1983

Self-perceived benefits which occur as the result of Kimberly-Clark's health management program

Richard Lee Langford

SELF-PERCEIVED BENEFITS WHICH OCCUR AS THE RESULT OF KIMBERLY-CLARK'S HEALTH MANAGEMENT PROGRAM

An Abstract of a Thesis

Submitted

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

Richard Lee Langford

University of Northern Iowa

April 1983

ABSTRACT

The purpose of this study was to determine if employee participants in Kimberly-Clark's Health Management Program perceived benefits from their participation that have affected their lifestyles, both at work and outside of work.

The population for this study consisted of all salaried employees of Kimberly-Clark in the Fox Valley of Wisconsin who have been participants within the Health Service Center for at least six months at an adherence level of two days per week or more. A random sample of this population was used to conduct the survey. A total of 130 employees were surveyed.

The research study was of a descriptive design. Once the research questions were evaluated, a cross-tabulation by age, sex, and adherence was done.

There was no significant change between the participants' sex, age, and adherence and perceived differences in the items listed below as a function of their participation in Kimberly-Clark's Health Management Program.

1. Adherence to the program
2. Work performance

3. Reactions or feelings about their job environment
4. Work attendance
5. Kind of food eaten
6. Amount of food eaten
7. Recreational activities engaged in
8. Stamina
9. Amount of stress in their lives
10. General health
11. Weight
12. Work associates' health habits

No significant change was found between participants' age, sex, and the amount of food eaten, but a significant change was found between participants' adherence and the amount of food they eat as a function of their participation in the program. No significant change was found between participants' sex, adherence and their smoking habits, but a significant change was found between participants' age and their smoking habits as a function of their participation in the program. No significant change was found between participants' sex, adherence, and their handling of stress, but a significant change was found between participants' age and their handling of stress as a function of their

participation in the program. No significant change was found between participants' sex, adherence, and their spouses' health habits, but a significant change was found between participants' age and their spouses' health habits as a function of their participation in the program. No significant change was found between participants' adherence and their familys' health habits, but a significant change was found between participants' age, sex, and their familys' health habits as a function of their participation in the program. No significant change was found between participants' age, sex, and their friends' health habits, but a significant change was found between participants' adherence and their friends' health habits as a function of their participation in the program.

SELF-PERCEIVED BENEFITS WHICH OCCUR AS THE RESULT OF KIMBERLY-CLARK'S HEALTH MANAGEMENT PROGRAM

A Thesis

Submitted in Partial Fulfillment

of the Requirements for the Degree

Master of Arts

Richard Lee Langford

University of Northern Iowa

April 1983

This Study by: Richard Lee Langford

Entitled: Self-Perceived Benefits Which Occur as the Result of Kimberly-Clark's Health Management Program

has been approved as meeting the thesis requirement for the Degree of Master of Arts

[illegible]	Michael White	
Date	Chairman, Thesis Committee	
	Forrest Dolgener	
3 11 83		
Date	Member, Thesis Committee	
	David Whitsett	
3/22/83	[illegible]	
Date	Member, Thesis Committee	
	John C. Downey	
4/26/83		
Date	Dean of the Graduate College	

ACKNOWLEDGEMENTS

The author would like to thank the many people who made this masters thesis possible--committee members Drs. Michael White, David Whitsett, and Forrest Dolgener for their advice, time, and support during this research project.

Several noncommittee members were also directly responsible for the success of this study--Kimberly-Clark Corporation Health Management staff members Dr. R. E. Dedmon, Connie Smoczyk, and Bill Boles. These people were very helpful, not only the time they took from their busy schedule to give me advice and guidance, but also for making my three-week stay at Kimberly-Clark an enjoyable one. Last and most important, I would like to thank my wife Cyndi, for the constant support and help she gave me throughout my master study endeavor.

TABLE OF CONTENTS

		Page
ACKNOWLEDGEMENTS		iii
LIST OF TABLES		viii
Chapter		
1.	INTRODUCTION	1
	Background of the Problem	1
	Significance of the Problem	6
	Statement of the Problem	7
	Purpose of the Study	7
	Research Questions	7
	Assumptions	8
	Limitations	9
	Delimitations	9
	Definition of Terms	10
2.	REVIEW OF THE LITERATURE	11
	Evaluation of Psychological Research	11
	Three Major Psychological Studies	15
3.	METHODS AND PROCEDURES	26
	Introduction	26
	Data Collection	26
	Research Population	27
	Description and Selection of Kimberly-Clark	29

Chapter Page

Data Preparation. 33

Statistical Analysis of the Data. 33

4. PRESENTATION AND ANALYSIS OF THE DATA 35

Introduction. 35

Evaluation of the Research Questions. 36

5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . 67

Summary 67

Conclusions 69

Discussion. 70

Recommendations for Further Research. 76

REFERENCES 78

APPENDICES 84

Appendix A Lutheran Mutual Life Insurance Fitness Program. 84

Appendix B Survey Questions. 86

Appendix C Descriptive Statistics of Data Analysis 92

1. Survey Population 93

2. Adherence by Age. 94

3. Adherence by Sex. 95

4. Work Performance by Age 96

5. Work Performance by Sex 97

6. Work Performance by Adherence 98

7. Reactions or Feelings by Age. 99

8. Reactions or Feelings by Sex. 100

9. Reactions or Feelings by Adherence. . . 101
10. Work Attendance by Age. 102
11. Work Attendance by Sex. 103
12. Work Attendance by Adherence. 104
13. Kind of Food by Age 105
14. Kind of Food by Sex 106
15. Kind of Food by Adherence 107
16. Amount of Food by Age 108
17. Amount of Food by Sex 109
18. Amount of Food by Adherence 110
19. Smoking Habits by Age 111
20. Smoking Habits by Sex 112
21. Smoking Habits by Adherence 113
22. Amount of Sleep by Age. 114
23. Amount of Sleep by Sex. 115
24. Amount of Sleep by Adherence. 116
25. Recreational Activities by Age. 117
26. Recreational Activities by Sex. 118
27. Recreational Activities by Adherence. . 119
28. Stamina by Age. 120
29. Stamina by Sex. 121
30. Stamina by Adherence. 122
31. Amount of Stress by Age 123
32. Amount of Stress by Sex 124

33. Amount of Stress by Adherence 125

34. Handling of Stress by Age 126

35. Handling of Stress by Sex 127

36. Handling of Stress by Adherence 128

37. General Health by Age 129

38. General Health by Sex 130

39. General Health by Adherence 131

40. Weight by Age 132

41. Weight by Sex 133

42. Weight by Adherence 134

43. Spouse's Health Habits by Age 135

44. Spouse's Health Habits by Sex 136

45. Spouse's Health Habits by Adherence . . 137

46. Family Health Habits by Age 138

47. Family Health Habits by Sex 139

48. Family Health Habits by Adherence . . . 140

49. Friends' Health Habits by Age 141

50. Friends' Health Habits by Sex 142

51. Friends' Health Habits by Adherence . . 143

52. Work Associates' Health Habits by Age . 144

53. Work Associates' Health Habits by Sex . 145

54. Work Associates' Health Habits by Adherence. 146

LIST OF TABLES

Table		Page
1.	Best Liked Features of Supervised Physical Activity for Middle-Aged Men	18
2.	Chi-square Analysis of Survey Responses by Age	37
3.	Chi-square Analysis of Survey Responses by Sex	38
4.	Chi-square Analysis of Survey Responses by Adherence	39

CHAPTER 1

INTRODUCTION

Background of the Problem

The nature of man's work has evolved more rapidly during the past century than perhaps any period in recorded history. Not only has the majority of the work force shifted from jobs requiring manual labor to sedentary positions, but the production jobs that do remain require far less physical exertion than they did up until the last half of the nineteenth century.

> It has been estimated that in 1850, human muscles produced nearly one-third of the energy used by workshops, factories, and farms. Today, that figure is less than one percent. While such drastic changes have taken place at the work place, the human body has not evolved. Its muscular, respiratory, and circulatory systems still require regular and vigorous use to maintain a desirable level of health.
>
> Two of the most serious occupational health hazards are the desk and the swivel chair. They deprive working men and women of opportunities for needed exercise. The typical job in a modern office or automated factory requires less physical exertion than a hot shower.
>
> The consequences are a variety of degenerative conditions which contribute to heart disease, stroke, hypertension, and premature aging. Without regular exercise at appropriate levels of stress, health and vitality are bound to ebb--it's as simple as that. (Keelor, 1978, pp. 3-4)

A comparison can be made with prolonged bed rest transforming a previously healthy individual into a feeble, unsteady person. Similar debilitative effects can result from sedentary work and living habits. The difference is that they are allowed to develop and thus more insidious, because they are mistaken for the aging process.

From 1960 to 1978, the total spending for health mushroomed from $27 billion to an estimated $182 billion. In 1960, the United States spent less than six percent of our gross national product on health care; today the total is nearly nine percent. Nearly 13 cents of every federal dollar goes to the health industry. In that period, annual health care expenditures have increased nearly 700%. Yet premature deaths still cost American industry more than $25 billion and 132 million workdays of lost production annually. Heart disease alone accounts for 52 million lost workdays (Conrad, 1979).

Heart attacks kill more than one-half million Americans every year, many of them middle-aged and at the peak of their productive lives. Recruiting their

replacements cost approximately $700 million each year. About 75 million suffer from one or more types of back pain, usually as a result of neglected muscles. This accounts for $1 billion in lost ouput, as well as an additional $250 million in Workman's Compensation claims (Employee Fitness, 1980).

Equally significant, but more difficult to estimate, are hidden costs. Unfit individuals are ill more often and recover more slowly. Chronic fatigue and lethargy increase the risk of on-the-job accidents, while efficiency and productivity sag. Companies lose more than sick pay when employees are laid up in hospitals (Conrad, 1979).

General Motors, for example, now spends $825 million for its employee health plan--more than it spends to purchase steel from U.S. Steel, its principle supplier. In 1979, health benefits added $175 to the price of every car and truck manufactured by the giant automaker (Crase, 1979).

The federal government fares no better than private employers in this problem area. The rate of disability retirements among federal employees has risen 170% since 1955. Absenteeism in the executive branch alone costs 1.34 billion dollars.

It has become popular to blame health care providers for the large cost increases and what's perceived as inferior care. The fact is that, despite significant scientific advances in the health care fields, death rates and life expectancies are little improved over a generation ago.

The reason? An American's health is far more likely to be imperiled by his or her own conduct than any other factor.

> The medical system affects about ten percent of the usual factors that determine a patient's state of health. The remaining 90 percent are determined by factors over which doctors have little or no control. Physicians maintain that more sensible personal health decisions on smoking, drinking, exercise, proper diet, and such offer a better hope for a healthier American than the medical system. (Employee Fitness, 1980, p. 13)

Employee fitness has become a major concern of the President's Council on Physical Fitness and Sports, and their efforts have met with an ever increasing measure of success in recent years. This is all part of a much larger process which the President's Council on Physical Fitness likes to call "America's Fitness Renaissance". Not so long

ago, physical fitness was supposed to be something for youngsters, athletes, the marines, and "fitness freaks". Now, doctors recommend exercise with the enthusiasm of grizzled old coaches; every public park has its contingent of joggers; and many companies provide their employees with time and facilities for exercise. Such government agencies as NASA, the Smithsonian Institution, and the Department of Transportation and Justice also provide these benefits to their employees. The list of private firms committed to employee fitness reads like a Who's Who of the Fortune 500: Arco, Chase Manhattan, Western Electric, Exxon, General Foods, Firestone, Pepsico, Goodyear, Metropolitan Life, Boeing, Xerox, Rockwell International, Merrill Lynch, and scores of others.

Generally, fitness programs are found in the larger organizations and primarily include services to those only in managerial or executive positions. Fielding's (1979) review of the subject, however, suggests there is an increasingly larger trend to broaden those programs to all employees and to include emphasis on preventive health practices.

Approximately 50,000 business firms in the United States have some type of program promoting exercise

designed to keep their employees more "physically fit". Only about 20 to 30, or less than 0.1% of these have fully-staffed facilities with comprehensive testing and exercise prescriptive programs (Pyle, 1979). Other techniques used to promote employee health and safety include special employee programs of diverse nature.

Significance of the Problem

Research needs to be done to determine what benefits employees perceive they are gaining by participating in company-sponsored fitness programs and how they use their personal gains from the program to improve their lifestyles both at work and outside of it (Heinzelmann, 1970). This is an important area to study and research because employee fitness is becoming an increasingly important area of concern to employers. Before implementing an employee fitness program of their own, they want to know what benefits their company can expect to receive by implementing such a program (Conrad, 1979). One step toward achieving this objective is to first discover what the employees themselves feel they gain from the program and then apply this knowledge to determine what benefits a company gains by the employee's gains (Fogle, 1979).

Statement of the Problem

Many companies such as Kimberly-Clark have established employee fitness programs with the hope of deriving benefits for their company from the program, but what does each employee perceive having gained from his or her participation in the program?

