

1985

Beliefs Differentiating Levels of Exercise Adherence in Males Age 30 and Older

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BELIEFS DIFFERENTIATING
LEVELS
OF
EXERCISE ADHERENCE IN
MALES AGE 30 AND OLDER
BY
LINDA S. AMARAL

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE
IN
PHYSICAL EDUCATION

UNIVERSITY OF RHODE ISLAND

1985

MASTER OF SCIENCE THESIS
OF
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1985

ABSTRACT

Beliefs were studied in five groups of individuals representing different levels or stages of adherence to exercise. The five groups were immotives, contemplators, recruits, adherers and dropouts.

Based on Fishbein's model of behavioral intention, a survey instrument was developed. First, 23 exercise professionals were interviewed for what they had found people to believe about exercise. A 69-item belief survey was formulated from this information, and it was administered to 220 males. Additionally, a background questionnaire was administered, evaluating exercise behavior and other demographic variables.

An analysis of variance was conducted, and comparisons were made between pairs of the five groups. Most significant comparisons involved the immotive group. Time and mental health benefits distinguished almost all groups, with adherers relating most negatively to the fact that time is a problem and most positively to the mental health benefits that exercise provides. Immotives were opposite in nature. Recruits and adherers were found to think quite similarly.

A discriminant function analysis was done, and nine items were found which correctly classified subjects into the five groups with 50.73% degree of accuracy. Much of the error was with the dropout group which was consistent with the results of the analysis of variance which showed the beliefs of dropouts to be quite diversified.

The findings of the study were consistent with past research in so far as belief differences were concerned, but the results of the discriminant function analysis were unique.

ACKNOWLEDGEMENTS

The author would like to thank her thesis committee, Dr. Robert Sonstroem, Chairman, Dr. Leo O'Donnell, and Dr. Gene Knott for their assistance and encouragement. Thanks must be expressed to the Narragensett Lions Club for allowing a portion of the study to take part at their festival. Also, the North Kingstown Knights of Columbus, the South Kingstown Kiwanis Club and the South Kingstown Rotary Club, as well as the Bonnet Shores Beach Club are offered gratitude for their participation in the study.

I am grateful to my parents for giving me the inspiration to educate myself, the rest of my family for their support, and Chris Lupton for her motivation.

Thanks are extended to Fred Nelson for the use of his IBM and finally to Alan Bardsley for his interest in my professional development.

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CHAPTER I - INTRODUCTION

In America, as in many European countries, the trend in health care is leaning toward prevention rather than cure. No longer do we die from epidemics of biological disease, but instead, in epidemic proportions from disease resulting from poor lifestyle practices.

Logically, medical professionals, hospitals, school systems, insurance companies, health organizations and fitness centers have jumped on the band wagon promoting "total well-being" and positive health behaviors. Nutrition, smoking cessation, stress management, substance abuse control and exercise are the priorities in health education.

The practices of Americans, however, remain poor. One out of three adults smokes (American Cancer Society, 1978). One out of four men and women between the ages of 30 and 39 are 20% or more above ideal body weight (Metropolitan Life Insurance Co., 1978). In a report issued by the Alcohol, Drug Abuse & Mental Health Administration, it was found that American society loses close to \$50 billion each year because of alcohol abuse ("Drug, Alcohol Abuse," 1982), and in a study conducted by the President's Council on Physical Fitness and Sports, less than 45% of American adults were found to participate in

physical activity for exercise (U.S. Office of Consumer Affairs, 1973).

This final statistic is of particular interest, for circulatory-respiratory endurance activities have been found to reduce such risk factors as serum cholesterol, hypertension, obesity, stress, and dysrhythmias - all risk factors of the leading cause of death in the U.S., heart disease.

So, why is physical activity participation so low? Or, better yet, why do some people exercise regularly, some inconsistently, and some people refrain from exercise altogether?

As a health educator, it is this author's concern to study the belief patterns of exercisers as compared to other groups of individuals that do not exercise enough in an effort to find out what focus professionals need to take in educating individuals about the benefits of exercise so that they will undertake and maintain the behavior.

The Fishbein model of behavioral intention suggests that beliefs are the underlying key to behavior (Ajzen and Fishbein, 1980). The research of McConaughy, Prochaska, and Velicer (1980) delineates five stages of change that individuals pass through in implementing a behavior change. Referencing these researchers, this study attempted to identify differences in beliefs which may exist among the following groups: those that have no intention of exercising (immotives), those that are thinking of starting

starting an exercise program (contemplators), those that have recently started an exercise program (recruits), and those that have been maintaining a regular exercise program for at least two years (adherers), as well as those that have dropped out of exercise programs (dropouts).

It is believed that through such research, health professionals will better understand and be better prepared to motivate the American population to exercise.

Statement of the Problem

The Fishbein model of behavioral intention (Ajzen and Fishbein, 1980), which posits that actual behavior is a function of behavioral intention, has recently gained acceptance in predicting health behaviors. Some applications have been with weight loss (Saltzer, 1981), alcohol consumption (Beck, 1981), and exercise participation (Riddle, 1980). The model states that behavioral intention is determined by an attitudinal component, as well as a social component, and that each of these can be further reduced into subcomponents.

The attitudinal component can be segmented into (1) beliefs about an attitude object and (2) evaluation of the consequences of this belief. The social component can be reduced to (1) a perception of beliefs that significant others have toward the attitude object and (2) the person's motivation to comply with those referents.

McConnaughy, et al. (1980) have delineated five stages associated with behavior change that can be used in combination with Fishbein's model to study beliefs in different exercise groups.

The purpose of this study was threefold. First, the research was undertaken to explore the possible beliefs that could affect the behavioral intention of exercising through their influence of attitudes. Second, it was undertaken to expand the purview of previous studies to include various types of exercise. And third, it was undertaken to compare the beliefs concerning exercise with five groups. These groups were immotives, contemplators, recruits, adherers, and dropouts. The purpose was considered to be one of identifying differences in specific beliefs between these groups. Studies examining the reliability of beliefs of these groups is recommended for future investigation.

The author first needed to gather information from the general public regarding their beliefs about exercise. This could be misconception or fact. This was in order to develop a pool of items to be evaluated. It was felt, however, that if the public was interviewed directly, interviewees might not be sincere in their responses. If they were only to relate concepts that they felt were universally accepted, rather than those representative of their true ideas, a wealth of material would be overlooked. It was, therefore, concluded that if the

professionals that spent time with the public in exercise situations were interviewed in regard to what they had heard people say they believe about exercise, a more accurate account of the public beliefs would be generated.

After interviewing exercise professionals for the information, the survey instrument was developed according to specifications (Azjen and Fishbein, 1980). Along with a background questionnaire that measured exercise participation history and other demographic information the survey was administered to 267 males over the age of 30.

Subjects were grouped into one of the five exercise categories dependent upon behavior reported in the background questionnaire, and items were then analyzed for similarities and differences between pairs of groups.

Justification for and Significance of the Study

The objective of health educators is to influence health behavior (Rash & Pigg, 1979). To be considered successful, however, such an influence must result in permanent changes - maintenance of the health behavior. Substantiating the need for an emphasis on exercise behavior particularly, Pollock (Pollock, Wilmore, and Fox, 1979) states that physical activity may reduce the occurrence or severity of coronary heart disease by increasing collateral vascularization, vessel size, myocardial

efficiency, efficiency of peripheral blood distribution and return, tolerance to stress, and red blood cell mass and volume, and by decreasing serum lipid levels, obesity, arterial blood pressure and heart rate.

Consistent with such research, Froelicher & Oberman (1972) have discussed the risks associated with sedentary living. Further, exercise adherence seems to be presenting a challenge. Dishman (1980) has found that roughly half of initial participants discontinue programs within the first six months of involvement. Even more alarming, Kentala (1972) reports the dropout statistic as high as 87% in a cardiac rehabilitation program for post infarction patients.

Exercise-adherence research has basically followed two paths. One has been to analyze the effects of situational factors, such as proximity to the exercise site and attitudes of the spouse; and the second, more recently emphasized, analyzing the effects of the personal factors - what an individual thinks or feels about a behavior (Andrew, et al., 1981). Behavior change techniques such as balanced decision making and contracting are based on such research. Though researchers have already experienced some success in applying these intervention methods to health behavior change, it would seem that future applications would be enhanced with a better understanding of the thought patterns associated with the behaviors.

Jaccard (1975) outlined two major problems in under-

standing health behavior: "(1) the identification of those variables that determine an individual's intention to perform a health behavior; and (2) the extent to which these intentions are predictive of behavior."

