| **Author, Year** | **Intervention** | **Description** |
| --- | --- | --- |
| Edelman, 2006129 | Healthy diet & physical activity counseling | Multidimensional intervention on risk education and development/execution of personal health plan. Risk assessments using the “Know Your Number” tool and individual assessments with medical providers to interpret and understand their risk. Small group sessions: 1) first 7 week phase of the intervention, participants learned about integrative health, explored healthier behavior changes, and developed 1–3 personal health goals to prioritize during the remainder of the intervention; 2) next 21 sessions, participants learned about techniques for changing the behaviors identified in their personal goals. Group sessions included mind-body approaches to self-care, nutritional education, physical activity education, and strategies for behavior change. Individual telephone sessions to reinforce group session techniques, to clarify their priorities and set or update goals, and to enhance their motivation. Two opportunities to meet with a nutritionist for more information and development of an individualized eating plan. |
| Usual care | The group received a mailed report including their health assessment and baseline blood test results. |
| PREMIER, 2003116 | Healthy diet & physical activity counseling (IG 1) | Participant goals were: 1) weight loss ≥15 lb at 6 months for those with BMI ≥25 kg/m2; 2) ≥180 minutes/week of moderate-intensity physical activity; 3) daily intake ≤100 mEq of dietary sodium; and 4) daily intake ≤1 oz alcohol (2 drinks) for men and ½ oz of alcohol (1 drink) for women. No goals for fruit, vegetable, or dairy intake; saturated fat goal ≤10% and total fat goal ≤30% of energy. To achieve weight loss, increased physical activity and reduced total energy intake was emphasized. Participants kept food diaries and recorded physical activity. |
| Healthy diet & physical activity counseling (IG 2 [DASH diet]) | Same goals as IG 1 plus instruction and counseling on the Dietary Approaches to Stop Hypertension (DASH) diet. Goals related to DASH diet were: increased consumption of fruits and vegetables (9–12 servings/day) and low-fat dairy products (2–3 servings/ day) and reduced intake of saturated fat (≤7% of energy) and total fat (≤25% of energy). To achieve weight loss, increased physical activity and reduced total energy intake was emphasized (as in IG 1), but IG 2 also emphasized substitution of fruits and vegetables for high-fat, high-calorie foods. In addition to food diaries, recording physical activity, and monitoring calorie and sodium intake (as with IG 1), IG 2 participants also monitored intake of fruits, vegetables, dairy products, and fats. |
| Usual care | Interventionist discussed nonpharmacological factors that affect blood pressure (weight, sodium intake, physical activity, and the DASH diet) and provided printed educational materials. Counseling on behavior change not provided. |
| Nilsson, 1992119 | Healthy diet & physical activity counseling | Intensive nonpharmacological program for improving knowledge and lifestyle. Run-in period of 1 month with seminars, videotapes, and individual counseling; groups continued to meet monthly and encouraged to meet between sessions. Special physical activity given to all participants and relatives (outdoor walking for 2 hours) and every 2 weeks to the 8 most sedentary men; participation in other sports strongly recommended. Special guided tours to supermarkets as well as cooking instruction and distribution of free olive oil to provide adherence to healthier lifestyle. Goals: low-fat, high-fiber diet recommended; fat energy <30%, polyunsaturated fat/saturated fat ratio of 0.8/1.0; more mono and polyunsaturated fat; cholesterol <200 mg/day; fiber 30 g/day (mostly water soluble oat and beans); fruits and vegetable intake; cold water fish (fatty fish such as salmon, mackerel); dietary salt and caloric intake reduced in overweight (BMI ≥27 kg/m2) or increased abdominal obesity distribution; stop smoking; increase physical activity; no overconsumption of alcohol. |
| Usual care | No special intervention offered. Told of metabolic disturbances, risk of hyperinsulinaemia, and how to treat it with nonpharmacological methods; opportunity to know findings of 4-day diet recordings. |
| DPP, 200289 | Healthy diet & physical activity counseling | Goals were to achieve and maintain weight reduction ≥7% of initial body weight through a healthy low-calorie, low-fat diet and engage in moderate-intensity physical activity, such as brisk walking for ≥150 minutes/week. Intervention was designed to maximize success by: interactive training in diet, exercise, and behavior modification skills; frequent support for behavior change; interventions that are flexible, culturally sensitive, and acceptable in specific communities where they are implemented; combination of structured protocol and flexibility to tailor strategies individually; and emphasis on self-esteem, empowerment, and social support. Participants taught to record diet and exercise. Offered supervised exercise sessions teice per week for duration of intervention (not mandatory). |
| Minimal intervention | Staff reviews written information addressing importance of healthy lifestyle to prevent diabetes with each participant. Encouraged to follow Food Pyramid guidelines and consume equivalent of National Cholesterol Education Program Step 1 diet, lose 5%–10% of initial weight through diet and exercise, increase physical activity gradually to 30 minutes of an activity, such as walking 5 days/week, and avoid excessive alcohol intake. Smokers encouraged to stop smoking. Placebo tablet taken twice per day. Recommendations reviewed annually. |
| TONE, 1998117 | Healthy diet counseling: sodium reduction (IG 1) | Participants advised on ways to change eating patterns. Interventionists provided information using both centrally and locally prepared materials, motivated participants to make and sustain long-term lifestyle changes, monitored individual and group progress at frequent intervals, and helped participants customize intervention to meet individual needs. Centrally prepared materials included food counters, scorekeepers, manuals, and audiovisual aids. Each active intervention consisted of 3 phases (intensive, extended, and maintenance). Primary goal during intensive phase was to provide core knowledge and behavior skills necessary to achieve and maintain reductions in sodium and body weight. During extended phase, focus was on problem solving and relapse prevention. During maintenance phase, continued attempts made to maintain or reengage participant interest in the intervention. Goal was 24-hour dietary sodium intake ≤1800 mg (as measured by 24-hour urine collection). |
| Physical activity counseling: weight loss (IG 2) | Participants advised on ways to increase physical activity for weight loss. Goal was weight loss ≥4.5 kg (10 lb). |
| Healthy diet & physical activity counseling: sodium reduction & weight loss  (IG 3) | Combination of IG 1 & IG 2. Participants advised on ways to change eating patterns (all active interventions) and increase physical activity (weight loss interventions). |
| Usual care (partial attention control) | Usual care groups received no study-related counseling in lifestyle change techniques, but were invited to meetings on topics unrelated to diet, physical activity, and cardiovascular disease. |
| HIP136 | Healthy diet & physical activity counseling: patient only  (IG 1) | Weekly small group sessions focusing on behavior change using the following strategies: frequent contact, group interaction and social support, goal setting and self-monitoring, identification of barriers and problem solving, and motivational interviewing. Participants kept records of dietary intake, physical activity, and medication use. Group sessions and the participant manual emphasized diet, physical activity, and changing behaviors. Community health advisors attended and helped to lead group sessions and also provided 1-on-1 telephone counseling during and after the group session period. |
| Healthy diet & physical activity counseling: patient + physician (IG 2) | Same as above, plus physician-focused training. Physician: training modules (CME) aimed at JNC-7 guidelines and lifestyle modification for blood pressure control. An evaluation and treatment algorithm summarizing the major JNC-7 guidelines and formatted as a decision tree was provided to each physician. Assessment and quarterly feedback to physicians on their adherence to guidelines, including lifestyle counseling that assessed the proportion of patients with hypertension whose blood pressure was controlled, proportion not at goal, proportion that received lifestyle counseling, proportion with diabetes or chronic kidney disease who were at goal blood pressure and prescribed a thiazide diuretic or angiotensin-converting enzyme inhibitor/angiotensin receptor blocker, and comparisons of physicians with peers. |
| Usual care | Patients: brief visit after randomization during which they received advice and brochures on lifestyle modification for blood pressure control consistent with JNC-7 guidelines. |
| PREDIAS, 200995 | Healthy diet & physical activity counseling | Group sessions (median size, 7 people) based on the self-management approach. PREDIAS goals were: weight loss (minimum 5%), change of unhealthful eating habits, and increase in physical activity to >150 minutes/week. First 8 weeks were comprised of weekly core lessons covering 8 topics: motivational challenge, weight reduction, healthy diet, analysis and modification of eating habits, physical activity, analysis and modification of physical activity, social support, and maintenance of lifestyle modification. Booster session topics included: dealing with failure, stress management, activating resources, and maintaining new lifestyle. Group leaders provided with curriculum and patients were given a book that contained information about diabetes prevention, resources, and worksheets for each lesson (i.e., eating diaries and physical activity logs). |
