.8 kg [SD 5.3] kg) for all groups combined). Participants were required		session, facilitated by a therapist. Lesson topics were introduced at the start of each session by the therapist. Participants also received bi-weekly email contact with the therapist. Participants self-reported weight, dietary intake, and exercise data, on a weekly basis. Group members could contact each other by email, posting questions to the web bulletin board, or by making appointments to chat in the chat room. **Delivered by:** Researchers and therapist (dietitian). **Frequent in person support:** Participants met bi-weekly at their local ITV for 52 weeks. At each session individuals handed in their self-monitoring diaries, were weighed, and participated in group discussions facilitated by a group therapist. Topics focussed on problem solving difficult eating and exercise situations. Participants received a telephone call from the therapist on the weeks that no	Internet support: 62% Frequent in person support: 46% Minimal in person support: 49% **Programme adherence:** Subjects in the frequent in person support group attended significantly more maintenance group meetings than the Internet support group ($p = 0.02$). Subjects in the Internet support condition submitted self-monitoring diaries more frequently ($p < 0.01$), and reported more peer support contacts ($p < 0.01$) than the frequent in person group. Attendance at treatment meetings and chat sessions ($p < 0.01$), and frequency of self-monitoring ($p < 0.01$) significantly correlated with weight loss from baseline to end of maintenance phase. The minimal in person support group was not included in this analysis. **Other outcomes:** The authors report that there were no between group differences in perceived social support and working alliance. Data were not reported.	Supported by the National Institutes of Health.

	to have a computer with Internet access, and have no history of major medical problems. The majority of participants were comfortable with basic computer applications and enjoyed using computers.		meetings were held. During these weeks self-monitoring data was posted to the therapist. Subjects also participated in a social-influence peer-support programme. Each week participants could win adherence points, which were converted into lottery tickets. **Delivered by:** Therapist (dietitian) **Minimal in person support:** Participants met monthly in person at independent television studios for sessions delivered over ITV for the first 6 months. Each group support session lasted 1 hour. Participants were encouraged to continue to self-monitor, although diaries were not monitored by the therapist. Weight measurements were taken at this meeting. There was no group contact between monthly meeting or from months 7–12. **Delivered by:** Therapist (dietitian) **Length of follow-up:** 12 months		

			Other agencies involved: None reported. **Other information related to delivery:** The Internet support condition and the frequent in person support condition were based on the multi-component weight maintenance programmes developed by Perri et al. (1988).		
Harvey-Berino 2002 [3997] USA RCT Individual 1+	**Setting:** Treatment intervention and in-person support were in a clinical setting. Internet maintenance took place wherever participants had Internet access. **Internet support:** *n* = 40 BMI (kg/m^2): 32.2 (SD 4.0) Weight (kg): 89.3 (SD 15.3) Age (years): 46.3 (SD 11.1) Gender: 10% male Ethnicity: 96.9% White Education: 65.0% college degree or higher **Frequent in-person support:** *n* = 41 BMI (kg/m^2): 31.5 (SD 4.8) Weight (kg): 86.5 (SD 10.1)	To investigate the effectiveness of a weight maintenance programme conducted over the Internet.	**Internet support:** Participants attended a 24-week behavioural weight control programme. They then received a technical orientation session teaching them how to access and use the secure study website. For the next 52 weeks, participants were required to enter self-monitoring data, and bi-weekly group maintenance sessions were held online by a therapist in the study chat room. On weeks when there was no meeting, the therapist emailed the participants. Group members could contact one another using email, bulletin board or chat room. By adhering to programme goals participants earned points, which were converted into tickets for a	**Loss to follow-up:** Internet support: *n* = 10 (25%) Frequent in-person support: *n* = 9 (22%) Minimal in-person support: *n* = 13 (32%) **Weight (kg):** Over the 24-week treatment period there was no significant difference in the weight lost by the three groups: Internet support (–8.0 [SD 5]), frequent in-person support (–9.8 [SD 5.9]) and minimal in-person support (–11 [SD 6.5]). During the first 6 months of weight maintenance, weight gain was significantly greater ($p = 0.05$) in the Internet support group (+2.2 [SD 3.8]) than the frequent in-person support group (0 [SD 4]). Weight loss at 18 months from baseline was significantly smaller ($p < 0.05$) with	No description of randomisation method. No mention of allocation concealment or blinding. Loss to follow-up >20%. ITT analysis data not reported although authors state that effects with ITT analysis were the same as for completers only. Diet and activity outcomes were self-reported.

	Age (years): 49.8 (SD 8.4) Gender: 14.3% male Ethnicity: 100% White Education: 68.3% college degree or higher **Minimal in-person support:** *n* = 41 BMI (kg/m^2): 32.8 (SD 4.6) Weight (kg): 90.2 (SD 13.9) Age (years): 49.1 (SD 9.1) Gender: 19.5% male Ethnicity: 97.4% White Education: 56.1% college degree or higher **Other relevant information:** Participants were required to have a computer with Internet access, and have no history of major medical problems. The majority of participants were comfortable with basic computer applications and enjoyed using computers.		weekly lottery to win £25. **Delivered by:** Two of the researchers gave the orientation session. A therapist facilitated online meetings and email contact. **Frequent in-person support:** Participants attended the 24-week weight control programme as above. They then attended bi-weekly group maintenance sessions with a therapist for 52 weeks for review of self-monitoring diaries and group discussion. On weeks when there was no meeting, the therapist telephoned each participant. By adhering to programme goals participants earned points, which were converted into tickets for a weekly lottery to win £25. **Delivered by:** Therapist. **Minimal in-person support:** Participants attended the 24-week weight control programme as above. Then for the next 6 months participants attended a 1-hour meeting each month for weight measurement and encouragement although their	Internet support (–5.7 [SD 5.9]) than both frequent in-person support (–10.4 [SD 6.3]) and minimal in-person support (–10.4 [SD 9.3]). The percentage of participants maintaining a weight loss of 5% or more at 18 months was significantly greater ($p = 0.02$) with minimal in-person support (81.3%) or frequent in-person support (81%) than Internet support (44.4%). **Diet:** (Assessed using the Block FFQ) All groups significantly ($p < 0.001$) decreased energy intake from baseline to 6-month assessment, with no between group differences. Only the frequent in-person support group maintained a significant difference from baseline at 18 months. **Activity:** (Assessed using the Paffenbarger Physical Activity Questionnaire) All groups significantly ($p < 0.01$) increased physical activity from baseline to 6-month assessment with no between group differences. Only the frequent in-person support group maintained a significant difference from baseline at 18 months. **Attendance:** Attendance over the 1-year	

			self-monitoring diaries were not reviewed by a therapist. For the following 6 months they were not contacted. **Delivered by:** Unclear. **Length of follow-up:** 18 months (from initial treatment) **Other agencies involved:** None reported. **Other information related to delivery:** All subjects were seen for assessment measures at baseline and at 6, 12 and 18 months; attendees entered a lottery to win US$50. The frequent in person support and Internet support programmes were based on multi-component weight maintenance programmes (Perri et al. 1998).	maintenance programme was significantly (p = 0.04) greater in the frequent in-person support group (54%) than the Internet support group (39%). There was no difference in the submission of self-monitoring data. **Other outcomes:** At baseline acceptability of group assignment was similar in both groups. The percentage of Internet support participants who would prefer to be in the other group had increased at 6 months (from 35% to 70%). There was no change in this measure in Frequent in-person support participants at 6 months.	

Evidence of corroboration (external validity)								
No additional controlled studies conducted in a UK setting met the inclusion criteria.								
Evidence of salience – Is it appropriate for the UK?								
First author	**Study design**	**Research type**	**Research quality**	**Study population**	**Research question and design**	**Length of follow-up**	**Main results**	**Confounders/comments**
Evidence for implementation – Will it work in the UK?								
First author	**Study design**	**Research type**	**Research quality**	**Study Population**	**Research question and design**	**Length of follow-up**	**Main results**	**Confounders/comments**
Evidence of cost-effectiveness								
First author	**Study design**	**Research type**	**Research quality**	**Study Population**	**Research question and design**	**Length of follow-up**	**Main results**	**Confounders/comments**

SEARCH STRATEGIES

1. exp obesity/
2. Weight Gain/
3. Weight Loss/
4. obes$.ti,ab.
5. (weight gain or weight loss).ti,ab.
6. (overweight or over weight or overeat$ or over eat$).ti,ab.
7. weight change$.ti,ab.
8. ((bmi or body mass index) adj2 (gain or loss or change)).ti,ab.
9. body mass.ti,ab.
10. or/1-9
11. ((slim or slims or slimm$) adj3 (program$ or facilit$ or centre$ or center$ or organi?ation$ or association$ or product$ or aid or aids or regime$ or scheme$ or group or groups or class$ or strateg$ or club$)).ti,ab.
12. ((dieting or diet or weight loss or weight manag$ or weight reduc$ or weight control$ or weight maint$) adj3 (program$ or facilit$ or centre$ or center$ or organi?ation$ or regime$ or scheme$ or class$ or strateg$ or club$)).ti,ab.
13. (weightwatcher$ or weight watcher$).ti,ab.
14. ((slim or slims or slimm$ or dieting or diet or weight loss or weight manag$ or weight reduc$ or weight control$ or weight maint$) adj3 (internet or web or online or computer$ or correspond$ or mail or email or postal)).ti,ab.
15. internet/
16. electronic mail/
17. correspondence/
18. meal replace$.ti,ab.
19. food provision.ti,ab.
20. ((fat or diet$ or weight$) adj3 (camp or camps or camping)).ti,ab.
21. camping/
22. ((exercis$ or fitness or fit or activit$ or sport$ or leisure) adj3 (program$ or facilit$ or centre$ or center$ or organi?ation$ or regime$ or scheme$ or class$ or strateg$ or club$ or service$)).ti,ab.
23. ((jog$ or swim$ or walk$ or aerobics or danc$ or gym) adj3 (program$ or facilit$ or centre$ or center$ or organi?ation$ or regime$ or scheme$ or class$ or strateg$ or club$ or service$)).ti,ab.
24. ((exercis$ or fitness or fit or activit$ or sport$ or leisure) adj3 (referral$ or prescrip$ or prescrib$)).ti,ab.
25. ((jog$ or swim$ or walk$ or aerobics or danc$ or gym) adj3 (referral$ or prescrip$ or prescrib$)).ti,ab.
26. (selfhelp or self help or self cure$).ti,ab.
27. self help groups/
28. ((lay or communit$ or agenc$) adj3 support).ti,ab.
29. ((neighbo?rhood$ or peer$ or lay or communit$) adj3 (group or groups or network$ or program$ or scheme$)).ti,ab.
30. ((parent or parents or guardian$ or friend$ or wife$ or wives or husband$ or spouse$ or partner or partners or family or families or peer$ or carer$) adj3 (involv$ or encourag$ or support$ or help$ or aid$ or manag$ or treat$ or interven$)).ti,ab.
31. ((communit$ or home or neighbo?rhood$) adj3 (treat$ or interven$ or manag$)).ti,ab.
32. ((communit$ or home or local or family or families or neighbo?rhood$) adj3 (program$ or activit$ or facilit$ or club$ or centre$ or center$ or organi?ation$ or group or groups or scheme$ or class$ or strateg$ or regime$ or service$)).ti,ab.
33. ((work$ or job$ or office$ or employ$) adj3 (program$ or activit$ or facilit$ or club$ or centre$ or center$ or organi?ation$ or group or groups or scheme$ or class$ or strateg$ or regime$ or service$)).ti,ab.
34. ((work$ or job$ or office$ or employ$) adj3 (interven$ or treat$ or manag$)).ti,ab.
35. ((school$ or afterschool$ or preschool$ or college$ or nurser$ or universit$) adj3 (program$ or activit$ or facilit$ or club$ or centre$ or center$ or organi?ation$ or group or groups or scheme$ or class$ or strateg$ or regime$ or service$)).ti,ab.

