

**THE ROLE OF ENJOYMENT IN EXERCISE MAINTENANCE
IN COMMUNITY FITNESS PROGRAMS FOR OLDER ADULTS**

by

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ABSTRACT

This thesis investigates factors that promote or inhibit continued participation in community fitness programs for older adults. Of particular interest is the investigation of the role of enjoyment at various points in time during the process of joining and continuing an exercise program. Social cognitive theory, the theory of planned behavior, and the transtheoretical model facilitate understanding of exercise behavior among older adults.

A convenience sample of 125 older respondents is used in this study (75 participants, 50 drop-outs). Each respondent voluntarily filled out a 10-page questionnaire. Statistically significant differences at the bivariate level reveal that higher levels of 1) enjoyment and satisfaction while performing the exercise ($r = .26, p < .01$), 2) perceived exercise well-being for the remainder of the day after exercising ($r = .28, p < .01$), 3) perceived group social support ($r = .31, p < .001$), and 4) exercise self-efficacy ($r = .20, p < .05$) are positively related to exercise participation. Main findings for multivariate analyses support statistically significant differences between the two groups, where higher levels of 1) expected enjoyment prior to starting an exercise program (odds ratio = 1.97, $p < .05$), 2) perceived group social support (odds ratio = 1.49, $p < .10$), and 3) perceived health (odds ratio = 5.44, $p < .05$), as well as preferring a group exercise environment (odds ratio = 18.36, $p < .001$), are predictive of exercise participation.

The most striking findings from this study indicate that a) feelings of enjoyment and feelings of accomplishment while exercising are perceived as different, b) feelings of enjoyment, feelings of energy, and physical feelings while exercising are related and are associated with exercise participation, c) increasing levels of enjoyment with the exercise activity over time are an integral part of exercise participation, and d) feelings of energy and physical feelings, both while exercising and for the remainder of the day after exercising, are predictors of exercise participation. Implications of this study suggest the inclusion of the concept of enjoyment when considering marketing and design strategies for exercise programs that hopefully will lead to increased levels of exercise maintenance among older adults.

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Chapter I

INTRODUCTION

Background

In Canada, health has been defined as encompassing a range of factors, including human biology, the social and physical environments in which people live, the lifestyle people lead, as well as the organization of health care (Lalonde, 1974). Similarly, Epp (1986) conceives health as "a basic and dynamic force in our daily lives, influenced by our culture and our social, economic and physical environments" (p. 3). Viewed in these terms, health is a positive experience, covering not only the absence of disease, pain, or disability, but psychological well-being and successful aging.

The term health promotion is relatively new, especially as it is applied to older adults. Health promotion is seen as an interrelation between an individual's responsibility and that of society as a whole in the maintenance of health and in responses to illness (Epp, 1986; Health and Welfare Canada, 1988; Stokols, 1992). The World Health Organization conceptualizes health promotion as an inclusive process that enables individuals and/or groups to increasingly control and improve their health (Health and Welfare Canada, 1988). This perspective of health promotion differs from an orientation of disease prevention or traditional health education, since it clearly places emphasis on the active participation of individuals, groups, and society to attain individual and collective well-being (Health and Welfare Canada, 1988; Stokols, 1992). The challenges that Canada faces as a nation in attaining this kind of health promotion have been outlined by Epp (1986) as: a) reducing inequities in health status of low versus high income groups; b) increasing efforts in prevention of illnesses, injuries, and disabilities; and c) enhancing

people's coping capacity to manage disabilities, chronic illness, and mental health problems. One potential application of this model of health promotion may entail the voluntary participation by older adults in relatively inexpensive community fitness programs. However, research that examines the predictors of involvement and maintenance in exercise programs among older adults is still in its infancy. This thesis addresses this issue through investigation of factors that promote or inhibit continued participation in community fitness programs for older adults.

The field of gerontology is becoming increasingly important as the percentage of people aged 65 and over steadily rises. In 1991, 11.6 percent of Canadians belonged to that age category (Statistics Canada, 1992), while projections for the years 2001 and 2011 show respective figures of about 12.6 percent and 14.1 percent (Statistics Canada, 1994). The fastest growing segment of older adults are those aged 75 and over, which means that more people are living in states of activity restriction. Fifty-six percent of Canadians age 75 to 84 report some physical limitation to travel, sport or leisure, while 83 percent of those aged 85 and over are thus affected (Elliot, Hunt, & Hutchison, 1996). Census data from 1991 showed that 7.2 percent of all persons 65 and older were living in special care institutions, compared to only 2 percent of those between the ages of 65 and 69 (Prieger, 1994). This percentage rises to about 9 percent for men and 16 percent for women among those aged 75 and older (Statistics Canada, 1992a). The vast majority of older adults below age 75 are thus living in the community.

The review of the gerontological literature, as it pertains to exercise behavior, reveals that the concepts of both physical activity and exercise are widely used. While exercise and physical activity greatly overlap, they are distinct in certain ways. Exercise pertains to structured and repetitive bodily movements which are intentionally performed

to improve or maintain one's ability to perform physical activity (Pate et al., 1995).

Physical activity is a broader concept which entails exercise performed in a group and/or individual environment as well as activities of daily living such as housework, gardening, or walking that result in physiological and/or psychological benefits. Although the literature review uses both physical activity and exercise, the focus of this thesis is on the maintenance of exercise in community fitness programs for older adults.

Benefits of Physical Activity

Physical exercise is recognized as a significant contributor to physiological and psychological health (Bouchard, Shephard & Stephens, 1993) and promotion of regular exercise for the general population is seen as an important priority for public health interventions (Courneya & McAuley, 1995; Health & Welfare Canada, 1993). Low physical activity levels have been identified as an important risk factor in all-cause mortality, as well as for rates of cardiovascular disease and cancer (Blair et al., 1989). It has been found that even moderate fitness protects to some degree against the influence of such known risk factors of mortality as smoking, elevated blood pressure, or elevated cholesterol level (Blair et al., 1996). In order to underline the importance of maintaining regular physical activity in older adults, the following sections will examine the physiological and psychological benefits of regular physical activity among older adults.

Physiological Benefits of Physical Activity

Research has found significant physiological gains in older adults as a result of regular exercise participation (Blumenthal et al., 1989; Cunningham, Rechnitzer, Howard & Donner, 1987; Emery & Blumenthal, 1990). It has been shown that older adults can

significantly increase cardiorespiratory functioning after only 4 months of aerobic exercise training (Blumenthal et al., 1989) and that continued exercise participation (beyond 16 weeks) results in continued, but much smaller increments, in aerobic capacity (Blumenthal et al., 1991).

Osteoporosis is increasingly recognized as a serious public health problem, especially in post-menopausal women, as more people live to advanced age. It is now the most prevalent skeletal disorder in North America (Ausensus, 1988). Bone fragility is a result of excessive loss of bone mass which in turn predisposes afflicted individuals to fractures after even minor traumas or falls (Bravo, 1994). Economic, societal and personal costs as a consequence of such fractures are enormous (Nelson et al., 1994). About 20 percent of people aged 50 and over will die within three months after sustaining a hip fracture, while 50 percent of the survivors will need permanent care in a long-term care facility (Bravo, 1994). A study based on post-menopausal women (age 50 to 70) shows that a one year high-intensity strength training exercise program (twice weekly for 45 minutes) results in maintenance of bone mass density in the lumbar spine and femoral neck. Support was uncovered for an association between "increased muscle mass, strength, dynamic balance, and overall physical activity levels" (p. 1913), which are all related to a reduced risk for osteoporotic fractures by preventing falls and/or minimizing associated trauma (Nelson et al., 1994). These authors further point out that, although hormone replacement therapy and nutritional supplements can maintain or slow bone loss, they do not address the reduced risk of fractures. Even a relatively short, ten week high-intensity resistance training program with frail elderly results in increased muscle strength and muscle size, spontaneous physical activity and improved mobility (Fatarone et al., 1994). Yet, only a small minority of older women maintain regular exercise at a

level sufficient to benefit their health and well-being (O'Brien Cousins, 1996; Stephens & Craig, 1990).

It has been argued that exercising the mind and keeping it active and stimulated is just as important as exercising the body during the adult life span (Burdman, 1986; Hampton, 1991). The "use it or lose it" hypothesis states that increased activity in neurons interferes to some degree with the process of aging (Swaab, 1991). Research has shown that access to plenty of oxygen is especially important for neuron-sustaining neural stimulation (McEwen, 1991). Physical activity of even light or moderate intensity increases oxygen intake through lung function and therefore its availability to the body and the brain. Thus, participating in regular exercise programs may be stimulating for both body and mind.

Medication Use in Older Adults

The most commonly prescribed medications for older adults are antihypertensives and drugs affecting the central nervous system for conditions such as depression and anxiety. People aged 65 and over consume more drugs than any other segment of the population. In British Columbia they receive 25 percent to 30 percent of all prescriptions issued by the medical profession (Tuominen, 1988). Disturbing data reveal that 23 percent of all seniors in British Columbia received at least one benzodiazepine prescription in 1994. These figures increase to 27 percent for seniors (30 percent for senior women, 20 percent for senior men) living on Vancouver's North Shore (Hall & Bell, 1996). Stratton and Foster (1992) found that an average of over nine medications (5.5 prescription drugs, 3.7 non-prescription drugs) were brought by each elderly person to the B.C. seniors brown bag clinic project. As the number of drugs consumed by the elderly

increases, so do deleterious side effects, drug interactions, and hospital admissions due to adverse drug reactions (Stratton, & Foster, 1992; Tuominen, 1988). It is well known that lifestyle changes, such as adding regular physical activity to one's life, can reduce or prevent the use of certain drugs such as is the case for antidepressants, anxiolytics (benzodiazepines), and antihypertensives.

Research findings strongly support the notion that regular physical activity and/or exercise are important factors in the maintenance and improvement of physical health, functioning, and well-being in people of all ages, including older adults.

Psychological Benefits of Physical Activity

In addition to physiological benefits, a variety of psychological benefits have been linked to regular physical activity. A comprehensive literature review of articles published since 1980 (Plante and Rodin, 1990) reveal that exercise tends to improve mood and psychological well-being and is likely to decrease mild depression and anxiety in nonclinical participants. Because of the pandemic nature of depression in older adults, Bouchard, Shephard and Stephens (1993) suggest regular exercise as a preventative measure, rather than focusing on pharmacological or psychotherapy treatments.

Effects of regular exercise on depression. Depression is the most common mental affliction in the elderly. As many as 30 percent of this segment of the population show transient depression with mild symptoms, while 13 percent suffer from severe depression that needs professional intervention (Donnelly, 1988). Although the etiology of depression is not completely understood, both psychological (e.g., negative self-schemas, negative reinforcement, early experiences) and biological (e.g. biogenic amine theories)

models have been proposed (Fitten et al, 1989; O'Leary & Wilson, 1987; Palfai & Jankiewicz, 1991). The use of certain medications has been identified as one underlying cause of depression, especially in the elderly. Medications thought to contribute to depression in the elderly include: diuretics, antihypertensives, digitalis, benzodiazepines, analgesics and anti-inflammatories, opiates, corticosteroids, and alcohol (Fitten et al, 1989). Research has shown that regular aerobic exercise can significantly improve mild or moderate depression (Freemont & Craighead, 1987; O'Leary & Wilson, 1987), and that improved levels of fitness are associated with reduced depression scores in older men and women (Blumenthal et al., 1991; Valliant & Asu, 1985). Psychological and somatic symptoms of depression are significantly reduced after even 6 weeks of regular exercise in moderately depressed elderly (McNeil, LeBlanc & Joyner, 1991). Symptoms of mild to moderate unipolar depression respond well to both regular aerobic or nonaerobic exercise, and lower depression scores are still associated with continued exercise one year after termination of a training program (Martinsen, 1993).

Effects of regular exercise on anxiety. Anxiety and stress comprise two important components: a cognitive perception of a threat and a physical expression of anxiety (Palfai & Jankiewicz, 1991). In order to feel the physical symptoms of anxiety and stress, an event has to be perceived mentally as threatening. The review of the literature generally supports the view that physical exercise can be anxiety reducing and can be a preventive coping resource, as well as a source of increased feelings of vigour (Long, 1993; O'Leary & Wilson, 1987; Plante & Rodin, 1990). Reductions in trait anxiety (pervasive with pre-disposing characteristics) and state anxiety (psychophysiological state as a situation specific response) can be obtained by engaging in regular aerobic exercise. In fact, the

largest reductions in anxiety are shown in participants who have the lowest levels of fitness at the outset of an exercise training program (Bouchard, Shephard & Stephens, 1993). Three meta-analyses by Petruzzello, Landers, Hatfield, Kubitz and Salazar (1991) reveal that aerobic exercise is associated with reduced anxiety. The anxiolytic effects of exercise on state anxiety are similar to that of relaxation, whereas significant effects on trait anxiety appear only after a minimum of 10 weeks of regular exercise, indicating that long-term maintenance of exercise behavior is most important. Another meta-analysis by Long and van Stavel (1995) concludes that low-to-moderate anxiety reduction result from regular exercise training when used as a stress-management treatment; most benefits are achieved by adults who have a stressful lifestyle. Petruzzello et al. (1991) conclude that regular exercise has an anxiolytic effect on trait and state anxiety, however, the mechanisms of why this is so remain to be determined.

It appears that continuing, regular performance of exercise, rather than intensity, is the most important factor in the achievement of psychological benefits. King, Taylor and Haskell (1993) report that regular exercise (12 months duration) significantly reduces stress, anxiety, and depressive symptoms in healthy older adults. Similar results have been found for high and low intensity exercise performed either at home or in a group. Lower depressive symptoms are related to reductions in body weight. Interestingly, psychological changes are not associated to changes in physical fitness but rather to the amount of exercise participation, so that the amount of exercise participation is significantly related to fewer depressive symptoms and lower anxiety levels. The key to psychological improvement, therefore, seems to be regular performance of exercise, be that in an organized group or a self-directed environment.

Effects of regular exercise on other psychological dimensions. Optimism is viewed as a generalized expectancy that everything will turn out for the best. Enhanced motivation, persistence and performance have been associated with optimism, and psychological and physical well-being have been linked with optimism (Kavussanu & McAuley, 1995). These authors report that highly active exercisers (4 times per week) are significantly more optimistic than low exercisers (once per week) or non-exercisers. Significant increases in self-concept, as well as a greater perceived internal locus of control, have also been found after a 14 week aerobic exercise program in older men and women (Perri & Templer, 1985).

The literature review of the benefits of regular exercise on cognitive performance and psychological functioning in older adults does not lead to a definitive conclusion (Blumenthal et al., 1991; Emery & Gatz, 1990). While older participants in an aerobic exercise program perceived subjective improvements in performing cognitive tasks and feelings of psychological well-being, only relatively few improvements in cognitive performance and psychological functioning could be measured (Blumenthal et al., 1991). Bouchard, Shephard and Stephens (1993) report small benefits of ongoing exercise for fit individuals' reaction times. Based on a 16 week program of aerobic exercise or yoga for older adults, Emery and Blumenthal (1990) identified significant subjective improvements in functioning and psychological well-being, such as "sleep patterns, self-confidence, social life, loneliness, family relations, and sex life" (p. 520). Thus, the benefits of exercise extend and generalize to areas other than physical fitness and well-being. However, these variables were not often assessed by psychometric measures. Emery and Blumenthal (1990) further found that reported improvements in subjective ratings of memory and concentration do not coincide with objective measures of cognitive functioning, and that

indicators of psychological well-being do not consistently relate to perceived improvements in mood. However, it was found that perceived improvements are linked to continuing participation in the exercise programs. Support for the benefit of regular exercise in the above mentioned domains depends on outcome measures and research design. It is proposed that measures of participants' expectations and self-perceptions (Emery & Blumenthal, 1990), as well as measures assessing perceived efficacy in specific domains other than health, such as activities of daily living (Emery & Gatz, 1990), be included in exercise studies relating to older adults. Furthermore, the above research emphasizes the importance of maintaining exercise patterns over extended periods of time.

