EVIDENCE TABLE

Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Burton (1995) and German (1995) • Country: USA • Design: RCT • Follow-up: 24 months • Cost of program per person: $145 + $40 for follow-up risk counseling visit • Notes:	• Group 1: Control Received a booklet which discusses prevention and offers guidance for those wishing further help in securing preventive services. • Group 2: Health promotion intervention. Received an explanatory letter and a voucher for a visit without charge to their primary caregiver. As close as possible to 1 year from the first visit, a voucher for a second preventive visit was mailed, along with a letter; this letter was sent as well to those in the intervention group who had not made a first visit. Physicians were asked to review health risks; provide counseling where appropriate; take a complete history including vision, hearing, and dentition; and include in the physical exam a breast and pelvic exam and a digital rectal exam. Lab tests and immunizations were also provided.	• Medicare beneficiaries. • Initial sample size: Group 1: 2,090 Group 2: 2,105 • Retention: 84% of those available to interview completed baseline. 75% of intervention group and 73% of control group completed follow-up. • Age: 57% of the sample was between 65-74 years • % female: 63 • % white: 87	*Behavioral variables:* Smoking Problem alcohol use Sedentary lifestyle *Health status variables:* Quality of Well-Being Scale*	Self-report Quality of Well-Being Scale includes the assessment of symptoms, mobility, and physical and social activity. The score ranges from 1 (perfect health) to 0 (death).	Group comparisons on smoking, problem drinking, and sedentary lifestyle were not significant. The health of participants in the intervention group declined less over 2 years compared to the health of control group participants. The difference between groups on the Quality of Well-Being Scale is mostly due to differential death rate. A greater proportion of control patients died (11.1%) than intervention patients (8.3%). Comparisons of the change in score for survivors only showed virtually no group difference. Group n Mean Change Control 1755 -.0832 Intervention 1748 -.0631

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• Connell (1995) • Country: USA • Design: RCT • Follow-up: 12 months • Cost of program per person: N/A • Notes:	• Group 1: Control • Group 2: HRA only • Group 3: Counseling only. Individual health counseling was provided by health educators who visited departments on a monthly basis to meet with interested employees, suggest behavior change strategies and provide individualized feedback and/or self-help materials. Although not a major focus of the intervention, classes on smoking, cholesterol and weight control were offered, as were walking contests. • Group 4: HRA and counseling	• Employees at a Midwestern university. • Initial sample size: Group 1: 248 Group 2: 415 Group 3: 455 Group 4: 313 • Retention: 65% of employees agreed to participate. Attrition ranged from 40-50% at follow-up. • Mean age: 39 years • % female: 60.5 • % white: 88.4	*Behavioral variables:* Exercise* (decreased) *Physiological variables:* BMI* Diastolic blood pressure Systolic blood pressure* Cholesterol	Self-report of exercise; measures of BMI, blood pressure, and cholesterol were obtained by nurse	Study presents results from hierarchical regression analysis predicting total cholesterol, systolic and diastolic blood pressure, exercise frequency and BMI from demographic and group assignment variables. Group assignment was dummy-coded with Group 1 compared to each of the other groups. Results: Compared to the control group, participation in any of the intervention groups was associated with lower systolic blood pressure and BMI at follow-up. Contrary to predictions, participation in Group 4 was associated with lower exercise frequency compared to the control group. No group differences were found on cholesterol or diastolic blood pressure.

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• Family Heart Study Group (1994) • Country: Britain • Design: RCT • Follow-up: 12 months • Cost of program per person: N/A • Notes:	• Group 1: Completed HRA through interview with nurse and underwent physiological measures of outcome health parameters. Participants were told their relative risk of coronary heart disease. The risk score was recorded in a booklet in which personally negotiated lifestyle changes in relation to smoking, weight, diet, drinking, and exercise could be documented. Health education pamphlets were distributed, as appropriate. Frequency of follow-up visits was determined by both the coronary risk score and individual risk factors. • Group 2: Internal comparison group • Group 3: External comparison group	• Patients of 26 general practices in 13 towns in Britain • Initial sample size: Group 1: 2,984 Group 2: 3,576 Group 3: 5,912 • Retention: Household response rate was 73%. 88% of men and 85% of women in Group 1 completed follow-up. • Mean age: 50 • % female: 40 • % white: N/A	*Behavioral variables:* Smoking* *Physiological variables:* Weight* Diastolic blood pressure* Systolic blood pressure* Cholesterol* Blood glucose	No self-report (carbon monoxide concentration in breath was used to assess smoking status)	Cigarette smoking was lower in intervention group compared to control groups by about 4%, systolic blood pressure by an average of 7 mm Hg and diastolic pressure by 3 mm Hg, weight by an average of about 2.2 lbs., and cholesterol concentration by an average of about 0.1 mmol/l. For the latter, the standard errors were sufficiently large to include the possibility of no effect in women. There was no change in random blood glucose concentrations. Smoking prevalence (%) — Men / Women Intervention 19.1 / 17.7 External comparison 22.8 / 21.2 Internal comparison 23.0 / 21.5 Mean blood cholesterol (mmol/l) Intervention 5.58 / 5.48 External comparison 5.69 / 5.61 Internal comparison 5.72 / 5.60 Mean systolic pressure (mm Hg) Intervention 131.6 / 123.2 External comparison 138.8 / 130.8 Internal comparison 139.0 / 129.6 Mean diastolic pressure (mm Hg) Intervention 83.3 / 78.6 External comparison 85.5 / 80.7 Internal comparison 86.6 / 81.3 Mean weight (lb) Intervention 36.08 / 29.96 External comparison 36.60 / 30.31 Internal comparison 36.63 / 30.27

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• Gemson & Sloan (1995) • Country: USA • Design: RCT • Follow-up: 6 months • Cost of program per person: N/A • Notes:	• Group 1: Completed HRA. Did not receive HRA feedback, but had one-on-one counseling from a physician. • Group 2: Completed HRA and received feedback. Received counseling from physician. All employees completed HRA and returned to the medical department for a physical exam and one-on-one counseling session with a physician. Participants from both groups received equivalent treatment at this visit except that participants in Group 2 received feedback on their HRA.	• Employees of a large financial services firm in NYC • Initial sample size: 161 • Retention: 56% • Mean age: 46 • % female: 19 • % white: N/A	*Behavioral variables:* Exercise* Seat belt use *Physiological variables:* Weight Systolic blood pressure Cholesterol *Health status variables:* Risk age*	Self-report, except for weight, blood pressure, and cholesterol	Groups 2 showed significantly greater improvement than Group 1 on exercise and risk age. Change in risk factors at 6 months' follow-up are shown below: Exercise (times/week): Group 1 -.13, Group 2 +.33 Appraised age (years): Group 1 -.40, Group 2 -2.1

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• Johns (1977) • Country: USA • Design: RCT • Follow-up: 4 months • Cost of program per person: N/A • Notes:	• Group 1: HRA and received educational intervention from a family physician • Group 2: HRA and received educational intervention from a health educator. • Group 3: HRA without feedback or counseling. Educational intervention included a 20-30 minute counseling session during which participants were given a health risk profile handbook, including their individual health risk profile. They also received appropriate referrals to their private physician and information on reducing health risks.	• Patients at a multi-specialty clinic in northern Utah. • Initial sample size: Group 1: 50 Group 2: 49 Group 3: 45 • Retention 15% of eligible individuals agreed to participate. Follow-up was completed by 58%, 57%, and 73% of Groups 1-3, respectively. • Mean age: N/A Age eligibility = 20-60 years • % female: N/A • % white: N/A	*Behavioral variables:* Smoking Alcohol consumption Exercise Mileage Seat belt use *Screening variables:* Mammography Physician breast exam Breast self-exam Rectal exam *Physiological variables:* Weight Diastolic blood pressure* Systolic blood pressure *Health status variables:* Risk age Average risk of death Risk of accidents Risk of ASHD Risk of stroke Risk of lung cancer Risk of colon cancer Risk of breast cancer	Mostly self-report through the mail Participants returned to clinic for measurements of weight and blood pressure	Groups 1 and 2 showed significantly greater improvement than Group 3 on diastolic blood pressure. Results are as follows: Follow-up: 0 4 months Group 1 84.8 80.1 Group 2 81.8 79.7 Group 3 77.2 80.8

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• Kelly (1988) • Country: USA • Design: RCT • Follow-up: 4 weeks • Cost of program per person: N/A • Notes: Group 4 (control group) contained a significantly higher proportion of men compared to other groups. Group comparisons were not made on specific health behaviors, only whether behavior change had been made.	• Group 1: Received assessment, personalized recommendations from a physician, standard instructional materials, and follow-up • Group 2: Received assessment, standard instructional materials, and follow-up • Group 3: Received assessment and follow-up • Group 4: Received follow-up	• Patients of a family practice residency program in Cleveland • Initial sample size: Group 1: 88 Group 2: 88 Group 3: 88 Group 4: 62 • Retention: Groups 1-3: 81% Group 4: 91% • Mean age: N/A Age eligibility = 18-60 years • % female: 70 • % white: 97	*Behavioral variables:* Smoking Alcohol Nutrition Exercise Seat belt use *Psychological variables:* Stress	Initial HRA was self-administered while waiting to see the physician Follow-up HRA was administered via phone interview	Based on a series of questions, the interviewer graded patient behavior change into four categories for each area of lifestyle: 1 = no change made and no intent to change; 2 = no change made but intends to change; 3 = some change made; and 4 = significant change made. There were no significant differences between Groups 1, 2, and 3. Group 4 (control group) had significantly less interest in changing their health behaviors and made significantly fewer changes than participants in Groups 1, 2, and 3. Results are as follows: Group: 1 2 3 4 Don't want to change: 5 % 6 % 6 % 64 % Want to change: 38 41 49 22 Some change: 35 40 31 5 Major change: 22 13 15 9 Mean degree of change: 2.74 2.60 2.57 1.60

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• Kreuter & Strecher (1996) • Country: USA • Design: RCT • Follow-up: 6 months • Cost of program per person: N/A • Notes:	• Group 1: Enhanced HRA feedback. Received risk information and individually tailored behavior change information. • Group 2: Typical HRA feedback. Received risk information, but not the tailored behavior change information. • Group 3: Received no feedback.	• Adult patients from eight independent community-based group family practices in North Carolina • Initial sample size: Group 1: 427 Group 2: 427 Group 3: 463 • Retention 80% of eligible individuals agreed to participate. 86% of initial participants completed follow-up. • Mean age: 40 (range 18-75) • % female: 65 • % white: 86	*Behavioral variables:* Quit smoking Reduce dietary fat Exercise 3x/week Use seat belt regularly *Screening variables:* Get mammogram Get pap smear Get cholesterol test*	Initial HRA was self-administered while waiting to see the physician Follow-up HRA was administered via mail	A significant difference between groups was found on the % of individuals who had their cholesterol tested by follow-up (compared only those who had not had a cholesterol test in the last 5 years and wanted to get one). Note that Group 2 was less likely than control group to get a cholesterol test. Group 1 Group 2 Group 3 Get cholesterol test 53% 28% 40%