The Fishbein model of behavioral intentions (Fishbein and Azjen, 1975) affords a framework by which both can be investigated. By breaking down attitudes into (1) beliefs about an attitude object and (2) evaluation of the consequences of this belief; and social influences into (1) a perception of beliefs that significant others have toward the attitude object and (2) the person's motivation to comply with those referents, the variables that make up the mode, attitudes and social influences, become identifiable as well as measurable.

In addition, the heuristic quality of the model assists research by providing a breakdown of the directly-measurable components of attitude and social influence to sub-components that can be indirectly measured. Attitudes are measured indirectly by multiplying belief responses by their respective evaluation responses and summing over all belief-evaluation products.

In relation to exercise, Riddle (1980) and Sonstroem (1981) have already examined the efficacy of the model. Riddle found a correlation between the intent to jog and jogging behavior of .82. Further, attitudes and social evaluation provided a multiple correlation of .74 with behavioral intention. Thus, the Fishbein model was found

to be valid in terms of its internal components and in the strong relationship between behavioral intention and actual behavior. Riddle's application also suggested a correlation between positive beliefs about jogging and actual jogging behavior. Joggers were found to have more positive beliefs about exercise whereas non-exercisers tended to hold more neutral beliefs about the consequences of regular jogging.

Analyzing stages of change in psychotherapy, McConaughy, et al. delineated four groups that suggest levels of adherence as follows: (1) immotives - non-exercisers who have no intention of changing their behavior, (2) contemplators - those that are considering a behavior change, (3) recruits - those that have recently implemented a behavior change, and (4) adherers - those that are maintaining a behavior change. An additional group that must be considered is dropouts.

Since exercise participation has been shown to assume essentially the same attrition curve over time as medical and psychological therapies (Dishman, Ickes, and Morgan, 1980), it is assumed that the psychological processes involved may be similar. Since no established model of adherence levels specific to exercise exists to the best of this author's knowledge, the author applied the McConaughy, et al. research results to the study of beliefs about exercise participation.

It was decided that if the beliefs representing the

five groups mentioned could be isolated, and the belief systems analyzed, health professionals would be even closer to influencing the exercise behavior of individuals.

Limitations

1. Volunteers were used for the study.
2. Subjects encountered difficulty understanding the directions of the complex text.
3. Only males were evaluated.
4. Age as a factor was not explored in this research.
5. Only a single present belief measure was utilized in predicting past and present exercise behavior. However, it is recognized that beliefs may change over time.

CHAPTER II - THE REVIEW OF THE LITERATURE

The review of the Literature is divided into five sections. They are (1) The Adherence Problem, (2) Early Attitudinal Research, (3) The Fishbein Model - Introduction and Measurement, (4) Applications of the Model to Health Education, and (5) The Adherence Cycle.

The Adherence Problem

Though heart disease is the leading cause of death in the U.S., and the benefits of physical activity are directly correlated with the reduction of at least five of the risk factors associated with the onset of heart disease - namely, obesity, cholesterol levels, high blood pressure, stress, and physical inactivity (Pollock, et al., 1979), the President's Council on Physical Fitness and Sports reports that less than 45% of the adult American population takes part in physical activity for exercise (U.S. Office of Consumer Affairs, 1973). Further, with groups that do begin rehabilitative exercise programs, as well as with those taking part for preventive reasons, the adherence rate following the first six months is approximately 50% (Dishman, 1980).

In part, it has been found that the reason for such

poor adherence can be explained through situational factors such as the distance of the individual from the exercise facility or how the spouse thinks or feels about exercise (Andrew, et al., 1981). But, additionally, research on more personal factors, such as attitudes needs to be carried out.

Early Attitudinal Research

Attitudes are, basically, underlying variables that guide or influence behavior. As such, they are subjective in nature and offer difficulty in measurement.

Some early measurement techniques in the field of attitudinal theory made use of various scales. One such scale was developed by L.L. Thurstone. According to Thurstone, attitudes could be measured in the following manner.

First, the attitude was specified. A collection of a wide variety of opinions relating to the attitude was then carried out. The information was edited to form approximately 100 statements of opinion. The statements were scaled by a few hundred people. Some were disregarded due to ambivalence or irrelevance, and an attitude scale resulted from the remaining statements. Attitudes were then measured by requesting that participants either endorse (indicated by a + sign) or reject (indicated by a - sign) each statement. The score was the average value of all the statements he/she had endorsed. As is obvious,

the formulation of such a scale was quite time consuming (Fishbein, 1967).

Another theorist, Rensis Likert, believed that attitudes could be measured through the use of scales that consisted of a number of statements which were evaluated on a continuum basis. A number of alternative responses were available for each statement, and each would be given a numerical equivalent. For example, if five alternatives were provided, values of one to five would be assigned to the responses. An individual's score would be arrived at by summing the numerical evaluations of each statement (Fishbein, 1967).

According to Azjen and Fishbein (1980), it was Allport, however, who finally pointed out that attitudes were made up of both a cognitive, as well as an affective component, and it was Charles Osgood who recognized that the semantic differential scale, one that scales from one extreme to the other, offered more sensitivity in measurement than the two-point system.

In attempting to measure health-related attitudes as they relate to behavior, Jaccard (1975) pointed out two major problems - the first being the identification of those variables that determine behavioral intention in the specific area of health, and the second being the extent to which the intentions are predictive of behavior.

The Fishbein Model - Introduction and Measurement

The Fishbein model of behavioral intention affords the framework by which both of Jaccard's problems can be evaluated. In addition, it represents a developmental step from the measurement techniques discussed earlier.

First, the model posits that actual behavior is a function of behavioral intention - basically, people do what they plan to do. Thus, to ascertain whether or not an individual will perform a behavior, we can obtain an accurate prediction by asking them if they intend to perform that behavior. Second, according to Fishbein (Ajzen and Fishbein, 1980), behavioral intention can be predicted through a combination of the measurement of attitude toward performing the behavior and subjective norm.

The attitude toward the behavior is defined as a person's predisposition to respond in a consistently favorable or unfavorable manner with respect to the behavior. The subjective norm is defined as the various normative (external) pressures concerning the subject's performance of the behavior. In other words, how the "significant others" in an individual's life would evaluate the importance of the individual taking part in the behavior.

Symbolically, the model is represented as follows:

$$B = BI = (A_B)w_1 + (SN)w_2$$

where B is the behavior, BI is behavioral intention,

A_B is attitude toward the behavior, SN is the subjective norm, and w_1 and w_2 are the empirically determined weights (Ajzen and Fishbein, 1980).

The attitudinal component can be segmented further into (1) beliefs about an attitude object and (2) evaluation of the consequences of this belief. The subjective norm can be reduced to (1) a perception of beliefs that significant others have to the subject's behavior toward the attitude object and (2) the person's motivation to comply with those referents.

In measuring attitude, thus, the sum of all beliefs multiplied by their evaluative worth is symbolically represented as follows:

$$N = \sum_{i=1} b_i e_i$$

where b_i is beliefs "i" about the object, e_i is the evaluative aspect of b_i , and N is the number of beliefs (Ajzen and Fishbein, 1980).

The belief items are measured on a semantic differential scale which is bipolar in nature as shown below:

My participation in a regular program of exercise would make me lose weight.

LIKELY

UNLIKELY

extremely quite slightly neither slightly quite extremely

Subjects respond as to whether they believe the statement is likely or unlikely. Similarly, evaluation items are measured on the same type of scale as shown below:

My losing weight would be . . .

GOOD

BAD

extremely quite slightly neither slightly quite extremely

Subjects respond as to whether they believe the consequence is good or bad.

To insure accurate measurement of the behavioral intention of concern, Fishbein emphasizes the importance of specification of four behavioral elements in each statement. These are action, either a single behavior or a behavioral category; target, what the behavior is directed toward; context, in what situations the behavior will take place; and time, when the behavior will be carried out.

To illustrate this, the following example is provided. If we were measuring an individual's beliefs regarding drinking, the action would be the drinking behavior, the target would be the substance drunk, the context would be the occasions of drinking, and the time would be the period measured. Thus, a statement to be used to measure the beliefs regarding the behavioral intention of concern would begin as follows:

My drinking alcoholic beverages in any location

(ACTION)

(TARGET)

(CONTEXT)

within the next two weeks. . .

(TIME)

The absence of any of the elements in the statement reduces the predictive accuracy of that statement. If the target were omitted, for example, we would be measuring all drinking behavior. That would include soda, milk, water, etc. If we omitted the context, we would be unsure of the scope of our behavioral measurement. This would also be true with the omission of the time element.