| Minimal intervention | Controls received the PREDIAS written group information and written patient materials. |
| FDPS, 2001118 | Healthy diet & physical activity counseling | Goals of the intervention were: weight reduction ≥5%; fat intake <30% of energy; saturated fat intake <10% of energy (mono or polyunsaturated fats, 20% of energy, or ≤25% if surplus from monounsaturated fat); cholesterol <300 mg/day; 1.0 g protein per kg ideal body weight per day; carbohydrate intake >50% of energy; increase fiber to ≥15 g/1,000 kcal; and moderate exercise for ≥30 minutes/day. Frequent ingestion of whole-grain products, vegetables, fruits, low-fat milk and meat products, soft margarines, and vegetable oils rich in monounsaturated fats recommended. Dietary advice tailored to each subject on the basis of 3-day food records completed 4 times/year. Subjects received individual guidance on increasing physical activity. Endurance exercise (e.g., walking, jogging, swimming, aerobic ball games) was recommended. Optional supervised, progressive, individually tailored, circuit-type resistance-training sessions offered up to twice per week (participation rates varied from 50%–85% at different centers). |
| Usual care | General nontailored verbal and written advice (2-page leaflet) to adjust total energy intake in order to reduce BMI to <25 kg/m²; keep fat to <30% of daily energy; reduce alcohol intake; and stop smoking as appropriate. Verbal general information about health effects of recreational exercise provided, but no specific individual advice given. |
| LLDP, 201294 | Healthy diet & physical activity counseling | Increasing intake of whole grains and nonstarchy vegetables and reducing sodium, total and saturated fat, portion sizes, and refined carbohydrates and starches. The physical activity goal was to increase walking by 4,000 steps per day from baseline. Participants received a pedometer. Skill building included cooking classes, shopping skills, goal setting, self-monitoring, problem solving, and information on opportunities to engage in safe physical activity. The previous DPP intervention was tailored to be culturally and low-literacy sensitive by focusing on traditional Latino foods, using a video series featuring Latino actors, and illustrated, colorful workbooks and materials. |
| Usual care | No description provided. |
| Inter99, 2008107 | Healthy diet & physical activity counseling | Three kinds of group counseling offered: a smoking cessation course, a smoking reduction course, and a course on diet and physical activity. Choice of group depended on risk factors and the preference of the individual. Those who were not ready to decide if they wanted to participate in group counseling were encouraged to consider the invitation and were contacted by mail after 3 months and offered participation in a group. Relatives of participants were offered to participate in 1 of the meetings. After 1 and 3 years, individuals still fulfilling high-risk criteria were again offered group counseling. Group counseling included didactic and open-ended discussion and committing to specific diet and physical activity goals; dietary and physical activity advice mirrored advice in individual sessions. In group sessions, the physical activity aim was to achieve small positive changes in physical activity in everyday life. |
| Minimal intervention | Based on a personal risk assessment, each participant received an individual “lifestyle counseling talk” focusing on smoking, physical activity, diet, and alcohol. Counseling addressed all individuals who smoked, had <30 minutes physical activity daily, had a high saturated fat diet, <300 g fruits/vegetables daily, or alcohol consumption >14 drinks/week for women and >21 for men. Written materials provided as appropriate. Overall goal was to achieve small but sustained dietary changes. Specifically, decreasing total saturated fat intake, substituting saturated for unsaturated fat, and increasing intake of fruits/vegetables and fish. Participants advised to aim for 4 hours/week of physical activity (some papers report 30 minutes/day); only minimal counseling time spent on physical activity. Participants reinvited after 1 and 3 years for risk assessment and counseling and at 5 years for a short final lifestyle counseling session. |
| PEGASE, 2008120 | Healthy diet & physical activity counseling | Assessment and counseling for healthy diet and physical activity. Sessions focused on 3 stages: increasing awareness on CVD risks, start action, and maintain action. Group sessions included self-reflection on risks and threats to health, physical activity and healthy diet education, and information on cholesterol management, plus written materials. Educational messages were reinforced during individual sessions, along with focusing on translating individual goals into small, achievable steps and actions related to healthy behaviors. |
| Usual care | Physicians received no training; patients received usual care. |
| Applegate 1992127 | Healthy diet & physical activity counseling | Focused on calorie and sodium restriction and increase in moderate levels of physical activity. Weight loss goal was 4.5 kg and calorie restrictions were individualized (women advised to not eat <1200 calories per day and men not <1500). Daily sodium consumption was reduced to 1400 mg. Advised to increase physical activity to 120 minutes/week. |
| No advice | Received no treatment; if diastolic blood pressure exceeded 105 mm Hg, participants were placed on medication and removed from trial. |
| EDIPS-Newcastle, 200991 | Healthy diet & physical activity counseling | Counseling sessions included individually tailored plans for behavior change with the following goals: >50% energy from carbohydrates, <30% energy from fat, reduce saturated fat, increase fiber intake, and physical activity of 30 minutes of moderate aerobic activity each day. Weight goal was BMI <25 kg/m². Three-day food diaries, activity diaries, weight, and waist circumference used to track behaviors. Group sessions included healthy cooking demonstrations and tastings and healthy behavior education. Quarterly newsletters were mailed and included information on healthy recipes, nutrition labels, and opportunities for exercise in the community. Information packs with information about local exercise facilities and opportunities, along with a City Card (offering discounts on facilities), and the opportunity to meet with a trainer for an initial session were offered. |
| Usual care | Standard advice plus widely available educational leaflets on healthy eating and physical activity. |
| APHRODITE, 201188 | Healthy diet & physical activity counseling | Stages of change-based intervention with the following goals: weight reduction ≥5% if overweight; moderate- to high-intensity physical activity ≥30 minutes, 5 days/week; fat <30% of energy; saturated fat <10% of energy; and dietary fiber intake ≥3.4 g/MJ.  A 3-day food record informed a dietician consultation. |
| Usual care | Received oral and written information about type 2 diabetes, risk for developing diabetes, and benefits of exercise and healthy diet. |
| WISEWOMAN NC, 2008110 | Healthy Diet & physical activity counseling | Individual sessions consisted of education about barriers to behavior change and "tip sheets" were used to facilitate tailored messaging. An action plan with 2–3 specific goals related to healthy diet and physical activity was created in the first session and progress was monitored at each subsequent session. A motivational videotape was given to view at home. Group sessions focused on teaching problem solving skills, lifestyle behavior change strategies, and emphasized the importance of social support. Education regarding heart-healthy eating, portion sizes, meal planning, and how to read nutrition labels also included. Group sessions also included recipe taste testing and 15-minute physical activity sessions (chair exercises). Food and exercise diaries and pedometers were used to track activity and diet. Participants received monthly phone calls offering support, followup on goal setting, and linkages to community resources. |
| Usual care | One-time mailing of two AHA pamphlets on healthy dietary and physical activity practices. |
| SLIM, 2011149 | Healthy diet & physical activity counseling | Diet: dietary goals based on Dutch guidelines and included carbohydrate intake ≥55% of total energy; total fat intake <30%–35% of total energy, with <10% total energy intake of saturated fats; cholesterol intake <33 mg/MJ; protein intake 10%–15% total energy, and dietary fiber intake ≥3 g/MJ. Weight loss goal was 5% to 7%, depending on the degree of obesity. Initially, this was achieved by stimulating people to change their daily dietary intake and increase physical activity according to recommendations. If necessary, subjects received example of a mild energy-restricted diet during second year. Detailed dietary advice based on 3-day food record. At each meeting, new goals (including physical activity) were set for the next visit. Topics covered in sessions included fat, carbohydrates, label reading, artificial sweeteners, special occasions, vegetarian food, vitamins and minerals, and lifestyle and diabetes.  Physical activity: physical activity goal was to increase low- to moderate-physical activity to ≥30 minutes/day, 5 days/week. Individual advice was given on how to increase daily physical activity. Participants were offered supervised training sessions as part of an exercise program designed for the study that emphasized aerobic exercise and resistance training. Subjects had free access to training sessions and were stimulated to participate for ≥1 hour/week. |
| Usual care | Oral and written information on healthy diet, weight loss, and increased physical activity. No individualized advice or information provided. |