Several studies have found that regular, continued participation by older adults in exercise programs is linked to several desired health outcomes. It therefore is crucial to find the most important factors that help older adults remain in exercise programs and/or keep them physically active at a comparable level.

Participation in Physical Activity

Bouchard, Shephard and Stephens (1993) report that about 40 percent of adults aged nineteen and over in Canada, the United States, and Australia are physically active at least at a moderate level and as such derive multiple health benefits from such activities. Only 10 percent of adults in these countries, however, are regular exercisers (three times per week for at least 20 minutes) at an intensity sufficient for maintenance or gain of cardiorespiratory fitness levels. Depending on the definition of 'sedentary', 30 to 50 percent of adults fall into this category. Statistics Canada figures show that 62 percent of people aged 65 to 74 are considered to be physically inactive, while fully 72 percent of

older adults aged 75 and over fall into the inactive category (as cited in Stephens & Associates, 1995).

Education and level of exercise are related. People with high levels of education are between 50 to 200 percent more likely to participate in regular exercise than those with lower levels of education (Bouchard, Shephard & Stephens, 1993; Wister, 1993). According to O'Brien Cousins (1995) women over age 65 are less likely than men to participate in vigorous physical activities: 23 percent male versus 11 percent female for age 65-74, and 17 percent male versus 8 percent female for age 75 and over (Stephens & Associates, 1995). Cognitive barriers, such as the perceived effort required to engage in vigorous exercise, or the perceived lack of enjoyment when performing a repetitive physical activity, may play a significant role for this finding. Based on the 1990 Canadian Health Promotion Survey, it has been found by Wister (1996) that about 30 percent of elderly women and 45 percent of elderly men exercise seldom or never. Fully 40 percent of this group were not aware of existing exercise programs in their community. However, about 40 percent of elderly Canadians in this study believed that exercise would improve their health. Spink and Carron (1992) report that a typical withdrawal rate is between 20 to 50 percent during the first 5 to 6 months of an exercise program. With such large percentages of sedentary older adults who may benefit from regular exercise, it is particularly important to identify the processes by which individuals become involved and remain in exercise programs.

Levels of Physical Activity and Health Gains

The review of the literature reveals that various forms and amounts of physical activity at varying levels of intensity are considered adequate or necessary for health gains

in older adults. If regular exercise (vigorous) is defined as engaging in physical activity three times per week for 20 minutes or more at an intensity that is considered sufficient to promote maintenance or gain of cardiorespiratory fitness levels (Bouchard, Shephard and Stephens, 1993), then 90 percent of adults in Canada and the United States do not get enough exercise (Gavin, 1992). King et al. (1991) define high-intensity exercise training as three 40-minute sessions of endurance training per week at 73 to 88 percent of peak treadmill heart rate. One might ask if this type of exercise is actually necessary or desirable for the elderly to keep fit? Keeping physically active on a regular basis by engaging in activities of daily living, walking, or gardening might be equally beneficial. Moderate physical activity can be defined as the equivalent of brisk walking at 3 to 4 mph (Pate et al., 1995). Low intensity exercise training is seen as five 30-minute sessions of endurance training per week at 60 to 73 percent of peak treadmill heart rate (King et al., 1991). Prochaska (1994) defines regular exercise participation as exercising at least 20 minutes three times per week. Regular physical activity for older adults is defined by Courneya (1995) as "any planned physical exertion aimed at improving or maintaining physical fitness and health," such as "aerobics, brisk walking, jogging, running, swimming, biking, rowing, cross country skiing" (p. 82) performed at a moderate intensity for 20 to 30 minutes per session, three times per week. Epidemiologic evidence supports the view that even low to moderate intensity physical activity leads to health benefits and reduction of the risk of diseases (Blair et al., 1989; Dishman, 1994; King et al., 1991). It has been found that moderate levels of regular physical activity can achieve desired cardiovascular benefits for older adults, because such benefits are not dependent on a life-long vigorous training program (Wister, 1996). Prohaska, Leventhal, Leventhal, and Keller (1985) compared the frequencies of health promoting actions among young, middle aged, and

elderly adults. They found that elderly respondents show more health promoting behaviors than the two younger groups, including: regular medical check-ups, regular sleep patterns, and gathering information about disease. Cognitive-emotional items such as avoiding emotional stress, anger or anxiety, and staying mentally alert and active, also show an increase in frequency among the elderly group. Interestingly, it was found that the elderly significantly decrease only one health practice: aerobic or strenuous exercise. These findings underline the importance of investigating motivational factors that keep older adults in regular exercise programs other than those based on strenuous aerobics.

A recent communication from the Centres for Disease Control issues new recommendations regarding the types and amounts of physical activity. They state that "every US adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week" (Pate et al., 1995, p. 402). The authors state that "physical activity is closely related to, but distinct from, exercise and physical fitness" (p. 402) and that moderate-intensity physical activity is adhered to more often than high-intensity activities. One example of a moderate-intensity, 30 minute physical activity would be to briskly walk 2 miles. Exercises addressing muscular strength and flexibility are also recommended, as they help people to better perform activities of daily living, contribute to better coordination and balance as well as help prevent falls, especially in the older population. It is further pointed out that this daily 30 minute session of physical activity can be broken up into segments of about 10 minutes each with the same outcomes (Pate et al., 1995). Emery and Gatz (1990) developed a special exercise program for older adults with each session lasting about 1 hour (10 - 15 minutes of stretching, followed by 20 - 25 minutes of aerobics and 5 minutes cool-down exercises) and held three times per week. Another community-based group exercise program for older adults

lasting 60 minutes (three times per week) includes 40 minutes of walking/jogging endurance training (King, Taylor & Haskell, 1993). However, cardiorespiratory fitness is not the only criteria for health benefits. High intensity strength training exercises (two days per week at 45 minutes per session) have been used to preserve bone density, increase muscle mass, muscle strength, and dynamic balance in post-menopausal women (Nelson et al., 1994). Research therefore shows that various forms of physical activity at light, moderate, or high intensity are conducive to a variety of health benefits. The most important factor for lasting health benefits for older adults is, however, maintenance of regular physical activity, not necessarily the intensity or variety of such activities.

Summary

The concept of health includes both well-being and successful aging. To attain individual and collective well-being, population health emphasizes the active participation of individuals, groups, and society. Population aging magnifies the importance of maintenance of regular physical activity and exercise among older adults, because such activities are recognized as significant contributors to physiological and psychological health. Continued, regular performance of physical activity and/or exercise is linked to desired outcomes. However, over 35 percent of older Canadians are considered sedentary, which underlines the importance of research into the factors that promote and maintain regular physical exercise. Many definitions regarding adequate levels and amounts of physical activity for desired health gains can be found in the exercise literature. The most recent recommendation states that 30 minutes daily of moderate physical activity are desirable for all adults to maintain and improve health. In order to understand factors that might influence older adults to maintain regular participation in exercise

programs, it is necessary to now examine underlying theories that pertain to exercise motivation and behavior.

Chapter II

THEORETICAL APPROACHES AND RESEARCH FINDINGS PERTAINING TO EXERCISE BEHAVIOR

Understanding how personal motivation is involved in the maintenance of regular exercise and physical activity remains a high priority for research (Dishman, 1994). A variety of psychological factors have been associated with individuals' participation in physical activity. While there are many different theories, this thesis will focus on three major theoretical perspectives to investigate motivational factors that promote and maintain exercise behavior in older adults. These theories are Bandura's social cognitive theory, Ajzen's theory of planned behavior, and Prochaska and DiClemente's transtheoretical model. The fundamental principles reflected in these three theories capture the main elements of the majority of theories in this field. I will describe each theory, integrate relevant research findings, and identify hypotheses of interest to this thesis.

Social Cognitive Theory

Social cognitive theory states that self-efficacy and perceived control play an important role in the outcome of an event (Bandura, 1986). Self-efficacy includes expectancy about outcomes, and confidence in one's ability to perform a given behavior. The theory can be visualized as an interactive triangle, where one angle represents personal factors, the second angle represents environmental events, and the third angle stands for behavioral functions, all being reciprocal determinants (Monte, 1991). Examining cognitive processes is a priority for social cognitive theory, which states that

thoughts provide a means for individuals to control personal behavior. Developing cognitive skills in order to self-regulate exercise behavior is therefore of prime importance (Dzewaltowski, 1994). Self-efficacy expectations, outcome expectations, and goals are thought processes involved in influencing physical activity. Self-efficacy expectations are defined as "individual's confidence in their use of their skills and abilities to perform a behavior at a level that will lead to an outcome" (p. 1396). Outcome expectations are cognitive representations of future events. People "may be motivated to participate in physical activity to improve their health status, receive social approval, and experience self-satisfaction" (p. 1396). Outcomes can be further categorized into distal and proximal outcome expectations. Improved health status (e. g., losing weight, increased mobility) is a distal expectation that can only be achieved with continued participation in physical activity (Dzewaltowski, 1994). Expected enjoyment while performing the exercise can be seen as a proximal outcome. Goals can be defined as what an individual wants to achieve or how people define success. Dzewaltowski (1994) further explains that motivation relies both on discrepancy production as well as on discrepancy reduction, such that the effects on motivation of all three cognitive processes (self-efficacy expectations, outcome expectations, and goals) are additive. These cognitions can be further theory-driven or data-driven, where theory-driven means "retrieval of relevant, previously stored cognitive structures from memory" and data-driven means "construction of a judgment based upon the information or attributes that are salient in the environmental context when the behavior is being performed" (p. 1397). An action is data-driven when it involves extensive thought, while it is theory-driven when it is "a spontaneous reaction to one's perception of the immediate situation based on memory" (p. 1397). Research addressing self-efficacy often taps into data-driven processing because questions asked often relate to

barriers such as time management or work obligations. They might, however, be poor predictors of exercise behavior, because data-driven attitudes can be of short duration, whereas theory-driven attitudes based on accessible cognitive structures are more durable and show a more consistent relationship to behavior (Dzewaltowski, 1994). Expected enjoyment as a result of doing a physical activity can be seen as theory-driven, while actual enjoyment during the activity can be defined as data-driven. It is therefore desirable to address both data-driven and theory-driven attitudes when investigating predictive factors that relate to exercise behavior. Research has shown that there is a tendency for people who engage in health promoting behaviors, including regular exercise, to value good health as an outcome, to believe that their health behavior influences their health status, and to believe that they are capable of carrying out the health behavior (Wallston, 1992). This is consistent with social cognitive theory, which states that self-efficacy and perceived control play an important role in the outcome of an event (Bandura, 1986; Croyle, 1992).

Self-efficacy continues to be identified throughout the exercise literature as a predictor of regular exercise for all age categories (McAuley & Courneya, 1991; McAuley, 1993; Clark, Patrick, Grembowski & Durham, 1995). Self-efficacy within the exercise literature is often operationalized as the perceived confidence to overcome barriers to participation (e.g., work, home, and social commitments, injury/illness, transportation problems, family needs), in other words, as barrier self-efficacy (DuCharme & Brawley, 1995; McAuley, 1993; Marcus & Owen, 1992). Another measure of self-efficacy, however, is designed to address people's perceptions of "their ability to organize, plan, and schedule regular exercise bouts into their daily lives" (DuCharme & Brawley, 1995, p. 484), which is termed scheduling self-efficacy. These authors have found that both barrier self-efficacy and scheduling self-efficacy are needed to motivate

novice exercisers to attend regularly (during the first 2 months of a program), whereas only scheduling efficacy continues to be a significant predictor of regular attendance after the initial two months of a program. Of further importance for continued participation (after 2 months) is previous exercise behavior (DuCharme & Brawley, 1995). The hypothesis flowing out of social cognitive theory pertinent to this thesis is that it is expected that participants will demonstrate higher scheduling self-efficacy than drop-outs.

Although social cognitive theory uses self-efficacy as a predictor for exercise behavior, only approximately 12 percent of the variance of exercise behavior can be explained with this variable (Dzewaltowski, 1989). Research further suggests that other factors, such as social support, group cohesion, and enjoyment and satisfaction, may play a significant role as predictors in continued exercise participation among older adults, and should also be included in an analysis of this behavior. The theory of planned behavior (TOPB) incorporates some of these variables.

Theory of Planned Behavior

The theory of planned behavior (Ajzen, 1985) extends the earlier theory of reasoned action in several important ways (Ajzen & Fishbein, 1980). The TOPB assumes that the causal mediator to exercise is the intention to exercise, which in turn is influenced by attitudes and social norms directed towards exercise behavior, as well as personality factors such as will power. Actual and/or perceived personal control of exercise behavior can have a moderating influence on intention (Dishman, 1994). Bandura's concept of self-efficacy and Ajzen's notion of perceived behavioral control are very similar. Perceived behavioral control "reflects personal beliefs as to how easy or difficult adoption of the behavior is likely to be, and how beliefs about resources and opportunities may thus be

viewed as underlying perceived behavioral control" (Godin, 1994, p. 1393). Godin (1994) reports that about 30 percent of the variability in behavior to exercise can be explained by intention alone. He further contends that adding the notion of perceived behavioral control (TOPB) will add on average about another 8 percent of explained variance. Godin (1994) further found that past exercise behavior is an important external variable in translating intention into exercise behavior. Dzewaltowski (1989) has reported that two variables from social cognitive theory (self-efficacy and self-evaluated dissatisfaction) explained 16 percent of the variance in his measure of exercise behavior. In a study involving over 300 women aged 70 to 98, a surprising 22 percent of the variance in exercise was explained by two constructs from social cognitive theory, namely social reinforcement and self-efficacy (O'Brien Cousins, 1996). Dishman (1994) suggests that social cognitive theory and the TOPB help us to understand many of the factors involved in initiating exercise behavior, and may assist in planning promotional advertising for exercise programs.

Another important variable in health promoting behaviors appears to be active information seeking rather than receiving information in a more passive way through exposure to mass media messages (Rakowski, Assaf, Lefebvre, Lasater, Niknian, & Carleton, 1990). Researchers have also found that defining an issue as being important to all members of a community will increase the spread of the health promoting information (Viswanath, Finnegan, Hannan, & Luepker, 1991). Promoting the importance of exercise for all adults will thus result in reaching a higher number of older adults because of the wider spectrum of propagating the message. Active information seeking can reinforce feelings of being in control of one's own actions and therefore increase feelings of self-efficacy. The construct of self-efficacy, or the similar notion of perceived behavioral

control, therefore play an important role in health promotion initiatives organized at the societal, community, and group levels.

Courneya and McAuley (1995) argue that social influence constructs, such as cohesion and social support, have important theoretical links to TOPB through cognitive determinants, such as attitude and perceived behavioral control. These constructs are examined in order to understand how social support and feelings of belonging to a group can increase maintenance in exercise programs.