36. ((school$ or afterschool$ or preschool$ or college$ or nurser$ or universit$) adj3 (interven$ or treat$ or manag$)).ti,ab.
37. ((media or television$ or radio$ or newspaper$ or press or magazine$ or tv$) adj3 campaign$).ti,ab.
38. ((government$ or public or local$ or national$ or international$ or communit$) adj3 campaign$).ti,ab.
39. (canteen$ or refector$ or cafeteria$).ti,ab.
40. (church$ or pub or pubs or hairdresser$).ti,ab.
41. or/11-40
42. 10 and 41
43. animal/
44. human/
45. 43 not (43 and 44)
46. 42 not 45
47. limit 46 to yr=1990-2005

Data sources

The following information sources were searched to June 2005:

Cochrane Database of Systematic Reviews (Cochrane Library 2005, issue 2) (www.thecochranelibrary.com)
Database of Abstracts of Reviews of Effects (http://www.york.ac.uk/inst/crd/crddatabases.htm)
HTA Database (http://www.york.ac.uk/inst/crd/crddatabases.htm)
What Works in Public Health: evidence from systematic reviews relevant to implementing the 'wider public health' agenda (forthcoming online database) Centre for Reviews and Dissemination 2005.
HDA Evidence Base Briefing Documents (http://www.hda-online.org.uk/evidence/)
National Research Register (2005, issue 2) (http://www.update-software.com/National/)
Health Evidence Bulletins Wales (http://hebw.cf.ac.uk/index.html)
National Guideline Clearinghouse (http://www.guideline.gov/)
NHS Health Technology Assessment Programme (http://www.ncchta.org/
National Institute for Health and Clinical Excellence (http://www.nice.org.uk/)
Clinical Evidence (http://www.clinicalevidence.com/ceweb/conditions/index.jsp)
Scottish Intercollegiate Guidelines Network (http://www.sign.ac.uk/index.html)
Turning Research into Practice Database (Trip) (http://www.tripdatabase.com/)
MEDLINE (1966-2005 July week 1) (OVID)
MEDLINE In-Process & Other Non-Indexed Citations (July 14, 2005) (OVID)
CINAHL (1982–2005 July week 2) (OVID)
Embase (1980-2005 week 28) (OVID)
AMED Alternative and Complementary Medicine (1985-2005 July) (OVID)
Psycinfo (1872-2005/07 week 1) (SilverPlatter)
ASSIA (1987 – current) (CSA Illumina)
Sociological Abstracts (1963 – current) (CSA Illumina)
ERIC (Educational Resources Information Center) (1966-current) (CSA Illumina)
Social Science Citations Index (1981-2005 July 16th) (ISI Web of Knowledge)
Biosis Previews (1969-2005 Jul w3) (Dialog)
CAB Abstracts (1972-2005/Jun) (Dialog)
Food Science & Technology Abstracts (1969-2005/Jul w3) (Dialog)
Cochrane Central Register of Controlled Trials (Cochrane Library 2005, issue 2) (http://www.thecochranelibrary.com)
Campbell Collaboration Social, Psychological, Educational and Criminological Trials Register (C2-SPECTR) (1950-02.17.2005.pdt) (http://geb9101.gse.upenn.edu/RIS/RISWEB.ISA)
SIGLE (1980-2004/12) (SilverPlatter)
Zetoc (1993-updated daily) (http://zetoc.mimas.ac.uk/)
ReFeR (http://www.info.doh.gov.uk/doh/refr_web.nsf/Home?OpenForm)
EPPI-Centre in-house databases (http://eppi.ioe.ac.uk/EPPIWeb/home.aspx)
Department of Health website (http://www.dh.gov.uk/Home/fs/en)

The electronic search strategies were developed in Medline and adapted for use with the other information sources.

Update searches were conducted on 1 December 2005. The following databases were searched using the same search strategy as the original searches:

MEDLINE (1996-2005 November week 3) (OVID)
MEDLINE In-Process & Other Non-Indexed Citations (November 30, 2005) (OVID)
CINAHL (1982–2005 November week 3) (OVID)
Embase (1996-2005 week 47) (OVID)
Psycinfo (2000-2005 November week 2) (OVID)
ERIC (Educational Resources Information Center) (1966-current) (CSA Illumina)
Cochrane Central Register of Controlled Trials (Cochrane Library 2005, issue 4) (http://www.thecochranelibrary.com)
Cochrane Database of Systematic Reviews (Cochrane Library 2005, issue 4) (www.thecochranelibrary.com)
Database of Abstracts of Reviews of Effects (CRD administration database)

EXCLUDED REFERENCES

Papers not received in time for the review

Paper	Reason for exclusion
Diet meals: Healthy Choice vs. Lean Cuisine vs. Weight Watchers. *Consumer Reports* 2004;69:16–8.	Excluded Does not evaluate an intervention. Article on diet meals.
Bartlett SJ, Faith MS, Fontaine KR, Cheskin LJ, Allison DB. Is the prevalence of successful weight loss and maintenance higher in the general community than the research clinic? *Obesity Research* 1999;7:407–13.	Excluded Does not evaluate an intervention
Paradis G, Levesque L, Macaulay AC et al. Impact of a diabetes prevention program on body size, physical activity, and diet among Kanien'keha:ka (Mohawk) children 6 to 11 years old: 8-year results from the Kahnawake Schools Diabetes Prevention Project. *Pediatrics* 2005:115: 333–9.	Excluded Primary prevention. Separate data not available for overweight/obese children.
Savoye M, DeStefano R, Caprio S. Effect of the Bright Bodies weight management program for kids on pediatric obesity. *Obesity Research* 2000;8:PB67.	Excluded No control group
Strass D, Korsten-Reck U, Granacher M, Wolfarth B, Berg A, Keul J. Effects of a six-week swimming program on characteristics of physical fitness in obese children. *International Journal of Sports Medicine* 1998;19:S82.	Excluded Setting unclear and length of follow-up was less than 3 months.

Papers excluded as not non-clinical setting

Paper	Reason for exclusion
Current approaches to obesity management in UK Primary Care: the Counterweight Programme. *Journal Human Nutrition and Dietetics* 2004;17:183–90.	Not non-clinical setting.
Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report, Rep. No. NIH publication no. 98-4083. National Institutes of Health, National Heart Lung and Blood Institute, 1998; Bethesda: MD.	Not non-clinical setting.
Andersen RE, Wadden TA, Bartlett SJ, Zemel B, Verde TJ, Franckowiak SC. Effects of lifestyle activity vs structured aerobic exercise in obese women: a randomized trial. *Journal of the American Medical Association* 1999;281:335	Not non-clinical setting.
Anderson JW, Hamilton CC, Crown-Weber E, Riddlemoser M, Gustafson NJ. Safety and effectiveness of a multidisciplinary very-low-calorie diet program for selected obese individuals. *Journal American Dietetic Assocation* 1991;91:1582–4.	Not non-clinical setting.
Ashley JM, St. Jeor ST, Perumean-Chaney S, Schrage J, Bovee V (2001) Meal replacements in weight intervention. *Obesity Research* 2001;9:312S–20.	Not non-clinical setting.
Ashutosh K, Methrotra K, Fragale-Journalackson J. Effects of sustained weight loss and exercise on aerobic fitness in	Not non-clinical setting.

obese women. *Journal Sports Medicine and Physical Fitness* 1997; 37:252–7.	
Aude YW, Agatston AS, Lopez-Journalimenez F et al. The national cholesterol education program diet vs a diet lower in carbohydrates and higher in protein and monounsaturated fat: a randomized trial. *Archives of Internal Medicine* 2004;164:2141–6.	Not non-clinical setting.
Avenell A, Broom J, Brown T et al. Systematic review of the long-term effects and economic consequences of treatments for obesity and implications for health improvement. Health Technology Assessment 2004;8:1–194.	Setting unclear.
Ayyad C, Andersen T. Long-term efficacy of dietary treatment of obesity: a systematic review of studies published between 1931 and 1999. *Obesity Reviews* 2000;1:113–9.	Setting unclear.
Bacon L, Keim NL, Van Loan MD Derricote M, Gale B, Kazaks A, Stern JS. Evaluating a 'non-diet' wellness intervention for improvement of metabolic fitness, psychological well-being and eating and activity behaviors. *International Journal of Obesity and Related Metabolic Disorders* 2002;26,854–65.	Not non-clinical setting.
Bjorkelund CV, Bengtsson C, Carazo B, Palm L, Tarschys G, Wassen A. Effects of a community risk factor reducing programme on weight, body fat distribution, and lipids in obese women. *International Journal of Obesity* 1991;15:251–8.	Not non-clinical setting.
Blumenthal JA, Sherwood A, Gullette EC et al. Exercise and weight loss reduce blood pressure in men and women with mild hypertension: effects on cardiovascular, metabolic, and hemodynamic functioning. *Archives of Internal Medicine* 2000;160:1947–58.	Not non-clinical setting.
Borg P, Kukkonen-Harjula K, Fogelholm M, Pasanen M. Effects of walking or resistance training on weight loss maintenance in obese, middle-aged men: a randomized trial. *International Journal of Obesity and Related Metabolic Disorders* 2002;26: 676–83.	Setting unclear.
Bowerman S, Bellman M, Saltsman P et al. Implementation of a primary care physician network obesity management program. *Obesity Research* 2001;9(Suppl 4): S321–5.	Not non-clinical setting.
Braet C, Van Winckel M, Van Leeuwen K. Follow-up results of different treatment programs for obese children. *Acta Paediatrica* 1997;86:397–402.	Not non-clinical setting.
Braet C, Van Winckel M. Long-term follow-up of a cognitive behavioral treatment program for obese children. *Behavioral Therapy* 2000;31:55–74.	Not non-clinical setting.
Ciliska D, Kelly C, Petrov N, Chalmers J. A review of the weight loss interventions for obese people with non-insulin-dependent diabetes mellitus. *Canadian Journal of Diabetes Care* 1995;19:10–15.	Not non-clinical setting. Management of overweight with diabetes.
Cordero-MacIntyre ZR, Peters W, Libanati CR, Espana RC, Howell WH, Lohman TG. Effect of a weight-reduction program on total and regional body composition in obese postmenopausal women. *Annals of the New York Academy of Sciences* 2000;904:526–35.	Not non-clinical setting.
Cousins JH, Rubovits DS, Dunn JK, Reeves RS, Ramirez AG, Foreyt JP. Family versus individually oriented intervention for weight loss in Mexican American women. *Public Health Reports* 1992;107:549–55.	Setting unclear.
Cox KL, Burke V, Morton AR, Beilin LJ, Puddey IB. The independent and combined effects of 16 weeks of vigorous	Setting unclear.