Purpose of the Study

The purpose of this study was to collect data on employee participants in Kimberly-Clark's Health Management Program regarding their perceived benefits from their participation that have affected their lifestyles both at work and outside of work.

Research Questions

An attempt was made in this study to answer the following research questions.

Do the employees of Kimberly-Clark feel there has been a change in their

1. adherence to the program
2. work performance
3. reactions or feelings about their job environment
4. work attendance
5. kind of food eaten
6. amount of food eaten
7. smoking habits

8. amount of sleep
9. recreational activities engaged in
10. stamina
11. amount of stress in their lives
12. handling of stress
13. general health
14. weight
15. spouse's health habits
16. family's health habits
17. friends' health habits
18. work associates' health habits

as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

Assumptions

Three assumptions were made in regard to this research study. They were:

1. Most participants expect to gain some personal benefits from their participation in the program.

2. Employers expect most of their employees to participate in some phase of the program.

3. Employees' self-reported perceptions are accurate indicators of their actual perceptions of the benefits.

Limitations

Four main limitations were found to restrict the scope of this research. They were:

1. The newness of the company fitness program limits the amount of data available on employee perceptions toward programs of this type.

2. Participation in this study by the subjects within the research population was voluntary.

3. Kimberly-Clark was the only company recommended by American Fitness Directors in Business and Industry with an established company fitness program close enough to LaPorte City, Iowa, that the researcher could use to complete the study within the time framework allowed for the project.

4. The only source of data for this study was survey questions answered by the Kimberly-Clark salaried employees who have completed the multiphasic screening and have been participants within the Health Service Center for at least six months at an adherence level of two days per week or more.

Delimitations

Two main delimitations were used to narrow the scope of this research. They were:

1. Kimberly-Clark's Neenah, Wisconsin, Health Management Program was the only health fitness program

used in this research.

2. Only salaried employees of Kimberly-Clark who have been participants within the Health Services Center for at least six months at an adherence level of two days per week were included in the research of this study.

Definition of Terms

The following terms were defined for the purposes of this study:

Adherence. Adherence is maintaining loyalty to the fitness program.

Flextime. Flextime allows employees to deviate from the standard 7:30 to 4:00 work day to participate in the fitness program. With the employee's supervisor's approval, the employee may take up to one hour during the time period of 11 a.m. to 1 p.m. per day to do their prescribed exercise workouts.

Fox Valley. The Fox Valley will refer to the combined cities of Appleton and Neenah-Menasha, Wisconsin.

CHAPTER 2

REVIEW OF THE LITERATURE

Evaluation of Psychological Research

Relevant literature was reviewed concerning past studies done pertaining to psychological changes experienced by participants of experimental physical fitness programs within clinical populations.

This section reviews major studies which have been conducted that attempt to relate physical fitness training to improvement on psychological variables among normal as well as selected clinical populations.

Due to lack of conceptual links between mind and body, the research in this area has been limited thus-far. Effects from physical fitness training are often thought to be caused by a person expecting results from the training to occur (Harris, 1973). "The somato-psychic rationale for man's involvement in physical activity and sport is the theory that bodily activity and function influence his behavior" (Folkins, 1981, p. 373).

Physical fitness and mental health are important to each other. Buffone (1980) has found that an increased sense of well being comes from improved cardiovascular function after training. Emotional

stress was found to be handled more effectively after training according to Chapman and Mitchell (1965). Physical fitness training has also been thought to trigger the release of endorphines by the brain and pituitary gland (Stein & Belluzzi, 1978). Tension relief occurs because of a reduction in resting muscle action after training (deVries, 1968).

Schwartz, Davidson, and Goleman (1978) suggest that our biobehavorial systems have only a limited channel space. It is thought that when we exercise it takes up the space previously used for anxiety and thus reduces anxiety.

Ismail and Trachtman (1973) and Solomon and Bumpus (1978) report a sense of well being occurs as a direct result of physical fitness improvement. Buffone (1980) and Solomon and Bumpus (1978) suggest that exercise can be used as a form of meditation which can then alleviate several stressful cognitions.

Biofeedback research and practice are part of a cognitively oriented theory of adaptation and emotion (Lazarus, 1975). Changes occurring from fitness training can be affected by psychological variables. Fitness training can help a person better cope with their environment and reduce psychosomatic turmoil.

Previous reviews were done by Laymon (1974) and Scott (1960) on how physical fitness training affects several psychological variables (Folkins, 1981). The relationship between physical fitness and cognitive functioning was reviewed by Clarke (1958), Ismail (1972), and Powell (1975). The relationship between athletics and personality was studied by Cooper (1969). Psychological changes in relationship to changed physical fitness condition were not documented in most of these reviews. These researchers mainly were concerned in comparing changes occurring in normal groups to those occurring in abnormal groups. Only one researcher, Hammett (1967), did experimental pre and post-training studies on the effects of physical fitness training on mental health.

Clarke (1958) found that physical fitness affects learning potential, but Harris (1973), after reviewing previous research, found there was no evidence to back up this statement. A study by Gruber (1975) found that children with improved physical fitness condition enjoyed an improved academic performance.

A review was done by Donoghue (1977) to try and determine if a relationship existed between improved

physical fitness and work behavior. According to this review, the changes occurring as a result of improved physical fitness were: reduced absenteeism, reduced heart disease risk, reduced job errors, improved output, improved work performance, and improved work attitudes.

Previously done research has compared athletes to nonathletes on personal variables and physical fitness. No significant change in personality variables has been found. A study by Ismail and Young (1977) indicated that if fitness training sessions were of longer duration, changes in personality would occur because of changes in body chemistry.

As the body changes, due to physical conditioning, so does one's self image. One is more satisfied with his or her health, body image, and the image projected to other people, and thus in turn, radiates self confidence. Some of these changes could occur as a result of the perceived perceptions each person has of improved fitness (Zion, 1965; Goldberg & Folkins, 1974).

Physical fitness training has been used as a treatment method for various health problems such as retardation (Chasey, Swartz, & Chasey, 1974; Maloney, Ball, & Edgar, 1970), cardiovascular rehabilitation (Folkins, 1976; McPherson, 1967), alcoholism (Gary &

Guthrie, 1972), aging (Powell, 1974; Stamford, Hambacker, & Fallica, 1974), and depression (R. S. Brown, Ramirez, & Taub, 1978; Kavanagh, 1967). The problem lies in the fact that most of the data collected thus far are only suggestive.

Only 15 percent of the studies done can be classified as true experiments, and most of the true experiments were done with children (Folkins, 1981). Also, variations in duration and intensity of exercise programs make the results difficult to interpret.

Three Major Psychological Studies

The following section reviews three major studies which have been conducted on psychological changes experienced by participants in an experimental setting. An article by Fred Heinzelmann and Richard W. Bagley (1970), discussed research they had done in the area of changes occurring from participation in an experimental physical activity program. Their study was done on middle-aged men who were considered risks for coronary heart disease. They wanted to discover what the response would be to a supervised physical activity program and if changes in health attitudes and behavior would occur as a result of the program.

Pilot studies to gather data were done at the Universities of Minnesota, Wisconsin, and Pennsylvania.

The purpose of these studies was to determine if there was a relationship between program participation and changes in cardiovascular risk.

Two types of study groups were used for the studies. Minneapolis, Minnesota, was used for the suburban study group and Madison, Wisconsin, and College Park, Pennsylvania, were used for the university setting study group. The participants were all men between the ages of 45-59 who led sedentary lifestyles. All of these men were also considered to be at risk for coronary heart disease. The program was set up for 239 men to exercise three times a week, one hour, for 18 months. A control group of 142 men was also established. The men at each of the three exercise sites were randomly assigned to an exercise or control group.

The first step in initiating the study was a telephone survey conducted with each potential participant. The phone survey assessed each potential participant's attitudes, beliefs, and health behavior. After the participants were selected, additional data were obtained in regular three-to-four-month intervals and upon the termination of the program. Medical evaluations were done on each participant in the exercise group and in the control group at the same

three-to-four-month intervals. Data were also obtained through participant interviews and self-administered questionnaires.

Two-thirds of the program participants responded when asked to rank a list of reasons why they had decided to participate in the program. The main reasons given for program participation were to feel better and healthier, to lessen the chance of a heart attack, and to help medical research. Participants were asked again at the conclusion of the program to rank a list of why they stayed in the program (see Table 1).

One-fourth of the participants ranked the social aspects as one of the best-liked features of the program. The social aspect made them adhere more strongly to the program. It was also discovered that a wife's positive attitude toward the program helped her husband adhere better to the program and gain more from it.

Several implications were derived from the study. A wide variety of reasons such as health, recreation, and change of routine motivated the men to participate. As the social aspect of the program kept the participants adhering to the program once they had started, this part of the program needed further development. The people surrounding the program participant greatly

Table 1

Best Liked Features of
Supervised Physical Activity for Middle-Aged Men

Feature	% of Participants
Organization and leadership	32
Exercising in general	21
Recreation--games	29
Social aspects--camaraderie	26
Health and fitness benefits	14
Regularity of exercise	12

(Heinzelmann, 1970, p. 906)

influenced his participation in the program. Support needs to be given to these outside people to help enhance the social influences of the program.

At the end of the program, comparisons were made between the exercise group and the control group. This was possible because the participants were randomly assigned to either group. The 0.01 level of significance was used to statistically compare the results obtained from the two groups.

Almost 60 percent of the exercise participants responding reported that their participation in the program had a positive effect on their work performance. Only three percent of the responding control group members reported a positive effect on their work performance. A more positive work attitude was reported by 40 percent of the exercise group and one percent of the control group.

Men in the exercise group reported significant changes in their personal health. The benefits they felt they received were increased stamina, increased energy, weight loss, and greater ability to deal with stress and tension. The control group did not have any significant changes in this area.

Habits and behavior was the final area of concern. The exercise and control group differed in the amount

of food they were eating, but not in the kinds of food. Weight control and/or loss was found to be more important to the exercise group than it was to the control group. Also, the exercise group reported they now walk instead of ride, use stairs instead of elevators, and got their friends and families more involved in recreational activities. Exercise participants reported they need less sleep and their sleep is more relaxed and sound.

The standard social-psychological measures to assess the results of the study showed marked differences between the exercise and the control groups. Exercise participants appeared to have a more positive self image, a feeling of better health, and a feeling of less vulnerability to heart attacks (Heinzelmann, 1970).

Heinzelmann and Durbeck (1970) initiated a study of psychological changes occurring as a result of a health evaluation and enhancement program at NASA headquarters in Washington, D.C. They were concerned with effects of the program on work, health habits, and behavior. All participants were men who were employed by NASA in the Washington, D.C. area. These men were between the ages of 33 and 35 with GS pay ratings

of 11 or higher. The men were notified of their selection through a written invitation to attend an orientation session for the program. This session included a discussion of the goals and objectives of the program, the benefits to be gained from participating in the program, and the three kinds of exercise programs available. The three exercise programs available were: (1) a stress lab circuit exercise program, (2) a group jogging program, and (3) individual exercise programs. The participants were asked to participate three times a week for a minimum of 30 minutes a time.

After the volunteer participants signed up for the program in July of 1968 and had their doctor's consent to participate, their medical and dietary histories were recorded. Also, at this time, a detailed physical examination was given to each participant. Participants were asked to fill out self-administered questionnaires regarding health status and concerns, vulnerability to illnesses, their diet, smoking habits, physical activity, and voluntary medical check-ups. Resting EKG, double master, and treadmill tests were given to each participant.

Approximately one-third or 259 men volunteered to

participate in the program. Of these volunteers, 60% chose the stress lab program, 22% the jogging program, and 18% the individual program. After 12 months in the program, the participants were re-evaluated on their physical condition, health attitudes and beliefs. Program effects in regard to work, health, and habits and behavior were also examined at this time.

The average adherence to the program was 1.3 days which was about half of the requested adherence rate. All participants reported positive effects that were in direct relation to their participation in the program. A feeling of better health and increased stamina was the effect reported most often. Other effects reported were: weight loss, decrease in amount of food eaten, more positive work attitude, less stress and tension, improved work performance, increased and expanded recreational activities outside of the program, and more adequate sleep and rest.

Adherence was directly related to the benefits received from participating in the program. Good adherers received many more benefits from the program than did poor adherers. Family members, spouses, work associates, and friends were also found to benefit from the program (Heinzelmann, 1970).

In March of 1982, Mr. Richard Langford (the author of this thesis study) conducted a survey of employee perceived benefits at the corporate headquarters of Lutheran Mutual Life in Waverly, Iowa. This study was different from the two previously described in several distinct ways. The two previously discussed studies used only men in their populations for their research. In the Heinzelmann-Bagley study, the male participants were between the ages of 45-59, and the male participants in the NASA study were between the ages of 35-55. Each of these two studies also put some type of limit on the male participants. The Heinzelmann-Bagley study required that the participants be sedentary and have certain characteristics that increased their risk of coronary heart disease and NASA required that the population participants be a labor grade 11 or higher. The population in the Lutheran Mutual Life study was comprised of both men (43%) and women (57%). No restrictions were imposed as to age or personal health of the participant. Anyone who worked at Lutheran Mutual Life and participated in the employee fitness program was strongly encouraged to participate in the study. The participants in this study were also mostly Caucasian (95%).