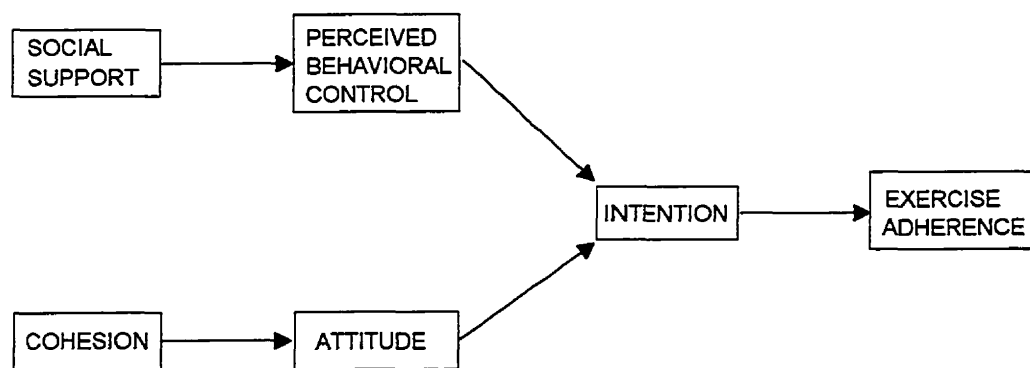


Figure 1. Two paths from social influence to exercise adherence (adapted from Courneya & McAuley, 1995).

Examining the Concept of Cohesion

Social support has been identified as a strong determinant of exercise behavior (Duncan & McAuley, 1993; Seeman et al, 1995; Wister, 1993). Cohesion is defined as "a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its goals and objectives" (Carron, 1982, p. 124). The number of friends one has who are physically active, as well as having a spouse who exercises, have been identified as the second most important reasons for engaging in

exercise behavior among young and middle aged adults (Wister, 1993). Emery and Blumenthal (1990) report that a high degree of social interaction among participants contributes to a high level of participation and a strong sense of group identity in an exercise program for older adults. The Longitudinal Study on Aging revealed that non-kin social support was one of the major factors in regular performance of physical activity (Wolinsky, Stump & Clark, 1995). Similar findings resulted from the MacArthur Research Network on Successful Aging Community Study, where it was discovered that prior exercise behavior and social network emotional support were conducive to maintenance of better physical performance among high-functioning older adults between the ages of 70 to 79 (Seeman et al., 1995). Participants in group exercise programs who perceive themselves as being an integral part of the group, who perceive that members have bonded into a cohesive whole, exhibit higher adherence, while drop-outs often point to a lack of group support (Spink & Carron, 1992; 1994). Overall, it has been shown that group cohesiveness is related to individual adherence behavior in fitness classes, recreational team sports, and elite team sports. People who drop out of a fitness class have significantly lower scores on items related to attraction to group tasks and attraction to group social aspects than do people who continue to attend (Carron, Widmeyer & Brawley, 1988). These authors point out that program planners most often target individuals when recruiting or motivating people to remain in exercise classes, while possibly greater adherence might be achieved by focusing on the group rather than the individual. Cohesion-based interventions, specifically targeted to the needs of participants as a group (Spink & Carron, 1992; 1994), could increase long-term attendance in exercise programs for older adults. Being supported and surrounded by people who also engage in physical activity is therefore a key element in continued participation in regular exercise

programs. This research also suggests that enjoyment and satisfaction derived from continued exercise behavior may play an important role in motivating older adults to remain physically active.

Examining the Concepts of Enjoyment and Satisfaction

Enjoyment can be defined as a subjective feeling of 'being happy with', or 'take pleasure in' some activity, while satisfaction means fulfillment of conditions or desires (Barnhart & Barnhart, 1978). Carron (1982) conceptualizes that enjoyment and satisfaction as psychological outcomes are influenced by group cohesiveness. Based on the TOPB, Courneya and McAuley (1995) propose that affective outcomes such as enjoyment and satisfaction "are considered attitudinal components and therefore are expected to influence intention and behavior" (p. 502). These authors report that, based on a study of 11 different exercise classes, participants who perceive their exercise class as cohesive show a more positive attitude towards attending their class. Enjoyment of exercise, without looking at group cohesion, has been investigated by Kendzierski and DeCarlo (1991). They point out that exercise can be repetitive and boring or cause physical discomfort. Having friends to talk to or listening to music while exercising may relieve boredom and make the experience of exercising more enjoyable. They further suggest examination of enjoyment by looking at its underlying factors. The authors pose the question: Can enjoyment be separated into a variety of factors, or is it essentially a unidimensional concept?

Dishman (1994) proposes the development of valid measures to assess "the rewarding experiences and outcomes of physical activity that can reinforce participation and minimize relapse" (p. 1388). Steinhardt and Young (1992) examined differences in

some psychological attributes (e.g., attitudinal commitment, self-motivation) between participants and nonparticipants in a worksite health and fitness program. They describe that exercise research often focuses “on a control-oriented, disciplined approach rather than a process-oriented, pleasure-based approach” (p. 44). These researchers ask whether the product of exercise programs (such as weight loss or fitness level), or the process, especially enjoyment in performing the activity, is more important for long-term maintenance in health and fitness programs. They suggest a need for a critical evaluation of this question. A study by Garcia and King (1991) tested the predictive power of self-efficacy and self-motivation, as well as perceived exertion, enjoyment and convenience (PEEC) as factors affecting exercise maintenance among mature men and women between the ages of 50 and 64. Their research indicates that only self-efficacy and exercise adherence are strongly related, while the other factors are not. However, the researchers point out that the measure they used for enjoyment may not have been suitable as it consisted of a one-item scale only. They suggest that a multiple item scale requiring more attention on the part of the respondents might have resulted in explaining some of the variance of exercise adherence. Enjoyment derived from engaging in some physical activity (organized or self-directed) may be a crucial variable for a pattern of staying physically active over a long period of time. This thesis investigates the role of enjoyment in exercise participation and maintenance among older adults as two factors: First as a theory-driven factor which measures expected enjoyment before engaging in a particular physical activity, and second as a proximal factor which measures actual enjoyment and satisfaction on three levels (overall, while doing it, and during the rest of the day). Additionally, the effects of congruence, increase, or decrease between expected and actual enjoyment on maintenance of exercise are examined.

Research to date has not revealed if and how enjoyment and satisfaction influence the maintenance of regular physical activity and/or exercise in older adults. For purposes of this thesis, the hypotheses emanating from the theory of planned behavior are that participants who maintain or adhere to regular exercise will demonstrate higher scores on enjoyment and group social support than drop-outs.

We now turn to a discussion of literature pertaining to stage of readiness to participate and remain in programs aimed at changing health behaviors. The stages of the transtheoretical model will be the focus of this discussion.

The Transtheoretical Model

Motivation, in conjunction with health beliefs, social support, and self-efficacy, is an important component of behavioral change (Kelly, Zyzanski, & Alemagno, 1991). In already motivated older adults, a simple cue, such as educational or promotional material, or instructions from a health care provider, might be sufficient to initiate health promoting behaviors, such as joining a fitness program or reducing alcohol and nicotine consumption. Rost, Connell, Schechtman, Barzilai, and Fisher (1990) point out, however, that some people might not be ready for change. They may not like the lifestyle values implicit in a program, they may prefer to work out alone, or they may prefer a generally more risky lifestyle. Yet, the etiology of motivation to change health behaviors, and to maintain such newly acquired behaviors is not well known, especially among older adults.

The transtheoretical model (Prochaska, DiClemente, & Norcross, 1992) proposes that people who try to change health behaviors progress through a series of stages, not necessarily in a linear fashion, but often in a cyclical manner by advancing and regressing through the stages. The specific stages people move through are, in order,

precontemplation, contemplation, preparation, action, and maintenance. This model has been increasingly applied to exercise behavior, even though it was originally conceived to be used with cessation of addictive behaviors (i.e. smoking). In fact, initiating regular exercise behavior can be seen as the cessation of a sedentary lifestyle (Marcus & Simkin, 1994). Thus, applying the discrete measures to exercise behavior, people considered to be in a stage of precontemplation do not intend to start exercising within the next 6 months. The contemplation stage means that individuals are seriously thinking about starting regular physical activity within that same time frame. Preparation is the stage in which people make a change in exercise, but not on a regular basis, for example, they begin introductory stretching exercises. Individuals in the action stage have started to exercise regularly (often measured as exercising at least three times per week for a minimum of 20 minutes) within the last six months. And people in the maintenance stage have been exercising regularly for longer than 6 months (Prochaska, DiClemente, & Norcross, 1992). Using the transtheoretical model to assign people to the appropriate stage in their exercise behavior can thus add predictability regarding behavioral change. Recently, this model has been applied to adults of all ages, including older adults (Gorely & Gordon, 1995; Lee, 1993). However, the emphasis of research has tended to be on the earlier stages of exercise behavior (precontemplation, contemplation, preparation, and action), while the maintenance stage has received little attention in the literature. Drawing from social cognitive theory (e.g., scheduling self-efficacy), and the theory of planned behavior (e.g., group social support, and enjoyment), the subsequent study examines factors that predict exercise behavioral stage at the level of maintenance, as well as action stages.

Summary and Working Hypotheses

Although a review of the pertinent literature clearly demonstrates health promoting benefits of regular exercise participation for adults of all ages, there is a paucity of research focusing specifically on older adults. There is also a need to investigate the factors that promote or inhibit continued participation in exercise or fitness programs among older adults. Moreover, research has tended to identify correlates of participation in exercise programs rather than attempt to also understand the process by which individuals become involved and remain in such programs.

This study will investigate factors that promote or inhibit continued participation in exercise programs among older adults as well as the process of involvement, and the motivational factors for remaining, in such programs. Of particular interest is the concept of enjoyment. The following hypotheses will be evaluated in this study of exercise participation among older adults.

- 1 Participants in an exercise program will report higher expected enjoyment scores than drop-outs.
- 2 Participants in an exercise program will report higher enjoyment/satisfaction scores while performing the exercise than drop-outs.
- 3 Participants in an exercise program will report higher overall enjoyment scores two months after starting a program than drop-outs.

- 4 Participants in an exercise program will demonstrate higher relative enjoyment scores than drop-outs.
- 5 Participants in an exercise program will demonstrate higher perceived exercise well-being than drop-outs for the remainder of the day after exercising.
- 6 Participants in an exercise group will perceive more group social support than drop-outs during a program.
- 7 Participants in an exercise program will demonstrate higher exercise and scheduling self-efficacy than drop-outs.

Chapter III

METHOD

To investigate the hypotheses flowing out of chapter 2, questionnaires were administered to two groups of adults aged 50 and over. One group (n = 75) consisted of older adults who were participating in a community fitness program for older adults at the time of the study, while the second group (n = 50) comprised people who had earlier dropped out of such a program. Current, retrospective, and prospective information on key variables was solicited from both groups. Members of the drop-out group were also asked questions regarding reasons for dropping out. The term "community fitness programs for older adults" refers to various programs (e.g., circuit training, swimming, mall-walking, aerobics, etc.) which are run in a group environment by a community agency and which stipulate that participants be aged 50 and over. When the term "exercise participation" is used in this thesis, it refers specifically to such community based exercise programs for older adults. The following sections describe details of the methodology, including 1) sampling and data collection, 2) socio-demographic characteristics of the sample, 3) instrument, 4) measurement, and 5) analyses. The chapter concludes with a discussion of methodological issues.

Sampling and Data Collection

Prior to data collection, a "Request for Ethical Approval of Research" for this study was approved by the University Research Ethics Review Committee of Simon

Fraser University. A pilot study was conducted with 7 subjects and minor adjustments were made to the questionnaire. Age 50 was chosen as the lower limit for respondents because most fitness programs for older adults advertise for "people over age 50". All respondents had to have at least a working knowledge of the English language, so that no interpreter was needed. Data was collected between March 1996 and March 1997.

Participants

The North Vancouver Recreation Centre was chosen as a suitable site to solicit respondents for the participant group because it runs several sections of a circuit training program, as well as aerobics and aquasize classes, for older adults. Permission to approach participants in these programs was obtained from the Director of Programs. Telephone contact explaining the study was established with fitness instructors prior to approaching people who were participating in these classes. Instructors then informed their exercisers of the upcoming study during the following week. Participants were given a short presentation on the study at the end of their exercise session by the researcher. In order to participate, they had to be currently enrolled in a program for at least one month. Most exercisers were willing to stay after class to fill out a questionnaire. Reasons given for not staying were time pressure, such as prior commitments. People were handed a questionnaire and pencil, along with a one-page letter which explained the purpose of the study, assured complete confidentiality, thanked people for voluntarily participating, informed them that they did not have to answer a question if they would rather not, and that they could withdraw at any time. They were also given the name and telephone

number of the Director of the Gerontology Centre at Simon Fraser University in case they had any concerns about the study, and they were informed that a copy of the results would be available at their Community Centre after completion of the study. Participants were handed a further one-page letter asking them for assistance in locating people who had left their program. An assortment of reading glasses was provided in case exercisers did not have their own glasses. Questionnaires were filled out in a leisure area with tables and chairs adjacent to the exercise room. The researcher was always present to answer any questions people might have while filling out the questionnaires. Two participants asked the researcher to read the questions to them and fill in the provided answers. The time required by respondents to fill out the questionnaire for both groups varied from 20 to 40 minutes. However, not enough respondents resulted from programs at the North Vancouver Recreation Centre and more participants were found in various exercise programs for older adults in the adjacent communities of West Vancouver and Lions Bay. Due to the limited availability of community fitness programs exclusively geared towards people age 50 and over, a convenience sample of 75 participants was obtained.

Drop-outs

Respondents for the drop-out group were required to have dropped out of a fitness program geared towards older adults within the last two years. Participation in such a program for at least one month before discontinuing was a further stipulation to be included in this group. Respondents resided in the communities of North Vancouver, West Vancouver, Lions Bay, Bowen Island, East Vancouver, and Vancouver's West End.

Various means were employed to locate older adults who had dropped out of a community fitness program geared towards people age 50 and over. Advertisements asking for suitable candidates were put up in community recreation centres and seniors' centres. Only three respondents resulted from this approach. Handing out letters to subjects in the participant group again only showed minimal results. Networking by the researcher proved to be the most successful method in locating respondents for this group. Fitness instructors of pertinent programs in the chosen communities were most helpful in providing names of people who had dropped out of their programs. Respondents also remembered names of acquaintances who had left exercise programs. Some respondents were initially introduced to the study by their former fitness instructor prior to the researcher's telephone call. Candidates for the drop-out group were individually approached by telephone. Most people agreed to voluntarily fill out the questionnaire. Two people cited time pressure as the reason for not wanting to participate. Respondents filled out their questionnaire either in their home with the researcher present or the researcher filled out the questionnaire during a telephone interview with a respondent. It was necessary to add telephone interviews to the method of data collection because many respondents felt that it was much more convenient for them to do the interview over the telephone rather than having to arrange for a mutually convenient time and place for filling out the questionnaire. Twenty-seven questionnaires were done on a personal basis with the researcher present to answer any possible questions. Again, respondents were handed a questionnaire and pencil, along with the explanatory letter and the letter asking for names of people who had left an exercise program. On two occasions, both husband

and wife each filled out a questionnaire while the researcher was at their home.