exercise and energy restriction on body mass and composition in free-living overweight men: a randomized controlled trial. *Metabolism* 2003;52:107–15.	
Dalle Grave R, Todesco T, Banderali A, Guardini S. Cognitive-behavioural guided self-help for obesity: a preliminary research. *Eating and Weight Disorders* 2004;9: 69–76.	Not non-clinical setting.
Dallow CB, Anderson J. Using self-efficacy and a transtheoretical model to develop a physical activity intervention for obese women. *American Journal of Health Promotion* 2003;17:373–81.	Setting unclear.
Dansinger ML, Gleason JA, Griffith JL, Selker HP, Schaefer EJ. Comparison of the Atkins, Ornish, Weight Watchers, and Zone diets for weight loss and heart disease risk reduction: a randomized trial. *Journal of the American Medical Association* 2005;293:43–53.	Not non-clinical setting.
De Mello ED, Luft VC, Meyer F [Individual outpatient care versus group education programs: which leads to greater change in dietary and physical activity habits for obese children?]. *Journal of Pediatrics (Rio Journal)* 2004;80,468–74.	Not non-clinical setting.
Deforche B, De Bourdeaudhuij I, Tanghe A, Hills AP, De Bode P. Changes in physical activity and psychosocial determinants of physical activity in children and adolescents treated for obesity. *Patient Educuation and Counselling* 2004; 55:407–15.	Not non-clinical setting.
Deforche B, De Bourdeaudhuij I, Tanghe A, Debode P, Hills AP, Bouckaert J. Post-treatment phone contact: a weight maintenance strategy in obese youngsters. *International Journal of Obesity* 2005;29:543–6.	Not non-clinical setting.
Deforche B, De Bourdeaudhuij I, Debode P, Vinaimont F, Hills AP, Verstraete S, Bouckaert J. Changes in fat mass, fat-free mass and aerobic fitness in severely obese children and adolescents following a residential treatment programme. *European Journal of Pediatrics* 2003;162:616–22.	Not non-clinical setting.
Dornelas EA, Wylie-Rosett J, Swencionis C. The DIET study: long-term outcomes of a cognitive-behavioral weight-control intervention in independent-living elders. Dietary intervention: evaluation of technology. *Journal of the American Dietetic Association* 1998;98:1276–81.	Not non-clinical setting.
Douketis JD, Feightner JW, Attia J. Periodic health examination, 1999 update: 1. Detection prevention and treatment of obesity. *Canadian Medical Association Journal* 1999;160:513–25.	Not non-clinical setting.
Epstein LH, Goldfield GS. Physical activity in the treatment of childhood overweight and obesity: current evidence and research issues. *Medicine and Science in Sports and Exercise* 1999;31:S553–9.	Setting is not the focus of the review.
Epstein LH, Paluch RA, Gordy CC, Saelens BE, Ernst MM. Problem solving in the treatment of childhood obesity. *Journal of Consulting and Clinical Psychology* 2000;68:717–21.	Not non-clinical setting.
Epstein LH, Wing RR, Koeske R, Valoski A. Effects of diet plus exercise on weight change in parents and children. *Journal of Consulting and Clinical Psychology* 1984;52:429–37.	Not non-clinical setting.
Epstein LH, Wing RR, Koeske R, Ossip DSB. A comparison of lifestyle change and programmed aerobic exercise on weight and fitness changes in obese children. *Behavioral Therapy* 1982;13:651–65.	Not non-clinical setting.

Facchini M, Malfatto G, Sala L et al. Changes of autonomic cardiac profile after a 3-week integrated body weight reduction program in severely obese patients. *Journal of Endocrinological Investigation* 2003;25:138–42.	Not non-clinical setting.
Flodmark CE, Ohlsson T, Rydén O, Sveger T. Prevention of progression to severe obesity in a group of obese schoolchildren treated with family therapy. *Pediatrics* 1993;91:880–4.	Not non-clinical setting.
Foreyt J, Ramirez A, Cousins J. Cuidando El Corazon: a weight-reduction intervention for Mexican Americans. *American Journal of Clinical Nutrition* 1991;53;1639S–41.	Setting unclear.
Glenny AM, Omeara S, Melville A, Sheldon TA, Wilson C. The treatment and prevention of obesity – a systematic review of the literature. *International Journal of Obesity* 1997; 21:715–37.	Not non-clinical setting.
Grant S, Todd K, Aitchison TC, Kelly P, Stoddart D. The effects of a 12-week group exercise programme on physiological and psychological variables and function in overweight women. *Public Health* 2004;118: 31–42.	Setting is not the focus of the study.
Green MW, Elliman NA, Kretsch MJ. Weight loss strategies, stress, and cognitive function: supervised versus unsupervised dieting. *Psychoneuroendocrinology* 2005;30:908–18.	Setting is not the focus of the study.
Gwinup G. Weight loss without dietary restriction: efficacy of different forms of aerobic exercise. *American Journal of Sports Medicine1987*;15:275–9.	Setting unclear.
Hakala P, Karvetti RL, Roennemaa T. Group vs. individual weight reduction programmes in the treatment of severe obesity: a five year follow-up study. *International Journal of Obesity* 1993;17:97–102.	Not non-clinical setting.
Harvey EL, Glenny AM, Kirk, SF, Summerbell CD. An updated systematic review of interventions to improve health professionals' management of obesity. *Obesity Reviews* 2002;3:45–55.	Setting is not the focus of the review.
Harvey EL, Glenny AM, Kirk SFL. *Improving health professionals' management and the organisation of care for overweight and obese people (Cochrane Review).* Cochrane Review; 2001.	Setting is not the focus of the review.
Heber D, Ashley JM, Wang HJ, Elashoff RM. Clinical evaluation of a minimal intervention meal replacement regimen for weight reduction. *Journal of the American College of Nutrition* 1994;13:608–14.	Not non-clinical setting.
Hellerstedt WL, Jeffery RW. The effects of a telephone-based intervention on weight loss. *American Journal of Health Promotion* 1997;11:177–82.	Not non-clinical setting.
Hillsdon M, Thorogood M, White I, Foster C. Advising people to take more exercise is ineffective: a randomized controlled trial of physical activity promotion in primary care. *International Journal of Epidemiology* 2002;31:808–15.	Not non-clinical setting. Not management of overweight/obesity.
Hipsky J, Kirk S. HealthWorks! weight management program for children and adolescents. *Journal of the American Dietetic Assocation* 2002;102:S64–7.	Not non-clinical setting.
Irwin ML, Yasui Y, Ulrich CM et al. Effect of exercise on total and intra-abdominal body fat in postmenopausal women: a randomized controlled trial. *Journal of the American Medical Association* 2003;289,323–30.	Setting not the focus of the study.
Irwin ML, Tworoger SS, Yasui Y et al. Influence of demographic, physiologic, and psychosocial variables on adherence to a yearlong moderate-intensity exercise trial in	Setting unclear. No control/comparison group.

postmenopausal women. *Preventive Medicine* 2004;39:1080–6.	
Jacobsen DJ, Donnelly JE, Snyder-Heelan K, Livingston K. Adherence and attrition with intermittent and continuous exercise in overweight women. *International Journal of Sports Medicine* 2003;24:459–64.	Not non-clinical setting.
Jakicic JM, Winters C, Lang W, Wing RR. Effects of intermittent exercise and use of home exercise equipment on adherence, weight loss, and fitness in overweight women: a randomized trial. *Journal of the American Medical Association* 1999;282:1554–60.	Not non-clinical setting.
James LC, Folen RA, Page H, Noce M, Brown J, Britton C. The Tripler LE3AN Program: a two-year follow-up report. *Military Medicine* 1999;164:389–95.	Not non-clinical setting.
James LC, Folen RA, Garland FN et al. The Tripler Army Medical Center LEAN Program: a healthy lifestyle model for the treatment of obesity. *Military Medicine* 1997;162:328–32.	Not non-clinical setting.
Jirapinyo P, Limsathayourat N, Wongarn R, Limpimwong V, Bunnag A, Chockvivatvanit S. A summer camp for childhood obesity in Thailand. *Journal of the Medical Association of Thailand* 1995;78;238–46.	Not non-clinical setting.
Kaliski EM, Cahill K. Positive Moves: a teen weight management program. *HMO Practice* 1993;7:168–9.	Not non-clinical setting.
Kaplan TA, Campbell MH, Moccia-Loos G. Effects of a 3-month exercise and nutrition program for childhood obesity on anthropometrics, physical fitness, and serum lipids. *International Pediatrics* 1996;11:31–7.	Setting unclear.
Logue E, Sutton K, Jarjoura D, Smucker W, Baughman K, Capers C. Transtheoretical model – chronic disease care for obesity in primary care: a randomized trial. *Obesity Research* 2005;13:917–27.	Not non-clinical setting.
Maziekas MT, LeMura LM, Stoddard NM, Kaercher S, Martucci T. Follow up exercise studies in paediatric obesity: implications for long term effectiveness. *British Journal of Sports Medicine* 2003;37:425–9.	Settings unclear.
McTigue KM, Hess R, Ziouras J. *Diagnosis and treatment of obesity in the elderly*. Agency for Healthcare Research and Quality (AHRQ) 2003; Rockville.	Not non-clinical settings.
Mellin LM, Slinkard LA, Irwin CE. Adolescent obesity intervention: validation of the SHAPEDOWN program. *Journal of the American Dietetic Association* 1987;87:333–8.	Not non-clinical setting.
Miller Y, Dunstan D. The effectiveness of physical activity interventions for the treatment of overweight and obesity and type 2 diabetes. *Journal of Science and Medicine in Sport* 2004;7:52–9.	Settings unclear.
Miyatake N, Nishikawa H, Morishita A et al. Daily walking reduces visceral adipose tissue areas and improves insulin resistance in Japanese obese subjects. *Diabetes Research and Clinical Practrice* 2002;58;101–7.	Setting unclear. No control/comparison group.
Neumark-Sztainer D, Kaufmann NA, Berry EM. Physical activity within a community-based weight control program: program evaluation and predictors of success. *Public Health Reviews* 1995;23:237–51.	Not non-clinical setting.
Noakes M, Foster PR, Keogh JB, Clifton PM. Meal replacements are as effective as structured weight-loss diets for treating obesity in adults with features of metabolic syndrome. *Journal of Nutrition* 2004;134:1894–9.	Not non-clinical setting.
Norris S, Zhang X, Avenell A et al. Long-term non-pharmacologic weight loss interventions for adults with type 2	Not non-clinical settings. Participants have

diabetes. In: *The Cochrane Database of Systematic Reviews*. John Wiley & Sons 2005; Chichester.	diabetes.
Norris S, Zhang X, Avenell A, Gregg E, Schmid CH, Lau J. Long-term non-pharmacological weight loss interventions for adults with prediabetes. In: *The Cochrane Database of Systematic Reviews*. John Wiley & Sons 2005; Chichester.	Some studies have obese/overweight inclusion criteria but settings of these are unclear.
Norris SL, Zhang X, Avenell A et al. Long-term effectiveness of lifestyle and behavioral weight loss interventions in adults with type 2 diabetes: a meta-analysis. *American Journal of Medicine* 2004;117:762–774.	Not non-clinical settings. Participants have diabetes.
Nunn RG, Newton KS, Faucher P. 2.5 years follow-up of weight and body mass index values in the Weight Control for Life! program: a descriptive analysis. *Addict Behavior* 1992;17:579–85.	Not non-clinical setting.
Okazaki T, Himeno E, Nanri H, Ikeda M. Effects of a community-based lifestyle-modification program on cardiovascular risk factors in middle-aged women. *Hypertension Research* 2001;24:647–53.	Setting unclear. No control/comparison group.
Pavlou KN, Krey S, Steffee WP. Exercise as an adjunct to weight loss and maintenance in moderately obese subjects. *American Journal of Clinical Nutrition* 1989;49:1115–23.	Not non-clinical setting.
Petrella RJ, Lattanzio CN. Does counseling help patients get active? Systematic review of the literature. *Canadian Family Physician* 2002;48:72–80.	Not non-clinical settings. Not management of overweight/obesity.
Pirozzo S, Summerbell C, Cameron C, Glasziou P. Advice on low-fat diets for obesity. In: *The Cochrane Library*. Update Software, Oxford.	Not non-clinical settings.
Powell LA, Nieman DC, Melby C et al. Assessment of body composition change in a community-based weight management program. *Journal of the American College of Nutrition* 2001;20:26–31.	Setting unclear. No control/comparison group.
Powell JJ, Tucker L, Fisher AG, Wilcox K. The effects of different percentages of dietary fat intake, exercise, and calorie restriction on body composition and body weight in obese females. *American Journal of Health Promotion* 1994;8:442–8.	Not non-clinical setting.
Ready AE, Drinkwater DT, Ducas J, Fitzpatrick DW, Brereton DG, Oades SC. Walking program reduces elevated cholesterol in women postmenopause. *Canadian Journal of Cardiology* 1995;11:905–12.	Not non-clinical setting. Not management of overweight/obesity.
Reilly DJJ, McDowell ZC. Physical activity interventions in the prevention and treatment of paediatric obesity: systematic review and critical appraisal. *Proceedings of the Nutrition Society* 2003;62:611–619.	Not non-clinical settings.
Reilly JJ, Wilson ML, Summerbell CD, Wilson DC. Obesity: diagnosis, prevention, and treatment; evidence based answers to common questions. *Archives of Disease in Childhood* 2002;86:392–395.	Not non-clinical settings.
Rothacker DQ, Staniszewski BA, Ellis PK. Liquid meal replacement vs traditional food: a potential model for women who cannot maintain eating habit change. *Journal of the American Dietetic Association* 2001;101:345–7.	Not non-clinical setting.
Saelens BE, Sallis JF, Wilfley DE, Patrick K, Cella JA, Buchta R. Behavioral weight control for overweight adolescents initiated in primary care. *Obesity Research* 2002;10, 22–32.	Not non-clinical setting.
Shaw K, O'Rourke P, Del Mar C, Kenardy J. Psychological interventions for overweight or obesity. In *The Cochrane*	Not non-clinical settings.

