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The Effect of the Cooper Wellness Program in Promoting Long-Term Lifestyle Behavior Changes

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by

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Each person whose signature appears below certifies that this dissertation in his/her opinion, is adequate in scope and quality as a dissertation for the degree Doctor of Public Health.

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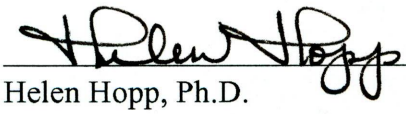

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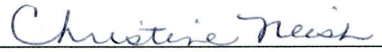

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ABSTRACT OF DISSERTATION

The Effectiveness Of The Cooper Wellness Program In Promoting Long-Term Lifestyle Behavior Change

by

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Most research on health behavior change programs examines their effectiveness in producing initial behavior changes, but fails to evaluate long-term maintenance of those changes. This study examined the effectiveness of the Cooper Wellness Program (CWP) in Dallas, Texas, in promoting maintenance of lifestyle behavior changes for one year or longer in the areas of diet, exercise, and stress management.

The CWP offers an intensive live-in lifestyle behavior modification program in four-, seven-, or 13-day formats. Data were collected from 223 individuals who attended the CWP between January, 1989, to February, 1992. The study addressed the following areas: 1) long-term maintenance rates of CWP participants for diet, exercise, and stress management, 2) differences in these rates between the three program-formats, and 3) factors related to the maintenance or relapse of these behaviors. Maintenance of overall lifestyle change was evaluated using a Composite Score (CS) calculated according to specific criteria established for each of the three areas. The American College of Sports Medicine's recommendation for exercise was used as the standard for the exercise component; since no standard criteria exist in the current literature for successful maintenance of diet and stress management behaviors, specific criteria were arbitrarily established for purposes of this study.

Analysis indicated 29.9% (n=158) of the respondents obtained a maximum Composite Score, i.e. reached or surpassed the standards established for diet, exercise, and stress management. Separate maintenance rates were high for exercise (81.1%) and stress management (98.1%) and low for dietary behaviors (31.8%). There were no significant differences in Composite Scores among the three program-formats ($p = .645$). While spousal support was not a significant predictor for long-term maintenance in any of the behaviors, "Lack of an exercise partner" was seen as a significant ($p<.001$) barrier to exercise for non-exercisers compared to successful exercise maintainers, as well as "Lack of exercise facilities" ($p=.022$) and "Boredom" ($p<.0001$). Respondents whose Composite Score indicated successful maintenance in all three areas rated the expertise of the program staff as the most helpful aspect of the CWP, and post-program follow-up support as the least helpful.

Although caution must be used in generalizing the results of this study to other programs, due in part to the relatively low survey response rate (31%) , these findings suggest that a live-in, multi-intervention lifestyle behavior modification program can promote long-term maintenance of specific healthy behaviors. Implications for health behavior change programs and preventive health care are: 1) the need for standardized criteria for evaluating successful maintenance of healthy behaviors, especially in stress management and diet, 2) the need for post-program support and follow-up, and 3) continued study of the impact of spousal support and length of program on long-term maintenance rates.

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Acknowledgments

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Chapter 1: INTRODUCTION

Definition of the Problem

Given recent concern regarding the high cost of health care today, prevention of disease through health promotion and education is becoming an increasingly attractive alternative to the high cost of treating disease. A large part of the nation's health care resources are devoted to the treatment of chronic diseases, such as heart disease, cancer, obesity, and Type II diabetes. These types of diseases have been attributed largely to unhealthy lifestyle behaviors, such as consumption of high-fat diets, lack of exercise, smoking, and unmanaged stress. The goal of health promotion and education programs is to replace unhealthy lifestyle behaviors with healthy ones, thereby reducing the risk of disease, and eventually reducing health care costs.

While much research has focused on the effectiveness of these programs in initiating health behavior changes, little research has been done on the long-term (one year or longer) maintenance of these behavior changes. Also, very few studies have been conducted on live-in multi-intervention wellness programs which offer intensive lifestyle behavior interventions compared to other programs. The effectiveness of attempting to change several lifestyle behaviors at the same time needs to be studied further. While it may seem cost-effective and efficacious to attempt to alter more than one behavior at a time, this may in fact overwhelm participants. The efficacy of targeting entire lifestyle change is still unclear at this point. This study explores this issue through an examination of long-term maintenance of healthy lifestyle behaviors learned in an intensive live-in, multi-intervention wellness program.

Purpose of the Study/Research Goals

The purpose of this study was to examine the effectiveness of the Cooper Wellness Program (CWP) in promoting long-term lifestyle behavior changes in the areas of diet, stress management, and exercise, and if these changes persisted for a minimum of one

year. Also, factors contributing to maintenance or relapse of behavior changes were identified.

Specific Research Questions:

1. What were the maintenance rates of CWP alumni for exercise, diet, and stress management techniques targeted by the CWP, one to two years post-program?
2. Was there a difference in maintenance rates between the three CWP program lengths (four-day, seven-day, and 13-day)?
3. What aspects of the program were related to maintenance of healthy behaviors?

Definitions:

CWP: Cooper Wellness Program, Dallas, TX

CWP Alumni: CWP participant who completed one of the three intervention formats of the CWP (four-day, seven-day, or 13-day formats).

Relapse: Resumption of a previous undesired behavior(s).

Long-term maintenance: Minimum one-year post-treatment.

Adherence: Maintenance of desired behavior patterns.

Diet adherence: Practicing six or more of the eight CWP-recommended dietary behaviors. (See p.50 for list of specific behaviors.)

Exercise adherence: Participation in moderate, continuous exertion for a duration of at least 20 minutes, three or more days a week. Based on the *American College of Sports Medicine* (1986) exercise guidelines.

Stress management adherence : Participants indicate that they are: 1) managing their stress "well" or "fairly well"; 2) and "seldom" or "almost never" use substances such as alcohol, tobacco products, or other medications to manage their stress.

Assumptions and Limitations of the Study

One of the main assumptions of this study was that positive lifestyle changes, such as reducing the intake of saturated fat in the diet, increasing exercise, and practicing stress management techniques, reduce the risk of disease--mainly coronary heart disease. There is considerable evidence in the literature supporting the effects of positive lifestyle changes on coronary heart disease (Barnard, 1991; Blair, Kohl, Paffenbarger, Clark, Cooper, & Gibbons, 1989; Burke, Sprafka, Folsom, Hahn, Luepker, & Blackburn, 1991; Castelli, Garrison, Wilson, Abbott, Kalousdian, & Kannel, 1986; Hill, Thiel, Heller, Markon, Fletcher, & DeGirolamo, 1989; Kannel, Wilson, & Blair, 1985; Leon, 1985; Mersy, 1991; Ornish, Brown, Scherwitz, Billings, Armstrong, Ports, McLanahan, Kirkeeide, Brand, & Gould, 1990; Paffenbarger, Wing, & Hyde, 1978; Runyan, 1989). The purpose of this study was not to see if attendance at the CWP decreased risk of disease, but to determine if participation in an intensive multi-intervention program promoted long-term maintenance of lifestyle changes.

This study also assumed that self-reported data reflected actual practices of the participants. Lifestyle behavior data were collected from self-reported information in CWP's intake medical questionnaires and follow-up surveys. Self-reported measures are always suspect to a number of biases, including those due to problematic recall and social desirability, and thus constitute a study limitation. Many studies have attempted to validate the efficacy of self-reported measures and concluded that such tools are reliable instruments for certain variables such as diet and exercise (Baranowski, 1988; Blair, Dowda, Pate, Kronenfeld, Howe, Parker, Blair, & Fridinger, 1991; Blair, Haskell, Paffenbarger, Vranizan, Farquhar, & Wood, 1985; Dishman & Steinhardt, 1988; Gionet & Godin, 1989; Godin, Jobin, & Bouillon, 1986; Lee & Owen, 1986). In this study, attempts were made to minimize biases by assuring CWP alumni that confidentiality would be maintained, thus encouraging honesty in reporting.

The most common way of assessing dietary behavior is through measuring the number of servings consumed for various foods. The nutrition intervention component of the CWP, however, does not focus on monitoring numbers of servings for each of the food groups, but on the adoption of positive dietary behaviors, such as reading labels for fat and calorie content. The CWP, and this study, assumed that the adoption of such behaviors reflects an improvement of the participant's overall dietary behavior, while avoiding the problems associated with counting numbers of servings eaten, such as misestimation of servings amounts and sizes.

Another assumption of this study was that the respondents were representative of the total sample; however, with only a 31% return rate of follow-up surveys, this assumption is questioned. The low response rate is indicative of self-selection bias that limits the generalizability of the results, statistical power, and the ability to control possible confounders. Lee and Owen (1986) noted that people who respond to an initial mailing of a survey are not representative of the entire population of potential participants. In the current study, a comparison of demographic information and pre-program behaviors of responders and non-responders revealed that the two groups were not statistically different; however, there may be other differences between the two groups that were not assessed that may limit the generalizability of this study. The small sample size used in this study was due to a lack of resources for continued follow-up of nonresponders. A complimentary four-day program was used as an incentive to increase the response rates; however, this may also have introduced a bias--those who wanted to return to the CWP would have entered while those who either did not care to return or did not have the time to return would have been less motivated by this incentive to return their follow-up surveys.

The use of physiological variables, such as percent body fat measured by hydrostatic weighing, graded exercise stress test on the treadmill, and complete blood panel for assessing compliance with health behavior changes, would have been ideal to assess post-program since pre-program values, measured on the first day of the program, were

available in the medical charts. This was considered impractical for the purposes of this study, however, since it was not known how many CWP alumni would have repeated, such a complete assessment 12 months after leaving the CWP. Also, no resources were available to make provisions for re-testing. The mailed survey asked participants to provide such information, if it was known or available to them, but the majority of respondents left that section of the survey blank.

Despite these assumptions and limitations, the study has merit, contributing to the body of knowledge both on long-term maintenance rates of wellness programs and on multi-intervention. Through careful analysis of the limitations of this study, future research studies may be devised to improve the generalizability of the conclusions. This study also offered the CWP feedback on strengths and areas for improvement, by providing a forum for CWP alumni to voice their opinions and comments about the CWP in a confidential way.

Chapter 2: LITERATURE REVIEW

The majority of studies that evaluate the effectiveness of health promotion programs in achieving long-term maintenance of behavior change focus on three areas: (1) initiation of behavior change; (2) psychological factors associated with behavior change, such as self-efficacy, self-motivation, and locus of control; and (3) physiological outcomes as a measure of intervention success (weight lost, increased volume of maximal oxygen uptake, etc.). Although these are important aspects in the evaluation of health behavior change programs, little attention has been directed towards the maintenance and adherence rates of newly learned behaviors. This review identifies the limited number of studies that deal with maintenance and adherence rates of new health behaviors as a result of intervention programs. Collection periods for follow-up data ranged from three months to four years post-program. Studies of programs targeting individual health behaviors will be presented first, followed by studies of multi-intervention programs.

Exercise Programs

Martin, Dubbert, Katell, Thompson, Raczynski, and Lake (1984) studied 143 healthy sedentary adults enrolled in a three-month exercise program over a four-year period. During the four years, a series of six studies were conducted to test various techniques and strategies in acquiring and maintaining adherence to exercise behavior. Maintenance was defined as exercising for at least three times per week for at least 30 minutes each session.

Over the four-year period, maintenance rates for exercise at the three-month follow-up evaluation ranged from 47% to 87%. One study found a 67% maintenance rate at the six-month follow-up evaluation . Factors associated with long-term maintenance of exercise included: receiving positive feedback during the exercise session, focusing on the environment or external thoughts while exercising, being involved with personal goal

setting, and re-evaluating and setting goals after five weeks. In one study, non-maintainers cited inclement weather (71%) and loss of an exercise partner (33%) as the main reasons for not maintaining their exercise programs. Their final study examined one-year follow-up data among three different intervention groups. Maintenance rates ranged between 83.3% to 100%; however, these results must be viewed with caution since there were significant limitations in this study. An "overzealous" instructor in one group arranged meetings several times after the end of the formal course which were not part of the study. Several members in another group also formed their own group and exercised together during the follow-up period. The authors did conclude, however, that better-designed maintenance programs would improve long-term maintenance rates.

Welsh, Labbé, and Delaney (1991) tested the effect of cognitive strategies, such as positive self-statements, on the activity level of 26 sedentary women during a six-week jogging program. At the six month follow-up point, only 17 of the women could be contacted, and of these, only 11 indicated that they were still exercising regularly, yielding an adherence rate of 64%, according to the authors. While the authors reported their findings as "encouraging" compared to generally reported rates (Martin & Dubbert, 1982), this statement is misleading. Their reported 64% rate was essentially a "convenience adherence rate" because it was based on only those subjects the researchers were able to reach, not the total number of women who initially enrolled in and/or completed the program. If those not contacted, or who dropped out, were considered "non-maintainers", the adherence rate would drop to 42%. This study concluded that positive self-statements did not enhance adherence, since they were most likely overridden by the frequent positive reinforcements from the instructors and support from the group. No one-year follow-up data were reported.

In a study demonstrating the difficulty of follow-up (Lee and Owen, 1986), 372 people who participated in an exercise program for three months were sent a survey by mail six-and-a-half months after completion of the program. Of the 372 subjects, the

authors achieved a 90% response rate after two mailings and a phone call over a six-month period. The overall long-term maintenance rate of exercise achieved at six-and-a-half-months was 33%. The authors found that the majority of exercisers (44%) responded to the first follow-up attempt. This suggests that those who answer the first mailing may not be representative of the total population.

While most of the previous exercise studies conducted long-term follow-ups of less than one year post-program, a study by Kriska, Bayles, Cauley, Laporte, Sandler, and Pambianco (1986) followed participants for two years post-program. To study compliance to a walking program, 229 postmenopausal women were randomly assigned to either a walking group (n=114, intervention group) or a control group (n=115). The walkers participated in an eight-week training period, after which they continued to exercise on their own and recorded their walking sessions on monthly log sheets. To be counted as an exercise maintainer, they had to walk an average of seven miles per week, over a two year period. Of those in the intervention group, 61% were considered maintainers. Even though the other women in the intervention group were considered non-maintainers based on the walking criteria, 80% of them had walked an average of five miles per week over the two year period. Maintainers tended to be more active, weighed less, and were non-smokers at baseline. The primary factor that differentiated the compliers from non-compliers however, was frequency of illness. Maintainers reported significantly fewer illness episodes than non-maintainers.

In all the studies that analyzed follow-up data at several different times, adherence rates dropped, and continued to drop, over time. This indicates that most exercise programs were fairly effective in initiating adoption of exercise behaviors, but not as were effective in maintaining those behaviors over time. More studies are needed that will plan to conduct follow-up for at least one year, and explore strategies for improving long-term maintenance of exercise behaviors.

Adherence to ACSM guidelines (three times per week, 15-20 minutes per session)

seemed to be the standard criterion for determination of a compliant exerciser in most of these exercise studies. As the authors of one study stated, however, (Kriska et al., 1986), a sizable portion of subjects were exercising regularly as a result of the program, but did not fit the criteria to be classed with the compliant group. More discussion is needed in order to establish an acceptable scale for measuring exercising compliance.

Nutritional Behavior Change Programs

Most of the studies evaluating nutrition behavior change programs examined outcome (weight loss) rather than maintenance of healthy behaviors or eating patterns. There are several possible explanations for this. First, maintenance of any weight lost post-program is usually considered reflective of healthy eating behaviors. Another explanation may be that it is more convenient, and presumably more effective, to measure and evaluate weight changes during follow-up than to assess eating patterns. Finally, there is no need to rely on self-reports for data collection to assess weight gained or lost as maintenance criteria. No studies were found that looked specifically at long-term maintenance of dietary behaviors, as was done in this present study; however, since dietary behavior and weight are assumed to be correlated, this review briefly summarizes studies that address long-term maintenance of weight loss outcome.

Initially successful results from weight loss programs tend to diminish over time after a program. One study measured the body weights of 152 participants on a yearly basis for four years found that, despite significant weight loss at the end of the 15-week behavioral weight loss program, the group regained most of their lost weight during the follow-up period (Kramer, Jeffery, Forster, & Snell, 1989). Overall, the maintenance rate for stable weight loss was 0.9% for the men and 5.3% for the women indicating that women tended to maintain their weight losses over the follow-up period better than men. Approximately 70% of men regained weight during the follow-up, compared to only 36.8% of women.

In another study, a small sample of 32 participants recruited from an advertisement in a newspaper attended an initial 12-week weight loss program, after which all participants were matched based on weight lost (Baum, Clark, & Sandler, 1991). One member of each pair was randomly assigned to one of two experimental groups who received "booster" sessions consisting of relapse-prevention training, with the other member going to the control group.