Twenty-three questionnaires were filled out employing the telephone method. Before starting, respondents were informed of the content of the explanatory letter, of the approximate time required to fill out the questionnaire, and that they could ask the researcher to read a question as many times as necessary in order to understand their content, or that they could ask any question they would like in order to better understand a question. This was worded in the same way as for members of the participant group or for respondents for the drop-out group who filled out the questionnaire with the researcher present in their homes. One person decided not to complete the telephone interview as she felt that the questions relating to medical visits and prescription drug use were too intrusive. The described ways of locating older people who had dropped out of an exercise program resulted in 50 respondents for the drop-out group.

Socio-demographic Characteristics of the Sample

Respondents in the participant group (n = 75) included 51 females (68%) and 24 males (32%) who ranged in age from 51 to 84 (mean age 63.8). The average time in a fitness program was 17 months. For frequency distributions of socio-demographic variables for both groups see Table 2.

Members in the drop-out group (n = 50) consisted of 42 females (84%) and 8 males (16%); they ranged from age 50 to 81 (mean age 66.4). The average time in a program before dropping out was 9 months.

Instrument

The questionnaires constructed for this study (one for each group) are shown in Appendixes A (participants) and B (drop-outs). In each, the first set of questions related to respondents' health. They were asked to rate their subjective overall health, overall mood, and possible limitation because of a long term physical condition or health problem. They indicated if they had existing medical conditions, such as heart or blood vessel disease, high blood pressure, cancer, arthritis, rheumatism or joint disease, osteoporosis or any other condition. Respondents were asked for their weight, height, how many times they had visited a medical doctor or another health care specialist within the last 6 months, how many different prescription drugs they took every day, and how many non-prescription drugs they consumed on a regular basis. Further questions addressed smoking and drinking patterns.

The following section related to exercise patterns and history. Respondents were asked to rate their current exercise behavior in order to determine their exercise stage according to the transtheoretical model. A grid-chart was used so that respondents could indicate in which physical activities they currently participated and the frequency and duration of these activities. Information was sought on the preferred exercise environment and lifetime exercise history. Participants were asked how long they had participated in the relevant exercise program, while drop-outs were asked to name the exercise program they had discontinued and how long they had participated before deciding to leave.

Respondents were then asked a set of questions which related to perceived enjoyment, satisfaction, and exercise well-being associated with the exercise program

measured at various points in time: a) while performing the exercise, b) for the remainder of the day after exercising, c) two months after starting their program, and d) how much overall enjoyment they expected when they first signed up. Participants were asked how much overall enjoyment they presently derived from their exercise program. For the participant group, the described questions were worded in the present tense, while past tense was used for the drop-out group.

Respondents' perceptions of group social support and group cohesion were assessed next. Again, present tense was used for wording questions relating to participants, and past tense for drop-outs. Following was a set of questions addressing various aspects of exercise self-efficacy. Motivational and practical reasons for joining their exercise program were then solicited from all respondents.

Participants were asked to indicate what made their program special to them and what their expectations were as a result of continuing participation in the exercise program. Drop-outs were asked for their reasons for leaving the exercise program.

A last set of questions related to demographic information, including age, sex, marital status, living conditions, caregiving responsibilities, income, country of origin, and education. A final question invited respondents to add any comments they would like.

Measurement

This section will describe the measures and scoring used for variables chosen for descriptive, bivariate and multivariate analyses. Wherever possible, an attempt was made to fill in any missing data on the questionnaires by recontacting respondents by telephone.

If a respondents could not be reached, or for sensitive questions (e.g., income or age) missing values were replaced by the mean value (for interval data), or mode (for all other data) for each group. No questionnaire had to be discarded because of missing data.

Health

To obtain a subjective health score, respondents were asked to indicate their overall health on a 4-point rating scale, ranging from 1 (poor) to 4 (very good). Overall mood was similarly assessed on a 4-point scale, ranging from 1 (depressed) to 4 (happy). For multivariate analysis, both items were recoded into dichotomous variables (health: very good/all others; mood: happy/all others). In order to determine how limitations in the kind or amount of activity due to long term physical conditions or health problems affect exercise maintenance, respondents were asked to indicate if they were very limited, somewhat limited, a little limited, or not limited. For analytical purposes, this variable was recoded into 3 categories (very and somewhat limited, a little limited, not limited).

To obtain an objective health score, 6 specific questions regarding existing medical conditions (e.g., heart or blood vessel disease, high blood pressure, cancer) requiring "yes" or "no" answers were asked. These items were combined into a total health score with a range of 0 to 6. In order to establish body mass index (BMI), people were asked for their weight and height. To further assess health status, respondents were asked how many times they had visited a Medical Doctor or other health care specialists within the last 6 months, how many prescription drugs they took every day, and how many non-prescription drugs they took on a regular basis. They were also asked to indicate if

they smoked regularly, only occasionally, or never. Use of alcohol was determined with seven categories, ranging from "never" to "3 or more drinks a day". The medical and health literature often indicates that moderate drinking (1 or 2 drinks/day) is beneficial to heart health. This question tried to establish if there was an association between exercise behavior and self-reported alcohol consumption.

Exercise Patterns and History

The transtheoretical model was used to assign people to the appropriate stage in their exercise behavior (Prochaska, DiClemente, & Norcross, 1992). The 5-step stage ladder was used for assessing respondents' current stage. Since participants already belonged to an exercise group, they were asked to check one of only three questions that describe the preparation, action, and maintenance stages. Drop-outs were presented with all 5 questions, including the precontemplation and contemplation stages.

Participants indicated how many years and months they were part of the same exercise program, while drop-outs were asked to name the program they left and indicate on a 6-point scale (from "less than 1 month" to "more than 1 year") how long they participated in that program before dropping out.

In order to determine how many minutes respondents were usually physically active per week, they were asked to mark the appropriate boxes on a grid-chart indicating the type of exercise, the frequency, and the duration in minutes per session.

To ascertain respondents' lifetime exercise histories, a further chart asked people to indicate if they had regularly participated in group exercise, individual exercise, or no exercise in 10-year increments (age 10-19, 20-29 etc.).

Enjoyment and Satisfaction, and Exercise Well-Being

Items taken from the Physical Activity Enjoyment Scale (PACES) (Kendzierski & DeCarlo, 1991) were used to measure enjoyment and satisfaction while performing the exercise, as well as exercise well-being for the remainder of the day after exercising. PACES contains 18 seven-point bipolar items. Internal consistency was assessed in two studies conducted with undergraduate students using exercise bicycles and abdominal workout machines. Cronbach's (1951) coefficient alpha was .93 in both instances. Two additional studies provided further evidence of reliability and validity of PACES (Kendzierski & DeCarlo, 1991).

In order to provide consistency with other response sets in the questionnaire, it was decided to use five-point scales for all social and psychological items. Five questions from PACES using a five-point bipolar scale were chosen to assess enjoyment and satisfaction while doing the exercise. The question was worded in the following way:

Please rate how you usually feel about the physical activity you are doing in this program, while you are doing it.
For each statement, please circle the most appropriate number from the rating scale of 5 choices.

5	4	3	2	1
I enjoy it		indifferent		I hate it

The anchors for the remaining four questions to assess enjoyment and satisfaction were: I find it energizing/I find it tiring, I feel interested/I feel bored, I feel good physically/I feel bad physically, It gives me a strong sense of accomplishment/It does not give me any sense of accomplishment (for exact wording see question 15 in Appendix A). It should be noted that the bipolar scales can be combined to form an interval measurement. Scores of these 5 questions were totalled to represent the overall variable of "enjoyment and satisfaction while doing the exercise" (range = 5 to 25). Each item was also examined individually (range = 1 to 5).

The variable "exercise well-being for the remainder of the day after exercising" was computed by adding scores from 4 five-point bipolar questions (range = 4 to 20). These questions followed the format of PACES, asking respondents to "Please rate how you usually feel for the remainder of the day after you exercised." Two questions related to feelings of physical well-being (anchors: I feel energized/I feel tired, I feel good physically/I feel bad physically) and two questions assessed feelings of psychological well-being (anchors: I feel relaxed/I feel tense, I feel happy/I feel depressed) (see question 15 in Appendix A). Each individual question was again examined as a separate factor (range = 1 to 5).

A question was designed to measure expected enjoyment retrospectively: "Please think back to when you started this program. How much enjoyment did you expect to get from this exercise program, when you first signed up." A 5-point bipolar scale quantified expected enjoyment just before starting a program from 1 (none at all) to 5 (very much).

Overall enjoyment was similarly assessed retrospectively at two months after starting a program and was again measured on a 5-point bipolar scale from 1 (none at all) to 5 (very much). A further question, again on a 5-point bipolar scale, assessed how much overall enjoyment participants derived from the exercise program at the time of filling out the questionnaire (see Appendix A).

An additional variable, "relative enjoyment" was created by subtracting expected enjoyment from scores obtained for overall enjoyment two months after starting a program (range = -2 to 4). This variable was recoded into 4 values (range = 1 to 4).

Group Social Support and Group Cohesion

The Group Environment Questionnaire (GEQ) Modified for the Exercise Setting (Spink & Carron, 1994) was used to develop a set of questions to assess group social support and group cohesion for this study. The GEQ was originally developed for the sport domain by Widmeyer, Brawley and Carron (1985). The modified GEQ includes 18 questions organized into four subscales labelled attraction to the group-task (ATG-Task), attraction to the group-social (ATG-Social), group integration-task (GI-Task), and group integration-social (GI-Social). Each item is scored on a 9-point bipolar scale. For this study, the two subscales relating to group tasks (ATG-Task, and GI-Task) were not used. ATG-Social "assesses the attractiveness of the group as a social unit and the social interactions and friendship opportunities available within the group for the individual personally", while GI-Social "assesses the individual's perceptions of the socially oriented similarity, closeness, and bonding within the group as a whole" (Spink & Carron, 1994, p.

31). Internal consistency reliabilities using Cronbach's (1951) alpha from two studies with 198 and 290 fitness class participants respectively were .62 and .61 for ATG Social, and .77 and .78 for GI-Social (Spink & Carron, 1994). This study used 4 questions from the GEQ to assess ATG-Social, and 4 questions to assess GI-Social for the participant group, while members of the drop-out group were only asked 3 of these questions. The original 9-point GEQ scale was modified into a 5-point bipolar scale which retained the original anchors of strongly disagree (1) to strongly agree (5).

Many respondents verbally expressed frustration to the researcher with the double negative wording and scoring anchors of most of these questions. Many answers were left blank or showed the middle value (3). One question for ATG-Social (For me this exercise class is one of the most important social groups to which I belong) showed none of these flaws and was chosen to represent the variable of perceived group social support. The GI-Social questions which were to measure perceptions of group cohesion were dropped from the analysis because of the aforementioned problems.

To determine if the exercise environment played a role in continued participation, people were asked to indicate if they preferred to exercise in a group, alone (but out of home), or at home. Some respondents chose multiple responses. This resulted in 7 different categories. For analytical purposes, this variable was recoded into a dichotomous variable distinguishing between group exercise and all other types. This variable will be included in evaluating the role of perceived social support in exercise maintenance.

Exercise Self-Efficacy

To measure exercise self-efficacy a 7 item 5-point bipolar rating scale ranging from 1 (not at all confident) to 5 (very confident) was adapted from Marcus, Selby, Niaura, and Rossi (1992). The original scale contains 5 items and is worded: "I am confident I can participate in regular exercise when: a) I am tired, b) I am in a bad mood, c) I feel I don't have the time, d) I am on vacation, e) It is raining or snowing". For this study "raining" and "snowing" were separated into two items. The rationale for this was that rain is common and expected in this geographical area, while snow is less frequent but presents considerable hazards for driving or walking on hillsides, especially for older adults. A 7th item that was created for this study (I am exercising alone) was dropped from the analysis as it added no discriminant knowledge to the variable. The Exercise Self-Efficacy Scale (ESE) was developed by Marcus et al. (1992) to measure people's confidence in their ability to maintain regular exercise behavior under various adverse circumstances, such as negative affect, time pressure, or climatic events. Test-retest (product moment) reliability for the ESE over a two-week period was .90 ($n = 20$) among employees in a workplace setting. For this study all 6 items were combined into a total exercise self-efficacy score by adding individual scores from each question (possible range from 6 to 30). Each item was also analysed separately in order to investigate which factors were most important in maintenance of regular exercise in older adults. Scheduling self-efficacy was defined by item three "I feel I don't have the time" with a possible range from 1 to 5.

Reasons for Joining a Program

A series of questions investigated if there were differences between groups in motivational factors before starting a program. Three questions elicited answers that expressed either a desire to join a program (I would like to join ...) or a perceived obligation to self (I should join ...) or others (I have been instructed to join ...) just before starting. Respondents were asked to complete only one of these sentences. The number of answers to each of these questions were added for both groups. Three yes/no answers ascertained how respondents first became aware of their exercise program while a further 3 yes/no answer set investigated if people were referred to the program by a medical doctor, a physiotherapist, or other.

Reasons for Remaining in a Program

Participants were asked to describe what made the program special to them. These qualitative answers were coded into 12 categories. Most people gave more than one reason. A further qualitative question asked participants what their expectations were as a result of continuing participation in their exercise program. Answers were coded into 10 categories. Again, most people cited more than one expectation. For both qualitative questions interrater reliability of 95% was established by having a master's student code a sample of 20 answers.

Reasons for Leaving a Program

Respondents for the drop-out group were asked to indicate their reasons for leaving the program by marking all appropriate reasons of 8 possible choices. They were further asked to describe the main reasons for leaving in their own words. For evaluative purposes, reasons cited in this qualitative answer were cross-checked with the 8 choices provided in the previous question. As a result of this process, a ninth category (lack of motivation) was added to the list.

Demographic Information

Respondents were asked to indicate their age, sex, and marital status. Marital status included 4 categories (married, widowed, divorced or separated, never married) which were recoded into a dichotomous variable (married/all others) for multivariate analysis. Respondents indicated their living conditions by marking the appropriate category from 7 choices. Respondents indicated if they were the main caregiver of another person by choosing "yes" or "no". Yearly combined family income was obtained from 7 choices (range from < \$10,000 to > 60,001). This question was left unanswered by 18 participants (24%) and 2 drop-outs (4%). For analytical purposes, these missing values were replaced by the mode for each group (participants, drop-outs). To determine if cultural origins had an effect on exercise maintenance, respondents were asked if they were a first generation immigrant, and if yes, from which country. Level of education was assessed with 5 possible categories. For multivariate analysis, this variable was recoded

into three categories (up to secondary school, some college or university, or university degree).

The final question invited respondents to add any comments they would like. These qualitative answers were evaluated with the intent to provide added information regarding respondents' reasons for leaving a program, or for remaining in a program. Some respondents also provided ideas on what factors could improve the exercise program they participated in. These will be used in the discussion.

Analyses

Descriptive analyses are used to allow exploration of socio-demographic characteristics of respondents as well as factors that are involved in maintenance of an exercise program among participants, or reasons leading to discontinuation among people who dropped out of such a program. Bivariate analyses are used to test the hypotheses developed in Chapter 2. Crosstabulations between belonging to the participant or drop-out group (dependent variable) with variables such as perceived enjoyment and satisfaction, exercise well-being, group social support, and exercise self-efficacy (independent variables) are examined. Multivariate analyses are employed to determine which variables provide predictive power in exercise maintenance in older adults.

Methodological Issues

Several methodological issues pertinent to this study are outlined in order to draw attention to some of the limitations of this research.