| Migneault, 2012126 | Healthy diet & physical activity counseling | Telephone-linked care: automated system delivered 3 tailored behavior intervention modules using social cognitive theory, transtheoretical model of behavioral change, and motivational interviewing. The first 3 calls introduced targeted behaviors, how they help with blood pressure control, and oriented users to the system. Subsequent calls were modules on medication adherence (8 calls), physical activity (12 calls), and diet (9 calls). The physical activity module focused on increasing moderate- or greater- intensity physical activity. The diet module focused on fruits/vegetables, fiber, sodium, and fat and intended to promote the DASH diet. Participants and their providers received printouts of their tracked health behaviors. Before randomization, all eligible participants had an in-home visit for health education (and to collect baseline data). |
| Minimal intervention | Pre-randomization, everyone had 1 visit for health education; a 75-page resource manual that described hypertension, dietary recommendations, food recipes, and local resources for exercise; and support for medication adherence; also received a pedometer and digital scale. Followed by usual primary care, details not reported. |
| Kosaka, 200593 | Healthy diet & physical activity counseling | Individual advice was given to help patients lower their BMI if it was above the desirable range for Japanese men (≥22 kg/m²). Patients were instructed to weigh themselves at home weekly. Patients were giving instructions based on their current dietary habits to help them achieve a BMI of 22 kg/m². Patients were encouraged to maintain a nutrient balance, to eat smaller portions, and to consume less fat, alcohol, and fewer meals outside the home. Dietary recommendations were based on “Food Exchange Lists, Dietary Guidance for People With Diabetes.” Current physical activity was assessed and realistic ways of achieving a physical activity goal of 30–40 minutes per day were discussed. |
| Minimal intervention | All participants were informed of the importance of maintaining a healthy lifestyle. CG subjects with BMI ≥24 kg/m² were advised to reduce their portion sizes and increase physical activity. Those with BMI <24 kg/m² were told to maintain their current weight. These objectives were repeated at each hospital assessment visit. |
| EURO-ACTION, 2008106 | Healthy diet & physical activity counseling | Encouraged to achieve a healthy lifestyle with support from family and health professionals using stages of change and motivational interviewing. Advice provided in terms of food (not nutrients) and patterns of eating and set realistic goals for patients and their families. No supervised exercise classes; physical activity plan developed with goals, step counter used for motivation. For smoking cessation, prepared, set date, and made contingency plans. Workshops focused on lifestyle and risk factors. Goals: not smoking, saturated fat <10% total daily energy, fruits/vegetables >400 g/day, fish >20 g/day, oily fish >3 times/week, alcohol <30 g/day, BMI <25 kg/m², waist circumference <81 cm for women and <95 for men, 30–45 minutes moderate-intensity physical activity 4–5 times/week, blood pressure <140/90 mm Hg (<130/85 mm Hg in diabetics), total cholesterol <5.0 mmol/L, low-density lipoprotein <3.0 mmol/L, blood glucose concentration <6.1 mmol/L (good glycemic control in diabetics); for BMI ≥25 kg/m², reduce weight by 5% in 1 year. |
| Usual care | No details provided. |
| LIHEF, 2002137 | Healthy diet & physical activity counseling | Individualized counseling focused on changing health behaviors, specifically reducing sodium to <5 g/day, reducing saturated fat consumption, and consuming ≤2 alcoholic beverages per day; increasing physical activity to ≥3 sessions of 30-minute, moderate-intensity activity per week; and smoking cessation. Weight reduction was also emphasized (goal of BMI <25 kg/m2). Participants recorded food consumption in 4-day food diaries. Group sessions concentrated on reducing salt intake and body weight. |
| Usual care | Instructed to see their primary care physician according to usual care practices. |
| HLC, 201192 | Healthy diet & physical activity counseling | Pre-course individual session in which personal medical history, eating, and exercise patterns are discussed. Group psychoeducational learning sessions on diet, physical activity, motivation, goal setting, stress, and support to adopt healthier lifestyle choices. |
| Waitlist control | Waitlist control. CG was not restricted in their use of usual health care services. |
| RIS, 1998112 | Healthy diet & physical activity counseling | Aims to reduce total cholesterol to <6.0 mmol/L, help current smokers quit, prevent nonsmokers from starting, reduce HbA1c to <6.0% in diabetics, and lower diastolic blood pressure to <90 mm Hg. Weekly lessons for 5 weeks for 10–20 patients (and spouses) to change eating habits; basic nutrition, purchase and preparation food book, slide series, textbooks, and food/beverage exhibition. Overweight patients set a weight goal. Restriction of alcohol intake for high consumers; diabetics taught self-monitoring glucose; all provided physical activity information. Followup visit with nurse to discuss results and further changes in dietary habits. Smoking cessation include discussion of smoking habits, symptoms of and diseases secondary to nicotine usage, psychological and social factors, and motivation for quitting. |
| Usual care | Usual care. Primary care physician treated hypercholesterolemia, diabetes, and smoking according to normal practice. |
| ADAPT, 2006138 | Healthy diet & physical activity counseling | Multifactorial program aimed at reducing need for antihypertension drugs and decrease cardiovascular risk factors; focused on DASH diet for dietary advice: sodium intake <2 g/day; increased intake of fruit, vegetables, and low-fat dairy; reduced intake of total saturated fats, sweets, and sugary drinks; consuming ≥4 fish meals per week; participating in ≥30 minutes of physical activity most days; weight loss (reducing weight by ≥5%); reduced alcohol (consuming ≤2 drinks/day), and smoking cessation. Social support was encouraged by allowing a partner, relative, or friend to accompany participants during group sessions and involving them in grocery shopping, meal preparation, and physical activity. Diet and physical activity calendars were used to track behaviors. |
| Usual care (partial attention control) | Usual care; publications from the National Heart Foundation of Australia and the Health Department of Australia; attention control with 4 seminars on topics unrelated to the trial were held as well. |
| HTTP, 1993134 | Healthy diet & physical activity counseling | Intervention objectives are: assumption of greater responsibility for disease management, including blood pressure self-monitoring and treatment decisionmaking; confirming diagnosis of hypertension and treatment using at home blood pressure monitoring; and emphasis on nonpharmacological treatments. First session focuses on group discussions and patients are provided with blood pressure monitors and log books. Second session, blood pressure monitoring and log books are assessed, and strategies for achieving blood pressure control (including dietary and physical activity recommendations) are discussed. The last 2 sessions focus on antihypertension therapy. |
| Minimal intervention | Staff and medical doctors at all practices were also trained in blood pressure measurement techniques to increase frequency of blood pressure measurements. Additionally, 20 patients at each site had their medical files marked with a red dot to remind clinic staff to take blood pressure, weight, and medication information at each visit. Control practices continued to treat hypertensive patients without the HTTP program; after the study these practices could initiate the program. In the CG, only the physician and staff training occurred, in the IG, both physician and staff training occurred plus the group HTTP intervention. |
| Hyman, 2007135 | Healthy diet & physical activity counseling (IG 1) | Motivational interviewing plus home-based instruction manual to improve adherence to lifestyle behaviors for reducing CVD risk. Primary goals for target areas included: stop smoking, reduce sodium levels to <100 mEq/L/day, and increase physical activity by 1500 steps/day (or >10,000/week); were measured objectively in all areas. Six-month visits included measurements; postcard was mailed to participants to report how their measures compared to goals.  IG 1: Simultaneous counseling addressed all 3 behaviors during the 6 months. Counseling interaction and instruction manual. |
| Healthy diet & physical activity counseling (IG 2) | Same content as above, but sequential counseling introduced 1 area at a time at each 6-month interaction (all 3 areas addressed over 18-month period, in random order), plus instruction manual. |
| Minimal intervention | Brief educational session on 3 target behaviors (smoking cessation, sodium intake reduction, increased physical activity). Postcards mailed after each 6-month measurement to report how measures compared to goals. |
| Logan Healthy Living, 2009114 | Healthy diet & physical activity counseling | Telephone counseling focusing on motivational interviewing to promote healthy diet and physical activity. Patients were mailed a workbook and pedometer. Counseling followed the “4A” approach: assessment, advice, assistance, and arranging followup. Advice was consistent with Australian National Guidelines and physical activity goal was 150 minutes/week of moderate-intensity physical activity. Consultations were not tailored to diabetes or hypertension, but healthy diet and physical activity suggested were appropriate for both conditions. Calls were weekly at first and moved to biweekly. |
| Minimal intervention | After each assessment, minimal intervention patients received a brief and tailored letter with feedback. They also received generic brochures on a variety of health topics. |
| RHPP69 | Healthy diet & physical activity counseling: hospital-based (IG 1) | 2 IGs: hospital-based (IG 1) and physician-based (IG 2). Both had initial Health Risk Appraisal with 5 vouchers for free health screenings and health promotion services related to identified risk factors. IG 1 offered health screening and health promotion services through regional hospitals. |