At three months, 66.7% of the experimental group continued to lose weight, but this diminished to 13.3% by the one year follow-up point. Even though only 13.3% of the experimental group continued to lose weight by the one year follow-up, 46.1% of this group maintained the weight they had lost at post-program. Control group members fared much worse throughout the one year follow-up, with the percentage of the group still losing weight also decreasing over time. At the 12-month follow-up, only 20.2% of the controls maintained their therapy-induced weight loss; none of the controls maintained their weight loss below the 20%- overweight category (compared to 20% of the experimental group). Relapse-prevention training seemed to be an effective tool in helping participants in the experimental group maintain their weights lost.

Del Prete, English, Caldwell, Banspach, and Lefebvre (1993) surveyed 229 former participants of the Pawtucket Heart Health Program during 1985-1987. During this follow-up interview (anywhere from one to three years post-program), 80% of the participants reported that they had lost weight at the completion of the program; however, only 65% of the subjects said their weight currently remained below their entrance weights.

In a study by Perri, Gange, Jordan, McAdoo, and Nezu (1988), 123 mildly and moderately obese adults were randomly assigned to one of five treatment programs: (1) behavior therapy only (no maintenance program except for follow-up assessment at six-, 12-, and 18-months); (2) behavior therapy plus a therapist-conducted maintenance program; (3) #2 plus a social influence maintenance program; (4) #2 plus an aerobic exercise maintenance program; or (5) #3 plus #4. All subjects went through an identical

20-week weight loss program, followed by a 26-week maintenance program (except for group #1) during the following year. From immediate posttreatment to the 18-month follow-up, participants who received some sort of maintenance program maintained 82.7% of the treatment-induced weight loss, while those who received the treatment program alone only maintained 33.3% of their treatment-induced weight loss. , an analysis of the self-ratings of adherence to nine weight-control strategies (including aerobic exercise) at the six-month, 12-month, and 18-month follow-up periods, however, showed decreased adherence to these behaviors for all five treatment groups. Although this decrease was noted, the study concluded that maintenance programs seem to improve the ability of participants to keep the weight off. This implies that maintenance programs of longer duration might be needed to maintain the weights lost over longer periods of time.

Finally, one study followed 89 middle-aged men enrolled in a weight loss program consisting of weekly meetings, financial contracting, diet and exercise instruction, and behavioral skills training. At the end of the program, subjects were contacted three months, one, and two years and weighed. The study reported a mean weight loss of 29.7 ± 12.3 pounds during a 15-week treatment program, 16.1 ± 15.2 pounds at the one year follow-up, and 11.2 ± 15.4 pounds at the two year follow-up (Jeffrey, Bjornson-Benson, Rosenthal, Lindquist, Kurth, & Johnson, 1984).

A questionnaire assessing the subjects' eating habits was administered at the one-year follow-up, revealing a significant association between weight loss at one-year and following the recommendations for carbohydrate (eat more complex and less simple carbohydrates) and fat consumption (eat less foods containing fat). However, by the two-year follow-up, these associations disappeared.

Another change in eating behavior that was significantly associated with weight lost and maintained was reduced snacking. Those who said they reduced snacking (n=57) lost 20.7 pounds. at the one-year follow-up and 15.5 pounds. at the two-year follow-up. Those who did not reduce snacking (n=12) only lost 9.3 pounds. at the one-year follow-up and

1.2 pounds at the two-year follow-up.

Two other interesting findings from this study are worth mentioning. One was that people who had failed in previous weight-loss programs were more likely to fail in future attempts. Therefore, those who have a prior record of failure need special attention. A second finding was that men whose wives accompanied them through the program did not find this helpful for weight loss. One explanation may be that these men did not pay attention to the information given when their wives (who tended to be the main food preparer) were with them. Rather, the men depended on their wives to learn and apply the necessary information for preparing healthy meals conducive to weight loss.

One observation regarding the majority of these weight-loss studies is that the reported weight loss represents the mean weight loss of the group. Thus, it is possible that some subjects in the experimental groups strictly adhered to their new diets and/or exercise habits, while others were less tenacious, sustaining only mild to moderate weight losses. Therefore the success of a weight loss program could possibly be attributed to only a very small percentage of the total sample, thus presenting an overly optimistic picture for the majority of the participants.

Another observation is that for all of these weight loss/dietary change studies, save one, there was no in-depth discussion of the actual behaviors practiced, or adherence rates for the behaviors taught in the program. Only the outcome measure, weight loss, was consistently assessed, most often by self-report. Any changes in body weight that were observed during a study could be related to other confounding variables (such as illness, outside treatment influences, etc.), and not to adherence to healthy behavior patterns. This raises some question about the validity of using weight loss to evaluate adherence to healthy behavior patterns, more attention should be given to this problem in future studies. In an effort to address this issue, this study did not use weight as a variable for dietary lifestyle assessment, but asked about specific dietary behaviors practiced directly.

Stress Management Programs

The challenge of defining and measuring stress became obvious when reviewing studies on stress management programs. There are a host of tools available that attempt to quantify stress and stress management. One study by Stachnik, Brown, Hinds, Mavis, Stoffelmayr, Thornton, and Egeren (1990) used the Lifestyle Coping Inventory, the Hassles Scale, and the Self-Consciousness Scale to measure stress levels and evaluate changes as a result of a stress management program. Goodspeed and Delucia (1990) analyzed their subjects' stress by way of a personality assessment using the Myers-Briggs Type Indicator, then designed a stress management plan based on the results of this instrument. They also used the Stress Potential Survey which determined a personalized hierarchy of stressors for each individual. These are only a few of the scales designed to measure and assess stress levels. The "success" or "failure" of a program may be partially determined by the scale used in the evaluation. This point must be kept in mind while reviewing the studies on stress management programs.

Only two studies were identified that focused specifically on stress management programs. Neither study examined long-term adherence (follow-up of one year or longer) in practicing stress management techniques learned during a stress management program. Studying long-term adherence to learned stress management techniques may reveal the efficacy of these techniques on stress levels over time. The following studies focused mainly on the efficacy of various stress management techniques in reducing participants' stress levels during, and immediately after, the program.

In a study by Goodspeed and DeLucia (1990), 148 employees at a CIGNA worksite participated in stress management programs offered over a 15-month period. Of the 148, 113 completed a 5-session stress management workshop while the other 35 participated in a stress management program designed around the Myers-Briggs Personality Type approach. One possible reason for the large difference in the two proportions is that most workers were unable to take off the two half-days required to

attend the Myers-Briggs program, "forcing" them to take the five-session course. A Strain Questionnaire was administered pre- and post-program. Results showed that both groups showed significant reductions in the Strain Questionnaire scores compared to baseline. The authors concluded that both of these programs were effective in reducing stress in employees for at least six to eight months. A longer follow-up needs to be conducted before conclusions about the long-term effectiveness of stress management interventions can be made.

In a study by Stachnik, Brown, Hinds, Mavis, Stoffelmayr, Thornton, and Egeren (1990), 13 one-hour stress management sessions were held over a five to six-month period for 21 faculty, staff, and graduates students at Michigan State University. While 82% maintained their set goals for the duration of the program, no long-term follow-up was conducted.

It is clear from the lack of studies that more long-term follow-up studies of stress management programs are needed. Also, since changes in measured stress levels could be related to factors, such as changes in life situation, other than adherence to the use of stress management techniques, the impact of stress management programs might be more accurately assessed with measures of adherence to the practice of stress management techniques rather than measures of stress levels. These, plus the problem generated by the multiplicity of measurement tools, are issues that need to be resolved before a uniform standard for a successful stress management program can be constructed.

Wellness Programs

Wellness programs are multi-intervention programs designed to impact a number of areas in a person's lifestyle--mainly diet, exercise, cessation of a harmful habit (i.e. smoking, drugs, drinking), and stress management. The studies dealing with wellness programs reviewed here are divided into two categories: (1) worksite wellness programs; and (2) live-in wellness programs. Worksite wellness programs are usually on-going,

whereas live-in wellness programs are intensive, short-term interventions ranging from a few days to a month or more. Studies were selected based on their inclusion of follow-up that lasted for a minimum of at least one year.

The first four of these studies focused on worksite wellness programs. One of the advantages of worksite programs is that there are usually a large number of participants available for study who can be tracked over time relatively easily via employee records, insurance and workman's compensation claims, and absenteeism data--information often considered to be "hard" outcome data as opposed to relying solely on self-reports.

One of the longest studies done was by Shephard (1992), who analyzed the records of 511 employees of the Canada Life Assurance Company who were participants in the company's wellness program from 1979 through 1989. This fitness program included weekly exercise classes, various lifestyle education classes, and access to a staffed gymnasium.

Assessments and evaluations were conducted six months, one year, seven years, and ten years from the start of the program. The main variables for assessment and evaluation were physiological outcomes: fitness status (maximal oxygen uptake, percent body fat, and flexibility), and blood lipid profile. Job satisfaction and health hazard appraisals were also part of the assessment and evaluation process. There was very little reported as far as actual health behavior changes made as a result of participating in the wellness program. The only reported health behavior change involved changes in exercise behavior.

While no exercise maintenance rates were given at the first one-year follow-up, rates at the 10-year follow-up were reported at 8.2% (n=511). These participants had averaged three or more exercise sessions per week over the 10-year period, and presented improved outcomes on previous physiological measurements.

Another study was conducted on two Blue Cross/Blue Shield health promotion programs: Healthtrac and Senior Healthtrac (Fries, Fries, Parcell, and Harrington, 1992).

The premise of the Healthtrac and Senior Healthtrac programs was to provide a low-cost program designed to improve lifestyles, increase participants' feelings of self-sufficiency, and to improve the appropriateness of health care utilization. The intervention consisted of health habit questionnaires and computerized health risk reports every six months, individualized recommendation letters from their physicians, a newsletter, books, and other program materials. Health behaviors measured included dietary intake, exercise habits, and other health habits (seat belt use, smoking, alcohol intake, stress management). A health risk score assessed each participant based on the data collected at baseline and at each of the follow-up assessment times.

From baseline to 18-months, there was a 49.4% improvement in health risk score in high fat dietary intake, a 12.4% decrease in cigarette smokers, a 6.1% increase in exercisers, a 14.1% increase in exercise minutes per week, and a 25.4% decrease in stress scores (those who were stressed over 25% of the time) found in 9,845 participants under the age of 65 years old. In 27,163 people aged 65 and older, changes in health scores were as follows: a 49.4% decrease in high fat dietary intake; a 20% decrease in number of smokers; a 12.9% increase in exercisers; a 22.5% increase in minutes exercised per week; and a 19.2% decrease in stress scores (those stressed over 25% of the time).

This program, while producing remarkable results across most health risk behaviors, could have been affected by variables such as maturation or self-selection. The use of some type of randomized control group that was not enrolled in either program would have helped to rule out such limitations. Other limitations include self-report bias and limitations in identifying which component of the program was responsible for particular health behavior changes.

A study to evaluate lifestyle risk factors and absenteeism rates at General Mills, Inc., was conducted on the TriHealthalon Wellness Program over a two-year period (Wood, Olmstead, & Craig, 1989). Beginning in 1985 and continuing through 1986, the study included 688 employees who participated in the program, plus 387 nonparticipant

employees who served as the comparison group. A computerized lifestyle appraisal form was used at the beginning of 1985 and at the end of 1986 for data collection to assess risk reduction. Absenteeism rates were used to further evaluate the program's effectiveness.

After two years in the TriHealthalon program, participants exhibited improvement in several healthy lifestyle behaviors, including: (1) a five percent decrease in smokers; (2) a 37% increase in seatbelt users; and (3) a 23% increase in those exercising at least three times per week (from 48% in 1985 to 71% at the end of 1986). These results were obtained while participants were still in the program, not during a post-program follow-up.

While there was no significant difference in absenteeism rates between the participants and non-participants before the program in 1984, non-participants showed significantly higher absenteeism rates in 1985 and 1986. These results should be interpreted in light of this study's limitations: (1) lifestyle data were not available for the nonparticipants who might have showed similar trends; (2) the nonparticipants interacted on a daily basis with the participants, as well as being exposed to the media, making it difficult to separate external influences and "contamination" from the participant group; and (3) data were self-reported (except for absenteeism rates, which were available from employee records). Since the employees were not randomly assigned, there is a possibility of self-selection bias; however, this is unlikely given the similarity in absenteeism rates prior to the program. Unfortunately, other demographic characteristics were not measured and thus could not be compared to participants and non-participants.

An evaluation of the Carolina Healthstyle Project, a health promotion program for South Carolina state employees, involved 854 state employees from various state agencies who had participated in the program (Kronenfeld, Jackson, Blair, Davis, Gimarc, & Salisbury et al., 1987). This study was based on a quasi-experimental research design. Eighteen agencies (intervention group, n=142 subjects) were selected to receive the full project programming while the other agencies (comparison group, n=313 subjects) only received a quarterly newsletter and participated in two annual walking events during that

first year. Analysis of the demographics and pre-program health behaviors indicated no significant differences between the intervention and comparison groups.

Data collection occurred at two specific times for each agency: (1) before the project's program was implemented in that agency; and (2) one year after the project's program had been in place for at least 10 months. A questionnaire was used to obtain data regarding the subjects' health behaviors and health attitudes. The overall response rate for the entire study was 80%.

Both the intervention and control groups showed significant increases in exercise hours. In the intervention group, the proportion of people who were "very active" increased from 40.7% to 55.6% and the proportion of those who were "hardly active" decreased from 32.4% to 17.6%. Similar, significant changes were seen in the comparison group: from 45% to 54% in the "very active" category, and from 22% to 15% in the "hardly active" category .

While the intervention group made a few positive dietary changes, such as decreased fat intake and increased use of low-calorie foods, none of these changes, nor the changes seen in the stress measurement, was statistically significant when compared to baseline. This could have been due to the type of tool the researchers used to measure stress management, or to outside contamination of the comparison group.

Although previous wellness programs conducted assessments 3-12 months after the start of these programs, the programs were ongoing; thus participants were still in the program at the time of these "follow-up" assessments. The literature also includes studies that deal with "one-time", shorter-duration wellness programs (Bamberg, Acton, Goodson, Go, Struempoler, & Roseman, 1989; Yang, Lairson, Frye, Herd, & Falck, 1988). While these studies report changes in health behavior immediately post-program, they did not conduct follow-up assessment and evaluations for longer than three months; therefore, these studies are not included in this review. Only three studies reported follow-up data on participants of a limited duration wellness program, for at least one year post-program. An

interesting point is that the wellness programs in these studies closely resemble the intensive, live-in wellness program examined in the present research.

Barnard (1991) conducted a study on 4587 participants (from 1977 through 1988) of the Pritikin Longevity Center, a live-in program in Santa Monica, California. He found that, in just three weeks, changes in dietary and exercise lifestyle behaviors significantly reduced serum lipid levels without medications. He also followed a small group of motivated and willing participants (n=29) for 18 months and found that continued adherence to the new lifestyle changes resulted in maintained immediate post-program serum levels.

Intake procedures at the Center included a medical history, physical examination, and treadmill test. Based on the results, an exercise prescription consisting of walking and an exercise class, was prescribed. Participants' diet consisted of a high-complex carbohydrate, high fiber, low-fat, low-cholesterol, and low-salt diet. Participants attended educational classes on major chronic diseases such as hypertension, diabetes, cancer, and heart disease, and learned how diet and exercise can manage and prevent these diseases. They also received instruction in nutrition and lifestyle management, including stress management sessions.

Post-program chemistry results were significantly different from pre-program levels: total cholesterol levels were decreased by 23% (234 to 180 mg/dl), with a 23% decrease in low-density cholesterol (151 to 116 mg/dl), a 16% decrease in high-density lipoproteins cholesterol (HDL-C), and an 11% decrease in total/HDL-D ratio. Triglyceride levels were also significantly reduced (by 33%, from 200 to 135 mg/dl), as was body weight (5.5% for males, 4.4% for females).

While these physiological outcomes are impressive, adherence to the behaviors promoted by the program was not reported in this study. A very small group of participants (n=29) were followed for 18 months after the end of the program. They maintained immediate post-program serum lipid levels throughout the follow-up period,

which may indicate that these participants continued to follow behaviors recommended by the program.

Fielding, Malotte, Neutra, Cobb, and Kleeman (1983) evaluated a wellness program conducted by the University of California in Los Angeles (UCLA) Center for Health Sciences. This wellness program involved a 24-day live-in program that emphasized behavioral changes in exercise, nutrition, weight management, stress management, and smoking cessation. The purpose of this wellness program was to promote healthy lifestyle changes in a controlled and intensive environment. Participants lived in an adjacent hotel and ate their meals at the program site. The sample consisted of the first 459 participants who completed the program. The data collected consisted of various physiological measures (complete blood panel, modified Balke treadmill test) and several psychosocial status indicators (stress analysis, personality typing, coping skills).

