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THE UNIVERSITY OF ALBERTA

EMPLOYEE FITNESS PROGRAM EFFECTS UPON LONG TERM FITNESS INVOLVEMENT

by

JACK RUDNICKI

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF ARTS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled EMPLOYEE FITNESS PROGRAM EFFECTS UPON LONG-TERM FITNESS INVOLVEMENT submitted by JACK RUDNICKI in partial fulfilment of the requirements for the degree of MASTER OF ARTS.

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Supervisor

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Date.....

DEDICATION

To Fitness/Physical Activity/Physical Recreation

For its effect on my life professionally, academically, socially and especially to my psychological well-being.

To My Parents

For their everlasting and uncompromising love, regardless of their understanding of, or feelings towards my endeavors.

ABSTRACT

The primary purpose of the study was to investigate the effects of participation in an employee fitness program upon long-term involvement in physical activity. The secondary purpose of the study was to determine the relative importance of various health, programmatic, non-health, personal and situational factors to long-term exercise involvement.

The 124 subjects, were the respondents of the selected population of 220 University of Alberta employees. The population consisted of individuals who enrolled in a beginner or intermediate level exercise class in the University of Alberta's Staff Fitness and Lifestyle program in the Fall of 1983 or Winter of 1984.

The study questionnaires consisted of a combination of open-ended and closed-ended items with the content divided into six general sections which included: general demographic information, physical activity involvement prior to and after the exercise program, the effect of the program on long-term activity involvement and the effect of various program factors on long-term participation in physical activity. Data pertaining to the primary purpose of the study, were analyzed by descriptive statistics and a one tailed t-test. Data pertaining to the secondary purpose of the study, were analyzed by descriptive analysis and two stepwise multiple regression analyses.

The results indicated that 61.8% of the respondents reported that the Staff Fitness and Lifestyle program increased their physical activity level over the one to one and one half year period since completion of the program. Fifty two percent of the respondents noted that they had increased their physical activity level since completion of the program as compared to one year prior to it (a two to two and one half year period). Furthermore, the days per week of physical activity measure indicated a significant increase in physical activity following participation in the program as compared to prior to it.

Results on the Likert-scale type questions pertaining to the realization of certain outcomes from being involved in the exercise program revealed that various health and non-health factors were important to continued involvement. Of these factors, however, only

"goal attainment" and "convenience", entered into a multiple regression equation to predict increased levels of physical activity involvement. Together these two variables accounted for 30% of the variance in the criterion variable. With respect to the "reasons for continued involvement" descriptive statistics again indicated a number of health and recreational aspects to be important but again only two factors, "self challenge" and "to control weight" entered into the regression equation to predict increased levels of long-term fitness involvement. These two factors together accounted for 21% of the variance in the criterion variable.

The final results which were obtained via three open-ended questions revealed that individuals initially registered in the program primarily for health related reasons. However, reasons for re-registration were substantially recreational and programmatic/situational. The participants' activity levels (one and one half or more years after the program's termination) were affected equally by "health related" considerations, "enjoyment aspects" of exercise and "activities they did on their own".

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I. THE STATEMENT OF THE PROBLEM

In recent years, there has been an increased recognition of the importance of regular physical activity. A number of studies have noted the correlation between exercise and various measures of physiological health (Bruce, Frederick, Bruce & Fisher, 1976; Kannel, & Sorlie 1979; Morris, Adam, Chave, Sirey, & Epstein 1973). Physical activity has also been associated with important psychological and quality of life improvements in both normal and clinical populations (Folkins & Sime, 1981; Stern & Cleary, 1981).

Numerous benefits have also been reported to accrue from employee fitness programs (Salmon, 1981; Pyle, 1979). These include psychological benefits (Dedmond, Gander, O'Connor & Paschke, 1979; Durbeck et al., 1972; Heinzelmann & Bagley, 1970b; Rhodes & Dunwoody, 1980), increases in productivity, (Durbeck, et al. 1972; Heinzelmann & Bagley, 1970b; Teraslinna, Partanten, Koskela & Oja, 1969) and increased job satisfaction (Cox, Shephard & Corey, 1981; Heinzelmann & Bagley 1970b; Rhodes & Dunwoody, 1980).

The general public is also aware of the value of physical activity (Canada Fitness Survey, 1983; Wankel, 1980). Further support for the value of physical activity is evidenced by a general increase in the last decade, in the number of regularly active adults, as well as an increase in the intensity of those who are regularly active (Canada Fitness Survey, 1983; Fitness Ontario, 1983; Martin & Dubbert, 1982). Despite these results nearly half the population continues to be inactive (Canada Fitness Survey, 1983; Fitness Ontario, 1981; 1983; Kirshenbaum & Sullivan, 1983; Martin & Dubbert, 1982). Evidence indicates that amongst those initially joining a program it is common that 50% will drop-out within six months (Dishman, 1982; Morgan, 1977; Oldridge, 1982). Furthermore, compliance with an exercise program does not necessarily mean the habit will be maintained after completion of the program (Oldridge, 1984).

The recognition of the numerous benefits of exercise together with the generally low participant involvement rates has led to the identification of exercise motivation and exercise adherence as important areas of study. For example, Morgan (1977) states, "The psychologic

and physiologic benefits of involvement in vigorous physical activity are so numerous and well documented that it is no longer fruitful for exercise scientists to continue asking questions which relate to beneficence... The major issue at this point in our history can be subsumed under the rubric involvement" (p. 1). Franklin (1978) suggests that although large numbers of adults are participating in physical activity, compliance continues to be a problem. He states, "The problem no longer appears to be how to motivate people to take the first step toward an exercise commitment but rather to keep this motivation alive" (p. 16).

Techniques for facilitating exercise involvement have generally focussed on a health benefits approach, which has been noted to have only limited success in influencing adherence (Wankel, 1985). This realization has led authors to investigate the effects of other factors on participation. The investigations have indicated that adherence is influenced by non-health related factors (Heinzelmann, 1973; Oldridge, 1977; Wankel, 1980). Evidence indicates that social factors (Heinzelmann & Bagley, 1970b; Massie & Shephard, 1971; Wankel, 1985), recreational aspects (Cox, 1984; Heinzelmann & Bagley, 1970b; Wankel, 1985), slow rate of exercise progression (Cox, 1984; Dishman, 1982; Durbeck et al., 1972) and leadership (Andrew & Parker, 1981; Wankel, 1980; Wanzel & Danielson, 1977) influence exercise program adherence. In addition, convenience has been consistently related to compliance (Dishman, 1982; Teraslinna, Partanen, Koskola & Oja, 1969; Wanzel, 1978). With respect to long-term involvement, Dishman (1982) posits that initial program adherence (first three to six months) is critical, Wankel (1980) suggests that initial program reaction is important and Cox (1984) speculates that initial program support is influential. There is little evidence, however, to indicate what influences long-term involvement. This study is designed to investigate this research void.

A. The Statement of the Problem

The primary purpose of the study was to investigate the effects of participation in an employee fitness program upon long-term involvement in physical activity.

A secondary purpose of the study was to examine the relative importance of various health, programmatic/non-health, personal and situational factors to long-term exercise involvement.

B. The Delimitations

The study was delimited as follows:

1. To adults who enrolled in a Staff Fitness and Lifestyle exercise program in the Fall of 1983 and to those registered in the Winter of 1984 who had not been registered in the Fall of 1983.

2. To those adults who joined an exercise program designed for people with a low level of fitness (beginner, beginner/intermediate, or intermediate).

3. To those adults meeting the above criteria who are presently employees of the University of Alberta.

C. Limitations of the Study

This study is limited by the following factors:

1. By the reliability and validity of the questionnaire.

2. By the accuracy of the registration and employee payroll lists.

3. By the subject's ability to recall (retrospective study): the extent of their physical activity participation prior to the exercise program, their experience in the exercise program, the effect of the program on subsequent exercise involvement and the extent of their physical activity participation since completing the exercise program.

4. By the willingness of the subjects to complete and return the questionnaires.

D. The Definition of Terms

Employee Fitness Programs. The term used to describe those fitness programs which are promoted, subsidizied or provided by a business or organization for the employees of that organization.

The Exercise Program. The term used to describe a particular Staff Fitness and Lifestyle exercise program in which the subject was registered. Staff Fitness and Lifestyle Programs constitutes an employee fitness program which offers various fitness and lifestyle opportunities for the employees of the University of Alberta. Some of the programs offered are: calisthenics-jogging type classes, various aerobics type classes, aquacise, Tai Chi, Yoga, Relaxercise as well as Cardiopulmonary Resuscitation, rollerskating and a variety of special events.

Physical Activity. In the study physical activity was operationalizied as: those exercise activities that elevate the heart rate (or cause above normal breathing) for a duration of at least 20 minutes.

Long Term Involvement. In this study the term long-term involvement refers to participation in vigorous physical activity for one year or more since the completion of the exercise program.

Health Factors. Those health related reasons for which individuals may participate in physical activity. They include both physiological and psychological outcomes.

Programmatic/Non-Health Factors. Those non-health factors which may facilitate an individual's participation in physical activity. This study will focus on four such factors: social support, recreational aspects, exercise progression and leadership.

Social Support. Social support refers to help received by a participant from the positive interaction of the class in which he or she was enrolled. This help may take the form of verbal reinforcement, discussion of problems and so forth.

Recreational Aspects. An approach to exercise that focuses upon the enjoyment attained or the quality of the experience. This is often accomplished through an approach stressing fun and variety.

Exercise Progression. The intensity level and emphasis at which the program operates. It could emphasize progressing at a high intensity level to achieve health benefits, a moderate intensity to encourage participants to get comfortable with exercise or a combination of both.

Leadership. The ability of the leader to interact with the participants so as to create an environment which is conducive to the realization of both individual and group goals.

Personal Factors. Those personal factors that encourage or discourage individuals partaking in physical activity. Such factors include: feelings or reactions towards the exercise program or exercise in general, time related barriers associated with personal commitments, and injury or medical illness.

Situational Factors. Convenience and accessibility of the program and how it interacts with one's schedule, as well as the social support recieved outside of the exercise setting.

E. The Importance of the Study

As a result of the numerous benefits of exercise, motivation for involvement in employee fitness programs and other exercise programs has gained increased attention. There now exists a body of knowledge on factors related to adherence primarily in short-term exercise programs (social factors, recreational aspects, exercise progression, leadership and convenience). This study is designed to extend this theoretical knowledge primarily of short-term motivational factors and to investigate its relation to long-term motivational factors. This study differs from previous investigations, some long-term, which have either been exploratory or have analyzed the effect of only one or two of the exercise adherence variables identified.

One of the major goals of exercise program administrators, whether in employee fitness settings or in other exercise settings, is to increase individual's long-term involvement in physical activity. However most programs and studies only follow individuals as long as they are in a program. What happens to program participants after they cease participating in an organized program? This study will investigate the activity levels, activity patterns, and reasons for involvement of individuals one to one and one half years after participating in an employee fitness program. The results should be useful in learning how long-term fitness involvement is affected by initial program reactions. The knowledge obtained might be useful in more effectively designing future exercise programs in order to have long-term carryover effects.

II. THE REVIEW OF RELATED LITERATURE

The review of related literature has been subdivided into two major sections, each containing several sub-sections: the first section discusses factors affecting initial involvement in physical activity, and the second reviews the factors affecting adherence to physical activity regimes.

A. Initial Involvement

There is a general recognition that different factors may be involved in initial involvement and continued exercise involvement (e.g., Heinzelmann & Bagley, 1970b; Massie & Shephard, 1971; Shephard, Morgan, Finucane & Schimmelfing, 1980; Wankel, 1985). The following section isolates initial involvement factors. Major areas covered in this section are: recruitment approaches, personal factors, program factors, and barriers to initial involvement. Each of these areas in turn is subdivided into subcategories.

Recruitment Approaches

Mass Media

Before discussing recruitment techniques tailored to specific programs a brief review of general mass media approaches will be provided. Mass media campaigns such as "Participaction" in Canada, "Trimm" in West Germany, "Life Be In It" in Australia, are essientially designed to promote general awareness of the need for involvement in regular physical activity and to promote greater widespread involvement.

These mass media campaigns have succeeded to a degree. They have generally been effective in reaching large numbers with their messages. Ninety-three percent of the members of a West German adult sample were found to be aware of the Trimm campaign (Palm, 1977a). Seventy nine percent of adults in Victoria, Australia were found to be aware of the Life Be In It campaign (Becker, 1977), while 94% of Saskatoon, Saskatchewan residents sampled were aware of the Participaction campaign (Jackson,

1979). Furthermore, respondents generally reacted favourably to the campaigns (Becker, 1977; Palm, 1977a). With respect to their ultimate goal of increasing involvement in physical activity these mass media campaigns have not been as effective. In West Germany 10% of the respondents reported that the promotional campaigns had stimulated them to be active, whereas in the Australian and Canadian studies the figures were 12% and 1 % respectively.

A refinement of a general media approach to promoting physical activity is a campaign based on target marketing principals. Such an approach was incorporated into the Australian, Life Be In It campaign (Becker, 1977). Prior to initiating the media promotional campaign a marketing survey of the populace was undertaken. The attitudinal survey of 1000 respondents revealed that there were clearly separate elements within the population. Five target groups were identified on the basis of the responses received. Each group was classified and then motivational strategies were developed. For example, the classification "Drifter" was coined for the group of people who were aware of the benefits of physical activity, and wanted to be fitter but did little about it (almost 50% of the population). Their attitudes suggested that they could be motivated by an approach that emphasized the intrinsic interest of activity rather than the work connotation of fitness. This finding that the "Drifter type person" formed the majority group within the population seems to be also true in West Germany (Palm, 1977b, p. 140) as well as in Canada (Wankel, 1980).

The Australian target marketing approach achieved some success in altering the exercise behavior of the population. A 1979 study (National Policy Committee for "Life Be In It") reported that 20% of respondents stated that the Life Be In It campaign caused them to be more active in their leisure time. This study gives some credence to the use of marketing research and promotion to attract individuals to adopt the exercise habit. Martin and Dubbert (1982) have suggested the use of similar techniques to entice individuals to adopt the exercise habit.

> More research can be devoted to the initial stage of exercise adoption/recruitment. The marketing of exercise and health programs can draw from advertising research, from the relatively recent research on health marketing as conducted by health psychologists. (p. 1014)

Program Recruitment Techniques

Faulkner and Stewart (1978) evaluated the effectiveness of various recruitment techniques in motivating a group of sedentary Canadian workers to begin a fitness program. It was found that the most effective recruitment approach (73% of those exposed) was a combined fitness test (Canadian Home Fitness Test, CHFT) and small group educational seminars emphasizing the components of fitness and their importance to health. The second most effective technique was a fitness assessment technique (Canadian Home Fitness Test), which yielded a 36% recruitment rate. A poster and brochure treatment approach yielded a 20.5% return. The least effective treatment of those studied was an educational seminar approach, which yielded a 12.5% return.

Heinzelmann and Bagley (1970b) found that a small group discussion and decision making approach was more effective than was a large group lecture format in recruiting middle aged men to an exercise program. This finding was found to hold across different discussion leaders, presentation styles and for different group member characteristics. The authors observed that the social and psychological support of the group served to increase the understanding and commitment of the individual.

Employee Fitness Program Recruitment Techniques

Employee fitness programs cater to their own "community"; their employees. Such programs are unique in that they are administered through a company generally not in the fitness/recreation business. They therefore have different mandates than programs offered through the traditional fitness/recreation industry. Their aim is to improve the quality of the work environment and the services offered there rather than to provide a separate

service as in a public program or to make money as in a private industry. These programs have flourished for various reasons in recent years and are starting to come into their own as an area of study (cf. Cox, 1984). Recruitment techniques in employee fitness programs may differ from other exercise programs. Although Cox reports that employee fitness recruitment techniques have not been studied, he provides some suggestions on how to maximize initial participation. His suggestions include: management support and encouragement, advisory committee with representatives from all facets of corporate life, employee involvement in program, proper promotion of program, convenience, conducive environment, and professional leadership. Other techniques or factors of particular relevance to employee fitness programs, will be discussed later in the adherence section under program factors.

In summary, a review of literature on "recruitment approaches" revealed little systematic research. Studies of mass media campaigns indicated that although awareness of the campaign can be effectively achieved, desirable behavior change in the public (i.e., increased involvement in physical activity) has been more difficult to achieve.