Database of Systematic Reviews. John Wiley & Sons 2005; Chichester.	
Shimamoto H, Adachi Y, Takahashi M, Tanaka K. Low impact aerobic dance as a useful exercise mode for reducing body mass in mildly obese middle-aged women. *Applied Human Science* 1998;17:109–14.	Not non-clinical setting.
Simpson M, Earles J, Folen R, Trammel R, James L. The Tripler Army Medical Center's LE3AN program: a six-month retrospective analysis of program effectiveness for African-American and European-American females. *Journal of the National Medical Assocation* 2004;96:1332–6.	Not non-clinical setting.
Slentz CA, Duscha BD, Johnson JL et al. Effects of the amount of exercise on body weight, body composition, and measures of central obesity: STRRIDE – a randomized controlled study. *Archives of Internal Medicine* 2004;164:31–9.	Not non-clinical setting.
Sum CF, Wang KW, Choo DC, Tan CE, Fok AC, Tan EH. The effect of a 5-month supervised program of physical activity on anthropometric indices, fat-free mass, and resting energy expenditure in obese male military recruits. *Metabolism* 1994;43:1148–52.	Not non-clinical setting.
Summerbell CD, Ashton V, Campbell KJ, Edmunds L, Kelly S, Waters E. *Interventions for treating obesity in children*. In The Cochrane Library 2003, Issue 3. John Wiley & Sons, Ltd; Chichester.	Settings either clinical or unclear.
Taylor VC, Baranowski T, Young DR. Physical activity interventions in low-income, ethnic minority, and populations with disability. *American Journal of Preventive Medicine* 1998;15:334–343.	Studies on overweight/obesity are in clinical settings.
Trent LK, Stevens LT. Evaluation of the Navy's obesity treatment program*. Military Medicine* 1995;160:326–30.	Not non-clinical setting.
Wadden TA, Foster GD, Letizia KA, Stunkard AJ. A multicenter evaluation of a proprietary weight reduction program for the treatment of marked obesity. *Archives of Internal Medicine* 1992:152;961–6.	Not non-clinical setting.
Walsh MF, Flynn TJ. A 54-month evaluation of a popular very low calorie diet program. *Journal of Family Practice* 1995;41:231–6.	Not non-clinical setting.
Wylie-Rosett J, Swencionis C, Peters MH et al. A weight reduction intervention that optimizes use of practitioner's time, lowers glucose level, and raises HDL cholesterol level in older adults. *Journal of the American Dietetic Association* 1994;94:37–42.	Not non-clinical setting.
Yoshinaga M, Sameshima K, Miyata, K, Hashiguchi J, Imamura M. Prevention of mildly overweight children from development of more overweight condition. *Preventive Medicine* 2004;38: 172–4.	Not non-clinical setting.

Papers excluded as not management of overweight/obesity

Paper	**Reason for exclusion**
An evaluation report of the Glasgow Exercise Referral Scheme. Greater Glasgow Health Board 2001; Glasgow.	Not all participants overweight. Data not reported separately for overweight participants.
Agron P, Takada E, Purcell A. *California Project LEAN's Food on the Run program: an evaluation of a high school*.	Not management of overweight/obesity.

Journal of the American Dietetic Association 2002;102(Suppl 3):s103-5.	
Aldana SG, Jacobson BH, Kelley PL, Quirk M. The effectiveness of a mobile worksite health promotion program in lowering employee health risk. *American Journal of Health Promotion* 1994;8:254	Not all participants overweight. Data not reported separately for overweight participants.
Andersen RE, Franckowiak SC, Snyder J, Bartlett SJ, Fontaine KR. Can inexpensive signs encourage the use of stairs? Results from a community intervention. *Annals of Internal Medicine* 1998;129:363	Not targeted at overweight population. No follow-up data for overweight subgroup.
Anderson JV, Mavis BE, Robison JI, Stoffelmayr BE. A work-site weight management program to reinforce behavior. *Journal of Occupational Medicine* 1993;35:800–4.	Not all participants overweight. Data not reported separately for overweight participants.
Angelico F, Del Ben M, Fabiani L, Lentini P, Pannozzo F, Urbinati GC, Ricci G. Management of childhood obesity through a school-based programme of general health and nutrition education. *Public Health* 1991;105:393–8.	Not all participants overweight. Data not reported separately for overweight participants.
Baranowski T, Baranowski JC, Cullen KW, Thompson DI, Nicklas T, Zakeri IE, Rochon J. The Fun, Food, and Fitness Project (FFFP): the Baylor GEMS pilot study. *Ethnicity and Disease* 2003;13:S30–9.	Not all participants overweight. Data not reported separately for overweight participants.
Beech BM, Klesges RC, Kumanyika SK et al. Child- and parent-targeted interventions: the Memphis GEMS pilot study. *Ethnicity and Disease* 2003;13:S40–53.	Not all participants overweight. Data not reported separately for overweight participants.
Bell AC, Swinburn BA, Amosa H, Scragg RK. A nutrition and exercise intervention program for controlling weight in Samoan communities in New Zealand. *International Journal of Obesity and Related Metabolic Disorders* 2001;25:920–7.	Not all participants overweight. Data not reported separately for overweight participants.
Bosse, MC, Davis, SC, Puhl, SM et al. Effects of Zone diet macronutrient proportions on blood lipids, blood glucose, body composition, and treadmill exercise performance. *Nutrition Research (Los Angeles)* 2004;24:521–30.	Not all participants overweight. Data not reported separately for overweight participants.
Bowen DJ, Beresford SA, Vu T et al. Baseline data and design for a randomized intervention study of dietary change in religious organizations. *Preventive Medicine* 2004;39:602–11.	Not management of overweight/obesity.
Brodie D, Dugdill L. Health promotion at work. *Journal of the Royal Society of Medicine* 1993;86:694–6.	Not all participants overweight. Data not reported separately for overweight participants.
Brown WJ, Lee C, Oyomopito R. Effectiveness of a bilingual heart health program for Greek-Australian women. *Health Promotion International* 1996;11:117–25.	Not all participants overweight. Data not reported separately for overweight participants.
Brownson RC, Smith CA, Pratt M et al. (1996) Preventing cardiovascular disease through community-based risk reduction: the Bootheel Heart Health Project. *American Journal of Public Health* 1996;86:206–13.	Not management of overweight/obesity.
Bruno R, Arnold C, Jacobson L, Winick M, Wynder E. Randomized controlled trial of a nonpharmacologic cholesterol reduction program at the worksite. *Preventive Medicine* 1983;12:523–32.	Not management of overweight/obesity.
Burke V, Giangiulio N, Gillam HF, Beilin LJ, Houghton S. Physical activity and nutrition programs for couples: a randomized controlled trial. *Journal of Clinical Epidemiology* 2003;56:421–32.	Not all participants overweight. Data not reported separately for overweight participants.
Byrne SM, Cooper Z, Fairburn CG. Psychological predictors	Not management of

of weight regain in obesity. *Behavioral Research Therapy* 2004;42:1341–56.	overweight/obesity. No intervention evaluated.
Caballero B, Clay T, Davis SM et al. Pathways: a school-based, randomized controlled trial for the prevention of obesity in American Indian schoolchildren. *American Journal of Clinical Nutrition* 2003;78:1030–8.	Not all participants overweight. Data not reported separately for overweight participants.
Calfas KJ, Sallis JF, Zabinski MF et al. Preliminary evaluation of a multicomponent program for nutrition and physical activity change in primary care: PACE+ for adults. *Preventive Medicine* 2002;34:153–61.	Not all participants overweight. Data not reported separately for overweight participants.
Carroll P, Ali N, Azam N. Promoting physical activity in South Asian muslim women through exercise on prescription. *Health Technology Assessment* 2002;6:101.	Not management of overweight/obesity.
Chan CB, Ryan DA, Tudor-Locke C. Health benefits of a pedometer-based physical activity intervention in sedentary workers. *Preventive Medicine* 2004;39:1215–22.	Not all participants overweight. Data not reported separately for overweight participants.
Cheung CYW, Ng GYF. An eight-week exercise programme improves physical fitness of sedentary female adolescents. *Physiotherapy* 2003;89:249–55.	Not management of overweight/obesity. Setting unclear.
Clemmens D, Hayman LL. Increasing activity to reduce obesity in adolescent girls: a research review. *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 2004;33:801–8.	Interventions not targeted at overweight/obese populations.
Cohen RY, Stunkard AJ, Felix MR. Comparison of three worksite weight-loss competitions. *Journal of Behavioral Medicine* 1987;10:467–79.	Not all participants overweight. Data not reported separately for overweight participants.
Coleman KJ, Tiller CL, Sanchez J et al. Prevention of the epidemic increase in child risk of overweight in low-income schools: the El Paso coordinated approach to child health. *Archives of Pediatric and Adolescent Medicine* 2005:159; 217–24.	Not all participants overweight. Data not reported separately for overweight participants.
Connell CM, Sharpe PA, Gallant MP. Effect of health risk appraisal on health outcomes in a university worksite health promotion trial. *Health Education Research* 1995;10:199–209.	Not management of overweight/obesity.
Cook C, Simmons G, Swinburn B, Stewart J. Changing risk behaviours for non-communicable disease in New Zealand working men: is workplace intervention effective? *New Zealand Medical Journal* 2001;114:175–8.	Not management of overweight/obesity.
Cox KL, Burke V, Morton AR, Gillam HF, Beilin LJ, Puddey IB Long-term effects of exercise on blood pressure and lipids in healthy women aged 40–65 years: the Sedentary Women Exercise Adherence Trial (SWEAT). *Journal of Hypertension* 2001;19:1733–43.	Not all participants overweight. Data not reported separately for overweight participants.
Dart L, Frable PJ, Bradley PJ, Bae S, Singh K. Working with families to prevent obesity: a community–campus partnership. *Journal of Family and Consumer Sciences* 2005;97:20–8.	Not all participants overweight. Data not reported separately for overweight participants.
Dastani HB, Brown CM, O'Donnell DC. Combating the obesity epidemic: community pharmacists' counseling on obesity management. *Annals of Pharmacotherapy* 2004;38:1800–4.	Not management of overweight/obesity.
Day F, Nettleton B. The Scottish Borders general practitioners exercise referral scheme (GPERS). *Health Bulliten* 2001;59:343–6.	Not management of overweight/obesity.
Del Prete L, English C, Caldwell M, Banspach SW, Lefebvre C (1993) Three-year follow-up of Pawtucket Heart Health's	Not all participants overweight. Data not