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• Lauzon (1977) • Country: Canada • Design: RCT • Follow-up: 3 months • Cost of program per person: N/A • Notes:	• Group 1: Received two-page HRA computer printout and had their results interpreted. Also received counseling from a nurse that involved detailed information about moderating personal health risks. • Group 2: Received two-page HRA computer printout and had their results interpreted. However, no information was offered concerning how to reduce personal health risks other than the general directions given by the compliance section of the printout. • Group 3: Did not receive HRA feedback	• Federal civil servants working in the National Capital Region (Ottawa-Hull) • Initial sample size: 346 • Retention: 85% • Mean age: N/A Age eligibility = 30-55 years • % female: 47 • % white: N/A	*Behavioral variables:* Smoking Alcohol* Exercise habits* Seat belt usage *Screening variables*: Breast self-exam* Pap smear Rectal exam *Physiological variables:* Weight Diastolic blood pressure Systolic blood pressure *Health status variables:* Risk age* *Psychological variables:* Feelings of anxiety	Self-report	Significant differences between groups in percentage change for the better are reported for the following variables: Alcohol consumption (Group 1 > Group 2 > Group 3; only for males aged 30-40) Exercise (Group 2 > Group 3; only for males aged 41-55) Breast self-exam (Group 1 > Group 2 > Group 3; only for females aged 41-55) Health risk age (Group 1 > Group 2 > Group 3; only for participants aged 41-55) Relevant percentages collapsing across low- and high-risk categories are not provided.

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• Leigh (1992) • Country: USA • Design: RCT • Follow-up: 12 months • Cost of program per person: $30/year • Notes: Same sample as Fries et al., 1993	• Group 1: Completed HRA at 1, 6, and 12 months. Received personalized risk report, personalized recommendation letters, newsletters, two books, "other" materials • Group 2: Completed HRA at 1, 6, and 12 months, but did not receive full health promotion program • Group 3: Not made aware of program and monitored for insurance claims experience only	• Bank of America retirees in California • Initial sample size: Group 1: 1,887 Group 2: 1,892 Group 3: 1,907 • Retention: 51% at 6 months and 47% at 12 months • Mean age: Group 1: 68.4 Group 2: 68.8 • % female: Group 1: 52.1 Group 2: 54.7 • % white: N/A	*Behavioral variables*: Smoking Alcohol Exercise Walking Seat belt use* *Dietary habits*: Fat* Salt* Fruits Vegetables Fiber* Calcium Red meat Eggs* Cheese* Butter Whole-grain bread* Whole-grain cereals* *Physiological variables:* Weight Diastolic blood pressure Systolic blood pressure Cholesterol *Health status variables*: Health risk score* Global health status* Sick days* Disability/illness* Arthritis *Psychological variables:* Tense Rushed* Angry* Stressed* Tranquilizers	Self-report Program delivered through the mail	Group 1 showed significantly greater improvement than Group 2 on the following variables: Group 1 showed significantly greater improvement than Group 2 on the following variables: Group 1 Group 2 Follow-up: 0 12 0 12 mo. Seat belt use (% of time): 86.1 90.0 85.7 85.5 Servings/week: Fat 8.8 6.8 9.2 8.3 Salt 6.3 4.7 6.3 5.3 Whole-grain bread 4.8 5.5 5.2 5.4 Whole-grain cereals 4.1 4.7 4.3 4.6 Fiber 20.4 21.8 21.0 20.9 Eggs 1.6 1.2 1.6 1.4 Cheese 2.4 1.8 2.4 2.2 Times/week: Rushed 1.2 1.0 1.2 1.3 Angry 1.2 0.8 1.0 1.0 Stressed 4.2 2.6 4.1 3.0 Disability/illness 2.7 1.3 1.7 1.2 Health risk score 19.7 18.9 19.9 21.3 Global health status 27.8 28.0 27.0 30.0 Sick days/6 mos 18.0 17.2 18.0 19.4

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• Mayer (1994) and Elder (1995) • Country: USA • Design: RCT • Follow-up: 12 months (Mayer) and 48 months (Elder) • Cost of program per person: $164 • Notes:	• Group 1: Clinical tests and immunizations, HRA with counseling, and 8-week health promotion workshop • Group 2: Received regular care and completed HRA (but did not receive feedback)	• Medicare beneficiaries enrolled in a risk-sharing HMO in California • Initial sample size: Group 1: 899 Group 2: 901 • Retention: Group 1: 84% at 12 mo. Group 2: 88% at 12 mo. 44% at 48 mo. • Age 12 48 mo. 65-69 yrs = 30% 36% 70-74 yrs = 37% 40% 75-79 yrs = 23% 18% ≥80 yrs = 10% 6% 12 48 mo. • % female: 56 53 • % white: > 90	*Behavioral variables:* Fat intake* Fiber intake Caffeine intake* Dietary variety Meal regularity Stretching exercises* Strength exercises* Home safety Motor vehicle safety *Physiological variables*: BMI Diastolic blood pressure Systolic blood pressure Metabolic rate*	Self-report, except for measurement of blood pressure	Mayer et al. (1994): Group 1 showed significantly greater improvement than Group 2 on the following variables: Group 1 / Group 2 Follow-up: 0 12 / 0 12 Stretching (min/wk) 15.08 19.29 / 17.03 16.32 Strength (min/wk) 20.88 28.13 / 21.45 22.01 Fat 2.75 2.53 / 2.70 2.60 Caffeine 2.15 2.06 / 2.13 2.12 Metabolic rate 355.76 431.74 / 375.21 368.38 Elder et al. (1995): Group 1 / Group 2 Follow-up: 0 24 48 / 0 24 48 Stretching (min/wk) 15.0 19.8 20.3 / 19.2 18.6 17.9 Metabolic rate 379.3 507.1 432.1 / 424.6 423.6 388.0

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• Patrick (1999) • Country: USA • Design: RCT • Follow-up: 48 months • Cost of program per person: $186.03 per year for preventive-services package and $20 for each baseline HRA conducted for Group 1 • Notes: Group 1 was less healthy than Group 2 at baseline. Consistent with this finding, the mortality rate for Group 1was higher than for Group 2 at the 24- (p = .006) and 48-month (p = .062) follow-ups.	• Group 1: Invited to take advantage of a benefits package and services for 2 years. This included: health-risk assessment, 90-minute health-promotion visit with a trained nurse during which HRA was reviewed, positive behaviors reinforced, and referrals made to interventions for appropriate risk areas. • Group 2: Given usual care, including access to usual preventive services.	• Medicare beneficiaries enrolled in a Seattle HMO • Initial sample size: Group 1: 1,282 Group 2: 1,276 • Retention: 51% of eligible individuals agreed to participate. 96% of participants completed 24-month follow-up • Mean age: 73 • % female: 61 • % white: N/A	*Behavioral variables:* Smoking Alcohol Physical activity* Dietary fat and fiber Seat belt use Home safety Medication awareness *Screening variables:* Breast self-exam Flu shot* *Physiological variables:* BMI *Health status variables:* Quality of life* Global health status* Pain Hearing problems Vision problems Sleep problems Incontinence *Psychological variables:* Life events/stress Depression* Health worry*	Self-report Participants completed mail questionnaires and telephone interviews	Group 1 showed significantly greater improvement, or less decline, than Group 2 at the 24-month follow-up on the following variables: Group 1 / Group 2 Physical activity Decline 13% / 13% No change 61 / 64 Improvement 27 / 21 Received flu shots Decline 2% / 3% No change 81 / 85 Improvement 17 / 12 Group 1 / Group 2 Follow-up: 0 24 / 0 24 mo. Quality of life 7.92 7.97 / 7.98 7.93 Global health status 3.35 3.25 / 3.41 3.18 Depression 8.25 8.85 / 8.06 9.19 Health worry 3.09 3.51 / 2.94 3.63 By 48-month follow-up, improvement was maintained in the following areas (mean scores not provided): Proportion receiving flu shots Depression Health worry

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• Smith (1985) • Country: USA • Design: RCT • Follow-up: 6 months • Cost of program per person: N/A • Notes:	• Group 1: Received full HRA feedback (health risk age, suggested lifestyle changes, relative risks, and a problem list of abnormal responses) and counseling from family practitioner • Group 2: Received full HRA feedback, but not counseling from family practitioner • Group 3: Received partial HRA feedback (the problem list) and counseling from family practitioner • Group 4: Received partial HRA feedback, but not counseling from family practitioner	• Adults who entered the Tripler Army Medical Center family practice program • Initial sample size: 410 • Retention: 70% • Mean age: 35.9 • % female: 51 • % white: N/A	*Behavioral variables:* Smoking Alcohol Exercise* Seat belt use *Screening variables:* Breast self-exam Physician breast exam Pap smears Rectal exam *Physiological variables:* Weight Blood pressure Serum cholesterol *Health status variables:* Risk age	Self-report, except for measurements of blood pressure and cholesterol	No significant differences were found between experimental groups (Groups 1 and 2) and control groups (Groups 3 and 4). A statistically significant difference was found between the counseled groups (Groups 1 and 3) and uncounseled groups (Groups 2 and 4) on exercise. Number of Regular Exercisers Follow-up: 0 6 months Group 1 51 63 Group 2 19 20 Group 3 47 65 Group 4 11 16

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• Williams (1997) • Country: USA • Design: RCT • Follow-up: 48 months • Cost of program per person: $165/year • Notes:	Group 1: Completed HRA and received usual care. Group 2: Completed HRA and received individual verbal feedback by a health educator on modifiable risk behaviors; a written report on areas of highest risk; referrals, as needed; immunizations; screening procedures; health education manuals; an 8-week workshop; two booster telephone calls; and a newsletter on positive lifestyles.	• Medicare managed care enrollees in San Diego County, California • Initial sample size: 1,791 • Retention: 47% retention over 4 years • Age: 75% of sample was 65-74 years. • % female: 55 • % white: majority	*Behavioral variables:* Stretching minutes/week* Fiber servings Fat servings Salt use Caffeine Cruciferous foods *Screening variables:* Immunizations* *Physiological variables:* BMI Systolic blood pressure Diastolic blood pressure Metabolic rate* *Psychological variables:* Depression* Control over health*	Self-report, except for weight, blood pressure, and metabolic rate	Four years after the initial intervention, Group 2 had higher metabolic rate, more stretching activity, lower depression, and a higher immunization rate than Group 1. Group 1 / Group 2 Follow-Up: 0 48 / 0 48 mos. Metabolic rate 424 388 / 379 432 Stretching (minutes/week) 19 18 / 15 20 % of both groups immunized for flu increased dramatically, with this increase being more pronounced for Group 2. Group 2 was estimated to have 13-14% lower depression scores in the fourth year compared to Group 1. There was a decline in the % of subjects reporting they had a great deal of control over their future health, with the decline being more pronounced for Group 1. For Group 1, 19% changed from having 'a great deal of control' at baseline to having 'some or very little control' at 48-month follow-up, whereas 10% moved in the opposite direction. No significant shift was found for Group 2.