| Healthy diet & physical activity counseling: physician-based (IG 2) | IG 2 offered the same services through participating primary care clinics. Seven possible risk factor interventions, ranging from weight management to flu immunizations. Educational mailings on lowering cholesterol were distributed to participating providers; offered education sessions by dieticians covering government/society recommendations (AHA, NHLBI, NCEP) for lowering cholesterol; physician training on lowering cholesterol was offered in the area. |
| Usual care | Usual care; not offered vouchers for screening or health education. |
| Rodriguez-Cristobal, 2012172 | Healthy diet & physical activity counseling | With the support of their physicians and psychologists, patients received specific interventions using different measures to help improve their habits. Smoking: motivated to give up smoking and received clear and tailored advice as well as medication when indicated. Physical activity: advice to start, maintain, or increase current level of physical activity. Obesity or overweight: gradual weight loss (methods not reported) and maintaining a healthy diet after healthy weight achieved. Weight objective: BMI 20–25 kg/m2. Hypertension: dietary and pharmacological treatment according to guidelines. Hypertension objective: physical activity <140/90 mm Hg; diabetics <130/80 mm Hg. Diabetes: dietary or pharmacological treatment according to guidelines. Diabetes objective: HbA1c <7%. Psychologists made phone calls to remind IG of upcoming visits (every 2 months) and to provide encouragement about maintaining lifestyle changes. |
| Usual care | Received information about their lifestyle according to current practice guidelines. |
| Bo, 2007146 | Healthy diet & physical activity counseling | General healthy lifestyle information from their physicians (see details in CG description), plus the following: 1) an individually-prescribed diet tailored to their current weight and dietary intake; general dietary recommendations about cooking, reducing fat, sugar, and salt intake, and tips for dining out; written recommendations for physical activity; brief written guide on behavioral change; copy of the Food Pyramid; explanations about the benefits of using diet and exercise to control metabolic abnormalities; and individualized diet and physical activity goals; 2) group sessions on 4 different topics: food composition, portion control, strategies for dining out, and physical activity benefits. |
| Usual care | General information on the importance of a healthy lifestyle. Physicians gave advice according to their usual practice and had participated in ≥3 meetings on standard practice lifestyle recommendations and the efficacy of preventive lifestyle changes. No written information or recommendations were given. |
| CouPLES, 201367 | Healthy diet & physical activity counseling | Phone intervention targeting diet, physical activity, patient-physician communication, and medication adherence to improve cholesterol control; patients and spouses received information about hypercholesterolemia and an overview of self-management principles; spouses also received an orientation to strategies to support patient goal achievement; patient calls focused on goal setting and problem solving, patients selected their own goals. Patients were able to select 1 of 4 topic modules (diet, physical activity, medication adherence, patient-physician communication); first spouse call focused on learning about the patient's goals and action plans and strategies to help the patient; subsequent followup monitoring of patient progress and modifying or creating new goals and action plans; second spouse call focused on staying informed on patient progress and learning about new goal suggestions to help patients; plus mailed printed materials. |
| Minimal intervention | Clinical management of lipid disorders using ATP III guidelines. Reminders for physicians were embedded in 11 emails and electronic medical records. Emails emphasized the use of lipid-lowering medications. Physicians also had access to referral specialty clinics (lipid disorders clinic, risk factor management clinic for high-risk patients) |
| EDIPS, 2006177 | Healthy diet & physical activity counseling | Regular counseling using stages of change. Included a dietary assessment using baseline food diary. Stage-specific motivational interviewing was used to develop individual targets for behavior change. Participants were encouraged to eat healthy according to British Diabetic Association recommendations (fat 30% of energy, carbohydrates 50%–55% of energy, polyunsaturated/saturated fats ratio of 1.0, daily dietary fiber 20 g/1000 kcal). Participants were given written nutrition education materials. Level of physical activity was assessed and a graded physical activity plan was tailored to participant's lifestyle (designed to enable 20–30 minutes of aerobic activity 2–3 times/week). Information about exercise facilities was provided and a discount card for public leisure facilities in the city was offered to all participants. |
| No advice | No advice. |
| PHPP, 2007121 | Healthy diet & physical activity counseling | Team encouraged patients to set their own goals and select lifestyle improvements that they were interested in making; choose and prioritize physical activity to achieve goals; provided advice about how to achieve goals using "stages of change" challenge cards. Problem solving for ways to achieve goals, or discussion about changing goals when appropriate, was part of sessions. |
| Usual care | Asked to return to the medical center 1 month after baseline assessments, where they received results and were given instructions on how to enhance physical activity via leaflets only. |
| Rodriguez, 2012113 | Healthy diet & physical activity counseling | Telephone counseling based on transtheoretical model for exercise, diet, and medications, based on patient’s current stage of change. Stage of change was evaluated at each session and a computer system was used to deliver standardized interventions; problem solving; tips and information for each behavior; and review of medication log (a calendar tracked medication use). |
| Minimal intervention  (CG 1) | Nontailored health education telephone calls about hypertension management and other health topics. General information was provided about hypertension, sun safety, flu prevention, sleep hygiene, preventing back injury, and vision/hearing problems. |
| Usual care (CG 2) | Participated in in-person assessment visits only. |
| Hardcastle, 2008167 | Healthy diet & physical activity counseling | Stage-matched motivational interviewing approach in which the focus on diet or physical activity depended on the participant's priorities and readiness to change. |
| Usual care | All patients received a standard leaflet about exercise and nutrition at their baseline assessment. |
| GOAL, 2009139 | Healthy diet & physical activity counseling | Initial lifestyle questionnaire followed by physical activity and healthy diet counseling consisting of individual sessions focused on self-awareness, lifestyle education, individual motivation, and goal setting. Patients developed a tailored treatment plan based on goals. Ongoing evaluation of goals by nurse practitioners during sessions; modification of goals, as needed, as well as possible referral to dietician. Diet was assessed via food diaries and physical activity was measured using pedometers. |
| Usual care | 1 session (10 minutes) to discuss results from screening, followed by usual care. |
| WISEWOMAN California, 2010108 | Healthy diet & physical activity counseling | Assessment and counseling for healthy diet and physical activity. Individually tailored; comprised of collaborative goal setting, identifying strategies for overcoming barriers, and outlining small, achievable steps. Emphasis on self-efficacy, self-monitoring, reinforcement, readiness for change, and importance of social support. Delivered in language of choice. Visual aids and hands-on tools used (e.g., food models showing appropriate portions), along with a curriculum binder. Community health workers followed up via telephone in between sessions to encourage healthy behaviors, give referrals to health education classes (e.g., smoking cessation, nutrition, physical activity), and give appointment reminders. Received incentives (e.g., tote bags, water bottles, transportation tokens, grocery store vouchers) during assessments and sessions. |
| Usual care | Usual care for elevated blood pressure and cholesterol. May have included brief healthy behavior education, healthy lifestyle hand-outs (general, related to hypertension/hyperlipidemia), or referral to education classes. Received incentives during assessments. |
| Wister, 2007140 | Healthy diet & physical activity counseling | Report card to patient and primary care physician with risk profile and telehealth self-management system; recommendations based on letter grade score for each key lifestyle or Framingham risk factor. Telephone counseling used staged target levels developed for each patient. Smoking was considered the top priority for lifestyle counseling, followed by physical activity, dietary habits, weight management, and stress. A counselor addressed areas in which the grade was lowest first. Comparisons with previous report cards were discussed with the participant to set new goals. Summaries of each counseling session and supporting evidence were mailed to the participants. |
| Usual care | Received usual care from their physicians, based on their own determination of the need for visits. |
| Vitalum, 2011105 | Healthy diet & physical activity counseling (IG 1) | Four tailored letters based on baseline and followup survey data (variables included current behavior, awareness, age, sex, stage of change, attitude, self-efficacy expectations, and action plans); letters 1 & 3 focused on physical activity (3–6 pages) and 2 & 4 on fruit/vegetable consumption (4–6 pages). Half in each group received pedometers at week 29 (along with instructions to gradually increase their number of steps to 10,000/day), and the remainder received it after the last followup. |