community-based weight loss programs. *American Journal of Health Promotion* 1993;7:182–7.	reported separately for overweight participants.
DeVahl J, King R, Williamson JW. Academic incentives for students can increase participation in and effectiveness of a physical activity program. *Journal of the American College of Health* 2005;53:295–8.	Not management of overweight/obesity.
Donnelly JE, Jacobsen DJ, Whatley JE. Obesity and metabolic fitness: effects of a school intervention of nutrition and physical activity. *Food and Nutrition News* 1995;67:7–10.	Not all participants overweight. Data not reported separately for overweight participants.
Dunn AL, Andersen RE, Jakicic JM. Lifestyle physical activity interventions – history, short- and long-term effects, and recommendations. *American Journal of Preventive Medicine* 1998;15:398–412.	Not management of overweight/obesity.
Dzator JA, Hendrie D, Burke V et al. A randomized trial of interactive group sessions achieved greater improvements in nutrition and physical activity at a tiny increase in cost. *Journal of Clinical Epidemiology* 2004;57:610–9.	Not all participants overweight. Data not reported separately for overweight participants.
Englert HS, Diehl HA, Greenlaw RL. Rationale and design of the Rockford CHIP, a community-based coronary risk reduction program: results of a pilot phase. *Preventive Medicine* 2004;38:432–41.	Not all participants overweight. Data not reported separately for overweight participants.
Ewart CK, Young DR, Hagberg JM. Effects of school-based aerobic exercise on blood pressure in adolescent girls at risk for hypertension. *American Journal of Public Health* 1998;88: 949–51.	Not management of overweight/obesity.
Fardy PS, Azzollini A, Herman A. Health-based physical education in urban high schools: the PATH program. *Journal of Teaching Physical Education* 2004;23:359–71.	Not management of overweight/obesity.
Fitzgibbon ML, Stolley MR, Schiffer L, Van Horn L, KauferChristoffel K, Dyer A. Two-year follow-up results for Hip-Hop to Health Jr.: a randomized controlled trial for overweight prevention in preschool minority children. *Journal of Pediatrics* 2005;146:618–25.	Not all participants overweight. Data not reported separately for overweight participants.
Flores R. Dance for health: improving fitness in African American and Hispanic adolescents. *Public Health Reports* 1995;110:189–93.	Not all participants overweight. Data not reported separately for overweight participants.
Fogelholm M, Lahti-Koski M. Community health-promotion interventions with physical activity: does this approach prevent obesity? *Scandinavian Journal of Nutrition/Naringsforskning* 2002;46:173–177.	Interventions not targeted at overweight/obese populations.
Forster JL, Jeffery RW, Sullivan S, Snell MK. A work-site weight control program using financial incentives collected through payroll deduction. *Journal of Occupational Medicine* 1985;27:804–8.	Not all participants overweight. Data not reported separately for overweight participants.
Frenn M, Malin S, Bansal N et al. Addressing health disparities in middle school students' nutrition and exercise. *Journal of Community Health Nursing* 2003;20:1–14.	Not management of overweight/obesity.
Fukahori M, Aono H, Saito I, Ikebe T, Ozawa H. Program of exercise training as Total Health Promotion Plan and its evaluation. *Journal of Occupational Health* 1999;41:76–82.	Not all participants overweight. Data not reported separately for overweight participants.
Gance-Cleveland B, Harri, M, Ward-Begnoche W. Family-centered care: working with schools to connect with families of overweight children. *Journal for Specialist in Pediatric Nursing*;2005:10, 40–3.	Not management of overweight obesity. Description of screening programme.
Gidlow C, Johnston LH, Crone D, James D. Attendance of exercise referral schemes in the UK: a systematic review.	No details about weight status of participants.

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Goetzel RZ, Kahr TY, Aldana SG, Kenny GM. An evaluation of Duke University's live for life health promotion program and its impact on employee health. *American Journal of Health Promotion* 1996;10:340–2.	Not management of overweight/obesity.
Gomel M, Oldenburg B, Simpson JM, Owen N. Work-site cardiovascular risk reduction: a randomized trial of health risk assessment, education, counseling, and incentives. *American Journal of Public Health* 1993;83:1231–8.	Not all participants overweight. Data not reported separately for overweight participants.
Goodman RM, Wheeler FC, Lee PR. Evaluation of the Heart To Heart Project: lessons from a community-based chronic disease prevention project. *American Journal of Health Promotion* 1995;9:443–55.	Not all participants overweight. Data not reported separately for overweight participants.
Goran MI, Reynolds K. Interactive multimedia for promoting physical activity (IMPACT) in children. *Obesity Research* 2005;13:762–71.	Not all participants overweight. Data not reported separately for overweight participants.
Grodstein F, Levine R, Troy L, Spencer T, Colditz GA, Stampfer MJ. Three-year follow-up of participants in a commercial weight loss program: can you keep it off? *Archives of Internal Medicine* 1996;156:1302–6.	Weight status of participants unclear. No control/comparison group.
Hambleton, H. Fit 4 Fun. *Community Practitioner* 2004;77:367–8.	Not management of overweight/obesity.
Harland J, White M, Drinkwater C, Chinn D, Farr L, Howel D. The Newcastle exercise project: a randomised controlled trial of methods to promote physical activity in primary care. *British Medical Journal* 1999;319:828–32.	Weight status of participants unclear.
Harrell JS, Gansky SA, McMurray RG, Bangdiwala SI, Frauman AC, Bradley CB. School-based interventions improve heart health in children with multiple cardiovascular disease risk factors. *Pediatrics* 1998;102:371–80.	Not all participants overweight. Data not reported separately for overweight participants.
Harrell JS, McMurray RG, Bangdiwala SI, Frauman AC, Gansky SA, Bradley CB. Effects of a school-based intervention to reduce cardiovascular disease risk factors in elementary-school children: the Cardiovascular Health in Children (CHIC) study. *Journal of Pediatrics* 1996;128,797–805.	Not all participants overweight. Data not reported separately for overweight participants.
Hennrikus DJ, Jeffery RW. Worksite intervention for weight control: a review of the literature. *American Journal of Health Promotion*;1996;10:471–498.	Not all studies are targeted at overweight/obese participants.
Hermann JR, Kopel BH, McCrory ML, Kulling FA (1990) Effect of a cooperative extension nutrition and exercise program for older adults on nutrition knowledge, dietary-intake, anthropometric measurements, and serum-lipids. *Journal of Nutrition Education* 1990;22:271–4.	Not all participants overweight. Data not reported separately for overweight participants.
Hoke CN, Franks S. Work site, physician's office, or medical university clinic: the effect of setting on success in a multidisciplinary weight-loss program. *Eating Behavior* 2002;3:93–100.	Not management of overweight/obesity.
Hourihan F, Krass I, Chen T. Rural community pharmacy: a feasible site for a health promotion and screening service for cardiovascular risk factors. *Australian Journal of Rural Health* 2003;11:28–35.	Not all participants overweight. Data not reported separately for overweight participants.
Jackson C. *Exercise by prescription in North Yorkshire: an evaluation*. North Yorkshire Specialist Health Promotion Service. North Yorkshire Health Authority 1997; Harrogate.	Not management of overweight/obesity.
James J, Thomas P, Cavan D, Kerr D. Preventing childhood obesity by reducing consumption of carbonated drinks: cluster randomised controlled trial. *British Medical Journal*	Not all participants overweight. Data not reported separately for

2003;328:1237.	overweight participants.
Jeffery RW, McGuire M, Brelje K et al. Recruitment to mail and telephone interventions for obesity in a managed care environment: the Weigh-To-Be Project. *American Journal of Managagement Care* 2004;10: 378–82.	Not management of overweight/obesity.
Jeffery RW, Gray CW, French SA et al. Evaluation of weight reduction in a community intervention for cardiovascular disease risk: changes in body mass index in the minnesota Heart Health Program. *International Journal of Obesity and Related Metabolic Disorders* 1995;19:30–9.	Not management of overweight/obesity.
Jeffery RW, Forster JL, Baxter JE, French SA, Kelder SH. An empirical evaluation of the effectiveness of tangible incentives in increasing participation and behavior change in a worksite health promotion program. *American Journal of Health Promotion* 1993;8:98–100.	Weight status of participants unclear. Insufficient before and after data.
Jeffery RW, Forster JL, French SA et al. The Healthy Worker Project: a work-site intervention for weight control and smoking cessation. *American Journal of Public Health* 1983;83: 395–401.	Not all participants overweight. Data not reported separately for overweight participants.
Johnson CC, Nicklas TA, Arbeit ML et al. Cardiovascular intervention for high-risk families: the Heart Smart Program. *Southern Medicine Journal* 1991;84:1305–12.	Not all participants overweight. Data not reported separately for overweight participants.
Kaats GR, Keith SC, Pullin, D et al. Safety and efficacy evaluation of a fitness club weight-loss program. *Advances in Therapy* 1998;15:345–61.	Not all participants overweight. Data not reported separately for overweight participants.
Kahn EB, Ramsey LT, Brownson RC et al. The effectiveness of interventions to increase physical activity – A systematic review. *American Journal of Preventive Medicine* 2002;22:73–108.	Not management of overweight/obesity.
Kain J, Uauy R, Albala Vio F, Cerda R, Leyton B. School-based obesity prevention in Chilean primary school children: methodology and evaluation of a controlled study. *International Journal of Obesity and Related Metabolic Disorders* 2004;28:483–93.	Not management of overweight/obesity.
Kalten MR, Ardito DA, Cimino C, Wylie-Rosett J. A Web-accessible core weight management program. *Diabetes Educator* 2000;26:929–36.	Weight status of participants unclear. Description of a programme without evaluation.
King AC, Haskell WL, Taylor CB, Kraemer HC, DeBusk RF. Group- vs home-based exercise training in healthy older men and women: a community-based clinical trial. *Journal of the American Medical Association* 1991;266:1535–42.	Not all participants overweight. Data not reported separately for overweight participants.
Knutsen SF, Knutsen R. The Tromso survey: The family intervention study: the effect of intervention on some coronary risk factors and dietary habits, a 6-year follow-up. *Preventive Medicine* 1991;20:197–212.	Not all participants overweight. Data not reported separately for overweight participants.
Krass I, Hourihan F, Chen T. Health promotion and screening for cardiovascular risk factors in NSW: a community pharmacy model. *Health Promotion Journal of Australia* 2003;14:101–7.	Not management of overweight/obesity.
Kumanyika SK, Charleston JB. Lose weight and win: a church-based weight loss program for blood pressure control among black women. *Patient Education and Counseling* 1992;19:19–32.	Not all participants overweight. Data not reported separately for overweight participants.
Lamb SE, Bartlett HP, Ashley A, Bird W. Can lay-led walking programmes increase physical activity in middle aged adults?	Not management of overweight/obesity.