Applications of the Model to Health Education

Weight Control

Applications of the Fishbein model to health education research have been made. In her study on weight loss, Saltzer (1981) concluded that behavioral intention predicted behavior for internally-oriented subjects, but for those with high measures of external control, behavioral intentions were unrelated to behavior. The study combined the research on behavioral intention with that of locus of control.

In another weight-loss study, Seiwacz, Azjen, and Fishbein (1980) evaluated 88 women over a two-month period

to examine the relationship of intention to behavior. At the outset, participants were questioned as to their attitudes toward dieting and exercise, which were determined to be the two behaviors correlated with weight loss. The behavioral measurement consisted of five specific dieting techniques representative of dieting behavior in general and three indices of physical activity representative of exercising in general.

For dieting, the techniques were:

1. Avoid snacking between meals and in the evening.
2. Cut down on all starchy foods.
3. Avoid being in places where one might be tempted to eat starchy food and/or eat too much.
4. Decrease food intake in general by eating lighter meals, not having seconds, and not overeating.
5. Eat on a consistent and regular schedule.

For exercise, the indices were:

1. Avoid long periods of physical inactivity.
2. Do exercises on a regular basis.
3. Participate in sports on a regular basis.

These behaviors were measured weekly as was weight loss.

The direct measure of intention to lose weight correlated with the intentional indices just previously mentioned ($r = .60$ for dieting and $r = .66$ for physical

activity). Both the general measures of intention and the intentional indices permitted prediction of the corresponding behavior, though the index of dieting intention (five behaviors) was more predictive of dieting behavior ($r = .60$) than the direct measure of intention ($r = .40$). The same was true of the index of intention to perform physical activity ($r = .60$) as compared to the general intention ($r = .45$). Performance was found to be related to intention.

Family Planning

In a study on family planning (Ajzen and Fishbein, 1980), a relationship was found between intention to have a child and behavior. As expected, women that evaluated beliefs such as "leading to lack of time" and "interfering with plans" negatively were less likely to have a child.

Further, women were more likely to have a child if they (1) felt they could afford a child, (2) felt they were at a good age for child bearing, and (3) felt that the addition would make the family stronger.

In a similar study on the use of the pill, attitudes were found to be highly predictive of behavior. Questions fell into one of three general categories - physical effects, morality, and effectiveness. The more confident the tested women were of the low-percentage chance of negative outcomes associated with the use of the pill, the more likely they were to be found using it. Advantage-

disadvantage beliefs were quite important. Interestingly, it was found that college women were more influenced by the attitudinal aspect of intention, whereas married women were more influenced by the normative component (Ajzen and Fishbein, 1980).

Alcohol

In a study on driving under the influence of alcohol, the Fishbein model was utilized in comparison with the Health Belief Model. In contrast to the Fishbein model which views the influence of beliefs upon behaviors to be indirect and mediated by evaluation of consequences and subjective norms, the Health Belief Model promotes that behavior is directly related to three specific beliefs. These are (1) seriousness of the consequences associated with a behavior, (2) susceptibility to the consequences provided no action is taken to avoid them, and (3) the effectiveness of a course of action at being able to avoid these consequences. In the study, attitude was more predictive of behavior than subjective norm, and intention was more predictive of behavior than attitude. The Health Belief Model was less successful in predicting intention to drive while under the influence of alcohol (Beck, 1981).

Exercise

Recently, the Fishbein model was applied to two studies of the prediction of exercise participation. Sonstroem

(1981) compared the beliefs of high and low attenders in a faculty fitness program at the University of Rhode Island. High attenders were found to have more positive beliefs about exercise and feel less strongly about negative outcomes. Low attenders were found to have stronger feelings about negative outcomes.

Riddle (1980) found significant differences between the beliefs of joggers and non-exercisers. Non-exercisers evaluated jogging as a behavior requiring too much discipline and time, and further, one that would make them too tired. Joggers believed, in most cases, that regular jogging would have positive effects, such as making them feel good mentally and working off tensions and frustrations. In addition, joggers evaluated the positive consequences of jogging more favorably than non-exercisers.

In reviewing Riddle's research, however, it does not seem that the possible domain of beliefs was actually studied. It is quite possible that additional beliefs regarding positive and negative outcomes of exercise participation exist. Further, it would seem helpful if exercising behavior of all aerobic types were evaluated rather than jogging specifically.

The Adherence Cycle

McConnaughy's, et al. (1980) research on stages of change in psychotherapy outlined four groups that suggest levels of adherence as follows: (1) immotives - non-exercisers

who have no intention of taking part in the behavior. If they are involved in a program, it is probably out of force from a spouse or family member; (2) contemplators - those that are considering participation in the behavior. They are struggling to understand the problem. They want more information, but are not yet committed to change; (3) recruits - those that have recently started taking part in the behavior. They feel ready for change, willing to invest to make change, but have not yet reached a maintenance of change of the behavior; and (4) adherers - those that regularly participate in the behavior but may still be struggling with the possibility of relapse.

In addition, a fifth group, dropouts, appear to complete the cycle that Prochaska and DiClemente (1981) have documented to exist in behavior change therapy. According to Prochaska, individuals tend to move through stages one to four in a cyclical fashion relapsing occasionally and starting back at the beginning. They then move through the same stages again. Additionally, Prochaska has found participants to drop out of therapy at all stages, thus breaking away from the cycle. The resultant dropout group consists of participants at all levels of behavior change. These same participants frequently return repeatedly, moving through the cycle in the same pattern.

McConaughy, et al. (1980) developed a 32-item inventory which proved highly predictive in delineating

stages of change in smoking cessation and maintenance. As they point out, by evaluating the stage of change a client is in, readiness for change can be ascertained, and the appropriate processes of change can be matched to the level that the client is at, producing a more systematic approach to psychotherapy.

For example, if a subject is in stage 3, recruit, he may be very turned off by talk but much more receptive to behavior change techniques. Immotives, however, may be quite far from behavior change readiness but quite receptive to information.

Since exercise participation has been shown to assume essentially the same attrition curve over time as medical and psychological therapies (Dishman, et al., 1980), it is assumed that the psychological processes involved may be similar, thus applicable to the present study.

CHAPTER III - PROCEDURES

The procedures are broken into three major sections and several sub-sections. The first section describes the Inventory Development. Both the Belief Questionnaire and the Background Questionnaire are discussed. Methods of evaluation both are also reviewed. Second, Data Collection is reviewed. This consisted of the pilot study, the sample, and the method of administration. Finally, the statistical Analyses are discussed.

Inventory Development

Belief Questionnaire

The belief questionnaire consisted of 69 items developed from information gained as described below.

Development of Item Pool. The first stage of the research consisted of the development of the items for the attitude survey. This process began with interviews of professionals in the field of exercise. The rationale for this is described in Chapter 1. Table 3-1 lists those interviewed.

Each was questioned as to what they had found, through

their experience, people believed about exercise. Each interview lasted between 30 and 60 minutes and elicited one and two pages of information.

TABLE 3-1
Interviewees

2	Nautilus instructors
3	Aerobic dance instructors
4	Weight lifting instructors
1	Slimnastics instructor
1	Yoga instructor
1	Women's fitness center manager/instructor
2	Nautilus center managers/instructors
3	YMCA directors
1	Elderly swim program director
1	Dance professor
2	Physical education professors

Following Fishbein's specifications, the information from the interviews was worded into 94 items.

Instrument Development. Each item of the 94 was analyzed for clarity and similarity. Any items that seemed similar were discarded. The best item was retained and any others were disregarded. Sixty-nine items were approved in the final evaluation. These 69 were then categorized according to their principal concept into one of the 13 groups listed in Table 3-2. These categories represent the different areas of belief that were found to exist according to two evaluators.

The entire instrument, which is reproduced in Appendix A-D, consisted, in order, of an informed consent sheet, the background questionnaire, directions for completing the survey, the survey itself, and a sheet evaluating medical conditions that would interfere with exercise participation.

TABLE 3-2
Belief Concept Groups

-
- Pain - discomfort
 - Discipline - competition
 - Eating - weight
 - Prerequisites
 - Socializing
 - Time Commitment
 - Appearance
 - Age
 - Physical - endurance
 - Mental - relaxation
 - Cost
 - Recreation
 - Self-image
-

Method of Scoring. The survey was scored in the following manner. A score of 0 was given to the leftmost response. Additionally, consecutive numbers were applied to the rest as shown below:

LIKELY GOOD							UNLIKELY/BAD
0	1	2	3	4	5	6	
extremely	quite	slightly	neither	slightly	quite	extremely	

A score of 0 supported the statement most highly (extremely likely - extremely good), and a score of six rejected the

item completely (extremely unlikely - extremely bad). Illustrating the scoring system, a subject that responded "slightly unlikely" to a belief statement received a score of "4" for that statement.