| Healthy diet & physical activity counseling (IG 2) | Four telephone calls based on motivational interviewing about physical activity and fruit/vegetable consumption. Half in each group received pedometers at week 29 (along with instructions to gradually increase their number of steps to 10,000/day), and the remainder received it after the last followup. |
| Healthy diet & physical activity counseling (IG 3) | Combined methods from IG 1 and 2; 2 tailored print letters and 2 telephone motivational interviews. 1 letter and 1 call focused on physical activity; the other 2 focused on fruit/vegetable consumption. Half in each group received pedometers at week 29 (along with instructions to gradually increase their number of steps to 10,000/day), and the remainder received it after the last followup. |
| Usual care | After the intervention periods, received 1 tailored letter addressing physical activity and fruit/vegetable consumption based on participants previous followup questionnaire. |
| IMPALA, 2009133 | Healthy diet & physical activity counseling | To implement a nurse-led cardiovascular risk management program, nurses received a 2-day training focused on 4 strategies: risk assessment, risk communication, use of decision aids, and adapted motivational interviewing. Counseling emphasized resolving ambivalence about behavior change, increasing patient motivation to improve healthy behaviors, self-directed goal setting, and creating concrete action plans. Nurses explained 10-year CVD mortality risk score and used a risk communication tool, which was given to patients. Risk reduction techniques were explained and decision aids were given to patients to review at home. Agenda-setting charts were used to allow patients to guide discussion at each meeting. |
| Usual care | Nurses received a 2-hour training on risk assessment. Nurses assessed 10-year CVD mortality risk using table from Dutch guidelines (for those without diabetes) or the UK Prospective Diabetes risk engine (for those with diabetes); patients received usual care after risk assessment step. |
| Arroll, 1995128 | Healthy diet & physical activity counseling (IG 1) | Exercise and salt interventions. All participants kept a weekly diary tracking injuries or health problems and medication compliance. |
| Healthy diet & physical activity counseling (IG 2) | Exercise: advised to walk briskly for 40 minutes 3 days per week. A plan to build up to this amount of exercise was determined by the patient's doctor. |
| Healthy diet & physical activity counseling (IG 3) | Salt: asked to decrease use of high-salt foods and added salt when cooking and eating. Each person received a simple pamphlet, a general article about salt and blood pressure, and an in depth book with information about salt content of common foods. |
| Usual care, partial attention control | Usual care; publications from the National Heart Foundation of Australia and the Health Department of Australia; attention control with 4 seminars on topics unrelated to the program were held as well. |
| Bosworth, 200984 | Healthy diet & physical activity counseling (IG 1) | Tailored behavioral self-management intervention. Nurse delivered bimonthly telephone calls. Information presented in an easily understood format with a readability score of 9th grade or less. Factors targeted in calls were: perceived risk for hypertension, memory, literacy, social support, patients' relationships with their healthcare provider, and side effects of medication. Intervention also focused on improving adherence to the DASH diet, weight loss, reduced sodium intake, regular moderate-intensity physical activity, smoking cessation, and moderation of alcohol intake. Each encounter included a core group of modules potentially implemented during each call and additional modules activated at specific intervals. |
| Healthy diet & physical activity counseling (IG 2) | Combined intervention. Nurse-led telephone intervention as described above, as well as receipt of a home blood pressure monitor and training on its use. Trial nurse was not aware of home-monitored blood pressure values, but participants asked to maintain and turn in blood pressure logs. |
| Usual care | Hypertension treatment from regular provider. |
| Cochrane, 2012102 | Healthy diet & physical activity counseling | NHS Health Check plus support for lifestyle change. Lifestyle change based on national Health Trainer motivational interviewing/ counseling model. Sessions with lifestyle coach provided opportunity to discuss goals and make a plan. Also, referrals to support sessions for weight management, physical activity, cooking and eating, and positive thinking, as desired by participant. Additional individual support was provided for first 20 weeks of program and ongoing support was available up to 1 year. |
| Minimal intervention | NHS Health Check plus usual general practice care, including medication or treatment for elevated blood pressure, cholesterol, and newly diagnosed diabetes and referral to smoking cessation services, but did not receive additional lifestyle support. May have received lifestyle advice from the general practitioner team. |
| E-LITE, 201387 | Healthy diet & physical activity counseling | Self-management group. IT-assisted self-management lifestyle intervention. Based on social cognitive theory and transtheoretical model of behavior change and focuses on goal setting, skill building, and self monitoring to instill behavior change. Participants attend 1 group session where they were trained to track their weight and physical activity using the AHA online self-management portal and given a scale and pedometer. Introductory session was followed by a 12-week curriculum ("Group Lifestyle Balance") on a DVD developed by DPP (for home use) and access to a study dietitian via secure, online messaging. Participants are given primary goal of 7% weight loss and 150 minutes of moderate physical activity per week, within 5 weeks of initiating intervention. Other goals include total fat reduction (25% of calories from fat) and calorie restriction (reduction of 500 to 1000 calories); lower saturated fat intake; lower cholesterol intake; consume a high plant-based diet (fruits, vegetables, whole grains, low-fat dairy); reduce intake of high glycemic index carbohydrates. After attaining the physical activity goal, participants who wish to be more active (or who have not achieved the weight loss goal) are encouraged to increase their physical activity levels. Three-month intensive phase followed by 12 months of maintenance. |
| Usual Care | Primary care physician for usual care. |
| HIPS, 2012103 | Healthy diet & physical activity counseling | Physician intervention modeled after SNAP intervention; brief intervention based on the stages of change and 5A models. Physicians were trained in assessing risk factors and motivational interviewing. Patient education resources (waiting room questionnaires, health check visit guides, physician checklists) were available. Patients attended individual counseling sessions if deemed high-risk by the brief intervention. High risk was defined by any 1 of the following: history of diabetes or impaired fasting glucose or glucose tolerance; hypertension; dyslipidemia; BMI >25 kg/m2; waist circumference >102 cm in males or >88 cm in females; or current smoker. Food diary was assessed and individually-tailored lifestyle goals were developed. Group sessions included health education on self-management strategies and physical activity (20–30 minutes of walking or resistance exercise). Between sessions, patients kept food and exercise diaries, used a pedometer, and participated in home-based exercise. |
| Waitlist control | Usual care; after 12 months, control practices offered to join intervention. |
| HOORN, 2013132 | Healthy diet & physical activity counseling | Based on the theory of planned behavior and self-regulation; aim of counseling was to increase motivation and ability to change diet, physical activity, and smoking behaviors (patients chose which one[s] they wanted to focus on). Motivational interviewing and problem solving treatment were used to help patients find solutions to overcoming barriers and increase perceived control. In-person counseling sessions (weekly at first, then every 2–3 weeks) were followed by monthly telephone sessions. |
| Usual care | Received written information about risk of developing diabetes and CVD and brochures containing health guidelines on physical activity, healthy diet, and smoking cessation. Patients with systolic blood pressure >160 mm HG and/or hypercholesterolemia (>8 mmol/L) were referred to their primary care provider for additional medication. Patients with glucose values >7.0 mmol/L were referred to primary care physician and then excluded from the trial. |
| Live Well Be Well, 201286 | Healthy diet & physical activity counseling | Individually-tailored, phone-based lifestyle program designed for lower socioeconomic status, minority, and low-literacy adults and adapted from interventions with established efficacy. Offered in English and Spanish. Participants had an individual counselor and an introductory session (in-person), personal planning session (in-person), and followup calls and workshops. Program focused on self-monitoring, goal setting, and problem solving, and 2 key social cognitive theory concepts were taught to provide behavior change skills and increase self-efficacy. Six-month active phase was followed by 6-month maintenance phase. Counselor contact occurred mostly at the beginning and decreased over time. Physical activity focus promoted 30 minutes of moderate-intensity activity ≥5 days/week (150 minutes/week). Diet goals were to reduce calorie intake and total fat and increase fiber intake. “Eat Colors” and “Eat Breakfast” were used to enforce these goals. Education about health risks and benefits of healthy behaviors were delivered through written, phone, and in-person methods. Skills building was provided through training on goal setting, self-monitoring, problem solving, and relapse prevention. Motivational interviewing techniques were used during phone calls. |