a randomised controlled trial. *Journal of Epidemiology and Community Health* 2002;56:246–52.	
Larsen P, Simons N. Evaluating a federal health and fitness program: indicators of improving health. *AAOHN Journal* 1993;41:143–8.	Not management of overweight/obesity.
Lionis C, Kafatos A, Vlachonikolis J, Vakaki M, Tzortzi M, Petraki A. The effects of a health education intervention program among Cretan adolescents. *Preventive Medicine* 1991;20:685–99.	Not management of overweight/obesity.
Lloyd KB, Krueger KP, Moore RT, Walters NB, Eichner SF, Fanning K. Impact of a workplace health and wellness pharmaceutical care service on the weight and obesity classification of employees. *Journal of the American Pharmacuetical Assocosiation* 2002;42:118–20.	Weight status of participants unclear. No control/comparison group. Insufficient before and after data.
Lowe MR, Miller-Kovach K, Frye N, Phelan S. An initial evaluation of a commercial weight loss program: short-term effects on weight, eating behavior, and mood. *Obesity Research* 1999;7:51–9.	Not management of overweight/obesity.
Luepker RV, Perry CL, McKinlay SM et al. Outcomes of a field trial to improve children's dietary patterns and physical activity: the Child and Adolescent Trial for Cardiovascular Health [CATCH]. *Journal of the American Medical Association* 1996;275:768–76.	Not management of overweight/obesity.
McKenzie TL, Nader PR, Strikmiller PK et al. School physical education: effect of the Child and Adolescent Trial for Cardiovascular Health. *Preventive Medicine* 1996;25:423–31.	Not management of overweight/obesity.
McMurray RG, Harrell JS, Bangdiwala SI, Bradley CB, Deng S, Levine A. A school-based intervention can reduce body fat and blood pressure in young adolescents. *Journal of Adolescent Health* 2002;31:125–32.	Not all participants overweight. Data not reported separately for overweight participants.
Miles A, Rapoport, L, Wardle J, Afuape T, Duman M. Using the mass-media to target obesity: an analysis of the characteristics and reported behaviour change of participants in the BBC's 'Fighting Fat, Fighting Fit' campaign. *Health Education Research* 2001;16:357–72.	Not all participants overweight. Data not reported separately for overweight participants.
Morgan O. Approaches to increase physical activity: reviewing the evidence for exercise-referral schemes. *Public Health* 2005;119:361–70.	Not management of overweight/obesity.
Mo-suwan, L, Pongprapai, S, Journalunjana, C, Puetpaiboon, A. Effects of a controlled trial of a school-based exercise program on the obesity indexes of preschool children. *American Journal of Clinical Nutrition* 1998;68:1006–11.	Not all participants overweight. Data not reported separately for overweight participants.
Murie J, Tuohy AP, Carroll D. Impact of a health promotion programme on multiple risk factors for CHD: a preliminary evaluation. *Scottish Medical Journal* 1994:39;12–6.	Not management of overweight/obesity.
Nader PR, Stone EJ, Lytle LA et al. Three-year maintenance of improved diet and physical activity: the CATCH cohort (Child and Adolescent Trial for Cardiovascular Health). *Archives of Pediatric and Adolescent Medicine* 1999;153: 695–704.	Weight status of participants unclear.
Neumark-Sztainer D, Story M, Hannan PJ, Rex J. New Moves: a school-based obesity prevention program for adolescent girls. *Preventive Medicine* 2003;37:41–51.	Not all participants overweight. Data not reported separately for overweight participants.
Nilsson PM, Klasson EB, Nyberg P. Life-style intervention at the worksite: reduction of cardiovascular risk factors in a randomized study. *Scandinavian Journal of Work and Environmental Health* 2001;27: 57–62.	Not all participants overweight. Data not reported separately for overweight participants.
Oexmann MJ, Ascanio R, Egan BM. Efficacy of a church-	Not all participants

based intervention on cardiovascular risk reduction. *Ethnicity and Disease* 2001;11:817–22.	overweight. Data not reported separately for overweight participants.
Oexmann MJ, Thomas JC, Taylor KB et al. Short-term impact of a church-based approach to lifestyle change on cardiovascular risk in African Americans. *Ethnicity and Disease* 2000;10,17–23.	Not all participants overweight. Data not reported separately for overweight participants.
Okada K. Effects of long-term corporate fitness program on employees' health. *Journal of Nutritional Science and Vitaminology (Tokyo)* 1991;37(Suppl):S131–8.	Not all participants overweight. Data not reported separately for overweight participants.
Pelletier KR. Clinical and cost outcomes of multifactorial, cardiovascular risk management interventions in worksites: a comprehensive review and analysis. *Journal of Occupational and Environmental Medicine* 1997;39:1154–69.	Not management of overweight/obesity.
Phillips JM, Philbin CA. Worksite wieght loss; an effective and fun successful program. *AAOHN Journal* 1992;40:496–8.	Weight status of participants unclear. No control/comparison group. Insufficient before and after data.
Prior JO, van Melle G, Crisinel A, Burnand B, Cornuz J, Darioli R. Evaluation of a multicomponent worksite health promotion program for cardiovascular risk factors – correcting for the regression towards the mean effect. *Preventive Medicine* 2005;40:259–67.	Not all participants overweight. Data not reported separately for overweight participants.
Rees R, Harden A, Shepherd J, Brunton G, Oliver S, Oakley A. Young people and physical activity: a systematic review of research on barriers and facilitators. EPPI Centre 2001; London.	Not management of overweight/obesity.
Resnicow K, Cohn L, Reinhardt J et al. A three-year evaluation of the Know Your Body program in inner-city schoolchildren. *Health Education Quarterly* 1992;19:463–80.	Not management of overweight/obesity.
Robinson TN, Killen JD, Kraemer HC et al. Dance and reducing television viewing to prevent weight gain in African-American girls: the Stanford GEMS pilot study. *Ethnicity and Disease* 2003;13:S65–77.	Not all participants overweight. Data not reported separately for overweight participants.
Rose G, Heller RF, Pedoe HT, Christie DG. Heart disease prevention project: a randomised controlled trial in industry. *British Medical Journal* 1980;280:747–51.	Not all participants overweight. Data not reported separately for overweight participants.
Rose G, Tunstall-Pedoe HD, Heller RF. UK heart disease prevention project: incidence and mortality results. *Lancet* 1983;1:1062–6.	Not all participants overweight. Data not reported separately for overweight participants.
Rowland TW, Varzeas MR, Walsh CA. Aerobic responses to walking training in sedentary adolescents. *Journal of Adolescent Health* 1991;12:30–4.	Not all participants overweight. Data not reported separately for overweight participants.
Sahota P, Rudolf MC, Dixey R, Hill AJ, Barth JH, Cade J. Randomised controlled trial of primary school based intervention to reduce risk factors for obesity. *British Medical Journal* 2001;323:1029–32.	Not all participants overweight. Data not reported separately for overweight participants.
Sallis JF, McKenzie TL, Alcaraz JE, Kolody B, Hovell MF, Nader PR. Project SPARK: effects of physical education on adiposity in children. *Annals of the New York Academy of Sciences* 1993;699:127–36.	Not all participants overweight. Data not reported separately for overweight participants.
Shephard RJ. Worksite fitness and exercise programs: a review of methodology and health impact. *American Journal of Health Promotion* 1996;10:436–52.	Not management of overweight/obesity.

Steinhardt MA, Bezner JR, Adams TB. Outcomes of a traditional weight control program and a nondiet alternative: a one-year comparison. *Journal of Psychology* 1999;133:495–513.	Weight status of participants unclear.
Story M, Sherwood NE, Himes JH et al. An after-school obesity prevention program for African-American girls: the Minnesota GEMS pilot study. *Ethnicity and Disease* 2003;13:S54–64.	Not all participants overweight. Data not reported separately for overweight participants.
Tamir D, Feurstein A, Brunner S, Halfon ST, Reshef A, Palti H. Primary prevention of cardiovascular diseases in childhood: changes in serum total cholesterol, high density lipoprotein, and body mass index after 2 years of intervention in Jerusalem schoolchildren age 7–9 years. *Preventive Medicine* 1990;19:22–30.	Not all participants overweight. Data not reported separately for overweight participants.
Tata P, Vigus J, Bowyer C, Judd P. Mood, bulimic symptoms and outcome in a community-based slimming group. *European Eating Disorders Review* 1994;2:14–31.	Not all participants overweight. Data not reported separately for overweight participants.
Taylor AH, Doust J, Webborn N. Randomised controlled trial to examine the effects of a GP exercise referral programme in Hailsham, East Sussex, on modifiable coronary heart disease risk factors. *Journal of Epidemiology and Community Health* 1998;52, 595–601.	Not all participants overweight. Data not reported separately for overweight participants.
Thorsteinsson, R, Johannesson A, Jonsson H, Thorhallsson T, Sigurdsson JA. Effects of dietary intervention on serum lipids in factory workers. *Scandinavian Journal of Primary Health Care* 1994;12:93–9.	Not all participants overweight. Data not reported separately for overweight participants.
Tudor-Smith C, Nutbeam D, Moore L, Catford J. Effects of the Heartbeat Wales programme over five years on behavioural risks for cardiovascular disease: quasi-experimental comparison of results from Wales and a matched reference area. *British Medical Journal* 1998;316: 818–22.	Not all participants overweight. Data not reported separately for overweight participants.
Vandongen R, Jenner DA, Thompson C et al. (1995) A controlled evaluation of a fitness and nutrition intervention program on cardiovascular health in 10- to 12-year-old children. *Preventive Medicine* 1995;24:9–22.	Not all participants overweight. Data not reported separately for overweight participants.
Webber LS, Osganian SK, Feldman HA et al. Cardiovascular risk factors among children after a 2 1/2-year intervention: the CATCH Study. *Preventive Medicine* 1996;25:432–41.	Weight status of participants unclear.
Weight Watchers (UK) & Islington Primary Care Trust. *Evaluation of GP referral to Weight Watchers: qualitative research of a pilot referral scheme between the Goodinge Health Centre and Weight Watchers*. Views of health professionals, patients and Weight Watchers leaders. Debrief notes. Weight Watchers (UK) in collaboration with Islington PCT 2004.	Not management of overweight/obesity.
Yancey AK, McCarthy WJ, Taylor WC et al. The Los Angeles Lift Off: a sociocultural environmental change intervention to integrate physical activity into the workplace. *Preventive Medicine* 2004;38:848–56.	Not all participants overweight. Data not reported separately for overweight participants.
Yanek LR, Becker DM, Moy TF, Gittelsohn J, Koffman DM. Project Joy: faith based cardiovascular health promotion for African American women. *Public Health Reports* 2001;116:68–81.	Weight status of participants unclear.