At the program level, recruitment was positively affected by individual or small group approaches such as fitness testing and/or discussion and decision making approaches. Awareness approaches such as media campaigns, poster and brochure sessions or educational seminars have also affected recruitment, although to a lesser extent. Finally, the literature revealed suggestions, albeit not supported through any systematic studies, that employee fitness programs need specialized recruitment techniques that are appropriate to the environment. Attention in the next section will be shifted to how individual personal characteristics and various personal factors affect initial involvement.

Personal Factors

This section on the personal characteristics of those who join exercise programs will be subdivided into three sections: the previous exercise and health history, social characteristics

and the attitudes and exercise behaviors of participants.

Previous Exercise and Health History

Previous exercise and health history have been found to be associated with initial involvement. Harris (1970) set out to assess the background of, and attitudes towards, physical activity of middle aged men in an attempt to determine why some choose to be active, while others choose to be sedentary. The subjects for the study were drawn from an employee group which participated in a program at an on-site facility. Results from the study showed the profile of a volitionally active middle aged man to be as follows: he grew up in an urban area; had parents who encourged his participation; was a member of high school and college athletic teams; had more years of formal education than average; had always participated in physical activity; and enjoyed the competition and feeling of fatigue following strenuous activity. A positive attitude toward physical activity was formed early on in his life and had, in effect, become part of the individual's lifestyle.

It would follow from this study that individuals recruited to an exercise program would likely have had an active lifestyle prior to recruitment. Support for such a relationship is provided by Shephard, Morgan, Finucane and Schimmelfing (1980). They found that volunteers for an industrial fitness program were drawn from a segment of the population which had above average levels of both habitual physical activity and physical fitness. In their study at least 53% of the men and 44% of the women were active prior to the program. In an earlier study Teraslinna, Partanten, Oja & Koskela (1969) examined social factors and living habits associated with willingness to participate in physical activity. They reported that, smokers and people who were already active were more likely to join an exercise program.

Demographic Characteristics

In this review, demographic characteristics shall refer to education, occupational status, marital status factors, age and sex.

A recent United States survey (Gallup Poll, 1983), found that sedentary adults were less well educated, less affluent and older then were active people. Further support for the relationship of these factors with physical activity patterns has been found by the Canada Fitness Survey (1983) which reports that as education increases so does participation in physical activity. Results from the Canada Fitness Survey also show that overall physical activity levels decline with increasing age. With respect to marital status the Canada Fitness Survey found that single people were most active (62%), followed by "other" (55%) and married (49%). Occupation is another variable that has been found to be related to participation in exercise programs. The Canada Fitness Survey found that managers and professionals were more likely to spend their leisure time in an active manner than were other occupational groups, especially blue collar workers (60% versus 48%).

Heinzelmann (1973), in his review of social and psychological factors that influence effectiveness of exercise programs, reported a positive relationship between socioeconomic status and voluntary participation in an organized exercise program. In general the higher the social class (measured in terms of occupation and education) the more likely the men were to participate. He noted that white collar in contrast to blue collar workers generally: 1) participated more in various kinds of voluntary actions; 2) led a more sedentary lifestyle which makes them more prone to a heart attack then men without such characteristics; 3) felt a certain degree of control over their environment and therefore exercise as a preventive measure; and 4) had more flexible schedules which offered the opportunity and time to get involved.

Other studies in the "preventive milieu" (e.g., Kavanagh and colleagues, 1979; and Pollock, Foster, Salisbury & Smith, 1982) report that predominantly white collar managerial populations participate in their programs. However at least one major study, the Ontario Exercise Heart Collaborative Study reported by Oldridge (1984), found that a substantial number of the participants (42% of the 733 patients) were blue collar workers.

With the exception of one study it would seem that the majority of exercise programs, especially the rehabilitative ones, are frequented by members of middle to higher social class levels. People who exercise generally have a higher level of education and are younger.

Attitudes and Exercise Behavior

Attitudes are generally viewed as containing three components: a cognitive or thought component, a conative or behavioral predisposition component, and an affective or emotional, evaluative component (Triandis, 1971). An individual may feel very positively about participating in physical activity, because he or she believes that exercise is healthy, and that physical activity helps to reduce weight. In this situation the positive evaluation or feeling about the activity is the affective component. The belief that activity is healthy or can reduce weight is the cognitive (or belief) component. Further, it is likely that given these affective and cognitive aspects, the individual will be predisposed to behave (conative aspect) in a consistent manner by being active.

Harris (1970) utilized the Physical Activity Attitude Inventory (PAAI) to study the attitudes of middle aged men involved in physical activity. She found that, "once a positive attitude had been formed, the volitionally active man was motivated to learn new sports and games whenever he was in an area where facilities were available" (Harris, p. 208). However, not all studies have found such a positive relationship between attitudes and behavior.

Neale, Sonstroem and Metz (1969) carried out a study, using the Physical Activity Attitude Inventory (PAAI) to try to understand why adolescent boys became involved in physical activity. They found no significant differences between high fit and low fit adolescent boys in either self-esteem or in level of voluntary physical activity. The PAAI was compromised of two scales, the Attraction Scale (which measures the individual's interest or attaction to physical activity) and an Estimation scale (which measures the individual's estimated physical ability, which in turn is related to that individual's

self-esteem). In an attempt to improve upon this scale (PAAI), Sonstroem (1974) developed the Physical Estimation and Attraction Scales (PEAS). Sonstroem and Kampper (1980) utilized the PEAS and Bialer's Locus of Control Scale with grade 7 and 8 boys to examine whether these instruments predicted recruitment and adherence to fall sports (flag football and cross country running). The PEAS had a predictive efficiency of 75.8% for recruitment to the two sports. The Locus of Control measure was not predictive of recruitment. The adherence results will be reported in the adherence section.

Other studies have found little relationship between attitudes and exercise behavior (Andrew et al., 1981; Morgan, 1977). As was noted earlier, although positive attitudes are generally held toward the messages of mass media campaigns (Becker, 1977; Palm, 1970a), subsequent behavior change (increased involvement in physical activity) has not necessarily been the outcome. In view of the lack of consistency of the attitude behavior relationship, an investigation of other possible predictors of initial exercise is warranted. The following section looks at program factors that affect initial involvement.

Program Factors

Health Related

The literature consistently shows that the primary reasons for undertaking an exercise program are health related. Heinzelmann and Bagley (1970b) in their previously mentioned study of adult males, found that at the beginning of a program the most important reasons given for joining were a desire to feel better and healthier, and a concern about lessening the chances of having a heart attack. In his study of active participants in Waterloo county, Perrin (1979) also noted that most new participants gave health benefits as their main reason for being involved. Similar results were recorded in a study which attracted professional and managerial workers (Wankel, 1985). Both dropouts and continuing participants indicated that health related goals were important to their initial decision to join the program. Specific goals indicated to be important were: to

prevent cardiovascular disease; to lose weight; and to reduce tension and anxiety. The Canada Fitness Survey (1983) obtained similar results in its study of fitness and lifestyle in Canada. Adult Canadians reported a desire to feel better, to control weight and to reduce stress as major reasons for initial participation in physical activity. Shephard, Morgan, Finucane, and Schimmelfing (1980) administered a modified form of Kenyon's Attitude Toward Physical Activity inventory to their test subjects in an occupational setting to establish the main perceived reasons for deliberate physical activity. They found that health and fitness was the most important of the seven "percieved motivations".

Non-Health/Recreational

Other reasons for initial involvement revolve around non-health related goals, many of which are recreational in nature. Shephard, Morgan, Finucane and Schimmelfing (1980) found that after the primary motivators of health and fitness, secondary reasons for initial involvement were fun and competition for men and, fun and appearance for women. Heinzelmann and Bagley (1970b) also reported non-health related factors to be of some importance. Factors identified included: the desire to gain knowledge; to have recreation and pleasure; to vary one's usual routine; for social aspects and the desire to please one's wife. Wankel (1985) found that although not as important as health related goals, recreational factors were also important determinants of initial involvement. These non-health related factors included: to release competitive drives; to develop recreational skills; to develop relationships; to satisfy curiosity and to go out with friends.

Barriers to initial involvement

The literature usually does not distinguish between barriers to participation and reasons for dropping out of an exercise program. In this review, however, barriers will refer only to those obstacles to initial involvement in physical activity. Reasons for dropping out of an exercise program will be considered in a latter section.

Perhaps the most relevant study to date on the barriers question is the National Aeronautics and Space Administration (NASA) study reported by Durbeck et al. (1972). The study set out to investigate the feasibility of an exercise program in a federal agency and also to identify the factors that influenced joining, adherence and effectiveness of the program. The program was utilized by 237 of the 998 eligible federal employees who were 35 to 55 years of age. The study determined the barriers to joining the program by selecting by random sampling, a group of nonparticipants to determine their reasons for not joining the program. The reasons reported in order of importance were: job-related factors (e.g. heavy work load, travel schedule and lack of time); factors relating to operational aspects of the program (e.g. the lengthy medical examinations and the need for consent from a private physician); and the individual's belief that he was in good physical condition and did not need to be more physically active.

The Canada Fitness Survey (1983) investigated obstacles to increased physical activity among various groups of Canadian adults. Those who were sedentary reported the following as obstacles: no time due to work pressures (39%); injury or illness (39%); too lazy, lack energy (26%) and inadequate facilities (13%).

The NASA study appears to be the sole one that investigated reasons for non-participation in an offered program. Other studies generally investigate why individuals do not participate more but non-participants and participants are usually not effectively distinguished and it is not clear whether the studies are looking at initial involvement or adherence. More specific systematic study is needed in this area.

With regard to employee fitness programs, it would seem that other considerations might also play a role. These considerations would likely come under the rubric of management-employee relations. For example, Cox & Shepard (1980) suggested that men dissatisfied with the company pay policy are likely to be non-participants. As with many questions pertaining to employee fitness programs, there is a need for systematic research in this area.

Summary

A review of the factors affecting initial involvement revealed that although some factors that are related to initial involvement have been recognized, little systematic research has been done in this area. An approach that is used in mass media approaches as well as in other areas that attempt to influence exercise behavior is a focus on the attitude-behavior relationship. It has been assumed that attitudes may predict behavior. However results have not been overly supportive. Previous exercise and health history and various demographic characteristics, such as education and occupational status have been positively associated with those who undertake physical activity.

Several studies have noted a number of reasons for initial involvement in exercise programs. Primary factors are health related such as a desire to feel better and healthier, to lose weight or to reduce tension or anxiety. Secondary reasons are more intrinsic in nature and include, for fun, for recreation or pleasure as well as for social aspects. Although few systematic studies have been done on employee fitness programs, this domain nevertheless notes the importance of good company relationships to foster involvement. Similarly, poor relations might constitute a reason for not participating. Other barriers to exercise involvement are: lack of time, injury or illness, lack of energy and inadequate facilities.

B. Adherence

This section presents a review of the literature which examines an individual's exercise behavior once he/she has enrolled in an exercise program. The questions that will be investigated are: Who are the participants and what are some of their personal characteristics (personal factors)? What factors have they reported as being influential in keeping them in the program or involved in physical activity in general (program factors)? What techniques have been used to try to promote exercise involvement (motivational interventions)? Finally, what are the reported reasons for dropping out of an exercise program (drop out factors)?

Personal Factors

This section on personal factors influencing exercise adherence will be subdivided into the following sections: previous exercise and health history, social characteristics, attitude and exercise behavior and personality characteristics.

Previous Exercise and Health History

In the previous section it was noted in referring to the Harris (1970) study that previous exercise history could affect initial involvement. Individuals who joined the program were active prior to it and they had a positive attitude toward physical activity. This section will review the previous exercise and health history factors that affect adherence to exercise.

It is generally found that individuals adhering to exercise programs are the ones who are lean, healthy and do not smoke (Oldridge, 1984). Shephard, Morgan, Finucane, Schimmelfing and Jazmali (1984), found that those who perceived themselves as initially healthy had a greater tendency to maintain a regular exercise program. They also cite similar results from Lindsay-Reid and Osborn (1980). Other researchers have found that biological factors such as excess weight and high percent body fat are discriminatory factors for dropouts (e.g., Andrew and Parker, 1978; Dishman, 1981 and Massie and Shephard, 1971). Further support is provided by Dishman (1982, p. 243) who says, "the

most consistent discrimination between adherers and dropouts in exercise programs has been the percentage of body weight which is fat".

Ward and Morgan (1984) and Becker and Maiman (1975) provide evidence to temper these findings. The former authors looked at adherence patterns of healthy men and women in an adult exercise program. There was little difference between adherers and dropouts in percent body fat or body weight. Female adherers had a higher percent body fat, and performed fewer sit-ups when compared with dropouts. Becker and Maiman reviewed socio-behavioral determinants of adherence and found that seriousness of and vulnerability to disease resulted in increased compliance. Consistent with the Health Belief Model (Rosenstock, 1966), those who percieved that their health was poor were more likely to exercise.

Two opposing views exist in the literature. One view is that those who percieve themselves as being healthy and are lean are more likely to maintain an exercise regimen while the other view holds that those who percieve their health to be poor and who carry excess body weight are more likely to exercise. Although the literature reviewed here supports the former view, more research utilizing models such as the Health Belief Model, which suggests that a poor perception of health is more likely to lead to compliance, might be warranted.

Demographic Characteristics

As can be seen in the section on initial involvement where various demographic characteristics were briefly reviewed it is often individuals of the middle to high social class levels who enroll in exercise programs especially those of a therapeutic nature. Similarly, with respect to exercise adherence; evidence from the Ontario Exercise Heart Collaborative Study indicates that white collar workers and nonsmokers are more likely to comply than are blue collar workers and smokers (Oldridge, 1984). Stern and Cleary (1982) reported that dropouts in the National Exercise Heart Disease Project (NEHDP) tended to be of the middle rather than upper-middle social class.

The value of using socio-demographic and socio economic status variables are questionable. Oldridge (1984, p. 174) remarks, that the failure to find a consistent association between occupational class and exercise compliance may be because, "there is no relationship", or because of the low proportion of blue collar workers involved in most of the samples studied". Andrew et al. (1981), suggest that various demographic and socio-economic factors are not significantly related to compliance. Finally, the suggestion forwarded by the Outdoor Recreation Resources Review Commission (cited in Howard, 1976) after their multivariate analysis of demographic and socioeconomic factors was that "factors other than socio-economic characteristics are the major determinants of outdoor recreation activity". The question still remains: Are there other personal characteristics that can predict exercise behavior?

Attitude and Exercise Behavior

Researchers have investigated whether attitude leads to behavior, with the view that positive attitudes and/or acceptance of physical activity might lead towards exercise adoption. Recent survey information indicates that most individuals are convinced of the value of physical activity (Canada Fitness Survey, 1983; Wankel, 1980). At the same time, despite a general increase over the last decade in the number of regularly active adults as well as in the intensity of involvement of those who are regularly active, nearly half of the population continues to be inactive (Canada Fitness Survey, 1983; Kirshenbaum & Sullivan, 1983; Martin & Dubbert, 1982). These surveys lend support to the notion that acceptance of the positive benefits of physical activity does not necessarily lead to adoption.

Sonstroem and Kampper (1980) found the attitudes recorded by the physical estimation and attraction scales (PEAS) predicted initial involvement behavior with some accuracy but did not predict who would stay with a program. Dishman (1982) reported that exercise values may not influence how long an individual stays with a program. He states:

"While these findings may initially appear inconsistent with attitude theories, they actually support a body of evidence that shows attitudes and beliefs are of limited utility in predicting a long-term behavior such as exercise adherence (p. 241).

Sonstroem and Kampper (1980, p. 687) in their review of literature note the lack of support for the attitude-behavior relationship. "An accumulation of negative results, however, has led many investigators to question or minimize the attitude-behavior relationship." They referred to Wicker's (1969) extensive review of research which provided little support for the existence of a strong attitude-behavior relationship. It is clear there is reason for doubt as to the nature of this relationship.

Personality Characteristics

One method used to try to understand involvement in physical activity is a focus on the study of personality characteristics. The basic assumption underlying this approach is that there are general stable personality factors which are important in determining whether or not an individual will be active (Wankel, 1980, p. 19). Numerous studies have been carried out to investigate differences in the personality traits of active and nonactive people.

Ismail and Trachtman (1973), studied the personality characteristics of selected groups of "most fit" (N=14) and "least fit" (N=14) individuals from a population of 60 sedentary middle-aged males. Cattell's 16 Personality Factor Questionnaire was administered to the subjects before and after a four month training period. On the pretest, the high fit group scored significantly higher on Factor C, indicating emotional stability, and on Factor M, indicating imagination. The low group scored higher on Factor O, which suggests guilt sensations. Post-tests revealed that the scores of the low fit group on Factor C, had become similar to those of the high fit group. Other factors improved with exercise, especially self-sufficiency and confidence (the converse of guilt in the low fit group).