A follow-up program was designed to help the participants maintain their newly learned behaviors. This consisted of sessions at two months (after leaving the program), six months, one year, and every year after that until the fifth anniversary year (although five-year data were not included in this study). Several of the groups were encouraged to meet with a staff psychologist at two-week intervals for the first eight weeks (after program), then at three-, six-, 12-months, and then yearly for the next five years. Several other groups were encouraged to attend a follow-up group three weeks after the program ended, and then were invited to attend a weekly support meeting as they felt necessary. These follow-up sessions consisted of problem-solving, realistic goal setting, and discussion of successes and barriers. Data was collected on blood pressure, weight, blood lipids, and several indicators of psychosocial status.

Immediate post-program changes were impressive. Of the 86 participants who smoked upon entrance into the program, 71% quit smoking by the end of the program. Average cholesterol levels decreased from 240 to 200 mg%; ideal body weight (based on those who were greater than 120% of their ideal body weight) fell from 134% to 129%;

blood pressures improved (systolic: 131 to 119 mm Hg; diastolic: 81 to 73 mg Hg); reported feelings of general well-being increased while depression, anxiety, and uncontrolled emotions and behaviors decreased. Greater changes were seen in those who were assessed as being greater risk at the start of the program. All these changes were statistically significant.

Participants who lived within 20 miles of UCLA (n=303) were designated as the potential follow-up group. Forty-eight percent attended the follow-up session one-year post program. Follow-up sessions consisted of risk factor evaluations, reinforcement, and support to maintain the positive changes. Except for age, none of the other variables (admission diagnosis, risk group category, pre-program levels of lipids, blood pressure, or weight) were related to follow-up attendance. Those who showed less change from pre- to post-program levels, however, were significantly more likely to attend the one-year follow-up.

The biochemical and physiological changes observed at post-program varied at one-year follow-up. Body weight, blood pressure, and triglyceride levels were still improved compared to baseline levels while cholesterol had returned to baseline levels. Except for females with total cholesterol levels under 240 mg/dl, participants improved their total cholesterol/high density lipoprotein ratios from immediately post-program to the 12-month follow-up.

Average depression, anxiety, and uncontrolled behaviors/emotions scores declined from pre-program to immediate post-program scores. These post-program scores were maintained throughout the two-, six-, and 12-month follow-up.

In summary, those who were defined as "high risk" (those with one or more diseases such as cardiovascular disease, diabetes mellitus, arthritis) continued to maintain positive changes seen immediately at the end of the program (smoke-free, improved blood pressure, improved lipid panels, etc.) while those at lower risk had returned to baseline levels.

Variables that may have had an impact on these positive results include participants' motivation for change, the residential setting, seclusion from daily temptations and cues for unhealthy behavior, peer support, a committed and empathic staff, and positive progress that the group, as a whole, made.

There also may have been a synergistic effect from the multiple -behavior intervention approach that helped to produce and maintain the positive changes over 12 months. Maintaining an exercise program may not only have increased feelings of accomplishment, improved fitness, and well-being, but also decreased depression and stress. These results might have reinforced the exercise behavior. They could also have had an effect on dietary behaviors. Improved body image and self-esteem, as well as decreased depression and stress may have resulted in reduced snacking and consumption of foods with little nutritional value.

The results of the study need to be interpreted with caution, due to the limitations inherent in the study. The participants included in the follow-up were self-selected; although they seemed to be similar to those who did not respond to the follow-up sessions, they may not have been truly representive of all of the participants. The authors state that a "conservative assumption is that the results for those who participate [in the follow-up sessions] are better than for the entire cohort." (p.459). This, however, does not detract from the significant changes that were seen in the high-risk participants.

Based on several desired changes in measured physiological variables, the participants seem to have maintained some positive health behavior changes. Data on the actual behaviors practiced (for example, amount of dietary fat, number of snacks, frequency, intensity, and duration of exercise sessions, type and number of stress management techniques practiced, etc.) throughout the follow-up period would have been valuable. This kind of data, combined with physiological outcome data (blood lipids levels, blood pressure, weight, etc.), would have given a more complete answer to questions about the effectiveness of wellness programs in maintaining long-term behavior change.

The Lifestyle Heart Trial was a prospective, randomized, controlled study designed to test whether lifestyle changes could reverse coronary heart disease (Ornish, Brown, Scherwitz, Billings, Armstrong, Ports, et al., 1990). Selection criteria for study participants included documentation of existing coronary heart disease, based on angiography. Participants were randomly assigned to an experimental group (n=22) or a control group (n=19). Three-day food diaries, computer analyses, and a questionnaire were used to establish baseline diet, exercise, and stress management practices.

The intervention consisted of a week-long live-in program at a hotel where the new lifestyle changes were taught to the experimental group. Following this intervention, experimental group participants attended regular support meetings twice a week (for a total of four hours per week). Control group participants received no instruction, and were not asked to make any lifestyle changes; however, they were not prohibited from doing so on their own.

Participants in the experimental group were asked to eat a low-fat vegetarian diet for at least one year. Stress management techniques were taught and participants were asked to practice these techniques for at least one hour per day. Participants were asked to exercise a minimum of three hours per week. An "adherence score" was calculated to reflect the experimental groups' adherence to the requested changes. A "1" meant 100% adherence to the lifestyle change program and a "0" meant 0% adherence. A score greater than "1" could be obtained if they were practicing above the recommended levels.

Baseline (pre-intervention) adherence scores for the experimental and control groups were .55 and .56, respectively. Adherence rates at the one-year follow-up, according to Ornish et al, were excellent. The one-year adherence scores for the experimental and control groups were 1.22 and .62, respectively, and were significantly different. Those in the experimental group with the highest adherence scores (1.25-1.61) experienced the greatest decrease in coronary artery stenosis and reflected a "dose-response" relationship between adherence scores and decreased change in stenosis. This

relationship held true when both the experimental and control groups were analyzed together; in fact, those with medium adherence scores (0.75-1.11) and the lowest adherence scores (0.14-0.74) suffered increased stenosis compared to baseline measures.

The implications of this study are significant, for it strengthens the link between healthy lifestyle behavior and a physiological outcome (regression of stenosis), as well as assessing long-term behaviors and outcome. Of interest are the regular support groups that were held; the authors did not indicate in the study whether the support groups were held all through the year until the follow-up or just for a short time post-program. It is unclear how these support groups influenced adherence rates. Possibly, an intense one-week intervention coupled with a serious life-threatening condition would be enough motivation to produce adherence to radically different lifestyle behaviors, even in the absence of a support group.

Conclusions

An analysis of this literature review reveals that the majority of studies followed participants for three to six months post-program. While a few studies that conducted follow-up evaluations for a year or longer showed that certain health behaviors were maintained, this may be due in part to certain "follow-ups" which were composed of interventions while other follow-ups only assessed if the behavior was still being maintained (Fielding et al., 1983; Sherman et al., 1989). Only more carefully designed studies will be able to examine this issue. This indicates a need for studies with a minimum of a one year follow-up, both assessment one-year post-program and follow-up interventions to promote maintenance.

Studies are also needed that focus on health behavior change maintenance, not just on health outcomes such as weight loss, decrease in percent body fat, increased time on the treadmill, and decreased absenteeism. While engaging in healthy behaviors is one way that these outcomes may be obtained, this is not the only way. Unhealthy behaviors, such as

eating disorders (anorexia, bulimia) may lead to the "desired" weight loss. Excessive exercise patterns may lead to improved treadmill times in the short-run, but will lead to detrimental outcomes in the long-run. Being a "workaholic" may decrease absenteeism. These problems emphasize the need to study the behavior that led to the outcome, and not just the outcome itself.

This review demonstrated how difficult it is to compare the efficacy of different programs, since the criteria used to determine the maintenance rates of behaviors vary greatly from program to program. This also makes it difficult to assess whether multi-intervention programs are more effective in promoting long-term behavior changes compared to single-intervention programs. More attention needs to be directed towards the identification of valid criteria to evaluate maintenance of desired health behavior changes. This study presents several suggestions on how this can be done.

Finally, in spite of the methodological difficulties in evaluating the impact of wellness programs on long-term maintenance rates, this review indicated that the success of most behavior change programs is limited. Studies are needed to follow-up on strategies with potential to increase adherence has been suggested in the current literature.

Theoretical Model

Several studies referred to the potential that relapse prevention techniques, such as those presented in Marlatt and Gordon's relapse prevention model (1985), may be the reason for improved effectiveness of current health promotion programs in maintaining behavior change. The relapse prevention model was designed to lengthen the maintenance stage following any behavior change intervention. The goal of the relapse prevention model is two-fold: (1) to help those in the process of changing their behaviors to anticipate and cope with the problems associated with relapse; and (2) to help them recover from a "slip" before it turns into a full-scale relapse (Marlatt & Gordon, 1985).

The whole purpose of the relapse prevention model is to empower people to be

their own therapists so that they can maintain and individualize their newly acquired behaviors on their own, after leaving a behavior change program. This model helps people learn new coping skills to substitute for the undesirable behaviors and change their attitudes and perceptions about behaviors and self-control, and finally, helps develop a new daily lifestyle that will foster the desired change(s).

The relapse prevention model presents a number of implications for this present study of an intensive live-in wellness program, as well as the other studies reviewed. Programs do not usually provide the type of training that teaches people to "be their own maintenance therapists," as the relapse prevention model recommends. Although not originally founded on the framework of the relapse prevention model, the CWP does incorporate many of the principles of the model (such as providing opportunities to practice coping skills to deal with eating out at restaurants, or focusing on fostering positive attitudes about nutrition rather than on counting calories). Since studies designed specifically to evaluate the relapse prevention model have been limited, studies of programs, like the CWP, that incorporate such concepts can be used to help evaluate the effectiveness of the model's principles.

Implications of Literature Review for Current Study

This review has led to the present study of the Cooper Wellness Program, an intensive live-in wellness program offering four-, seven-, and 13-day formats. This program, which has been in existence since 1986, has conducted one study on the effects of the 13-day program on blood lipid levels in men (Mason, unpublished dissertation, 1992). There has not been an overall evaluation of the program's efficacy in promoting long-term lifestyle behavior changes among participants, however.

This review presented several implications for the present study. Instead of focusing on outcome data, this study focused on the actual practice of behaviors. It operationalized and established maintenance rates for individual behaviors, as well as

combinations of behaviors, based on recommendations and study of the literature. The study focused on long-term maintenance of behavior changes, from one to two years post-program.

This study presents criteria that can be utilized in future studies to distinguish between maintenance and non-maintenance of health behaviors. It attempts to provide new data to support the effectiveness of multi-intervention programs, over a single-intervention programs, in promoting lifelong behavior changes. Finally, this study attempts to further investigate the effectiveness of relapse prevention strategies in the long-term maintenance of health behavior change.

Chapter 3: METHODOLOGY

Description of the Cooper Wellness Program

This study is based on an evaluation of the long-term effects of the Cooper Wellness Program (CWP), located at the Cooper Aerobic Center in Dallas, Texas. Started in 1986, the CWP offers an intensive, lifestyle behavior modification program in the areas of exercise, nutrition, stress management, weight control, and other wellness strategies in four, seven, and thirteen-day live-in formats.

Each wellness program participant's experience begins with a thorough medical evaluation and consultation with a physician. Risk factors were assessed through lab results, physical examination, and stress treadmill testing; strategies for the reduction of these risk factors were carefully examined and discussed with each individual. The participants were then immersed in a schedule filled with supervised exercise sessions, workshops, lectures, recreation and social activities, and professional consultations.

The CWP was staffed with experts from a wide variety of professional backgrounds, including preventive care specialists, nutritionists, dietitians, counselors, exercise specialists, psychologists, physicians, and various support people (administrative and marketing) who ensure that the program runs smoothly. Protocols and regimens were carefully discussed with the medical director, thus maximizing safety for those participants at higher levels of risk.

During the program, participants stayed in either of the two guest lodges located on the 30-acre Cooper Aerobic Center complex. In each of the guest lodges was a meeting room where the educational seminars were held. Staff from the CWP, as well as outside speakers who were considered experts in their field, presented information in the areas of nutrition, exercise, stress management, behavior modification, reduction of risk factors, and disease prevention.

For their exercise sessions, participants utilized the facilities of the Cooper Fitness

Center, which consisted of a gymnasium, outdoor swimming pool (heated for winter use), a muscle-strengthening area complete with free weights and Cybex machines, various types of aerobic workout machines (such as treadmills, stationary bicycles, hand ergo meters, stair climbers, and rowing machines), an indoor track, an aerobics studio, and four racquetball courts. The Fitness Center also housed a small snack shop, and massage rooms for men and women.

The Fitness Center employed trained staff to help with supervision in the various areas, so that participants are never far from aid or help during their scheduled and free-time exercise and recreational activities. Each participant was given an individualized exercise prescription based on his/her medical questionnaire, stress treadmill results, and the American College of Sports Medicine exercise guidelines (Mason, 1992). Minimum and maximum training heart rates were calculated and monitored by CWP staff during each of three daily exercise sessions; CWP staff also kept notes on each participant's condition. Each participant was given a heart rate monitor to use during the program, with the option to purchase it when they left.

The majority of meals were eaten in a dining room located on the first floor of one of the guest lodges, which includes a full kitchen for cooking demonstrations. A number of meals are eaten at various local restaurants as part of training for healthy dining while eating out. The meal plans are based on the diet composition: 14% of the total calories from fat, 23% from protein, and 63% from carbohydrates, of which 61% are complex carbohydrates (Mason, 1992).

The goal of the wellness program is to provide the information and support needed for making positive lifestyle changes, in the hope of reducing the incidence of disease, aiding in the management of disease, and increasing quality of life.

Research Purpose and Design

The purpose of this retrospective study was to assess the effectiveness of a live-in wellness program in effecting long-term behavior change. Pre-program lifestyle information was accessed from the records of participants who attended the CWP from January, 1989, to February, 1992. These participants were sent a follow-up survey containing questions regarding their current health behaviors (see Appendix A). The data were used to determine long-term maintenance rates for the behaviors addressed by the CWP program.

In addition to determining overall long-term maintenance rates of healthy behaviors, differences between the four-day, seven-day, and 13-day programs were analyzed and the reported strengths and weaknesses of the CWP were examined.

Study Population

Eligible study participants were obtained through a systematic search of the files of all past participants in the CWP. Participant consent was obtained from the release found in the last page of the Medical History Questionnaire (MHQ), as well as CWP's additional consent form for their participants (Appendix B). Criteria for inclusion in this study consisted of attendance at any of the programs offered between the dates of January, 1989 through February, 1992. Participants must have completed the entire program they selected (either four, seven, or 13 days).

A total of 766 past participants were eligible for inclusion in this study. Information from their medical charts was made available through a computer database at the Institute of Aerobics Research, a subdivision of the Cooper Aerobic Center.

Current addresses were available for 717 of the 766 past participants; 717 questionnaires subsequently were mailed out. Of these, 223 questionnaires were returned to the CWP by the deadline five weeks after the mailing (31% return rate). Follow-up mailing was not attempted due to lack of resources.

Demographic information for responders and non-responders is given in Table 3.1. Responders were also compared to non-responders on pre-program exercise behavior (no pre-program diet or stress management data were available). There were no significant differences in the demographics or exercise behaviors between the non-responders and responders.

Table 3.1 Comparison of demographic information and pre-program exercise behavior between CWP alumni responders and non-responders .

	Responders (n=223)	Non-responders (n= 494)	Statistics
Age			s.d. = 10.4
Range	18-74	17-84	t-test= -.34
mean age	47.4	47.1	p=.734
Gender			
Female	34.1%	36.8%	$X^2(1)=2.247$
Male	31.4%	43.8%	p=.134
missing data	34.5%	19.4%	
Marital status			
Single	3.1%	7.2%	$X^2(1)=2.770$
Married	57.0%	65.2%	p = .096
Divorced/Widow	4.5%	14.5%	
missing data	35.4%	13.1%	
Ethnicity			
Caucasian	94.0%	89.8%	$X^2(2)=5.284$
Non-Caucasian	.7%	5.3%	p=.527
missing data	5.3%	4.8%	
Exercise (%Yes)			$X^2(1)=.399$
	15.5%	17.5%	p=.527

Measurements

Pre-program demographic and exercise data for the 717 eligible participants were obtained from the MHQ completed by participants during their physical examination on the first day of the program, prior to intervention (Appendix B).

A follow-up survey was designed for use in this study (Appendix A). Several of the exercise-related questions in the follow-up survey were repeated from the MHQ to allow for comparison. Based on these questions, post-program behavior changes could be compared to the pre-program MHQ.

The remaining questions in the follow-up survey were designed to: 1) evaluate current diet and stress management behaviors; 2) examine possible reasons for engaging in, or failing to engage in, certain health behaviors; 3) evaluate participant satisfaction with the CWP; and 4) evaluate the importance of certain aspects of the CWP in helping initiate and maintain healthy behavior changes. A 5-point Likert scale (1="Not helpful", 2="Somewhat helpful", 3="Helpful", 4="Very helpful", and 5="Extremely helpful") was used to assess the helpfulness of the components of the CWP in making health behavior changes.