Papers excluded for other reasons

Paper	**Reason for exclusion**

Family-based programmes to tackle obesity. *Community Practitioner* 2003;76:406.	Not a primary study. News article.
Surestart schemes forging partnerships with the commercial slimming sector. Surestart Salford. Surestart Dino Runcorn. Slimming World.	Not a primary study. Brief description of ongoing scheme.
Weight management counseling of overweight adults. American College of Preventive Medicine – Medical Specialty Society 2001.	Not a systematic review. Not non-clinical setting.
Obesity in women. A guide to assessment and management. Brigham and Women's Hospital (Boston) – Hospital/Medical Center 2003.	Not a systematic review. Not non-clinical setting.
Evaluation and treatment of childhood obesity. University of Texas at Austin School of Nursing, Family Nurse Practitioner Program – Academic Institution 2004.	Only summary available from British Library. Setting unclear.
Prevention and management of obesity (mature adolescents and adults). Institute for Clinical Systems Improvement 2004; Bloomington, MN.	Not a systematic review. Not non-clinical setting.
Abrams DB, Follick MJ. Behavioral weight-loss intervention at the worksite: feasibility and maintenance. *Journal of Consulting and Clinical Psychology* 1983;51:226–33.	Insufficient before and after data.
Aldana SG, Jacobson BH, Harris CJ, Kelley PL. Mobile work site health promotion programs can reduce selected employee health risks. *Journal of Occupational Medicine* 1993;35:922	No control/comparison group.
Aldarondo F. Adherence among individuals in an exercise, nutrition, and weight loss program. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 1999;60:0353.	Thesis not available from British Library.
Anonymous. Popular diets equally effective for losing weight. Journal of Family Practice 2005;54:306.	Not a primary study.
Anonymous. School anti-'fizzy drinks' programme helps to prevent obesity in children. Evidence Based Healthcare 2004;8:368-9.	Not a primary study. Summary of James 2004.
Anwyl V. *Community development training initiative to treat adult obesity*. Department of Nutrition and Dietetics, Tameside and Glossop Primary Care Trust, Hyde; 2004.	No control/comparison group. Insufficient before and after data.
Appleton CL, Summerbell C, Finn P et al. Preliminary results of the effectiveness of a commercial weight-loss programme compared with usual care in primary care. *Proceedings of the Nutrition Society 2004*;63:81A.	Abstract only. Otherwise meets inclusion criteria.
Ard JD, Rosati R, Oddone EZ. Culturally-sensitive weight loss program produces significant reduction in weight, blood pressure, and cholesterol in eight weeks. *Journal of the National Medical Association* 2000;92:515–23.	No control/comparison group. Follow-up less than 3 months.
Asp NG, Bjorntorp P, Britton M et al. Obesity – problems and interventions. Swedish Council on Technology Assessment in Health Care (SBU), Stockholm; 2002.	Only summary available in English; not enough information provided. Full report is in Swedish.
Astrup A, Rossner S. Lessons from obesity management programmes: greater initial weight loss improves long-term maintenance. *Obesity Reviews* 2000;1,17–9.	Not a primary study.
Atkinson RL, Nitzke SA. School based programmes on obesity: increase knowledge about nutrition but do not change eating habits by much. *British Medical Journal* 2001; 323:1018–9.	Not a primary study. Commentary.
Avery AJ, Lavin JH, Rees E, Barth JH, Whitehead SM. Improvements in mental well being during weight loss on a slimming on referral programme. *Proceedings of the Nutrition Society* 2004;63:135A.	Abstract only. Insufficient detail.

Awramenke M. Help yourself to health. *Practice Nurse* 1997;13:598–602.	Not a primary study. Description of a scheme.
Ball, GD, Marshall, DJ, McCargar LJ. A comparison of two weight management programs for obese children. *Obesity Research* 2000; 8(Suppl 1):O128.	Abstract only. Setting unclear.
Barnes JT. Weight status during and after a 12-week weight loss program at the worksite. *Research Quarterly for Exercise and Sport* 2004;75:A15–6.	Abstract only. Insufficient detail.
Bar-Or O. Prescribing activity. Managing juvenile obesity with enhanced physical activity. *Canadian Family Physician* 2001; 47:2165–7.	Not a primary study.
Barton SB, Walker LL, Lambert G, Gately PJ, Hill AJ. Cognitive change in obese adolescents losing weight. *Obesity Research* 2004;12:313–9.	No control/comparison group. Follow-up less than 3 months.
Bessell TL, McDonald S, Silagy CA, Anderson JN, Hiller JE, Sansom LN. Do internet interventions for consumers cause more harm than good? A systematic review. *Health Expectations* 2002;5:28–37.	Includes one study on weight loss intervention but before and after data points are not reported.
Bjorvell H, Rossner S. Long-term effects of commonly available weight reducing programmes in Sweden. *International Journal of Obesity and Related Metabolic Disorders* 1987;11:67–71.	Pre-1990 and not an RCT.
Bland JS, Dibiase F, Ronzio R. Physiological effects of a doctor-supervised versus an unsupervised over-the-counter weight-loss program. *Journal of Nutritional Medicine* 1992;3:285–93.	Follow-up less than 3 months.
Blomquist B, Borjeson M, Larsson Y, Persson B, Sterky G. The effect of physical activity on body measurements and work capacity of overweight boys. *Acta Paediatrica Scandinavica* 1965;54:566–72.	Pre-1990 identified through reference check.
Bohnker BK. Get moving Navy: a program to improve fitness and reduce obesity. *Aviation, Space, and Environmental Medicine* 2005;76:186.	Abstract only. Insufficient detail.
Booth AO, Nowsen CA, Worsley T, Margerison C, Jorna MK. Dietary approaches for weight loss with increased fruit, vegetables and dairy. *Asia Pacific Journal of Clinical Nutrition* 2003;12(Suppl):S10.	Abstract only. Insufficient detail.
Botvin GJ, Cantlon A, Carter BJ, Williams CL. Reducing adolescent obesity through a school health program. *Journal of Pediatrics* 1979;95:1060–4.	Follow-up less than 3 months. Insufficient before and after data.
Bradshaw A, Katzer L, Horwath CC et al. A randomised trial of three non-dieting programs for overweight women. *Asia Pacific Journal of Clinical Nutrition* 2004;13:S43.	Not available from British Library.
Briley ME, Montgomery DH, Blewett J. Worksite nutrition education can lower total cholesterol levels and promote weight loss among police department employees. *Journal of the American Dietetic Association* 1992;92:1382–4.	No control/comparison group. Insufficient before and after data.
Brownell KD, Kaye FS. A school-based behavior modification, nutrition education, and physical activity program for obese children. *American Journal of Clinical Nutrition* 1982;35:277–83.	Follow-up less than 3 months.
Bye C, Avery A, Lavin J. *Influence of Slimming World's lifestyle programme on diet, activity levels and health of the whole family: draft Slimming World report*. Slimming World, Alfreton, 2005.	Draft report of magazine survey. Weight status of participants unclear.
Bye C, Avery A, Lavin J. Tackling obesity in men: preliminary evaluation of men-only groups within a commercial slimming organization. *Journal of Human Nutrition and Dietetics* 2005;18:391–4.	No control/comparison group. Insufficient before and after data.

Cameron R, MacDonald MA, Schlegel RP et al. Toward the development of self-help health behaviour change programs: weight loss by correspondence. *Canadian Journal of Public Health* 1990;81:275–9.	Insufficient before and after data.
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White MA. Mediators of weight loss in an internet-based intervention for African-American adolescent girls. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2004;64:3546.	Thesis not available from British Library.
Wilcox S, Parra-Medina D. Physical activity interventions in primary care: review and analysis of effect sizes. *Medicine and Science in Sports and Exercise* 2001;33:S211.	Conference abstract. Not a systematic review. Not non-clinical settings. Not management of obesity.
Williams J, Sultan M. Evaluation of an Asian women's healthy eating and exercise group. *Journal of Human Nutrition and Dietetics* 1999;12:91–8.	No control/comparison group.
Williamson DF. The effectiveness of community-based health education trials for the control of obesity. *Progress in Obesity Research* 1996;7:331–335.	Not a systematic review. Not targeting overweight/obese populations.
Wing RR. Physical activity in the treatment of the adulthood overweight and obesity: current evidence and research issues. *Medicine and Science in Sports and Exercise* 1999;31: S547–52.	Not a systematic review. Not non-clinical settings.
Wing RR, Tate DF. Lifestyle changes to reduce obesity. *Current Opinion in Endocrinology and Diabetes* 2000;7:240–246.	Not a systematic review.
Winick C, Rothacker DQ, Norman RL. Four worksite weight loss programs with high-stress occupations using a meal replacement product. *Occupational Medicine (London)* 2002:52:25–30.	No control/comparison group.
Winkleby MA, Feldman HA, Murray DM. Joint analysis of three us community intervention trials for Reduction of cardiovascular disease risk. *Journal of Clinical Epidemiology* 1997;50:645–658.	Not a systematic review.
Wochenko CJ. Program evaluation of the TOPS Club, Inc, weight-loss program. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2002;63:2348.	Thesis not available from British Library.
Wong ML, Koh D, Lee MH, Fong YT. Two-year follow-up of a behavioural weight control programme for adolescents in Singapore: predictors of long-term weight loss. *Annals of the Academy of Medicine, Singapore* 1997;26:147–53.	Insufficient before and after data.
Zandee GL, Oermann MH. Effectiveness of contingency contracting: component of a worksite weight loss program. *AAOHN Journal* 1996;44:183–8.	Insufficient before and after data.

Excluded studies from update searches 1 December 2005

Anonymous. Intense diet, behavior, and physical activity intervention effective for obese children. *Journal of Family Practice* 2005;54(7):579.	Clinical setting.
Anonymous. Safety warning issued on slimming aids. *Pharmaceutical Journal* 2005;275(7368):360.	News item.
Bautista-Castano I, Doreste J, Serra-Majem L. Effectiveness of interventions in the prevention of childhood obesity. *European Journal of Epidemiology* 2004;19(7):617–622.	Prevention.
Beckham S, Bradley S, Washburn A. One health center's response to the obesity epidemic: an overview of three innovative, culturally appropriate, community-based strategies. *Hawaii Medical Journal* 2005;64(6):151–5.	Descriptive paper.
Carrel A, Meinen A, Garry C, Storandt R. Effects of nutrition education and exercise in obese children: the Ho-Chunk Youth Fitness Program. *Wisconsin Medical Journal* 2005;104(5):44–7.	Not a controlled study.
Fitzgibbon ML, Stolley MR, Ganschow P et al. Results of a faith-based weight loss intervention for black women. *Journal of the National Medical Association* 2005;97(10):1393–402.	Not a proper nonclinical setting. Participants included patients in a hospital as well as staff and visitors.
Gotthelf L, Tsai AG, Wadden TA. Commercial weight loss programs. *Annals of Internal Medicine* 2005;142(12 pt I):1023–5.	Letter.
Harrison RA, Roberts C, Elton PJ. Does primary care referral to an exercise programme increase physical activity one year later? A randomized controlled trial. *Journal of Public Health* 2005;27(1): 25–32.	Outcomes not reported separately for overweight participants.
Katz DL, O'Connell M, Yeh MC et al. Public health strategies for preventing and controlling overweight and obesity in school and worksite settings: a report on recommendations of the Task Force on Community Preventive Services. *Morbidity & Mortality Weekly Report Recommendations & Reports* 2005;54(RR-10):1–12.	Systematic review: Prevention and treatment synthesised together – tables of individual studies not available online to 2006.
Keogh JB, Clifton PM. The role of meal replacements in obesity treatment. *Obesity Reviews* 2005;6(3):229–34.	Not a systematic review.
LeCheminant JD, Jacobsen DJ, Hall MA, Donnelly JE. A comparison of meal replacements and medication in weight maintenance after weight loss. *Journal of the American College of Nutrition* 2005;24(5):347–53.	Clinical setting.
Mukherjee D. Comparison of the Atkins, Ornish, Weight Watchers, and Zone diets for weight loss and heart disease risk reduction: a randomized trial. *ACC Current Journal Review* 2005;14(4):19.	Commentary paper on excluded study.
Ornish D. Comparison of diets for weight loss and heart disease risk reduction.*Journal of the American Medical Association* 293;13:1589–90.	Letter.
Poston WSC, Haddock CK, Pinkston MM et al. Weight loss with meal replacement and meal replacement plus snacks: a randomized trial. *International Journal of Obesity* 2005;29(9): 1107–114.	Setting not the focus of this study. Counselling took place at the research centre.
Rooney BL, Gritt LR, Havens SJ, Mathiason MA, Clough EA Growing healthy families: family use of pedometers to increase physical activity and slow the rate of obesity. *Wisconsin Medical Journal* 2005;104(5):54–60.	Adult participants had co-morbidities. Data on children available separately but included children who were not overweight.
Rosser WW. Seeking the balance between individual and community-based nutritional interventions. *European Journal of Clinical Nutrition* 2005;59(Suppl. 1):S102–105.	Discussion paper.