Brunner (1969) examined personality differences in active versus passive adults to see if the two groups had distinguishing personality traits. The Adjective Check list and a

questionnaire were administered to the 69 adult males. Results revealed significant differences in physical activity between participants and non participants. The regular exercisers scored significantly higher on six of the eight scales (intraception, number of favourable adjectives checked, defensiveness, achievement, dominance and self-confidence), whilst spasmodic exercisers scored significantly higher on two scales (succorance and counselling readiness). These differences led Brunner to conclude that regular exercisers were more extroverted while the spasmodic exercisers were more introverted.

Attribution theory is a theory that may have applicability in determining whether or not a person will be active. Attribution theory is concerned with the linking of an event that has occurred, with the conditions that underlie or cause it by considering the personal and environmental factors involved (Deci, 1975; Shaver, 1975). The central concept of causality is that a person can attribute the outcome of an event to either a dispositional quality of the actor (personal disposition) or to some external factor (environmental disposition). Shaver (1975, pp. 60-63) delineates examples of personal components of action as, intention, exertion and ability; and examples of environmental components as task difficulty, opportunity and luck. In attribution theory the loci of causality have been referred to as external and internal (Deci, 1975). Deci describes the importance of internal and external causal factors for affect and for motivation. Deci (1975, p. 253) concludes, "in sum, intrinsically motivated behaviors are characterized by internal causality . . . extrinsic behaviors are characterized by external causality." Yardley (1982, pp. 25-26) concludes his review of the section on attribution theory and laws of causality by saying: "It is of fundamental importance, therefore, when studying physical activity behavior; to consider the attribution process, since it gives an insight into the reasons for being involved in and also why a person might persist, at physical activity".

Dishman (1982), in his review of health related exercise adherence, discussed the empirical testing of self-motivation. The Dishman, Ickes and Morgan (1980) study of

self-motivation and adherence to physical activity provided evidence for the logical validity, internal consistency and test retest reliability of the Self-Motivation Inventory. Moreover, from the standard of behavioral validation, self-motivation proved to be the best discriminator between exercise adherers and dropouts of the psychological variables employed and was significantly related to program adherence. Dishman and Ickes (1981) also found that level of self-motivation, measured by the Self-Motivation Inventory, significantly influenced exercise adherence levels.

Although self-motivation tested via the Self-Motivation Inventory revealed significant exercise adherence results in the two reported settings, at least two other studies have not produced supportive results. Wankel and associates (Wankel and Graham, 1980; Wankel and Yardley, 1982a) undertook two separate investigations that utilized the Self-Motivation Inventory along with other interventions (balance-sheet technique and social support strategies). Although the intervention facilitated attendence in both cases, neither investigation recorded significant effects due to level of self-motivation.

In discussing the personality characteristics of individuals and their effect on exercise involvement it is useful to note the effect of not only self-motivation but also intrinsic motivation. As will be discussed in the adherence section, "intrinsic type" factors (i.e., recreational aspects) better account for continued involvement than do extrinsic factors (i.e., to prevent cardiovascular disease).

The area of intrinsic motivation and its value to physical activity is born out in the work of Csikszentmihalyi (1975) in his model of the flow state (1975, p. 49). This model was developed through studying play because the author wanted to use activities which did not depend on external incentives. He said, "of all patterned human activities, play is supposed to depend least on external incentives". The flow experience which is the crucial component of enjoyment describes the holistic sensation that people feel when they act with total involvement. In order for the enjoyment and the flow experience to arise the player must perceive the challenges (action opportunities) as matching his/her skills

(action capabilities). When this match occurs the activity is likely to be satisfying and considered to be intrinsically rewarding. On the other hand, when the situation demands more than the player's skills can accomodate, a state of worry and anxiety ensues. Conversely, a situation where the player's skills are not tested results in boredom and anxiety.

Two valuable factors may be extracted from the work of Csikszentmihalyi (1975). First, the experience describes an internal sensation or characteristic which can be compared to the personality traits or perceptions reviewed in the previous studies, that is self sufficiency and confidence (Ismail & Trachtman, 1973); achievement, dominance and self-confidence (Brunner, 1969), internal causality (Deci, 1975), and self motivation (Dishman, 1982) which in most cases were reported to be related to exercise adherence. Second, this model recognizies the continually changing skills of individuals and the effect of the changing skills on the perception of the challenges that await the individual. Therefore the model provides a usefull perspective in which to view the stages individuals go through in exercise programs, from initial involvement to continued involvement. In the initial stage, boredom or anxiety could lead to dropout whereas the experience of flow would increase the probability of exercise adoption.

An individual's initial reactions to a program have important implications as to whether that individual will drop out or will adhere to the exercise program and subsequent physical activity.

Program Factors

Program factors in the context of this section are those factors within a program itself which are reported to keep people returning to the program. A number of authors have noted the importance of distinguishing between reasons for initial involvement and adherence (Heinzelmann, 1973; Oldridge, 1977; Wankel, 1979; 1985). Whereas initial involvement is primarily affected by health related factors, reasons for continued involvement are most

notably of a non health nature. Such program factors to be covered in this section include social factors, recreational aspects, exercise progression, leadership, convenience and employee fitness program factors.

Social Factors

The broad heading "social factors" will cover social support, be it from "buddies", peers, colleagues, or spouses. Exercise as a social outlet will also be reviewed in this section.

Continued participation in the exercise class can be encouraged with the strengthening of group bonds (Brawley, 1979, Kindl & Brown, 1976). Feldman (1983) notes that social support arises from spouses, family members, friends, co-workers, and other significant others. According to Feldman, social support (note he is referring to health promotion programs in industry), " reduces the social isolation of the worker, makes the worker more accountable for his or her actions, and assists the worker in remembering and carrying out the recommended health advice" (p. 22). He reports on studies by Alderman (1977) and Alderman and Shoenbaum (1975) who have found that the support provided by other union members, family, and friends accounted for a large portion of the success of worksite programs to control blood pressure.

Wankel (1985) undertook an exploratory interview study with the members of an employee fitness program to investigate adherence or dropout factors with particular attention paid to factors related to the quality of the experience. Results indicated that social factors such as the level of friendship and encouragement from various social groups were important factors related to compliance. Continuing participants rated these social factors significantly higher than did drop-outs.

A study undertaken with middle-aged men comparing the effectiveness of individual and group-based exercise programs (Massie & Shephard, 1971), found social factors to be important aspects facilitating involvement. The gymnasium-based program had only a 18.2% dropout while the individualized program had a 52.6% dropout rate.

Another study conducted with middle aged sedentary men investigated factors that influenced participation and adherence (Heinzelmann & Bagley, 1970b). In this study social aspects of the program increased in importance from being among the least important factors at the commencement of the program to very important at the end of the program. More than one fourth of the respondents listed the social aspects as among the best liked features and a factor which influenced their adherence. The authors' commented on the importance of social aspects to physical activity adherence,

> Physical activity is apparently often viewed as a social community: persons often prefer to exercise with another person or with a group rather than alone . . . when participants were asked to state in what circumstances they preferred to exercise, almost 90% of the 195 men who responded indicated that they preferred to exercise with a group or another person (pp. 906-907).

Data indicated that the influence of wives was also an important factor related to adherence. Of the 143 men whose wives' attitudes towards the program were positive, 80% had good or excellent patterns of adherence. In contrast, 40% of the 39 men whose wives' attitudes were neutral or negative had good or excellent patterns of adherence.

Perrin (1979) in his survey of exercisers in Waterloo County noted that preference for exercising alone or in a group varies from person to person. He found that 35% of physical activity participants exercised alone, 35% with family members or one or two friends, and 27% exercised with larger groups. Gerson (1983) acknowledged the importance of social aspects of the program but he also cautions that "we cannot overlook the exerciser who is ashamed to work out with a group". He suggests many reasons may exist for this, including embarassement about either personal appearance or inability to perform the activities.

The literature revealed that not all individuals benefit from social support factors. However, the studies heavily support social elements as being important factors in fostering exercise adherence. The social factors reviewed included group bonds, family,

spouses, peers, and friendship. The ensuing section will review how recreational features affect exercise adherence.

Recreational Aspects

Recreational aspects of exercise programs are often reported by participants to be factors that affect their compliance with physical activity programs. Continuing participants in the Wankel (1985) study scored significantly higher than the dropouts in the goals to develop recreational skills and to release competitive drive. Heinzelmann and Bagley (1970b) found that at the end of their exercise program 29% of the participants noted recreation/games as important factors to their adherence to the program. Other authors have noted the importance of fun to exercise compliance (Jette, 1979; Massie & Shephard, 1971; McKelvey, 1979; Perrin, 1979).

Although "fun" may not have the same meaning to everyone, many enjoy the opportunity to meet new people (social factors) in a relaxed setting and engage in activities which are "novel, complex, and dissonant" (McKelvey, 1979). Noting that man is an arousal-seeking animal, McKelvey states that as an activity becomes less novel through repetition, its complexity becomes diminished and dissonance within the individual is resolved. The individual then seeks new activities to provide this arousal, progressing through a series of events which are ever more "novel, complex, and dissonant".

A fun and variety approach was a key factor in the highly successful (83% compliance after six months) Canada Life Project (Cox, 1984). Gottheiner (1968) reported on a long-term cardiac sports rehabilitation program that used outdoor sports activities to provide greater variety to the exercise program. The decision to do so was based on the consideration that,

> in contrast to the rather monotonous and less enjoyable indoor exercise training, more varied and stimulating outdoor activities offer the participants superior emotional, environmental, and physical advantages. Certainly, such programs enhance the participant's motivation for regular and persistent adherence to

activities, the subjective rewards are manifested in enhanced self confidence, ambition to maintain health and a greater capacity for the enjoyment of living (p. 426)

Practitioners have also noted the importance of recreation to exercise adherence. Gerson (1983) suggests exercise should be made to be fun in order to have the participant enjoy the play nature of the activity. This will result in exercise being its own reward, thereby increasing adherence. In order to foster motivation, Franklin (1978) suggests including recreational games in the program.

Exercise Progression

Exercise programs often emphasize the prophylactic value of exercise while neglecting adherence considerations. It may be that a slow rate of exercise progression increases adherence especially for individuals unaccustomed to exercise regimes.

Massie and Shephard (1971) found substantially better adherence rates in the group-based gymnasium program than in the individualized one using Cooper's Aerobics scheme. The group-gymnasium program emphasized initially low exercise intensity versus the individualized group which had a regimented points program. The authors commented that,

> Possibly too much emphasis has been placed on the prophylactic value of exercise in preventing cardiovascular disease. Certainly, many of our groups found that exercise was fun, and this rather than the stern call of cardiovascular duty seems the best approach to sustenance of interest. (p. 116)

Wankel (1985) noted that although a definite level of intensity is required to have an optimal training effect (American College of Sports Medicine, 1981), too intense exercise is associated with increased incidence of injury and poor adherence. Dishman (1982) has indicated with the support of Pollock (1978) that the intensity of exercise which is optimal from a physiological training perspective is not likely the optimal level for adherence. The intensity of the exercise program might be especially noteworthy for a

beginner, for elderly people or for individuals with below-average scores for cardio-respiratory fitness.

Cox (1984) and Shephard and Cox (1980) both reporting on the Canada Life Project highlight the importance of a slow rate of exercise progression. They say it was necessary for the clientele they attracted, participants with below average levels for cardiovascular fitness. Since it is unfit rather than fit individuals who need the extra motivation to pursue exercise, this formula warrants further investigation. As well as facilitating greater motivation a slower rate of exercise progression may reduce the number of injuries due to exercise.

Durbeck et al. (1972) commented on the reasons for dropping out in their study which for many (13%) were injury related. In their study, a majority indicated they would participate more regularly if the exercise regimen was changed to adjust for these problems. The Canada Fitness Survey (1983) found that one of the most frequently reported obstacles to participation was injuries. Although it is noted that many of these were found in elderly people, a slow rate of exercise progression catering for people with low levels of fitness or those unacustomed to exercise, might improve the probability of exercise adoption.

The studies reviewed in the last three sections (social factors, recreational aspects and exercise progression), reported the importance of non-health factors to exercise adherence. From these studies it would appear logical to try to make the participant feel comfortable and happy rather than to focus too much on cardiovascular factors, at least until he/she has adopted a physically active lifestyle.

Leadership

The effect of the exercise leader appears to be critical to the exercise adoption process. According to some authors (Cox, 1984; Franklin, 1978; Heinzelmann & Bagley, 1970b; Wankel, 1980) the exercise leader can have a profound impact on the initial involvement and continued involvement of program participants. "Knowledgeable,

enthusiastic, and prudent leadership is a key to program success and has been shown to outlast the superficial and oftentimes short-term benefits of merely having elaborate facilities and expensive equipment" (Lauzon, 1982; cited in Cox, 1984). Haskell and Blair (1980), also emphasize the importance of knowledgeable and skilled leadership. They stress that the most important determinant of success will be the ability of the program director or leaders to properly inform and help employees motivate themselves.

Danielson and Wanzel's (1977) study of exercise adherence revealed a significant sex of participant interaction with instructor's personality. More women (11.1%) than men (1.6%) reported that they left the fitness program because of the instructor's personality. This was especially so for women 25 years of age and under. Andrew and Parker (1979) found that equal numbers of adherents and dropouts cited exercise staff as being the reason for their attendance/dropping out.

Gerson (1983) suggests that exercise leaders play a key role in making the activity fun which will encourage employees to engage in it. In order to foster adherence exercise leaders should smile and give praise, and enjoy their position because they are role models and have a great influence on the participant's decision to continue or to stop exercising. Wankel (1980) writing on fitness motivation recognizes the importance of the leader in maintaining the individual's enthusiasm in the early period. To accomplish this task the leader must be knowledgeable, competent, warm and supportive. Good communication and interpersonal skills are essential if the leader is to be a positive factor in fostering the individual's involvement. Further support for the importance of the leader comes from Franklin (1978). He suggests that exercise instructors should have strong leadership qualities to inspire others to muster the magnitude of will-power needed to sustain continued interest in a physical conditioning program. Franklin recognizes the "I want to quit stage" and recommends sincere encouragement from the exercise leader to carry the participant through this stage. In Franklin's conclusion he brings together the importance of the exercise leader with other significant factors, such as social support, to foster fitness

motivation.

> Ultimately the motivation to continue an exercise program must be intrinsic rather than extrinsic in nature. The individual must develop an attitude towards exercise which reinforces adherence. The most important positive force shaping this attitude is group participation led by imaginative and enthusiastic exercise leaders. (Franklin, 1978, p. 16)

This concluding comment from Franklin combined with his introductory paragraph, which talks about the limitations and the overemphasis of fitness testing versus education and personal motivation, summarizes and highlights the importance of leadership.

Convenience and Accessibility

A lack of time (Canada Fitness Survey, 1983), inconvenient program location and disruption of daily schedule (Wankel, 1980) are some of the most frequently reported factors affecting exercise involvement. It would follow that if these barriers were removed an increase in physical activity participation might result. Many investigators report that the convenience of the setting is an important factor affecting exercise adherence (Andrew et al., 1981; Morgan, Shephard, Finucane, Schimmelfing & Jazmaji, 1984; Teraslinna, Partanen, Koskala & Oja, 1969; Wanzel, 1978).

Teraslinna, Partanen, Koskela and Oja (1969), in their study of manager executives found that the men who were more willing to participate in the offered fitness program lived near the gymnasium where the program was taking place. Andrew et al. (1981) discussed program convienience factors which affected dropping out of a post-coronary exercise program. Factors mentioned included: difficulty of attending on time, perceived inconvenience of the centre's location, and difficulty in obtaining parking. Similarly, the dropout rate was considerably higher in those who felt that the exercise sessions interfered with their work.

In a paper related to adherence in industrial fitness programs, Wanzel (1978) reports concerns of individuals which could have an adverse effect on continued attendance. Two major concerns identified were the distance of the facility from home or place of work (42.5%), and the disruption caused by participation to the participant's daily schedule (40.2%). Similar results were found in a recent study (Morgan, Shephard, Finucane, Schimmelfing & Jazmaji, 1984). The authors report that adherence rates were higher among adults whose work allowed them to remain in good contact with the program. Dishman (1982), in reviewing the importance of exercise setting characteristics, noted the major influence of program convenience or accessibility.