Background Questionnaire

The background questionnaire was utilized to differentiate groups to be analyzed. According to responses on each of the eight questions, subjects were grouped in regard to their exercise behavior, their socioeconomic status, their weight, their smoking habits and their sex.

Method of Scoring. According to responses to questions one, two, and three, participants were categorized into one of five groups regarding their exercise behaviors. The five groups were immotives, contemplators, recruits, adherers, and dropouts. Table 3-3 shows the categorization method used to group subjects. To see the actual questions (1 - 3), readers are referred to the Appendix.

Exercisers that did not meet the standard of 20-30 minutes of aerobic exercise three times per week, laid out by the author for categorization as some type of exerciser, but did exercise at times, were categorized as contemplators. For example, someone who played tennis once a week for two hours would be a contemplator.

TABLE 3-3

Exercise Behavior Evaluation

Exercise Group	Responses to Questions				
	<u>1A</u>	<u>1B</u>	<u>1C</u>	<u>2</u>	<u>3</u>
Immotive	No			No	NO
Contemplator	No			No	Yes
Recruit	Yes	< 2 yrs.	aerobic		
Adherer	Yes	> 2 yrs.	aerobic		
Dropout	No			Yes	No

According to responses to questions four and five, subjects were categorized into one of five groups regarding socio-economic status. The Two-factor Index of Social Position (Hollingshead, 1957) was used, updated by the Bureau of Labor Statistics, U.S. Department of Labor, New England Regional Office, Boston. Dennis McSweeny (Personal communication, April 4, 1982), a regional economist from the office, recommended that we apply an inflation rate of 188.25% to all financial status evaluations to make the classifications current.

Based on responses to questions 6A, 6B, and 6C, subjects were classified into one of three groups regarding weight: normal - within 10% of ideal body weight, overweight - within 30% of ideal body weight, and obese - more than 30% above ideal body weight according to the Pacific Mutual Life Insurance Company (cited in Health Management: Promotion and Self Care, 1982).

From the response to question 7, subjects were grouped into one of five levels regarding smoking behavior.

Subjects were differentiated according to sex according to their responses to question 8.

It should be noted that questions four to seven were collected for informational purposes only. Though brief comparisons were made, these areas did not represent the focus of the research.

Data Collection

Pilot Study

After completing the development of the survey, a pilot study was carried out to uncover any administration problems. Fifteen participants were asked to complete the survey. Through their evaluation, as well as our own, a few format modifications were made, and the instrument format was finalized.

Sample

For the purpose of this study, only male data was evaluated. The number of surveys included in the final computer analysis was 220. All participants were over the age of 30. All participants were volunteers. Test administration lasted approximately two months.

Method of Administration

Heritage Festival. Annually a festival is held in this area. People from around the state attend. Approximately 1,000 people attend the three-day gathering that offers food, goods, and games. A booth was set up at the entrance to the three-day festival. Signs invited individuals over 30 to participate in a study being done by the University of Rhode Island. Approximately a little more than half the data resulted from this testing.

Beach

A local beach was targeted on several weekends throughout the summer. Randomly, individuals were asked to complete the survey. Slightly more than a quarter of the data resulted from this testing.

Service Organizations

An attempt was made to contact intact groups, such as unions, rotary clubs and community groups. The unions were unable to participate due to a legal technicality which prevents any outsider from taking advantage of the membership gathering by making any type of group presentation - research included.

Though some of the community and rotary groups did comply, their total participation accounted for less than a quarter of the data.

Test Instructions

Participants were instructed to read and sign the informed consent sheet, read directions carefully, and complete all survey items. They were told that this information was being gathered so that the author could learn more about people's beliefs concerning exercise. They were informed that there were no right or wrong answers and that they should respond according to the way they truly feel in regard to each survey item. Individuals with questions regarding the completion of the instrument were referred back to the direction sheet. No time limit was given for completion of the survey.

Data Deletion

Tests were disregarded if any of the following conditions existed:

Lack of variation - if one full page showed no variation in response.

Lack of independence - if three items or less were different on the entire test.

Missing data - if more than five items were incomplete.

Medical clearance - if a subject was refraining from exercise for medical reasons.

Of the 267 surveys collected, 47 were disregarded for one of the above reasons, leaving 220 for evaluation.

Statistical Analyses

Utilizing the five classifications of people, an F ratio analysis was carried out to measure significant differences between groups. The Duncan Multiple Range statistic was used to identify which pairs of means were significantly different.

Two analyses were performed on the resultant data. First, the McConaughy, et al. model was used to identify beliefs distinguishing steps on the continuum of adherence. Four comparisons were studied: immotives/contemplators, contemplators/recruits, recruits/adherents, and adherers/dropouts. Second, exercisers (recruits/adherers) were compared to non-exercisers (immotives) for belief identification. Univariate F Ratios were computed for these analyses.

A Discriminant Function Analysis was carried out to outline the items that collectively predicted most accurately exercise groupings.

CHAPTER IV - RESULTS

The Results section is divided into six major areas. These areas and their sub-sections are outlined below.

Outline of the Chapter

The first section involves the group comparisons. There were five comparisons discussed and a summary provided. The five comparisons were immotives/contemplators, contemplators/recruits, recruits/adherers, adherers/drop-outs, and immotives/recruits, adherers.

The next section provided the results of the discrimination function analysis followed by a discussion of all the research. This discussion was further broken into six sections: group comparisons, discriminant function analysis, a comparison discriminant function analysis; a comparison of results to past research, a look at the demographic data results and an analysis of the problems encountered in carrying out the research.

The last three sections were conclusions, implications for future research, and practical implications of the study.

Analysis of Variance

Group Comparisons

Table 4-1 presents a summary of the belief items that differentiated any two groups of the five studied. Any item that appears on the chart was found to differentiate with a .05 level of significance.

Subjects were classified into five groups via the system explained in Chapter 3. Following, is a description of the comparisons between groups that were made. Five comparisons were carried out.

Immotives vs. Contemplators

This pair was studied to identify the initial change in thought that exists when a person considers making a change to exercise behavior. Table 4-2 indicates that a large number of beliefs (26) significantly differentiated between immotives and contemplators. All of the 26 items suggested positive outcomes of exercise, and in all cases contemplators agreed with these statements to a significantly greater extent than immotives. The largest group difference was observed in item 60; "help me cope with stressful situations." Other large group differences greater than 1.00 were observed for item 4; "help me to sleep better," item 19; "increase my enjoyment of life," item 41; "make me look better," item 44; "increase my strength," item 47; "make me feel better about myself," and item 64; "result in my reaching personal fitness goals."

TABLE 4-1

Differentiating Belief Items

	IMMOTIVES	CONTEMPLATORS	RECRUITS	ADHERERS	DROPOUTS
IMMOTIVES		4, 7, 10, 15, 19, 20, 24, 27, 30, 32, 34, 37, 41, 44, 46, 47, 49, 55, 56, 58, 59, 60, 62, 64, 66, 69	6, 7, 8, 19, 20, 23, 25, 26, 27, 28, 30, 34, 35, 36, 39, 41, 47, 48, 49, 54, 55, 56, 58, 60, 64, 67	1, 2, 4, 5, 6, 7, 8, 10, 14, 19, 20, 24, 27, 30, 32, 34, 35, 37, 41, 44, 46, 47, 48, 49, 52, 54, 55, 56, 58, 59, 60, 62, 64, 66, 67, 68, 69	1, 2, 5, 6, 7, 14, 15, 19, 24, 27, 28, 32, 34, 35, 39, 41, 44, 46, 47, 48, 49, 52, 55, 56, 58, 59, 60, 62, 64, 66, 67, 68, 69
CONTEM.			25, 36, 39, 48, 54	6, 8, 14, 19, 25, 27, 34, 39, 45, 48, 54, 58, 59, 61, 67	52, 61, 67, 68,
RECRUITS				60, 68	25, 39, 54, 68
ADHERERS					8, 10, 14, 34, 39 54