Scholz GH, Flehmig G, Scholz M et al. Evaluation of the self-help programme 'I lose weight' weight loss, dietary pattern and acceptance in overweight subjects after a 1-year advisor-supported intervention [German]. *Ernahrungs-Umschau* 2005;52(6): 226–31, 214.	German language paper.
Strong WB, Malina RM, Blimkie CJR et al. Evidence based physical activity for school-age youth. *Journal of Pediatrics* 2005;146(6):732–7.	Systematic review – details of setting not provided on individual studies; treatment and prevention not synthesised separately.
Wald ER, Ewing L, Cluss P, Goldstrohm S, Cipriani L, Colborn K. Establishing a family-based intervention for overweight children in pediatric practice. Annals of Family Medicine 2005;3(Suppl 2): S45–7.	Clinical setting.

Review of interventions in a non-clinical UK setting for people with co-morbidities

The GDG considered that due to the lack of evidence identified, no specific recommendations could be made.

Evidence statement(s)

Evidence statement	Grading
A combination of home and clinic visits (approximately seven contacts over a period of 12 months) can be effective for weight loss (approximately 1.5 kg at 12 months) in people with diabetes	1–

Evidence review

This review aims to provide evidence from the UK on the effectiveness of an intervention delivered in a *non-clinical setting*, designed to address the management of overweight or obesity in adults and children with comorbidities. The inclusion criteria were as follows:

- Interventions

  Any intervention which targeted the management of obesity and aimed to improve provider practice or patient outcomes or target the individual (such as diet, PA, etc.). If the intervention was primarily aimed at the management of the comorbidity, not weight loss, this was excluded. Only studies conducted in the UK were included.

- Setting

  Only those interventions conducted in a non-clinical setting were included. Other settings are covered in other evidence reviews.

- Participants

  All qualified healthcare professionals and lay people involved in the management of obesity and/or all individuals classified as overweight or obese (mean initial BMI ≥28 kg/m^2 for adults).Overweight or obese adults and children had to have at least one identified comorbidity.

- Outcomes

  Studies reporting weight, diet or PA outcomes were included provided that baseline and follow-up data were provided.

- Length of follow-up
  At least 12 weeks duration. Length of follow-up was measured from commencement of the intervention.

- Study design
  Only studies with a control or comparison group were included.

Excluded studies are listed below. Due to time constraints, a staged approach was adopted. We searched the York CRD database on non-clinical settings for studies focussing on people with key comorbidities (diabetes, hypertension and dyslipidaemia) and also for any studies based in the UK. These were scanned for inclusion using the criteria as above. The CRD review on non-clinical settings was cross-referenced, as were other relevant reviews.

Interventions for the management of obesity and overweight in children

No relevant studies were identified for children.

Interventions targeted at individuals (adults)

One study meeting our inclusion criteria was found (Manning et al. 1998; Jakicic et al. 1999). However, some methodological issues were identified (see Evidence table for details). Manning and colleagues compared the effectiveness of clinic visits, BT and home visits on weight loss and glycaemic control in people with diabetes. No significant differences were seen, although the people who had a combination of home and clinic visits did appear to have some success in losing weight (see below).

Evidence tables

Weight loss

Manning 1995 and 1998 RCT

Aim	To evaluate the effectiveness of regular dietetic advice given in the clinic, at both the clinic and at home, BT and dexfenfluramine.
Participants	Adults aged 16 to 70 years, with insulin dependent and non-insulin dependent diabetes, who were overweight (BMI 28–45 kg/m^2). Mean (SD) age (years): 56.4 (10.1) clinic (*n* = 32); 58.2 (9.2) BT (*n* = 36), 55 (12.1) home (*n* = 29), 53.3 (12.4) routine. Mean (SD) BMI (kg/m^2): 31.8 (3.5) clinic, 32.3 (5.2) BT, 31.8 (3.6) home, 32.0 (3.4) routine.
Intervention	Clinic: Individual dietetic consultations at the Diabetes Centre at 6 weekly intervals for the first 6 months then 2 monthly for the rest of the year. Diet was 50–55% energy from carbohydrate, 30–35% energy from fat, 10–15% energy from protein. Energy restriction according to history, weight, sex, age and PA. BT: Physiotherapist-, clinical psychologist- and dietitian-led. Groups of up to ten people at fortnightly intervals for 3 months, then 2 monthly intervals for rest of the year. Diet as above. Home: Individual dietetic consultations at the Diabetes Centre and home visits at 6 weekly intervals for the first 6 months then 2 monthly for the rest of the year. First and fourth visits were at home, with all other at the Diabetes Centre. Diet as above.
Comparison	Routine care: Access to dietitian if requested or referred (within service level of 5 hours per week dietetic advice available at the practice at that time) and had dietetic advice when diagnosed.
Length of follow-up	4 years

Results

Weight change (kg)	**Clinic (*n* = 37)**	**BT (*n* = 38)**	**Home (*n* = 35)**	**Routine (*n* = 54)**
3 months	–1.59	–1.20	–1.69	N/r
6 months	–1.70	–1.21	–1.30	N/r
12 months	–1.21 (–2.33 reported for *n* = 34 in 1998 paper)	–1.82 (–3.41 reported for *n* = 36 in 1998 paper)	–1.14 (–1.59 reported for *n* = 29 in 1998 paper)	+1.00
48 months	–1.20 (*n* = 34)	–2.42	–1.00	+0.35

No significant differences were seen either within or between groups at any time point. (Only significant differences were seen in the drug group – not reported here.) All groups were reported as being better than routine care up to 12 months (1995 paper).

% of people who achieved weight loss of ≥3 kg	**Clinic**	**BT**	**Home**	**Routine**
12 months	16	22	21	7
48 months	16	33	38	24

[Where is asterix in table? – deleted and added to comments below]

Significant difference seen between the home visits and the clinic visits ($p \leq 0.05$).

Quality and comments	Only the results for clinic based, clinic and home, and BT are reported here. SDs calculated from confidence intervals (CI). No details of randomisation. (Limited) baseline assessment done, and no significant differences. Blinded assessment not clear. ITT analysis done. Results differed between papers.
Sponsor details	Servier Laboratories.

Other outcomes

Manning 1995 and 1998 RCT

Results

Change in HbA_{1c}	**Clinic**	**BT**	**Home**	**Routine**
Baseline	7.60 (7.70 from 1998 paper)	6.04 (5.97 from 1998 paper)	6.59 (6.72 from 1998 paper)	7.02
3 months	–0.36	–0.05	–0.34	+0.54
6 months	–0.39	+0.11	+0.02	+0.18
12 months	–0.01	+0.32	+0.34	+0.96
48 months (from 1998 paper with different baseline)	+0.29	+0.82	+1.17	+0.72

Initial HbA_{1c} level reported as being no different, but Clinic group appears to be higher.
No significant reductions were seen or maintained.
At 12 months, the majority of people had no change to their medication, with 5.1% of the clinic group, 18.4% BT, 25.7% home and 5.3% routine care having a reduction in diabetic medication.

Quality and comments: –

Harms

Manning 1995 and 1998 RCT

Harms	None reported.
Quality and comments	–

Generalisability

Manning 1995 and 1998 RCT	
Country and setting	UK (Scotland). Outpatient diabetes clinic.
Participants (inc/exc)	Included if aged 16–70 years, had diagnosis of diabetes, BMI between 28 and 45 kg/m^2. Excluded if lost >3 kg during previous 12 months. Also pregnant women, unstable thyroid, known psychiatric disorders, taking oral corticosteroids.
Recruitment	Selected from clinic patient records.
Randomisation	No details.
Intervention (mode and intensity)	Clinic: Individual dietetic consultations at the Diabetes Centre at 6 weekly intervals for the first 6 months then 2 monthly for the rest of the year. BT: Physiotherapist and clinical psychologist and dietitian led. Groups of up to ten people at fortnightly intervals for 3 months, then 2 monthly intervals for rest of the year. Home: Individual dietetic consultations at the Diabetes Centre and home visits at 6-weekly intervals for the first 6 months then 2-monthly for the rest of the year. First and fourth visits were at home, with all other at the Diabetes Centre. .
Duration of active intervention	12 months.
Comparison (mode and intensity)	Routine care: Access to dietitian if requested or referred (within service level of 5 hours per week dietetic advice available at the practice at that time) and had dietetic advice when diagnosed.
Delivery of intervention/comparison (who)	See above.
Dropout rates	At 12 months, 39% clinic, 43% BT, 29% home and not clear routine.
Treatment of dropouts (return to baseline, or last measurement?)	No details.

Excluded studies

Study	Source	Reason
Cheyette C. Weight management programme for type 2 diabetes patients on insulin. *Journal of Diabetes Nursing* 2004;8:52–6.	CRD searches	Intervention delivered in a hospital setting.
Gamsu DS, Sutton MS, Bennett L, Ward JD. The development of a psychoeducational group intervention for overweight women with type 2 diabetes mellitus: a service evaluation. *Practical Diabetes International* 2002;19:43–50.	CRD searches	Setting not clear – described as a new service, so assumed to be within clinical setting.
Gidlow C, Johnston LH, Crone D, James D. Attendance of exercise referral schemes in the UK: a systematic review. *Health Education Journal* 2005;64(2):168–86.	CRD searches	Review – cross referenced. Only one study relevant, and excluded as not only people who were overweight (see Excluded from CRD review).
Hampshire M. For good measure. *Nursing Standard* 2004;18:18–20.	CRD searches	Discussion article on Moore and Counterweight studies.
Harland PSEG, Watson MJ, Ashworth L. The effect of metabolic programming on atherosclerosis and obesity risk factors in UK adolescents living in poor socioeconomic areas. *Annals of the New York Academy of Sciences* 1997;817:361–4.	CRD searches	Not intervention evaluation.
Hughes J, Todorovic V, Kemp H. 'The Sugar Buddies': An intervention programme for 'obese' patients with poorly controlled diabetes. *Journal of Human Nutrition and Dietetics* 1999;12(Suppl 1):71–78.	CRD searches	Setting not clear, but appears to be in a clinical setting.
Mengham LH, Morris BF, Palmer CR, White AJS. Is intensive dietetic intervention effective for overweight patients with diabetes mellitus? A randomised controlled study in a general practice. *Practical Diabetes International* 1999;16:5–8.	CRD searches	Intervention delivered in primary care setting.
Murphy C, Simkins M, Helowicz R. Diabetes exercise project. *Journal of Human Nutrition and Dietetics* 1999;12(Suppl 1):79–90,.	CRD searches	Not only people who were overweight.
Rose G, Tunstall-Pedoe HD, Heller RF. UK heart disease prevention project: incidence and mortality results. *Lancet* 1983;1(8333):1062–6.	CRD searches	Not people who were overweight.
Williams K, Prevost AT, Griffin S et al. The ProActive trial protocol – a randomised controlled trial of the efficacy of a family-based, domiciliary intervention programme to increase physical activity among individuals at high risk of diabetes. *BMC Public Health* 4:48, 2004. Wareham DN. *The development of a family-based intervention to prevent obesity in a high risk group*. Anonymous National; 2004.	CRD searches	Protocol only, no publication of results found.

Reference list

Jakicic JM, Winters C, Lang W, Wing RR. Effects of intermittent exercise and use of home exercise equipment on adherence, weight loss, and fitness in overweight women: a randomized trial. *Journal of the American Medical Association* 1999;282:1554–60.

Manning RM, Jung RT, Leese GP, Newton RW. The comparison of four weight reduction strategies aimed at overweight patients with diabetes mellitus: four-year follow-up. *Diabetic Medicine* 1998;15:497–502.