With the recognition of the benefits of physical fitness for individuals as well as companies, the major question for the company becomes, "do we incorporate a physical activity program?" If so, what about a facility? Is it necessary? Is there one available, or do we need to have an on-site program? A review of the literature on exercise adherence suggests that a convenient and accessible program along with the other program factors reviewed would foster adherence.

In addition to the program factors found to affect adherence, employee fitness programs might need to take note of some particular characteristics unique to their environment.

Employee Fitness Program Factors

> Ongoing organizational support for the employee fitness program is an essential ingredient in ensuring the viability of such a program. Without it, even the best conceived programs are liable to falter once the initial spark of enthusiasm has subsided. (Cowan, 1979, p. 35)

This paragraph sums up one of the factors to be aware of in the administration of an employee fitness program which aims to attain high participation. Feldman (1983) suggests that, in some programs, collaboration between management and labour unions is necessary. He also recommends working with physicians or a health care team. Haskell and

Blair (1980) suggested that employee programs in industrial settings be promoted by employee groups as well as management

Cowan (1979) advocates the following 21 principles for a sucessful fitness program.[1]

1. Fun
2. Strong leadership
3. Management support (enlisting personal and financial commitment from company executives)
4. Accessibility (providing on site or nearby facilities)
5. Availability (implementing the right programs at the right times)
6. Continual assessment (evaluating levels of fitness and performance achievements)
7. Recording (monitoring progress of participants)
8. Group exercise opportunities
9. Challenging physical programs
10. Continual motivation of participants
11. Administration (attending to details and mechanics of program operation)
12. Continual promotion within the company
13. Individualization (setting up individualized exercise counselling)
14. Diversification of programming
15. Flexibility (listening to program feedback from all participants)
16. Extension (incorporating travelling employees)
17. Integration (supporting the values, policies and public relations of the company)
18. Continuity (supporting other company and community organizations)
19. Co-ordination (complementing company programs in the areas of Marketing, Public Relations, Personnel, Medical Care, Recreation or Staff Association, and Management)
20. Organizational integrity (keeping within the company structure)
21. Fun

Many of these principals have already been reviewed and some others will be discussed in the ensuing section on motivational interventions, however the list will serve as a usefull summary at this time.

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[1]This list comes from Cowan (1979, p. 36) reported in Employee Fitness "The how to". Proceedings of the Employee Fitness Workshop. Seneca College, King City, Ontario, March, 1979.

Motivational Interventions

Numerous techniques to increase adoption and compliance with exercise programs have and continue to be administered. This section is a review of some of the techniques that have been implemented.[2]

Acquiring the Exercise Habit

SHAPING

Shaping is instrumental in fostering a long term habit. "It is the process by which behavior is dissected into a series of successive approximations that are gradually progressed to the desired end behavior" (Martin & Dubbert, 1984, pp. 200-201). The goal is to comfort and instill confidence in the client from the start even at the expense of physiological improvement if necessary. The authors suggest that for most individuals, it is better to start at too easy a level than too difficult a level. The program can always be accelerated, but it is sometimes difficult or impossible to recover from starting at too ambitious a level. Shaping was one of the basic modification components in a six-study series (Martin et al., 1984). The authors suggest that in the shaping process the instructor should be in tune with the participants' feelings. This assists the instructor to set up and monitor the program. The authors do not provide any studies for comparison but the effect of a slow exercise progression has been documented earlier (Cox, 1984; Massie & Shephard, 1971).

REINFORCEMENT APPROACHES

The need for reinforcement during and after exercise is also important for establishing the exercise habit. An exercise leader should deliver reinforcement with as much commitment as should a coach in a competitive environment. For most beginning

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[2] This review of motivational interventions follows the framework set out in the article by Martin and Dubbert (1984), Behavioral Management Strategies for Improving Health and Fitness. *Journal of Cardiac Rehabilitation, 4,* pp. 200-208.

exercisers social support and attention during and after exercise reinforces the exercise habit (Andrew et al., 1981, Heinzelmann & Bagley, 1970b; Martin et al., 1984; Massie & Shephard, 1971). Wankel (1985) reports, that "buddy support" can also provide this support. Other reinforcement approaches that have been attempted are behavioral contracting and token reinforcements.

Social Support: Based on research on structured social support in areas other than exercise adherence (Gottlieb, 1984; Turkat, 1980), Wankel and Associates (Wankel and Yardley, 1982a; Wankel and Yardley, 1982b and Wankel and Kreisel 1983) utilized various methods of social support to attempt to increase exercise adherence.[3] The studies incorporated elements of an educational and enviornmental approach to create a supportive enviornment in order to foster the desired behavior change.

In their intervention, Wankel and Yardley (1982a) included elements of leader, class, buddy (partner), and home support. The program was introduced to the participants and the exercise leader by the researcher and then the exercise leaders were encouraged to implement the in-class support program and to encourage the participants in implementing and maintaining their home-based support programs. Results indicated that the subjects who received the social support program attended more of the ten classes than did those who did not. Comments from the instructors were generally positive and they felt the social support program positively affected attendance.

Wankel and Kreisel (1983) took these observations into account and administered another intervention. This one contained the social support intervention as well as the group decision balance-sheet procedure (the balance sheet procedure will be discussed in detail later). The study used experienced fitness leaders who were responsible for introducing the program to the participants. Results indicated that the social support intervention had significantly better attendance than either the group decision

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[3] These three studies are reported in Wankel, L.M. (1984), Decision-Making and Social Support Strategies for Increasing Exercise Involvement. *Journal of Cardiac Rehabilitation, 4,* pp. 124-135.

balance sheet condition or the nonintervention control condition. Seven of the eight class leaders indicated that the social support program had benefitted their class by contributing to a positive class atmosphere. As part of the social support system, buddy support was implemented. Subjective feedback from class leaders indicated that although the exercise buddy system worked well with individuals who were already friends, or at least comfortable with each other, it was difficult to implement successfully with strangers.

Wankel and Yardley (1982b) also found that the method of establishing exercise buddies influenced the effectiveness of a structured social support program. New members joining a commercial health club were categorized into two groups: those who joined alone and those who joined with someone else. It was found that the participants who joined the club together and undertook the social support condition as exercise buddies exercised at the club more often than did those participants who joined alone and were paired with an exercise buddy by the club. After a review of the three studies, Wankel (1984) concluded that a structured program of social support can facilitate exercise attendance.

Behavior Contracting: Epstein and Wing (1979) and Kanfer (1975) suggest that behavioral contracting in verbal or preferably in a written form will enhance commitment. Behavioral contracting can be between a patient and therapist, a patient and family members, or it can involve others in the treatment program. According to Dunbar, Marshalla and Hovell (1979) behavioral contracting may be useful for the following reasons: (1) developing the contract involves patients in planning their treatment regimes; (2) the contract provides a written outline of what behaviors are expected, which can be used as a reference at a later time when details could otherwise be forgotten; (3) the contract elicits a formal commitment from the patient and others involved; and (4) the terms of the contract provide incentives to change the specified behaviors in order to gain the reward and/or avoid the punishment for noncompliance. Martin and Dubbert (1984) support behavioral contracting as a technique to increase exercise and dietary adherence. However, they suggest using the technique with care, considering the patient's rights, and

the effectiveness of the intervention technique.

Token Reinforcements: Epstein, Wing, Thompson and Griffin (1980) used behavioral contracting in conjunction with another reinforcement approach, token reinforcements. They found that both an attendance lottery (coupons which provided a chance to win a prize for each class attended), and a weekly attendance contract which provided for a $1.00 weekly deposit return contingent upon participation, significantly enhanced adherence of a 25 day (5 week) jogging program. Martin et al. (1984) did not receive as encouraging results in their study with a community population but suggest it was because of individualized support administered but unplanned for in the control group. Suggestions for other forms of reinforcement contingencies include token reinforcement (awarding tokens contingent on a behavior) for geriatric patients (Libb & Clements, 1969), and reinforcement by way of returning valuable personal items left on deposit (Wysocki, Hall, Iwata & Riordan, 1979). Faulkner and Stewart (1978) in their previously reported study, found of their four groups that the T-shirt (gift item to be given out upon completion of the course) technique was third at 35.5% effectiveness in retaining participants after the follow-up personal contact group and the test-retest group. Although these results are not encouraging, the subjective questionnaire revealed that 66.4% of the T-shirt group considered earning a T-shirt to be of some importance in completing the 10 week program.

The "Cooper points system" utilized in the Massie and Shephard (1971) study has a built in method of self-evaluation and feedback which is periodically activated by the individual performing a 12 minute run. Although adherence results in the "Cooper points system" group were not extremely favourable the authors remarked that it has relevance as a method of feedback. Cox (1984) notes the relevance of feedback and reward systems as do Heinzelmann and Bagley (1973) who recommend regular contact with medical or program personnel.

The use of fitness evaluations for motivational purposes (Bailey, Shephard, & Mirwald, 1976) has been shown to provide some encouraging results. Martin et al. (1984) found a monthly submaximal graded exercise test (treadmill or ergometer) to be a useful method of providing feedback and motivating involvement. Oldridge and Jones (1983) found that regular testing and feedback was one of the most helpful motivational strategies. In the Faulkner & Stewart (1978) study, the test retest group scored 81.6% effectiveness, of the four instruments they used, it was second only to the follow up personal contact.

STIMULUS CONTROL

This technique involves "making use of cues and prompts that stimulate, or are reliably followed by exercise" (Martin & Dubbert, 1984, p. 202). The authors provide some examples: Teaching people to lay out their exercise clothes the night before, wearing exercise clothes around the house and town, and carrying expensive exercise equipment in the car to stimulate the desired response of exercise. Brownell, Stunkard and Albaum (1980) increased the rate of stair climbing by posting a cartoon beside an escalator/stairway depicting a healthy happy heart bouncing up the stairs and coaxing others to do the same.

One method which has been shown to consistently increase commitment to desired behavior change is the decision balance-sheet technique.[1] Janis and Associates (1959, 1968, 1975, 1977) studied the decision-making process and postulated that the more relevant information considered prior to a decision, the greater the probability that subsequent behavior would be consistent with the decision. To this end they developed a decision balance-sheet technique with a grid to record the potential benefits and costs that could result from their decision. The typical procedure requires the subject to complete a

[1]The decision-balance segment is extracted from the review by Wankel, L.M. (1984), Decision-Making and Social Support Strategies for Increasing Exercise Involvement. *Journal of Cardiac Rehabilitation, 4,* pp. 124-135.

balance sheet grid that consists of the following categories: (1) utilitarian gains or losses (i.e., instrumental effects on self); (2) utilitarian gains or losses for significant others; (3) self approval or disapproval; and (4) approval or disapproval of significant others. The decision balance sheet is administered either by telephone or in person by an interviewer who explains, assists and supports the participant in compiling his/her grid.

The decision balance-sheet has been shown to facilitate attendance in a university based fitness class (Hoyt and Janis, 1975), a commercial fitness center (Wankel and Thompson, 1977), and a community based fitness class (Wankel and Graham, 1980). The three studies, in addition to taking place in different environments had slight methodological differences. Nevertheless, in all three cases the intervention increased adherence. This suggests that analyzing and being aware of a decision and the effects of that decision as well as taking the time to follow the process results in a better possibility of achieving the desired behavior. Wankel (1984), however, suggests some limitations. First, the long-term effectiveness has not been demonstrated (maximum ten weeks) and second, although positive effects have been consistently reported, the magnitude of the effects have not been large. Wankel recommends that the technique be modified or combined with other treatment approaches so that program adherence is more effectively enhanced.

COGNITIVE STRATEGIES

This classification emerges from the assumption that what individuals are thinking about, before, during, and after exercise can have a signficant impact on exercise adherence, particularly in the formation of the habit.

Goal Setting: In order to increase the likelihood of adoption of an exercise regime it is important that there be psychological reassurrences. Barriers may be overcome with assistance or support especially if there is evidence of goal attainment (Danielson & Wanzel, 1977). Wanzel (1978) reporting on a study of dropouts from an employee fitness program stressed that people who did not attain their objectives tended to drop-out much

earlier than did those who attained them. Within six months over 50% of the subjects were gone. Conversely only 36% of those who attained their objectives had withdrawn. Six month objectives were set in this study. Wankel noted the low goal achievement rate (53.2%) and suggested the utilization of goal setting for two week periods. Bandura and Simon's (1977) work with obese subjects supports the suggestion by Wankel that short term goal setting (two weeks in Wankel's suggestion, one week in Bandura and Simon's study) might better increase adherence.

A recent study (Martin et al., 1984) investigated the importance of setting proximal (weekly) versus distal (every six weeks) goals as they relate to exercise adherence. Contrary to the results of Bandura and Simon (1977) and the suggestion of Wankel (1985), proximal goal setting was not associated with better adherence (high mean attendance and three month exercise attendance). Martin et al. explain this "unexpected" result by suggesting that distal goal-setters may have done better in the exercise program, because less frequent goal-setting allowed greater flexibility and choice in daily and weekly performance prior to goal achievement day. The choice element in this study may have had some effect on the results. Another study (Thompson and Wankel, 1980) found that individuals who believed that their choices and preferences helped determine their exercise prescription had better adherence than did those who were told their preferences were not considered.

Associative/Dissociative Strategies: Associative strategies refer to cognitive strategies which emphasize being in touch with bodily functions occurring during the act of exercising. This technique where for example a runner focuses in on his/her heartbeat has facilitated exercise performance in trained athletes (Morgan, 1979; Morgan & Costill, 1972) but not in beginner exercisers (Martin & Dubbert, 1984). The latter group performed better when they were able to dissociate from the internal feedback resulting from the activity and concentrate on the external environment (i.e., relate to the sights observed in the outdoors while cross-country skiing rather than attending to the feelings in

their working arms).

In summary, many motivational techniques which may assist individuals to acquire the exercise habit have been discussed including shaping, reinforcement approaches, stimulus control and cognitive strategies. A consideration of procedures important for maintenance of the exercise habit follows.

Exercise Maintenance

To this point the motivational intervention literature review has focussed on assisting individuals through the initial phase of their exercise experience. The exercise maintenance stage seeks to support people in becoming autonomous in their exercise behavior so that they will continue to exercise on their own volition.

GENERALIZATION TRAINING

Generalization training prepares the participant for the transition from the structured exercise environment. It involves taking the exercise from its protected, structured setting into one that the participant can access when the program is over. Martin and Dubbert (1984) report this technique to be necessary and underused. In their research, they had participants do their exercises in their home trying to incorporate peer and family support to assist individuals to get comfortable with exercise in their own enviornment. The participant returned to the structured exercise class with the results of their effort and problems that they encountered were addressed. By the end of the class the participant was able to exercise autonomously.

REINFORCEMENT FADING

A part of generalization training is reinforcement fading which involves the removal of artificial reinforcements "piece by piece". It is hoped that these artificial reinforcements will be replaced with natural reinforcements such as: positive comments from others, increased feelings of self-control and self-esteem, increased energy levels, and

positive feelings from being active. The optimal end result is an individual who chooses and seeks to be active.

RELAPSE PREVENTION TRAINING

It is not uncommon for individuals to falter even after the exercise behavior has been adopted. For this reason researchers have looked at this issue to try and prevent relapse. Martin and Dubbert (1984) cite a number of Rosenthal's (1985) suggestions for relapse prevention. One idea they suggest is to discuss the possibility of "adherence slips" with new exercisers to prepare the exercisers for the possibility of the occurrence. This preparation (similar to a part of the decision balance technique described by Wankel, 1984) can reduce the detrimental impacts if the individual should falter. Another suggestion is to caution exercisers about the "abstinance violation effect". Sometimes individuals feel that they will never be able to recover should they once fail. By encouraging them that this will not result and that they should base their success rate on total results, rather than evaluation at each individual session, adherence can be improved. Exercisers should be warned of "high-risk situations" such as watching television prior to exercising or going on vacations that promote eating and drinking. A final suggestion is to plan a voluntary relapse. In this latter approach the authors insisted that their subjects voluntarily fail to exercise once a week. Martin and Dubbert (1984) reported that allowing their patients this liberty did not decrease adherence but rather increased confidence in their abilities to deal with possible relapse in the future.

Factors Affecting Dropping Out From Exercise Programs

This section will review the factors relating to reasons individuals drop out from exercise programs. Many of the reasons reported here will resemble both barriers to initial involvement as well as the obverse of the adherence question. It logically follows that people who adhere to programs might be dropouts if certain personal and/or program factors ceased to

exist.