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• Dunton (1990) • Country: USA • Design: CCT • Follow-up: approx. 6 months • Cost of program per person: N/A • Notes:	• Group 1: No HRA or education • Group 2: HRA and group counseling • Group 3: HRA group counseling and seat belt use materials and instruction 4-6 weeks after completing HRA, Groups 2-3 returned for group counseling session, which included an interpretation of HRA results and, for Group 3, presentation of educational materials.	• Employees of 3 worksites in Illinois (which had mandatory seat belt use law) and 3 worksites in Pennsylvania (which did not have seat belt use law) • Initial sample size: Group 1: 512 Group 2: 202 Group 3: 492 • Retention: 65-75% of employees, depending upon group, were observed for seat belt use • Mean Age (estimated): 27-40, depending upon group • % female (estimated): 23-85, depending upon group • % white: N/A	*Behavioral variables:* Seat belt use*	Self-report of HRA, except for weight, blood pressure, and cholesterol. Direct observation of seat belt use was scheduled for four times for each group: baseline, post-screening, post-counseling, and delayed post-counseling (follow-up)	% of employees who were observed to use seat belts at baseline and follow-up. Follow-up: 0 6 months % change in rate* No seat belt laws: Group 1 8.8 7.9 N/A Group 2 15.1 30.4 124.3 Group 3 9.5 14.3 67.7 State seat belt laws: Group 1 19.9 27.2 N/A Group 2 36.4 not followed Group 3 17.2 34.7 47.6 * statistically adjusted to account for changes in the corresponding control group.

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• Erfurt (1991) • Country: USA • Design: CCT • Follow-up: 36 months • Cost of program per person: $50-100 • Notes:	• Group 1: HRA, including referrals of at-risk employees to treatment /wellness programs • Group 2: Group 1 intervention, plus health education (includes use of media, program sign-up campaigns, and health improvement classes) • Group 3: Group 2 intervention, plus follow-up counseling (all people with high blood pressure, overweight, and/or smoking; see each patient at least once every 6 months) • Group 4: Group 3 intervention, plus plant organization (health communication networks, peer support groups, specific interest health promotion groups, plant-wide health promotion activities)	• Employees of four manufacturing plants near Detroit. Plants were randomly assigned to interventions. • Initial sample size: Group/Site 1: 2,448 Group/Site 2: 1,374 Group/Site 3: 2,089 Group/Site 4: 1,893 • Retention: Of those who were initially screened, random samples of 600 employees at Sites 1-3 and 500 employees at Site 4 were drawn. Participation in rescreening ranged from 80-84%. • Mean age: 39-43 years • % female: < 50% • % white: > 50%	*Behavioral variables:* Smoking* *Physiological variables:* Weight* Diastolic blood pressure* Systolic blood pressure*	Self-report of smoking; measures of blood pressure and weight were obtained by health professionals.	Changes in risk factors for at-risk employees (high blood pressure, overweight, and/or smoking) in four sites, 1985-1988. Change in SPB: Group 1 +3.0; Group 2 -2.9; Group 3 -7.3; Group 4 -10.7 a Change in DPB: Group 1 -4.4; Group 2 -2.2; Group 3 -6.3; Group 4 -8.4 a % w/BP under good control: Group 1 36-44%; Group 2 32-41%; Group 3 26-55%; Group 4 30-62% b Change in weight: Group 1 +4.2; Group 2 -2.4; Group 3 -5.0; Group 4 -6.4 b % lost 10+ pounds: Group 1 15%; Group 2 9%; Group 3 35%; Group 4 35% b % lost 3+ pounds: Group 1 15%; Group 2 36%; Group 3 52%; Group 4 58% b Smoking quit rate: Group 1 16.7%; Group 2 10.5%; Group 3 26%; Group 4 22.9% b a. Comparison across 4 sites b. Comparison between sites 1-2 vs. sites 3-4

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• Gomel (1991) • Country: Australia • Design: CCT • Follow-up: 12 months • Cost of program per person: N/A • Notes:	• Group 1: Received HRA feedback through the use of tables/ graphs of standardized norms. No other advice or information provided. Group 2: Received standardized HRA feedback on the life-style changes required to reduce heart disease risk factors. The advice was not personalized. Resource manual and videotapes were also provided. • Group 3: Same as Group 2. In addition, participants with risk factors were offered up to 6 lifestyle counseling sessions over a 10-week period. • Group 4: Same as Group 2. In addition, they were provided with a lifestyle change manual and were offered a goal-setting and follow-up counseling session, as well as a range of incentives (e.g. $40 vouchers).	• Employees of Ambulance Service in New South Wales, Australia • Initial sample size: Group 1: 130 Group 2: 82 Group 3: 124 Group 4: 95 • Retention: 88% of eligible employees participated. 364 (84%) were retained at 12 months. • Mean age: 31-33 • % female: 15-19 • % white: N/A	*Behavioral variables:* Smoking* *Physiological variables:* BMI (increased)* Body fat Blood pressure* Cholesterol Aerobic capacity	No self-report (cotinine was measured to determine smoking status).	In several cases, initial improvements in health parameters were followed by a return to baseline levels. There were significant changes over 12-month follow-up on the following parameters: Continuous cessation rates for Groups 3-4 (7%) were significantly higher than for Groups 1-2 (0%). BMI increased significantly overall, although the average increase for Groups 1-2 was 4% higher than the average increase for Groups 3-4. There was a significant overall decline in mean blood pressure for those in Group 3 compared to those in Group 4.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Nice & Woodruff (1990) • Country: USA • Design: CCT • Follow-up: 12 months • Cost of program per person: N/A • Notes:	• Group 1: Matched control group that did not complete HRA. • Group 2: Completed HRA and received printed feedback	• Randomly selected individuals participating in a larger Navy-wide longitudinal health promotion evaluation • Initial sample size: Group 1: 93 Group 2: 625 • Retention: Of 625 in Group 2 who were mailed an HRA, 270 (43%) returned it. 93 (34%) who completed baseline HRA also completed the follow-up. Group 1 was comprised of 93 matched controls. • Mean age: 30 • % female: 9.7 • % white: N/A	*Behavioral variables:* Smoking Alcohol Exercise Traffic risk Substance use risk Accident control Wellness maintenance and enhancement	Self-report	HRA intervention had no significant effect on subsequent health behaviors

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Bertera (1990) • Country: USA • Design: CBA • Follow-up: 24 months • Cost of program: $2,151,277 over 2 years for 41 sites • Notes: Same study as Bertera (1993), which does not compare program and non-program sites.	Participants completed an HRA. Assistance was provided for interpreting appraisal results in groups using a videotape explanation, and individually through consultation with site medical personnel for all employees who request it. Health promotion activities included: four- to ten-week classes; a bimonthly health and fitness magazine; challenges and incentive programs for fitness, weight control, and smoking; healthy foods in vending machines; and machines and scales available to employees so they can check their own blood pressure and weight.	• Hourly employees in a large, diversified manufacturing company. • Initial sample size: Intervention sites: 2,600 Control sites: 1,700 • Retention: 95% of both groups provided information at baseline and follow-up. • Age: 41% were 40 years or older • % female: 17.3 • % white: 83.9%	*Health status variables:* Disability days	Information on blood pressure, cholesterol and weight were obtained in most cases from the most recent company physical examination. Disability days were recorded on time cards signed by supervisors.	Mean disability days lost by hourly employees by program year for program and non-program sites Year / Program sites / Non-program sites 1984 (pre-program) 5.7 5.2 1985 (Year 1) 5.1 5.3 1986 (Year 2) 4.9 4.9 1984-1986 (decline) 0.7 0.3 95% C.I. for group difference = [0.3, 0.5 days]

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Blair (1986), Shipley (1988), Weinstein (1986), and Wilbur & Garner (1984) • Country: USA • Design: CBA • Follow-up: 6 months to 2 years • Cost of program per person: $150-$175/year • Notes: These studies appear to use overlapping samples of Johnson & Johnson employees.	• Group 1: Completed health screening and participated in a 3-hour lifestyle seminar to introduce the program. Lifestyle improvement activities included behaviorally oriented programs dealing with nutrition, exercise, weight, smoking, stress, blood pressure, and others. In some work locations employees were given an opportunity to exercise on their own time at company-provided fitness facilities. Incentives, including clothing and sports equipment, were provided to reward participation and encourage involvement in the program. • Group 2: Completed health screening	• Johnson & Johnson employees in New Jersey and Pennsylvania (control group for Weinstein et al. included non-Johnson & Johnson employees) • Initial sample size: Intervention sites: 2,100-2,600 employees at 4 sites. Control sites: 1,700-2,000 employees at 3-5 sites • Retention: About 75% of eligible employees agree to complete initial screening at baseline. About 95% of those who were still employed at the company 2 years later completed the follow-up assessment. • Age range: 18 – retirement age • % female: 47% • % white: N/A	*Behavioral variables*: Smoking* Exercise* Seat belt use* *Physiological variables*: Weight* Blood pressure Vo_2max* Aerobic calories/kg/week Daily energy expenditure in vigorous exercise *Psychological variables*: General well-being* • Note that specific studies included only a subset of these variables.	Self-report of smoking, exercise, and general well-being Physiological measurement of weight, blood pressure, and Vo_2max Observation of seat belt use	Wilbur & Garner (12 months): Percent change from baseline to follow-up Group 1 / Group 2 Aerobic calories/kg/week +43 / +6 % above ideal weight -1 / +6 % current smokers -15 / -4 General well-being +5 / +2 % blood pressure ≥ 140/90 -32 / -9 Blair et al. (24 months): Percentage change from baseline to follow-up Group 1 / Group 2 Daily energy expenditure in vigorous exercise +104 / +33 Vo_2max +10 / +5 Shipley et al. (24 months) Group 1 / Group 2 % who quit smoking 20 / 19 % who quit smoking among those at risk for CHD 32 / 13 Weinstein et al. (6 months) % using seat belt (change from baseline-6 months) Group 1 / Group 2 North intervention site 31-50 / 19-22 South intervention site 30-40