| Waitlist control | Waitlist control; started program after 12 months. During recruitment/enrollment, diabetes prevention materials were distributed. |
| Melbourne Diabetes Prevention Study (MDPS), 201285 | Healthy diet & physical activity counseling | Based on the Life! program; comprised of structured group sessions every 2 weeks for the first 3 months, then the last session 8 months after the first. Sessions focused on problem solving and individually-tailored goals. Goals were based on the Finnish Diabetes Prevention Study: ≤30% calories from fat, ≤10% from saturated fats, ≥15 g/1000 kcal of fiber, ≥30 minutes/day moderate-intensity physical activity, and ≥5% weight reduction. |
| Waitlist control | Usual care; offered the intervention after 12 months. |
| PRO-FIT, 201268 | Healthy diet & physical activity counseling | Developed according to the I-Change model (integrated model for exploring motivational and behavioral change), which targets 3 phases of the behavioral change process: 1) awareness, 2) motivation, and 3) action. The intervention is personalized health counseling and includes use of a Web site on CVD risk communication and how to change these risks; access to online PRO-FIT advice on positive behaviors such as food intake, smoking, and compliance to statin therapy, presented according to the participant’s risk profile; and a lifestyle coach who delivers personal feedback and works with participants to make action plans. The goal of the intervention is to help participants adopt a healthier lifestyle with regard to physical activity, diet, smoking, and compliance to statin therapy and to lower the level of low-density lipoprotein cholesterol and other CVD risk factors, through use of online tools and a lifestyle coach. |
| Usual care | Usual care (no intervention). |
| SPRING, 2012100 | Healthy diet & physical activity counseling | All patients receive counseling on CVD risk from practice nurses trained in motivational interviewing techniques. In the IG, this first meeting was based on self-monitoring results (pedometer, scale, and/or blood pressure device). SCORE risk assessments, present risk factors, and treatment goals were discussed. Participants had followup visits that proactively treated for all present risk factors. The order in which risk factors were treated depended on the preference and state of change of the participant, though quitting smoking was the first goal treated if applicable. Adapted motivational interviewing counseling was used. All treatment had to start within 3 months after initial meeting. All patients were offered self-monitoring tools (scales and pedometers) if applicable. For overweight participants: food diaries, home scales, pedometer, and tracking were used in addition to intensive counseling. For low physical activity participants: pedometers and diaries were used in addition to intensive counseling. For those with hypertension: home blood pressure monitoring was used in addition to intensive counseling. |
| Minimal intervention | All patients receive 1 session of counseling on CVD risk from practice nurses trained in motivational interviewing techniques. SCORE risk assessments, present risk factors, and treatment goals were discussed at first visit. After the initial visit, followup visits for the CG followed the Dutch hypertension and hypercholesterolemia guidelines. Standard information leaflets were given to overweight participants, smokers, and low physical activity risk groups at first visit. |
| Anderson, 199270 | Healthy diet counseling: AHA diet (IG 1) | Recommended nutritional targets derived from the AHA Phase II guidelines: 55% carbohydrate energy, 20% protein energy, 25% fat energy, ≤200 mg dietary cholesterol per day, and 15 g fiber. Individually-tailored, preplanned meal patterns with 3 servings fruits/vegetables; 4 starches/breads; 2 low-fat dairy; ≤198.5 g lean meat, poultry, or seafood; no egg yolks; fat servings based on energy content. Optional sweets and alcohol servings available. No additional recommendations on modification of other risk-relevant behaviors (e.g., smoking, exercise). Encouraged to attend small-group educational sessions with spouse/close friend; included demonstrations, problem solving, individual counseling (problems, questions about diet, goals). Home visits by dietitian; also available by telephone. |
| Healthy diet counseling: high fiber (IG 2) | Same recommended nutritional targets as IG 1 except 50 g fiber (which was stressed during sessions); same preplanned meal patterns except at least 1 serving of beans and 1 of cereal. All other aspects identical to IG 1. |
| Usual care | No details provided. |
| Moy, 200173 | Healthy diet counseling | Individualized instructions to lower fat intake (based on ATP III guidelines), focusing on total fat consumption and daily monitoring (usually a goal of <40 g total fat); taught how to read food labels, use fat counter to monitor and record total daily fat intake; self-monitoring logs. Physicians asked to explicitly not manage dietary interventions as recommended based on results and feedback from baseline screening. At each visit, dietary fat screening instrument used to identify potential problems. Counseling individualized based on initial dietary habits, lifestyles, and progress. |
| Usual care | Usual care from primary care physician. Physicians received patient-specific recommendations from results and feedback from the baseline screening for risk factor management on 3 occasions. |
| DEER, 199871 | Healthy diet counseling | NCEP Step 2 diet. Goals: <30% fat, <7% saturated fats, <200 mg cholesterol/day. Sessions included lessons on replacing dietary sources of saturated fat with complex carbohydrates, low-fat dairy foods, and other alternatives, including lean meats. Weight loss not emphasized. |
| No advice | CG (no intervention). Asked to maintain usual diet and exercise. |
| Delahanty, 200172 | Healthy diet counseling | Cholesterol-lowering nutritional counseling and treatment according to NCEP-based protocol. Number of visits each participant received was based on assessment of each's eating habits, lifestyle, capabilities, and motivation for change, in addition to usual care from primary care physicians. |
| Usual care | During the 6-month intervention, participants agreed to not use lipid-lowering drugs or to seek additional dietary counseling. |
| Hyman, 199876 | Healthy diet counseling | Patients offered/encouraged to use multimodal counseling options (mailed dietary questionnaire, computer interactive calls, and classes) to make dietary changes to reduce cholesterol levels. Intervention focused on improving practical skills like reading labels, eating out, modifying recipes, and self-monitoring, while being practical for primary care. |
| Usual care (waitlist control) | Usual care by primary care physician, hypercholesterolemic patients could be referred to registered dieticians. After trial, offered the series of classes (waitlist control). |
| Johnston, 199577 | Healthy diet counseling (IG 1) | Small-group sessions on source and function of dietary cholesterol, risk associated with high cholesterol intake, debunking of dietary misconceptions, advice for eating out, and benefits of exercise. Partners invited to attend. All patients got basic information (see CG description). |
| Healthy diet counseling (IG 2) | Nurse counseling: advised to make changes in food intake to reduce the amount of total and saturated fat; increase amount of dietary fiber and complex carbohydrates. Habitual diet estimated by questionnaire; total score and pattern of individual food sources used to suggest specific changes in food choices. |
| Usual care | All patients given simple health questionnaire (basic information on diet and exercise) and verbal advice/pamphlet about diet modification, cooking methods, and physical exercise. No further counseling. Incidental queries from subjects were answered briefly on their return to clinic. |
| Tomson, 1994174 | Healthy diet counseling | Counseling intervention aimed at nonpharmacological management of high cholesterol; individualized counseling based on diet history and "step I" or general lipid-lowering advice, low-fat diet, high-fiber diet; spouses were invited to the second session; group session included visiting a grocery store to learn how to identify low-fat and high-fiber foods. |
| Usual care | Booklet with diet information was sent with a letter, and dietary recommendations based on the patient's weight was included. For those who were overweight: increase fiber and decrease fat intake to 30% of total daily calories. For those of healthy weight: switch to mono and polyunsaturated fats. |
| Ammerman, 200374 | Healthy diet counseling | Special intervention with 3 components: 1) Food for Heart Program during tailored counseling sessions, 2) referral to local nutritionist if lipids remained elevated at 3-month followup, and 3) reinforcement during the second half of the intervention (phone call, 2 newsletters focusing on seasonal tips for food preparation and strategies to enhance dietary change). Food for Heart Program aimed to reduce consumption of foods high in saturated fat, increase fruit and vegetable intake and complex carbohydrates; individually tailored with goal sheets, pamphlets, and southern-style cookbooks. Participants were also instructed to see their physician if total cholesterol remained high. |
| Usual care | Nurses instructed to provide counseling for high cholesterol as usual; participants instructed to see their physician if total cholesterol remained high. |