First, the relatively small sample size of 125 subjects (75 and 50, respectively) provided weak statistical power to detect small effects between maintainers of exercise and people who dropped out of their exercise program. To deal with this limitation, the minimum level of significance was set at $p < .10$.

Second, this study used a cross-sectional research design. A longitudinal design, which would allow interviewing the same people at various points in time, would be preferable to distinguish factors that lead to maintenance or discontinuation of regular participation in community fitness programs for older adults. Time constraints for completion of a master's thesis limited design options.

Third, collecting retrospective information from older subjects may be viewed as problematic. However, retrospective information relating to lifetime exercise behavior has been used extensively in studies with older women (e.g., O'Brien Cousins, 1995; O'Brien Cousins & Keating, 1995). For example, Sallis, Hovell, and Hofstetter (1992) used retrospective information in a study on adoption and maintenance of physical activity with 2,053 adults. Assessment of both historical and contemporary variables relating to regular vigorous exercise in men and women showed acceptable test-retest reliabilities with over 80% agreement to a subsample of questionnaire items 1 week apart (Hovell et al., 1989).

Chapter IV

RESULTS

The following sections will first present results as they relate to the hypotheses flowing out of chapter two. Bivariate analyses are used for this purpose. Multivariate analyses will then explore which variables provide predictive power in exercise maintenance in older adults. Following will be descriptive analyses which will describe socio-demographic characteristics pertaining to each group as well as factors which may be involved in maintenance or discontinuation of regular participation in exercise programs for older adults.

Two software packages were used to input and analyse the data. A data base system, Lotus 1-2-3, was used to input the data which was then transmitted into the Statistical Package for Social Sciences (SPSS for MS WINDOWS 6.1). SPSS provides statistical programs for univariate (descriptive), bivariate, and multivariate analyses.

As previously discussed, the relatively small sample size of 125 subjects led to the decision to accept levels of significance (p values) of $p < .10$, which indicates the probability of a difference between groups due to sampling error. This means that differences at the $p < .10$ level could have been produced solely by chance in less than 10 out of 100 separate samples of identical size of the population under study.

Univariate Analysis

This section will describe the variables that are used in the subsequent sections that describe bivariate and multivariate analyses. Table 1 shows frequency distributions for the dependent variable (group status) and the socio-psychological variables used in the subsequent analyses. All measures for these variables are interval scales. Table 2 displays frequency distributions for the control variables that were included in the logistical regression. Measures for independent control variables are either interval or categorical.

Variables	Interval scales with anchors	Participants		Drop-outs	
		Frequency	valid %	Frequency	valid %
Dependent Variable					
Group		75	100	50	100
Independent Variables					
Expected enjoyment	1 - none at all	1	1.3	1	2
	2 -	5	6.7	2	4
	3 - a little	25	33.3	24	48
	4 -	22	29.3	13	26
	5 - very much	22	29.3	10	20
Variables used for enjoyment/satisfaction while exercising:					
Enjoyment while exercising	1 - I hate it	1	1.3	-	-
	2 -	-	-	2	4
	3 - indifferent	3	4	3	6
	4 -	7	9.3	6	12
	5 - I enjoy it	64	85.3	39	78
Sense of accomplishment while exercising	1 - none	-	-	1	2
	2 -	1	1.3	1	2
	3 - indifferent	3	4.0	7	14
	4 -	14	18.7	17	34
	5-strong sense	57	76	24	48

Variables	Interval scales with anchors	Frequency	valid %	Frequency	valid %
Feelings of energy while exercising	- It is tiring	1	1.3	3	6
	2 -	-	-	3	6
	3- indifferent	1	1.3	4	8
	4 -	9	12	7	14
	5 - energizing	64	85.3	33	66
Physical feelings while exercising	1 - I feel bad	-	-	-	-
	2 -	-	-	1	2
	3 - indifferent	-	-	5	10
	4 -	8	10.7	7	14
	5 - I feel good	67	89.3	37	74
Feelings of interest while exercising	1 -I feel bored	3	4	-	-
	2 -	-	-	1	2
	3 - indifferent	3	4	8	16
	4 -	8	10.7	7	14
	5 - Interested	61	81.3	34	68
Enjoyment 2 months after starting	1 - none at all	-	-	-	-
	2 -	1	1.3	1	2
	3 - a little	6	8	6	12
	4 -	22	29.3	14	28
	5 - very much	46	61.3	29	58
Group social support	1- disagree	7	9.3	15	30
	2 -	12	16	17	34
	3 -	26	34.7	6	12
	4 -	14	18.7	6	12
	5 - agree	16	21.3	6	12
Variables used for exer- cise well-being for the remainder of the day:					
Feelings of energy	1 - I feel tired	1	1.3	4	8
	2 -	-	-	2	4
	3 - no change	4	5.3	8	16
	4 -	17	22.7	15	30
	5 - energized	53	70.7	21	42
Physical feelings	1 - I feel bad	-	-	1	2
	2 -	-	-	2	4
	3 - no change	3	4	6	12
	4 -	14	18.7	12	24
	5 - I feel good	58	77.3	29	58

Variables	Interval scales with anchors	Frequency	valid %	Frequency	valid %
Feelings of relaxation	1 - I feel tense	-	-	-	-
	2 -	-	-	-	-
	3 - no change	5	6.7	10	20
	4 -	18	24	9	18
	5 - relaxed	52	69.3	31	62
Feelings of happiness	1 - depressed	-	-	-	-
	2 -	-	-	-	-
	3 - no change	9	12	9	18
	4 -	14	18.7	12	24
	5 - happy	52	69.3	29	58
Variables used for exercise self-efficacy:					
If snowing	1 - not confid.	4	5.3	12	24
	2 -	2	2.7	4	8
	3 -	14	18.7	9	19
	4 -	15	20	5	10
	5 -very confid.	40	53.3	20	40
If no time	1 - not confid.	3	4	9	18
	2 -	4	5.3	7	14
	3 -	20	26.7	9	18
	4 -	28	37.3	7	14
	5 -very confid.	20	26.7	18	36
If raining	1 - not confid.	-	-	5	10
	2 -	2	2.7	2	4
	3 -	9	12	4	8
	4 -	12	16	5	10
	5 -very confid.	52	69.3	34	68
If tired	1 - not confid.	5	6.7	7	14
	2 -	5	6.7	6	12
	3 -	17	22.7	9	18
	4 -	23	30.7	15	30
	5 -very confid.	25	33.3	13	26
If in a bad mood	1 - not confid.	3	4	1	2
	2 -	3	4	2	4
	3 -	9	12	6	12
	4 -	26	34.7	19	38
	5 -very confid.	34	45.3	22	44

Variables	Interval scales with anchors	Frequency	valid %	Frequency	valid %
If on vacation	1 - not confid.	23	30.7	19	38
	2 -	10	13.3	4	8
	3 -	11	14.7	5	10
	4 -	17	22.7	10	20
	5 -very confid.	14	18.7	12	24

Table 2
Frequency Distributions for Independent Control Variables

Variables	Interval scales or categories	Participants		Drop-outs	
		Frequency	valid %	Frequency	valid %
Perceived health	Poor	-	-	1	2
	Fair	3	4	4	8
	Good	41	54.7	30	60
	Very good	31	41.3	15	30
Perceived mood	Depressed	-	-	-	-
	Somewhat depr.	5	6.7	2	4
	somewhat happy	30	40	16	32
	Happy	40	53.3	32	64
Body Mass Index	Range: < 20	4	5.3	2	4
	20 - 24.9	40	53.4	19	38
	25 - 26.9	7	9.3	10	20
	≥ 27	24	32	19	38
		mean=25.1 S.D.=4.1		mean=25.9 S.D.=3.8	
Age	Range: 50 -59	20	26.7	8	16
	60 - 69	42	56	22	44
	70 - 79	11	14.6	19	38
	80 +	2	2.7	1	2
		mean=63.8 S.D.=7.3		mean=66.4 S.D.=7.2	

Variables	Interval scales or categories	Frequency	valid %	Frequency	valid %
Sex	Male	24	32	8	16
	Female	51	68	42	84
Objective health (only "yes" answers are listed)	Heart disease	5	6.7	13	26
	High B.P.	14	18.7	9	18
	Cancer	4	5.3	2	4
	Arthritis	25	33.3	22	44
	Osteoporosis	9	12	5	10
	Other	14	18.7	16	32
Limitation	Very limited	2	2.7	1	2
	Somewhat limit.	14	18.7	14	28
	A little limited	21	28	11	22
	Not limited	38	50.7	24	48
Preferred exercise environment	In a group	65	86.7	27	54
	Alone	1	1.3	11	22
	At home	-	-	6	12
	Group and other	9	12	6	12
Marital status	Married	44	58.7	29	58
	Widowed	15	20	13	26
	Divorced/separ.	15	20	6	12
	Never Married	1	1.3	2	4
Minutes /week total all exercise	Range: < 90	23	38.7	20	40
	90 - 120	16	21.3	2	4
	121 - 240	19	25.3	13	26
	241 - 360	8	10.7	9	18
	> 361	9	12	6	12
		mean=179 S.D.=178		mean=197 S.D.=202	
Income	< 10,000	1	1.3	-	-
	10,001 - 20,000	9	12	5	10
	20,001 - 30,000	11	14.7	16	32
	30,001 - 40,000	29	38.7	10	20
	40,001 - 50,000	4	5.3	5	10
	50,001 - 60,000	7	9.3	3	6

Variables	Interval scales or categories	Frequency	valid %	Frequency	valid %
Income - continued	> 60,001	14 mean = 43,730 S.D=1659	18.7	11 mean = 43,600 S.D=1723	22
Education	Elementary	1	1.3	-	-
	Some secondary	1	1.3	-	-
	Secondary	21	28	6	12
	Some university	37	49.3	24	48
	University degr.	15	20	20	40

Bivariate Analyses

Bivariate analysis allows for an assessment of the magnitude of difference between the dependent variable and the independent variable. As a rule of thumb, correlations ranging from zero to .2 are considered weak, those between .2 and .3 moderate, and those over .3 moderate to strong. A negative sign before the correlation indicates a negative or inverse relationship. The dependent variable for this study is dichotomous - belonging to the participant group or the drop-out group, which is assumed to be influenced by a variety of independent variables. A positive correlation therefore indicates that scores were higher for participants than for drop-outs.

All variables, except one, used to test the hypotheses in this study are considered interval, which means that they have equal intervals between categories. One variable is dichotomous (preference of exercise environment), and can therefore also be treated as an

interval variable. Pearson's r will therefore be used to indicate the magnitude of difference for all variables.

To initially test the 7 hypotheses developed in chapter 2, crosstabulations have been performed between the dependent variable (belonging to the participant group or drop-out group) and the independent variables. These include: 1) expected enjoyment, 2) enjoyment and satisfaction while performing the exercise, 3) overall enjoyment two months after starting a program, 4) relative enjoyment, 5) exercise well-being for the remainder of the day, 6) group social support, and 7) exercise and scheduling self-efficacy.

Hypothesis 1

Participants in an exercise program will report higher expected enjoyment scores than drop-outs.

This hypothesis states that older adults who regularly participate in a community fitness program at the time of the study would report higher retrospective levels of expected enjoyment just before they started an exercise program than would people who had dropped out of such a program. Although visual examination of the data in Table 3 reveals that a higher percentage of participants report higher values for expected enjoyment, this association is not statistically significant ($r = .11$, ns).

Table 3
Crosstabulation of Group and Expected Enjoyment Prior to Starting a Program

Group	none at all		1		2		3		4		very much	
	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%	(N)	%
Participants	1	1.3	5	6.7	25	33.3	22	29.3	22	29.3		
Drop-outs	1	2	2	4	24	48	13	26	10	20		

$r = .11$, ns

Hypothesis 2

Participants in an exercise program will report higher enjoyment/satisfaction scores while performing the exercise than drop-outs.

To test this hypothesis, both the combined enjoyment/satisfaction scores, as well as the individual items, were investigated to compare this variable. First, it was expected that participants would report higher overall scores in this variable measuring both enjoyment and satisfaction than drop-outs. Hypothesis 2 is confirmed by the statistically significant positive association between group status and the combined variable of enjoyment and satisfaction while performing the exercise, $r = .26$, $p = .003$.

Second, individual items that were combined into the total enjoyment/satisfaction scores, are examined in Table 4. The item measuring feelings of enjoyment while performing the exercise shows no significant difference between the two groups ($r = .09$, ns), although the association was in the expected direction. Crosstabulating the scores for sense of accomplishment while exercising resulted in a significant difference between the two groups, $r = .29$, $p = .001$. This suggests that people who are continuing exercisers report a significantly stronger sense of accomplishment while exercising than do people who had dropped out of a program. The association between feelings of energy and group status reveals that members of the participant group found exercising significantly more energising than did drop-outs while performing the activity, $r = .27$, $p = .002$. Comparing the two groups on their physical feelings while exercising shows that participants felt significantly better physically than did drop-outs, $r = .26$, $p = .003$. The final question regarding enjoyment and satisfaction while exercising investigated how interested people felt in the exercise activity while doing it. Results indicate no significant

difference between the two groups ($r = .10$, ns). However, the trend was again for participants to show more interest in the activity than did drop-outs.

Table 4
Crosstabulations of Group and Enjoyment and Satisfaction while Exercising

Variables	r	p-value
Combined score for enjoyment/satisfaction	.26	.003
Enjoyment while exercising	.09	ns
Sense of accomplishment while exercising	.29	.001
Feelings of energy while exercising	.28	.002
Physical feelings while exercising	.26	.003
Feelings of interest while exercising	.10	ns

Hypothesis 3

Participants in an exercise program will report higher overall enjoyment scores two months after starting a program than drop-outs.

This hypothesis stipulated that people who remain in an exercise program would report that they derived higher overall enjoyment from their exercise program two months after starting when compared with people who later dropped out of such a program.

Although results indicate a trend in the expected direction, crosstabulation of reported overall enjoyment scores derived from an exercise program two months after starting did not reveal a statistically significant difference between the participant and the drop-out groups ($r = .06$, ns).

Hypothesis 4

Participants in an exercise program will demonstrate higher relative enjoyment scores than drop-outs.

This variable was constructed to measure relative enjoyment by subtracting retrospective expected enjoyment scores before starting the program from overall enjoyment scores reported two months after participating in the program. Crosstabulation of these variables showed no statistically significant difference between group one and group two ($r = -.05$, ns).

Hypothesis 5

Participants in an exercise program will demonstrate higher perceived exercise well-being than drop-outs for the remainder of the day after exercising.

This hypothesis tested exercise well-being during the rest of the day after exercising as a combined score of 4 questions as well as separately analysing each of these 4 factors, two of which represented physical factors (energy and physical feelings), while the remaining two measured psychological domains (feelings of relaxation and happiness). As shown in Table 5, crosstabulating the combined variable of exercise well-being with belonging to either group confirmed a statistically significant difference between groups, $r = .28$, $p = .001$. This association indicates that participants report significantly higher scores for exercise well-being for the remainder of the day after exercising than people who dropped out of a program. Turning to the individual items, exercise participants report significantly higher feelings of energy than drop-outs, $r = .33$, $p = .000$. Crosstabulating scores for how people felt physically for the rest of the day after exercising also reveals a statistically significant association ($r = .27$, $p = .002$). Bivariate analysis of both feelings of relaxation and feelings of happiness for the remainder of the day after exercising did not result in statistically significant differences between the

two groups ($r = .14$, ns; $r = .12$, ns respectively). However, the associations were in the anticipated direction. In sum, it is noteworthy that the physical factors related to exercise well-being showed statistically significant differences between the two groups, while psychological factors did not significantly discriminate participants from drop-outs.