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Boudreau (1995) • Country: Canada • Design: CBA • Follow-up: 2 months • Cost of program per person: N/A • Notes:	Group 1: Preintervention Group 2: Postintervention Group 3: Control Intervention involved completing an HRA to assess CVD risk factors. Serum cholesterol, blood pressure, height/weight were measured. Participants discussed their CVD risk-factor profile with a health professional. Specific recommendations were given for factors that could be modified and participants were asked to select one modifiable risk factor. High-risk participants were asked to make an appointment with their regular physician and given a reference letter. Documentation and written information about CVD risk factors were given to participants.	• White collar workers and the support staff of a large university. • Initial sample size: Groups 1-2: 219 Group 3: 98 • Retention: Groups 1-2: 188 (86%) completed follow-up Group 3: 86 (88%) completed follow-up. • Age: 38-46, depending upon group • % female: 39-49, depending upon group • % white: N/A	*Behavioral variables:* Exercise	Self-report. Participants were asked "Since the HRA activity, how many times have you participated in one or more physical activities for 20-30-minutes per session during your free time?" This was rated on a 6-point scale (1 = *never* to 6 = *3 or more times per week*).	The intervention did not have a significant effect on exercise behavior 2 months later.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Clifford (1991) • Country: USA • Design: CBA • Follow-up: 12 months • Cost of program per person: $195 • Notes: small sample size.	• Group 1: Months 1-6: Attended group meetings on exercise, nutrition and weight management, and stress management; developed and revised behavioral health self- contracts. Months 7-12: Attended treatment maintenance support group. • Group 2: Same as Group 1, plus 5 individual sessions with a therapist. • Group 3: Same as Group 1, plus 5 peer problem-solving sessions. • Group 4: Completed same assessments as Groups 1-3 at the same time intervals, but did not receive other aspects of program. Received feedback regarding weight, body composition, cardiovascular fitness, and blood pressure.	• Members of one YMCA • Initial sample size: Group 1: 11 Group 2: 11 Group 3: 14 Group 4: 12 • Retention: 71% • Mean age: 48.9 • % female: 50 • % white: N/A	*Behavioral variables:* Exercise adherence* *Physiological variables:* Cardiovascular fitness* Weight* % body fat* Diastolic blood pressure* Systolic blood pressure* *Health status variables:* HRA Health age difference * *Psychological variables:* Self-control Self-motivation State and trait anger Chronic tension* Somatic anxiety	Self-report, except for measures of cardiovascular fitness, weight, % body fat, and blood pressure	Groups 1, 2, and 3 were combined for the analyses and compared to Group 4. Groups 1-3 showed significantly greater improvement ($p \leq .05$) over 12 months than Group 4 on the following variables:

		Pre-test	Post-test	Follow-up
Exercise adherence	G1-3	2.1	2.6	2.5
	G4	3.0	2.9	2.9
HRA health age difference	G1-3	3.1	2.0	1.9
	G4	2.0	2.6	2.1
Cardiovas-cular fitness	G1-3	29.2	33.0	32.0
	G4	32.1	30.1	29.7
Weight (lbs.)	G1-3	38.3	36.9	37.0
	G4	37.2	37.2	37.3
% body fat	G1-3	30.0	26.2	26.4
	G4	30.4	30.0	29.3
Diastolic Blood pressure	G1-3	84.5	73.8	74.5
	G4	81.7	83.7	79.7
Systolic Blood Pressure	G1-3	135.8	122.4	124.7
	G4	130.6	131.1	129.4
Chronic tension	G1-3	54.2	49.5	44.6
	G4	46.8	51.3	50.1

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Logsdon (1989) • Country: USA • Design: CBA • Follow-up: 10-12 months • Cost of program per person: N/A • Notes:	• Group 1: Received age- and sex-specific medical screening procedures and patient education and counseling for behavioral risk reduction. Education and counseling component involved the physicians' use of prevention-oriented encounter forms for recording the patients' risk history and providing the physical exam, clinical lab tests, radiologic studies, and immunizations that were indicated according to the clinical findings and the protocols for well patients. • Group 2: Completed medical screening, but did not receive education and counseling.	• Patients in multi-specialty group practices in Wisconsin, Pennsylvania, and Florida (3 study sites and 2 reference sites) • Initial sample size: Group 1: 1,409 Group 2: 809 • Retention: 61% of eligible individuals in Group 1 agreed to participate. 41% of eligible individuals in Group 2 agreed to participate. Overall retention was 80% • Mean age: N/A • % female: Group 1: 54.7 Group 2: 39.6 • % white: >97	*Behavioral variables:* Smoking Alcohol* Exercise* Seat belt use* *Screening variables:* Breast self-exams* *Physiological variables:* BMI*	Baseline survey was self-report through mail Follow-up survey was through mail with extensive telephone follow-up	A significantly greater percentage of at risk individuals in Group 1 than Group 2 changed their health behaviors in the following areas: Reduced heavy drinking: Group 1 32.6 %, Group 2 21.4 % Started exercising: Group 1 33.8, Group 2 24.1 Began always using seat belts: Group 1 22.8, Group 2 8.0 Began monthly breast self-exams: Group 1 50.7, Group 2 18.8 Lost at least 5 pounds: Group 1 37.6, Group 2 24.8

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Shi (1992) • Country: USA • Design: CBA • Follow-up: 24 months • Cost of program per person: N/A • Notes: (ns) in Findings section indicates that difference between baseline and follow-up was not significant for particular group.	• Group 1: HRA and bimonthly health newsletter • Group 2: Intervention received by Group 1, plus health resource center (which provided targeted educational offerings) and free self-care books • Group 3: Intervention received by Group 2, plus behavioral change workshops/classes and Division HealthWise team (volunteers who met regularly to exchange experiences and monitor each others' progress) • Group 4: Intervention received by Group 3, plus case management targeted to high-risk participants and environmental policy designed for environmental improvement (exercise space, smoking policies, incentives, health fairs)	• Employees at Pacific Gas and Electric in Northern California • Initial sample size: Group 1: 1,030 Group 2: 785 Group 3: 645 Group 4: 427 • Retention: 69% of eligible individuals agreed to participate. 1,998 (69%) of these participated in follow-up • Mean age: > 70% were between 30-49 • % female: 21-26 • % white: N/A	*Behavioral variables:* Smoking Alcohol Speeding (increased) *Physiological variables:* Weight Blood pressure Cholesterol *Health status variables:* Heart attack risk Diabetes risk Lung cancer risk Overall risk score*	Self-report	Post hoc tests were not conducted to compare changes across groups for specific behaviors. Decline in overall risk was greater for Group 4 than the other three groups. Follow-up: 0 24 mo. Difference Smoked: Group 1 18% 12% -34% Group 2 17% 14% -18% (ns) Group 3 24% 15% -35% Group 4 14% 8% -44% Drank heavily: Group 1 26% 20% -22% Group 2 25% 20% -20% Group 3 23% 20% -11% (ns) Group 4 26% 21% -17% Exceeded speed limit: Group 1 28% 38% 36% Group 2 29% 34% 16% Group 3 31% 43% 38% Group 4 34% 38% 12% (ns) Had high cholesterol: Group 1 42% 30% -29% Group 2 35% 23% -34% Group 3 44% 26% -41% Group 4 47% 24% -49% Had high blood pressure: Group 1 27% 23% -14% Group 2 17% 16% -3% (ns) Group 3 26% 21% -17% Group 4 22% 16% -28% Overall risk score: Group 1 895 805 90 Group 2 795 720 75 Group 3 910 795 115 Group 4 880 680 200

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Spilman (1985) • Country: USA • Design: CBA • Follow-up: 12 months • Cost of program per person: N/A • Notes: Due to marked differences in demographic makeup, Group 3 was not included in the analyses and, as a result, the independent effects of HRA on health risk were not tested	• Group 1: Administered HRA and offered the health education modules • Group 2: Administered HRA, but not offered the health education modules • Group 3: Not administered HRA prior to the program and not offered the health education modules Health education modules were offered three times over a 9-month period. Modules focused on fitness, reduction of backache, weight control, stress management, smoking cessation, cholesterol reduction, cancer screening, nutrition, and interpersonal communication. Modules varied in length from 4-12 weeks and met between 1-3 times per week.	• Employees of AT&T from various locations around the country. • Initial sample size: Group 1: 1198 Group 2: 905 Group 3: 1425 • Retention: 70-77% (depending on location) of eligible individuals in Group 1 agreed to participate. 58-66% of participants completed follow-up. 54% of eligible individuals in Group 2 agreed to participate and 70% completed follow-up. 26% of eligible individuals in Group 3 agreed to participate. • Mean age: N/A • % female: N/A • % white: N/A	*Behavioral variables:* Smoking* Alcohol Exercise* Mileage Seat belt use *Physiological variables:* Weight* Diastolic blood pressure* Systolic blood pressure Cholesterol level* High-density lipoprotein *Health status variables*: Global health status* Sick days Attainable health age HRA attainable age Mortality risk* Attainable mortality risk* Heart attack risk Attainable heart attack risk* Cancer risk Attainable cancer risk* *Psychological variables:* Type A behavior* Global psychological well-being Belief in ability to affect own health Commitment to change health behaviors	Self-report, except for measurements of blood pressure, cholesterol, and weight	Only p-values are reported by the researchers. There were two locations for Group 1 – Bedminster and Kansas City. Results that were only found for one location are indicated below. In some cases where overall differences between Groups 1 and 2 were not found, further analysis indicated that individuals in Group 1 who participated in the modules differed from Group 2. These cases are indicated below. Text indicates that there were significantly greater improvements in Group 1 than Group 2 on the following variables: Smoking (module participants only) Exercise (module participants only) Body weight (Kansas City only) Diastolic blood pressure (Bedminster only) Cholesterol (Bedminster only) Global health status (module participants only) Mortality risk (Kansas City only) Attainable mortality risk Attainable heart attack risk Attainable cancer risk Type A behavior (Kansas City only) Text reports that employees who participated in the modules showed greater improvement than did the study group as a whole. Independent effects of HRA on health risk could not be addressed. Group 3 (post-program HRA only) was an unsatisfactory control group due to marked differences in demographic makeup.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Acquista (1988) • Country: USA • Design: OBS • Follow-up: 12 months • Cost of program per person: $146 • Notes: The complete set of health behaviors that were measured is not clearly specified in the Method section. Therefore, the list of variables may be incomplete.	A home evaluation was conducted, involving an interview by a nurse practitioner who completed a medical and social history. Following the interview, the nurse performed a physical exam. The nurse discussed any identified health problems with the participant and ways to decrease health risks. Educational booklets and health brochures were distributed. A health action plan was written and agreed upon by both parties. One month later, the nurse phoned the participant to answer any questions or concerns and to review the health action plan. Where appropriate, the participant was encouraged to attend health promotion courses.	• Members of a local labor union and their spouses. • Initial sample size: 476 • Retention: 16% of eligible individuals agreed to participate. 92% of initial participants completed follow-up. • Age: < 30 = 6.5% 30-39 = 22.3% 40-49 = 31.3% 50-59 = 26.7% ≥ 60 = 13.2% • % female: 48.3 • % white: 97.7	*Behavioral variables:* Smoking* Alcohol* Dietary habits* Physical activity* Mileage Seat belt use* *Screening variables:* Breast self-exam* Pap smear* *Physiological variables:* Obesity Diastolic blood pressure Systolic blood pressure Cholesterol level *Psychological variables:* Perceived stress*	Self-report through interview, except for measurements of BMI, blood pressure, and cholesterol	Among individuals identified as being at high risk, significantly fewer of them reported health-related problems in the following areas: Baseline N / Follow-up N Smoking 166 / 147 Alcohol problem 90 / 64 Poor dietary habits 60 / 31 No regular physical activity 126 / 65 Seat belt use < 50% 365 / 272 No breast self-exam 127 / 64 No pap smear 41 / 18 Stress 129 / 84