Another important way that the Lutheran Mutual Life study differed from those previously discussed was that the program used in the study is an in-house employee fitness program whereas the other two were not. The Lutheran Mutual Life fitness program consisted of aerobic dancing, stationary cycling, weight training, a variety of health classes, and various recreational activities such as basketball and bowling.

The Lutheran Mutual Life study sought to discover the same type of information and answers as the previously discussed two studies did. The findings from the research at Lutheran Mutual Life were tabulated in a bargraph (see Appendix A) as to what beneficial effects the employees received from their participation in the program. This bargraph was broken down into the benefits received by the employees according to their adherence to the program. The employees who participated in the program four or more times a week were found to have received the most benefits from the program. Fair adherers (participated in the program two-three times a week) received more benefits than the poor adherers who only participated in the program one or less days a week but less benefits than the good adherers to the program received.

The benefits reported by employee respondents to the survey used included a general feeling of better health, greater stamina, some weight loss, a more positive attitude toward work, less stress and tension, and improved work performance. To a lesser degree, employees who participated in the study reported beneficial changes in the amount of food they ate, the type of food they ate, and the amount of physical activity they enjoyed beyond that of the program. Also, more recreation and more adequate sleep and rest were reported by a few of the participants. Changes in their smoking habits were not reported. Women participants were included along with men participants when tabulating the study. The sex of the participants responding was not cross-tabulated in this survey.

CHAPTER 3

METHODS AND PROCEDURES

Introduction

The data for this study were collected from a series of questions conducted through a survey (see Appendix B) of Kimberly-Clark salaried employees. These questions were designed to extract information from the respondents in three general areas: effects of the program in relation to work, health habits, and general state of health.

Data Collection

The survey was the only source used for collecting the information required for this study. Only salaried employees of Kimberly-Clark (Neenah, Wisconsin) who had been participants within the Health Service Center for at least six months at an adherence level of two days per week were surveyed. The design and development of the survey evolved over a period of six months. The questions had gone through several revisions before they were used in the actual survey. Prior to using the actual questions, the content validity of the survey questions was established by a professor of industrial technology, a professor of education, a professor of industrial psychology, an associate

professor of physical education, a wellness director for a hospital and a fitness director for a life insurance company. Evaluation was based on appropriateness of the questions in the survey, considering the purpose of the study. Suggestions made by these people were incorporated within the questions and thus contributed to the content vaidity of the survey.

To establish content validity of the survey questions, a pilot study was done at Lutheran Mutual Life in Waverly, Iowa, in early 1982. Similar questions were used in the pilot study seeking similar information.

Research Population

The Health Management Program at Kimberly-Clark was opened to all salaried employees in the Fox Valley of Wisconsin (Appleton and Neenah-Menasha) in April of 1977. Before employees could be part of the program, they had to go through a complete health screening. This health screening consists of a complete medical history and health risk profile which is scored to indicate the employee's level of risk for certain illnesses (e.g. heart attack). This is followed by a series of laboratory tests in the multiphasic screening unit, exercise testing by treadmill or bicycle ergometer, and a complete physical examination. When

all the data are in, the employee meets with a member of the health services staff for an evaluation and a "wellness prescription". The wellness prescription outlines an exercise program and sometimes recommends counseling and/or health education. The employee was made aware that the chief responsibility for his health is in his hands.

Due to these factors, the population for this study consisted of all salaried employees of Kimberly-Clark in the Fox Valley of Wisconsin who have been participants within the Health Service Center for at least six months at an adherence level of two days per week. As of September 1, 1982, this population included 650 employees. A random sample of this population was used to complete the survey instrument.

The random sample was chosen through the use of Kimberly-Clark's information retrieval system. All pertinent information regarding involvement in Kimberly-Clark's Health Management Program such as the employee's adherence level, age, and sex were stored within the computer. Through this random selection process, the computer singled out 130 program participants to participate in the study. Of those 130 participants, 95 were men and 35 were women. Distribution of the

survey entailed the introduction of the researcher to each selected study participant by an employee of the Health Management Program. A preprinted statement was then read to each of the selected participants introducing the researcher, explaining the purpose of the study, and giving the participant the option whether or not to participate in the study. If the participant chose to participate in the study, further directions for filling out the survey were given, and a designated area was assigned in which to complete the survey. All of the 130 participants chose to complete the survey. Thus, the return rate on the survey was 100%.

Description and Selection of Kimberly-Clark

In 1977, Kimberly-Clark Corporation initiated a preventive health maintenance effort called the Health Management Program. The objective of the program was to achieve a higher level of wellness and productivity in employees and to reduce absenteeism and the rate of escalation of health care costs. The program consists of two main parts--Health Screening and Health Promotion. Medical testing and examination are covered in the Health Screening. Health Promotion is comprised of the Employee Assistance and Health Education Programs. Health Screening and Promotion activities are conducted on company premises under the same roof.

The program was opened to all salaried employees in the Fox Valley of Wisconsin in April of 1977. In September of 1981, the program was expanded to include a midday program where employees could use one hour during the time of 11 a.m. to 1 p.m. to do their prescribed exercise workouts. In January, 1982, employee-spouses and retirees and their spouses were included in the program. Retirees were admitted to the program at no charge. Employee-spouses and retiree-spouses were charged an annual fee of $100 which included a complete physical examination and screening, use of the Exercise Facility, and participation in the Health Education classes. In addition, the program was expanded to the Kimberly-Clark Health Care, Paper, and Specialties Companies with headquarters in Roswell, Georgia.

The Employee Assistance Program was designed to provide assistance to employees who have personal problems which interfere with their job performance. These problems include drug or alcohol abuse, financial or legal difficulties, and family or marital problems. Individual and group counseling are available to both employees and their families. In adddition, the program serves as a referral service for special problems such as alcoholism or other serious problems such as

mental illness. Follow-up after treatment for alcoholism or other serious problems is a very important part of the Employee Assistance Program.

The Health Education Program is an integral part of the total Health Management Program. The program provides a combination of classes, activities, and projects designed to facilitate employee awareness of the importance of maintaining healthy lifestyles and to support and reinforce healthful behavior change. Health Education classes have been established to encompass all the dimensions of health. Instruction is provided by Health Services Center staff as well as instructors from the community. Classes are conducted in the Exercise Facility or the Health Services Center Health Education Conference Room and are open to all employees.

The exercise programs are particularly popular among Kimberly-Clark employees. Water Exercise, Fitness for the Mature Woman, and Circuit Weight Training for Women are classes that have evoked a great deal of interest and have also provided motivation for a number of female employees to enter the exercise program, whereas they had been hesitant to do so in the past. The CPR classes are conducted in accordance

with American Heart Association standards. A number of employees have been trained as volunteer CPR instructors. CPR training is open to all employees, spouses, and other family members. Since the program's inception, 29 employees have been trained as instructors and 450 employees and family members have been certified in Basic Life Support (CPR).

A variety of other classes are offered to teach employees patterns of health and safety. Stress Management and Relaxation Skills have become increasingly popular among both hourly and salaried employees.

Aside from a varied program of classes, emphasis has also been placed on special annual projects. For three years, Kimberly-Clark actively participated in National High Blood Pressure Month activities and has developed a screening program that has grown significantly. In the 1981 program, 59 percent of all Fox Valley, Wisconsin employees were screened. Nineteen percent of the employees were found to have elevated readings and approximately one percent were ultimately referred to their personal physician.

The increasing number of back injuries noted throughout industry prompted the development of a special back injury prevention program. Implementation

and evaluation of the educational component is now in process. Future program direction and expansion will be contingent upon study findings.

Data Preparation

After all the surveys were completed by the 130 Kimberly-Clark employees, the data were punched onto standard 20-column computer cards. This procedure allowed for data analysis subprograms, presented in the Statistical Package of the Social Sciences (SPSS) to be employed for the purpose of data analysis (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). Appendix C describes the detailed descriptive statistics compiled as a result of the initial SPSS analysis.

Statistical Analysis of the Data

The analysis of data was performed utilizing the SPSS subprograms frequency and crosstabulation. The general response to the survey was broken down into three general categories: age, sex, and adherence. In each of these three general areas, the percentage or frequency of the response occurring was reported (e.g. sex: male = 50%). This frequency distribution showed the number of people not answering that particular question, a relative frequency which includes the missing respondents, and an adjusted frequency of the

response which does not include the people who did not respond to that particular question (see Appendix C).

A crosstabulation of responses by sex, age, and adherence was also done. This crosstabulation is a joint frequency distribution of cases according to two or more classifactory variables. These joint distributions are analyzed by the chi-square statistic to determine whether or not the variables are statistically independent. These distributions are summarized by a measure of association which describes the degree to which the values of one variable are associated with or vary with those of another (Nie, 1975).

CHAPTER 4

PRESENTATION AND ANALYSES OF THE DATA

Introduction

The data analyses for this study were broken down into two parts. First, each of the research questions generated in Chapter 1 was discussed as to any perceived change occurring as a function of the employee's participation in Kimberly-Clark's Health Management Program. Secondly, each research question was then crosstabulated using the Statistical Package for the Social Sciences program Crosstabs. These crosstabulations compared perceived changes in the participant's age, sex, and adherence and a change in the variable as a function of the participant's involvement in Kimberly-Clark's Health Management Program. The data were gathered from the 130 subjects participating in the research endeavor. After the data were gathered, they were entered into the computer for analysis. Appendix C describes the statistical results of the Statistical Package for the Social Sciences program. There were no missing data from any of the 130 study participants. Tables 2-4 summarize the chi-square and the statistical significance of the different variables within the

survey. The analysis of these tables allowed for the research questions generated in Chapter 1 to be answered.

Evaluation of the Research Questions

1. Do the employees of Kimberly-Clark feel there has been a change in their work performance as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their work performance and involvement in Kimberly-Clark's Health Management Program. Of the employees surveyed, 65.4% said they felt their output had increased because of their participation in Kimberly-Clark's Health Management Program. No one reported a decrease in their output, and 34.6% felt there had been no change in output. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 6.7699. The probability of obtaining a chi-square this large by chance is 0.1486. Thus, at the .05 level, there was no significant relationship between

Table 2

Chi-Square Analysis of
Survey Responses by Age

Question Number	Variable	Chi Square	Significance
1.	Adherence	11.8644	0.1574
2.	Work Performance	6.7699	0.1486
3.	Reactions or Feelings	12.9668	0.1130
4.	Work Attendance	8.3602	0.0792
5.	Kind of Food	9.3972	0.3099
6.	Amount of Food	7.0001	0.5366
7.	Smoking Habits	32.3241	0.0091
8.	Amount of Sleep	6.9382	0.5433
9.	Recreational Activities	10.4678	0.2337
10.	Stamina	6.2941	0.6143
11.	Amount of Stress	10.1796	0.2526
12.	Handling of Stress	10.0571	0.0395
13.	General Health	3.1384	0.5349
14.	Weight	12.5097	0.7082
15.	Spouse's Health Habits	22.7707	0.0297
16.	Family Health Habits	29.7889	0.0030
17.	Friends' Health Habits	8.2242	0.4119
18.	Work Associate Health Habits	10.9186	0.2064

Table 3

Chi-Square Analysis of
Survey Responses by Sex

Question Number	Variable	Chi-Square	Significance
1.	Adherence	0.5119	0.7741
2.	Work Performance	0.0654	0.7981
3.	Reactions or Feelings	0.9830	0.6117
4.	Work Attendance	0.2775	0.5983
5.	Kind of Food	1.8909	0.3885
6.	Amount of Food	2.3304	0.3119
7.	Smoking Habits	2.9546	0.5654
8.	Amount of Sleep	1.2955	0.5232
9.	Recreational Activities	2.8567	0.2397
10.	Stamina	0.3808	0.8266
11.	Amount of Stress	0.8488	0.6542
12.	Handling of Stress	2.3008	0.1293
13.	General Health	0.0000	1.0000
14.	Weight	4.1648	0.3842
15.	Spouse's Health Habits	2.7654	0.4292
16.	Family Health Habits	9.0976	0.0280
17.	Friends' Health Habits	0.6967	0.7059
18.	Work Associates' Health Habits	1.5437	0.4621

Table 4

Chi-Square Analysis of
Survey Responses by Adherence

Question Number	Variable	Chi-Square	Significance
2.	Work Performance	0.6478	0.7233
3.	Reactions or Feelings	0.9394	0.9188
4.	Work Attendance	3.4500	0.1782
5.	Kind of Food	0.7133	0.9497
6.	Amount of Food	9.9343	0.0415
7.	Smoking Habits	9.0549	0.3377
8.	Amount of Sleep	7.2951	0.1211
9.	Recreational Activities	4.3485	0.3609
10.	Stamina	1.0592	0.9007
11.	Amount of Stress	2.7297	0.6040
12.	Handling of Stress	0.4010	0.8183
13.	General Health	1.4015	0.4962
14.	Weight	9.4090	0.3090
15.	Spouse's Health Habits	7.0128	0.3197
16.	Family Health Habits	7.8545	0.2490
17.	Friends' Health Habits	130.9076	0.0000
18.	Work Associates' Health Habits	1.3967	0.8448

participants' age and a difference in work performance because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 0.0654. The probability of obtaining a chi-square this large by chance is 0.7981. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in their work performance because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 0.6478. The probability of obtaining a chi-square this large by chance is 0.7233. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in work performance because of their participation in Kimberly-Clark's Health Management Program.