Personal Factors

The dropout phenomena has been most fully addressed in studies on cardiac rehabilitation, where the dropout question is of greater health importance. Three major studies in this area are the Ontario Exercise Heart Collaborative Study (OEHCS) described by Oldridge (1984), the Cardiopulmonary Research Institute's (CAPRI) programs (Bruce, Frederick, Bruce & Fisher, 1976) and a Swedish study (Sanne & Rydin, 1973). Oldridge (1984) described some of the characteristics of dropouts from these programs as being smokers, blue collar workers and possessing inactive leisure habits. Other characteristics of the dropouts were lack of motivation/interest (Bruce, Frederick, Bruce & Fisher) and little enthusiasm and belief in the value of exercise (Oldridge).

Level of self-motivation assessed by the Self-Motivation Inventory (Dishman, Ickes & Morgan, 1980) has been reported to be related to continued involvement in vigorous physical activity. Dishman (1980), in a study of undergraduate females who volunteered for a crew training program, found self-motivation scores to be significantly lower among the dropouts. Ward and Morgan (1984) found no difference in self-motivation levels between adherers and dropouts in their university health and fitness program. Wankel and associates (Wankel & Graham, 1980; Wankel & Yardley, 1982a) in two separate studies did not find level of self-motivation to significantly affect program adherence.

Program Factors

Program factors in this review will encompass various social/recreational and convenience/accessibility factors. The importance of these factors has been noted earlier in the adherence section. A study by Wankel (1985) focussed on how recreationally oriented aspects affected adherence to an employee fitness type program. The results revealed that dropouts came to view the exercise program as less fun and less sociable than did the

continuing participants. Dropouts did not enjoy the program as much as did adherers. Morgan, Shephard, Finucane, Schimmelfing and Jazmaji (1984) undertook a prospective study which examined the attitudes, practices and physical characteristics of adults who enrolled in and adhered to a workplace fitness program. Low-level participants in their program came to view exercise as less "fun" and more "discipline". Social factors played a substantial role in adherence/dropout in a study comparing individualized exercise and a group gymnasium program (Massie & Shephard, 1971). Dropouts from this program were predominantly from the individualized exercise program. The researchers attributed this result to the lack of group atmosophere and fun and variety in the individualized program. The importance of spousal support has been noted earlier (Heinzelmann & Bagley, 1970b). Oldridge (1984) reported from the Ontario Exercise Heart Collaborative Study a lack of spousal support was the most prominent single factor associated with dropping out.

Convenience and accessibility factors are often reported to be the greatest reasons for non-participation and dropout. In response to a question dealing with obstacles to increased physical activity, both active and passive groups noted no time due to work pressures as the major obstacle; 56% for active people and 39% for sedentary people (Canada Fitness Survey, 1983). Durbeck et al. (1972) administered a questionnaire to participants in an exercise program of a federal agency six months after the start of the program. They found that the factors most often cited as having a negative influence on participation were directly related to the person's job, specifically work load and travel schedule. Oldridge (1984) noted that dropouts were more likely than adherers to report that exercise was inconvenient and that it interfered with work and vice versa. Wankel (1985), in an interview study of dropouts from an employee fitness program found that inconvenient time, lack of program flexibility, poor schedule and problems with the location were reported as reasons for withdrawing from the program.

Wanzel (1978) in an earlier study of employee fitness programs noted similar concerns. An inconvenient location in terms of distance of the facility from the

individual's home or place of work, coupled with any necessary re-arrangement of a participant's daily schedule were reported to have an adverse effect on adherence. To counteract such difficulties Wankel suggested that companies should investigate the possibility of incorporating a work-out period into the office hours of employees.

Summary

The first section on initial involvement revealed that the most common reasons for commencing physical activity revolved around health related factors (Dishman, 1982; Morgan, 1977; Wankel, 1980). Continued involvement on the other hand is usually dependent on non-health related factors (Heinzelmann & Bagley, 1970b; Massie & Shephard, 1971; Wankel, 1980). Participants who responded favourably to program factors such as: the social relations, the recreational aspects, the exercise progression, the program leadership, and who perceived the program as convenient were likely to comply to exercise regimes. On the basis of the limited research available, long-term, 12 months or longer adherence factors, appears to be influenced by the same factors as short-term adherence. Actually, some of the studies reviewed in the adherence section extended over a 12 month period or longer (Cox, 1984; Heinzelmann & Bagley, 1970b; Oldridge, 1984).

Social factors have been found to be important in promoting exercise adherence. Wankel's (1985) study which noted the importance of social groups, questionned continuing participants eight to ten months after initiating the program. In their study which extended over a seven month duration, Massie and Shephard (1971) found that a gymnasium group program had better attendance than an individualized program. The importance of spousal support was noted in an 18 month program (Heinzelmann & Bagley, 1970b). Furthermore, Oldridge (1984) in a four year cardiac rehabilitation (OECHS) program found spousal support to be the most prominent single factor associated with adherence.

Recreational aspects, also appear to be important factors in fostering long-term adherence. Again the Wankel (1985) study and the Massie and Shephard (1971) study which

both stressed the importance of fun to exercise adherence were of a relatively long term nature. Cox's (1984) analysis which stressed the importance of fun and variety arose from a questionnaire administered six months after a program was initiated. However, his 1984 report which referred to the program six years after it commenced, described a continued highly successful adherence rate which can be attributable in part, to the fun and variety aspects of the initial program.

Massie and Shephard (1971), have suggested that an initial low intensity level may be one of the important factors necessary to sustain interest in exercising. Cox (1984), also proposed that a slow rate of exercise progression might facilitate motivation while reducing the number of injuries due to exercise and therefore might minimize the number of dropouts.

Unfortunately the effect of leadership has not been systematically demonstrated. Heinzelmann and Bagley's (1970b) study is perhaps the only long-term study in the adherence section to have investigated its significance. Most of the other papers reviewed in the leadership section assume that the leader is vital to program success but provide little evidence to support this assumption. However, based on the reported importance of the leader to motivate, it would follow that this would be an important factor for long-term exercise adherence.

Finally, convenience/accessibility appears to be vital to increasing exercise adherence. Teraslinna, Partanen, Koskela and Oja (1969) in their nine month study of manager executives found the convenience of the program to be a major aspect which contributed to program adherence. Other studies stress the importance of convenience but they are generally surveys (Canada Fitness Survey, 1983; Wanzel, 1978) rather than long-term studies.

The literature has noted the importance of various factors to exercise adherence. However, exercise compliance as it relates to long-term (greater than one year) has rarely been studied. Moreover, this topic has received little attention in employee fitness settings. The current study will examine the importance of various factors as they relate to long-term exercise adherence arising out of participation in an employee fitness program.

III. METHODOLOGY

The general procedure for this study included: (a) the selection of the population and the setting; (b) construction of the instrument, and (c) collection and analysis of the data.

A. The Population and Setting

The population consisted of adults who enrolled in a Staff Fitness and Lifestyle exercise program in the 1983-1984 academic school year (Fall 1983, Winter 1984), who were employees of the University of Alberta at the time of the study. The study was delimited to individuals who enrolled in an exercise class designed and promoted for those with relatively low activity levels (new beginners, beginner or intermediate). Only the first exercise class that an individual enrolled in during the predetermined time period was included in the investigation.

The Staff Fitness and Lifestyle exercise classes included in this investigation were all run according to the objectives of the program which are: to provide programs for people to initiate, maintain or increase their level of physical activity and to try to "build independency" in the participants. The goals of the Staff Fitness and Lifestyle programs would be achieved if the participants emerged from the program as active, or more active then they had previously been. Further evidence for goal attainment would be if participants either enrolled in a further exercise class, or participated on their own in physical activity subsequent to participation in the Staff Fitness and Lifestyle Program. In attempting to achieve these goals Staff Fitness and Lifestyle program organizers have attempted to build the following factors into the exercise program: social support, encouragement to work at (not beyond) one's own exercise threshold, fun and variety and an educational component. The instructors were selected for their technical expertise as well as their ability to instruct and work effectively with others.

The exercise classes met twice a week, between 35-50 minutes per session for a 10 week, 20 session period. The general framework for each class was 5 to 15 minutes of stretching and warm-up exercises, 8 to 18 minutes of aerobic activity and 10 to 20 minutes of muscular endurance, flexibility and cool down exercises. The Yoga classes were different because they

placed a greater emphasis on flexibility, body posture and body awareness aspects, and less emphasis on the aerobic component. The breakdown of the population included the following types of exercise classes and numbers of people within those classes. In the Fall of 1983 the participants included 61 people from aerobics dance and aerobics exercise type classes, 24 people who took aquacise, 34 who registered in calisthenics jogging-type classes, and 24 who participated in Yoga. In the Winter of 1984 aerobic dance and aerobic exercise type classes had 31 people. Aquacise classes included 15 enrollments while calisthenic jogging type classes and Yoga recorded 16 and 15 people respectively. In total 220 people formed the population.

B. The Instrument

A self-administered questionnaire comprised of both open-ended and closed-ended questions was used for this investigation. The overall content of the questionnaire was divided into six general sections. Written instructions preceeded each section. The first section, dealt with physical activity involvement prior to the exercise program. Two questions were asked. One was open-ended and dealt with the type of activities pursued while the other was a forced choice question inquiring into the respondents activity level for the year prior to joining the exercise program. The second section of the questionnaire dealt with program information and included questions on reasons for joining the program, goal attainment, satisfaction with the program, and attendance in the program.

The third set of questions focussed on the effects of the exercise program on long-term exercise involvement as well as the importance of various program variables. Three questions were asked to determine the effect of the program on subsequent exercise involvement. Ten Likert-scale type items were posed to investigate the effect of specific program variables on exercise involvement.

The fourth section inquired into the respondent's present physical activity level while the fifth section delved into the reasons for the respondents being involved in physical activity over the past year. Twelve Likert-scale type questions were included in this section. The last

portion of the questionnaire addressed general demographic information such as the respondent's gender, age, occupation, and educational background. (See Appendix 2 for the complete questionnaire).

C. Collection and Analysis Of The Data

The questionnaires were sent to the sample and returned via campus mail. The responses were then coded for computer analyses and analyzed as follows. The effect (change in physical activity level) of participation in an employee fitness program upon long-term involvement in physical activity, was investigated by performing a one tailed t-test analysis on reported pre and post-program reports of physical activity levels.

Two other questions asked whether physical activity level remained the same, increased or decreased; firstly as a result of the program (a one to one and one half year period) and secondly from one year prior to the program until one year after the program (a two to two and one half year time period). These questions were followed by a Likert-scale type question to determine the extent of the change in physical activity level. The above results were analyzed by descriptive statistics, frequencies, means and standard deviations.

The secondary purpose of the study, to examine the relative importance of various factors to long-term exercise involvement, was analyzed by calculating the means of the responses to the Likert-type scale questions on the effect of the program as well as on the reasons for long-term activity. To determine the utility of these factors for predicting increased involvement, stepwise linear multiple regression analyses were performed.

IV. RESULTS

This chapter first sets the stage for the results by describing the population and information pertaining to the validity of the responses and then presents the results according to the purposes of the study as stated in the problem statements in Chapter 1. Each table is discussed regarding means and standard deviations or frequencies and percentages. The presentation of percentages will be done according to "valid percentages" (that is the percent of total responses, excluding missing cases). All mean scores refer to scores derived from the 5 point Likert-scale type questions.

A. The Sample

Out of the 220 people who were sent the questionnaire, 124 (56%) completed and returned the questionnaire by the due date. The response rate may have suffered because the questionnaire was sent out in the summer when many university employees were difficult to reach. The frequency and percentage data pertaining to the gender, age, educational background and type of exercise class enrolled in by the respondents presented in Table 1.

From the table it can be determined that the majority of the respondents were female (72.1%). The age distribution was quite uniform with each each age category containing between 20.3% and 29.3% of the respondents, the 60 or older category, which contained 1.6% of the respondents. The respondents were generally well educated with 43.4% having completed at least one graduate degree. Finally, of the four types of exercise programs, participation was most frequent in aerobics type classes, while the others were fairly well distributed with approximately 18% of the respondents enrolled in each.

Table 1

Descriptive Characteristics of the Population

Variable	Frequency	Percent
Gender		
Male	34	27.9
Female	88	72.1
Age		
less than 29	25	20.3
30-39	36	29.3
40-49	33	26.8
50 or more	29	23.6
Educational Background		
High School Graduate	24	19.7
Community College Graduate	20	16.4
University Undergraduate Degree	25	20.5
University Graduate Degree	53	43.4
Exercise Class Enrolled In		
Aerobics	57	46.0
Aquacise	24	19.3
Calisthenics/Jogging	23	18.6
Yoga	20	16.2

Comparison to the population selected is not possible on three of the four characteristics of the respondents. Initial information on the population did not reveal their gender, age or educational level. However, past records of Staff Fitness and Lifestyle participants reveal that females make up about 70% of the participants, the age of the participants have been generally younger than those seen in this study, and individuals with high levels of education form the majority of the participants. The only characteristics of the respondents that can be directly compared to the population sampled is, the exercise class in which they enrolled. On this measure, aquacise and aerobics type classes were slightly overrepresented at 63% and 61% of the respondents while calisthenics-jogging classes and Yoga were slightly underrepresented at 49% and 51% of the respondents.

A series of one-way analyses of variance were performed to determine whether gender, age, and educational background had an effect on the important variables of this study. Most of the analyses revealed no significant effect due to these factors. The analyses that have resulted in a significant effect are reported in their appropriate sections.

B. Validity of Responses

To check the validity of respones to the questionnaire, the responses to two questions measuring similar factors were correlated. These questions were related to the primary purpose of the study: to investigate the change in physical activity level. Two questions directly inquired into change in activity level: one dealt with change in activity level as a result of participation in the exercise program and the other dealt with change in activity level over a period of two to two and one half years.

A cross-tabulation on the responses to those questions indicated that 86.7% of the respondents noted, a) the effect of the program increased their activity level, and b) an increase in their activity level over the long-term. A statistically significant ($p<0.01$) correlation coefficient was obtained. The validity of the responses are further supported by the fact that 60 respondents indicated that their activity level increased over the long-term, while the results of the reports of 59 people indicates that they sgificantly increased their activity level according to the days per week measure (which also dealt with a long-term time period).

C. Effect of The Program on Long-Term Activity Involvement

In order to examine the effect of participation in the program upon later fitness involvement, a number of questions related to change in activity level were posed. Table 2 presents descriptive results (frequencies and percentages) for two of these questions.

From Table 2 it can be seen that 61.8% of the participants reported that their involvement in the Staff Fitness and Lifestyle Program increased their subsequent physical activity level. Furthermore, their mean increase on a scale from one to five, where one

represents "not at all" and 5.Ne represents "a great deal", was 3.49. On the second measure of change in fitness involvement, 52% indicated that their activity level in the period since completion of the program was greater than it was one year prior to it. Moreover, participants indicated that their mean increase (on the scale noted above) was 3.46. When this was broken down by gender it was found that females reported a significantly higher change than did males [F (1, 111) = 3.01, $p<0.05$, $M_1 = 2.16$, M_2 2.53].

Table 2

Frequency Information Pertaining to the
Effect of the Program on Physical Activity Level
And Change in Activity Level From Pre to Post Program

	Effect of Program (N 123)		Change in Activity Level (N =114)	
Change in Activity Level	Frequency	Percent	Frequency	Percent
no change	44	35.8	44	38.6
increased it	76	61.8	60	52.6
decreased it	3	2.4	10	8.8

An additional measure to determine change in activity level was to compare the number of days per week of physical activity among the respondents one year prior to the program and one year since program termination. Prior to the program, individuals exercised at a mean of 2.36 (S.D. ± 1.79) days per week, while the corresponding figure for after the program was 2.80 (S.D. ± 1.78). A one tailed t-test analysis indicated that the post-test mean score was significantly greater than the pre-test mean score [t (d.f.=120)= 3.53, $p<0.05$.]. Thus the three methods utilizied to measure the change in physical activity level, all indicated an increase in levels of physical activity from before to after participation in the program.

D. Effect of Various Program Factors Upon Long-Term Activity Involvement

This section provides information pertaining to the reported importance of various factors to long term fitness involvement. All means are derived from five point Likert scale type questions on which one represents "not at all important" and five represents "very important."

The mean score on, "the extent that the participants attained the goals they were seeking from the program" was 3.71 (S.D. ± .976). The mean score on the measure of "satisfaction obtained from the program" was 4.19 (S.D. ± .863). Out of the 20 classes in each exercise program, 84.4% of the respondents reported they missed from 0-5 classes. Of the respondents, 10.4% reported they missed from 6-10 classes and 5.2% of the respondents noted that they missed 11 or more classes.