While there was no formal analysis of the survey's reliability and validity, it was sent to seven recent participants of the CWP to check for readability, understandability, and appropriateness of the questions. Pilot group respondents reported few problems with understanding or completing any of the questions, commented on the thoroughness of the questionnaire, and expressed their wishes to be in the study.

Data Collection

The follow-up survey was mailed to all 717 eligible participants with a cover letter of support from both Kenneth Cooper, M.D., M.P.H., founder of the Cooper Aerobics Center, and Ava Bursau, M.S., Executive Director of the CWP (See Appendix C). Included in the mailing was a CWP-addressed, stamped envelope and an entry ticket for a

drawing to win a complimentary four-day program, used as an incentive for returning the survey.

Those who returned their completed surveys by the deadline were entered into the drawing. Although previous return rates have not been officially documented according to CWP staff, surveys mailed out to this population in the past have not had a positive return rate (15%-20%). The complimentary four-day program incentive appears to have made a contribution towards increasing the return rate (31%).

All participants eligible for the study were assigned an identification number, which was stamped on the last page of the survey. This numbering system was used to maintain the participants' confidentiality; pre- and post-program data were matched according to identification number, so that no names were required on surveys or data sheets.

The raw data from all surveys received were entered into a spreadsheet created in Microsoft Excel 4.0 for the Macintosh computer.

Data Analysis

The exercise data received by the respondents were matched with their pre-program MHQ data and analyzed using two-tailed t-tests pre- and post-program. A one-way ANOVA was used to detect differences in the data between the three program lengths. If homogeneity of variance assumptions were not met, then a non-parametric test, such as the Kruskal-Wallis one-way ANOVA, was run.

When no significant differences were detected between the three program lengths, the data were combined by collapsing across program length and an overall mean was reported. A statistical significance level of $p<.05$ was used for all analyses. The statistical software package used was the Statistical Package for the Social Sciences (SPSS).

To analyze the CWP's effectiveness in promoting long-term behavior change based on the three behaviors (diet, exercise, and stress management), maintenance rates for each behavior were calculated, as well as a Composite Score (CS), which combined all three

behaviors into one overall score. A participant meeting the maintenance criteria for one particular area received one point. A participant successfully maintaining healthy behaviors in all three areas received a CS of three points. Participants needed to achieve this perfect Composite Score of three points in order to be designated as a maintainer.

Since there were no defined criteria for long-term maintenance of dietary and stress management behaviors in the literature, criteria were established for this study. The dietary maintenance rate was based on the number of eight CWP-recommended healthy eating behaviors participants indicated they currently practiced. These behaviors are listed in Appendix C. If six or more of the behaviors were selected, the participant was considered to be successfully maintaining, and received one point.

The stress management maintenance rate was based on two criteria. One point was awarded to participants who indicated that they were: 1) managing their stress "fairly or very well"; and 2)"seldom or almost never" used substances such as alcohol, medications, and tobacco for stress management. Both of these criteria needed to be fulfilled before a participant would be considered a successful stress manager.

Finally, the exercise maintenance rate was based on the American College of Sport's Medicine's recommendation that exercise be performed a minimum of three days per week for at least 20 minutes per exercise session (Mason, 1992). All participants were awarded one point if they met or exceeded this minimum requirement.

Chapter 4: RESULTS

Introduction

This chapter is organized in terms of the three main research questions: 1) maintenance rates of the CWP alumni in diet, exercise, and stress management; 2) maintenance rates across the three program-lengths; and 3) factors related to maintenance or relapse. CWP alumni satisfaction ratings will also be presented since the respondents' levels of satisfaction at follow-up may indicate which CWP components contribute most to long-term maintenance.

Maintenance Rates

Maintenance rates for health behaviors and corresponding composite scores are listed in Table 4.1. As indicated earlier, diet maintenance rates were based on the reported practice of six out of the eight identified CWP-recommended dietary behaviors, exercise maintenance rates were based on ACSM recommendations, and stress management maintenance rates were based on reported success in managing stress plus minimal usage of substances such as alcohol or drugs to control stress. The percentage given for the Composite Score indicates the percentage of respondents who met the minimum criteria in all three areas. A chi-square analysis was done to detect any significant differences in the maintenance rates based on program length. No significant differences were noted.

Table 4.1. Percentages of respondents who met minimum criteria for the three lifestyle behaviors. X^2 analysis of three program lengths.

Behavior	Total (n=223)	4-day (n=114)	7-day (n=84)	13-day (n=25)	X^2 p value
Diet	31.8%	54.9%	33.8%	11.3%	.702
Exercise	81.1%	53.3%	35.6%	11.1%	.449
Stress Management (S.M.)	69.5%	51.0%	37.4%	11.6%	.959
Diet/Exercise	29.7%	56.1%	31.8%	12.1%	.726
Diet/S.M.	22.4%	50.0%	34.0%	16.0%	.453
Exercise/S.M.	57.2%	52.0%	36.2%	11.8%	.672
Perfect Composite Score: Diet/Exer./S.M.	21.2%	51.1%	31.9%	17.0%	.395

Diet had the lowest percentage of maintenance when compared to Exercise and Stress Management. These percentages were all significantly different from each other. In order to be classified as a Diet maintainer, a respondent had to be practicing a minimum of 75% (six out of eight) of the dietary behaviors recommended by the CWP. Since the 75% criteria was arbitrarily set for purposes of this study, respondents practicing 50% and 25% of behaviors were determined. This resulted in an increase in percentage of dietary maintainers to 64% and 91%, respectively. Practicing 50% of the behaviors resulted in 39.2% of the respondents who obtained a perfect Composite Score of three points (in contrast to the 21.2% of respondents obtaining a Composite Score of three points using the 75% criteria).

Exercise was the behavior practiced most often by CWP alumni. Pre-program, only 15.5% (n=223) indicated that they were exercising regularly, as compared to 81.1% at the time of follow-up. These percentages were significantly different.

Of those who were exercising regularly (n=181), 44% of the respondents had been

exercising for less than two years, with the majority having started their exercise program before entering the CWP. Table 4.2 gives the specific proportions of CWP alumni and years exercised.

Table 4.2 Percentage breakdown of CWP exercisers by number of years exercised.

Years exercised	Percentage of CWP alumni (n=181)
Less than 1 year	30%
More than 1 year but less than 2 years	14%
More than 2 years but less than 3 years	5%
More than 3 years but less than 4 years	9%
More than 4 years	37%

Stress management was the second highest individual behavior practiced. This is reflected by the fact that almost 70% of the CWP alumni (n=223) said they were currently managing their stress either "Very well" or "Fairly well", and that they "Never" or "Seldom" used substances such as alcohol, drugs, and tobacco products to manage their stress.

"Exercise" was the most-used technique for stress management among all respondents. Successful stress managers were compared with unsuccessful stress managers to assess for differences in stress management techniques practiced. A chi-square analysis indicated no significant differences between the maintainers and non-maintainers in the use of any of the stress management techniques. Non-maintainers in stress management were just as likely to use a given technique as maintainers. The average number of techniques used was three for all respondents.

Differences Across The Three Program Lengths

The second research question addressed at possible differences in maintenance across the three program-lengths. Overall, no significant differences were seen in the maintenance rates based on program length. An analysis of respondent ratings of the helpfulness of different CWP components in maintenance of behavior change, however, did reveal significant differences between program-lengths in the following areas: 1) time with dietitian (four-day participant ratings significantly higher than that of the other two program lengths); 2) exercise facilities (13-day participant ratings significantly higher than other two program lengths); and 3) lectures (four-day participant ratings significantly higher than other two program lengths). See Tables 4.3 for results.

Table 4.3 Means and standard deviations of Likert scale for CWP components by program length.

	Four-day program (n=108) mean, s.d.	Seven-day program (n=78) mean, s.d.	13-day program (n=24) mean, s.d.
Time with R.D.	3.78*, .99	3.33, 1.20	3.50, .78
Exercise facilities	4.26, .91	4.18, .86	4.71*, .55
Lectures	4.45*, .71	4.14, .80	4.29, .75

Likert Scale: 1="Not at all helpful", 2="Somewhat helpful", 3="Helpful", 4="Very helpful", 5="Extremely helpful"
*Statistically significant from the other program lengths at a p value <.05.

Factors Related to Maintenance or Relapse

The final research question addressed factors related to the maintenance or relapse of healthy behaviors. Survey results were analyzed in an attempt to identify attitudes and beliefs that might have contributed to maintenance or relapse of healthy behaviors.

Diet. CWP alumni were asked to indicate both positive nutritional behaviors that they were currently practicing, as well as barriers to following a healthy diet plan. A chi-

square analysis was used to reveal any significant differences in percentages between dietary maintainers and non-maintainers, as defined by the study criteria.

Those results that proved statistically significant are given in Table 4.4 and 4.5. Table 4.4 indicates that a higher proportion of maintainers held the positive nutritional behaviors when compared to non-maintainers, and that these differences were highly significant for all behaviors. Table 4.5 shows that there were two statistically significant reasons given by non-maintainers for not following a healthier diet plan: lack of willpower, and frequent travel.

Table 4.4 Positive nutritional behaviors of CWP alumni who met and did not meet the dietary maintenance rate criteria–practicing 75% of recommended dietary behaviors (6 of 8 dietary behaviors).

Positive nutritional behaviors (in order of most to least used)	Maintainers (n=71)	Non-maintainers (n=152)	X^2 p value
"I read the labels for ingredients and nutritional information."	100.0%	80.9%	<.001
"I continue to apply and add to my knowledge of nutrition."	98.6%	52.6%	<.001
"I know how to select things in a restaurant; I'm restaurant savvy; I'm a 'menu sleuth'."	93.0%	42.8%	<.001
"I'm aware of my intake of fat grams."	95.8%	42.1%	<.001
"I'm eating a healthy balance of fats, proteins, and carbohydrates."	91.5%	41.4%	<.001
"I'm aware of my calorie intake."	77.5%	23.7%	<.001
"I've changed my thinking of foods from 'good or bad' to 'All foods, in moderation, can fit into a healthy lifestyle'."	54.9%	28.9%	<.001
"I pre-plan for 'crisis' situations (holidays, special occasions, etc.)."	47.9%	3.9%	<.001

Table 4.5 Barriers to following healthier eating plans identified by CWP alumni who maintained and did not maintain the dietary maintenance rate criteria (practicing 6 of 8 dietary behaviors).

Reasons	Maintainer n= 71	Non-maintainer n=152	X^2 p value
"I need more willpower to follow my new eating style."	22.6%	77.4%	.012*
"I travel frequently and eating healthfully on the road is hard."	23.5%	76.5%	.042*
"I have a 'sweet tooth' that's difficult to satisfy."	30.8%	69.2%	.801
"I mainly eat my meals out."	25.9%	74.1%	.256
"I lack time to plan nutritious meals."	30.0%	70.0%	.751
"I need to hire a cook."	33.3%	66.7%	.877
"I cook for my family and they aren't interested in eating my healthy cooking."	25.0%	75.0%	.542
"Healthy food is expensive."	41.7%	58.3%	.452

*Statistically significant at p=.05 level.

Exercise. CWP alumni were asked to indicate their reasons for exercising, in an attempt to identify factors that might be associated with long-term maintenance. Among respondents who met the exercise maintenance rate criteria , "prevent disease" was the most frequently chosen reason for exercising. A complete breakdown of all the responses and their frequencies are found in Table 4.6.

Table 4.6 Reasons for exercising, in order of decreasing frequency of choice, given by CWP alumni who met the exercise criteria (n=180).

Reason for exercising	Exercise Maintainers
Prevent disease	63%
Control weight	60%
I feel better	60%
Reduce stress	42%
Increase my vigor/energy level	33%
I enjoy it	26%
Enhance my memory	12%
Other	4%
Socializing	4%
Enhance my thinking	1%

CWP alumni were surveyed to determine factors that might be related to relapse of exercise for barriers that interfered with their exercise program. The barrier most often selected by both non-exercisers and exercisers was, "Lack of time due to work/school". The percentage of non-exercisers to exercisers were significantly different for three of the barriers: 1) "Lost interest, boring"; 2) "Lack of an exercise partner"; and 3) "Lack of

exercise facilities" (see Table 4.7).

Table 4.7 Differences in perceived barriers between exercising and non-exercising CWP alumni.

Barriers to exercise behavior	Non-exerciser (n=42)	Exercisers (n=180)	X^2 p value
Lost interest, boring	31.0%	7.8%	<.001*
Lack of exercise partner	14.3%	2.2%	<.001*
Lack of exercise facilities	9.5%	2.2%	.022*
Lack of time due to work/school	61.9%	49.4%	.146
Injury/health problem	28.6%	18.3%	.137
Inclement weather	26.2%	17.2%	.181
Lack of time due to travels	23.8%	35.0%	.165
Other	14.3%	6.7%	.103
Lack of time due to children	11.9%	11.1%	.883
Lack of time due to social activities	7.1%	10.0%	.569
Lack of time due to household chores	7.1%	13.3%	.269
Lack of time due to spouse	2.4%	4.4%	.541
Lack of money	0%	.6%	.628

*Statistically significant at p=.05 level.

Stress management. To determine factors that might hinder successful stress management, CWP alumni were asked to identify barriers to the utilization of stress management techniques. The percentages of their responses were separated based on of whether or not they met the stress management maintenance criteria. A chi-square analysis determined if there were any differences between the maintainers and non-maintainers on barriers to practicing stress management techniques. The results, which were highly significant, are presented in Table 4.8.

Table 4.8 Differences in perceived barriers between successful and unsuccessful stress managers.

Barrier to stress management	Unsuccessful stress managers (n=68)	Successful stress managers (n=155)	X^2 p value
"Not enough time to practice techniques"	34.3%	13.0%	<.001*
"Pressures were too much for techniques to handle"	16.2%	5.2%	.007*
"Can't remember how to perform techniques."	8.8%	13.6%	.312
Other reasons	11.8%	20.1%	.131

*Statistically significant at p=.05 level.

Spousal/significant other support. Support from a spouse or significant other proved to be another factor in maintaining healthy behavior changes . In this study, 52% of the respondents (n=223) said that their spouse or a significant other attended the CWP, either at the same or a different, time as themselves. Of this group (n=115), 91% said that spousal/significant other attendance was helpful in maintaining their lifestyle changes.

Thirty-six percent of the respondents said that their spouse/significant other had never attended the CWP. Of these (n=81), 67% felt it would have helped them maintain their lifestyle changes if their spouse/significant other had attended the CWP.

Further chi-square analysis revealed no significant differences in maintenance rates for exercise, stress management, or eating a balanced diet between those who perceived that spousal/significant other attendance was (or would have been) helpful and those who did not perceive it to be helpful.

CWP Alumni Satisfaction Ratings

In an attempt to evaluate whether satisfaction with various components of the CWP might be a significant factor in predicting maintenance rates, the CWP alumni were asked to rate various CWP components on their helpfulness in making healthy behavior changes. The mean Likert scores of Composite Scores maintainers were then compared to those of Composite Score non-maintainers. The t-tests results showed no significant differences in the Composite Score maintainers and non-maintainers mean Likert scores except for the following four CWP components: 1) the "On Track" newsletter; 2) follow-up services; 3) the CWP notebook; and 4) the and financial cost of the CWP (see Table 4.9).

Table 4.9. Differences in mean Likert scores of Composite Score maintainers and non-maintainers.

CWP Component	Composite Score Maintainer (n=47)	Composite Score Non-maintainer (n=175)	t-test p value
Expertise of staff	4.36	4.08	.123
Physical exam	4.36	3.98	.141
Support of staff	4.08	4.18	.275
Individual attention	4.02	3.71	.132
Lecture, speakers	4.02	3.84	.735
MD consultation	3.96	3.59	.268
Exercise sessions	3.87	3.69	.361
Individual time	3.81	3.45	.051
Workshops, classes	3.81	3.59	.630
Exercise facilities	3.79	3.85	.641
Meals	3.78	3.29	.162
Notebook, handouts	3.70	3.16	.033*
Practical information	3.70	3.48	.661
Videos, slides	3.55	3.17	.275
Guest lodge	3.42	3.29	.829
Support of group	3.40	3.04	.189
"On Track" newsletter	3.06	2.37	.007*
Financial cost of CWP	2.89	1.99	.003*
Follow-up	2.64	2.05	.027*

*Statistically significant at .05 level. Mean Likert scoring: 1="Not at all helpful", 2="Somewhat helpful", 3="Helpful", 4="Very helpful", 5="Extremely helpful".

The maintainers tended to rate these four components higher than the non-maintainers, although all scores ranked at the lower end of the scale, ranging from "Somewhat helpful" to "Helpful". Overall, the three highest-rated components of the CWP regardless of maintenance status are in Table 4.10.

Table 4.10 The three highest-rated CWP components regardless of maintenance status.