TABLE 4-2

Belief Items Differentiating
Immotives from Contemplators

<u>Item # and statement</u>	<u>Immot.</u>	<u>Contem.</u>	<u>Differ.</u>
4. help me to sleep better	3.52	2.40	1.12
7. relax me	3.33	2.49	0.84
10. give me a muscular appearance	4.32	3.37	0.97
15. rid me of minor muscular pains	3.90	2.98	0.92
19. increase my enjoyment of life	3.83	2.53	1.30
20. cause other people to respect me more	4.67	3.98	0.69
24. increase my energy level	2.77	1.98	0.79
27. make me feel younger	3.90	3.07	0.83
29. bring beauty and grace into my life	4.98	4.17	0.81
30. increase my overall health	2.75	1.95	0.80
32. increase my ability to perform physical tasks	2.95	2.21	0.74
34. increase my self respect	4.13	3.19	0.94
37. make my heart work better	2.32	1.70	0.62
41. make me look better	3.62	2.69	1.02
44. increase my strength	3.25	2.16	1.09
46. help my physical conditioning	2.36	1.86	0.50
47. make me feel better about myself	3.45	2.23	1.22
49. make me feel good mentally	3.25	2.42	0.83
55. help me work off tensions and frustrations	3.32	2.44	0.88
56. help me feel good physically	2.48	1.88	0.60
58. let me push myself in reaching my goals	3.72	2.86	0.86
59. show that I care for my body	3.23	2.53	0.70
60. help me cope with stressful situations	5.00	2.56	2.44
62. help me tone my muscles	2.80	2.02	0.78
64. result in my reaching personal fitness goals	3.55	2.51	1.04
66. make me live longer	3.02	2.28	0.74

It is important to note that, in general, immotives held favorable beliefs about exercise. Only five of the 26 values for immotives were above the median response (4) of the scoring scale. Differences between groups were essentially caused by the more favorable responses of the contemplators.

Contemplators vs. Recruits

This pair was evaluated because it represents the entry bridge of involvement in exercise. Table 4-3 compares the contemplators to the recruits. Five items differentiated the groups, four of which were negative items. These four, 25; "take too much time from family responsibilities," 36; "make me stiff and sore," 48; "take too much time," and 54; "be difficult to schedule," were disagreed to by recruits.

Three of the five items that differentiated the groups were concerned with time required to exercise and whether or not it was possible to afford such time (25, 48, 54). In all three cases contemplators agreed more strongly than recruits that time would be a problem. Additionally, contemplators related less to the possibility of exercise giving them time by themselves to think (29). "Time" was obviously the major factor at this bridge of the adherence cycle as was the focus on negative thinking. These were, in fact, the only variations.

TABLE 4-3

Belief Items Differentiating
Contemplators from Recruits

<u>Item # and statement</u>	<u>Contem.</u>	<u>Recruits</u>	<u>Differ.</u>
25. take too much time from family responsibilities	4.05	5.31	1.26
29. give me time by myself to think	3.58	2.53	1.05
36. make me stiff and sore	3.42	4.79	1.37
48. take too much time	3.63	4.63	1.00
54. be difficult to schedule	3.30	4.26	0.96

Recruits vs. Adherers

The third comparison studied recruits and adherers. It was made to elicit information about the stage of therapy change whereby a new exerciser begins to exercise regularly. Table 4-4 compares these groups. Little information was unfolded. This would suggest that the thinking of the groups is quite similar. This leaves the question of exactly what differentiates the recruit from the adherer. The two items that did differentiate recruits from adherers, 60, "help me cope with stressful situations," and 68, "allow me to compete with others," were answered in a noteworthy manner. Adherers felt less strongly about item 60 and more strongly about item 68. This would mean that adherers appreciate the competition that

exercise provides, but are not as convinced regarding its benefits for coping behavior.

TABLE 4-4

Belief Items Differentiating
Recruits from Adherers

<u>Item # and statement</u>	<u>Recruits</u>	<u>Adherers</u>	<u>Differ.</u>
60. help me cope with stressful situations	3.00	4.10	1.10
68. allow me to compete with others	4.16	3.12	1.04

Adherers vs. Dropouts

The fourth comparison that was done was of adherers and dropouts. It was carried out to provide information regarding the quitters as compared to the maintainers. Table 4-5 contains the results. Time, once again, was a differentiating factor - item 39; "give me time by myself to think," and item 54; "be difficult to schedule." Adherers related more positively to the fact that exercise would give them time to think and less so to the fact that exercise would be difficult to schedule, whereas dropouts were just the opposite. One other item, 8, "show others how out of shape I am," was indicated at a 1.00 level of difference. Dropouts associated more strongly with the statement than adherers. Altogether, Table 4-5 had much

variation. The items focused on time, mental health, self-image and discipline-competition.

TABLE 4-5
Belief Items Differentiating
Adherers from Dropouts

<u>Item # and statement</u>	<u>Adherers</u>	<u>Dropouts</u>	<u>Differ.</u>
8. show others how out of shape I am	5.12	3.76	1.36
10. give me a muscular appearance	3.08	3.89	0.81
14. help me to think better	2.47	3.35	0.88
34. increase my self-respect	2.37	3.08	0.71
39. give me time by myself to think	2.33	3.43	1.10
54. be difficult to schedule	4.43	3.24	1.19

Immotives vs. Recruits and Adherers

The final groups that were compared were immotives and the combination of recruits and adherers. This was done to provide more information about the differences between the opposing ends of the behavioral spectrum.

Table 4-6 shows the comparison. Most of the survey items (43 out of the 69) differentiated the groups, indicating a vast area of beliefs that distinguish immotives (non-exercisers) from recruits and adherers (exercisers). All positive consequence statements were related to more strongly by the exercisers and less so by the non-exercisers. All

negative consequence statements were related to more strongly by the non-exercisers and less so by the exercisers.

(see page 41 for Table 4-6)

Item 8 and

1. help
2. increa
4. help
5. be better
6. inform
7. relax
8. show
10. give
14. help
19. increa
20. cause
24. increa
25. take
26. not
27. make
28. make
30. far
32. impro
34. increa
35. make
36. make
37. make
39. give
41. make
44. increa
46. help
47. make
48. take
49. make
52. lead
54. be
55. help
56. help
58. let
59. show
60. help
61. be
62. help
64. resol
66. mak
67. pro
68. allo
69. bring

TABLE 4-6

Belief Items Differentiating Immotives
from Recruits and Adherers

Item # and statement

1. help me in controlling my weight
2. increase my cardiovascular endurance
4. help me to sleep better
5. be boring
6. interfere with lifestyle
7. relax me
8. show others how out of shape I am
10. give me a muscular appearance
14. help me to think better
19. increase my enjoyment of life
20. cause other people to respect me more
24. increase my enjoyment of life
25. take too much time from family responsibilities
26. not be right for a person my age
27. make me feel younger
28. make me feel too tired
30. improve my overall health
32. increase my ability to perform physical tasks
34. increase my self-respect
35. make me need less sleep
36. make me stiff and sore
37. make my heart work better
39. give me time by myself to think
41. make me look better
44. increase my strength
46. help my physical conditioning
47. make me feel better about myself
48. take too much time
49. make me feel good mentally
52. lead to my having good companionship
54. be difficult to schedule
55. help me work off tensions and frustrations
56. help me feel good physically
58. let me push myself in reaching my goals
59. show that I care for my body
60. help me cope with stressful situations
61. be a new experience for me
62. help me tone my muscles
64. result in my reaching personal fitness goals
66. make me live longer
67. provide me with excitement
68. allow me to compete with others
69. bring beauty and grace into my life

Summary of Group Comparisons

Several patterns existed in the comparisons regarding the responses. Certain belief concept groups were more popular than others. Certain types of items were more popular with one group than others. Below is a discussion of the similarities and differences.

Item characteristics. It is important to recognize that the higher adherence groups associated more highly with positive results of exercise and less so with negative outcomes. The lower groups tended to relate less strongly to positive outcomes and more strongly with negative outcomes.

Items 34; "increase my self respect," and 10; "give me a muscular appearance" distinguished immotives/contemplators, adherers/dropouts, and immotives/recruits, adherers. Item 39; "give me time by myself to think" distinguished contemplators/recruits, adherers. Item 54; "be difficult to schedule" differentiated contemplators/recruits and adherers/dropouts. Finally, item 60; "help me cope with stressful situations distinguished immotives/contemplators, recruits/adherers, and immotives/recruits adherers. All other items differentiated one group only.

Hypothesized item clusters. Referring back to Table 3-2 all items were grouped according to subject into one of 13 belief-concept groups. Of those groups, the areas of Pain-discomfort, Prerequisites, Cost and Recreation

were not found to distinguish any groups. Additionally, the areas of Eating-weight, Socializing, and Age were found to differentiate one set of groups only, immotives as compared to recruits/adherers (non-exercisers vs. exercisers). This would indicate that these six subject areas do not require emphasis in instruction but, are understood by most people better than other subject areas.