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Aldana (1994) • Country: USA • Design: OBS • Follow-up: 6 months • Cost of program per person: N/A • Notes:	The program included a biannual screening for high blood pressure, cholesterol, glucose, abnormal hematocrit, and a stool test. Physical fitness and % body fat tests, and an HRA, were also administered. A private consultation was held with a physician's assistant to discuss health risks and design and implement lifestyle and behavior intervention strategies. Written information on each risk was given to the participant and discussed. Together, the participant and physician's assistant established goals and signed an agreement which described what the participant agreed to do. A one-hour class on exercise was available and participants received health education literature. Brown bag seminars were also given periodically and participants were invited to attend if they had indicated an interest in the topic on their HRA.	• Employees of several large companies and organizations located in the southwestern US that chose to participate in the mobile health promotion program offered by CIGNA Healthplan. • Initial sample size: 4,509 • Retention: 36% of eligible employees completed baseline measures. 22% (N = 986) of initial participants completed follow-up. • Mean age: 37 • % female: 58 • % white: 92	*Physiological variables:* Obesity* Diastolic blood pressure* Systolic blood pressure* Cholesterol level* *Health status variables:* Submaximal fitness*	No self-report.	Below are mean high-risk measures from baseline to six month follow-up. High risk participants reported significant declines in blood pressure, % body fat, and cholesterol, as well as increases in the submaximal fitness score. Follow-up: 0 6 mo. Hypertension Systolic ≥ 140mmHg 147.7 129.0 Diastolic ≥ 90mmHg 92.6 83.2 Obesity (% body fat) 38.5 32.6 Hypercholesterolemia High risk ≥ 240mg/dl 264.3 240.6 Moderate risk 200 ≥ mg/dl < 240 218.3 210.9 Total/HDL ratio ≥ 5 6.1 5.6 Submaximal fitness $m10^2/kg$ 29.8 32.9 males < 41, females < 31

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Baier (1992) • Country: USA • Design: OBS • Follow-up: 6-8 months • Cost of program per person: N/A • Notes:	Employees completed HRA. During a waiting period, they read materials on diet and were exposed to displays on food, heart health videos, and information about health promotion classes. After receiving their blood pressure and cholesterol results, they met individually with counselors who suggested behavioral modifications that could be made without unrealistic lifestyle changes. Employees with elevated blood pressure or cholesterol levels were counseled to see their physicians and a physician referral service was available. At 3- and 6-month follow-ups, employees were sent questionnaires via mail. In addition, a second blood pressure, cholesterol, and heart health screening was conducted 8 months after the original screening.	• Employees of a rural public utility in Alabama • Sample size: 2,255 • Retention: 30% of participants completed each follow-up. 234 employees were rescreened for blood pressure and cholesterol. • Age: < 30: 33.2% 30-39: 35.0% 40-49: 19.4% 50-59: 8.9% > 59: 3.5% • % female: 71.3 • % white: 57.3	*Behavioral variables:* Smoking Nutritional intakes Meat* Fish* Fast foods* Vegetables/fruit Fried foods* Snacks* Cheese* Eggs* Ice cream (increased)* Milk Salt when cooking* Salt at table* Butter* Salad dressing* Exercise *Physiological variables*: Weight* (increased) Diastolic blood pressure* Systolic blood pressure* Cholesterol level*	Self-report, except for measurements of blood pressure and cholesterol	Changes in food intake (number of servings per week) from baseline to 6-month follow-up. Follow-up: 0 6-8 mo. Meat 4.32 3.72 Fish 2.37 2.76 Fast foods 1.13 0.85 Fried foods 1.67 1.35 Snacks 2.03 1.77 Cheese 2.77 2.49 Eggs 1.41 1.20 Ice cream 4.51 4.58 % of participants who changed other food consumption over time: Stopped adding salt when cooking 7.3% Stopped adding salt at the table 9.9% Used better butter spread 15.5% Used better milk 16.3% Used better salad dressing 11.9% % of participants who changed weight over time: Gained weight 5% Maintained weight 93.2% Lost weight 1.8% Overall, mean cholesterol levels decreased 9.82 from the initial to 6-month screening. Total mean systolic blood pressure levels decreased by 2.27 mmHg and total mean diastolic blood pressure levels decreased by 1.88 mmHg.

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• Bamberg (1989) • Country: USA • Design: OBS • Follow-up: 13 months • Cost of program per person: N/A • Notes: The complete set of health behaviors that were measured is not clearly specified in the Method section. Therefore, the list of variables may be incomplete.	Employees completed a general health risk appraisal, a detailed assessment of their nutritional intakes, and a measure of Type A personality. The employees' assessment printouts were discussed with each individual and then in small group sessions. Group summary results were used to plan and present health promotion educational programs for the employees. Six programs were presented which included information on gun safety, cancer control by tobacco elimination, hypertension prevention, exercise, nutrition for health, and stress management. These programs were attended by 94% of the employees. Separate smoking cessation and weight reduction programs were also offered.	• Employees of a rural public utility in Alabama • Sample size: 55 • Retention: N/A • Mean age: 42 (range = 21-68) • % female: 18 • % white: 82	*Behavioral variables:* Smoking Alcohol Nutritional intakes Calories* Calcium Saturated fat* Fried foods Eat breakfast Limit sweets Eat variety of foods Exercise* Automobile safety* Occupational safety Recreational safety Sun exposure *Screening variables:* Physician breast exam Pap smear Rectal exam* *Physiological variables*: BMI Pulse Diastolic blood pressure Systolic blood pressure Cholesterol level* *Psychological variables:* Mental health	Self-report, except for measurements of BMI, pulse, blood pressure, and cholesterol	The following are statistically significant changes in compliance. Number of respondents changing from non-compliance to compliance: N (%) Daily calories < 2000 14 (26) Limit saturated fat 15 (27) Walk 1 mile or climb 10 flights of stairs daily 16 (29) Do at least 20 minutes of vigorous exercise more than once a week 14 (26) Participate in less vigorous forms of recreation more than once a week 15 (27) Had rectal exam in past year 14 (26) Daily cholesterol < 300 mg 19 (35) The following are statistically significant mean differences. Follow-up: 0 13 mo. Sodium daily intake in mg 4676.4 3928.5 Percent calories from fat 39.2 36.6 Percent time use seatbelt 42.1 51.1

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Bartlett (1983) • Country: USA • Design: OBS • Follow-up: 3-5 months • Cost of program per person: $6 to analyze HRA • Notes: Significance tests are not reported.	Completed HRA and returned three weeks later to discuss the results of the HRA with their physician. Physicians were encouraged to do the indicated health education and counseling themselves, and/or to refer the patient to the health educator, nurse practitioner, or nutritionist for counseling in individual or class settings.	• Patients of one family practice center • Initial sample size: 69 • Retention: 58% of eligible individuals agreed to participate. 77% of initial participants completed follow-up. • Mean age: 35.6 • % female: 63.8 • % white: N/A	*Behavioral variables:* Smoking Alcohol Exercise Mileage *Screening variables:* Breast self-exam Rectal exam *Physiological variables:* Blood pressure	Self-report	% of persons reporting having made changes over the follow-up period (significance tests are not reported): Stop smoking 27.8% Limit alcohol 20.0% Regular vigorous exercise 41.3% Reduce mileage to under 10,000 miles 23.5% Practice breast self exam 75.0% Get annual rectal exam after age 30 33.3% Reduce or control high blood pressure 60.0%

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Bertera (1993) • Country: USA • Design: OBS • Follow-up: 24 months • Cost of program: N/A • Notes: Same study as Bertera (1990). Note different classification of study design due to different types of analyses presented in each paper.	Participants complete an HRA. Assistance is provided for interpreting appraisal results in groups using a videotaped explanation, and individually through consultation with site medical personnel for all employees who request it. Health promotion activities include: four- to ten-week classes; a bimonthly health and fitness magazine; challenges and incentive programs for fitness, weight control, and smoking; healthy foods in vending machines; and machines and scales available to employees so they can check their own blood pressure and weight.	• Employees in a large, diversified manufacturing company. • Sample size: Intervention sites: 7,178 Control sites: 7,101 • Retention: Response rate was 24.3% in intervention group and 80.3% in comparison group. • Age: 49% were 40 years or older • % female: 27% • % white: 90.4%	*Behavioral variables:* Smoking* Alcohol* Exercise* Seat belt use* *Physiological variables:* Weight (increased)* Systolic blood pressure (increased)* Cholesterol (increased)*	Mostly self-report, including illness days. Information on blood pressure, cholesterol and weight were obtained in most cases from the most recent company physical examination.	High-risk individuals tended to lower risk levels over the follow-up period. However, low-risk individuals increased risk levels in terms of blood pressure, cholesterol, and weight. * denotes significant difference from baseline to follow-up. Low risk / High risk Follow-up: 0 / 24 / 0 / 24 # of drinks/week: 2.6 / 2.5 / 23.2 / 13.3* % time use seat belt: 97.7 / 97.0 / 35.7 / 63.9* Amt (%) overweight: 9.3 / 10.4* / 32.4 / 32.4 Systolic blood pressure: 117.8 / 119.6 / 146.5 / 135.9* Cholesterol: 181.2 / 189.2 / 251.7 / 240.3* # of sick days/year: 2.8 / 2.7 / 4.1 / 3.6* Based on total intervention group: Follow-up: 0 / 24 months % smokers: 22.7 / 18.5 % not exercising: 60.2 / 45.7