Table 3 presents the descriptive statistics pertaining to the realization of certain outcomes from being involved in the exercise program. These questions were only answered by those respondents who noted an increase in their activity level as a result of the program.

Table 3

Descriptive Statistics Pertaining to the Realization of Various Outcomes as a Result of Participating in the Exercise Program

Variable	Mean (N = 75-77)	Standard Deviation
The Exercise Program:		
helped you come to feel better	4.49	.62
showed you the correct way to exercise	4.17	1.03
exercised you at a comfortable pace	4.05	1.09
gave you confidence to achieve your goals	3.95	.99
provided friendly encouragement	3.94	.91
leader encouraged you	3.84	1.20
influenced your beliefs about exercise	3.67	1.30
showed you exercise could be fun	3.56	1.17
showed how convenient exercise can be	3.43	1.12

Further analyses of variance and follow-up Scheffe post hoc tests revealed significant differences between individuals of different genders, age groups and education levels on four of the factors reported in Table 3. A significant age effect was found for the factor, "the exercise program helped you come to feel better." A Scheffe post hoc comparison test indicated that group 4 was significantly different from group 3 which indicates this factor was significantly more important for individuals 50 years of age and older than for people between 40 and 49 years of age [$F(3, 71) = 2.82$, $p<0.05$, $M_1 = 4.44$, $M_2 = 4.40$, $M_3 = 4.24$, $M_4 = 4.77$]. "The exercise program showed you the correct way to exercise" obtained significant differences on all three demographic variables which were gender, age and educational background. Females recorded significantly higher scores than did males [$F(1, 74) = 2.53$, $p<0.05$, $M_1 = 4.57$, $M_2 = 4.06$]. Individuals 50 years of age and older (group 4) indicated that this factor was significantly more important in comparison to people younger than 29 years of age (group 1) [$F(3, 72) = 3.11$, $p<0.05$; $M_1 = 3.69$, $M_2 = 3.95$, $M_3 = 4.24$, $M_4 = 4.61$]. High school graduates (group 1) obtained significantly higher scores on this factor than did those who completed a university undergraduate degree (group 3) [$F(3, 71) = 3.94$, $p<0.05$; $M_1 = 4.65$, $M_2 = 4.50$, $M_3 = 3.56$, $M_4 = 4.10$]. Another factor that was significantly more important for individuals of different age groups and educational backgrounds was "the exercise program exercised you at a comfortable pace". Results showed that individuals 50 years of age and older (group 4) found this factor to be significantly more important than did individuals who were in the younger age groups of less than 29 (group 1) and 30-39 (group 2) [$F(3, 72) = 3.27$, $p<0.05$; $M_1 = 3.69$, $M_2 = 3.70$, $M_3 = 4.06$, $M_4 = 4.57$] and that those individuals with a high school degree (group 1) rated this factor more important than did those people who had a university undergraduate degree (group 3) [$F(3, 71) = 2.93$, $p<0.05$; $M_1 = 4.47$, $M_2 = 4.42$, $M_3 = 3.50$, $M_4 = 3.97$]. Finally, the influence of the exercise leaders' encouragement was rated to be significantly more important for high school (group 1) and college graduates (group 2) than for those who completed a university undergraduate degree(group 3) [$F(3, 70) = 3.25$, $p<0.05$; $M_1 = 4.12$, $M_2 = 4.33$, $M_3 = 3.07$, $M_4 = 3.87$].

A stepwise multiple regression analysis was performed to investigate which outcomes were most related to increased levels of physical activity involvement. The background variables of gender, age, educational level and class type were included with the outcome variables in this analysis.

Results of the stepwise multiple regression analysis revealed that only two factors entered into the equation as predictor variables. "Goal attainment" entered on the first step. It accounted for 20% of the variance ($R = .45$, $R^2 = .20$, $P < .01$). "Convenience" entered on step number two. It accounted for an additional 10% of the variance ($R = .55$, $R^2 = .30$, $P < .01$), thus, together the two variables accounted for 30% of the variance.

Respondents who indicated that they participated in physical activity since completion of the exercise program, (111 respondents), were asked a battery of questions as to the importance of various goals for being involved in activity and the social support received from various significant others. Means and standard deviations were calculated and are reported in Table 4.

Table 4

Descriptive Statistics Pertaining to Reasons for Continued Involvement in Physical Activity

Variable	Mean (N = 107-111)	Standard Deviation
To improve physical fitness	4.49	.67
Convenient opportunities to exercise	3.96	1.19
To control weight	3.73	1.24
To reduce stress and anxiety	3.60	1.22
To have fun	3.55	1.16
For self challenge	3.35	1.23
To protect against disease	2.72	1.30
For companionship	2.33	1.27
Encouragement from friends	2.05	1.21
Encouragement from your spouse	2.01	1.23
Encouragement from colleagues	1.83	1.08
Encouragement from your work supervisor	1.43	.87

A further analysis revealed that the factor "to control weight" was significantly more important for females than for males [$F(1, 108) = 3.50$, $p<0.05$; $M_1 = 3.07$, $M_2 = 3.96$]. This factor was also significantly more important for high school graduates (group 1) than for individuals with university graduate degrees (group 4) [$F(3, 105) = 4.71$, $p<0.05$; $M_1 = 4.32$, $M_2 = 3.94$, $M_3 = 3.91$, $M_4 = 3.26$]. The factor, "to protect against disease" was a significant variable for the age classification [$F(3, 105) = 2.93$, $p<0.05$; $M_1 = 2.35$, $M_2 = 2.35$, $M_3 = 3.11$, $M_4 = 3.04$]; however, a Scheffe post hoc comparison test indicated that no groups were different at the $p<0.10$ level. "Encouragement from your work supervisor" was a significantly more important factor for females than it was for males [$F(1, 105) = 3.73$, $p<0.05$; $M_1 = 1.21$, $M_2 = 1.50$].

To determine which of the factors reported in Table 4 best predicted increased exercise involvement they were entered into a stepwise multiple regression analysis. The background characteristics of gender, age, educational background and type of exercise class were also added to the list of predictor variables.

The stepwise multiple regression analysis indicated that only two factors entered into the equation as predictor variables. The factor that entered on the first step was "self challenge". It accounted for 14% of the total variance ($R = .37$, $R^2 = .14$, $P < .01$). "To control weight" entered on step number two. It accounted for 7% additional variance ($R = .45$, $R^2 = .21$ $P < .01$.), so that together the two variables accounted for 21% of the variance.

Table 5 presents the frequency and percentage data for the reasons for registering in the original fitness program and for re-enrolling or for not re-enrolling in a subsequent fitness program. From the Table it can be seen that the majority of the respondents (75.5%) registered in the exercise program for health related reasons. A cross-tabulation revealed that there was a positive linear relationship between age and the frequency of reporting health related reasons for exercising. The group of individuals under 29 years of age reported that health related reasons accounted for 70% of their rationales for registering in the program. The rest of the age groups 30-39, 40-49, and 50 and over recorded 77.8%, 84.4% and 89.3% respectively. This category included reasons that implied some sort of physiological or psychological health benefit. Typical examples were: to get in shape, to keep in shape, for physical fitness, for cardiovascular fitness, for weight control, to tone the body, for flexibility, to feel better, to build stamina, for stress management and relaxation. The second category "enjoyment" (12.7% of the responses), included reasons that encompassed recreational and social aspects of the program. This list included: for fun, for excitement, for variety, something to do, to acquire skills, to meet friends, for group encouragement, and for support. The final category, "programmatic/situational" (16.7% of the responses), included the type of factors inherent in an organized exercise program, such as: convenience, organization, regularity, the routine and commitment associated with the organized exercise setting.

Table 5

Frequency Data Pertaining to Reasons For:

(a) Registering in the Original Fitness Program,
(b) Re-enrolling in a Subsequent Program or,
(c) Not Re-enrolling in a Subsequent Program

Category Label	Frequency	Percent
(a) Reasons for Registering		
Health	133	75.6
Enjoyment	23	13.1
Programmatic/Situational	20	11.4
(b) Reasons For Re-enrolling		
Health	38	51.0
Enjoyment	16	21.0
Programmatic/Situational	21	28.0
(c) Reasons For Not Re-enrolling		
Lack of Time	10	19.6
Program Problems	13	25.5
Unavailable	11	21.6
Lack of Interest	5	9.8
Exercise Elsewhere	12	23.5
(a) Total Responses = 176* Valid Cases = 121		100.0
(b)Total Responses = 75* Valid Cases = 50		100.0
(c)Total Responses = 51* Valid Cases = 41		100.0

*Accounts for more than one response from some respondents

Reasons for re-enrolling, which are presented in Table 5 were divided into the categories of "health", "enjoyment", and "programmatic". The "health" category included such aspects as: to keep fit and healthy, to gain energy, for rehabilitation (doctor's orders), for weight control and stress management. The "enjoyment" category included such responses as: fun, enjoyment, social variables and acquired skills. Finally, "programmatic" factors included: the facility, remission of fee, convenience, organization and quality of the program and of the instructors. The percentage of the total responses falling within the three categories were: "health", 51%; "enjoyment" 21% and "programmatic" 28%.

The bottom part of Table 5 presents the five categories under which the reasons for not re-enrolling were grouped. The category "lack of time" referred to insufficient time due to pressures of work. "Program problems" encompassed: unsuitable, too expensive, inconvenient and poor leadership. "Unavailable" referred to: pregnant, doctor's orders, or on holiday. "Lack of interest", included: busy doing other things, perhaps later and, finally; "exercise elsewhere" encompassed learned what I needed to know, exercise on own or exercise elsewhere. In considering the "reasons for not re-enrolling" it is useful to note that 23.5% of the respondents continue to exercise although not with the Staff Fitness and Lifestyle program.

Responses to an open-ended question pertaining to factors that affected the respondents physical activity level since completion of the program were subdivided into positive and negative factors. Table 6 provides a breakdown of the frequency responses in each of these categories.

Five categories on the positive side and four categories on the negative side were developed. Responses to the positive side along with a description of each are presented below. The type of responses in the "health" category were fitness and health related, such as: stress management and more energy even during advancing age, decreased or stopped smoking, better sleeping and eating, and became aware of the need for exercise. The second category, "enjoyment" included responses such as: acquired skills, happier outlook, for enjoyment, for camaraderie and colleague support. The third category "active on own" included, active on own

and increased activity. The fourth category, "programmatic/situational" generally dealt with convenience and specific program factors such as: convenience, organized, safe and low activity level of program. The sole response in the "miscellaneous" category noted the effect of the media. Responses to the "positive" only side revealed that, the three categories, health related factors, enjoyment factors and active on own reasons each accounted for approximately one third of the responses.

Table 6

Frequency Data Pertaining to Open-Ended Responses on Factors Affecting Physical Activity Level (a) Positively or (b) Negatively

Category Label	Frequency	Percent
(a) Factors Positively Affecting Activity Level		
Health	18	19.1
Enjoyment	16	17.0
Active on Own	21	22.4
Programmatic/Situational	2	2.1
Miscellaneous	1	1.1
(b) Factors Negatively Affecting Activity Level		
Lack of Time	16	17.0
Unavailable	16	17.0
Inconvenient	3	3.2
Lack of Social Support	1	1.1
Total Responses = 94*		100.0
Valid Cases = 78		

*Accounts for more than one response from some respondents.

The four categories that emerged on the side describing factors which negatively affected activity level were: "lack of time", "inconvenient", "unavailable" and "lack of social support". "Lack of time" was reported to be as a result of work or family pressures, while "unavailable" was the categorization used for those who were away from campus or injured. "Inconvenient" meant a conflict with one's work schedule.

An attempt was made to try to categorize the respondents based on their change in type of activity pursued prior to and after the program. Type of activity refers to either organized (i.e., employee fitness programs) or non-organized (i.e., alone or on own with friends). A review of the responses revealed the following trends. Approximately 15% decreased their physical activity involvement, approximately 25% undertook a similar type of activity prior to and after the program, approximately 20% increased their involvement in organized type of activities and approximately 40% increased their participation in non-organized activities.

V. DISCUSSION OF RESULTS

Although there is limited information on the characteristics of the specific population from which the sample of the study was drawn, except for a slight age discrepancy the sample appears to be quite comparable to the overall population of individuals who have participated in Staff Fitness and Lifestyle programs. The age discrepancy was that more people were in the higher age groups; 40-49 and 50-59 and fewer in the lower age groups, under 29 and 30-39, than one would expect based on the demographic data on the general population that participates in Staff Fitness and Lifestyle programs. This discrepancy may be attributed to the fact that high intensity level classes were excluded from the study. These classes have been known to be populated primarily by the younger age groups. The high percentage of female respondents in the sample (70% as compared to 30% male) is similar to the population make-up of Staff Fitness and Lifestyle participants.

As the sample was drawn from a very particular population, staff and faculty at a large Canadian university, it is not representative of the adult population at large. The unique nature of this population is reflected in the extremely high average education level of the population.

A. Validity of Responses

Before discussing the results it is important to recognize the limitations of the data. The data were of a retrospective nature collected one to one and one half years after participation in the program and some questions dealt with information going back two to two and one half years. It is therefore possible that the results may reflect selective memory processes on the part of the participants. One further limitation is the response rate.

As a check on the accuracy of individual responses a cross check was performed using related items pertaining to the change in physical activity level. Eighty six percent of those who noted the effect of the program on increasing their physical activity level, (over a one to one and one half year period) also responded that they increased their physical activity level over a two to two and one half year period. There was a significant ($p < 0.01$) relationship between

these two measures.

B. Effect of the Program on Long-Term Activity Involvement

Sixty two percent of the respondents noted an increase in their physical activity level as a result of participation in the Staff Fitness and Lifestyle program. The primary objective of the program was achieved for this group especially if further long term measures indicated that they continued to participate in physical activity (to be discussed later). Thirty six percent of respondents reported no change in their physical activity level as a result of the program. At first glance this might appear to reflect negatively on the program. Information on the level of activity prior to the program, however, indicated that individuals who reported no change in their activity level as a result of the program were active on the average 2.9 days per week prior to the program whereas those who noted an increase as a result of the program had been active on the average 2.0 days per week. Thus it may be concluded that many of the people who did not increase their activity level as a result of the program were already participating at a moderately high level, approximating the three to five day per week recommendation of the American College Of Sports Medicine (1978).

Only three individuals indicated that they decreased their physical activity level following their involvement in the program. A further cross-tabulation with the question asking what factors affected the participants' activity level revealed that one of those three people noted a lack of time and the other two were either injured or away from the university campus.

The finding that 62% increased their level of physical activity involvement as a result of the exercise program and that 36% continued their already moderately high level of activity supports the utility of the programs for solidifying participants involvement in fitness, for beginners, as well as those who were already active. Moreover, considering the literature which suggests that long-term exercise adherence is affected by both company fitness programs which provide an introduction to exercise (Cox, 1984) and initial program adherence in the first three to six months (Dishman, 1982), it would seem that the Staff Fitness and Lifestyle program

might make a contribution to enhanced activity involvement over the long-term. Some evidence consistent with this perspective was obtained. Individuals were asked to compare their physical activity level the year prior to joining the exercise program with their physical activity level since completion of the exercise program (two to two and one half years later). Has it remained at the same level, or has it increased or decreased? Results of this question revealed that 52.6% of the respondents indicated an increase in their physical activity level, 38.6% reported no change and 8.8% reported that their activity level decreased. Of the ten people whose level of physical activity had decreased, seven responded to the question, "what other factors have affected your physical activity level"? Of those seven, three said they did not have enough time, three were injured or away from the campus and one participated elsewhere in some sort of physical activity.

The finding that over one half (52.6%) of the respondents indicated an increase in their activity level over a two year period reflects positively on the program's impact on long-term exercise adherence. This is particularly true for females who increased their activity levels significantly more than did males. This can be considered so even though fitness and participation in physical activity is popular and some increase can be considered to be as a result of other factors such as social norms. The finding is noteworthy when considering that over 50% of initial program registrants generally drop out within six months (Dishman, 1982; Morgan, 1977; Oldridge, 1982). The impact of the program is further supported by Oldridge's (1984) suggestion that compliance with an exercise program does not necessarily mean the habit will be maintained after its completion. As was discussed earlier, the result of the "no change group" is not necessarily a poor indication. Considering the tendency of individuals to drop out of exercise programs over time, the group of people who did not change their level of physical activity must be considered favourable when their relatively high level of initial involvement is taken into consideration. The results of the first two groups, which reveal that over 90% of the total respondents were active participants, are extremely positive. Furthermore, consideration of the days per week of physical activity measures for all groups, prior to and after the

program, reveals that there was a significant increase in physical activity level.