As Table 4-7 shows, the following belief-concept groups differentiated more than two groups: Discipline-competition, Time-commitment, Appearance, Physical-Endurance, Mental-relaxation, and self-image. It should be noted that the nine items from the Discriminant Function Analysis (DFA) included items from all six of these areas. Additionally, the Discipline-competition group was found to distinguish four of the sets of groups and the Mental-relaxation group to distinguish all sets of groups.

With the large size of the immotive/contemplator comparison, it was possible to further analyze the belief-concept groups that existed. In the Time-Commitment area both groups agreed with time as a problem, whereas groups 2 and 3 (contemplators, recruits) disagreed. This would indicate that recruits are the first group in the adherence cycle to lose fear of problems with time.

Two Appearance items (10,41) and five Self-image items (20, 34, 47, 59, 64) were found to differentiate these same groups. In each case, contemplators agreed more strongly with the statement than immotives. This would indicate

TABLE 4-7

Exercise Classifications that were Differentiated by Belief-Concept Groups

<u>Subject Area</u>	<u>1-2</u>	<u>2-3</u>	<u>3-4</u>	<u>4-5</u>	<u>1-3/4</u>	<u>DFA</u>
Pain-Discomfort						
Prerequisites						
Cost						
Recreation						
Eating-weight					XX	
Socializing					XX	
Age					XX	
Time-Commitment		XX			XX	XX
Appearance	XX			XX	XX	XX
Physical-endurance	XX	XX			XX	XX
Mental-relaxation	XX	XX	XX	XX	XX	XX
Self-image	XX			XX	XX	XX
Discipline-competition	XX		XX	XX	XX	XX

1 - Immotive
 2 - Contemplator
 3 - Recruit
 4 - Adherer
 5 - Dropout
 DFA - Discriminant Function Analysis

that those beginning to consider exercising are very conscious of the cosmetic benefits whereas immotives are not. Interestingly, during the interview phase of the study, almost each interviewee listed cosmetics as the major factor in exercising for most individuals.

The area of Physical-endurance beliefs was strong in

comparing these two groups as was the Mental-relaxation area. Ten (15, 19, 24, 30, 32, 37, 44, 46, 56, 62) Physical-endurance beliefs and six Mental-relaxation beliefs differentiated immotives from contemplators. This was most definitely the area of the adherence cycle where there was the most variation.

Discriminant Function Analysis

A discriminant function analysis was carried out to determine which of the 69 items were most capable of predicting group affiliation. Four significant functions resulted, explaining 84.80% of the variance. The Wilks Lambda for this function was .3986 indicating that most of the variance was accounted for. Table 4-8 lists the set of nine items which significantly contributed to this function and their Standardized Discriminant Function Coefficients. The items are listed in their order of selection in the Function. The canonical correlation coefficient was .72.

Table 4-9 provides the classification results of the Discriminant Function Analysis.

Collectively, nine items in the discriminant function equation correctly classified 50.83% of the subjects into their appropriate exercise groups. This represents a considerable improvement over an estimated correct classification value of 20% by chance.

Table 4-10 provides additional information regarding misclassifications. Next to each group is listed the

percentage (if greater than 10%) that appeared under another classification and the name of the particular group classification in which this occurred.

It should be noted that in each case, dropouts represented a strong percentage of the misclassifications. This would suggest a pattern of some sort. This is further analyzed in the Discussion section.

TABLE 4-8

Nine Best Predictors and Their Discriminant Function Coefficients

<u>Item # and statement</u>	<u>Standardized Discriminant Coeffic.</u>
19. increase my enjoyment of life	-.42741
68. allow me to compete with others	-.29803
10. give me a muscular appearance	-.26750
25. take too much time from family responsibilities	.14702
54. be difficult to schedule	.28832
8. show others how out of shape I am	.20344
47. make me feel better about myself	-.37703
15. rid me of minor muscular pains	.33883

TABLE 4-9

Classification Results
Discriminant Function Analysis

<u>Actual</u>	<u>Predicted Group Membership</u>				
	<u>Immot.</u>	<u>Cont.</u>	<u>Rec.</u>	<u>Adher.</u>	<u>Drop.</u>
Immotive	50.8%	23.7%	3.4%	5.1%	16.9%
Contemplator	14.3%	54.8%	2.4%	9.5%	19.0%
Recruit	0.0%	27.8%	27.8%	22.2%	22.2%
Adherer	2.0%	16.3%	2.0%	59.2%	20.4%
Dropout	5.4%	29.7%	0.0%	18.9%	45.9%

Overall correct classification: 50.73%

TABLE 4-10

Misclassifications and Their Percentages*

<u>Actual Group</u>	<u>Percentage</u>	<u>Misclassification</u>
Immotives	23.7%	Contemplators
	16.9%	Dropouts
Contemplators	14.3%	Immotives
	19.0%	Dropouts
Recruits	27.8%	Contemplators
	22.2%	Dropouts
	22.2%	Adherers
Adherers	16.3%	Contemplators
	20.4%	Dropouts
Dropouts	29.7%	Contemplators
	18.9%	Adherers

*Remainder of misclassifications may be obtained from Table 4-9.

Discussion

As described in Chapter 3, Prochaska and DiClemente have found behavior change to follow a sequential pattern. Individuals tend to move through stages on a step-by-step basis from immotive to contemplator to recruit to adherer and, possibly during any stage, drop out. Accordingly, it seemed appropriate to study the differences in beliefs between sequentially-located groups.

It must be noted that much more information was found to differentiate immotives from each other group than was found to differentiate most pairs of groups, whereas the immotive comparisons consisted of approximately 20 items. This confirmed the fact that individuals at this stage are full of misconceptions regarding both costs and benefits of regular exercise.

Contemplators and recruits were differentiated in an interesting way. Four out of the five items differentiating the two were negatively oriented. It would seem that contemplators have already recognized benefits and are presently leery of costs of exercising.

As for the recruit/adherer relationship, the beliefs were quite similar suggesting more of an educational need at the immotive, contemplator, and dropout stages.

With the variation of the adherer/dropout table, it would seem that the dropout group was quite diversified as Prochaska and DiClemente would predict.

The overwhelming number of beliefs that differentiated

immotives from recruits/adherers confirmed the theory that those that do not exercise are full of misconceptions.

Referring back to Chapter 3, page 3, Fishbein's model is described as consisting of two major components - an attitudinal and a normative component. In this particular study only one half of one of the components (attitudinal) was evaluated. A 50.73% Prediction level was reached using only one-fourth of the model in the discriminant function analysis study.

As for the misclassifications, the fact that dropouts represented much of the error supports Prochaska and DiClemente's research which states that dropouts can exit from any level of the behavioral cycle. It is possible, therefore, that the misclassifications actually represent tendencies within the subjects to be ready to drop out. Also, these misclassifications reflect similarities within groups or levels of variation in beliefs with groups.

Comparing the results of the discriminant function analysis with that of the Analysis of Variance, several similarities were found. On Tables 4-2 and 4-8, items 10, 15, 19, and 47 were reflected in both analyses. Tables 4-3 and 4-8 both show items 25 and 54 as predictors. A comparison of Table 4-5 and 4-8 show items 8, 10, and 54 to differentiate groups in both cases. And, in comparing Tables 4-6 and 4-8, items 8, 10, 19, 25, 47, 61, and 68 were all reflected in both analyses. The two analyses validated each other.

The findings in this study were in one way consistent with that of both Riddle (1980) and Sonstrem (1981). In Riddle's research, as well as in the present study, exercisers (recruits and adherents) were found to relate more highly to the positive consequences and less so to the negative outcomes. The non-exercisers (immotives and contemplators) associated more strongly with negative beliefs and less so with positive outcomes. Further, both studies found exercisers to relate more highly to the mental health benefits and non-exercisers to relate more strongly to the benefits associated with time required to exercise.

In Sonstroem's study, this was also found when comparing high program attenders with low program attenders. Table 4-11 lists the similarities in results of Riddle's Sonstroem's and the present research in these two areas. In the present, study, immotives represent non-exercisers and recruits and adherers represent exercisers for the purpose of clear comparison. In Sonstroem's study low-attenders are compared as non-exercisers and high-attenders as exercisers.

The major variation between the present study and the Riddle study was in the results of the Discriminant Function Analysis. None of the items that accurately predicted 50.83% of the groups were found to differentiate in Riddle's study. In fact, they did not even appear in her study. It was concluded that the greater pool of items in the present study was responsible.