Notes. RCT = randomized controlled trial; CCT = controlled clinical trial; CBA = controlled before/after study; OBS = observational study (cohort or simple pre/post).
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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Bjurstrom & Alexiou (1978) • Country: USA • Design: OBS • Follow-up: 12 months • Cost of program per person: $110/year • Notes: No information is provided on rating scales for tobacco use, exercise, risk score, and stress.	After receiving a medical screening, participants began intervention involving a formal exercise program (3 days per week) and a classroom educational program (biweekly). The intervention lasted 15 weeks.	• Employees of New York State Education Department • Sample size: 719 • Retention: 80% at 15 weeks and 61% at 12 months. • Mean Age: N/A • % female: 40 • % white: N/A	*Behavioral variables:* Tobacco* Exercise* *Physiological variables:* Weight* Diastolic blood pressure Systolic blood pressure Cholesterol * Resting EKG *Health status variables:* Cardiovascular risk score* *Psychological variables:* Stress*	Self-report, except for weight, blood pressure, cholesterol, and EKG	Pre-Program and One Year Clinical Data: Pre-Program / First Year Weight (lbs.) 167.7 / 163.9 Percent fat 26.3 / 24.5 Cholesterol 215.7 / 206.1 Pre-program and one year scores on Cardiovascular Disease Risk Factor Estimates: Tobacco .91 / .59 Exercise 5.60 / 2.76 Risk Score 25.78 / 21.81 Stress 2.54 / 2.67

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Conzett (1999) • Country: Switzerland • Design: OBS • Follow-up: 6 months • Cost of program per person: N/A • Notes: Information comes from a conference abstract. Details regarding data collection and measurement are not provided. Statistical tests are not presented.	Completed HRA and received a health profile report. Were interviewed by telephone 2 weeks later to obtain the participants' feedback on the health profile report. Completed telephone interview 6 months later to evaluate the changes in health behavior.	• Individuals randomly sampled from health insurance company list in Thal and from population register in Muri-Gumligen. • Sample size: 244 • Retention: 83% • Mean age: N/A (described as "elderly") • % female: N/A • % white: N/A	*Behavioral variables:* Reduce smoking Reduce alcohol intake Reduce fat intake Increase exercise Wear seat belt *Screening variables:* Hearing control Flu vaccination Cholesterol screening *Psychological variables:* Take care of mood	Self-report	See table below

	# at risk	% who improved
Reduce smoking	22	14 %
Reduce alcohol intake	19	21 %
Reduce fat intake	172	26 %
Increase exercise	54	20 %
Wear seat belt	22	14 %
Hearing control	140	19 %
Flu vaccination	105	7 %
Cholesterol screening	40	40 %
Take care of mood	20	5 %

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Erfurt & Holtyn (1991) • Country: USA • Design: OBS • Follow-up: 12 months • Cost of program per person: $100/year • Notes: Employees of school district paid 50% for preventive services, whereas other employees received them for free.	Four wellness functions were attempted: 1) screening for blood pressure, cholesterol, % overweight, physical fitness, stress, and smoking; 2) referral of employees with high blood pressure or cholesterol to physicians in the community; 3) the provision of on-site wellness programs on a menu approach basis, including one-to-one guided self-help interventions, mini-group sessions; and full-group classes; and 4) long-term follow-up (one-to-one) counseling, on a semi-annual basis, with all employees having CVD risk factors. Each participant received a computerized HRA report mailed to home.	• Employees of a school district, aircraft repair and maintenance service company, and a gasoline service station • Sample size: School: 296 Aircraft company: 77 Gas station: 5 • Retention: 40% of eligible school employees were screened, whereas 100% of other employees were screened. None of the school employees took part in the wellness program or any follow-up activity. • Mean age: N/A • % female: N/A • % white: N/A	*Behavioral variables:* Smoking* *Physiological variables:* % body fat* Diastolic blood pressure * Systolic blood pressure * Cholesterol * Oxygen uptake*	Self-report for smoking only.	One-year change in health parameters: 40% decrease in systolic blood pressure of 140 or higher. 50% decrease in diastolic blood pressure of 90 or higher. 42% decrease in cholesterol of 200 or higher. 23% increase in oxygen update of 40 ml/kg/min or more. 23% decrease in % body fat of 21% or more. 50% decrease in prevalence of cigarette smoking.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Fries & McShane (1998) • Country: USA • Design: OBS • Follow-up: 6 months • Cost of program per person: Standard program = $30/year; High-risk program = $100/year • Notes: Significance tests are not reported. However, given the large sample sizes, even small effects will be statistically significant.	• Group 1: High-risk group • Group 2: Employee comparison group • Group 3: Senior comparison group Members of all groups received the Healthtrac program. This study compares health risk and utilization results across the three groups.	• Group 1: Participants in high-risk Healthtrac program. Majority were members of employee groups. • Group 2: Participants in standard Healthtrac program over the same period as Group 1. • Group 3: Participants in senior Healthtrac program. • Sample size: Group 1: 2,586 Group 2: 50,576 Group 3: 39,076 • Retention: N/A • Mean age: Group 1: 49.7 Group 2: 41.2 Group 3: 73.3 • % female: N/A • % white: N/A	*Behavioral variables:* Smoking Alcohol Dietary fiber Dietary fat Saturated fat Exercise Seat belt use *Physiological variables:* BMI Cholesterol *Health status variables:* Health risk score Global health status *Psychological variables:* Stress	Self-report Program delivered through the mail	% changes in health-related variables from baseline (exception: absolute change is shown for exercise). Positive values represent favorable change. Group 1 % / Group 2 % / Group 3 % Smokers (%): 6 / 8 / 9 Alcohol intake (%): -1 / 2 / 4 Fat (% calories): 9 / 16 / 13 Saturated fat (% calories): 6 / 15 / 14 Exercise min/week: 25 / 9 / 5 Seat belt use (%): 6 / 2 / 1 Stress: 17 / 26 / 0 Global health: 2 / 3 / 3 Health risk score: 11 / 9 / 6

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Fries (1993) • Country: USA • Design: OBS • Follow-up: 24 months • Cost of program per person: $30/year • Notes: Same sample as Leigh et al. (1992). See this study for description of all variables and results from the 12-month follow-up. Although study design is RCT, 24-month analyses do not involve a control group because Group 2 received the intervention in Year 2.	• Group 1: Completed HRA at 1, 6, 12, 18, and 24 months. Received personalized risk report, personalized recommendation letters, newsletters, two books, "other" materials. • Group 2: Completed HRA at 1, 6, 12, 18, and 24 months, but did not receive full health promotion program during initial year • Group 3: Not made aware of program and monitored for insurance claims experience only	• Bank of America retirees in California • Initial sample size: Group 1: 1,606 Group 2: 1,496 Group 3: 1,610 • Retention: 58% at 12 months and 47% at 24 months • Mean age: Group 1: 68.3 Group 2: 68.7 • % female: Group 1: 52.1 Group 2: 54.5 • % white: N/A	*Behavioral variables:* Smoking* Alcohol* Exercise* Exercise program* High salt intake* High dietary fat* Seat belt use < 50%* *Physiological variables:* Overweight Systolic blood pressure Cholesterol *Health status variables:* Health risk score* Sick days *Psychological variables:* Stressed > 25% of time*	Self-report Program delivered through the mail	Group 1 received the intervention during the first year and Group 2 received the intervention during the second year. Results show significant reductions in risk factors from baseline to 24-month follow-up for Groups 1 and 2. Numbers reflect % reduction in risk score from baseline. Group 1 / Group 2 Smoker: 23 / ns Alcohol use: 9 / 9 High salt intake: 43 / 49 High dietary fat: 52 / 50 Exercise (min/week): 14 / 15 Exercise program (%): 21 / 13 Seat belt use: 67 / ns Health risk score: 22 / 18 Stress: 38 / 27

Notes. RCT = randomized controlled trial; CCT = controlled clinical trial; CBA = controlled before/after study; OBS = observational study (cohort or simple pre/post).
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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Fries (1994) • Country: USA • Design: OBS • Follow-up: 12- and 18- months • Cost of program per person: $30/year • Notes: Although study design is RCT, most analyses compare changes in Group 1 only and within the employee, senior, and retiree samples.	• Group 1: Active/Intervention. Completed HRA at 6 or 12 month intervals; were sent personalized reports and recommendation letters, self-management materials, and other educational materials every 6 months. • Group 2: Passive/Intervention. Was assigned to intervention group, but did not return HRA. Were sent self-management materials and other educational materials every 6 months • Group 3: Control. Studied by claims experience only during first year. Provided intervention during second year.	• California Public Employees' Retirement System employees, non-Medicare eligible retirees, and retirees with Medical Supplement coverage administered by Blue Shield of California • Initial sample size: Group 1: 15,899 Group 2: 39,003 Group 3: 2,366 • Retention: 81% at 12 months. N/A at 18 months. • Mean age: 50.9 for employees, 73.5 for seniors, and 63.6 for retirees. • % female: N/A • % white: N/A	*Behavioral variables:* Smoking* Dietary fat* Saturated fat* Exercise* Seat belt use* *Physiological variables:* BMI *Health status variables:* Health risk score* Sick days/year*	Self-report Program delivered through the mail	Analyses using Group 1 only. All changes from baseline are statistically significant.

	Employees		Seniors		Retirees	
Follow-up:	0	18	0	18	0	18
Smokers (%)	8	5	6	5	12	9
Dietary fat (%)	30	24	28	23	30	24
Saturated fat (%)	11	9	10	8	11	9
Exercise (min/wk)	185	200	184	192	213	222
Seat belt use (%)	93	95	91	95	89	94
Health risk scores	18	16	19	16	17	16

	Employees		Seniors		Retirees	
Follow-up:	0	12	0	12	0	12
Sick days	5.5	4.3	4.1	3.4	ns	

Notes. RCT = randomized controlled trial; CCT = controlled clinical trial; CBA = controlled before/after study; OBS = observational study (cohort or simple pre/post).
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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Fries (1992) • Country: USA • Design: OBS • Follow-up: 18- and 30- months • Cost of program per person: $30/year • Notes: Give large sample sizes, even small effects are statistically significant.	Received the Healthtrac program. Completed HRA every 6 months. Received personalized risk report, personalized recommendation letters, newsletters, two books, "other" materials.	• All participants consecutively enrolled in Healthtrac from 01/01/86 – 01/01/91. They were invited to participate by their employer or their health insurer. • Initial sample size: < age 65: 135,093 ≥ age 65: 129,982 • Retention: 20-60% (depending upon group) of eligible individuals agreed to participate. Approximately 50% remained in the program at 30 months. • Mean age: < age 65: 41 ≥ age 65: 68 • % female: N/A • % white: N/A	*Behavioral variables:* Smoking* Alcohol* Salt intake* Dietary fat* Exercise* Seat belt use* *Physiological variables:* BMI* Diastolic blood pressure* Systolic blood pressure* Cholesterol* *Health status variables:* Health risk score* *Psychological variables:* Stress*	Self-report Program delivered through the mail	At 18-month follow-up, found improvement in computed health risk scores of 14.7% in those 65 and over and 18.4% in those under 65 ($p < .0001$). At 30-month follow-up, found improvement in computed health risk scores of 18.8% in those 65 and over and 25.7% in those under 65 ($p < .0001$). Changes in particular health behaviors reported for 18-month follow-up only. % changes in health-related variables from baseline. All percentages represent positive change, except for pounds over ideal weight for younger group and systolic blood pressure for older group. All effects of greater than 1% are statistically significant at $p < .0001$. < 65 years / ≥ 65 years Smokers (%): -12.4 / -20.0 Packs per day: -10.0 / -11.0 Alcohol intake (%): -12.7 / -7.5 Alcohol ounces/day: -12.5 / -12.5 High salt intake (%): -45.8 / -28.7 High dietary fat (%): -49.4 / -49.4 Exercise (%): 6.1 / 12.9 Exercise minutes/week: 14.1 / 22.5 Seat belt use < 50% (%): -45.5 / -12.1 Pounds over ideal weight: .3 / -.7 Diastolic blood pressure: -.2 / -1.3 Systolic blood pressure: -1.2 / .1 Cholesterol: -4.6 / -4.6 Stress: -25.4 / -19.2