| Southeast Cholesterol Project, 199781 | Healthy diet counseling | Clinician-directed dietary counseling, including a Dietary Risk Assessment, which assesses sources of fat and cholesterol and enabled individually-tailored counseling via the Food for Heart Program; easy-to-read, culturally-tailored patient education materials; quarterly reinforcement mailing containing recipes and health tips. If low-density lipoprotein levels remained elevated after 4 months, then participants were referred to a dietician or health educator for up to 3 counseling sessions. At 7-months followup, primary care physicians received mailed reminders (based on NCEP guidelines for initiating drug therapy) to consider lipid drug treatment if the patient’s low-density lipoprotein levels remained elevated. |
| Usual care | No details provided. |
| Beckmann, 1995111 | Healthy diet counseling | Instructed to lower sodium intake (e.g., not adding salt at table or while cooking, avoiding sodium-rich foods, processed food; bake own bread; use oil, salt-free margarine; and increase fruits/vegetables); provided with a free 2-week supply of unsalted foods with aim to reduce average daily sodium intake to 30 mmol/day. After, aim of achieving average daily sodium intake of 100 mmol/day; those with elevated BMI or total cholesterol were advised to reduce body weight and reduce saturated and increase intake of polyunsaturated dietary fat. |
| Waitlist control | At 12 months, given dietary advice similar to IG. |
| Stevens, 200382 | Healthy diet counseling | Combined motivational interviewing, problem solving, and social cognitive theory strategies; strategies for overcoming barriers and skills deficits interfering with dietary change or maintenance; opportunities for increasing environmental support; select 1 of 2 goals (reduce dietary fat or increase fruit/vegetable and whole grains); provided feedback on baseline dietary intake. Dietary fat goals were assisted with a computer assessment (30 minutes) and discussion of goals/plans for change (25 minutes) using the Fat and Fiber Behavior Questionnaire, which helped provide tailored strategies. Fruit and vegetable goals focused on barriers, self-efficacy, eating patterns, and stage of change. The second session, 2–3 weeks later, reported progress on current goal and counseled on other goal. Participants made commitments and personally tailored strategies for change, received telephone support after second session. |
| Attention control | Attention control on breast self-exams and a 9-minute American Cancer Society video; self-help pamphlets; and barriers-based, problem-solving counseling on interest and motivation for conducting regular breast self-exams. No dietary recommendations. |
| NFPMP, 200279 | Healthy diet counseling | Nutrition information and counseling according to stage of change; practical aspects included reducing saturated fat intake, increasing unsaturated fat intake, and reducing total energy and fat intake. If no progress, intervention stopped. Information package: individualized feedback based on baseline values, educational materials to support aforementioned goals (e.g., short food variation list, menus); if action phase then referral to dietician. |
| Usual care | No details provided. |
| ODES, 199580 | Healthy diet counseling | Individualized dietary counseling and education on high-/low-density lipoproteins and weight reduction by dietary change. Recommended against low caloric intake early in day and heavier at dinner; moderate salt restriction in persons with elevated blood pressure; energy restriction in overweight persons; recommended increase in fish, fruits and vegetables, andcomplex carbohydrates and reduction in sugar and saturated fat. Individualized dietary program of the 5–10 most important points made during counseling session. Target body weight/reduction agreed. Followup dietary advice at 3 and 9 months. |
| Waitlist control | Waitlist control offered dietary advice and physical training after 1 year. |
| Bloemberg, 199175 | Healthy diet counseling | Individualized dietary advice based on habitual food intake and the "Guidelines for a Healthy Diet" of the Netherlands Nutrition Council; used computer to generate dietary advice based on actual dietary pattern. Aim of dietary advice to reduce total cholesterol by 1 mmol/L. One week after examination, discussed dietary advice and tried to convince adherence. Telephone calls to inquire about possible problems about dietary advice. Mailers provided information on healthy diet. |
| No advice | Did not receive any advice to improve diet during the study period. |
| Neil, 199578 | Healthy diet counseling: dietician (IG 1) | Standard diet history taken and given individual advice on dietary habits and weight. Advised to reduce percentage of total dietary energy from fat to ≤30%; consume ≤10% of energy from saturated, monounsaturated, and polyunsaturated fatty acids; 50%–60% energy derived from carbohydrates, protein 10%–20%; daily intake of <300 mg cholesterol; 35 g fiber. Further advice given during a 10-minute appointment. |
| Healthy diet counseling: nurse (IG 2) | Advised to make changes in food intake to reduce the amount of total and saturated fat; increase amount of dietary fiber and complex carbohydrates. Habitual diet estimated by questionnaire; total score and pattern of individual food sources used to suggest specific changes in food choices |
| Usual care | Pamphlet containing dietary guidance consistent with advice provided by dietitian. Additional written advice after 2 months. |
| Watanabe, 200397 | Healthy diet counseling | New dietary education. Individualized counseling aimed to reduce total energy intake by modifying dietary intake and adopt habits to prevent diabetes. Program consisted of 1) individual dietary counseling based on questionnaire results, with booklet illustrating recommendations for meals corresponding to the recommended daily allowance for total energy intake at 1 month; and 2) mailed materials at 6 months. Education aimed to reduce late-night total energy intake; keep protein energy at 15%–20%, fat at 20%–25%, and carbohydrates at 55%–60% of total energy intake; optimize intake of whole grains, fruits and vegetables, low-fat milk, beans, fish, meat, eggs, and maintain alcohol intake at an appropriate level by Japanese Diabetes Society and American Diabetes Association recommendations. Mailer included encouragement to improve dietary intake, related information, self-administered checklist corresponding to recommended daily allowances, and information on necessity of blood glucose control. |
| Usual care | General oral and written information about results of health examination and questionnaire without detailed explanation; received conventional group counseling with a leaflet with general information for prevention of lifestyle-related disease. |
| LIFE, 2010130 | Physical activity counseling | Home-based lifestyle intervention aimed to stimulate integrated physical activity into immediate environment during daily routines. Prior to randomization, all IG participants attended a group session on healthy aging and benefits of physical activity. Following randomization, IG 1 attended group sessions throughout intervention period. Sessions shared general information about endurance, strength, flexibility, and postural/balance training and to ensure correct performance of exercises. Brochure and pedometer distributed (with training on proper use and heart rate monitoring). An individual session with exercise instructor set up program specific to individual needs, preferences, and experiences. Participants given booklet with exercises targeting strength (using elastic tubes), flexibility, and balance, and asked to choose preferred exercises. Suggested endurance trainings included jogging, cycling, swimming, or other cardiovascular exercises; participants encouraged to exercise at intensity that increased heart rate but still able to talk with their partner. Individual session with exercise psychologist focused on how to integrate exercises into daily life, how to persist, and how to anticipate barriers. Participants asked to keep an activity log and referred to these during "booster" phone calls to discuss program adherence. |
| Usual care | Prior to randomization of IG groups, CG volunteers attended a group session on different components of healthy aging (similar to the introductory session offered to IG volunteers, except it excluded the physical activity benefits component). CG volunteers were participating in a "checkup of fitness/health status" program, which involved getting measurements (3 times: pre-, mid-, post-) with no feedback or results until end of study period (after 11 months). Each participant was asked to report changes in lifestyle regarding physical activity, diet, or medication during the program. |
| Enhanced Fitness Trial, 201298 | Physical activity counseling: reduced calls  (IG 1) | Reliant on social cognitive theory, the strategy is to enhance self-efficacy for physical activity by integrating self-monitoring, goal setting, reinforcement, modeling, and cognitive function into counseling program. Five-element intervention, including: 1) In-person consultation with health counselor to assess functional status. 2) Primary care physician notified of participant enrollment and endorsed physical activity at next scheduled visit. At 3-month point, participant’s physical activity performance was assessed and all those who met >75% of exercise goals (minutes per week) were assigned to IG 1 (reduced calls); those who failed to meet exercise goals (<75%) were allocated to IG 2 (continued care). 3) Health counselor contacted participant for followup counseling by phone, using standardized protocol to reinforce continued physical activity, identify strategies for overcoming barriers, and customize individually-feasible activities. 4) Automated phone calls with recorded messages from the primary care physician. 5) Quarterly tailored progress report, including a graph showing participant change over time and encouragement messages tailored based on participant performance. 6) Referral to local physical activity program (MOVE!). |
| Physical activity counseling: continued care (IG 2) | Same as IG 1, with more phone call followup. |