CWP component	Mean Likert Score (n=223)
Physical exam	4.14
Expertise of staff	4.12
Support of staff	4.10

Chapter 5: DISCUSSION

Health promotion and education programs have been planned and implemented with the goal of eliciting positive lifestyle changes in the American public. It is hoped that through these types of program interventions escalating health care costs may be contained. While there have been several studies showing the immediate post-program effectiveness of a health behavior change program, little has been done to evaluate the long-term maintenance (at least one year or longer) of newly acquired behaviors. The purpose of this study was to examine the effectiveness of a live-in wellness program in promoting long-term lifestyle behavior changes. This chapter will discuss the results of this study, as well as the implications for preventive care. Long-term maintenance rates, differences between program-lengths, and factors associated with maintenance and relapse will be discussed.

Long-term Maintenance Rates

Long-term maintenance rates were evaluated in this study through the use of a Composite score, calculated from individual areas of diet, exercise, and stress management. While the Exercise score was based on widely accepted and utilized ACSM guidelines for exercise, the Diet and Stress Management scores were created specifically for this study. In the creation of these two scores, an arbitrary level was designated as indicative of maintenance. Any changes made in the setting of those levels, as was illustrated with the Diet score criteria, would result in different Composite scores. Thus, the Composite score is a unique maintenance rate that at this time, and further research will need to address the validity of this approach beyond its use for evaluating the CWP. Comparisons of overall maintenance rates of the CWP with other multi-intervention programs would require that those programs also use these same criteria to measure their program outcomes. The establishment of generally-accepted methods for evaluating diet and stress management are needed to facilitate such comparisons between programs.

Of the individual scores, the percentage of respondents achieving maintenance level was lowest for the area of diet (31.8%), as compared to the exercise (81.1%) and stress management behaviors (69.5%).

While the diet maintenance level of 31.8% may seem low, the criteria used to obtain this score must be kept in mind: respondents had to state that they were practicing at least six of the eight (75%) CWP-recommended behaviors to qualify as maintainers. While this method may still be prone to self-recall biases, it may more accurately reflect the overall diet behavior of the respondent.

According to the nutrition director of the CWP, the goal of the CWP is not to teach their participants to count servings and calculate what percentage of their consumed calories come from fat. It is possible that such specific consumption goals might discourage participants from attempting to improve their nutrition behavior at all. Instead, the CWP seeks to foster more positive attitudes and behavior towards nutrition. The impact of promoting specific food consumption goals versus promoting general healthy eating behaviors has not yet been addressed, but given the generally poor outcomes from most traditional programs which base their interventions on recalling serving amounts eaten, this measurement approach may represent a viable alternative for dietary behavior assessment.

Since most of the current literature reported measures maintenance of nutritional behavior change in terms of weight change instead of actual eating behaviors, it is difficult to draw conclusions regarding whether the CWP program was more or less successful in producing long-term maintenance in this area than other health behavior change programs. Given that 64% and 91% of the respondents were practicing 50% and 25%, respectively, of the recommended behaviors seems to indicate that the CWP was helpful in promoting long-term maintenance of at least a few healthy dietary behaviors.

As was stated earlier, this study found a very high maintenance rate (81%) of participants still exercising at follow-up. This is considerably better than the average maintenance rate (48%) after at least six months of follow-up cited in most studies of

exercise programs in the literature (Kriska et al., 1986; Martin et al., 1984; Welsh et al., 1991). Also, most of these previous exercise programs measured maintenance for less than a year post-program; the rates are likely to have been lower if measured at a one-year follow-up period. The high percentage of respondents in this study who were maintaining the recommended exercise level for a minimum of one year post-program may be connected to the reputation the Cooper Aerobic Center which has a reputation for focusing on aerobic fitness. In addition, the findings that exercise was one of the leading techniques used for stress management, supports the focus of this program.

Study results indicated that most respondents were successfully managing their stress levels; only 6% felt they were not managing their stress well. Unfortunately, pre-program stress data were unretrievable from the CWP data bank; therefore comparisons between pre-program percentages and follow-up percentages were not possible. Comparisons with other current studies are also difficult, since no long-term maintenance rates were given in the studies reviewed.

The purpose of this study, however, was not to look at the individual maintenance rates of these three behaviors, but the maintenance rate of the combined behaviors. Only one other study constructed a scoring system to take into account multiple behaviors (Ornish et al., 1990), but the two scoring systems were not similar enough to allow for comparisons.

While the percentage of respondents who achieved a Composite Score of three points may seem low (21.2%), it does indicate that more than one of every five respondents met at least the minimum recommended criteria in all three areas for at least one year. Considering how difficult it appears to be for people to maintain even one of these behaviors, as evidenced by the maintenance rates cited in the preceding literature review, this maintenance rate appears in a much more positive light. Based on the criteria used, the maintenance rate obtained is a conservative estimate.

In summary, the individual long-term maintenance rates are at least as good as, and

in most cases, better than those reported in studies of other wellness programs. Since most programs did not have a live-in format similar to the CWP, this suggests that a live-in format may have some unique advantages over other program formats. For many people, however, the increased cost and time commitment involved in a live-in format may outweigh its advantages. It must be pointed out that this study was not designed to compare a multi-intervention live-in program to single component programs, therefore the suggestion that a live-in format is more advantageous will need further investigation.

Similarly, since most other programs evaluated in the literature were single-intervention programs rather than multi-intervention like the CWP, the results of this study suggest that multi-intervention programs may have an advantage over single-intervention programs. This idea received a degree of support from the study finding that "exercise" was ranked as the most-used technique for stress management. Studies by Dyer and Crouch (1988), and Norris, Carroll, and Cochrane (1990) concluded that exercise does improve ability to cope with stress. Since the CWP seemed so successful in helping respondents maintain their exercise behavior, this might have contributed to more successful stress management also.

This success in maintenance of exercise behavior, may be due in part, as mentioned previously, to the reputation of the center and its founder. This reputation may draw people who are interested in exercise to begin with, and thus more motivated to begin and continue an exercise program.

Lifestyle behavior changes may better lend themselves to a multi-intervention format versus a single-intervention format. For example, many people in smoking cessation programs find that they replace their cigarettes with food when stressed (Perkins, Epstein, & Pastor, 1991). Adding a stress management program might not only help the smoking cessation process, but avoid creating a weight problem as well. There appears to be quite a bit of repetition when dealing with lifestyle behavior changes, and this repetition in each of the individual areas may help to reinforce the desired behaviors overall. Of

course, the person may be overwhelmed with making so many major changes at one time that they fail to make any changes at all. A multi-intervention approach may benefit from a pre-assessment of participants to find those best prepared to make multiple changes.

Differences Between Program-Lengths

The study results indicate no difference in maintenance rates based on the length of the program attended. Respondents in the 13-day program did give a significantly higher satisfaction rating than the other two program-lengths on the "exercise facilities." This is not surprising, since 13-day program participants spend the most time at the CWP, and thus have more time to use the exercise facilities. Higher ratings given to "time with the dietitian" and "lecture" components by the four-day program participants may imply that those who stayed longer had more time to interact with the other staff, which they felt to be more helpful to them in the long run than simply listening to a lecture or time with the dietitian.

These differences in satisfaction, however, did not seem to have any impact on actual maintenance rates based on length of stay at the CWP. This suggests that a less-expensive, shorter program may be as effective in facilitating long-term maintenance behavior changes as the more expensive, longer programs. Additional evidence, however, is needed before this conclusion can be drawn. The four- and seven-day programs may attract participants who feel confident in making lifestyle behavior changes and therefore feel they do not need to stay at the CWP as long to be successful; those participants who are not as confident about making such radical changes may feel it necessary to stay at the CWP longer, and even return for a repeat visit. Also, the study's sample size may be obscuring any real effect of program-lengths on long-term maintenance rates. Further analysis with a larger sample size and better controlled design is needed before a more definitive statement can be made about program-length and maintenance rates. Based on these findings, it does not appear that program-length is predictive of long-term

maintenance rates.

Factors Associated with Maintenance or Relapse

Diet. Lack of willpower and frequent traveling were two barriers to following a healthy eating plan that were significantly different between dietary maintainers and non-maintainers. Other studies produced similar barriers to eating healthfully (Jeffery et al., 1984; Wiles, 1992). Shannon, Bagby, Wang, and Trenkner (1990) contend that self-efficacy should be addressed in dietary behavior change programs. This suggests that these two areas may need to be re-emphasized, or elaborated on, in the nutritional portion of the CWP. By utilizing techniques to increase self-efficacy may help participants overcome these two barriers.

Exercise. Among the exercise maintainers, disease prevention, weight control, feeling better, and reducing stress were the top four reasons for exercising regularly. Similar findings have been documented by other researchers (Gillett, 1988; Riddle, 1980; Wiles, 1992; Wilson et al., 1991). Further research is needed to see if those who exercised for other reasons were less successful in maintaining their exercise behavior long-term.

Three of the barriers to exercising were significantly higher for non-exercising compared to exercising respondents: 1) considering exercise to be boring; 2) lack of an exercise partner; and 3) a lack of exercise facilities. Almost one-third (31.0%) of the non-exercising respondents indicated that exercise was boring. This study's findings reflect similar findings in the current literature (Dishman, Sallis, & Orenstein, 1985; Sallis et al., 1989; Sallis et al., 1990). This suggests a need to help CWP participants develop an exercise prescription individualized to maintain their interest, if long-term maintenance of an exercise program is to be achieved. Discovering what a participant really enjoys, and then planning exercises that closely resemble that enjoyable activity might go a long way towards promoting long-term maintenance of an exercise program. Exercise environment and equipment must also be assessed. Strategies to address the lack of an exercise partner

or exercise facilities could also, secondarily, make exercising more interesting, thus alleviating the boredom factor as well.

Stress management. Most respondents felt that they were managing their stress well. The respondents who were not managing their stress well felt that they did not have enough time to practice the CWP-recommended stress management techniques or that their pressures were too much for these techniques to handle. The comparisons for these two reasons were significantly different between successful and unsuccessful stress managers.

This could indicate a need for the CWP to place more emphasis on time management skills, as well as on the fact that stress management skills can be helpful even in the face of seemingly insurmountable pressures. However, the results of this study could have been confounded by a lack of differentiation between stress caused by major life crisis events, and stress caused by "daily hassles". Future studies might benefit from consideration of this issue when constructing data collection tools.

Spousal/significant other attendance. Although survey responses indicated that spousal program attendance was considered helpful in maintaining lifestyle behavior changes, the data analysis indicated that actual maintenance rates were not significantly different between those whose spouses attended and those whose spouses did not attend. This finding reflects the conflicting reports in the current literature on the impact of spousal support for behavior change (Black et al., 1990; Blanke et al., 1990; Jeffrey et al., 1984; Kelly et al., 1991; Marcoux et al., 1990; Wilson et al., 1991). Further study is needed to identify the cause of the disparity between respondents' perceptions (that spousal attendance was helpful) and actual statistical findings (no significant difference in maintenance rates of those whose spouse attended and did not attend). Involvement of a spouse may be helpful over the long-term if both parties are trained with appropriate support and nurturing skills. Also, the type of social support needed may be different for each individual (Black et al., 1990). Some individuals may only need a "cheerleader" offering verbal support to help them maintain their healthy behaviors, while others may

need a support person who is actively participating in the maintenance of the healthy behavior(s).

Overall Satisfaction Rating

Overall, the results indicated that most respondents were satisfied with all of the various aspects of the CWP. The two most highly-rated components were "Expertise of the staff" and "Support from the staff". Other studies report similar findings of the importance of knowledgeable and supportive staff (Gillett, 1988; McAuley & Jacobson, 1991).

Satisfaction scores between Composite Score maintainers and non-maintainers were compared, revealing four CWP-components that were statistically significant: 1) the "On Track" newsletter; 2) follow-up services; 3) CWP notebook and materials; and 4) the financial cost of the CWP. In most of these components, Composite Score maintainers' satisfaction ratings were higher than non-maintainers. The mean Likert scores for these components, however, ranged from 3.06 to a 2.64, placing these components at the bottom of the list.

It was interesting to note that the two components of the CWP that specifically dealt with follow-up and post-program long-term maintenance (the newsletter and the follow-up services), were given lower ratings. This could have serious implications for the overall long-term maintenance rates of the behaviors change. Some respondents were unaware that such follow-up services even existed; most of the respondents who were aware felt that CWP's follow-up services could be improved. The low ratings given the follow-up service components can be further understood in light of the high ratings given to the expertise and support of the CWP staff; these highly valued services seems to have been sorely missed once the participants returned home. This is evident from the many comments written in the follow-up survey.

Finally, the high satisfaction ratings given to the majority of the CWP components

by participants suggest that the relapse prevention model can be effective in providing a basis for health promotion programs. The findings show that many of the strategies advocated by the relapse prevention model, such as the individualization of change strategies and rehearsal of coping skills, may result in successful maintenance of health behaviors. Exercise prescriptions are individualized for each participant and then fine-tuned during their stay. Dietary behaviors, such as eating out at a restaurant, are practiced in a real outing. Since many techniques are used from the relapse prevention model and participants seem to be satisfied with the program, implies that this model be used in future health behavior change programs. Further studies are needed to evaluate the effectiveness of multi-intervention programs based on this model.

Chapter 6: Summary, Conclusions, and Recommendations

Summary

This study attempted to determine the effectiveness of the CWP in promoting long-term lifestyle behavior changes. The lack of accepted criteria for determining maintenance of adopted behaviors in the current literature necessitated the construction of somewhat arbitrary, but logical, criteria and scoring system to determine maintenance rates, both for the individual behaviors of diet, exercise, and stress management, as well as all three behaviors combined. Based on resultant maintenance rates, conclusions about the CWP, and multi-intervention programs in general, are stated below.

Conclusions

The CWP seemed to best promote long-term maintenance of the exercise and stress management behaviors; efforts to promote changes in dietary behavior were less successful. Thus, only 21% of the respondents met the established maintenance criteria in all three areas.

The CWP is unique in that it offers programs of three different lengths to potential participants. Analysis of maintenance rates based on the length of program attended did not reveal any significant differences. Based on these findings, a participant's chances of becoming a long-term maintainer were not influenced by the length of program attended. Shorter programs may be more cost-beneficial than longer ones.

Factors affecting the maintenance rates were revealed. Lack of an exercise partner, lack of appropriate facilities, and boredom with exercise were significant barriers for exercise non-maintainers. The support and expertise of the staff were rated as the most helpful for both the maintainers and non-maintainers, while post-program follow-up support was rated among the least helpful of all the CWP components. While most respondents believed that spousal or significant other attendance was or would have been

helpful in long-term maintenance, analysis of actual maintenance rates of maintainers as compared to non-maintainers, based on spousal/significant other attendance, revealed no significant differences. Attendance of a spouse or significant other did not seem to improve long-term maintenance of any or all of the behaviors. Encouraging spousal attendance to health behavior change programs may require programs to provide specific instruction to spouses in order to maximize the potential help and support they can provide to the one making the health behavior change.

Recommendations

Based on these study conclusions, several recommendations can be made that would enhance future research and analysis of the CWP, as well as multi-intervention programs. The primary recommendation involves improvement in the data collection tools. The medical health questionnaire needs to be modified and updated to better facilitate pre-program/post-program data comparisons in the three behavioral areas studied. The dietary section gives general food consumption trends and is impossible to calculate actual amounts of food eaten. Specific questions reflecting the CWP might be added. However, since this questionnaire is used for other patients besides those who attend the CWP, a supplemental questionnaire might be added for those attending the CWP. Finally, a one-month post-program survey might be helpful for comparisons to pre-program behaviors as well as 6- and 12-month follow-ups. This would facilitate assessment of maintenance rates and further evaluation of the CWP.

In this study, participants were asked for comments regarding how the CWP could be improved. Many of the suggestions received dealt with follow-up support; this is not surprising, given the relatively low ratings of that particular component. Respondents desired more information in the newsletter. Many requested "boosters" meetings perhaps over a weekend in major cities across the United States, since most could not afford the time or cost to return to Dallas, Texas, for another program. Another creative suggestion

called for the CWP to create a video that would summarize the high points of the program, so that participants could "attend" the CWP whenever and wherever they desired.

This study provided a starting point for many other research questions. Effort must be made to obtain higher response rates to reduce the inherent limitations of this type of study, and improve generalizability of the results. More studies are needed on the three different program lengths, and the types of persons who attend each one. Cost-benefit analysis can be conducted on each program length to find the ideal length for a multi-intervention program. Further studies can compare the effectiveness of multi-intervention programs to single-intervention programs. Is it more effective and cost-beneficial to promote single-intervention programs over multi-intervention programs? Or should both types be provided, along with a screening tool to place participants in the appropriate format? The effect of spousal/significant other support on long-term maintenance can be further explored so that the necessary spousal training may be designed and implemented. Methods for increasing the validity of measured dietary behaviors and levels of stress management can be studied. This may lead to general recommendations that can be utilized in other studies, facilitating comparisons between different types of programs and interventions. Finally, further research may lead to the formulation of a standard definition of successful long-term maintenance of healthy behaviors.