2. Do the employees of Kimberly-Clark feel there has been a change in their feelings and reactions toward their job as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference

between employees' perceptions of their reactions or feelings about their job and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 71.5% were more positive about their job; 0.8% felt less positive about their job; and 27.7% reported no change in how they felt about their job. These reponses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 12.9668. The probability of obtaining a chi-square this large by chance is 0.1130. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in their reactions or feelings about their job because of their participation in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 0.9830. The probability of obtaining a chi-square this large by chance is 0.6117. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in their reactions or feelings about their job because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 0.9394. The probability of obtaining a chi-square

this large by chance is 0.9188. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in their reactions or feelings about their job because of their involvement in Kimberly-Clark's Health Management Program.

3. Do the employees of Kimberly-Clark feel there has been a change in their attendance at work as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their attendance at work and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 27.7% felt they were now absent less, no one felt they were absent more, and 72.3% felt there was no change in their work attendance.

By age. The chi-square was calculated to be 8.3602. The probability of obtaining a chi-square this large by chance is 0.0792. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in work attendance because of their involvement in Kimberly-Clark's Health

Management Program.

By sex. The chi-square was calculated to be 0.2775. The probability of obtaining a chi-square this large by chance is 0.5982. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in their attendance at work because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 3.4500. The probability of obtaining a chi-square this large by chance is 0.1782. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in work attendance because of their involvement in Kimberly-Clark's Health Management Program.

4. Do the employees of Kimberly-Clark feel there has been a change in the kind of food they eat as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of the kind of food they eat and their involvement in Kimberly-Clark's

Health Management Program. Of those surveyed, 74.6% said they are now more selective in the kind of food they eat, 0.8% said they are now less selective, and 24.6% reported no change in the type of food they eat. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 9.3972. The probability of obtaining a chi-square this large by chance is 0.3099. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in the kind of food they eat because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 1.8909. The probability of obtaining a chi-square this large by chance is 0.3885. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in the kind of food they eat because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 0.7133. The probability of obtaining a chi-square this large by chance is 0.9497. Thus, at the .05 level, there was no significant relationship between

participants' adherence and a difference in the kind of food they eat because of their involvement in Kimberly-Clark's Health Management Program.

5. Do the employees of Kimberly-Clark feel there has been a change in the amount of food they eat as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of the amount of food they eat and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 12.3% reported they now require more food, 43.8% said they now require less food, and 43.8% reported no change in the amount of food they require. These responses were then cross-tabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 7.0001. The probability of obtaining a chi-square this large by chance is 0.5366. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in the amount of food they eat because of their involvement in Kimberly-

Clark's Health Management Program.

By sex. The chi-square was calculated to be 2.3304. The probability of obtaining a chi-squre this large by chance is 0.3119. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in the amount of food they eat because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 9.9343. The probability of obtaining a chi-square this large by chance is 0.0415. Thus, at the .05 level, there was a significant relationship between participants' adherence to the program, the amount of food they eat, and their participation in Kimberly-Clark's Health Management Program. Of the population, 12.3% said they require more food because of their participation in the program. Nineteen percent of those who exercise two days and 11.1% of those who exercise three or more days reported they now need more food. Of those who require less food, 100% of those who only exercise one day reported less food, 14.2% of those who exercise two days, and 49.1% of those who exercise three or more days also reported they now need less food. Of those who exercise two days, 66.7% reported no change in food

intake, as did 39.8% of those who exercise three or more days.

6. Do the employees of Kimberly-Clark feel there has been a change in their smoking habits as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their smoking habits and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 20% have quit smoking, 3.8% smoke less, and 21.5% report no change in their smoking habits. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 32.32418. The probability of obtaining a chi-square this large by chance is 0.0091. Thus, at the .05 level, there was a high rate of significance between employees' age and their smoking habits. One person in the age category 30-39 said he now smokes more. Of the people who had quit smoking, 23.8% of those aged 18-29 said they had, 9.4% of those aged 30-39 said they'd quit, 15.2% of those 40-49 had quit, 22.2% of those

50-59 had quit, and 62.5% of those 60 and over had quit smoking. Over half (53.8%) of those surveyed said they had never smoked. Of those aged 18-29, 76.2% had never smoked, 62.5% of those aged 30-39 had never smoked, 42.4% of those aged 40-49 had never smoked, 50% of those 50-59 had never smoked, and 25% of those 60 and over had never smoked.

By sex. The chi-square was calculated to be 2.9546. The probability of obtaining a chi-square this large by chance is 0.5654. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in smoking habits because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 9.0549. The probability of obtaining a chi-square this large by chance is 0.3377. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in smoking habits because of their involvement in Kimberly-Clark's Health Management Program.

7. Do the employees of Kimberly-Clark feel there has been a change in the amount of sleep they get as a function of their participation in Kimberly-Clark's

Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of the amount of sleep they get and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 9.2% said they now require more sleep; 36.9% reported they require less sleep; and 53.8% reported no change in the amount of sleep they get. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 6.9382. The probability of obtaining a chi-square this large by chance is 0.5433. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in the amount of sleep they get because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 1.2955. The probability of obtaining a chi-square this large by chance is 0.5232. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in the amount of sleep they

get because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 7.2951. The probability of obtaining a chi-square this large by chance is 0.1211. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in the amount of sleep they get because of their involvement in Kimberly-Clark's Health Management Program.

8. Do the employees of Kimberly-Clark feel there has been a change in their recreational activities as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their recreational activities and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 38.5% said they now participate in new activities; 11.5% said they participate in old activities but more; and 50% reported no change. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 10.4678. The probability of obtaining a chi-square this large by chance is 0.2337. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in their recreational activities because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 2.8567. The probability of obtaining a chi-square this large by chance is 0.2397. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in recreational activities because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 4.3485. The probability of obtaining a chi-square this large by chance is 0.3609. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in recreational activities because of their involvement in Kimberly-Clark's Health Management Program.

9. Do the employees of Kimberly-Clark feel there has been a change in their stamina as a function of their participation in Kimberly-Clark's Health

Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their stamina and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 96.2% reported they now feel they have greater stamina, one person (0.8%) reported less stamina and 3.0% reported no change in their stamina. These responses were then cross-tabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 6.2941. The probability of obtaining a chi-square this large by chance is 0.6143. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in stamina because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 0.3808. The probability of obtaining a chi-square this large by chance is 0.8266. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in stamina

because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 1.0592. The probability of obtaining a chi-squre this large by chance is 0.9007. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in stamina because of their involvement in Kimberly-Clark's Health Management Program.

10. Do the employees of Kimberly-Clark feel there has been a change in their amount of stress as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their amount of stress and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 58.5% felt they now incur less stress; 1.5% felt they incur more stress; and 40% said there had been no change in the amount of stress in their lives. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 10.1796. The probability of obtaining a chi-square this large by chance is 0.2526. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in the amount of stress because of the involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 0.8488. The probability of obtaining a chi-square this large by chance is .06542. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in the amount of stress because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 2.7297. The probability of obtaining a chi-square this large by chance is 0.6040. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in the amount of stress because of their involvement in Kimberly-Clark's Health Management Program.

11. Do the employees of Kimberly-Clark feel there has been a change in their handling of stress as a function of their participation in Kimberly-Clark's

Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their handling of stress and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 71.5% felt they handle stress better; no one said they handle stress less adequately; and 28.5% reported no change in the way they handle stress. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 10.0571. The probability of obtaining a chi-square this large by chance is 0.0395. Thus, at the .05 level, there was a significant relationship between participants' age, how they handle stress, and their participation in Kimberly-Clark's Health Management Program. Of those aged 18-29, 85.7% said they handle stress better. Those aged 30-39 reported that 71.0% handled stress better; 81.8% of those aged 40-49 felt they handle stress better; 52.8% of those aged 50-59 handle stress better, and 75% of those 60 and over felt they handle stress better.

By sex. The chi-square was calculated to be 2.3008. The probability of obtaining a chi-square this large by chance is 0.1293. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in handling of stress because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 0.4010. The probability of obtaining a chi-square this large by chance is 0.8183. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in handling of stress because of their involvement in Kimberly-Clark's Health Management Program.

12. Do the employees of Kimberly-Clark feel there has been a change in their general health as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their general health and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 95.4% re-

ported they now felt more healthy; no one reported feeling less healthy; and 4.6% reported no change in their general health. These responses were then cross-tabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 3.1384. The probability of obtaining a chi-square this large by chance is 0.5349. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in general health because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 0.0000. The probability of obtaining a chi-square this large by chance is 1.0000. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in general health because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 1.4015. The probability of obtaining a chi-square this large by chance is 0.4962. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in general

health because of their involvement in Kimberly-Clark's Health Management Program.

13. Do the employees of Kimberly-Clark feel there has been a change in their weight as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their weight and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 22.3% had lost more than 10 pounds; 30.0% had lost 5-10 pounds; 21.5% had lost 1-4 pounds; 6.9% had gained weight; and 19.2% reported no change in their weight. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 12.5097. The probability of obtaining a chi-square this large by chance is 0.7082. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in weight because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 4.1648. The probability of obtaining a chi-square this large by chance is 0.3842. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in weight because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 9.4090. The probability of obtaining a chi-square this large by chance is 0.3090. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in weight because of their involvement in Kimberly-Clark's Health Management Program.

14. Do the employees of Kimberly-Clark feel there has been a change in their spouses' health habits as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their spouses' health habits and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 44.6% reported that their spouses now exercise more; 0.8%

said their spouse now exercises less; 32.3% reported no change in their spouses' exercise habits; and 22.3% of the population said this question was not applicable to them. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 22.7707. The probability of obtaining a chi-square this large by chance is 0.0297. Thus, at the .05 level, there was a significant relationship between participants' age and their spouses' health habits. Of those aged 18-29, 57.1% reported their spouses exercise more; 31.3% of those aged 30-39 reported their spouses exercise more; 42.4% of those aged 40-49 reported their spouses exercise more; 44.4% of those aged 50-59 reported their spouses exercise more; and 75.0% of those 60 and over reported that their spouses now exercise more. One person in the age group 50-59 said that his spouse now exercises less.

By sex. The chi-square was calculated to be 2.7654. The probability of obtaining a chi-square this large by chance is 0.4292. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in their spouses' health habits because of their involvement in Kimberly-

Clark's Health Management Program.

By adherence. The chi-square was calculated to be 7.0128. The probability of obtaining a chi-square this large by chance is 0.3197. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in their spouses' health habits because of their involvement in Kimberly-Clark's Health Management Program.

15. Do the employees of Kimberly-Clark feel there has been a change in their families' health habits as a function of their participation in Kimberly-Clark's Health Management Program. Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their families' health habits and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 45.4% said their families now exercise more; 0.8% said their families now exercise less; 30.8% reported no change in their families' exercise habits; and 23.1% said the question was not applicable to them. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 29.7889. The probability of obtaining a chi-square this large by chance is 0.0030. Thus, at the .05 level, there was a high rate of significance between participants' age and their families' exercise habits. Of those aged 18-29, 61.9% reported their families now exercise more; 28.1% of those aged 30-39 reported their families exercise more; 42.4% of those aged 40-49 reported their families exercise more; 47.2% of those aged 50-59 reported their families exercise more; and 75.0% of those 60 and over reported that their families exercise more. One person in the age category of 50-59 reported that his family now exercises less.

By sex. The chi-square was calculated to be 9.0976. The probability of obtaining a chi-square this large by chance is 0.0280. Thus, at the .05 level, there was a significant relationship between participants' sex and their families' health habits. Forty-one point one percent of the males, and 57.1% of the females surveyed said that their families now exercise more. One male responded that his family now exercises less.

By adherence. The chi-square was calculated to be 7.8545. The probability of obtaining a chi-square this

large by chance is 0.2490. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in their families' health habits because of their involvement in Kimberly-Clark's Health Management Program.

16. Do the employees of Kimberly-Clark feel there has been a change in their friends' health habits as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their friends' health habits and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 29.2% reported that their friends now exercise more; 0.8% said their friends now exercise less; and 70.0% reported no change in their friends' exercise habits. These responses were then crosstabulated by the participant's sex, age, and adherence to the program.