TABLE 4-11

Beliefs Distinguishing Exercisers from Non-exercisers in Three Different Studies

<u>Item #/Statement</u>	<u>Present Study</u>		<u>Riddle</u>		<u>Sonstroem</u>	
	<u>Exer.</u>	<u>Non</u>	<u>Exer.</u>	<u>Non</u>	<u>Exer.</u>	<u>Non</u>
28. make me feel too tired	5.07	3.88	4.84*	4.94*	5.33*	4.17*
48. take too much time	4.69	3.17	4.83*	2.46*	4.83*	3.50*
49. make me feel good mentally	2.01	3.25	0.81*	2.20*	0.67*	1.34*

*Riddle's and Sonstroem's scores were set to the same system as that of the present study. Originally, both Riddle and Sonstroem used a scale of -3 to +3 whereas the present study used a 0 to 6 scale.

Additional analyses with the background questionnaire revealed that adherers were significantly lighter than immotives and contemplators. This would suggest that the exercise does result in reduced weight or that lighter people tend to adhere better to exercise, supporting the importance of prevention.

Adherers and recruits were found to smoke significantly less than immotives. This suggests an orientation to a healthy lifestyle with exercise.

Adherers, as compared to dropouts, had significantly less of a perceived medical history which keeps them from exercising. This might account for much of the dropout group.

And finally, oddly enough, immotives were found to have a significantly higher socio-economic status than three other groups, recruits, adherers, and dropouts.

PROBLEMS

Two major problems were encountered in the administration of the survey. First it was difficult finding the numbers that were required for the study. Many people refused to complete this lengthy instrument.

The second problem occurred with the instrument itself. Many individuals had a problem understanding the complex directions. Additionally, the directions were very long. Many people tried to ignore them and take the test. Consistently, however, they turned to testing personnel for assistance. As stated earlier, 47 of the 267 completed inventories had to be discarded because of incomplete or faulty responses.

Conclusions

1. In the belief-concept areas of Eating-weight, Age, Cost, Prerequisites, Pain-discomfort, Socializing, and Recreation, little variation exists between any groups.
2. Time is the most distinguishing factor between the immotive stage through the recruit stage. It is at the recruit stage that this changes.
3. Time is the only factor distinguishing between contemplators and recruits with the exception of one pain

statement.

4. The most variation in beliefs exists between the immotive and contemplator stages suggesting an overwhelming lack of information at this stage.

5. Recruits and adherers have very similar belief systems.

6. Immotives vary from recruits and adherers in their beliefs overwhelmingly. Recruits/adherers evaluate all items positively that immotives evaluate negatively, and immotives relate more to all negative statements where recruits/adherers do not.

7. Beliefs distinguishing dropouts from adherers are widely varied suggesting that the dropout group is made up of dropouts from various stages.

8. Major beliefs distinguishing levels of adherence vary in conceptual basis.

Implications for Future Research

Follow-up studies could branch in several directions. First, both female and male data should be studied and compared.

Second, research should include the implementation and evaluation of an educational program aimed at changing the beliefs of immotives and contemplators and analyzing the results of belief changes as compared to behavior change.

Third, follow-up should include research with the Discriminant Function Analysis results. Those nine items

with additional items representing the normative component of the Fishbein model should be put together to form another test instrument for predictive purposes. The instrument should be tested for its predictive ability.

Fourth, a follow-up studying the paths of recruits should be undertaken to identify the differences in beliefs of recruits that went on to become adherers and recruits that dropped out.

Finally, more research has to be done on the recruit/adherer relationship and the dropout group to ascertain the differentiating beliefs.

Practical Implications

The findings of the study can be utilized in all phases of exercise programming. To start, all findings reflective of each bridge between adherence levels in the cycle can be used as tools for individuals involved in exercise promotion. Advertisers can analyze the findings and identify loopholes in their presentations aimed at various targets. With a better understanding of what the target population thinks, they can more clearly design their packages to focus on the appropriate points. If aiming toward an immotive group, for example, the unrecognized benefits might be emphasized while the illogically perceived threats are downplayed.

One step closer, sales personnel can make use of the information similarly. After ascertaining where a pro-

spective member to a health club is, the sales person can move into the advertising mode and offer enticing information (unforeseen benefits).

From a more therapeutic standpoint, exercise instructors can utilize the information to assist clients through their adherence development. At each stage, misconceptions can be cleared up as positive foundations (accurate information) are laid down.

Finally, by analyzing dropouts, instructors will be better prepared to prevent repeat behavior if that behavior is belief oriented.

APPENDIX A - DATA

You are being asked to answer the questions on following page. The purpose of these questions is to get some ideas on what people think about physical activity and what they think about them in relation to physical activity. This type of information will be helpful in planning a future program for you.

If you are not sure if your answer is right or wrong, please give your answer. The questions you are asked are not meant to be answered in a "yes" or "no" way. You really feel this way?

Answers should be given strictly in terms of "yes" or "no". All data will be coded so that no one can identify your name. You do not have to answer any question if you do not want to. You may refuse to answer so at any time. Please feel free to ask any questions you may have.

Voluntary Consent

APPENDIX A

Date _____

The purpose of my participation in these procedures has been explained to me and I have freely consented to participate. I understand that I am not required to participate and that I may stop my participation at any time.

Name _____

Address _____

Telephone _____

SIGNATURE

Robert G. ...
Human Performance Laboratory
University of ...
King's ... Island 0288

Tel. ...

INFORMED CONSENT - BEHAVIORAL DATA

You are being asked to answer some questions on the following pages. The purpose of these questions is to develop some ideas about what people think about physical activity and what they think about themselves in relation to physical activity. This type of information will be helpful in planning exercise programs for people.

It should be emphasized that there are no right or wrong, no good or bad responses to the questions you are answering. Please answer each item as you really feel about it.

Data will remain strictly confidential. All data will be coded and will not be identified by name. You do not have to complete these inventories and you may refuse to do so at any time. Please feel free to ask any questions you may have.

Voluntary Consent

Date _____

The purpose of my participation in these procedures has been explained to me. I freely consent to participate. I understand that I am not required to participate and that I may stop participation at any time.

Name _____

Address _____

Telephone _____

SIGNATURE

Robert J. Sonstroem
Human Performance Laboratory
University of Rhode Island
Kingston, Rhode Island 02881

Tel. (401) 792-2925

BACKGROUND QUESTIONS

1a. Out of your total responsibility, are you presently engaged in a regular program of physical exercise? If this is a regular program that provides vigorous walking and other exercise for at least 20-30 minutes three times a week:

b. If "NO," how long have you been engaged in such exercise?

YEARS MONTHS

c. If "YES," please **APPENDIX B** describe the nature of exercise; also define the amount of walking, running, lifting, calisthenics, swimming, bicycling, etc. that you engage in on a regular basis. Then **PROCEED TO QUESTION 4.**

2. At any time in the past four years have you been involved in a regular program of physical exercise? If "YES," how often?

YEARS MONTHS # OF TIMES

3. During the past 3 months, have you thought or acted about starting a program of regular exercise?

4. Please describe precisely the nature of work you do, your responsibilities, and the size of the company for which you work.

BACKGROUND QUESTIONNAIRE

1a. Outside of job responsibilities, are you presently engaged in a regular program of physical exercise (By this is meant a program that includes vigorous endurance and aerobic exercises for at least 20-30 minutes three times a week.)?

Yes

No

b. If "YES" how long have you been engaged in such exercise?

YEARS

MONTHS

c. If "YES" please describe the type of exercise; also describe the amount of walking, running, lifing, calisthenics, swimming, bicycling, etc. that you engage in during each session. Then PROCEED TO QUESTION 4.

2. At any time in the past four years have you been involved in a regular program of physical exercise? If "YES" how many different times?

YES

NO

OF TIMES

3. During the past 3 months, have you thought seriously about joining or starting a program of regular exercise?

YES

NO

4. Please describe precisely the type of work you do, your position, and the size of the company for which you work.

5. Please indicate with a checkmark the highest level of formal schooling you received as described below:

- Did not complete the seventh grade.
- Completed seventh, eighth, or ninth grade.
- Completed tenth or eleventh grade, but not twelve.
- Completed high school.
- Completed at least one year of college, but not a full college course.
- Completed a four-year college or university course leading to a recognized college degree.
- Completed a recognized professional course leading to a graduate degree.

6. Height? _____ Weight? _____ Age? _____

7. Number of cigarettes smoked per day?

NONE 0-10 10-20 20-40 40+

8. Please check one. MALE FEMALE

GENERAL INSTRUCTIONS

The questionnaires are about to be made with check marks on the scales that best describe your opinion. For example, you are believed that the statement is as follows:

... we ask questions in places; you are to give your own opinion. The statement was given...