This study has several implications for the preventive care specialist. Personnel factors may impact the success of a health behavior change program. Tools or methods of assessing and measuring the management of stress in a person's life need to be developed or improved upon. And finally, the effectiveness and cost-benefit of a live-in, multi-intervention program and length of programs need to be justified before implementation of a program, especially in light of the current national health care environment.

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APPENDICES

List of Appendices

APPENDIX A

Follow-up Survey

The Cooper Wellness Program Research Survey

Thank you for your time! Your answers will be kept strictly confidential.

Diet and eating patterns:

1. In an average week, give the number of meals which include the following:

_____ Fried poultry or fish
_____ Beef (include burgers, tacos)
_____ Pork (include bacon & ham)
_____ Luncheon meat (include hot dogs)
_____ Cheese (include pizza)
_____ Fried foods (include chips, donuts)
_____ Pie, cake, ice cream, or cookies
_____ Eggs (# of eggs per week = ___)
_____ Margarine
_____ Breakfast cereal (# of cold:____; # of hot:____)

_____ Baked/broiled poultry or fish
_____ Fruit
_____ Vegetables
_____ Low-fat yogurt
_____ Ice milk, sherbet, or frozen yogurt
_____ Grains (bread, rice, pasta, corn)
_____ Legumes (beans, lentils, etc.)
_____ Butter
_____ Mayonnaise, salad dressing

2. In an average week, how many "snacks" do you eat? _____
   Check those that you eat most frequently:

❒ chips	❒ peanuts	❒ pretzels
❒ candy bars	❒ candy	❒ ice cream
❒ cookies	❒ popcorn	❒ fruit
❒ Other _____	_____	_____

3. Do you generally select low-fat, non-fat, or fat-free alternatives when available (like low-fat cheese, fat-free mayonnaise, etc.)? ❒ Yes ❒ No

4. Beverages: Give the number of servings that you consume in an average week of the following:
   Water (glasses) _____
   Coffee (cups): regular _____; decaffeinated _____
   Tea (cups): regular _____; decaffeinated _____
   Soft drinks (12 oz.): regular (with sugar)_____; sugar free _____; caffeinated ____
   Milk (8 oz. glass): whole _____; low-fat (2%) _____; skim (1/2-1%) _____; non-fat _____

5. ***"In attempting to follow my nutrition program, I've experienced the following:"*** (Check all that apply.)

❒ I need more will power to follow my new eating style.
❒ I lack time to plan nutritious meals.
❒ I know how to select things in a restaurant; I'm restaurant savvy; I'm a "menu sleuth."

- ❒ "Healthy" food is expensive.
- ❒ I cook for my family & they aren't interested in eating my healthy cooking.
- ❒ I travel frequently & eating healthfully on the road is hard.
- ❒ I need to hire a cook.
- ❒ I mainly eat my meals out.
- ❒ I've changed my thinking of foods from "good or bad" to "All food, in moderation, can fit into a healthy lifestyle."
- ❒ I read labels for ingredients & nutritional information.
- ❒ I'm eating a healthy balance of fats, proteins, & carbohydrates.
- ❒ I'm aware of my calorie intake.
- ❒ I'm aware of grams of fat intake.
- ❒ I have a "sweet tooth" that's difficult to satisfy.
- ❒ I continue to apply & add to my knowledge of nutrition.
- ❒ I pre-plan for "crisis" situations (holidays, special occasions, etc.)

6. How helpful were the following parts of the Cooper Wellness Program in changing your eating patterns? (Circle number that applies best in each category.)

	Extremely helpful	Very helpful	Helpful	Somewhat helpful	Not helpful
Presentations, lectures, videos	5	4	3	2	1
Cooking demonstrations	5	4	3	2	1
Individual time with dietition	5	4	3	2	1
Handouts, workbook	5	4	3	2	1
Practical tips and information	5	4	3	2	1
Other (list)	5	4	3	2	1

Exercise:

7. Are you currently involved in a routine of regular exercise (*moderate, continuous exertion for at least 15-20 minutes duration at least 3 days a week, for at least 6 months*)? ❒ Yes ❒ No–go to #10

   If **"YES"**, how long have you been exercising regularly? _____ (months)
   (Include time before attending the Cooper Wellness Program as well.)

8. Since attending the Cooper Wellness Program, please list the exercise activities you <u>currently</u> perform for a total of 3 or more times per week.
   - ❒ Walking
   - ❒ Swimming
   - ❒ Treadmill
   - ❒ Jogging/running
   - ❒ Stationary cycling
   - ❒ Bicycling (outdoors)
   - ❒ Aerobics (low,high impact)
   - ❒ Vigorous sports (racquetball, tennis, basketball, etc.)
   - ❒ Other activities (rower, Nordic Track, Stairmaster, etc.)

(Write in 1 to 3 frequent activities. ☛)	**Activity (example)** Walking	**Activity #1**	**Activity #2**	**Activity #3**
Workouts per week?	5			
Miles per workout?	3 miles			
Minutes per workout?	45 minutes			
Minutes in training heart rate zone	35 minutes			

9. ***"The reasons why I exercise are...":*** (Rank your top 3 answers. 1 = most important reason, 2 = 2nd most important reason, 3 = 3rd most important reason.)

___ I can control my weight/shape my body.
___ I can reduce my stress/tension/anxiety.
___ I enjoy it.
___ For the social benefits (do things with friends, meet people, etc.).
___ I'm concerned about what others will think of me.
___ It improves my health/prevents disease.
___ It improves my thinking/memory /concentration.
___ I feel better.
___ It increases my vigor/energy level throughout the rest of the day.
___ Other _____

10. If you are ***not*** exercising currently, when did you stop exercising on a regular basis?_____(month - year)

11. What are three main reasons that interfere with your exercise program?
(1 = main reason, 2 = 2nd reason, 3 = 3rd reason.)

___ Lack of time due to work/school
___ Lack of time due to household chores
___ Lack of time due to children
___ Lack of time due to social activities
___ Lack of time due to travels
___ Lack of time due to spouse
___ Lack of money
___ Lack of facilities
___ Lack of an exercise partner
___ It's boring, lost interest
___ A health problem/injury
___ Inclement weather (heat/cold, humidity, smog, etc.
___ Other (list:_____)

Stress:

12. How well do you feel you are <u>currently</u> managing your stress most of the time?

❒ Not well
❒ Fairly well
❒ Very well

13. If you ever have trouble managing your stress, which of the following explanations apply: (Check all that apply.)
    - ❒ I can't remember the stress management techniques/they are too complicated to perform.
    - ❒ My pressures are too much for the stress management techniques to handle.
    - ❒ I don't have enough time to practice any stress management techniques.
    - ❒ Other _____

14. Do you currently use any tobacco products? ❒ Yes ❒ No

15. How often do you use medications, alcohol, or other substances to help you relieve stress and relax?
    - ❒ Frequently (several times a week)
    - ❒ Occasionally (once or twice a week)
    - ❒ Seldom (once or twice a month)
    - ❒ Almost never

16. Which stress management techniques are you currently using on a regular basis? (Check all that apply.):

❒ Visualization	❒ Deep breathing	❒ Progressive muscle relaxation
❒ Balancing work/self/others		❒ Counseling
❒ Massage	❒ Values clarification	❒ Talking with others (friends, family, etc.)
❒ Exercise	❒ Positive thinking	❒ Self-talk

❒ Other (list) _____

Summary Questions:

17. In making positive lifestyle changes, how helpful are the following Cooper Wellness factors? (Please circle a number for each factor.)

CWP factors	Extremely helpful	Very helpful	Helpful	Somewhat helpful	Not at all helpful
Exercise facilities	5	4	3	2	1
Guest lodge, accommodations	5	4	3	2	1
Lectures/speakers	5	4	3	2	1
Workshops	5	4	3	2	1
Videos/slides	5	4	3	2	1
Individual time	5	4	3	2	1
Expertise of staff	5	4	3	2	1
Support of staff	5	4	3	2	1
Individual attention	5	4	3	2	1
Meals/eating out	5	4	3	2	1
MD consultation	5	4	3	2	1
***On Track* newsletter**	5	4	3	2	1
Complete physical examination	5	4	3	2	1
Exercise sessions	5	4	3	2	1
Support of other participants	5	4	3	2	1
Practical information/tips	5	4	3	2	1
Follow-up/800 number	5	4	3	2	1
Notebook/workbooks/handouts	5	4	3	2	1
Financial investment	5	4	3	2	1
Other:	5	4	3	2	1

18. My spouse/significant other has:
    - ❒ Never attended a Cooper Wellness Program.–go to #19
    - ❒ Attended a full Cooper Wellness Program with me.–go to #20
    - ❒ Attended part of a Cooper Wellness Program with me.–go to #20
    - ❒ Attended a Cooper Wellness Program at a different time.–go to #20
    - ❒ Not applicable–go to #21

19. If your spouse/significant other *never attended* the Cooper Wellness Program, do you think having them attend the program would help you maintain your lifestyle changes more easily?
    ❒ Yes–go to #21 ❒ No–go to #21

20. If your spouse/significant other *has attended* the Cooper Wellness Program (either with you or at a different time), do you feel this has helped you maintain your positive lifestyle changes since leaving the program? ❒ Yes ❒ No
    If Yes, how do you feel it has helped?

    _____

    _____

    _____

21. Have you attended any other lifestyle change program in addition to the Cooper Wellness Program?
    ❒ Yes–please check the appropriate boxes below ❒ No–go to #22

	Attended before going to the Cooper Wellness Program	Attended after going to the Cooper Wellness Program	Currently attending after going to the Cooper Wellness Program
Local health club, fitness club, etc.	❒ Yes ❒ No	❒ Yes ❒ No	❒ Yes ❒ No
Health programs at local school, YMCA, church, etc.	❒ Yes ❒ No	❒ Yes ❒ No	❒ Yes ❒ No
Worksite/employee wellness programs	❒ Yes ❒ No	❒ Yes ❒ No	❒ Yes ❒ No
Programs by HMO, medical group, MD, insurance company.	❒ Yes ❒ No	❒ Yes ❒ No	❒ Yes ❒ No
Health spa, resort, live-in center, etc.	❒ Yes ❒ No	❒ Yes ❒ No	❒ Yes ❒ No
Other:	❒ Yes ❒ No	❒ Yes ❒ No	❒ Yes ❒ No

22. If known, please give the results and date of your most recent test results for any of the

following: (To the best of your knowledge–you can approximate if need be.)

Test (check box if completed)	Results	Date (month-year)
❒ Weight	lbs.	
❒ Percent body fat (circle method): calipers, underwater weighing, bioelectrical impedance, other _____)	% body fat	
❒ Blood pressure	/ mg Hg	
❒ Total cholesterol	mg/dL	
❒ HDL	mg/dL	
❒ LDL	mg/dL	
❒ Triglycerides	mg/dL	
❒ Blood glucose	mg/dL	
❒ Treadmill time (circle protocol: modified Balke, Balke, Bruce, other _____)	Time: _____mins_____secs. Category (circle one): Superior-Excellent-Good-Fair-Poor	
❒ Other:		

23. Please share with us any comments or suggestions concerning the Cooper Wellness Program and how the program can be improved to help you maintain your new lifestyle changes?

_____

_____

Please be sure to sign and return the enclosed ticket for the drawing of a **complimentary Cooper Wellness 4-day Program** *with your completed survey in the self-addressed self-stamped envelope today! The deadline for the drawing is February 28, 1993.*

APPENDIX B

Medical History Questionnaire

MEDICAL HISTORY QUESTIONNAIRE

Name: _____

Date of Examination: _____

This is your medical history form for your visit to the Cooper Clinic. All information will be kept confidential. The doctor you see at the clinic will use this information in his evaluation of your health. Obviously, you will want to make it as accurate and complete as possible.

Please print your responses.

I. GENERAL INFORMATION

NAME:

_____ Dr.
_____ Rev.
_____ Mr.
_____ Mrs.
_____ Ms.
_____ Miss
_____ Other

(USE FULL LEGAL NAME PLEASE)

_____ Age _____
(Last) (First) (Middle)

_____
(Nickname or named used) (Maiden Name, if applicable)

ADDRESS: _____
(Number and Street) (City and State)

_____ ( )
(Country) (Zip Code) (Home Phone Number)

_____
(Soc. Sec. Account Number) (Birthday month-day—year) (Mother's Maiden Name)

PERSONAL PHYSICIAN: _____
(Last Name) (First)

_____ ( )
(Number and Street) (Physician'sPhone Number)

_____
(City) (State) (Zip Code)

Do you want a copy of your report and all other documents relating to this medical examination sent to your personal physician? ☐ Yes ☐ No

If yes, give permission by signing your name. _____

Do you wish to authorize the loan of x-ray films to your personal physician, or other consultant whom you may designate? ☐ Yes ☐ No

If yes, give permission by signing your name. _____

CURRENT OCCUPATION: Are you currently employed? ☐ Yes ☐ No

Name of Business or Employer: _____

Type of Business: _____

Your position, title, or type of work: _____ ( )
(Business Phone Number)

How long have you been with your present job? _____

Complete Office Address: _____

_____

_____

_____

BILLING AND INSURANCE INFORMATION

PATIENT'S NAME _____ DATE _____

IF YOU ARE A MEDICARE BENEFICIARY, IT IS ESSENTIAL THAT YOU CONTACT THE BUSINESS OFFICE BEFORE YOUR APPOINTMENT. 1-800-444-5764

INSTRUCTIONS

If you are responsible for your charges, go to section marked SELF.

If your company is responsible for your charges, go to section marked COMPANY.

NOTE: Charges for any procedures which we perform at your request, which your company does not cover, will be your responsibility.

SELF

MAILING ADDRESS FOR STATEMENT: ☐ HOME ☐ OFFICE

Patients are responsible for prompt payment of charges. If you plan to file for insurance for reimbursement to yourself, please indicate:

☐ Insurance form required (number of copies needed _____).

☐ Participation in Type B Medicare.
Please provide your Health Insurance Claim Number as it appears on your Health Insurance Card if you are a participant in Medicare.

_____

A standard insurance form will be mailed to you. You will need to fill in the name of the insurance company, your policy number, and sign a release form. You should then forward the completed form to your insurance company. If you need any assistance, please contact our bookkeeping department.

PATIENTS OR AUTHORIZED PERSONS SIGNATURE: I authorize the release of any medical or other information necessary to process this claim. I also request payment of government benefits either to myself or to the party who accepts assignment below.

SIGNED: _____ DATE: _____

COMPANY

You will receive the **original** medical report. If a copy of this report and other documents relating to this medical examination are to be forwarded to your company, you **MUST** sign the authorization below. This copy will only be sent to an individual. Please indicate the name and address below.

I authorize the Cooper Clinic to send me a copy of my medical report to the following individual:

NAME: _____ COMPANY NAME: _____

ADDRESS: _____

_____ PHONE (____) _____

SIGNED: _____

MAILING ADDRESS FOR STATEMENT:

Same as above. Other: _____

_____

_____

IF YOU NEED ANY HELP COMPLETING THIS PORTION, PLEASE ASK OUR RECEPTIONIST AT THE TIME OF YOUR VISIT.

I. GENERAL INFORMATION (CONT.)

REASON FOR VISIT:

Please check the appropriate box(es):

- ☐ Comprehensive Medical Evaluation
- ☐ Evaluation of Previously-Diagnosed Heart Disease
- ☐ Evaluation of Heart Disease Risk
- ☐ Determination of Present Level of Cardiovascular Fitness
- ☐ Recommendations for Exercise Program
- ☐ Recommendations for Nutritional Program
- ☐ Recommendations for Weight Loss Program
- ☐ Referred by Personal Physician
- ☐ Referred by Other Physician: Name _____ City/State: _____
- ☐ Participant in In-Residence Program Phone Number (____) _____
- ☐ Company Benefit
- ☐ Company Requirement
- ☐ Other _____

OTHER HEALTH DATA:

1. How many days of work did you lose due to illness in the past year? _____
2. How many times did you see a physician for medical reasons last year? _____
3. When was your last visit to a physician? (Approximate date) _____

   What was the reason for that visit? _____
4. When was your last visit to a dentist? _____
5. Please indicate someone outside your immediate family who will always know your address: (For our longitudinal research project)

   Name: _____

   Address: _____

   _____
6. Name, Address and Phone Number of Spouse: Phone Number:

   Name: _____ Home: (____) _____

   Address _____ Work: (____) _____

   _____
7. Name, Address, and Phone number of person to be notified in case of emergency:

   Name: _____ Relationship: _____

   Address: _____

   _____

   Phone Number: (____) _____
8. How did you learn about the Cooper Clinic? _____

II. PERSONAL PROFILE

Sex: ☐ Male ☐ Female

Race: ☐ White ☐ Black ☐ Hispanic ☐ Asian ☐ Other (specify _____)

Place of Birth: _____

A. Marital History:

1. Are you now or have you ever been married? ☐ Yes ☐ No
   If yes, how many times have you been married? _____

2. Current marital status:
   - ☐ Single
   - ☐ Married
     If yes, how long? _____
   - ☐ Divorced
   - ☐ Widowed

3. Number of children? _____

B. Education: *(Circle highest level attained).*

Grade:	7	8	9	10	11	12		Degree	Field	College/Univ.
College:				1	2	3	4	BACHELOR			
								MASTERS			
Post Graduate:				1	2	3	4	DOCTORATE			

C. Military: Are you now or have you in the past served in the Armed Forces?
☐ Yes ☐ No

If yes, give branch and dates: _____

D. Present Household *(Check all that apply).*

- ☐ Apartment
- ☐ City
- ☐ House
- ☐ Suburbs
- ☐ Other _____
- ☐ Country

Does anyone live with you?