By age. The chi-square was calculated to be 8.2242. The probability of obtaining a chi-square this large by chance is 0.4119. Thus, at the .05 level, there was no significant relationship between

participant's age and a difference in their friends' health habits because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 0.6967. The probability of obtaining a chi-square this large by chance is 0.7059. Thus, at the .05 level, there was no significant relationship between participants' sex and a difference in their friends' health habits because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 130.9076. The probability of obtaining a chi-square this large by chance is 0.0000. Thus, at the .05 level, there was a perfect relationship between participants' adherence and their friends' health habits. Of those exercising two days, 38.1% said their friends now exercise more. Those exercising three or more days, 27.8% said their friends exercise more. The one person who only exercises one day per week said his friends now exercise less. Of those who exercise two days, 61.9% report no change in their friends' exercise habits and 72.2% of those exercising three or more days reported no change in their friends' exercise habits.

17. Do the employees of Kimberly-Clark feel there has been a change in their work associates' health habits

as a function of their participation in Kimberly-Clark's Health Management Program? Do these perceptions differ as a function of the participant's age, sex, and/or adherence to the program?

This research question evaluates the difference between employees' perceptions of their work associates' health habits and involvement in Kimberly-Clark's Health Management Program. Of those surveyed, 46.2% reported that their work associates now exercise more; 0.8% reported that their work associates now exercise less; and 53.0% reported no change in their work associates' exercise habits. These responses were then crosstabulated by the participant's age, sex, and adherence to the program.

By age. The chi-square was calculated to be 10.9186. The probability of obtaining a chi-square this large by chance is 0.2064. Thus, at the .05 level, there was no significant relationship between participants' age and a difference in their work associates' health habits because of their involvement in Kimberly-Clark's Health Management Program.

By sex. The chi-square was calculated to be 1.5437. The probability of obtaining a chi-square this large by chance is 0.4621. Thus, at the .05

level, there was no significant relationship between participants' sex and a difference in their work associates' health habits because of their involvement in Kimberly-Clark's Health Management Program.

By adherence. The chi-square was calculated to be 1.3967. The probability of obtaining a chi-square this large by chance is 0.8448. Thus, at the .05 level, there was no significant relationship between participants' adherence and a difference in their work associates' health habits because of their involvement in Kimberly-Clark's Health Management Program.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The data for this research project were analyzed by the Statistical Package of the Social Sciences sub-programs frequency and crosstabulation. The general response to the survey was broken down into three general categories: age, sex, and adherence. In each of these three general areas, the percent of the frequency of the response occurring was reported. A crosstabulation of responses by age, sex, and adherence was also done. This crosstabulation is a joint frequency distribution of cases according to two or more classifactory variables. There was no significant change between participants' age, sex, and adherence and perceived differences in the items listed below as a function of their participation in Kimberly-Clark's Health Management Program.

1. Adherence to the program
2. Work performance
3. Reactions or feelings about their job environment
4. Work attendance
5. Kind of food eaten

6. Amount of food eaten
7. Recreational activities engaged in
8. Stamina
9. Amount of stress in their lives
10. General health
11. Weight
12. Work associates' health habits

No significant change was found between participants' age, sex, and the amount of food eaten, but a significant change was found between participants' adherence and the amount of food they eat as a function of their participation in the program. No significant change was found between participants' sex, adherence, and their smoking habits, but a significant change was found between participants' age and their smoking habits as a function of their participation in the program. No significant change was found between participants' sex, adherence, and their handling of stress, but a significant change was found between participants' age and their handling of stress as a function of their participation in the program. No significant change was found between participants' sex, adherence, and their spouses'

health habits as a function of their participation in the program. No significant change was found between participants' adherence and their families' health habits, but a significant change was found between participant's age, sex, and their families' health habits as a function of their participation in the program. No significant change was found between participants' age, sex, and their friends' health habits, but a significant change was found between participants' adherence and their friends' health habits as a function of their participation in the program.

Conclusions

The primary problem investigated in this study was what, if any, perceived changes occurred from the employees' participation in Kimberly-Clark's Health Management Program. Also, were these perceived changes affected by the participant's age, sex, and adherence to the program?

Past literature and research regarding this subject suggested that participants in a supervised physical activity setting do perceive themselves as gaining positive effects from their participation (Heinzelmann, 1970; Langford, 1982). The

evaluation of the primary research questions in Chapter 4 confirm the findings of the literature. The results of this study indicate that perceived changes do occur as a direct function of the participant's involvement in Kimberly-Clark's Health Management Program. The evaluation of the secondary research questions which pertained to the participant's sex, age, and adherence found seven significant changes which occurred as a function of the employee's participation in Kimberly-Clark's Health Management Program. The results of the study conclude that participants' age had a direct influence on a perceived change in the participants' smoking habits, handling of stress, spouses' health habits, and families' health habits. The participants' sex had a direct influence on perceived changes on their families' health habits; and the participants' adherence had a direct influence on perceived changes in the amount of food eaten and friends' health habits as a function of their participation in Kimberly-Clark's Health Management Program.

Discussion

The results of this study are in agreement

with those found in the Heinzelmann-Bagley study (1970), the Heinzelmann-Durbeck study (1970), and the Lutheran Mutual Life study (1982) except in two areas. The first of these areas was selection of food. The Kimberly-Clark study participants had a chance to take a variety of diet and nutrition classes as part of their program participation while participants in the other studies did not have the chance to take such nutrition classes as part of their program participation. The other area of difference was that of work associates' health habits. The only other study that addressed this area was the Heinzelmann-Durbeck study. Participation in this program was only open to NASA employees of a certain age and pay rating while Kimberly-Clark's program was open to any employee. Thus, work associates of participants in Kimberly-Clark's Health Management Program were more likely to be affected by the program.

Comparisons between the findings of the two Heinzelmann studies and this study were complicated by a variety of conflicting variables. The popu-lation was one of the main areas of contention

in both of the Heinzelmann studies. The Heinzelmann-Bagley study selected participants from Minneapolis, Minnesota, and from university settings that included both faculty members and service employees from Madison, Wisconsin, and College Park, Pennsylvania. These participants were sedentary men 45-59 who were found to have certain characteristics relative to blood pressure readings and cholesterol levels which increased their levels of coronary heart disease. The Heinzelmann-Durbeck study selected from NASA employees in the Washington, D.C. area for participants in their study. These participants were all males, aged 35-55, with GS pay ratings of 11 or higher.

Adherence was another area of concern in the Heinzelmann-Durbeck study. In this study, the participants were asked to exercise three times a week, 30 minutes a time. The adherence level was very poor. In a typical week, half of the participants did not exercise at all, and the average adherence rate was only 1.3 days per week.

Kimberly-Clark had an in-house facility for exercising while the exercise settings used in the

two Heinzelmann studies were not in-house. The participants in the two Heinzelmann studies had to go outside of their immediate work area to participate in the program. This could influence their program adherence and thus affect the results of the study. Program participants are more likely to exercise and participate in the program at a higher level of adherence if the exercise facility location is conveniently reachable.

Both Heinzelmann studies may have been affected by the obtrusive nature of the research methodology. The Kimberly-Clark study was done in an unobtrusive manner, and the data collection was incidential, brief, and had little impact on the respondents' activities in the program. Before taking part in the study, the study participants were assured that their names would not be used in any way with the study questions and the results obtained from the study itself. This anonymity may have lead to a more truthful response by the study participants.

After participating in and taking an in-depth look at Kimberly-Clark's Health Management Program, several general statements can be made. The development and

maintenance of Kimberly-Clark's Health Management Program has provided the company with an excellent opportunity to improve their public relations. This was done through the outstanding personnel that work in the Health Management Program as well as the image of program excellence that is projected to the community. Kimberly-Clark has enhanced its public image by winning several prestigious awards on their program including one from Blue Cross and Blue Shield and another from the American Association of Fitness Directors in Business and Industry. Also, their publication, Wellnews, does an outstanding job of keeping the program participants up to date on program opportunities and happenings.

Another positive aspect of Kimberly-Clark's Health Management Program is the effect it can have on potential employees. The author of this study gave the Health Management Program orientation to several potential employees. Several of these potential employees already knew of the program before the orientation. Also, several of them stated that the availability of the program could make the difference in whether or not they chose to accept employment at Kimberly-Clark.

The flextime concept of Kimberly-Clark's Health

Management Program was a good idea. Many employees use the facility during this time. Still, only 24% of Kimberly-Clark's employees use the facility two or more times a week. Stronger incentive needs to be used to get more employees to participate in the program. This could be done by putting more emphasis on showing self improvement through program participation. This could also be done through encouraging more family-oriented activities. Spouses are presently allowed to participate in the program, but not children. The program should be open to the entire family.

The availability of an in-house facility is a substantial asset to the program. The convenience is very important to employee participation and interest. The current program is of a non-recreational structure. Perhaps if it was expanded to include some recreational activities, program participation would increase. No fee is charged now for program participation except for some of the classes.

The screening process is perhaps too complete. Each participant is given a very complete medical evaluation. Some of this is unnecessary and could be eliminated, thus reducing program costs.

The program works as good preventive medicine.

Kimberly-Clark has chosen not to publish program information and results until the program has been maintained at least ten years. It is felt by the author that this information should be made public at this time so others interested in establishing or studying a program of this nature have Kimberly-Clark's program to use as an excellent source of information.

From the results of the data gathered in this study, several reasons can be found for establishing and maintaining a corporate fitness program. Several significant self perceptions were found that could directly affect the participant's work performance. These were: increased output, positive feelings about the job, and a drop in absenteeism. Several personal changes also occurred that would affect a person's work performance. These included greater stamina, a general feeling of better health, less stress and tension and a better handling of stress and tension. Also, the program participants got their work associates to do something positive about their own health.

Recommendations for Further Research

1. Research studies utilizing this research design should be done in other corporate fitness centers in order to replicate and substantiate the

results of this study.

2. This study should be replicated using different populations within the corporate fitness setting. Areas that could be studied are: retiree participants and cardiac rehabilitation program participants.

3. A study similar to this should be performed incorporating pre and post test measures on physiological and psychological findings to evaluate the differences obtained in each.

REFERENCES

Bakeland, F. Exercise deprivation. Archives of General Psychiatry, 1970, 22, 365-369.

Bakeland, F., & Lasky, R. Exercise and sleep patterns in college athletes. Perceptual and Motor Skills, 1966, 23, 1203-1207.

Blue, F. R. Aerobic running as a treatment for moderate depression. Perceptual and Motor Skills, 1979, 48, 228.

Brown, B. J. The effect of an isometric strength program on the intellectual and social development of trainable retarded males. American Corrective Therapy Journal, 1977, 31, 44-48.

Brown, R. S., Ramirez, D. E., & Taub, J. M. The prescription of exercise for depression. The Physician and Sports Medicine, 1978, 6, 34-39.

Buffone, G. W. Exercise as therapy: A closer look. Journal of Counseling and Psychotherapy, 1980, 3, 101-115.

Carter, R. Exercise and happiness. Journal of Sports Medicine and Physical Fitness, 1977, 17, 307-313.

Chapman, C. B., & Mitchell, J. H. The physiology of exercise. Scientific American, 1965, 212(5), 88-96.

Chasey, W. C., Swartz, J. D., & Chasey, C. G. Effect of motor development on body image scores for institutionalized mentally retarded children. American Journal of Mental Deficiency, 1974, 78, 440-445.

Clarke, H. H. Physical fitness benefits: A summary of research. Education, 1958, 78, 460-466.

Conrad, C. C. Why your organization should consider starting a physical fitness program. Training/HRD, February, 1979, 21, 28-31.

Cooper, L. Athletics, activity and personality: A review of the literature. Research Quarterly, 1969, 40, 17-22.

Crase, D., Hamrick, H. M., & Rosat, D. F. Emerging consciousness. Health Education, 1979, 23, 4-7.

deVries, H. A. Immediate and long-term effects of exercise upon resting muscle action potential level. Journal of Sports Medicine and Physical Fitness, 1968, 8, 12-20.

deVries, H. A., & Adams, G. M. Electomyographic comparison of single dose exercise and meprobamate as to effects on muscular relaxation. American Journal of Physical Medicine, 1972, 51, 130-141.

Dedmon, R. E., Gander, J. W., O'Connor, M. P., & Paschke, A. C. An industrial health management program. The Physician and Sports Medicine, 1979, 15, 56-67.

Donoghue, S. The correlation between physical fitness, absenteeism, and work performance. Canadian Journal of Public Health, 1977, 68, 201-203.

Employee fitness: Corporate philosophy for the 1980's. Athletic Purchasing and Facilities, July, 1980, 12-13.

Fielding, J. E. Preventive medicine and the bottom line. Journal of Occupational Medicine, 1979, 84, 79-88.

Fogle, R. K. Before you propose an exercise fitness program. Recreation Management, 1979, 15, 2-25.

Fogle, R. K., & Verdesca, A. S. The cardiovascular conditioning effects of a supervised exercise program. The Journal of Occupational Medicine, 1973, 17, 240-246.