| Minimal intervention | Usual care received in primary care clinic plus referral to the MOVE! program (program on physical activity and nutrition that includes self-management programs, classroom sessions, and individualized counseling with goal setting). Participants sent lifestyle questionnaire and could decide whether to enroll in the program. |
| PAC, 2001122 | Physical activity counseling | All participants (IG and CG) given brief (2–4 minutes) physical activity counseling during routine visit with primary care provider. Using the 7A shared-care model for physical activity counseling, this brief intervention addressed the first 4 As: Address the subject of physical activity; Ask participants about their physical activity; Advise participants to increase physical activity while personalizing benefits; Agree on 1-month leisure-time physical activity goal. All participants then received a tailored physical activity prescription that included the agreed upon goal. The IG (intensive-counseling group) then received 6 patient-centered physical activity counseling sessions over 3 months from the physical activity counselor, focusing on the other 3 parts of the 7 A model: Assess, Assist, and Arrange. Counseling was highly individualized but always involved encouragement and support, helped participants set a goal and problem solve around potential barriers, and focused on psychological mediators of change. |
| Minimal intervention | Brief (2–4 minutes) physical activity counseling intervention with primacy care provider. Using the 7A shared-care model for physical activity counseling, this brief intervention addressed the first 4 As: Address the subject of physical activity; Ask participants about their physical activity; Advise participants to increase physical activity while personalizing benefits; Agree on 1-month leisure-time physical activity goal. All participants then received a tailored physical activity prescription that included the agreed upon goal. No further intervention afterward. |
| PREPARE Trial, 200999 | Physical activity counseling (IG 1) | Single-session group educational program designed to promote increased physical activity (primarily walking) by targeting perceptions and knowledge of impaired glucose tolerance, physical activity self-efficacy, barriers, and self-regulatory skills. Person-centered approach to participant education delivered in groups of 5–10, divided into 4 modules: 1) participant story (participants share their knowledge of impaired glucose tolerance and concerns about program); 2) professional story (overview of healthy glucose metabolism, prediabetes complications and risk factors, calculate risk scores); 3) diet (link between diet and metabolism); 4) physical activity (how physical activity improves glucose control; understand physical activity recommendations; discuss how to incorporate physical activity into daily life; form action plans and set goals; encourage use of physical activity diaries). Only method of goal setting differed between IG 1 and 2. Both groups (IG 1 and 2) had brief 1-on-1 followup counseling with trained educator at 3 and 6 month clinical measurement session. Goal setting: IG 1 (PREPARE group): set physical activity goals based on generic exercise recommendations (i.e., 30 minutes of moderate-intensity exercise on most days of the week). Encouraged to set proximal goals, such as increasing moderate-intensity activity by 5 minutes/day every 2 weeks. Use of action plans and activity logs recommended. |
| Physical activity counseling (IG 2) | IG 2-PREPARE and pedometer: received pedometer and trained on its use. Set personalized goals of steps per day based on baseline ambulatory activity levels and step per day categories. Generally recommended to increase by 3,000 steps per day, unless baseline was at ≥9,000 steps, then recommended to sustain. Set proximal goals with timeline. Encouraged to wear pedometer on daily basis and to monitor activity using a log. |
| Usual care | Brief information sheet in the mail detailing the likely causes, consequences, symptoms, and timeline associated with impaired glucose tolerance, along with information about how physical activity can be used to treat/control the condition. |
| Kallings, 2009141 | Physical activity counseling | Usual care (1 page of physical activity education) plus brief physician message plus individual patient-centered motivational counseling plus physical activity prescription including participant's goals (including specific type of physical activity, frequency, and intensity). Given pedometers and education materials; encouraged to maintain physical activity diary. Participants encouraged to gradually increase levels until they met the recommended ≥30 minutes of moderate-intensity physical activity on most (preferably all) days of the week, including aerobic and strength training and exercises for improved flexibility and balance. Encouraged to reduce sedentary time. Group support session to which patient was encouraged to bring family member or friend; letter with individualized advice from physician; brief phone call. |
| Usual care | One page of general information about importance of physical activity for health. Baseline measurement results provided 1–2 months following assessment. |
| NERS, 2012109 | Physical activity counseling | IG participated in 16-week tailored exercise program supervised by a qualified exercise professional. IG provided with 1-on-1 initial consultation with exercise professional to complete lifestyle questionnaire, health check, motivational interviewing, and physical activity goal setting using patient-centered approach, and introduction to leisure centers (sport/community centers). IG given option to take part in 1-on-1 exercise instruction or attend group classes at discounted rate (£1 per session). Primary goal was to achieve 30 minutes of moderate physical activity on ≥5 days/week. Exercise professional followed up with IG at specified time points to review goals, provided additional motivational interviewing, and support to encourage attendance and prevent relapse. |
| Waitlist control | Usual care and a leaflet highlighting the benefits of exercise, including a Web site address listing locations of local leisure facilities. |
| PACE, 2005131 | Physical activity counseling | Participants met with general or nurse practitioner for 10-minute consultation to discuss medical condition(s), offer advice about becoming more physically active, and assess stage of change for physical activity. Provider counseled the patient using the PACE program, the goal of which is to “promote long-term participation in regular physical activity by altering social and psychological factors known to influence physical activity, such as social support, increased self-efficacy, reduced perceived barriers, and increased awareness of the benefits of physical activity.” Providers received 1-hour individualized training on PACE approach to increase knowledge and coach on use of PACE materials. PACE physical activity counselors (separate from general/nurse practitioner) provided 2 "booster" phone call consultations (2 and 8 weeks after initial visit), to offer support and resolve possible problems or questions. After initial visit, 1 followup visit with provider (4 weeks), where they focused on stage-specific protocols and checked on participant progress. At 4-week visit, offered new counseling protocol for those who had either progressed or regressed through stages of change. |
| Usual care | General practitioners discussed patient's current level of physical activity and, as appropriate, encouraged patient to become more active. Standard text on physical activity promotion was provided. |
| Green Prescription Programme, 2003123 | Physical activity counseling | Primary care clinicians (medical doctors and nurses) received 4 hours of training on how to use motivational interviewing techniques to advise on physical activity and the "green prescription." Following screening, patients given a prompt card with their stage of change, which they gave to their primary care provider (doctor [85%] or nurse [15%]) during their upcoming consultation. The prompt card cues clinician to discuss increasing physical activity and to set appropriate goals with the participant (usually home-based physical activity or walking). Goals are written on a green prescription, given to participant, and faxed to local sports foundation, along with details such as age, weight, health conditions. Exercise specialists from the foundation then call the patient ≥3 times in the next 3 months to encourage and support physical activity through motivational interviewing. Participants receive quarterly newsletters from the sports foundation about physical activity initiatives in the community; interested participants also receive other motivational materials, such as information on specific exercise programs. Clinician staff from general practice are encouraged to provide feedback to the patient during subsequent visits. |
| Waitlist control | Usual care. |
| Moreau 2001104 | Physical activity counseling | Walking program to reduce blood pressure. IG were given pedometers at baseline and instructed how to wear (belt or waistband, morning to bedtime). After 1–2 week baseline measurement, IG provided a target goal to gradually increase the distance they walked (from 1.4 km over baseline to a 3-km increase in walking by week 3, as recommended by the American College of Sports Medicine and the Centers for Disease Control and Prevention). Walking steps recorded on daily log sheets with other physical activities and turned in every 2 weeks. IG presented to laboratory for measurements at 3 time points: baseline, 12 weeks, and 24 weeks. |
| No advice | CG asked not to change daily activity and wore pedometer for 1 week each month to document their walking. |

**Abbreviations:** AHA = American Heart Association; ATP = Adult Treatment Panel; BMI = body mass index; CG = control group; CME = continued medical education; CVD = cardiovascular disease; IG = intervention group; IT = information technology; JNC = Joint National Committee; NCEP = National Cholesterol Education Program; NHLBI = National Heart, Lung, and Blood Institute.