Table 5
Crosstabulations of Group and Exercise Well-Being for the Remainder of the Day after Exercising

Variables	r	p-value
Combined scores for exercise well-being	.28	.001
Feelings of energy	.33	.000
Physical feelings	.27	.003
Feelings of relaxation	.14	ns
Feelings of happiness	.12	ns

Hypothesis 6

Participants in an exercise group will perceive more group social support than drop-outs during a program.

It was expected that older adults who remain in an exercise program will report higher group social support than people who later drop out of a program. The bivariate association confirmed this hypothesis, $r = .31$, $p = .000$. This indicates that participants assigned a higher value to their exercise class as being one of the most important social groups to which they belong when compared to drop-outs.

A further variable used in this study to measure perceived group social support (Hypothesis 6) was people's preference of exercise environment. This hypothesis assumed that participants would prefer a group environment to exercise significantly more often

than any other environment (e.g., exercising alone, or at home) when compared to drop-outs. Crosstabulation supported this assumption, $r = .36$, $p = .000$.

Hypothesis 7

Participants will demonstrate higher exercise and scheduling self-efficacy than drop-outs.

This hypothesis tested exercise self-efficacy with a combined score from 6 different questions as well as separately analysing each of these 6 factors. Crosstabulation of the combined variable confirmed that participants exhibited significantly higher scores for exercise self-efficacy than did drop-outs, $r = .20$, $p = .02$. Table 6 summarises the results of the crosstabulations for the 7 items that were included in evaluating exercise and scheduling self-efficacy.

Examining how confident respondents were that they could participate in regular exercise when it was snowing revealed a significant difference between the two groups, $r = .28$, $p = .002$. The scheduling self-efficacy item as a variable was evaluated using respondents' scores regarding their confidence that they would participate in regular exercise even if they felt they did not have the time. Crosstabulation confirmed a statistically significant difference between participants and drop-outs, $r = .16$, $p = .07$. Crosstabulating scores regarding people's confidence in their ability to exercise when it was raining ($r = .14$, ns), and when they were tired ($r = .14$, ns) resulted in no statistically significant relationships, however, the associations were in the anticipated direction. Analysing the level of confidence in participating in regular exercise when respondents were in a bad mood, or when they were on vacation revealed no statistically significant

difference between the two groups. In sum, only snowing and time were found to be important predictors of group status.

Table 6
Crosstabulations of Group and Exercise and Scheduling Self-Efficacy

Variable	r	p-value
Combined scores for exercise self-efficacy	.20	.02
If snowing	.28	.002
If no time	.16	.07
If raining	.14	ns
If tired	.14	ns
If in a bad mood	-.02	ns
If on vacation	.00	ns

Summary

The preceding section accepted or rejected hypotheses on the basis of statistically significant differences between belonging to the participant group or the drop-out group and selected independent variables. Hypotheses 1, 3, and 4 did not show statistically significant differences, although results were in the expected direction. Hypothesis 2, 5, 6, and 7 were confirmed. The major findings were that 1) enjoyment and satisfaction while performing the exercise, 2) perceived exercise well-being for the remainder of the day after exercising, 3) perceived group social support, and 4) exercise self-efficacy, significantly distinguished participants from drop-outs.

Multivariate Analyses

In order to examine the independent effects of the independent variables under study, multivariate analyses are needed. Logistic regression is a statistical technique that is suitable to perform multivariate analyses. It is the method of choice for a design that uses multiple independent variables with one dependent variable that is a dichotomy (Howell, 1992), such as group status. For this study, multivariate analyses have been employed to determine which variables have predictive power in promoting continued participation in an exercise program, or conversely, play a part in dropping out of such a program.

For this study, six independent variables were selected as potentially relevant socio-psychological factors involved in exercise maintenance among older adults. They include: 1) expected enjoyment prior to starting a program, 2) enjoyment and satisfaction while performing the exercise, 3) overall enjoyment after 2 months, 4) group social support, 5) perceived exercise well-being for the remainder of the day after exercising, and 6) exercise self-efficacy. Table 7 presents the correlation matrix for these variables. None of the correlations exceed .7, suggesting that the variables are not collinear.

Table 7
Correlations Matrix for Exercise Variables

	E + S while exercising	Enjoyment after 2 month	Group social support	Remainder of day	Exercise self-efficacy
Expected enjoyment	.12	.32**	.13	.09	.06
E+S while exercising	-	.56**	.39**	.62**	.37**
E after 2 months	-	-	.25*	.41**	.29*
Group social support	-	-	-	.45**	.28*
Remainder of day	-	-	-	-	.44**

* $p < .01$

** $p < .001$

$N = 125$

Two hierarchical models will be used in the logistic regression. Model 1 will include only the six socio-psychological variables in order to examine their impact on exercise maintenance separately (see Table 8). Model 2 will entail the six socio-psychological variables from model 1 as well as several socio-demographic factors as control variables. The control variables are: perceived health, perceived mood, body mass index, age, sex, total health score, limitation in the ability to be physically active, marital status, total of minutes/week spent doing exercise, income, and education. These variables were selected from the literature as potential covariates of participation in exercise programs among older adults (e.g., DuCharme & Brawley, 1995; Wister, 1993).

For the logistic regression, the following statistics will be presented: 1) the logistic regression coefficient (B), 2) its standard error, 3) its odds ratio, and 4) the level of significance. The logistic regression coefficient (B) indicates the change in the log odds of belonging to group one (compared to group two) with a one-unit change in an independent variable. The regression coefficient also controls statistically for the effects of all other independent variables in the regression model. The odds ratio represents the ratio of the probability that a respondent belonged to the participant group to the probability that they did not for each unit change in the independent variable. Wister (1995) explains that "a positive coefficient results in an odds ratio ranging between one and infinity, whereas a negative coefficient ranges between singularity and zero (but never reaching zero)" (p. 32). Using an interval variable as an example for an independent variable, an odds ratio of 1.50 would indicate that the probability of belonging to the participant group is increased for this variable by one and one half times for each one-unit

change in the independent variable, while statistically controlling for all other independent variables entered into the equation. A further statistic used for this logistic regression is the Log Likelihood Chi Square. A statistically significant result indicates that "the overall model does not significantly differ from the "perfect" model using all of the independent variables" (Wister, p. 32). Model 1 was found to be statistically significant (Model Chi-square = 21.19, $p < 01$). The overall model including both socio-psychological and control variables (model 2) showed statistical significance as well (Model Chi-square = 68.49, $p < .001$).

Table 8
Logistic Regression for Exercise Maintenance and Independent Variables

Variables	Model 1			Model 2		
	B	S. E.	Odds ratio	B	S. E.	Odds ratio
Expected enjoyment	.24	.22	-	.68*	.38	1.97
E. + S. while exercising	.15	.10	-	.19	.13	-
E. 2 months after starting	-.68+	.38	.51	-.85+	.51	.43
Group social support	.35*	.17	1.42	.33	.24	-
Exercise well-being	.11	.11	-	.01	.14	-
Exercise self-efficacy	.04	.05	-	.07	.07	-
Perceived health				1.69*	.78	5.44
Perceived mood				-.73	.59	-
BMI				-.06	.08	-
Age				-.11*	.04	.89
Sex				-2.33**	.78	.10
Objective health				-.18	.30	-
Limitation [^]						
Limitation (1)				-.45	.81	-
Limitation (2)				-1.29	.83	-
Preferred ex environment				2.91***	.78	18.36
Marital status				.57	.72	-
Minutes/week total				-.00	.00	-
Income				-.11	.21	-
Education [#]						
Education (1)				-1.87*	.81	.15
Education (2)				-2.52**	.92	.08
Constant				-8.86+	5.07	

+ $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

Model Chi-Square = 21.19, $p < .01$ (Model 1)

Model Chi-Square = 68.49, $p < .001$ (Model 2)

[^] Limitation (1) compares some limitation to high limitation (reference category)

 Limitation (2) compares no limitation to the reference category (high limitation)

[#] Education (1) compares medium education (some university) to low education

(\leq secondary school) which represents the reference category

 Education (2) compares high education (university degree) to low education

Model 1 found that only two of the six socio-psychological variables were important in predicting exercise participation among older adults. Perceived group social support increases the likelihood of continued exercise participation by almost one and one half times (odds ratio = 1.42) for each one-level change (4 levels for this variable). The variable overall enjoyment two months after starting a program also reveals a weak statistically significant association, however in the wrong direction. This means that high scores for enjoyment two months after starting a program are associated with dropping out of an exercise program.

When the control variables are included in model 2, two statistically significant associations for socio-psychological variables are observed, but not the same as in model 1. Expected enjoyment prior to starting a program is statistically significant in its association with group exercise maintenance. The odds ratio of 1.97 indicates that higher levels of expected enjoyment almost double the likelihood of exercise maintenance among older adults for each of the four levels of this independent variable. Overall enjoyment two months after starting a program again showed a statistically significant result similar to that described for model 1. However, group social support was not found to be statistically significant in model 2, which also controls for several socio-demographic and health variables.

Because of some overlap between two independent socio-psychological variables (see Table 7), namely group social support and exercise well-being for the remainder of the day, with the variable enjoyment/satisfaction while performing the exercise, regression models 3 and 4 were constructed by removing the latter variable from the analyses (see

Appendix C). Model 3 indicates that two of the five socio-psychological variables included in this model are important predictors in exercise participation among older adults. Perceived group social support again increases the likelihood of exercise participation by almost one and one half times ($B = .38$, $p = .03$, odds ratio = 1.46), while exercise well-being for the remainder of the day reveals a weak statistically significant association ($B = .17$, $p = .09$, odds ratio = 1.18). This variable is not statistically significant in any of the other three models, which would indicate that it not only overlaps with enjoyment/satisfaction while doing the exercise, but also with one or more of the control variables.

Model 4 represents partial support for the variable group social support. Under these conditions, while controlling for the effects of the same independent variables that were used in model 2, group social support was again found to significantly predict exercise participation ($B = .40$, $p = .09$, odds ratio = 1.49). Expected enjoyment prior to starting a program indicates the same statistically significant association (odds ratio = 1.98) as in model 2. Model 4 further reveals that enjoyment after 2 months is nonsignificant as a predictor in exercise maintenance when the variable enjoyment/satisfaction while performing the exercise is removed from the analysis. The remaining two socio-psychological variables in this analysis, namely exercise well-being for the remainder of the day after exercising, and exercise self-efficacy are not significant predictors in exercise participation, while controlling for the same independent variables that were used in model 2. The same control variables as in model 2, namely perceived

health, age, sex, preferred exercise environment, and education, again indicate statistically significant associations with group status.

Turning to the control variables included in Table 8, model 2, the strongest predictor of exercise maintenance is the preferred exercise environment with a statistically significant association of $B = 2.91$, $p = .000$, odds-ratio = 18.36. Preferring a group environment for exercising thus results in an eighteen fold increase in the chance of continued participation in a group exercise program for older adults. Higher scores in perceived health indicate a statistically significant association and increase the probability for exercise maintenance by more than 5 times (odds ratio = 5.44) for each of the two categories, while being older is statistically significantly associated with a decrease in the likelihood of continued exercise participation by about one tenth for each age (odds ratio = .89). An unusual finding for this study was a statistically significant association between being female and group status, so that being female decreases the probability of exercise maintenance by nine-tenth (odds ratio = .10). Contrary to the majority of research findings in the literature, this study indicates that lower levels of education are statistically significant factors in older adults for predicting exercise maintenance (odds ratios = .15 and .08 respectively), which means a reduction by more than four fifth in the probability of continued participation for each one-unit increase in the level of education.

In sum, multivariate analyses reveal that higher levels of expected enjoyment before starting an exercise program and perceived group social support are both predictive of continued exercise participation, while levels of enjoyment two months after starting a program support a weak negative relationship. The strongest indicator of exercise

maintenance in a community fitness program is the expressed preference for a group environment for physical activity. Perceived health status and continuing exercise participation show a moderate positive relationship, while being older, being female, and level of education result in moderate negative associations with continued exercise participation.

Qualitative Analyses

The following section will summarise answers given to qualitative questions concerning reasons that promote or inhibit continued participation in group exercise programs among older adults. Certain socio-demographic information not previously included in the bivariate or multivariate analyses will also be examined.

Descriptive analyses will first describe within-group differences for both participants and drop-outs to qualitative answers that were described in the method section. Following will be a description of between-group differences.

Within-Group Qualitative Analyses

Table 9 summarises the qualitative answers participants gave to the question of what made their exercise program special to them. Most of the 75 members of the participant group indicated more than one factor. The following categories (or reasons) will therefore add to more than a total of 75 responses or 100%. Some of the most frequently cited reasons were that participants liked the group (40%), derived health benefits (37%), and liked the instructors (33%).

Table 9
Frequencies for Program Appreciation Factors Cited by Participants

Reasons	N	% (rounded)
I like the group	30	40
Health benefits (physical, mental, well-being)	28	37
I like the instructors	25	33
I like the scheduling for the program	11	15
I have fun, I feel good	9	12
I like exercise and/or type of activity	7	9
Convenient location	5	7
I like the equipment	2	3
I like the commitment	2	3
It fulfilled my expectations	1	1
I like the co-ed format	1	1
I like the music	1	1
N = 75		

Table 10 summarises the expectations participants have as a result of continuing their exercise program. Some respondents again indicated more than one expectation, and percentages therefore add up to more than 100%. Increased flexibility (44%), preventive health benefits (38%), and increased well being (24%) were the most often cited expectations by members of the participant group.

Table 10
Frequencies for Expectations for Continued Exercise Participation

Expectations	N	% (rounded)
Increased flexibility	33	44
Prevention as a health benefit	29	38
Increased well-being	18	24
Expected weight loss	11	15
Continued enjoyment	4	5
Stronger bones	3	4
N = 75		

Table 11 summarises the reasons members of the drop-out group gave for discontinuing their exercise program. Most people gave more than one reason for leaving their program, so that percentages add up to more than 100%. The most frequently cited reasons for leaving a group exercise program were health problems (58%), scheduling difficulties (34%), lack of time (28%), and dissatisfaction with the program (24%).

Table 11
Frequencies for Reasons for Dropping a Program

Reasons for dropping a program	N	% (rounded)
Health problems	28	58
Scheduling difficulties	17	34
Lack of time	14	28
Dissatisfaction with the program	12	24
Lack of motivation	5	10
Care giving responsibilities	4	8
Dislike of the program	2	4
Financial difficulties	1	2
Transportation	0	0
N = 50		

Within-group comparison of members of the drop-out group further distinguishes between drop-outs who were exercise maintainers (according to the transtheoretical model) who performed some regular exercise activity other than the program they dropped, and drop-outs who were not regular exercisers. Table 12 compares reasons given by drop-outs for leaving their program and being an exercise maintainer or a person who did not exercise regularly. Of 50 members of the drop-out group, 29 (58%) were exercise maintainers, while 21 (42%) were not regular exercisers. Respondents could indicate more than one reason, so that percentages add up to more than 100%.