Folkins, C. H. Effects of physical training on mood. Journal of Clinical Psychology, 1976, 32, 385-388.

Folkins, C., & Sime, W. Physical fitness training and mental health. American Psychologist, April, 1981, 36, 4, 373-389.

Gary, V., & Guthrie, D. The effect of jogging on physical fitness and self-concept in hospitalized alcoholics. Quarterly Journal of Studies on Alcoholism, 1972, 33, 1073-1078.

Goldberg, B., & Folkins, C. Relationship of body-image to negative emotional attitudes. Perceptual and Motor Skills, 1974, 39, 1053-1054.

Greist, J. H., Klein, M. H., Eischens, R. R., Faris, J. W., Gurman, A. S., & Morgan, W. P. Running as treatment for depression. Comprehensive Psychiatry, 1979, 20, 41-54.

Gruber, J. J. Exercise and mental performance. International Journal of Sport Psychology, 1975, 6, 28-40.

Hammett, V. B. Psychological changes with physical fitness training. Canadian Medical Association Journal, 1967, 96, 764-768.

Hanson, D. S. The effect of a concentrated program in movement behavior on the affective behavior of four year old children at university elementary school (Doctoral dissertation, University of California, Los Angeles, 1970). Dissertation Abstract International, 1971, 31, 3319A. (University Microfilms No. 71-00629).

Harris, D. V. Involvement in sports: A somatopsychic rationale for physical activity. Philadelphia, Pa.: Lea & Febiger, 1973.

Heinzelmann, F., & Bagley, R. Responses to physical activity programs and their effects on health behavior. Public Health Record, 1970, 85, 905-911.

Heinzelmann, F., & Durbeck, D. Personal benefits of a health evaluation and enhancement program. Public Health Report, 1970, 85, 52-73.

Ismail, A. H. Integrated development. In J. E. Kane (ed.), Physiological aspects of physical education and sport. London: Routledge & Kegan Paul, 1972.

Ismail, A. H., & Trachtman, L. D. Jogging the imagination. Psychology Today, March, 1973, 73, 79-82.

Ismail, A. H., & Young, R. J. The effect of chronic exercise on the personality of middle-aged men by univariate and multivariate approaches. Journal of Human Ergology, 1973, 2, 47-57.

Kavanagh, T., Shephard, R. J., Tuck, J. A., & Qureshi, S. Depression following myocardial infarction: The effect of distance running. Annals of the New York Academy of Sciences, 1977, 301, 1029-1038.

Keelor, R. Address to the 1976 blue shield annual program conference. Corporate Fitness, 1976, 12, 4-5.

Keelor, R. Testimony to the council on wage and price stability hearings on health care cost. Training/HRD, 1978, 15, 27-29.

Koerner, D. R. Cardiovascular benefits from an industrial physical fitness program. Journal of Occupational Medicine, 1973, 15, 700.

Layman, E. M. The contribution of play and sports to emotional health. In J. E. Kane (ed.), Psychological aspects of physical education and sport. London: Routledge & Kegan Paul, 1972.

Layman, E. M. Psychological effects of physical activity. In J. H. Wilmore (ed.), Exercise and sports sciences reviews. New York: Academic Press, 1974.

Lazarus, R. S. A cognitively oriented psychologist looks at biofeedback. American Psychologist, 1975, 30, 553-561.

Maloney, M. P., Ball, T. S., & Edgar, C. L. Analysis of the generalizability of sensory-motor training. American Journal of Mental Deficiency, 1970, 74, 458-469.

Maloney, M. P., & Payne, L. F. Note on the stability of changes in body image due to sensory-motor training. American Journal of Mental Deficiency, 1970, 74, 708.

Marley, W. P. Asthma and exercise: A review. American Corrective Therapy Journal, 1977, 31, 95-102.

McPherson, B. D., Paivio, A., Yuhasz, M. S., Rechnitzer, P. A., Pickard, H. A., & Lefcoe, N. B. Psychological effects of an exercise program for postinfarct and normal adult men. Journal of Sports Medicine and Physical Fitness, 1967, 7, 95-102.

Nie, N. H., Hull, C. H., Jenkins, J. G., Steinbrenner, K., & Bent, D. H. Statistical package for the social sciences, (2nd ed.). New York: McGraw-Hill, 1975.

Nunley, R. L. A physical fitness program. Journal of the American Physical Therapy Association, 1965, 45, 946-954.

O'Conner, C. Effects of selected physical activities upon motor performance, perceptual performance and academic achievement of first graders. Perceptual and Motor Skills, 1969, 29, 703-709.

Paolone, A. M. Results of two years of exercise training on middle-aged men and its effects on physical fitness. American Journal of Public Health, May, 1974, 97, 459-465.

Powell, R. R. Effects of exercise on mental functioning. Journal of Sports Medicine and Physical Fitness, 1975, 15, 125-131.

Pyle, R. Corporate fitness programs--how do they shape up? Personnel, 1979, 44, 58-59.

Schwartz, G. E., Davidson, R. J., & Goleman, D. J. Patterning of cognitive and somatic processes in the self-regulation of anxiety: Effects of medication versus exercise. Psychosomatic Medicine, 1978, 40, 321-328.

Scott, M. G. The contributions of physical activity to psychological development. Research Quarterly, 1960, 31, 307-320.

Snyder, E. E., & Spreitzer, E. A. Involvement in sports and psychological well-being. International Journal of Sports Psychology, 1974, 5, 28-39.

Solomon, E. G., & Bumpus, A. K. The running meditation response: An adjunct to psychotherapy. American Journal of Psychotherapy, 1978, 32, 583-592.

Stamford, B. A., Hambacher, W., & Fallica, A. Effects of daily physical exercise on the psychiatric state of institutional geriatric mental patients. Research Quarterly, 1974, 45, 34-41.

Zion, L. C. Body concept as it relates to self-concept. Research Quarterly, 1965, 36, 490-495.

APPENDIX A

Lutheran Mutual Life Insurance Fitness Program

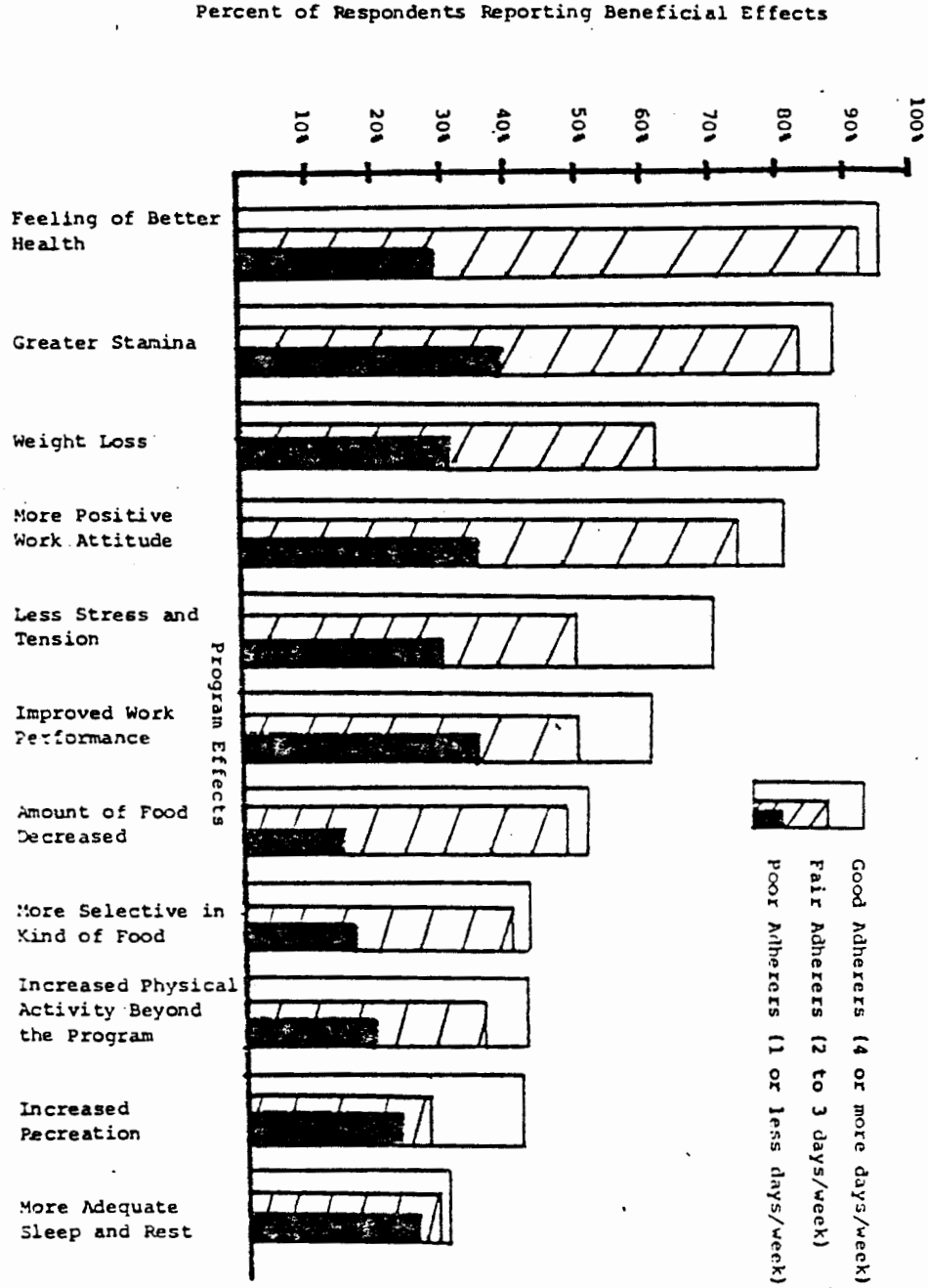

Figure 1

Lutheran Mutual Life Insurance Fitness Program

APPENDIX B

Survey Questions

Health Services Center
Kimberly-Clark Corporation Neenah, Wisconsin 54956
Phone (414) 729-1212

Dear Employee:

The following Health Management Survey is being conducted by Mr. Rick Langford, a graduate student at the University of Northern Iowa. We ask that you give Rick your fullest cooperation by answering each question honestly.

Your answers will remain confidential and will be used with other Kimberly-Clark employee answers to determine if any changes have occurred in your lifestyle as a result of participating in the Health Management Program.

Thank you for your help.

Connie Smoczyk
Manager, Health Education
And Exercise Programs

General Directions

Please respond to all items on this form. Only circle one answer per question.

Sex: Male
Female

Age: 1. 18-29
2. 30-39
3. 40-49
4. 50-59
5. 60+

1. As a result of the program, approximately how many days a week do you exercise in the Health Services Center?

1. less than 1 day
2. 1 day
3. 2 days
4. 3 or more days

2. As a result of the program, have there been any changes in your work performance or output, that is, how much you actually accomplish?

1. increased output
2. decreased output
3. no change

3. As a result of the program, have there been any changes in your reactions or feelings about your job environment or your work?

1. more positive about your job
2. less positive about your job
3. no change

4. As a result of the program, have there been any changes in your attendance at work?

1. absent less
2. absent more
3. no change

5. As a result of the program, have there been any changes in the kind of food you eat or drink?

1. more selective
2. less selective
3. no change

6. As a result of the program, have there been any changes in the amount of food you eat or drink?

1. require more
2. require less
3. no change

7. As a result of the program, have there been any changes in your smoking habits?

1. smoke less
2. smoke more
3. quit smoking
4. never smoked
5. no change

8. As a result of the program, have there been any changes in the amount of sleep and rest you get?

1. require more
2. require less
3. no change

9. As a result of the program, have there been any changes in your recreational activities (beyond that which you might get as part of the program?

1. participate in new activities
2. participate in old activities but more
3. no change

10. As a result of the program, have there been any changes in your stamina or level of pep and energy?

1. greater stamina and energy
2. less stamina and energy
3. no change

11. As a result of the program, have there been any changes in the amount of stress or tension in your life?

1. less stress
2. more stress
3. no change

12. As a result of the program, have there been any changes in how you handle stress both on the job and off?

1. more adequately
2. less adequately
3. no change

13. As a result of the program, have there been any changes in how healthy you feel in general?

1. feel more healthy
2. feel less healthy
3. no change

14. As a result of the program, have there been any changes in your weight?

1. lost more than 10 pounds
2. lost 5-10 pounds
3. lost 1-4 pounds
4. gained weight
5. no change

15. As a result of your participation in the program, have there been any changes in your spouse's health habits or the things they do about their health?

1. exercise more
2. exercise less
3. no change
4. not applicable

16. As a result of your participation in the program, have the members of your family made any changes in their health habits?

1. exercise more
2. exercise less
3. no change
4. not applicable

17. As a result of your participation in the program, have your friends or neighbors made any changes in their health habits to your knowledge?

1. they exercise more
2. they exercise less
3. no change

18. As a result of your participation in the program, have your work associates made any changes in their health habits to your knowledge?