Notes. RCT = randomized controlled trial; CCT = controlled clinical trial; CBA = controlled before/after study; OBS = observational study (cohort or simple pre/post).
Only statistically significant effects ($p < .05$) are reported in the Findings section, unless otherwise noted.
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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Goetzel (1994) • Country: USA • Design: OBS • Follow-up: 1 – 5 years • Cost of program per person: N/A • Notes:	"A Plan for Life" program included completing HRA and receiving specific feedback and counseling regarding their health risk status. Prominent features of the program include use of existing community-based health education resources, a range of course offerings, availability at a large number of IBM locations, and program coordination by sites.	• Employees of IBM • Initial sample size: Between May 1985 and April 1991, 93,807 employees completed at least one HRA. Of these, 9,162 also completed a second HRA. The analyses compare high-risk employees who did vs. did not participate in at least one health promotion course during follow-up (participation ranged from 5.1% to 22.6% across topics) • Retention: N/A • Age: 25% were < 35 years • % female: 70 • % white: N/A	*Behavioral variables:* Smoking *Physiological variables:* BMI Diastolic blood pressure Systolic blood pressure Cholesterol (total, HDL, non-HDL)	Self-report of smoking only. Information on BMI, blood pressure, and cholesterol collected by a health professional.	Number (%) of participants initially at high risk who were no longer at high risk at follow-up Participants / Non-participants Current smoker: 39 (49.2%) / 376 (33.0%) BMI ≥ 30: 48 (19.6%) / 147 (17.5%) Systolic blood pressure ≥ 140 mm Hg or diastolic blood pressure ≥ 90 mm Hg: 158 (60.8%) / 611 (46.8%) Total cholesterol ≥ 240 mg/dL: 247 (54.3%) / 978 (46.7%) Non-HDL cholesterol ≥ 190 mg/dL: 251 (53.2%) / 1042 (44.4%)

Notes. RCT = randomized controlled trial; CCT = controlled clinical trial; CBA = controlled before/after study; OBS = observational study (cohort or simple pre/post).
Only statistically significant effects ($p < .05$) are reported in the Findings section, unless otherwise noted.
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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Goetzel (1996) • Country: USA • Design: OBS • Follow-up: 1 – 5 years (mean = 3.3 years) • Cost of program per person: N/A • Notes:	Live for Life program included general employee screening; lifestyle improvement programs such as smoking cessation, weight control, stress management, nutrition education, fitness, ergonomics, and blood pressure intervention; and targeted high-risk programs. Participants received a quarterly newsletter. Special events, education, and action/goal-oriented challenges and contest were also offered regularly.	• Self-selected employees of Duke University • Initial sample size: 4,424 • Retention: 1,868 employees who completed the baseline health profile and had participated in the program for at least 1 year were randomly chosen to participate in the follow-up. Of these, 1,540 (82%) participated. • Age: 25% were < 35 years • % female: 70 • % white: N/A	*Behavioral variables:* Tobacco use* Alcohol* Dietary fat* Dietary fiber* Exercise* Motor vehicle safety* *Physiological variables:* Weight control (increased)* Blood pressure management (increased)* Cholesterol management* *Psychological variables:* Stress management* General well-being*	Self-report, except for measurements of blood pressure and cholesterol	% of participants who needed improvement at Time 1 and Time 2. Time 1 / Time 2 Tobacco use 15% 12% Alcohol 11% 8% Dietary fat 42% 36% Dietary fiber 71% 62% Exercise 76% 67% Motor vehicle safety 31% 13% Cholesterol management 39% 32% Stress management 37% 34% General well-being 45% 34% Weight control 57% 61% Blood pressure management 11% 14% Note that need for weight control and blood pressure management *increased* over time.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Goetzel (1998) • Country: USA • Design: OBS • Follow-up: 36 months • Cost of program per person: N/A • Notes: This study compares participants and nonparticipants in worksite program	"Health check" involved completing health profile questionnaires. Participants received individualized reports outlining health status in relation to specific risk areas. Participants determined to be at high risk were provided one-to-one counseling and behavior change support by clinical staff. Quarterly follow-ups were conducted by health professionals. Ancillary health support programs included fitness flex time, on-site aerobics, diet/weight management programs, cholesterol and blood pressure education, smoking cessation programs, brown bag education programs, annual mammography screening, voluntary health screening, and exercise incentives such as participation prizes.	• Procter & Gamble employees in Cincinnati who were continuously employed between Jan 1990-Dec 1992 and were eligible for the company's medical benefits plan. • Initial sample size: Participants: 3,993 Nonparticipants: 4,341 • Retention: N/A • Age: < 25 years: 7% 25-54 years: 87% ≥ 55 years: 6% • % female: 48 • % white: 81	*Health status variables:* Annual lifestyle-related hospital admissions Annual lifestyle-related hospital bed days	Self-report	Although not statistically significant, non-participants experienced 25% more lifestyle-related hospital admissions per 1,000 employees when compared with participants (22 vs. 17, respectively) in the third year of participation and 28% more lifestyle-related hospital days per 1,000 employees (106 vs. 83, respectively) after adjustment for age and gender.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Grana (1991) • Country: USA • Design: OBS • Follow-up: 48 months • Cost of program per person: N/A • Notes: This study compares participants and nonparticipants, on costs, as well as participants who completed HRA at two time points on health behaviors and health status.	"Champions for Life" included HRA; courses in CPR training, weight control, and smoking cessation; two company-wide events to encourage exercise; a one day competition in physical exercise events; and an event over a one-month period in which persons were encouraged to walk, jog or run the equivalent of a marathon. A fitness center was opened during the study period. On-site staff included an administrator, a health and fitness specialist, and an exercise physiologist.	• Champion International Corp. hourly workers in Canton, North Carolina who were employed from 1983-1986 and for whom medical care claims were available over the same period. • Initial sample size: Participants: 1,272 Nonparticipants: 401 878 employees completed HRA in 1984 and 1988. • Retention: N/A • Mean age: N/A • % female: N/A • % white: N/A	*Behavioral variables:* Smoking* Alcohol Exercise* Seat belt use* *Physiological variables:* Weight (Sheldon index)* Diastolic blood pressure Systolic blood pressure Cholesterol HDL* *Health status variables:* Heart attack mortality* Cancer mortality* Stroke mortality* Vehicle accident mortality* Total mortality* *Psychological variables:* Type A*	Self-report , except for weight, blood pressure, and cholesterol.	Health risk indicators for 878 program participants at baseline and follow-up. Follow-up: 0 / 48 mo. Smoking .33 / .26 Exercise 4251.4 / 4866.0 No seat belt use .72 / .17 Weight (Sheldon index†) 12.42 / 12.35 HDL 42.76 / 46.95 Heart attack mortality 1.04 / .74 Cancer mortality .86 / .79 Stroke mortality 1.37 / 1.07 Vehicle accidence mortality 1.01 / .84 Total mortality .97 / .87 Type A score 47.06 / 45.66 †Index is scored such that weight increased from Time 1 to Time 2.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Hall (1979) • Country: USA • Design: OBS • Follow-up: Academic year • Cost of program per person: N/A • Notes:	At beginning of course, students were given HRA. Individual printouts were distributed and discussed. Throughout the course, the printouts were referred to often in an attempt to personalize the course content. A health contract agreement was also completed by each student.	• Students registered in a personal health course at the University of Tennessee, Knoxville • Initial sample size: 55 • Retention: 85% • Mean age: N/A • % female: N/A • % white: N/A	*Physiological variables:* Diastolic blood pressure Systolic blood pressure* Weight *Health status variables:* Risk age Achievable age Risk percentage above or below average Potential risk reduction percentage*	Self-report, except for blood pressure and weight	Significant changes were found on systolic blood pressure (which *increased* from pre- to post-test) and potential risk reduction percentage (which decreased) Sum of signed ranks (Wilcoxon matched pair): - Ranks / + Ranks Systolic blood pressure: 8 / 29 Potential risk reduction: 24 / 9

Notes. RCT = randomized controlled trial; CCT = controlled clinical trial; CBA = controlled before/after study; OBS = observational study (cohort or simple pre/post).
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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Henritze (1992) • Country: USA • Design: OBS • Follow-up: 2 months • Cost of program per person: $32 • Notes:	LIFECHECK is a cardiovascular risk identification and modification program. Initial 30-minute screening included height, weight, blood pressure, cholesterol, smoking history, weekly Kcal expenditure, self-rating of health, and health effects of stress. Participants then met with counselor who reviewed results and referred them to the appropriate intervention activities. An 8-week intervention included an activity competition and activity classes; nutrition, hypertension, smoking and lipid classes; a smoke-out day; one-on-one counseling; exercise equipment at four worksites; posters; traymats; table tents; and electronic messages.	• Employees of Coors Brewing Company • Initial sample size: 692 • Retention: 52% of eligible employees participated in initial screening. 499 (72%) of those eligible completed the follow-up screening. • Mean age: 42.6 • % female: 23 • % white: 86	*Behavioral variables:* Physical activity* *Physiological variables:* Systolic blood pressure* Cholesterol* Weight* *Health status variables:* Framingham score* (risk of IHD in 8 years)	Self-report, except for blood pressure, cholesterol, and weight	Significant changes were found on the following parameters: Follow-up: 0 — 2 months Physical activity (times/week): 2.48 — 3.98 Systolic blood pressure: 123.18 — 121.33 Total cholesterol: 201.85 — 199.45 Weight (lbs): 180.04 — 178.22 Framingham score: .031 — .029