Table 12
Within-Group Comparison of Exercise Stage and Reasons for Leaving a Program

Reasons for dropping a program	Maintainers		Non-exercisers	
	N	%	N	%
Health problems	16	55	12	57
Scheduling difficulties	11	38	6	29
Lack of time	7	24	7	33
Dissatisfaction with the program	9	31	3	14
Lack of motivation	1	3	4	19
Care giving responsibilities	2	7	2	10
Dislike of the program	2	7	-	-
Transportation	-	-	-	-

N = 50

Both exercisers and non-exercisers mentioned health reasons and scheduling difficulties as the two most frequent reasons for dropping out of their exercise program. Considerably more maintainers (31%) reported dissatisfaction with the program as a reason for leaving, when compared with people who don't exercise regularly (14%), while lack of motivation was cited as a reason considerably more often by non-exercisers (19% vs. 3%). Difficulty with transportation was a non-issue for people in this study, as no one mentioned this category as a barrier to regular attendance.

Between-Group Qualitative Analyses

Participant and drop-out groups will be compared on the following factors: 1) their motivational statement before starting a program, and how they became aware of their program, 2) their patterns of use of health care professionals, medications, alcohol, and

tobacco, 3) their exercise history, 4) their living arrangements, and 5) their country of origin.

Table 13 compares respondents' motivational statements before starting an exercise program. Considerably more participants felt obligated to join a program (I should ...) when compared to people who later dropped out, while drop-outs declared considerably more often that they would like to join than did participants. These results were opposite to what was intuitively expected.

Table 13
Comparison of Motivational Statements Before Starting a Program

Motivational statement	Participants (N = 75)		Drop-outs (N = 50)	
	N	%	N	%
I should join because ...	41	55	17	34
I have been instructed to join because	7	9	5	10
I would like to join because ...	27	36	28	56

The ways in which respondents first became aware of their exercise program are virtually the same for both groups. Percentages add up to more than 100% because some respondents were already participating in a program at the same centre when they became aware of the exercise program they were about to join. For example, 44% of participants, and 46% of drop-outs first heard about their program through a friend, while 35% (participants) and 32% (drop-outs) were in other programs at the same centre. Becoming aware of their program through advertising was the case for 37% of participants and 44% of drop-outs. Medical doctors referred 9% of participants, versus 12% of drop-outs, to their program.

Use of health care professionals again revealed no difference between the two groups. In the 6 months before filling out the questionnaire, 88% of participants and 84% of drop-outs had visited a medical doctor four times or less. Sixty percent of participants, and 54% of drop-outs had not seen another health care specialist within the last 6 months, while 33% (participants), and 38% (drop-outs) recorded 1 to 8 such visits. The proportions for 9 to 25 visits were 7% for participants, and 8% for members of the drop-out group.

Prescription drug use was virtually the same for both groups, with 45% of participants and 48% of drop-outs taking no medications, and 50% (participants) and 46% (drop-outs) taking 1 to 3 prescribed drugs each day. However, regular use of non-prescription drugs was significantly higher for members of the drop-out group. Only 42% of drop-outs indicated no use, while 59% of participants were non-users. Forty-four percent of drop-outs reported ingesting 1 to 3 non-prescription drugs on a regular basis, while only 34% of participants did so. Crosstabulation revealed a significant difference, $\chi^2 = .17$, $p = .06$.

Visual examination of the data regarding alcohol use showed some differences between the two groups, with participants drinking more alcohol than drop-outs. Nine percent (participants) versus 24% (drop-outs) never consumed alcohol, while 52% (participants) versus 50% (drop-outs) had less than one drink a day. One or two drinks/day were consumed by 35% (participants) versus 26% (drop-outs). Four percent of participants were heavy drinkers (more than 3 drinks/day). Alcohol was originally

included in the logistic analysis, but was removed because it was not found to discriminate exercise maintainers from drop-outs.

The vast majority of respondents in this study were non-smokers (participants 93%, drop-outs 90%). Three percent of participants and 8 % of drop-outs were regular smokers.

Visual examination of data indicated that living conditions were similar for both groups. Forty-nine percent (participants) and 54% (drop-outs) shared living space with their spouses only, while 31% and 36% respectively lived alone; 17% (participants) and 8% (drop-outs) lived with other family members. This last category included people who still had dependent children at home or those who lived in the houses of their adult children or other family members. More drop-outs lived in apartments (32%) when compared with participants (20%), while 64 % (participants) and 62% (drop-outs) lived in single family dwellings.

Immigration status was almost identical for both groups, where 40% of the participant group and 38% of members of the drop-out group were first generation immigrants. Most of these respondents originated from European countries, 79% for both groups, while 7% and 21% respectively came from the USA. 14% of participants immigrated from Kenya, the Philippines, and Peru.

In sum, descriptive analyses examined both within- and between-group differences for some qualitative variables not covered in the previous analyses. The most important reasons cited by participants for remaining in their program were that they liked their group, derived health benefits, and liked their instructors. As a result of further

continuation, they most often expect increased flexibility, preventive health benefits, and increased well-being.

Members of the drop-out group most often indicated health problems, scheduling difficulties, lack of time, and dissatisfaction with the program as their reasons for leaving their exercise program.

Only one variable examined in this section revealed a large difference between the two groups. Members of the drop-out group used considerably higher numbers of non-prescription drugs than did participants. Comparison of data further indicated that participants generally consumed more alcohol than did drop-outs. A slightly higher percentage of drop-outs were smokers.

The following chapter will discuss and integrate the findings of this study.

Chapter V

DISCUSSION

This thesis has attempted to test a set of hypotheses drawn from three dominant social-psychological theories that extend an understanding of exercise maintenance among older adults. This study retrospectively investigated enjoyment at various points in time during the process of joining and maintaining an exercise program among two groups of older adults (participants, drop-outs). The first section of the discussion will present a summary of the research issues and the main results. Following will be a discussion of the results as they pertain to the underlying theories used in this study, which will lead to implications for program design. Limitations of research and implications for future research will close the chapter.

Research clearly demonstrates a great number of physiological and psychological health benefits from long-term exercise maintenance throughout the life span, and especially into old age. These include, for example, better dynamic balance because of increased muscle mass, reduced risk of osteoporotic fractures as a result of better maintenance of bone mass density, and reduced rates of depression. Yet, research indicates that the majority of older adults in Canada are leading a sedentary lifestyle, which has been linked to increased morbidity and mortality. This alarming trend unnecessarily leads many older adults to live with increasing levels of disabilities and decreased levels of vigour. This study investigated factors that promote or inhibit continued participation in exercise programs for older adults, as well as the process of involvement, and the

motivational factors for remaining, in such programs. Of particular interest is the investigation of the role of enjoyment at various points in time during the process of joining and continuing an exercise program, while both participants and drop-outs were exercising.

Based on a review of Bandura's social cognitive theory, Ajzen's theory of planned behavior, and Prochaska and DiClemente's transtheoretical model, the following socio-psychological variables were chosen to examine the issues under study: a) expected enjoyment prior to starting a program, b) enjoyment/satisfaction while exercising, c) overall enjoyment two months after starting a program, d) relative enjoyment scores, e) exercise well-being for the remainder of the day after exercising, f) group social support, and g) exercise and scheduling self-efficacy. In order to analyse the role of these variables in exercise behavior, seven hypotheses were tested at the bivariate level of analysis. Multivariate analysis included six of these socio-psychological variables (except relative enjoyment) as well as several selected relevant control variables based on the review of literature.

Main results

Hypothesis 1 states that participants in an exercise program report higher retrospective levels of expected enjoyment just prior to starting an exercise program than will people who had dropped out of such a program. Multivariate analysis including control variables confirmed this hypothesis. Higher levels of expected enjoyment, when compared to lower levels, double the likelihood of remaining in an exercise program for

each one-level change. The bivariate analysis indicated a trend in the expected direction, however, it was not a statistically significant association.

Hypothesis 2 stipulates that participants in an exercise program will report higher enjoyment/satisfaction scores while performing the exercise than drop-outs. Bivariate analysis indicated a positive association for the variable which included 5 individual items. When examined individually, strong associations were revealed for three of these items: a) participants reported a higher sense of accomplishment while exercising, b) they felt more energetic while exercising, and c) they felt better physically while exercising, when compared to people who later dropped out of an exercise program. No differences between the two groups were found for feelings of enjoyment or feelings of interest while exercising.

Hypothesis 3 tested if participants in an exercise program report higher overall enjoyment scores two months after starting a program than drop-outs. Bivariate analysis only indicated a trend in the expected direction, which was not a statistically significant association. Interestingly, the overall multivariate model indicated an unexpected, weak relationship, insofar as higher levels of enjoyment were associated with dropping out. When one socio-psychological variable, enjoyment/satisfaction while exercising, was removed from the logistic regression (see Appendix C), enjoyment two months after starting revealed no association with group status.

Hypothesis 4 did not discriminate participants from drop-outs when comparing relative enjoyment scores. This variable was constructed by subtracting retrospective expected enjoyment scores before starting a program from overall enjoyment scores reported two months after participating in the program. The surprising finding was that drop-outs reported considerably higher levels of enjoyment two months after starting a

program when compared to their scores for expected enjoyment before joining an exercise activity. Participants also reported higher scores for enjoyment two months after starting, however, the increase was smaller because they already reported high values for expected enjoyment.

Hypothesis 5 stipulates that participants in an exercise program demonstrate higher perceived exercise well-being than drop-outs for the remainder of the day after exercising. The composite variable, which included two measures for physical well-being and two measures for psychological well-being, confirmed a significant difference between the two groups at the bivariate level. The logistic regression confirmed this finding (see Appendix C). Bivariate examination of all four individual items revealed strong support for both physical measures, but not for the psychological ones. Participants felt considerably more energetic and better physically for the remainder of the day after exercising than people who later dropped out of a program. It is noteworthy that these findings were similar to those resulting from the variable that measured enjoyment/satisfaction while exercising (hypothesis 2), where participants again felt considerably more energetic and better physically while performing the activity than drop-outs.

Hypothesis 6 states that participants perceive more group social support than drop-outs during participation in an exercise program. It was found that people who consider their exercise class as being one of the most important social groups to which they belong, and who also prefer a group environment for regular exercise, were more likely to remain in a program when compared to people who later dropped out. These findings were confirmed at the bivariate level as well as at the multivariate level of analyses (see Appendix C).

Hypothesis 7, confirmed at the bivariate level, states that participants demonstrate higher exercise and scheduling self-efficacy than drop-outs. However, the multivariate analysis did not lend support for this variable, after controlling for various control variables. Six measures were combined to form the overall self-efficacy variable. Bivariate examination of the individual items revealed that only snowing and time pressure significantly affected the propensity to drop-out, while being in a bad mood, or being on vacation, were not statistically significant. Raining, and feeling tired did not indicate a statistically significant difference, however, results were in the expected direction, in that participants reported higher confidence to exercise under these adverse conditions than drop-outs.

Several control variables also revealed statistically significant associations with group status in the multivariate analysis. Participants perceived their health status as better than people who dropped out of an exercise program. Objective health (measured with a 6 item composite index) was not a statistically significant predictor of participation in the multivariate analysis. Further examination of the data, however, showed that among 3 of the 6 items, considerably more drop-outs reported health problems: heart disease (26% versus 6.7%), arthritis (44% versus 33.3%), and any other disease not listed on the questionnaire (32% versus 18.7%). A higher number of drop-outs reported a body mass index of 25 or over when compared to participants (58% versus 41.3%). A BMI over 25 may lead to health problems (Mahan & Arlin, 1992). Yet another health-related finding was that members of the drop-out group used significantly higher numbers of nonprescription drugs than participants. Thus, participants not only perceived their health status as being better than drop-outs, but examination of objective health data corroborates this finding.

Not surprisingly, increased age showed a significant relationship to group status. The mean age of participants was 2.6 years lower than that of drop-outs. Participants in this study were considerably younger than drop-outs (e.g., only 17.3 % of participants were age 70+, while 40% of drop-outs were of that age). The logistic regression also revealed sex to be an important predictor of group status, where being male was associated with participation. Thirty-two percent of participants were male, while only 16% of drop-outs were of that sex.

Contrary to the usual findings in the exercise literature pertaining to socio-economic status, this study found that higher levels of education was associated with dropping out of an exercise program. It is possible that people with higher education only remain in an exercise program if they are fully satisfied with all aspects of a program, otherwise they may switch to some other activity that better suits their needs. Alternatively, older adults with higher levels of education may be used to exercising and prefer to exercise on their own. The variable that investigated respondents' preferred exercise environment lends support to this assumption.

Qualitative data revealed that the most important reasons reported by participants for remaining in an exercise program were, in order, that they enjoyed the group, derived physical and mental health benefits and feelings of well-being, liked the instructors and the scheduling of the program, and had fun and generally felt good. As a result of continued participation, they mostly expected increased flexibility, preventive health benefits, increased well-being, and weight loss.

More than one half of older adults who had dropped out of an exercise program cited health problems as a factor for leaving their program. Scheduling difficulties, lack of

time, dissatisfaction with the program, and lack of motivation were further reasons given for dropping out.

Within-group analysis divided members of the drop-out group into two categories according to the transtheoretical model: current non-exercisers and those who were exercise maintainers in some exercise activity other than the program from which they dropped. Interestingly, over one half of all members of both categories mentioned health problems as a reason for dropping out of their program, while scheduling difficulties and lack of time were similarly mentioned by both groups. *Maintainers* cited dissatisfaction with their program considerably more often than non-exercisers, while lack of motivation was given as a reason for dropping out more often by non-exercisers.

In sum, this section provided an integrated discussion of findings, resulting both from bivariate and multivariate analyses, as pertaining to the seven hypotheses evaluated in this study. Multivariate analyses reveal that higher levels of expected enjoyment before starting an exercise program are predictive of exercise participation (hypothesis 1). The discussion of bivariate analysis examined which individual items, within the four composite variables that significantly distinguished participants from drop-outs, were statistically significant indicators of group status: 1) For the variable enjoyment and satisfaction while exercising (hypothesis 2), strong associations were revealed for a) sense of accomplishment, b) feelings of energy, and c) physical feelings. 2) For the variable perceived exercise well-being for the remainder of the day after exercising (hypothesis 5), a) feelings of energy and b) physical feelings were strongly associated with group status. 3) Perceived group social support (hypothesis 6) significantly distinguished participants from drop-outs at the bivariate and multivariate level of analyses. 4) Items in the variable exercise self-efficacy (hypothesis 7) that showed significant associations with group status

were a) scheduling self-efficacy and b) snowing. A discussion of univariate analyses summarized findings related to continuing exercise participation, as well as to discontinuing a program.

Theoretical integration

This section will integrate the findings with the theories discussed in chapter 2, namely social cognitive theory, the theory of planned behavior, and the transtheoretical model.

Social Cognitive Theory

The concept of self-efficacy emanating from Bandura's social cognitive theory was investigated in this study as exercise and scheduling self-efficacy which measured the levels of confidence people had in overcoming six exercise-related barriers. The composite variable was found to discriminate participants from drop-outs at the bivariate level, it was not, however, a predictor of group status in the logistic regression analysis. Only two of the six items were significant in determining group status when examined individually. A significant barrier to exercise participation was "snowing", where participants indicated considerably higher levels of confidence to overcome this barrier than drop-outs. A confounding variable in this study might be that drop-outs were considerably older than participants and had therefore less confidence in getting to their exercise class under severe weather conditions. The second discriminating factor was scheduling self-efficacy (measured as lack of time). This supports research findings by DuCharme and Brawley (1995), which state that *scheduling self-efficacy is the most*

important predictor related to self-efficacy in exercise maintenance after the first two months of program participation.