1. they exercise more
2. they exercise less
3. no change

Thank you for your cooperation

APPENDIX C

Descriptive Statistics of Data Analysis

Table 1

Survey Population

Sex	Number of Cases		Label
1	95	73.1%	Male
2	35	26.9%	Female
Total	130	100.0%	

Age	Number of Cases		Label
1	21	16.2%	18-29
2	32	24.6%	30-39
3	33	25.4%	40-49
4	36	27.7%	50-59
5	8	6.2%	60+
Total	130	100.0%	

Adherence	Number of Cases		Label
1	0	0.0%	Less than 1 day
2	1	0.8%	1 day
3	21	16.2%	2 days
4	108	83.1%	3 or more days
Total	130	100.0%	

Table 2

Adherence by Age

Adherence	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Less than 1 day	0	0	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2. 1 day	0	0	0	1	0	1
Percentage	0.0%	0.0%	0.0%	2.8%	0.0%	0.8%
3. 2 days	2	9	2	8	0	21
Percentage	9.5%	28.1%	6.1%	22.2%	0.0%	16.2%
4. 3 or more days	19	23	31	27	8	108
Percentage	90.5%	71.9%	93.9%	75.0%	100.0%	83.1%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 1: Frequency Distribution by Age

Table 3

Adherence by Sex

Adherence	Sex		
	Male	Female	Grand Total
1. Less than 1 day	0	0	0
Percentage	0.0%	0.0%	0.0%
2. 1 day	1	0	1
Percentage	1.1%	0.0%	0.8%
3. 2 days	16	5	21
Percentage	16.8%	14.3%	16.2%
4. 3 or more days	78	30	108
Percentage	82.1%	85.7%	83.1%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 1: Frequency Distribution by Sex

Table 4

Work Performance by Age

Work Performance	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Increased output	13	25	23	18	6	85
Percentage	61.9%	78.1%	69.7%	50.0%	75.0%	65.4%
2. Decreased output	0	0	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3. No change	8	7	10	18	2	45
Percentage	38.1%	21.9%	30.3%	50.0%	25.0%	34.6%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 2: Frequency Distribution by Age

Table 5

Work Performance by Sex

Work Performance	Sex		
	Male	Female	Grand Total
1. Increased output	61	24	85
Percentage	64.2%	68.6%	65.4%
2. Decreased output	0	0	0
Percentage	0.0%	0.0%	0.0%
3. No change	34	11	45
Percentage	35.8%	31.4%	34.6%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 2: Frequency Distribution by Sex

Table 6

Work Performance by Adherence

Work Performance	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Increased output	1	13	71	85
Percentage	100.0%	61.9%	65.7%	65.4%
2. Decreased output	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%
3. No change	0	8	37	45
Percentage	0.0%	38.1%	34.3%	34.6%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 2: Frequency Distribution by Adherence

Table 7

Reactions or Feelings by Age

Reactions or Feelings	Age					Grand Total
	18-29	30-39	40-49	50-59	60+	
1. More positive about job	18	25	23	18	6	85
Percentage	85.7%	78.1%	69.7%	50.0%	75.0%	65.4%
2. Less positive about job	0	0	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3. No change	8	7	10	18	2	45
Percentage	38.1%	21.9%	30.3%	50.0%	25.0%	34.6%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 3: Frequency Distribution by Age

Table 8

Reactions or Feelings by Sex

Reactions or Feelings	Sex		
	Male	Female	Grand Total
1. More positive about job	66	27	93
Percentage	69.5%	77.1%	71.5%
2. Less positive about job	1	0	1
Percentage	1.1%	0.0%	0.8%
3. No change	28	8	36
Percentage	29.5%	22.9%	27.7%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 3: Frequency Distribution by Sex

Table 9

Reactions or Feelings by Adherence

Reactions or Feelings	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. More positive about job	1	14	78	93
Percentage	100.0%	66.7%	72.2%	71.5%
2. Less positive about job	0	0	1	1
Percentage	0.0%	0.0%	0.9%	0.8%
3. No change	0	7	29	36
Percentage	0.0%	33.3%	26.9%	27.7%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 3: Frequency Distribution by Adherence

Table 10

Work Attendance by Age

Work Attendance	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Absent less	8	9	8	6	5	36
Percentage	38.1%	28.1%	24.2%	16.7%	62.5%	27.7%
2. Absent more	0	0	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3. No change	13	23	25	30	3	94
Percentage	61.9%	71.9%	75.8%	83.3%	37.5%	72.3%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 4: Frequency Distribution by Age

Table 11

Work Attendance by Sex

Work Attendance	Sex		
	Male	Female	Grand Total
1. Absent less	28	8	36
Percentage	29.5%	22.9%	27.7%
2. Absent more	0	0	0
Percentage	0.0%	0.0%	0.0%
3. No change	67	27	94
Percentage	70.5%	77.1%	72.3%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 4: Frequency Distribution by Sex

Table 12

Work Attendance by Adherence

Work Attendance	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Absent less	1	4	31	36
Percentage	100.0%	19.0%	28.7%	27.7%
2. Absent more	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%
3. No change	0	17	77	94
Percentage	0.0%	81.0%	71.3%	72.3%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 4: Frequency Distribution by Adherence

Table 13

Kind of Food by Age

Kind of Food	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. More selective	17	20	27	25	8	97
Percentage	81.0%	62.5%	81.8%	69.4%	100.0%	74.6%
2. Less selective	0	1	0	0	0	1
Percentage	0.0%	3.1%	0.0%	0.0%	0.0%	0.8%
3. No change	4	11	6	11	0	32
Percentage	19.0%	34.4%	18.2%	30.6%	0.0%	24.6%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 5: Frequency Distribution by Age

Table 14

Kind of Food by Sex

Kind of Food	Sex		
	Male	Female	Grand Total
1. More selective	68	29	97
Percentage	71.6%	82.9%	74.6%
2. Less selective	1	0	1
Percentage	1.1%	0.0%	0.8%
3. No change	26	6	32
Percentage	27.4%	17.1%	24.6%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 5: Frequency Distribution by Sex

Table 15

Kind of Food by Adherence

Kind of Food	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. More selective	1	15	81	97
Percentage	100.0%	71.4%	75.0%	74.6%
2. Less selective	0	0	1	1
Percentage	0.0%	0.0%	0.9%	0.8%
3. No change	0	6	26	32
Percentage	0.0%	28.6%	24.1%	24.6%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 5: Frequency Distribution by Adherence

Table 16

Amount of Food by Age

Amount of Food	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Require more	3	6	1	4	2	16
Percentage	14.3%	18.8%	3.0%	11.1%	25.0%	12.3%
2. Require less	9	11	18	15	4	57
Percentage	42.9%	34.4%	54.5%	41.7%	50.0%	43.8%
3. No change	9	15	14	17	2	57
Percentage	42.9%	46.9%	42.4%	47.2%	25.0%	43.8%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 6: Frequency Distribution by Age

Table 17

Amount of Food by Sex

Amount of Food	Sex		
	Male	Female	Grand Total
1. Require more	14	2	16
Percentage	14.7%	5.7%	12.3%
2. Require less	39	18	57
Percentage	41.1%	51.4%	43.8%
3. No change	42	15	57
Percentage	44.2%	42.9%	43.8%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 6: Frequency Distribution by Sex

Table 18

Amount of Food by Adherence

Amount of Food	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Require more	0	4	12	16
Percentage	0.0%	19.0%	11.1%	12.3%
2. Require less	1	3	53	57
Percentage	100.0%	14.3%	49.1%	43.8%
3. No change	0	14	43	57
Percentage	0.0%	66.7%	39.8%	43.8%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 6: Frequency Distribution by Adherence

Table 19

Smoking Habits by Age

Smoking Habits	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Smoke less	0	1	4	0	0	5
Percentage	0.0%	3.1%	12.1%	0.0%	0.0%	3.8%
2. Smoke more	0	1	0	0	0	1
Percentage	0.0%	3.1%	0.0%	0.0%	0.0%	0.8%
3. Quit smoking	5	3	5	8	5	26
Percentage	23.8%	9.4%	15.2%	22.2%	62.5%	20.0%
4. Never smoked	16	20	14	18	2	70
Percentage	76.2%	62.5%	42.4%	50.0%	25.0%	53.8%
5. No change	0	7	10	10	1	28
Percentage	0.0%	21.9%	30.3%	27.8%	12.5%	21.5%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 7: Frequency Distribution by Age

Table 20

Smoking Habits by Sex

Smoking Habits	Sex		
	Male	Female	Grand Total
1. Smoke less	4	1	5
Percentage	4.2%	2.9%	3.8%
2. Smoke more	1	0	1
Percentage	1.1%	0.0%	0.8%
3. Quit smoking	21	5	26
Percentage	22.1%	14.3%	20.0%
4. Never smoked	47	23	70
Percentage	49.5%	65.7%	53.8%
5. No change	22	6	28
Percentage	23.2%	17.1%	43.2%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 7: Frequency Distribution by Sex

Table 21

Smoking Habits by Adherence

Smoking Habits	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Smoke less	0	0	5	5
Percentage	0.0%	0.0%	4.6%	3.8%
2. Smoke more	0	1	0	1
Percentage	0.0%	4.8%	0.0%	0.8%
3. Quit smoking	0	2	24	26
Percentage	0.0%	9.5%	22.2%	20.0%
4. Never smoked	1	12	57	70
Percentage	100.0%	57.1%	52.8%	53.8%
5. No change	0	6	22	28
Percentage	0.0%	37.6%	20.4%	22.4%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 7: Frequency Distribution by Adherence

Table 22

Amount of Sleep by Age

Amount of Sleep	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Require more	1	4	2	3	2	12
Percentage	4.8%	12.5%	6.1%	8.3%	25.0%	9.2%
2. Require less	7	11	15	11	4	48
Percentage	33.3%	34.4%	45.5%	30.6%	50.0%	36.9%
3. No change	13	17	16	22	2	70
Percentage	61.9%	53.1%	48.5%	61.1%	25.0%	53.8%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 8: Frequency Distribution by Age

Table 23

Amount of Sleep by Sex

Amount of Sleep	Sex		
	Male	Female	Grand Total
1. Require more	8	4	12
Percentage	8.4%	11.4%	9.2%
2. Require less	33	15	48
Percentage	34.7%	42.9%	36.9%
3. No change	54	16	70
Percentage	56.8%	45.7%	53.8%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 8: Frequency Distribution by Sex

Table 24

Amount of Sleep by Adherence

Amount of Sleep	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Require more	0	2	10	12
Percentage	0.0%	9.5%	9.3%	9.2%
2. Require less	1	3	44	48
Percentage	100.0%	14.3%	40.7%	36.9%
3. No change	0	16	54	70
Percentage	0.0%	76.2%	50.0%	53.8%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 8: Frequency Distribution by Adherence

Table 25

Recreational Activities by Age

Recreational Activities	Age 18-29	30-39	40-49	50-59	60+	Grand Total
1. Participate in new programs	13	13	12	9	3	50
Percentage	61.9%	40.6%	36.4%	25.0%	37.5%	38.5%
2. Participate in old activities but more	1	2	4	6	2	15
Percentage	4.8%	6.3%	12.1%	16.7%	25.0%	11.5%
3. Participate less in all activities	0	0	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4. No change	7	17	17	21	3	65
Percentage	33.3%	53.1%	51.5%	58.3%	37.5%	50.0%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 9: Frequency Distribution by Age

Table 26

Recreational Activities by Sex

Recreational Activities	Sex		
	Male	Female	Grand Total
1. Participate in new programs	33	17	50
Percentage	34.7%	48.6%	38.5%
2. Participate in old activities but more	13	2	15
Percentage	13.7%	5.7%	11.5%
3. Participate less in all activities	0	0	0
Percentage	0.0%	0.0%	0.0%
4. No change	49	16	65
Percentage	51.6%	45.7%	50.0%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 9: Frequency Distribution by Sex

Table 27

Recreational Activities by Adherence

Recreational Activities	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Participate in new programs	1	5	44	50
Percentage	100.0%	23.8%	40.7%	38.5%
2. Participate in old activities but more	0	4	11	15
Percentage	0.0%	19.0%	10.2%	11.5%
3. Participate less in all activities	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%
4. No change	0	12	53	65
Percentage	0.0%	57.1%	49.1%	50.0%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 9: Frequency Distribution by Adherence

Table 28

Stamina by Age

Stamina	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Greater stamina	20	31	32	35	7	125
Percentage	95.2%	96.9%	97.0%	97.2%	87.5%	96.2%
2. Less stamina	0	0	0	1	0	1
Percentage	0.0%	0.0%	0.0%	2.8%	0.0%	0.8%
3. No change	1	1	1	0	1	4
Percentage	4.8%	3.1%	3.0%	0.0%	12.5%	3.1%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 10: Frequency Distribution by Age