The final method utilized to determine program effectiveness, information on whether or not individuals re-enrolled in the Staff Fitness and Lifestyle program, indicated that 60% re-enrolled and 40% did not. It is noteworthy that of the 40% that did not re-enroll, 25% noted that they exercised elsewhere. Sixty percent re-enrollment might appear high when considering that one of Staff Fitness and Lifestyle's goals and the goals of many employee fitness programs, is to build independency. However, the importance of convenience and other programmatic/situational factors (to be reported) is responsible to a large degree for this result. It was the reason given by 28% of those who re-enrolled. Furthermore, to build independancy does not necessarily mean people will not re-enroll; more importantly it means people will seek out opportunities to exercise on their own. Increased activity anywhere, be it within the offered programs (program re-enrollment) or involvement elsewhere could thus both be considered to be congruent with the program's goals.

C. Effect of Various Program Factors Upon Long-Term Activity Involvement

The high mean score on, "satisfaction with the exercise program" along with the overall high scores on the programmatic factors contributing to participants increased involvement in physical activity indicate the importance of a variety of factors to a successful program.

The factor that had the highest mean score, "the exercise program helped you come to feel better" is a health related reason and supports the literature on reasons for being active (Canada Fitness Survey, 1983; Heinzelmann & Bagley, 1970; Wankel, 1985). This factor was of particular importance, for individuals in the 50 and over age category, most likely because older individuals fear the onset of disease associated with the aging factor. Although this health related reason ranked most important according to mean scores, a further analysis indicated that it was the non-health factors that best discriminated between those who increased their physical activity involvement and those who did n

The reason that elicited the second highest mean score was, "the exercise program showed you the correct way to exercise". This factor was noted to be important by high school graduates, as compared to university graduates; by females as contrasted with males, and by individuals over 50 years of age, as compared to people in the less than 29 age category. This pattern of results probably just reflects the fact that the variables were inter correlated. That is, in this particular sample the females were older and more highly educated than the males. Although it is undetermined which of these factors would be most responsible for the importance of the "correct way to exercise" factor it would seem that the level of education might be important. With respect to autonomy in exercise which may foster long term adherence, this educational reason must be considered favourable. "The exercise program showed you how to exercise at a comfortable pace" is consistent with the literature that suggests that a slow rate of exercise progression increases adherence especially among individuals unaccustomed to exercise regimes (Cox, 1984; Massie & Shepard, 1971; Wankel, 1985). Since the population for the study were of a beginner to intermediate level, it would be expected that they would put considerable emphasis on this factor. Elderly individuals find this factor to be of particular significance probably because for them strenuous exercise might be particularly uncomfortable. The importance of the factor, "the exercise program gave you confidence to achieve your fitness goals", is consistent with the literature which notes the importance of goal attainment to exercise adherence (Martin & Dubbert, 1984; Wanzel, 1978). Further support for the importance of fitness goals, specifically the attainment of goals, which recognizes the extent to which participants attained their goals from the program, arose in a follow-up analysis described below.

A multiple regression analysis was undertaken to describe more precisely which factors could best predict higher levels of physical activity. In the results of the analysis, two variables emerged as being significant predictor variables. The first of these was "goal attainment" which accounted for 20% of the variance. The second was, "the exercise program showed how convenient exercise can be" which accounted for an additional 10% of the overall variance. In

combination the two variables accounted for 5% of the total variance.

Wanzel (1978) has noted the importance of goal attainment for exercise adherence. Reporting on a study of drop outs from an employee fitness program, he stressed that people who did not attain their objectives tended to drop out much faster than those who did attain their objectives. Within six months of commencement of the program over 42% of the non attainers had withdrawn. Conversely only 60% of those who attained their objectives had withdrawn. Wanzel suggested that participants should develop realistic and specific objectives which could be attained within a two week period. He suggested that new short term goals should be set and the procedure should be repeated over at least a six month period. Martin and Dubbert (1984) recognized the importance of goal setting and goal attainment and set out to evaluate the relative effectiveness of proximal (weekly) and distal (every six weeks) exercise goal setting. They found that distal goal setting by participants was more effective for facilitating adherence. They explained the result by noting that distal goal setters may have done better in the exercise program because less frequent goal setting allowed greater flexibility in daily and weekly performance prior to goal attainment day. Further research is required to reconcile the divergent results of the two studies pertaining to the relative advantages of short-term and long-term goals.

"The exercise program showed you how convenient exercise can be" was the second most important predictor variable. The convenience factor was included in this investigation because of the substantive evidence noting the importance of convenience to exercise adherence (Andrew et al., 1981; Dishman, 1982; Teraslinna, Partanten, Koskela, & Oja, 1969; Wanzel, 1978). With the provision of an on-site program and a schedule tailored to fit the bulk of the university's staff and faculty work schedule, the inconvenience factor should have been minimizied. The multiple regression analysis indicated that the convenience factor was related to increased activity level. This result not only supports the importance of convenience but also the relevance of educating people as to the proximity of various exercise programs as well as varied physical activity opportunities. Promotional efforts can also contribute to further this

education. Lifestyle counselling should further incorporate the awareness of the possibility of making exercise convenient in one's life. Within this definition of convenience is not only the physical proximity of the exercise setting but also the psychological distance from the client to the class (Burgess, Rudnicki, Hill & Glassford, 1985). The authors note that these psychological factors may include the ease of access to changing and shower rooms, security of personal effects and high level of precision in starting and ending activities. Hence, the individual must not only be able to get to the class, they must perceive it as being convenient. Besides employee fitness programs, community resources including the proximity of outdoor environments should be highlighted. Finally, people should be consulted as to how to decrease the psychological and/or actual distance so as to make the exercise experience as convenient as possible.

To effect long-term involvement in physical activity via an organized exercise program, the first step must be to create a program that emphasizes the health benefits of exercise. The program should also encompass the vital non-health factors such as: social support, recreational aspects, slow rate of exercise progression, qualified leadership, and convenience. Attention should, however, be focused on goal attainment and convenience factors especially if higher levels of exercise involvement are desired. Finally, an examination of factors other than those studied here is certainly warranted because 70% of the variance in the increased activity measure remains unexplained.

The examination of factors that were important to long-term involvement revealed that health related factors were the most important reasons. This was of particular importance for individuals in the older age groups. Since one's vital capacity decreases with advancing age it would seem logical that as an individual gets older, exercising for health related reasons gains importance. The overall high ratings on the health related variables are consistent with the literature suggesting the importance of health related factors to exercise (Canada Fitness Survey, 1983; Heinzelmann & Bagley 1970b; Perrin, 1979; Wankel, 1985). With respect to distinguishing factors of adherence, the literature suggests that non-health factors such as

social support (Heinzelmann & Bagley, Massie & Shephard, Warkell) and recreational aspects (Cox, 1984; Gerson, 1983, Heinzelmann & Bagley, Massie & Shephard, 1971, Warkell), are important. Referring to social support, Heinzelmann and Bagley (1970) stated that, "physical activity is apparently often viewed as a social community - persons often prefer to exercise with another person or with a group rather than alone (pp. 906-907). With respect to recreational aspects, Gerson suggests that exercise should be made to be fun in order to have the participant enjoy the play nature of the activity which will result in exercise being its own reward, thereby increasing adherence.

With all the previously reported support for the influence of social factors to exercise adherence it is interesting to note the low measures (ninth through twelfth place) obtained in this study. Four explanations are forwarded. First, since this measure dealt with long term adherence and the participants were active throughout the two year span, perhaps they no longer needed the social support that is required during initiation. Cox (1984) speculated that this might have been the case in the employee fitness study which he reviewed. Second, the short time duration of many of the exercise classes, in particular the lunch-time ones, often does not permit the forming of social bonds. Third, perhaps the exercise classes did not place much emphasis on social support factors. Aerobics or dance-type classes which form the great majority of the sample, generally focus on the exercise/dance routine. This focus may have minimized the development of social support. Fourth, perhaps the high education level of the population reflected a knowledge of the benefits of exercise, which were sufficient reasons for participation. Further investigation would be needed to determine which, if any, of the above mentioned explanations might account for the lack of the importance of social support in this study.

Although health factors were found to be the primary reasons for long-term involvement according to the mean scores, a multiple regression analysis found a notable recreational factor to be more important in predicting higher levels of physical activity. Although placing sixth on the rank order of means, "self challenge" emerged as being the

primary predictor variable and accounted for 14% of the variance. The other factor that emerged as being an effective predictor variable was, "to control weight". It accounted for eight percent of the variance and in conjunction with self challenge was responsible for 21% of the overall variance in the level of physical activity variable.

Self challenge implies that individuals seek and should be encouraged to seek out challenging opportunities. In this regard, models such as that of the flow experience (Csikszentmihalyi, 1975) become important. The flow experience which is posited as a crucial component of enjoyment, refers to the holistic sensation that people feel when they act with total involvement. In order for the enjoyment and the flow experience to arise, the individual must perceive the challenges (action opportunities) to match his/her skills (action capabilities). When the situation demands more than the individual's skills can match, a state of worry and anxiety ensues. Conversely, a situation wherein the individual's skills are not tested results in boredom and anxiety. An activity in which the participant experiences a flow experience on the other hand is experienced as intrinsically rewarding and more satisfying. This model provides a tool from which program administrators, exercise leaders and individuals can work. Individuals should be encouraged to work at, not beyond their own pace. Too difficult a task might result in worry or anxiety. A task which is too easy, could result in boredom or anxiety. Furthermore, this model might account for the changes that people go through over time. As an individual improves on a task he/she must receive encouragement either from within, or from others to continue to strive for attainable challenges. Finally, it is interesting to note that self challenge and goal attainment, which was the previous important discriminant variable, are similar; the setting and attainment of objectives is paramount to both their successes and therefore the continued participation in physical activity.

"To control weight" was the other predictor variable of long-term increased involvement. Given the nature of exercise and its benefits to long-term weight control, coupled with the "thin is in" trend, it is not surprising that this variable was important, especially for females who appear to be concerned with their appearence and body weight. Considering the

fact it entered as a discriminant variable, and that people will likely return for the weight control benefits, exercise should continue to be promoted as a means to reduce weight and keep "fit and trim". Further action can be taken to enter the weight loss market where exercise and weight loss should be promoted as being within the reach of everyone. This approach should also take into account the goal attainment and self challenge aspect of exercise motivation.

Nonetheless, caution might be warranted because some individuals may overemphasize the importance of weight loss to the extent that anorectic eating patterns may occur. College woman runners have been described as having anorectic eating patterns (Henry, 1982) and male "habitual" long distance runners have been compared to anorectics on the basis of a preoccupation with food and unusual emphasis on lean body mass (Wheeler, 1984; Yates, Leehay & Shisslak, 1983). It should be noted that these studies are reporting on a small subset of the population. It seems likely that the majority of adults will not be susceptible to these eating disorders and therefore exercise should still be promoted as a healthy approach to controlling weight.

To effect long-term participation in physical activity, individuals must first obtain the health related benefits of physical activity. In order to encourage higher levels of exercise involvement, participants should be encouraged to seek out attainable challanges. Women in particular, will respond to the weight control benefits of exercise. Although self challenge and weight control arose as being the variables best predicting increased activity levels in this study, other factors are undoubtably important as only 21% of the variance was explained.

Information on the participants' goals which they hoped to attain by joining the program indicated that they registered primarily for "health related reasons". They also re-enrolled for "health related reasons" but, "enjoyment" and particularly "convenience" factors were also important. As for the "factors that affected the participants physical activity level", "health related" considerations, "enjoyment aspects" and "activities they did on their own", were all of relatively equal importence.

The reasons for initial involvement were in accordance with the literature which suggests that exercise programs are undertaken for health related reasons (Canada Fitness Survey, 1983; Heinzelmann & Bagley, 1970b; Wankel, 1985). Moreover, as was seen, health related factors were important to both "the realization of various outcomes as a result of participation in the exercise program" and "reasons for continued involvement". This is logical considering that exercise provides and is promoted as being beneficial to one's well-being, whether for physiological health (Kannel, 1979; Kavanaugh & Shephard, 1981) or psychological health (Folkins & Sime, 1981; Morgan, 1981; Stern & Cleary, 1981).

The results of this study which suggest that "enjoyment aspects" are secondary ones for initially joining a program are also consistent with the previous literature (Heinzelmann & Bagley, 1970b; Wankel, 1985). The least important reasons for initial involvement, were "programmatic/situational" factors. Although factors associated with organizied exercise settings have been important to adherence (Dishman, 1982; Wanzel, 1978), they have not been reported to be important to initial involvement. This would appear logical especially for beginner exercisers because convenience factors cannot be motivators until one is motivated to exercise. Moreover, beginner exercisers may find real or perceived obstacles with respect to the convenience of exercise. Individuals who place the importance on "convenience" factors as reasons for participating in physical activity, have obviously overcome some of the initial barriers to exercising (cf. Canada Fitness Survey, 1983 for a review of some of the barriers).

The fact that "enjoyment" and "programmatic" factors became important to re-registration supports the belief that non-health factors are important to continued involvement (Heinzelmann & Bagley, 1970b; Massie & Shephard, 1971; Wankel, 1985). Perhaps individuals overcome the initial obstacles associated with exercise and re-enroll in Staff Fitness and Lifestyle Programs because of the "programmatic/situational" factors. They return not only because they know the benefits of exercise but also because it has become enjoyable, and perhaps most important to an habitual exerciser who is also busy, it is convenient.

The reasons reported in the health category of "factors that have positively affected activity level" were unique in that they were lifestyle changes individuals attained as a result of their exercise experiences, rather than the typical health related reasons for exercising reported earlier. For example, the type of responses were stress management, decreased or stopped smoking, and better sleeping and eating. These findings extend Martin and Dubbert's (1982) suggestion that exercise may help in a number of problem areas (e.g., depression, anxiety, smoking). Martin and Dubbert note that specific cause-effect factors, in this regard, are not known. In light of their suggestion and the results of this study, follow-up should be undertaken with those individuals who noted their positive lifestyle changes. Was it the lifestyle changes that increased their activity level? Was it their increased activity level that affected their lifestyle changes? Are they integral to each other? How much is perceived, how much is real and what are the implications?

The relatively high response to the "enjoyment" category indicates the importance of providing activities which participants enjoy doing in the structured program. Even more important to one's activity level according to the results of this study are the activities one does on his/her own. This is interesting to note in light of a recent article on exercise adherence in corporate settings, which notes that employee fitness programs continue to provide gymnasium type activities even though according to the Canada Fitness Survey (1983), Canadian's prefer walking, cycling, swimming, jogging and gardening (Shephard, 1985). In light of the results of the Canada Fitness Survey, Shephard suggests that a company program should invest in exercise testing, counselling, and shower facilities, and encourage employees (1) to develop their current interests, and (2) to walk, jog or cycle to work. The results of the current study lend support to Shephard's suggestions.

The factors that led to decreased involvement in physical activity were related, as is common, to a lack of time (Canada Fitness Survey, 1983; Durbeck et al.; 1972; Wanzel, 1978). In addition, "lack of availability", which meant the respondents were not around the campus, was another barrier. Perhaps Staff Fitness and Lifestyle should encourage home exercises that

can be done by those without the time or close proximity to the program and promote the availabity of various community resources.

The final factor investigated was the changes in the respondents pre and post-program activity patterns. Results revealed that 40% of the respondents increased their participation in non-organized type of activities. This result indicates that many individuals who were initially active in the organized setting of the Staff Fitness and Lifestyle Program later increased their involvement in non-organized type of activities such as jogging, swimming, cycling and cross country skiing. Since Canadians on a whole participate more regularly in non-organized type of activities (Canada Fitness Survey, 1983), this orientation seems to be the norm. From this result it can be inferred that efforts in employee fitness programs might be beneficially directed towards providing some sort of consulting service to people who are regularly active as is done at the large scale Canada Life Project (Cox, 1984). Cox notes that over 300 people in the Canada Life Project who exercise on their own still refer back to the program directors for consultation.

D. Final Comments

The final question asked respondents to make any final comments concerning the questionnaire. Specifically, the question asked how involvement in the Staff Fitness and Lifestyle Program affected their involvement in physical activity and what might assist them to be more active. Responses to this question which are reported below in point form were divided into three sections: (1) Attributes of the program and of physical activity, (2) Program complaints and/or recommendations, and (3) Barriers to participation.