LIKELY 1 ; 2 ; 3 ; 4 ; 5 UNLIKELY
... neither ... quite extremely

you believe that the statement is very much true, you would respond as follows:

LIKELY 1 ; 2 ; 3 ; 4 ; 5 UNLIKELY
... neither ... quite extremely

APPENDIX C

you feel that the statement is not true, you would see your response as follows:

LIKELY 1 ; 2 ; 3 ; 4 ; 5 UNLIKELY
... neither ... quite extremely

you feel that the statement was neither true nor untrue, you would place a check mark in the "neither" box. In the same way, you may check all of the other categories to indicate the exact nature of your belief.

At the end of the survey, we will have a question of the period, and we just happened to ask you to indicate whether you have "good" or "bad" examples.

... in January

6000 1 ; 2 ; 3 ; 4 ; 5 UNLIKELY
... neither ... quite extremely

you would see the survey shown as follows if you feel that the statement is generally true:

6000 1 ; 2 ; 3 ; 4 ; 5 UNLIKELY
... neither ... quite extremely

the statement was neither true nor untrue, you would see the survey shown as follows if you feel that the statement is generally true:

6000 1 ; 2 ; 3 ; 4 ; 5 UNLIKELY
... neither ... quite extremely

GENERAL INSTRUCTIONS

the questionnaire you are about to complete we ask questions which make use of rating scales with seven places; you are to make a check mark in the place that best describes your own opinion. For example, if you believed that the next statement was generally true, you would respond as follows:

The weather in Rhode Island is cold in January.

LIKELY _____ : X : _____ : _____ : _____ : _____ : _____ UNLIKELY
extremely quite slightly neither slightly quite extremely

If you believe that the above statement is very much true, you would respond as follows:

LIKELY X : _____ : _____ : _____ : _____ : _____ : _____ UNLIKELY
extremely quite slightly neither slightly quite extremely

If you felt that the statement was somewhat untrue, you would place your mark as follows:

LIKELY _____ : _____ : X : _____ : _____ : _____ : _____ UNLIKELY
extremely quite slightly neither slightly quite extremely

If you felt that the statement was neither true nor untrue, you would place your X on the "neither" line. In the same way, you may use all of the seven categories to indicate the exact nature of your belief.

Next, in our inventory we will take a portion of the sentence you have just responded to and ask you to indicate whether the idea is "good" or "bad". As an example:

cold weather in January

GOOD _____ : _____ : _____ : _____ : _____ : X : _____ BAD
extremely quite slightly neither slightly quite extremely

You would check the category shown above if you feel that cold weather in January is generally quite bad.

On the other hand, some people, such as skiing enthusiasts, who enjoy cold weather very much, might mark the scale as follows:

GOOD _____ : _____ : _____ : _____ : _____ : _____ : _____ BAD
extremely quite slightly neither slightly quite extremely

order to reduce space, the response "extremely, quite, slightly, and neither" have been abbreviated to "e, q, s, and n" as shown below. In making your ratings, please remember the following:

) place your marks in the middle of spaces, not in the boundaries.

LIKELY : : : : : : UNLIKELY
 e q s n s q e

) Never put more than one check mark on a single scale:

LIKELY : X : X : : : : UNLIKELY
 e q s n s q e

) BE SURE TO ANSWER ALL ITEMS - PLEASE DO NOT OMIT ANY!!

FINAL INSTRUCTIONS. PLEASE READ CAREFULLY!!!

In this particular questionnaire we are interested in people's views regarding participating in a regular exercise program. It should be a program that includes vigorous endurance and aerobic exercises for at least 20-30 minutes three times per week. This could be a program conducted at home, at a health spa, YMCA, or in our adult exercise program at URI.

In completing this questionnaire it is not important whether you presently exercise or not. We want you to think of exercise in relation to yourself. Please respond to all of the items below from the viewpoint of your own possible future participation in an exercise program.

For each numbered item below you are asked to indicate:

- A. To what extent is the item TRUE (LIKELY) or UNTRUE (UNLIKELY) in representing your own belief, AND -
- B. To what extent is the idea itself either GOOD or BAD, in your opinion.

NY PA... IN A ...

1a. ... controlling ...

b. ... by weight ...

2a. ...

b. ...

3a. ... articles ... by people

b. ...

4a. ... Sleep

b. ...

APPENDIX D

5a. ...

b. ...

6a. ...

b. ...

7a. ...

b. ...

8a. ...

b. ...

9a. ...

b. ...

... ..

... .. BAN

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

... ..

MY PARTICIPATION IN A REGULAR PROGRAM OF EXERCISE WOULD:

- | | | | | |
|-----|--|--------|---|----------|
| 1a. | help me in controlling my weight. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | controlling my weight | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 2a. | increase my cardiovascular endurance. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | increasing my cv. endurance. | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 3a. | involve me in activities admired by people | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | my involvement in such activities. | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 4a. | help me to sleep better | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | my sleeping better | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 5a. | be boring | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | my being bored | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 6a. | interfere with my lifestyle | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | interfering with my lifestyle | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 7a. | relax me | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | my being relaxed | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 8a. | show others how out of shape I am | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | showing others how out of shape I am | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |
| 9a. | improve my posture | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | UNLIKELY |
| | | | e q s n s q e | |
| b. | improving my posture | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : | BAD |
| | | | e q s n s q e | |

MY PARTICIPATION IN A REGULAR PROGRAM OF EXERCISE WOULD:

- | | | | |
|---|--------|---|----------|
| 10a. give me a muscular appearance. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my getting a muscular appearance | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 11a. make me lose weight. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b my losing weight | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 12a. result in an injury. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my getting an injury | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 13a. cause me to become like people I've admired. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my becoming like people I've admired | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 14a. help me to think better. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my thinking better | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 15a. rid me of minor muscular pains. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. ridding myself of minor muscular pains | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 16a. be fashionable. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my being fashionable | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 17a. be expensive. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. being expensive to me | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 18a. require that I be able to stretch. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |

MY PARTICIPATION IN A REGULAR PROGRAM OF EXERCISE WOULD:

- | | | | |
|---|--------|---|----------|
| 27a. make me feel younger. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my feeling younger | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 28a. make me feel too tired. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my feeling too tired | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 29a. cause me to give up bad health habits. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. giving up my bad health habits | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 30a. improve my overall health. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. improving my overall health | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 31a. make me hungrier. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. my being hungrier | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 32a. increase my ability to perform physical tasks. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. increasing my ability to perform physical tasks | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 33a. require previous experience with exercise. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. requiring previous experience of me w/exercise | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |
| 34a. increase my self-respect. | LIKELY | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | UNLIKELY |
| | | e q s n s q e | |
| b. increasing my self-respect | GOOD | <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> : <u> </u> | BAD |
| | | e q s n s q e | |

MY PARTICIPATION IN A REGULAR PROGRAM OF EXERCISE WOULD:

- | | | |
|---|---------------------------|----------|
| 35a. make me need less sleep | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. my needing less sleep | GOOD _____ | BAD |
| | e q s n s q e | |
| 36a. make me stiff and sore. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. my being stiff and sore | GOOD _____ | BAD |
| | e q s n s q e | |
| 37a. make my heart work better. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. having my heart work better | GOOD _____ | BAD |
| | e q s n s q e | |
| 38a. be unnecessary after I got into shape. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. being unnecessary after I got into shape | GOOD _____ | BAD |
| | e q s n s q e | |
| 39a. give me time by myself to think. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. having time by myself to think | GOOD _____ | BAD |
| | e q s n s q e | |
| 40a. be embarrassing. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. my being embarrassed | GOOD _____ | BAD |
| | e q s n s q e | |
| 41a. make me look better. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. my looking better | GOOD _____ | BAD |
| | e q s n s q e | |
| 42a. make me have a fatal heart attack. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. my having a fatal heart attack | GOOD _____ | BAD |
| | e q s n s q e | |
| 43a. provides me with social outlet. | LIKELY _____ | UNLIKELY |
| | e q s n s q e | |
| b. my having a social outlet | GOOD _____ | BAD |
| | e q s n s q e | |

MY PARTICIPATION IN A REGULAR PROGRAM OF EXERCISE WOULD:

68a. allow me to compete with others.	LIKELY	_ : _ : _ : _ : _ : _ : _	UNLIKELY
		e q s n s q e	

b. competing with others	GOOD	_ : _ : _ : _ : _ : _ : _	BAD
		e q s n s q e	

69a. bring beauty and grace into my life.	LIKELY	_ : _ : _ : _ : _ : _ : _	UNLIKELY
		e q s n s q e	

b. having beauty and grace in my life	GOOD	_ : _ : _ : _ : _ : _ : _	BAD
		e q s n s q e	

Do you have any medical condition which has caused a physician to advise you to limit or to refrain from exercise?

If so, please indicate the nature of this condition below.

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