Table 29

Stamina by Sex

Stamina	Sex		
	Male	Female	Grand Total
1. Greater stamina	91	34	125
Percentage	95.8%	97.1%	96.2%
2. Less stamina	1	0	1
Percentage	1.1%	0.0%	0.8%
3. No change	3	1	4
Percentage	3.2%	2.9%	3.1%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 10: Frequency Distribution by Sex

Table 30

Stamina by Adherence

Stamina	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Greater stamina	1	21	103	125
Percentage	100.0%	100.0%	95.4%	96.2%
2. Less stamina	0	0	1	1
Percentage	0.0%	0.0%	0.9%	0.8%
3. No change	0	0	4	4
Percentage	0.0%	0.0%	3.7%	3.1%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 10: Frequency Distribution by Adherence

Table 31

Amount of Stress by Age

Amount of Stress	Age					Grand Total
	18-29	30-39	40-49	50-59	60+	
1. Less stress	16	20	15	19	6	76
Percentage	76.2%	62.5%	45.5%	52.8%	75.0%	58.5%
2. More stress	1	0	1	0	0	2
Percentage	4.8%	0.0%	3.0%	0.0%	0.0%	1.5%
3. No change	4	12	17	17	2	52
Percentage	19.0%	37.5%	51.5%	47.2%	25.0%	40.0%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 11: Frequency Distribution by Age

Table 32

Amount of Stress by Sex

Amount of Stress	Sex		
	Male	Female	Grand Total
1. Less stress	56	20	76
Percentage	58.9%	57.1%	58.5%
2. More stress	2	0	2
Percentage	2.1%	0.0%	1.5%
3. No change	37	15	52
Percentage	38.9%	42.9%	40.0%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 11: Frequency Distribution by Sex

Table 33

Amount of Stress by Adherence

Amount of Stress	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Less stress	1	15	60	76
Percentage	100.0%	71.4%	55.6%	58.5%
2. More stress	0	0	2	2
Percentage	0.0%	0.0%	1.9%	1.5%
3. No change	0	6	46	52
Percentage	0.0%	28.6%	42.6%	40.0%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 11: Frequency Distribution by Adherence

Table 34

Handling of Stress by Age

Handling of Stress	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. More adequately	18	23	27	19	6	93
Percentage	85.7%	71.9%	81.8%	52.8%	75.0%	71.5%
2. Less adequately	0	0	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3. No change	3	9	6	17	2	37
Percentage	14.3%	28.1%	18.2%	42.2%	25.0%	28.5%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 12: Frequency Distribution by Age

Table 35

Handling of Stress by Sex

Handling of Stress	Sex		
	Male	Female	Grand Total
1. More adequately	64	29	93
Percentage	67.4%	82.9%	71.5%
2. Less adequately	0	0	0
Percentage	0.0%	0.0%	0.0%
3. No change	31	6	37
Percentage	32.6%	17.1%	28.5%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 12: Frequency Distribution by Sex

Table 36

Handling of Stress by Adherence

Handling of Stress	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. More adequately	1	15	77	93
Percentage	100.0%	71.4%	71.3%	71.5%
2. Less adequately	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%
3. No change	0	6	31	37
Percentage	0.0%	28.6%	28.7%	28.5%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 12: Frequency Distribution by Adherence

Table 37

General Health by Age

General Health	Age					Grand Total
	18-29	30-39	40-49	50-59	60+	
1. More healthy	21	31	30	34	8	124
Percentage	100.0%	96.9%	90.9%	94.4%	100.0%	95.4%
2. Less healthy	0	0	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3. No change	0	1	3	2	0	6
Percentage	0.0%	3.1%	9.1%	5.6%	0.0%	4.6%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 13: Frequency Distribution by Age

Table 38

General Health by Sex

General Health	Sex		
	Male	Female	Grand Total
1. More healthy	91	33	124
Percentage	95.8%	94.3%	95.4%
2. Less healthy	0	0	0
Percentage	0.0%	0.0%	0.0%
3. No change	4	2	6
Percentage	4.2%	5.7%	4.6%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 13: Frequency Distribution by Sex

Table 39

General Health by Adherence

General Health	Adherence			Grand Total
	1 Day	2 Days	3 or	
1. More healthy	1	19	104	124
Percentage	100.0%	90.5%	96.3%	95.4%
2. Less healthy	0	0	0	0
Percentage	0.0%	0.0%	0.0%	0.0%
3. No change	0	2	4	6
Percentage	0.0%	9.5%	3.7%	4.6%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 13: Frequency Distribution by Adherence

Table 40

Weight by Age

Weight	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Lost more than 10 pounds	3	5	10	7	4	29
Percentage	14.3%	15.6%	30.3%	19.4%	50.0%	22.3%
2. Lost 5-10 pounds	7	8	12	11	1	39
Percentage	33.3%	25.0%	36.4%	30.6%	12.5%	30.0%
3. Lost 1-4 pounds	5	7	5	9	2	28
Percentage	23.8%	21.9%	15.2%	25.0%	25.0%	21.5%
4. Gained weight	2	4	2	1	0	9
Percentage	9.5%	12.5%	6.1%	2.8%	0.0%	6.9%
5. No change	4	8	4	8	1	25
Percentage	19.0%	25.0%	12.1%	22.2%	12.5%	19.2%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 14: Frequency Distribution by Age

Table 41

Weight by Sex

Weight	Sex		
	Male	Female	Grand Total
1. Lost more than 10 pounds	24	5	29
Percentage	25.3%	14.3%	22.3%
2. Lost 5-10 pounds	30	9	39
Percentage	31.6%	25.7%	30.0%
3. Lost 1-4 pounds	20	8	28
Percentage	21.1%	22.9%	21.5%
4. Gained weight	5	4	9
Percentage	5.3%	11.4%	6.9%
5. No change	16	9	25
Percentage	16.8%	25.7%	19.2%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 14: Frequency Distribution by Sex

Table 42

Weight by Adherence

Weight	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Lost more than 10 pounds	0	4	25	29
Percentage	0.0%	19.0%	23.1%	22.3%
2. Lost 5-10 pounds	0	5	34	39
Percentage	0.0%	23.8%	31.5%	30.0%
3. Lost 1-4 pounds	1	3	24	28
Percentage	100.0%	14.3%	22.2%	21.5%
4. Gained weight	0	1	8	9
Percentage	0.0%	4.8%	7.4%	6.9%
5. No change	0	8	17	25
Percentage	0.0%	38.1%	15.1%	19.2%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 14: Frequency Distribution by Adherence

Table 43

Spouse's Health Habits by Age

Spouse's Health Habits	Age 18-29	30-39	40-49	50-59	60+	Grand Total
1. Exercise more	12	10	14	16	6	58
Percentage	57.1%	31.3%	42.4%	44.4%	75.0%	44.6%
2. Exercise less	0	0	0	1	0	1
Percentage	0.0%	0.0%	0.0%	2.8%	0.0%	0.8%
3. No change	3	8	15	14	2	42
Percentage	14.3%	25.0%	45.5%	38.9%	25.0%	32.3%
4. Not applicable	6	14	4	5	0	29
Percentage	28.6%	43.8%	12.1%	13.9%	0.0%	22.3%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 15: Frequency Distribution by Age

Table 44

Spouse's Health Habits by Sex

Spouse's Health Habits	Sex		
	Male	Female	Grand Total
1. Exercise more	45	13	58
Percentage	47.4%	37.1%	44.6%
2. Exercise less	1	0	1
Percentage	1.1%	0.0%	0.8%
3. No change	31	11	42
Percentage	32.6%	31.4%	32.3%
4. Not applicable	18	11	29
Percentage	18.9%	31.4%	22.3%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 15: Frequency Distribution by Sex

Table 45

Spouse's Health Habits by Adherence

Spouse's Health Habits	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Exercise more	1	8	49	58
Percentage	100.0%	38.1%	45.4%	44.6%
2. Exercise less	0	1	0	1
Percentage	0.0%	4.8%	0.0%	0.8%
3. No change	0	8	34	42
Percentage	0.0%	38.1%	31.5%	32.3%
4. Not applicable	0	4	25	29
Percentage	0.0%	19.0%	23.1%	22.3%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 15: Frequency Distribution by Adherence

Table 46

Family Health Habits by Age

Family Health Habits	Age 18-29	30-39	40-49	50-59	60+	Grand Total
1. Exercise more	13	9	14	17	6	59
Percentage	61.9%	28.1%	42.4%	47.2%	75.0%	45.4%
2. Exercise less	0	0	0	1	0	1
Percentage	0.0%	0.0%	0.0%	2.8%	0.0%	0.8%
3. No change	4	7	17	11	1	40
Percentage	19.0%	21.9%	51.5%	30.6%	12.5%	30.8%
4. Not applicable	4	16	2	7	1	30
Percentage	19.0%	50.0%	6.1%	19.4%	12.5%	23.1%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 16: Frequency Distribution by Age

Table 47

Family Health Habits by Sex

Family Health Habits	Sex		
	Male	Female	Grand Total
1. Exercise more	39	20	59
Percentage	41.1%	57.1%	45.4%
2. Exercise less	1	0	1
Percentage	1.1%	0.0%	0.8%
3. No change	36	4	40
Percentage	37.9%	11.4%	30.8%
4. Not applicable	19	11	30
Percentage	20.0%	31.4%	23.1%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 16: Frequency Distribution by Sex

Table 48

Family Health Habits by Adherence

Family Health Habits	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Exercise more	0	8	51	59
Percentage	0.0%	38.1%	47.2%	45.4%
2. Exercise less	0	1	0	1
Percentage	0.0%	4.8%	0.0%	0.8%
3. No change	1	7	32	40
Percentage	100.0%	33.3%	29.6%	30.8%
4. Not applicable	0	5	25	30
Percentage	0.0%	23.8%	23.1%	23.1%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 16: Frequency Distribution by Adherence

Table 49

Friends' Health Habits by Age

Friends' Health Habits	Age					
	18-29	30-39	40-49	50-59	60+	Grand Total
1. Exercise more	7	10	8	8	5	38
Percentage	33.3%	31.3%	24.2%	22.2%	62.5%	29.2%
2. Exercise less	0	0	0	1	0	1
Percentage	0.0%	0.0%	0.0%	2.8%	0.0%	0.8%
3. No change	14	22	25	27	3	91
Percentage	66.6%	68.8%	75.8%	75.0%	37.5%	70.0%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 17: Frequency Distribution by Age

Table 50

Friends' Health Habits by Sex

Friends' Health Habits	Sex		
	Male	Female	Grand Total
1. Exercise more	29	9	38
Percentage	30.5%	25.7%	29.2%
2. Exercise less	1	0	1
Percentage	1.1%	0.0%	0.8%
3. No change	65	26	91
Percentage	68.4%	74.3%	70.0%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 17: Frequency Distribution by Sex

Table 51

Friends' Health Habits by Adherence

Friends' Health Habits	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Exercise more	0	8	30	38
Percentage	0.0%	38.1%	27.8%	29.2%
2. Exercise less	1	0	0	1
Percentage	100.0%	0.0%	0.0%	0.8%
3. No change	0	13	78	91
Percentage	0.0%	61.9%	72.2%	70.0%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 17: Frequency Distribution by Adherence

Table 52

Work Associates' Health Habits by Age

Work Associates' Health Habits	Age 18-29	30-39	40-49	50-59	60+	Grand Total
1. Exercise more	11	12	19	12	6	60
Percentage	52.4%	37.5%	57.6%	33.3%	75.0%	46.2%
2. Exercise less	0	1	0	0	0	1
Percentage	0.0%	3.1%	0.0%	0.0%	0.0%	0.8%
3. No change	10	19	14	24	2	69
Percentage	47.6%	59.4%	42.4%	66.7%	25.0%	53.1%
Total by Group	21	32	33	36	8	130
Percentage	16.2%	24.6%	25.4%	27.7%	6.2%	100.0%

Missing: 0

Question 18: Frequency Distribution by Age

Table 53

Work Associates' Health Habits by Sex

Work Associates' Health Habits	Sex		
	Male	Female	Grand Total
1. Exercise more	41	19	60
Percentage	43.2%	54.3%	46.2%
2. Exercise less	1	0	1
Percentage	1.1%	0.0%	0.8%
3. No change	53	16	69
Percentage	55.8%	45.7%	53.1%
Total by Group	95	35	130
Percentage	73.1%	26.9%	100.0%

Missing: 0

Question 18: Frequency Distribution by Sex

Table 54

Work Associates' Health Habits by Adherence

Work Associates' Health Habits	Adherence			
	1 Day	2 Days	3 or More Days	Grand Total
1. Exercise more	1	10	49	60
Percentage	100.0%	47.6%	45.4%	46.2%
2. Exercise less	0	0	1	1
Percentage	0.0%	0.0%	0.9%	0.8%
3. No change	0	11	58	69
Percentage	0.0%	52.4%	53.7%	53.1%
Total by Group	1	21	108	130
Percentage	0.8%	16.2%	83.1%	100.0%

Missing: 0

Question 18: Frequency Distribution by Adherence