Attributes

- The program turned around my attitude towards water and exercise.
- The program has encouraged me to exercise regularly.
- I became more aware of the need for a balanced workout involving various muscles and

joints of the body as well as the importance of stretching exercises.

- Because of easy access it has been great.
- I lose motivation out of the group environment.
- The buddy system helps attendance and enhances interest.
- Top 10 music is great.
- Thank-you for getting me involved (instructor).
- Staff Fitness and Lifestyle is excellent to iniate physical activity and provides an incentive to embark on one's own; programs are well run and the facilities are convenient.
- I feel it opened up a whole new dimension to my life.
- Improved physical condition resulted in better performance in the classroom and a more relaxed attitude.
- Reduces tension, more relaxed, better performance. The University benefits because I return to work more relaxed and refreshed.
- Best deal to hit the campus.

Recommendations

- The noise ventilation system in the room made it hard to hear the instructor.
- The locker room is too crowded and the floor is very dirty.
- The program should have flexible attendance with a lump sum payment. Some weeks I want to attend everyday, other's twice a week.
- Make it easier to attend make-up classes.
- Would like to take weight training but the times are not convenient.
- I would like to see sport instruction during lunch hour (squash, volleyball, badminton).
- The only hassle is determining at what level the classes are going to be run: the instructors need guidelines.
- Aerobic exercise program should put less emphasis on jumping and more on stretching.
- Should have a clinic that assesses people with physical limitations and have classes

appropriate for them such as low level exercise and weight control classes.

- Continue with "50 and getting better".
- I am looking for classes in my age group, 50-59.
- I would prefer aquacise classes afterwork in the summer when I need to cool down.
- Would appreciate more late afternoon classes.
- Aquacise should combine some swimming instruction for non-swimmers; otherwise non-swimmers lag behind the class.

Barriers

- My problem is to divert my attention from work to my physical well-being.
- My back problems limit my participation.
- Too expensive.
- Lunch time meetings get in the way.
- I lose motivation outside of the exercise class.
- I'm too rushed (come from across campus) to make the noon hour classes.

VI. SUMMARY, CONCLUSIONS, RECOMMENDATIONS

A. Summary

The primary purpose of the study was to investigate the effects of participation in an employee fitness program upon long-term involvement in physical activity. The secondary purpose of the study was to determine the relative importance of various health, programmatic/non-health, personal and situational factors to long-term exercise involvement.

The 124 subjects, were the respondents of a selected population of 220 University of Alberta employees. The population included those who were enrolled in a beginner or intermediate level exercise class in the University of Alberta's Staff Fitness and Lifestyle program in the Fall of 1983 or Winter of 1984.

The eight page study questionnaires were distributed via the campus mail system. They consisted of a combination of open-ended and closed-ended items with the content divided into six general sections which included: general demographic information, physical activity involvement prior to and after the exercise program, the effect of the program on long term activity involvement and the effect of various program factors on long-term participation in physical activity. Completed questionnaires were returned via campus mail.

The primary purpose of the study, which was to examine the effect of the program on physical activity level, was analyzed by descriptive statistics and a one tailed t-test. The secondary purpose of the study, to examine the relative importance of various factors to long-term exercise involvement, was analyzed by descriptive analysis and two stepwise linear multiple regression analyses.

The results showed that 61.8% of the respondents reported that the Staff Fitness and Lifestyle program increased their physical activity level over the one to one and one half year period since completion of the program. Fifty two percent of the respondents noted that they had increased their physical activity level since completion of the program as compared to one year prior to it (a two to two and one half year period). Furthermore, the days per week of

physical activity measure indicated a significant increase in physical activity level following participation in the program as compared to prior to it. Although some of the respondents did not change their physical activity level to any great degree, results indicated that they were initially active and remained so for a long-term time period.

Results on the Likert-scale type questions pertaining to the realization of certain outcomes from being involved in the exercise program revealed that various health and non health factors were important to continued involvement, such as "the exercise program helped you come to feel better" and "the exercise program showed you the correct way to exercise". According to the multiple regression analysis, however, the most significant predictive factors of increased involvement were "goal attainment" and "convenience" which together accounted for 30% of the variance. On the questions pertaining to the reasons for continued involvement, various health factors were of primary importance followed by recreational aspects. The two best predictors of increased involvement according to a multiple regression analysis were "self challenge" and "to control weight" which together accounted for 21% of the variance.

Individuals initially registered in the program primarily for health related reasons. Reasons for re-registration, on the other hand, were substantially recreational and programmatic/situational. The participants' activity levels (one and one half or more years after the program's termination) were affected equally by "health related considerations", "enjoyment aspects of exercise" and "activities they did on their own".

B. Conclusions

1. The employee fitness program had a positive effect upon long-term involvement in physical activity.
2. The program's positive effect was a result of the importance of a group of health and programmatic/non-health factors which included: "felt better", "learned the correct way to exercise", "learned how to exercise at a comfortable pace" and "[illegible]ained confidence to

achieve fitness goals"

3. Higher physical activity levels as a result of the exercise program were more frequently obtained by those who achieved their goals and found exercise to be convenient.

4. Long term exercise involvement was influenced particularly by health related reasons such as: "improved physical fitness", "weight control" and "reduced stress". The "convenience" of exercise was also an influential factor.

5. Increased physical activity levels over the long term were achieved by those whose reasons for involvement were "self challenge" and "to control weight".

6. Reasons for initial involvement were primarily health related; reasons for re enrollment were also health related but enjoyment and situational factors also emerged as being influential. Current physical activity levels were affected relatively equally (about one-third each) by: "the health" benefits obtained from exercising, the "enjoyment" of physical activity and by the "activities individuals participated in on their own".

7. Physical activity patterns after the exercise program (as compared to prior to the exercise program) had a higher concentration in the type of activities that are non-organized rather than organized.

C. Recommendations

1. It is recommended that further study on motivation for physical activity incorporate the variables of this study that were discriminant: "goal attainment", "self challenge", "convenience" and "weight control".

Goal Attainment. Further research should be undertaken to extend the results of this study while paying attention to the research of Wanzel (1978) and Martin and Dubbert (1984). In that light the effect of weekly (proximal) versus every six weeks (distal) goal-setting should be tested. Individuals at all fitness levels, in particular beginners, should be alerted to the fact that goal-setting is an individual factor which can be used by

anyone as a tool to encourage their own exercise progression so long as they set personal and reasonable goals.

Self Challenge. The importance of personal challenges and their relation to increased exercise involvement should receive further attention. Perhaps the flow model (Csikszentmihalyi, 1975, p. 49) can be utilized as a model for undertaking this analysis. Self challenge should be studied in a further investigation to determine how to assist individuals to continue to strive for attainable challenges.

Convenience. For exercise to be convenient, opportunities for physical activity should be created within close proximity to the populace, at times that fit into their schedule and at a reasonable price. Furthermore, people should be educated in a class setting or through promotional efforts regarding the convenience of fitness and exercise, noting that opportunities to exercise are available and can fit into one's lifestyle.

Weight Control. Further research and education should be carried out regarding the weight control attributes of exercise. Information in this area is particularly relevant to females who tend to respond positively to program opportunities that stress the benefits of exercise to weight control.

2. As was suggested by Martin and Dubbert (1982), further research should be undertaken to determine specific cause-effect relationships between exercise and various lifestyle changes such as stress management, smoking cessation and sleeping habits.
3. Employee fitness program administrators should investigate how to better fulfill their clients' needs in light of the research reported here as well as elsewhere (Cox, 1984; Shephard, 1985) which suggests that people prefer doing activities outside of the boundaries of employee fitness settings.

4. It is recommended that open ended questions be included in further research studying human behavior. The open ended questions used in this study gave a view of the respondent's motivations which would have been unattainable solely by closed ended questions.

5. There is a need in the study of exercise motivation to clarify a number of definitions. A number of concepts which are not defined in a standard manner in the literature include initial involvement, adherence, dropout and long-term involvement as well as programmatic, situational, health and non-health factors.

6. Further techniques are necessary to determine the physical activity level of individuals. [redacted]ended methods are extremely difficult to classify and the method used by the Canada Fitness Survey (1983) is too complicated and is therefore presently being reviewed. The days per week measure used in this study appeared to be a reliable indicator. Further study of its reliability and validity should be undertaken.

7. A survey of the physical activity involvement of the University of Alberta's employees not involved in Staff Fitness and Lifestyle's programs is needed as are other studies of exercise motivation outside of organized settings.

8. A longitudinal study should be undertaken of the respondents in this study in order to describe the changes which they undergo over time. The data bank obtained from this investigation would be useful as a model of long-term exercise involvement stemming from an employee fitness program.

9. A similar instrument to that used in this study should be administered in other employee fitness settings to investigate the effects of other programs on long-term exercise involvement and exercise motivation.

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APPENDIX 1: LETTER OF INTRODUCTION

Dear Participant

I am conducting a study pertaining to the physical activity participation of employees of the University of Alberta.

As your name has been selected from the registration and class attendance lists of the Fall 1983 and Winter 1984 Staff Fitness and Lifestyle exercise programs, I hope that you will be willing to assist in this study. The demands on you will be minimal: all that is required is that you complete and return the attached questionnaire.

The questions deal with your past activity involvement, your participation in the Staff Fitness and Lifestyle Program, the effects of the program on your long-term involvement in physical activity, as well as other factors that influence your long-term involvement in physical activity. *The information is equally valuable regardless of your level of involvement, so please answer each question as accurately and honestly as possible.*

Your answers will be kept in the strictest confidence. All responses will be anonymously coded and computer analyzed. All results will be recorded as group scores; hence, individual anonymity is assured.

It is hoped that this study will produce information that might be useful to help individuals to meet their long-term exercise goals.

Please complete the form as soon as possible and return via campus mail, care of Jack Rudnicki, Department of Recreation and Leisure Studies, Physical Education, E-401. A self addressed label is enclosed on the final page of the questionnaire.

Thank you for your anticipated cooperation.

Yours sincerely,

Jack Rudnicki

Graduate Student

APPENDIX 2: QUESTIONNAIRE

DEFINITIONS

Please use the following definitions of the terms below when interpreting the questions in the questionnaire. The terms always appear in *italics*. Their definitions are:

PHYSICAL ACTIVITY: THOSE EXERCISE ACTIVITIES THAT ELEVATE THE HEART RATE (OR CAUSE ABOVE NORMAL BREATHING) FOR A DURATION OF AT LEAST 20 MINUTES.

EXERCISE PROGRAM: REFERS TO A PARTICULAR EXERCISE PROGRAM YOU ENROLLED IN, NAMELY:

Physical Activity Involvement Prior To The Exercise Program

Describe your *physical activity* involvement for the year prior to joining the *exercise program* (type of activities, frequency and duration).

	Type of Activity	Frequency (No. of sessions/week)	Duration (No. of weeks/year)
1.	*(eg calisthenics*	*3 times/week*	*32 weeks)*
2.	*(eg X-country skiing*	*2 times/week*	*16 weeks)*
1.			
2.			
3.			
4.			
5.			

Circle the appropriate number on the scale to indicate the number of days per week on the average that you engaged in *physical activity* for the year prior to joining the *exercise program*.

0 1 2 3 4 5 6 7

(number of days per week)

Program Information

3. What were your most important reasons for registering in the *exercise program*?

_____

_____

4. Circle the appropriate number on the scale below to indicate the extent that you achieved the goals or objectives that you were seeking from the *exercise program*.

1	2	3	4	5
Not at all				a great deal

5. To verify our attendance statistics please approximate the number of exercise classes, out of the possible 20, that you missed in the *exercise program*. (Circle the number of your response)

1. 0-5
2. 6-10
3. 11-15
4. 16-20

6. Circle the appropriate number on the scale to indicate how satisfied you were with the *exercise program*.

1	2	3	4	5
Not at all satisfied				very satisfied

Effect Of The Exercise Program

7. How did involvement in the *exercise program* effect your *physical activity* level since you completed the *exercise program*? (Circle the number of your response).

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

If you answered (2), circle the number which indicates how much the *exercise program* contributed to increasing your later involvement in *physical activity*.

1	2	3	4	5
not at all				a great deal

If you answered (3), circle the number which indicates how much the *exercise program* contributed to decreasing your later involvement in *physical activity*.

1	2	3	4	5
not at all				a great deal

8. Describe any other factors that have effected your *physical activity* level since completion of the *exercise program*.

_____

_____

If your response to item 7 was (2) proceed to item 9, if your response was (1) or (3), skip 9 and proceed to item 10.

Importance To Increased Participation

9. **Circle the number on the appropriate scale which indicates, how important each of the following factors are in accounting for your increased involvement in *physical activity* since participating in the *exercise program*.**

a. The *exercise program* influenced your beliefs concerning the value of exercise

1 2 3 4 5
not at all important — very important

b. The *exercise program* provided the friendly encouragement to be active

1 2 3 4 5

c. The *exercise program* introduced you to an exercise partner(s) with whom you continue to be active

1 2 3 4 5

d. The *exercise program* showed you that exercise could be fun

1 2 3 4 5

e. The *exercise program* showed you the correct way to exercise

1 2 3 4 5

f. The *exercise program* showed you how to exercise at a pace which allowed you to be comfortable with exercise

1 2 3 4 5

g. The *exercise program* gave you confidence that you could achieve your fitness goals

1 2 3 4 5

Effect continued

h. The *exercise program* leader encouraged you to be active

1 2 3 4 5
not at all important — very important

i. The *exercise program* showed you how convenient exercise can be

1 2 3 4 5

j. Through the *exercise program* you came to feel better

1 2 3 4 5

Present Physical Activity Level

10. Describe your *physical activity* involvement since completion of the *exercise program* (type of activities, frequency and duration).

Type of Activity	Frequency (No. of sessions/week)	Duration (No. of weeks/year)
1. *(eg calisthenics*	*3 times/week*	*32 weeks)*
2. *(eg X-country skiing*	*2 times/week*	*16 weeks)*
1.		
2.		
3.		
4.		
5.		

11. Circle the appropriate number on the scale to indicate the number of days per week on the average that you engaged in vigorous *physical activity* since completion of the *exercise program*.

0 1 2 3 4 5 6 7
(number of days per week)

Reasons for Long-Term Participation in Physical Activity

12. Have you participated in any *physical activity* since completion of the *exercise program*? (Circle the number of your response)

    1. Yes
    2. No

    If you responded (1) (yes), complete item 13.
    if you responded (2) (no), proceed to item 14.

13. Indicate on the appropriate scale the importance of each factor to your involvement in *physical activity*.

    a. To control weight

    1 2 3 4 5
    not at all important — very important

    b. To reduce stress and anxiety

    1 2 3 4 5

    c. To protect against disease

    1 2 3 4 5

    d. To improve general physical fitness

    1 2 3 4 5

    e. To have fun

    1 2 3 4 5

    f. For companionship

    1 2 3 4 5

    g. For self, challenge

    1 2 3 4 5

Reasons for Long-Term Participation continued

h. Encouragement from your spouse

1 2 3 4 5
not at all important — very important

i. Encouragement from your work supervisor

1 2 3 4 5

j. Encouragement from your colleagues

1 2 3 4 5

k. Encouragement from friends

1 2 3 4 5

l. Convenient opportunities to exercise

1 2 3 4 5

Physical Activity Since Completion of the Exercise Program

14. Compared to your *physical activity* level the year prior to joining the *exercise program* your *physical activity* level since the *exercise program* has: (Circle the number of your response)

1. remained the same
2. increased
3. decreased

If you answered (2), circle the number which indicates how much your *physical activity* level has increased.

1 2 3 4 5
not at all — a great deal

If you answered (3), circle the number which indicates how much your *physical activity* level has decreased.

1 2 3 4 5
not at all — a great deal

15. Have you enrolled in a Staff Fitness and Lifestyle *exercise program* since completion of the *exercise program*? (Circle the number of your response.)

    1. yes
    2. no

    Why, explain: _____

    _____

    If yes, give type (or name) of *exercise program* enrolled in.

    _____

General Information

Circle the number of the response, in each category, which characterizes you.

16. Gender:

    1. Male
    2. Female

17. Age in years

    1. less than 29
    2. 30-39
    3. 40-49
    4. 50-59
    5. 60 or more

18. Educational Background

    1. High School Graduate
    2. Community College Graduate
    3. Completed University Undergraduate Degree
    4. Completed University Graduate Degree(s)

Please make any comments you might have either concerning the questionnaire, how involvement in the Staff Fitness and Lifestyle Program affected your involvement in *physical activity*, or what might assist you to be more active.

_____

_____

_____

Thank You For Your Time And Cooperation