- ☐ Live alone
- ☐ Spouse
- ☐ Children
- ☐ Parents
- ☐ In-Laws
- ☐ Other

E. Present Occupation: What is your present work situation *(Check all that apply.)*

- ☐ Employed Full-time
- ☐ Employed Part-time
- ☐ Semi-Retired
- ☐ Fully-Retired
- ☐ Self-Employed
- ☐ Unemployed
- ☐ Housewife
- ☐ Student
- ☐ Other _____

If you are employed, please indicate the following:
Name of business or employer: _____

III. CURRENT MEDICAL STATUS

A. PRESENT MEDICAL PROBLEMS: Please list any known *significant* medical problems that you have *at present:*

PROBLEM	DATE OF ONSET	

IV. REVIEW OF SYSTEMS

Please indicate whether you have ever had a *significant* problem with any of the symptoms or conditions listed below.

	Yes	No	Don't know	If yes, when or onset?	Is this still a problem?	
GENERAL						
1. Unexplained weight loss	☐	☐	☐	_____	_____	_____
2. Chronic fatigue	☐	☐	☐	_____	_____	_____
3. Change in appetite	☐	☐	☐	_____	_____	_____
4. Night sweats	☐	☐	☐	_____	_____	_____
5. Fever or chills	☐	☐	☐	_____	_____	_____
6. Any type of cancer	☐	☐	☐	_____	_____	_____
7. Sleep disorder	☐	☐	☐	_____	_____	_____
HEART/VASCULAR						
8. Chest pain or pressure	☐	☐	☐	_____	_____	_____
9. Chest pain with exertion	☐	☐	☐	_____	_____	_____
10. Heart attack	☐	☐	☐	_____	_____	_____
11. Rapid or irregular heartbeats	☐	☐	☐	_____	_____	_____
12. Fainting or lightheadedness	☐	☐	☐	_____	_____	_____
13. High blood pressure	☐	☐	☐	_____	_____	_____
14. Rheumatic fever	☐	☐	☐	_____	_____	_____
15. Calf pain with exercise	☐	☐	☐	_____	_____	_____
16. Varicose veins	☐	☐	☐	_____	_____	_____
17. Phlebitis	☐	☐	☐	_____	_____	_____
18. Stroke	☐	☐	☐	_____	_____	_____
19. High blood cholesterol	☐	☐	☐	_____	_____	_____
20. High blood triglycerides	☐	☐	☐	_____	_____	_____
EYES						
21. Decrease in vision Date of last eye exam _____	☐	☐	☐	_____	_____	_____
22. Double vision	☐	☐	☐	_____	_____	_____
23. Glaucoma	☐	☐	☐	_____	_____	_____
24. Color blindness	☐	☐	☐	_____	_____	_____
25. Cataracts	☐	☐	☐	_____	_____	_____
26. Serious injury to eye	☐	☐	☐	_____	_____	_____
EAR-NOSE-THROAT						
27. Hearing loss	☐	☐	☐	_____	_____	_____
28. Prolonged exposure to loud noise	☐	☐	☐	_____	_____	_____
29. Ringing in ears	☐	☐	☐	_____	_____	_____
30. Chronic ear infection	☐	☐	☐	_____	_____	_____
31. Ruptured eardrum	☐	☐	☐	_____	_____	_____
32. Sinus infection	☐	☐	☐	_____	_____	_____
33. Vertigo	☐	☐	☐	_____	_____	_____
34. Vocal cord polyp	☐	☐	☐	_____	_____	_____
ENDOCRINE						
35. Thyroid disease	☐	☐	☐	_____	_____	_____
36. High blood sugar	☐	☐	☐	_____	_____	_____
37. Diabetes	☐	☐	☐	_____	_____	_____

IV. REVIEW OF SYSTEMS (CONT.)

	Yes	No	Don't know	If yes, when or onset?	Is this still a problem?	
PULMONARY						
38. Chronic cough or phlegm	☐	☐	☐			
39. Wheezing	☐	☐	☐			
40. Asthma	☐	☐	☐			
41. Tuberculosis	☐	☐	☐			
42. Bronchitis	☐	☐	☐			
43. Pneumonia	☐	☐	☐			
44. Emphysema	☐	☐	☐			
45. Coughed up blood	☐	☐	☐			
46. Unexplained shortness of breath	☐	☐	☐			
—while sleeping	☐	☐	☐			
—while sitting	☐	☐	☐			
—with physical activity	☐	☐	☐			
GASTROINTESTINAL						
47. Fatty food intolerance	☐	☐	☐			
48. Ulcer disease	☐	☐	☐			
49. Frequent heartburn	☐	☐	☐			
50. Vomited blood	☐	☐	☐			
51. Gallbladder trouble	☐	☐	☐			
52. Abdominal pain	☐	☐	☐			
53. Jaundice, hepatitis or cirrhosis	☐	☐	☐			
54. Frequent diarrhea	☐	☐	☐			
55. Diarrhea caused by milk (lactose intolerance)	☐	☐	☐			
56. Blood in stools	☐	☐	☐			
57. Tarry black stools	☐	☐	☐			
58. Hemorrhoids	☐	☐	☐			
59. Colon polyps	☐	☐	☐			
60. Chronic constipation	☐	☐	☐			
GENITOURINARY						
61. Veneral Disease	☐	☐	☐			
—syphilis	☐	☐	☐			
—gonorrhea	☐	☐	☐			
—herpes	☐	☐	☐			
62. Sexual problems	☐	☐	☐			
63. Decreased sex drive	☐	☐	☐			
64. Impotency	☐	☐	☐			
65. AIDS	☐	☐	☐			
66. Blood in urine	☐	☐	☐			
67. Burning or pain during urination	☐	☐	☐			
68. Kidney/bladder infection	☐	☐	☐			
69. Difficulty urinating (starting or stopping)	☐	☐	☐			
70. Prostate trouble	☐	☐	☐			
71. Awakening at night to urinate	☐	☐	☐			
72. Kidney stones	☐	☐	☐			

IV. REVIEW OF SYSTEMS (CONT.)

	Yes	No	Don't know	If yes, when or onset?	Is this still a problem?	
BONE AND JOINT						
73. Chronic joint or muscle pain	☐	☐	☐	_____	_____	_____
74. Low back pain	☐	☐	☐	_____	_____	_____
75. Swollen/stiff joints	☐	☐	☐	_____	_____	_____
76. Arthritis	☐	☐	☐	_____	_____	_____
77. Gout	☐	☐	☐	_____	_____	_____
NEUROPSYCHIATRIC						
78. Loss of consciousness	☐	☐	☐	_____	_____	_____
79. Vertigo	☐	☐	☐	_____	_____	_____
80. Seizures or epilepsy	☐	☐	☐	_____	_____	_____
81. Frequent headaches	☐	☐	☐	_____	_____	_____
82. Treatment for nervous disorder	☐	☐	☐	_____	_____	_____
83. Numbness or tingling of arms, legs or face	☐	☐	☐	_____	_____	_____
84. Difficulty sleeping	☐	☐	☐	_____	_____	_____
85. Depression	☐	☐	☐	_____	_____	_____
86. Anxiety	☐	☐	☐	_____	_____	_____
87. Thoughts of suicide	☐	☐	☐	_____	_____	_____
88. Nervous breakdown	☐	☐	☐	_____	_____	_____
89. Psychiatric of psychological counseling	☐	☐	☐	_____	_____	_____
HEMATOLOGY						
90. Anemia	☐	☐	☐	_____	_____	_____
91. Blood clotting deficiency	☐	☐	☐	_____	_____	_____
92. Enlarged or swollen lymph nodes	☐	☐	☐	_____	_____	_____
93. Previous blood transfusion	☐	☐	☐	_____	_____	_____
DERMATOLOGY						
94. Skin rash	☐	☐	☐	_____	_____	_____
95. Skin cancer	☐	☐	☐	_____	_____	_____
96. Shingles (herpes zoster)	☐	☐	☐	_____	_____	_____
97. Skin sores that won't heal	☐	☐	☐	_____	_____	_____
98. Unusual moles	☐	☐	☐	_____	_____	_____
99. Mouth sores that won't heal	☐	☐	☐	_____	_____	_____
100. Other skin problems	☐	☐	☐	_____	_____	_____

ALLERGIES AND IMMUNIZATIONS

	Yes	No	Don't know
101. Do you have any allergy problems?	☐	☐	☐
102. Do you have hay fever symptoms?	☐	☐	☐
103. Do you have food allergies?	☐	☐	☐
104. When was your last tetanus shot? _____			
105. Do you have an annual flu vaccine?	☐	☐	☐
106. Have you had a pneumonia vaccine (Pneumovax)?	☐	☐	☐
107. Have you had a polio immunization series?	☐	☐	☐
108. Have you had recent immunizations?	☐	☐	☐
109. Have you had a tuberculosis skin test (PPD or Tine)?	☐	☐	☐
If yes, was it negative?	☐	☐	☐
Date of test? _____			

IV. REVIEW OF SYSTEMS (CONT.)

CURRENT MEDICATIONS: *(Include oral contraceptives, over-the-counter medications, vitamins, diet supplements, etc.)*

MEDICATION	DOSAGE	DOSES PER DAY	FOR WHAT?	WHEN STARTED?

DRUG ALLERGIES: Are you allergic to any medication? ☐ No ☐ Yes

If so, list medication and reaction to it.

MEDICATION	TYPE OF ALLERGIC REACTION	YEAR

GYNECOLOGICAL HISTORY
WOMEN ONLY:

1. When was your last menstrual period? _____
2. When was your last pelvic examination? _____
   Was the pelvic examination abnormal? ☐ Yes ☐ No
   Was the Pap Smear abnormal? ☐ Yes ☐ No
3. Are (or were) your menstrual periods abnormal? ☐ Yes ☐ No
4. Do you have urine loss when you cough, sneeze or laugh? ☐ Yes ☐ No
5. Have you had a hysterectomy? ☐ Yes ☐ No
6. Are you currently using a form of birth control? ☐ Yes ☐ No
   If yes, what kind? _____ _____
7. Number of pregnancies? _____
8. Number of live births? _____
9. Year of last pregnancy? _____
10. When was your last breast examination by a physician? _____
11. Do you examine your breasts for lumps each month? ☐ Yes ☐ No
12. Are you aware of any breast lumps? ☐ Yes ☐ No
13. Do you have any nipple discharge or bleeding? ☐ Yes ☐ No
14. Have you ever had breast x-rays (mammography) performed? ☐ No ☐ Yes
    If yes, date _____
    Was it abnormal? ☐ Yes ☐ No
15. Have you ever had a breast biopsy? ☐ Yes ☐ No
16. Have you had any other breast surgery? ☐ Yes ☐ No
    Type? _____

V. PAST MEDICAL HISTORY

A. SIGNIFICANT PAST ILLNESSES: Please list any other significant illnesses you had as a child or adult.

ILLNESS	YEAR(S)	

B. PAST SURGERY: Please list in chronological order any surgeries you have had. Include hospital *and* out-patient surgery.

TYPE OF SURGERY	YEAR	

C. INJURIES: Please list any significant injuries you have had.

TYPE OF INJURY	YEAR	

D. RADIATION TREATMENT: Please list any radiation treatment that you have received to your head, neck, skin or elsewhere. *(Do not include diagnostic studies.)*

AREA TREATED	YEAR	REASON FOR TREATMENT

E. DIAGNOSTIC STUDIES: Check which of the following diagnostic studies you have had in the past.

	TEST	YEAR
☐	ECG (Electrocardiogram)	
☐	Treadmill Stress Test	
☐	Ultrasound examination of the heart (Echocardiogram)	
☐	Heart catheterization (Dye test of heart vessels)	
☐	X-ray exam of stomach ("Upper GI Series")	
☐	X-ray exam of large intestine ("Barium Enema")	
☐	Proctoscopy or sigmoidoscopy (Examination of the lowest portion of the colon and rectum with a rigid tube)	
☐	Colonoscopy (Examination of the colon with a long flexible tube)	

VI. FAMILY MEDICAL HISTORY

PARENTS	AGE IF ALIVE	OR	AGE AT DEATH	SIGNIFICANT HEALTH PROBLEMS	IF DECEASED, CAUSE OF DEATH
FATHER					
MOTHER					

BROTHERS/SISTERS

SEX	AGE IF ALIVE	OR	AGE AT DEATH	SIGNIFICANT HEALTH PROBLEMS	IF DECEASED, CAUSE OF DEATH

SPOUSE: NAME _____ AGE _____ HEALTH _____

CHILDREN

SEX	AGE IF ALIVE	OR	AGE AT DEATH	SIGNIFICANT HEALTH PROBLEMS	IF DECEASED, CAUSE OF DEATH

FAMILY ILLNESSES: Have your parents, grandparents, sisters or brothers, aunts or uncles, or your children developed any of the following? *Exclude* cousins, relatives by marriage or adoption, and half relatives. *(Please check appropriate boxes.)*

	FAMILY RELATION
☐ Heart attacks, coronary bypass, angioplasty or angina under age 50 *(circle problem)*	
☐ Heart attacks, coronary bypass, angioplasty or angina age 50-65 *(circle problem)*	
☐ Strokes under age 50	
☐ Strokes age 50-65	
☐ Other heart disease	
☐ High blood pressure	
☐ Sudden unexplained death	
☐ High cholesterol or triglycerides	
☐ Diabetes	
☐ Thyroid disease	
☐ Osteoporosis	
☐ Obesity	
☐ Colon polyps	
☐ Lung Cancer	
☐ Colon Cancer	
☐ Breast Cancer	
☐ Other Cancer	

Please indicate any death or serious illness, of immediate family members in the past year: _____

VII. PERSONAL HABITS

A. TOBACCO:

1. Do you currently use tobacco? ☐ Yes ☐ No
   (If not, go to question 2.)
   a. If you smoke cigarettes now, how many per day? _____
      What year did you start? 19_____
   b. If you smoke cigars now, how many per day? _____
      What year did you start? 19_____
   c. If you smoke a pipe now, how many pipefuls per day? _____
      What year did you start? 19_____
   d. If you use "smokeless" tobacco now, how often? _____
      What year did you start? 19_____

2. Have you used any of the following **in the past, but do not use them now?**
   ☐ Yes ☐ No
   (If not, go to the next section.)

a. Cigarettes	How many per day? _____	
	What year did you start?	19_____
	What year did you Stop?	19_____
b. Cigars	How many per day? _____	
	What year did you start?	19_____
	What year did you stop?	19_____
c. Pipe	How many per day? _____	
	What year did you start?	19_____
	What year did you stop?	19_____
d. "Smokeless" Tobacco	How many times per day? _____	
	What year did you start?	19_____
	What year did you stop?	19_____

3. Do you live with people who smoke? ☐ Yes ☐ No

4. Did your parents smoke when you were growing up? Father ☐ Yes ☐ No
   Mother ☐ Yes ☐ No

B. ALCOHOL:

1. Do you drink alcoholic beverages? ☐ Yes ☐ No
   If yes, how many drinks *per week?*
   Beer (12 oz.) _____
   Wine (5 oz. glass) _____
   Hard Liquor (1.5 oz.) _____

2. Do you now have or have you ever had problems with excessive alcohol use? ☐ Yes ☐ No
3. If you drink alcoholic beverages . . . .
   a. Have you ever felt you ought to cut down on your drinking? ☐ Yes ☐ No
   b. Have people annoyed you by criticizing your drinking? ☐ Yes ☐ No
   c. Have you ever felt bad or guilty about your drinking? ☐ Yes ☐ No
   d. Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover? ☐ Yes ☐ No
   e. Has your drinking ever affected your job or ability to work ☐ Yes ☐ No
   f. Have you ever been arrested for driving while intoxicated or under the influence of alcohol? ☐ Yes ☐ No

VII. PERSONAL HABITS (CONT.)

C. WEIGHT:

1. What is your current weight? _____ pounds
2. What do you consider a good weight for yourself? _____ pounds
3. What was your highest weight after age 18 (excluding pregnancy)? _____ pounds
   At what age? _____
4. What was your lowest weight after age 18? _____ pounds
   At what age? _____
5. What was your weight at age 21? _____ pounds
6. Weight loss history: How many times *in your life* would you estimate you have lost the number of pounds shown below?