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Kellerman (1992) • Country: USA • Design: OBS • Follow-up: 8 months • Cost of program per person: N/A • Notes: Statistical tests are not reported for some analyses.	Employees completed an HRA and health screening. They received their results at individual counseling sessions conducted by health educators and nurses 6 weeks later. Six months following the initial intervention, an identical follow-up screening was conducted. Eight months following the initial intervention, a health behavior questionnaire was administered designed to determine the impact of the HRA on select health-related behaviors and subjects' recall level of HRA recommendations.	• Employees of a textile plans in North Carolina • Initial sample size: 136 • Retention: Of 600 employees, 300 volunteered to complete HRA and health screening. 240 (80%) of these attended counseling sessions. 162 (54%) completed second health screening at 6 month follow-up. 136 (45%) completed the health behavior questionnaire at 8 month follow-up. • Mean age: 38.7 • % female: 86 • % white: 54	*Behavioral variables:* Tobacco use High fat foods Salt Breast self-exams Seat belt use *Screening variables:* Pap smear Rectal exam *Physiological variables:* Weight Blood pressure Cholesterol	Self-report, except for weight, blood pressure, and cholesterol	Participants reported on whether or not they had changed particular behaviors. No statistical tests are reported. Behavior change — % reporting behavior change: Eating fewer high-fat foods 78 Performing regular BSE 59 Eating less salt 54 Losing weight 47 Increasing use of seat belts 47 Had a Pap smear 40 Had a rectal exam 23 Cut down or stopped using tobacco 10 No changes 7 Relationship between recommendations for behavior change and self-reported changes: Change behavior? — Yes / No / χ^2 Blood pressure Recommended change 12 / 5 / 58.51* No recommendation 6 / 119 Cholesterol Recommended change 77 / 5 / 1.91, ns No recommendation 47 / 7 Body weight Recommended change 101 / 11 / 1.21, ns No recommendation 17 / 5

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Pilon & Renfroe (1990) • Country: USA • Design: OBS • Follow-up: 12 months • Cost of program per person: N/A • Notes:	Program consisted of a comprehensive lifestyle questionnaire, laboratory data, physical assessment by an occupational health nurse, and confidential written explanation of the results to the employee with follow-up recommendations for specific interventions. Follow up classes were conducted by nurses to help employees interpret the data. All employees were encouraged to make private appointments with the occupational health nurse to discuss individual results. During the time of the study, various classess were offered by nurses. High-risk employees were seen quarterly thereafter and other employees were seen annually.	• Hospital employees in a large South Central hospital • Sample size: 983 • Retention: N/A • Mean age: 38.95 • % female: 73.6 • % white: 61.2	*Behavioral variables:* Smoking* *Physiological variables:* Weight Diastolic blood pressure* Cholesterol*	Self-report, except for weight, blood pressure, and cholesterol	Changes in health parameters from Year 1 to Year 2 Follow-up: 0 12 mo. Diastolic blood pressure 77.5 75.7 Cholesterol 220.9 216.2 Smoking: 67 participants decreased smoking, 224 did not change, and 27 increased smoking.

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Powell (1996) • Country: USA • Design: OBS • Follow-up: 3 months • Cost of program per person: N/A • Notes: Small sample size	Soldiers were administered an HRA and those at risk for CHD by having an elevated serum cholesterol level were identified. They were enrolled in a cholesterol intervention program conducted by a registered dietitian. It consisted of a series of five cholesterol nutrition education classes. This study compares 12 individuals who dropped out of the class versus 18 who completed all five classes.	• Active duty noncommissioned and commissioned officers who were assigned to a US military installation in the Southwest. They were chosen for the intervention based on elevated cholesterol level. • Initial sample size: 59 • Retention: Demographic and risk factor information was available for 30 of the 59 laboratory cholesterol records. Only 18 of these 30 individual completed the cholesterol course. • Mean age: 38 • % female: 10 • % white: 47	*Physiological variables:* Cholesterol*	Physiological measurement	Decreases in serum cholesterol occurred for both groups, and no differences emerged between those soldiers who fully complied with the nutrition education classes and those who failed to complete the program. Follow-up: 0 3 mo. Group 1 (dropouts) TC 232.39 217.83 HDL 43.26 41.74 (p>.05) LDL 162.61 149.65 Group 2 (completed) TC 241.81 230.22 HDL 46.69 44.58 LDL 168.69 156.67

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Rodnick (1982) • Country: USA • Design: OBS • Follow-up: 12 months • Cost of program per person: N/A • Notes:	Employees received a letter from the company president urging them to participate in a program where they would get a physical exam and complete an HRA. After the exam/HRA, a group meeting was held with a health educator who reviewed the general idea and interpretation of the HRA and the meaning of the tests and blood chemistries. In addition, pamphlets discussing hypertension, heart disease, and cancer were distributed. All participants having abnormal results were urged to see their physician and were subsequently personally contacted by the plant nurse. The nurse was also available to discuss individual HRAs and test results.	• Employees of Optical Coating Laboratory in Santa Rosa, CA. • Sample size: 292 • Retention: N/A • Mean age: 36.5 • % female: 41 • % white: N/A	*Behavioral variables:* Smoking Alcohol* Exercise* Seat belt use* *Screening variables:* Physician breast exam* Breast self-exam *Physiological variables:* Weight Blood pressure* Cholesterol *Health status variables:* Risk age*	Self-report, except for weight, blood pressure, and cholesterol	% of participants who reported no change, increase, or decrease in the health parameters at follow-up. No change / Increase / Decrease Alcohol (men): 77% ++ Exercise (women): 51% 33% 16% Seat belt use (men): 84% 12% 4% Physician breast exam: 75% 18% 7% Blood pressure: 63% 13% 24% Risk age: At baseline, the average risk age was younger than the true age for both men and women (difference: 0.60 and 1.32 years, respectively). This difference between average risk age and true age significantly increased by follow-up (difference: 2.37 and 1.58 years, respectively). ++ Change depended on age group Age / Avg. change (drinks/wk.) 20-24 +13 25-29 -1 30-34 -4 35-39 -8 40-44 -16 45-49 -3 50-54 -- 55-59 -7 60-64 --

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Stonecipher & Hyner (1993a) • Country: USA • Design: OBS • Follow-up: 10 weeks • Cost of program per person: N/A • Notes: Same study as Stonecipher & Hyner (1993b), which did not compare participants to nonparticipants. These results were published in the American Journal of Health Promotion	Employees completed an initial questionnaire assessing demographic information and health practices. One week later, employees received a health screening and completed an HRA. Results were returned to employees 2 weeks later. A health education specialist explained the health risk assessment computerized feedback and the physiologic assessments. A question and answer period followed the educational session. Employees at high risk of cardiovascular disease were advised to see their personal physician. Approximately 10 weeks after the health screening follow-up session, the post-screening questionnaire was distributed to all employees.	• Employees of a manufacturing company in Indiana • Initial sample size: 403 • Retention: 227 (56%) completed both assessments • Mean age: 38.4 • % female: 15.5 • % white: 92.6	*Behavioral variables:* Use illicit substances Practice safe sex Drive while drunk Ride a motorcycle Drive within speed limit Consume alcohol Smoke Eat high fiber foods* Sleep 7-8 hours/night Wear a seat belt Eat breakfast Monitor weight Limit salt* Moderate exercise Limit sugar* Snack between meals Limit red meat Reserve exercise time* *Psychological variables:* Feel depressed Try to relieve tension	Self-report, except for weight, blood pressure, and cholesterol	Employees who participated in the screening significantly improved four out of 20 health practices over the follow-up period. Nonparticipants failed to show improvement in any of the health practices. Mean health practice scores for participants and nonparticipants: Participants: Follow-up 0 / 10 wks; Nonparticipants: 0 / 10 wks Limit salt: 2.89 / 3.21 / 2.90 / 2.71 Limit sugar: 2.89 / 3.11 / 3.00 / 2.71 Eat high fiber foods: 3.25 / 3.52 / 3.32 / 3.28 Reserve exercise time: 2.40 / 2.69 / 2.53 / 2.48

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Study	Intervention	Initial sample size and characteristics	Variables assessed at baseline and follow-up	Method of data collection	Findings
• Stonecipher & Hyner (1993b) • Country: USA • Design: OBS • Follow-up: 10 weeks • Cost of program per person: N/A • Notes: Same study as Stonecipher & Hyner (1993a), which compared participants to nonparticipants. These results were published in JOM.	Employees completed an initial questionnaire assessing demographic information and health practices. One week later, employees received a health screening and completed an HRA. Results were returned to employees 2 weeks later. A health education specialist explained the health risk assessment computerized feedback and the physiologic assessments. A question and answer period followed the educational session. Employees at high risk of cardiovascular disease were advised to see their personal physician. Approximately 10 weeks after the health screening follow-up session, the post-screening questionnaire was distributed to all employees.	• Employees of a manufacturing company in Indiana • Initial sample size: 403 • Retention: 227 (56%) completed both assessments • Mean age: 38.4 • % female: 15.5 • % white: 92.6	*Behavioral variables:* Use illicit substances Practice safe sex Drive while drunk Ride a motorcycle Drive within speed limit Consume alcohol Smoke Eat high fiber foods Sleep 7-8 hours/night Wear a seat belt Eat breakfast Monitor weight Limit salt* Moderate exercise Limit sugar* Snack between meals Limit red meat Reserve exercise time *Psychological variables:* Feel depressed Try to relieve tension	Self-report, except for weight, blood pressure, and cholesterol	Both female and male employees who participated in the screening tended to use less salt and less sugar after the screening compared with prescreening consumption, but the positive change for women was larger than for men (exact scores are not provided).
Study	**Intervention**	**Initial sample size and**	**Variables assessed at**	**Method of data**	**Findings**

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		characteristics	**baseline and follow-up**	**collection**	
• Uriri & Thatcher-Winger (1995) • Country: USA • Design: OBS • Follow-up: 12 months • Cost of program per person: N/A • Notes:	Completed HRA as part of their initial clinical assessment. HRA results were used to design individualized care plans for patients. In addition to the individualized health maintenance/promotion interventions, patients were also offered a health promotion program with a different topic and activity each month. Patients were encouraged to participate in these programs along with their individual activities. HRAs were completed again at 6- and 12-months follow-ups.	• Patients of a community-based clinic and enrolled in the North Little Rock Community Senior Health Services Project. • Sample size: 68 • Retention: N/A • Mean age: 79 (range = 65 – 98) • % female: 81 • % white: 32	*Behavioral variables:* Fiber in diet Fat in diet* Exercise* Seat belt use* *Screening variables:* Mammogram* Physician breast exam* Breast self-exam* Rectal exam* *Health status variables:* Global health status*	Self-report	No significant changes from baseline were found on any of the nine parameters at 6-month follow-up. Significant changes from baseline to the 12-month follow-up were found on the following: % of participants Follow-up: 0 12 mo. Eat foods high in fat 84% 71% Exercise at least 3x/week 38% 58% Always use seatbelt 38% 70% Monthly breast self-exams increased 5% Had professional breast exam 32% 48% Never had mammogram 53% 31% Never had rectal exam 25% 16% Rated health as "good" 42% 47%

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