	5 lbs.	10 lbs.	20 lbs.	30 lbs.	50 lbs.	80 lbs.	100 lbs.
Number of Times							

D. DIET:

1. Some people have to watch what they eat all the time to control their weight, others eat all they want and their weight is fine, and others have to eat more than they want to keep their weight up. What is your case?

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Eat Much Less Than I Want	Eat Somewhat Less Than I Want	Eat Just What I Want	Eat Somewhat More Than I Want	Eat Much More Than I Want

2. How often are you dieting (eating less than you would like)?

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Never	Rarely	Sometimes	Often	Always

3. Are you currently on any diet or dietary restriction?
   ☐ Yes ☐ No
   If yes, check the appropriate description.

   ☐ Low Fat
   ☐ Low Cholesterol
   ☐ Low Sodium (salt)
   ☐ Low Calorie (wt. reduction)
   ☐ High Fiber
   ☐ Other *(Specify)*: _____

   Who (if anyone) supervises or sponsors the program? _____
   How long have you been following the diet? _____

VII. PERSONAL HABITS (CONT.)

E. **MEALS:**

1. In an average week, how many meals (out of 21) do you eat? _____

2. Give the number of those meals which include the following:

_____ Fried poultry or fish
_____ Beef (include burgers, tacos)
_____ Pork (include bacon & ham)
_____ Luncheon meat (include hot dogs)
_____ Cheese (include pizza)
_____ Fried foods (include chips, donuts)
_____ Pie, cake, ice cream, or cookies
_____ Eggs
(Number of eggs per week = _____)
_____ Butter
_____ Margarine
_____ Mayonnaise, salad dressing

_____ Baked/broiled poultry or fish
_____ Fruit
_____ Vegetables
_____ Low-fat yogurt
_____ Ice milk, sherbet, or frozen yogurt
_____ Grains (bread, rice, pasta, corn)
_____ Legumes (beans, lentils, etc.)
_____ Breakfast cereal
(Specify Types: _____)
_____

3 In an average week, how many "snacks" do you eat? _____
Circle those that you eat most frequently:

chips	peanuts	pretzels	candy bars	candy	ice cream
cookies	popcorn	fruit	Other _____	_____	_____

F. **BEVERAGES:** Give the number of servings that you consume in an average week of the following:

Water (glasses) ..... _____

Coffee: (cups)
Regular ..... _____
Decaffeinated ..... _____

Tea: (cups)
Regular ..... _____
Decaffeinated or Herbal ..... _____

Soft Drinks: (12 oz.)
Regular (With Sugar) ..... _____
Sugar Free ..... _____
How many of the above contain caffeine? ..... _____

Milk (8 oz. glasses)
Whole Milk ..... _____
Low-Fat (2%) Milk ..... _____
Skim (½-1%) Milk ..... _____

VIII. EXERCISE

A. AEROBIC ACTIVITIES:

1. Are you currently involved in a routine of regular exercise *(moderate continuous exertion for at least 15-20 minutes duration at least 3 days a week?)* ☐ Yes ☐ No

2. How long have you been exercising regularly? _____Yrs. _____Mos. _____Wks.

3. For the last three months, which of the following activities have you performed regularly? (Please check **YES** for all that apply and **NO** if you do not perform the activity; provide an estimate of the amount of activity for all marked **YES**. Please be as complete as possible.)

Walking
☐ Yes
☐ No
How many workouts per week? _____
How many miles (or fractions) per workout? _____
Average duration of workout? _____ (minutes)
Average time per mile? _____

Jogging or Running
(outdoors or on track)
☐ Yes
☐ No
How many workouts per week? _____
How many miles per workout? _____
Average duration of workout? _____ (minutes)
Average time per mile? _____

Treadmill
(walking or running)
☐ Yes
☐ No
How many workouts per week? _____
Average duration of workout? _____ (minutes)
Speed? _____ Grade? _____ % Heart Rate? _____

Bicycling
(outdoors)
☐ Yes
☐ No
How many workouts per week? _____
How many miles per workout? _____
Average duration of workout? _____ (minutes)
Average time per mile? _____

Stationary Cycling
☐ Yes
☐ No
Type of stationary cycle? _____
How many workouts per week? _____
Average duration of workout? _____ (minutes)
Heart rate during exercise? _____

Swimming Laps
☐ Yes
☐ No
How many workouts per week? _____
How many miles per workout? _____
(880 yds.= 0.5 miles)
Average duration of workout? _____ (minutes)
How many months per year? _____

Aerobic Dance
or
Floor Exercises
☐ Yes
☐ No
How many workouts per week? _____
Average duration of workout? _____ (minutes)
Heart rate during exercise? _____

Vigorous Racquet Sports
(e.g. Racquetball, Singles Tennis)
☐ Yes
☐ No
How many workouts per week? _____
Average duration of workout? _____ (minutes)

Other Vigorous Sports
Or Exercise
(e.g. Basketball or Soccer) Please specify:
_____
☐ Yes
☐ No
How many workouts per week? _____
Average duration of workout? _____ (minutes)

4. Do you follow the Aerobics points exercise program? ☐ Yes ☐ No
If yes, about, how many Aerobics points do you earn per week? _____
How many Aerobics points did you earn last week? _____

5. What time of day do you usually exercise? _____

VIII. EXERCISE HISTORY (CONT.)

6. How do you rate the physical activity that you are now getting compared to others in your same age and sex? Think about both your leisure and work activities. *(Please check your response.)*

- ☐ A. EXTREMELY INACTIVE
- ☐ B. INACTIVE
- ☐ C. SOMEWHAT INACTIVE
- ☐ D. ABOUT AVERAGE
- ☐ E. SOMEWHAT ACTIVE
- ☐ F. ACTIVE
- ☐ G. EXTREMELY ACTIVE

7. Compared to a year ago, how much regular exercise do you currently get?

- ☐ A. MUCH LESS
- ☐ B. SOMEWHAT LESS
- ☐ C. ABOUT THE SAME
- ☐ D. SOMEWHAT MORE
- ☐ E. MUCH MORE

8. Have you continuously followed your program?

☐ No Approximately how many times have you stopped for at least six months? _____
What is the longest period that you were continuously active? _____
What is the longest period that you were not on any program? _____
Since you started an exercise program, how many total years have you been regularly active? _____

☐ Yes

9. What exercise equipment, if any, do you own? *(Check those that apply)*

- ☐ Running Shoes
- ☐ Stationary Cycle
- ☐ Bicycle
- ☐ Rowing Machine
- ☐ Treadmill
- ☐ Cross Country Ski Simulator
- ☐ Other *(Specify)* _____

10. To what exercise facilities do you have easy access? *(Check those that apply)*

- ☐ Fitness Club
- ☐ Jogging Path
- ☐ Bicycle Path
- ☐ Aerobic Exercise Class
- ☐ Swimming Lap Pool
- ☐ Suitable Area For Walking

11. If you are not exercising regularly, what exercise activities might be of most interest to you? *(List in order of decreasing preference.)*

a. _____

b. _____

c. _____

B. MUSCLE STRENGTHENING ACTIVITIES

1 Are you currently involved in a muscle strengthening program? ☐ Yes ☐ No

If yes, what type? *(Check those that apply)*

- ☐ Calisthenics
- ☐ Free Weights
- ☐ Weight Training Machines
- ☐ Other: *(Specify)* _____

How many days per week do you do these exercises? _____
Average duration of workout? _____
How long have you been involved in this routine? _____

EXERCISE HISTORY (CONT.)

C. FLEXIBILITY ACTIVITIES

1. Are you currently involved in exercises to maintain or improve your joint flexibility? ☐ Yes ☐ No

   If yes, what type?

   - ☐ Stretching
   - ☐ Calisthenics
   - ☐ Exercise Class

   How many days per week? _____
   Average duration of exercise? _____
   How long have you been involved in this routine? _____

2. Can you touch your toes without bending your knees? ☐ Yes ☐ No

D. EXERCISE SAFETY

1. Do you warm up prior to exercise? ☐ Yes ☐ No
2. Do you cool down slowly after exercise? ☐ Yes ☐ No
3. Do you know how to take your pulse? ☐ Yes ☐ No
4. Do you monitor your heart rate when exercising? ☐ Yes ☐ No
5. If you bicycle, do you wear a protective helmet? ☐ Yes ☐ No
6. If you exercise outdoors at night, do you use reflective gear or a light? ☐ Yes ☐ No

IX. STRESS AND EMOTIONAL FACTORS

1. How stressful do you consider your home life to be?

☐ Low ☐ Moderate ☐ High

2. How stressful do you consider your occupation to be?

☐ Low ☐ Moderate ☐ High

3. How would you classify yourself on the following tension and anxiety scale?

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
No Tension Very Relaxed	Slight Tension	Moderate Tension	High Tension	Very Tense "High-Strung"

4. What is your greatest source of worry or concern *at present?*

☐ Marriage ☐ Family ☐ Job ☐ Finances ☐ Health ☐ Other

5. How well do you feel you manage your stress?

☐ Not well most of the time
☐ Fairly well most of the time
☐ Very well most of the time

6. Do stress and tension in your life seem to cause you to have any of the following symptoms? *(Check all that apply)*

☐ General irritability or impatience
☐ Headache
☐ Abdominal discomfort
☐ Sleeplessness
☐ Other *(Specify)*

7. How often do you use medications, alcohol, or other substances to help you relieve stress and relax?

☐ Frequently (several times a week)
☐ Occasionaly (once or twice a week)
☐ Seldom (once or twice a month)
☐ Almost never

8. Please rate your general emotional outlook on life on the following scale:

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Often very Depressed	Generally Sad	Happy & Sad Equal Amount	Generally Happy	Usually Very Happy And Optimistic

9. How do you rate overall health?

☐ 1	☐ 2	☐ 3	☐ 4
Poor	Fair	Good	Excellent

10. How do you spend your leisure time?

_____

_____

_____

X. LIFESTYLE RISK EVALUATION

HOME

	Yes	No
1. Do you live in a dwelling without a smoke alarm?	☐	☐
2. Do you live in a dwelling without a fire extinguisher?	☐	☐
3. Do any household members use alcohol to excess or use illicit drugs?	☐	☐

AUTO

4. Do you drive a sports car or a subcompact car?	☐	☐
5. Do you ever drive or ride in a car without using seat belts?	☐	☐
If yes, what percent of the time without seat belts? _____		
6. Does your commute to work involve freeway traffic?	☐	☐
7. Does anger occasionally affect your driving?	☐	☐
8. Do you ever pick up hitchhikers?	☐	☐
9. Have you received any speeding tickets or warnings in the past year?	☐	☐
10. Do you ever drive after drinking alcohol?	☐	☐

LIFESTYLE

11. Do you have any hobbies that involve high risk such as race cars, motorcycles, ATV's, small planes, parachuting, or scuba diving?	☐	☐
12. Do you attend happy hour more than once per week?	☐	☐
13. Do you use any "recreational" drugs?	☐	☐

XI. CURRENT LEVELS OF SATISFACTION

Please indicate your level of satisfaction in each of the following areas by checking the appropriate box. Then indicate whether you intend to make any changes in those areas during the next 12 months.

	Generally satisfied	Generally dissatisfied	Intend to make changes
1. My diet	☐	☐	☐
2. My weight	☐	☐	☐
3. My physical condition and stamina	☐	☐	☐
4. My use of cigarettes	☐	☐	☐
5. My use of alcohol or recreational drugs	☐	☐	☐
6. My blood pressure	☐	☐	☐
7. My handling of tension and stress	☐	☐	☐
8. My job	☐	☐	☐
9. My family life	☐	☐	☐
10. My general health and lifestyle	☐	☐	☐

DISCLOSURE AND CONSENT
MEDICAL AND SURGICAL PROCEDURES

TO THE PATIENT: You have the right, as a patient, to be informed about your condition and the risks and hazards involved in the recommended surgical, medical, or diagnostic procedure to be used. You may then make the decision whether or not to undergo the procedure. This disclosure is not meant to scare or alarm you; it is simply an effort to make you better informed so you may give or withhold your consent to the procedure.

CONSENT

I voluntarily consent and authorize Dr. _____, as my Cooper Clinic physician, and such technical assistants and other health care providers as he may deem necessary, to administer an exercise stress test.

Just as there may be risks and hazards in continuing any present condition without treatment, there may also be risks and hazards related to the performance of this procedure. I realize that common to many surgical, medical, and diagnostic procedures is the potential for infection, blood clots in veins and lungs, hemorrhage, allergic reaction, and even death. In addition, I realize that the following risks and hazards may also occur in connection with this particular procedure: disorders of heart rhythm, fall in blood pressure, heart attack.

For the purpose of aiding medical research, I permit the Institute for Aerobics Research and the Cooper Clinic to accumulate and analyze data relating to my evaluation and to contact me for follow-up information regarding my health status in the future.

I have been given an opportunity to ask questions about the procedure and the risks and hazards involved, and I believe that I have sufficient information to give this informed consent. I certify this form is clear to me, that I have read it or have had it read to me, and that I understand its contents.

SIGNATURE: _____
PATIENT OR LEGALLY RESPONSIBLE PERSON

DATE: _____ **TIME:** _____

WITNESS: _____

Are you an Activity Center Member? YES ☐
NO ☐

(NOTE TO TECHNICIAN: IF YES IS CHECKED, YOU MUST COMPLETE THE AAC MEMBERSHIP MEDICAL FORM AND SEND TO AAC BUSINESS OFFICE.)

INFORMED CONSENT AND AUTHORIZATION FOR COOPER WELLNESS PROGRAM PARTICIPATION AND IMPERSONAL RELEASE OF MEDICAL/HEALTH RECORDS FOR SCIENTIFIC INVESTIGATION

I, the undersigned, hereby voluntarily give my informed consent and authorization to the Aerobics Center for me to engage in a series of health and medical evaluations and to participate in a lifestyle modification/health enhancement ("wellness") program.

I understand that the wellness program in which I will participate will be led by trained health promotion specialists including exercise leaders, health educators, and nutritionists. There is very little risk associated with the nutrition and stress management aspects of the program. There may be some slight risk associated with the exercise program, including muscle soreness or injury; there is a chance that some cardiovascular problem could develop, and in very rare instances a "heart attack" may occur. I will be responsible for following the instructors recommendations regarding safety procedures during the program, which will minimize these risks. Excessive exercise in hot humid conditions can lead to heat injury such as heat exhaustion or heat stroke. This danger can be reduced by altering my exercise program during hot and humid weather, by exercising in climate controlled environments, by drinking plenty of water, and by recognizing the early signs of heat injury.

These risks are minimized by careful medical screening prior to entering the program and through observations by trained exercise leaders. Exercise leaders are trained in first aid and emergency care, and such assistance will be rendered in the event of an emergency. If further diagnostic or therapeutic care is needed, I understand that it is my personal financial responsibility.

I also hereby voluntarily give consent and authorization to inclusion of data concerning my health and fitness status, which are obtained by personnel of the Aerobics Center, in a research data bank which will be used to investigate the relationships between various aspects of lifestyle and health (especially risk of heart disease). These data are derived from questionnaires, medical examinations, and lab testing. Included are medical history, family history of heart disease, smoking history, body composition, blood pressure, blood, diet, psychosocial, demographic, and physical activity data.

I understand that these data used for scientific research will receive only impersonal statistical treatment with my right of privacy protected. None of my data will be revealed in individualized form to another person without my prior written consent. Further, I recognize that I can discontinue participation at any time without penalty of any kind.

Further, I have read the foregoing carefully and I understand its content. Any questions which may have occurred to me concerning this informed consent have been answered to my satisfaction.

Finally, I release and discharge the Aerobics Center, its divisions, officers, agents, staff, faculty, physicians, technicians, and any others connected therewith from all claims and/or damages whatsoever that I or my representatives may have arising from, or incident to this program.

NAME:_____

ADDRESS:_____

_____

SIGNATURE:_____

DATE:_____

WITNESS:_____

APPENDIX C

List of Dietary Behaviors

- "I read labels for ingredients and nutritional information."
- "I continue to apply and add to my knowledge of nutrition."
- "I know how to select things in a restaurant; I'm 'restaurant savvy'; I'm a 'menu sleuth'."
- "I'm aware of my intake of fat grams."
- "I'm eating a healthy balance of fats, proteins, and carbohydrates."
- "I'm aware of my calorie intake."
- "I've changed my thinking of foods from 'good or bad' to 'All foods, in moderation, can fit into a healthy lifestyle'."
- "I pre-plan for crisis situations (holidays, special occasions, etc.)."