If expected enjoyment is conceptualized as a theory-driven cognition with proximal outcome expectations (Dzewaltowski, 1994), then expected enjoyment is a valid predictor of exercise maintenance. Indeed, this study has established *that expected enjoyment is a significant predictor of exercise participation, even after controlling for other socio-psychological factors and relevant control variables.* This finding therefore supports Dzewaltowski's proposal to place more weight on the examination of proximal, theory-driven attitudes as predictors of exercise behavior, rather than using the more common distal, data-driven attitudes, which may be weaker predictors. A finding from this study, which at first examination seems contradictory, actually lends further support to Dzewaltowski's proposal. Participants and drop-outs differed considerably in their motivational statement before joining an exercise program. It was not expected that a considerably higher percentage of participants would declare that they felt obligated to join their program when compared to drop-outs, and that, conversely, a much higher percentage of drop-outs would indicate that they would like to join an exercise program. Intuitively, these results are somewhat surprising, especially when compared with levels of expected enjoyment, which were considerably higher for participants than for drop-outs. However, the question that elicited a motivational statement for joining a program can be conceptualized as a data-driven, distal goal statement, and therefore a poor predictor of exercise maintenance. If enjoyment during performance of exercise (as an individual factor) is perceived as a data-driven attitude, and therefore a poor predictor, this study again lends support to Dzewaltowski's proposal. When examining enjoyment while

performing the exercise at the bivariate level, it was found to be non significant as a distinguishing factor between the two groups.

Theory of Planned Behavior

Ajzen's theory of planned behavior contends that the causal mediator to exercise is the intention to exercise, which in turn is influenced by attitudes and social norms directed towards exercise behavior. According to Courneya and McAuley (1995), two pathways lead to intention and exercise adherence: a) social support is influencing perceived behavioral control, and b) cohesion is influencing attitude. The variable group social support used in this study supports this construct as a predictor in exercise adherence. Participants were found to indicate significantly higher levels of perceived group social support at the bivariate level when compared to drop-outs. When the collinear variable exercise/satisfaction while exercising was removed from the multivariate analysis, *group social support was also found to predict exercise behavior*. A series of questions that investigated the concept of group cohesion had to be dropped from the analysis because of too many missing answers. However, when respondents were asked to indicate their preferred exercise environment, significant differences between the two groups emerged at the bivariate and multivariate levels, where preferred exercise environment was the strongest predictor of group status. This variable supports the concept of group cohesion, because people who prefer a group environment to exercise can be seen as considering themselves to be an integral part of a group. Further support for group cohesion resulting from this study was that the most often mentioned reason for appreciating their program by participants was that they liked their group.

The Concepts of Enjoyment and Satisfaction

As discussed in chapter 2, Courneya and McAuley (1995) consider enjoyment and satisfaction affective outcomes that are influenced by group cohesion. They are therefore attitudinal components that impact intention and behavior. Kendzierski and DeCarlo (1991) investigated enjoyment of exercise without looking at group cohesion. They further suggested examination of enjoyment by looking at its underlying factors, such as possible physical or psychological components of enjoyment. Dishman (1994) proposed the development of measures that assess rewarding experiences and outcomes of exercise, promoting maintenance and minimizing relapse. This study specifically focused on an examination of enjoyment, as well as some of its possible underlying physical and/or psychological components. Enjoyment had not been previously defined and operationalized in the literature. This is not surprising, because it is commonly perceived as a subjective statement of positive affect as a result of some behavior, or as an expected result of some future behavior. However, findings from this study indicate that enjoyment is conceptualized as a feeling quite distinct from other positive affects. For example, respondents scored feelings of enjoyment while exercising quite differently from feelings of accomplishment while exercising. Both groups rated enjoyment higher than accomplishment, however, drop-outs rated accomplishment significantly lower than participants, so that feelings of accomplishment while exercising are a strong predictor of exercise maintenance, while enjoyment is a weaker predictor. Interestingly, feelings of enjoyment revealed only somewhat higher scores in both groups than feelings of interest, again both while exercising (see Table 1). This indicates that *feelings of enjoyment and feelings of interest while exercising are related, while feelings of accomplishment are perceived as different from feelings of enjoyment*. Comparing enjoyment while

exercising with the two physical items used in this study to evaluate respondents' reactions to their physical activity revealed congruency amongst these three items. Participants rated feelings of energy while exercising, physical feelings, and feelings of enjoyment almost identically (only 4% difference), while members of the drop-out group showed a 12% spread between the three items, with feelings of enjoyment while exercising rated highest, and feelings of energy lowest. Because of the relatively high scores in the drop-out group, the variable enjoyment while exercising did not reveal a statistically significant difference between the two groups, however, results were in the expected direction. For all three items, participants showed consistently higher levels when compared to drop-outs. This indicates *that feelings of enjoyment, feelings of energy, and physical feelings while exercising are related and are likely predictors for exercise participation*. This study thus adds to our theoretical understanding of exercise enjoyment by illuminating relationships between feelings of enjoyment, feelings of interest, feelings of energy, and physical feelings while exercising.

Referring back to the diagrammatic conceptualization of two paths from social influence to exercise adherence (see Figure 1, p. 21), exercise enjoyment can be integrated into a feedback loop where social support, cohesion and exercise adherence are connected and work together to increase feelings of social support and group cohesion which in turn results in increased exercise maintenance.

Furthermore, examination of retrospective enjoyment levels reveal that expected enjoyment is the most significant predictor of exercise maintenance of all enjoyment-related variables used in this study. Expecting higher levels of enjoyment from exercise is associated with continued participation in the activity. Exercise can be enjoyed as soon as the activity is started, it is therefore a proximal outcome expectation. It is also

theory-driven, because, according to Dzewaltowski, people's attitudes about expected exercise enjoyment are based on earlier experiences with physical activities. When respondents were asked about their levels of expected enjoyment, they did not have to think deeply about their answer, because expecting enjoyment from an activity is based on past experience; they only had to recall what their attitude towards exercise enjoyment was at the time of signing up for their program. This study adds to theory development by demonstrating that *expected enjoyment from an exercise activity contributes to exercise maintenance among older adults.*

Visual examination of the data revealed that participants and drop-outs exhibited similar levels of retrospective overall enjoyment with the exercise program at two months after starting. It is interesting to note that, among both participants and drop-outs, about 20% fewer respondents indicated the highest level of enjoyment at two months after starting, when compared to percentages for the variable enjoyment while exercising. Eliciting a score for overall enjoyment at a specific point in time in their history with the exercise program, induced respondents to evaluate enjoyment as a composite variable that included both psychological as well as physical items. This was different from the earlier question which addressed five different feelings about the exercise during performance of the activity, including enjoyment. Different responses to these questions demonstrate that respondents gave considerable thought to how they answered questions in this study. This set of questions regarding enjoyment can be seen as an example for validity, and therefore support the assumption that respondents answered questions in this study truthfully and to the best of their knowledge.

Further examination of the descriptive data concerning enjoyment revealed that participants consistently indicated higher levels of enjoyment than drop-outs for the

variables of expected enjoyment, overall enjoyment two months after starting a program, and enjoyment while exercising (see Appendix D). Of these variables, only expected enjoyment is a statistically significant predictor of exercise participation. It is assumed, however, that a larger sample size would result in significant differences between groups in all measures of enjoyment because of the existence of weak associations that were not supported due to the level of statistical power afforded by a sample size of 125.

Participants were also asked to rate their levels of overall enjoyment at the time of the study. When comparing levels of enjoyment of exercise in the participant group only, increasing levels of enjoyment over time are revealed, with the highest levels for overall enjoyment reported at the time of the study. Even higher levels can be observed for feelings of enjoyment while performing the exercise. Again, attention is drawn to the fact that the item enjoyment while exercising was a component of a 5-item question, while questions regarding overall enjoyment were worded as a one-item, inclusive question. These findings clearly indicate that increasing levels of enjoyment resulting from a specific exercise activity are instrumental in maintaining regular exercise over a long period of time. They lend support to Steinhardt and Young's (1992) argument that a process-oriented, pleasure based approach to exercise, especially enjoyment in performing the activity, is more important for long-term exercise maintenance than the often used control-oriented, disciplined approach. Findings from this study investigating the role of enjoyment in exercise maintenance thus add to theory by showing that *increasing levels of enjoyment with the activity over time are an integral part of exercise participation.*

Potential underlying elements of enjoyment related to exercise were examined by investigated exercise well-being for the remainder of the day after exercising. This composite variable included 4 items, two of which addressed psychological dimensions,

while the remaining two were of a physical nature. The latter two questions asked respondents about their physical feelings and feelings of energy after exercising. These questions were identical to those included in the earlier investigation of enjoyment and satisfaction while performing the activity. Descriptive data regarding these physical factors reveal that both participants and drop-outs indicated considerably higher levels for both factors while exercising than for the remainder of the day (see Table 1). More specifically, when comparing level 5 ratings (highest), 15% more participants (25% more drop-outs) chose this highest rating for feelings of energy while exercising. Similarly, 12% more participants (16% more drop-outs) rated physical feelings while exercising higher than physical feelings for the remainder of the day. This indicates that feelings related to physical benefits of exercise decline rather rapidly as time passes and therefore underlines the necessity for regular performance of exercise. These findings support the more recent definitions of adequate amounts of exercise for health benefits, which point towards more frequent bouts of exercise (e.g. 30 minutes of moderate intensity, 7 days/week), rather than longer, less frequent exercise sessions of high intensity (Pate et al., 1995). Findings from this study also contribute theoretical support to new definitions of adequate amounts of exercise for health benefits among older adults by showing that *feelings related to physical benefits of exercise decline significantly during the day after exercising*. Bivariate analyses of these items show statistically significant differences between the two groups, so that *feelings of energy and physical feelings, both while exercising and for the remainder of the day after exercising, are strong predictors of exercise participation*. Both psychological measures (feelings of relaxation, and feelings of happiness) included in the composite variable exercise well-being for the remainder of the day after exercising, revealed higher scores for participants than drop-outs, however

not significantly so. When visually comparing the highest scores for all four items included in the composite variable exercise well-being, participants indicated a spread of only eight percentage points (69% to 77%), while drop-outs showed a spread of 20% (see Table 1). Drop-outs showed the lowest scores for energy (42% for highest rating), while 62% chose the highest rating for feelings of relaxation. In sum, this study followed suggestions for in-depth research of the concepts of enjoyment and satisfaction related to exercise behavior as emanating from the theory of planned behavior and social cognitive theory. Expected enjoyment and physical factors related to proximal outcomes show a clear relationship to exercise participation, while psychological factors are less predictive.

The Transtheoretical Model

The transtheoretical model was used as a guide to categorize respondents into five stages of exercise behavior (see chapter 2). The vast majority of members of the participant group had been exercising in their group for longer than six months (84%), they were thus maintainers according to the transtheoretical model. Sixty-eight percent of members of the drop-out group reported that they had been exercise maintainers before they decided to leave their program, which means that they had participated in the program for more than 6 months before deciding to discontinue. This therefore indicates that 32% of members of the drop-out group left their program within 6 months of starting, which in turn confirms early high drop-out rates for exercise programs generally reported in the exercise literature. This finding supports the transtheoretical model, which proposes that *people who try to change health behaviors advance and regress through a series of stages*. It is noteworthy that over one half of drop-outs declared that they were still exercising regularly in some physical activity other than the one they dropped out of.

Because both maintainers and non-exercisers of the drop-out group declared similar percentages for health problems, scheduling difficulties, and lack of time (as reasons for dropping out), it can be assumed that people who generally like exercising will find an activity or time slot that accommodates their barriers to exercise. One third of maintainers of the drop-out group further declared dissatisfaction with their program as a reason for dropping out, but had found another program or exercise activity that they enjoyed more, or that better suited their needs. These findings again lend support to the transtheoretical model which proposes that *people tend to resist change once a habit, such as exercise behavior, is established over a long period of time.*

Findings from this study underscore the importance for changes, or additions, to how exercise programs are currently marketed to older adults. Most importantly, the concept of enjoyment has to be included when considering marketing and design strategies that hopefully will lead to increased levels of long-term maintenance of exercise among older adults. The following section will propose such changes and discuss how these strategies can be integrated into program design involving fitness programs geared towards the needs of older exercisers.

Implications

The Process of Signing Up for an Exercise Program

The way in which respondents became aware of their program was almost identical for both groups, with about one half of all respondents first hearing about their program through a friend or acquaintance, while about one third were in other programs at the same centre. Becoming aware of their program through advertisement played a role in

about 40% of all respondents. Only about one tenth of all respondents were specifically referred to their exercise program by a health care professional. Word-of-mouth and same centre advertising are therefore powerful tools in the process of recruiting new members to fitness programs geared towards older adults. Results from this study show that health care professionals could play a bigger role in referring their older patients to fitness programs. Increased communication between local recreation centres and various types of health care professionals would be beneficial. Program directors from recreation centres and/or fitness instructors could personally visit local health care professionals in order to explain their fitness programs and leave promotional advertising materials that specifically explain programs for older adults. In this manner, physicians, for example, would not lose time explaining a program to patients, while at the same time giving a concrete plan of action to their older patient. A few respondents indicated that their reason for joining was that their spouse or a friend paid their membership as a Christmas present. This way of inducing sedentary older adults to exercise could be further explored via advertising in the local media at the appropriate time of year.

This study has clearly shown that older adults who dropped out of a community fitness program often prefer to exercise alone, rather than in a group environment. If community centres could offer more individualized programs for older exercisers (e.g. individualized weight lifting programs on a drop-in basis), people might be encouraged to exercise more regularly.

Since higher levels of expected enjoyment prior to starting a program were a distinguishing factor in participants, the concept of enjoyment could be used in advertising fitness programs for older adults, rather than mainly concentrating on distal outcomes, such as expected health benefits, or playing on fears of possible deterioration as a result of

inactivity. Use of the proverbial carrot, rather than the stick, might entice sedentary older adults to consider regular physical activity as a desirable pleasure in everyday life!

Exercise Maintenance

This study has clearly shown that increased levels of enjoyment and satisfaction while performing a physical activity, as well as higher scores for exercise well-being for the remainder of the day after exercising, affect continued participation in an exercise program. It is thus important for program coordinators and exercise instructors to pay close attention not only to how their older exercisers feel physically and psychologically while performing the exercise, but also how the exercise affects them on both levels for the remainder of the day after exercising. This adds new dimensions to the evaluation process of an exercise program. It may seem cumbersome to have to evaluate participants on these dimensions, however, it will help in assessing why some programs are successful at keeping their older exercisers enrolled, while others have high drop-out rates. As an incentive to discover which activities novice exercisers enjoy, recreation centres may create a trial membership that would allow older adults to sample all exercise activities or programs offered in their facility. It is further important to realize that some older adults simply prefer to exercise on their own. The important point to remember is that as long as a physical activity is enjoyable and results in proximal gain, it will probably be continued for a much longer period of time than when it is undertaken for distal gain, or as a result of pressure or fear of deterioration.

Further factors in continued participation in an exercise program are high levels of feelings of group social support, as well as feelings of group cohesion, so that exercisers feel that they are an integral part of their group. This finding suggests that the

group-building process is a valid part in encouraging continued participation. This seems especially important for new members who join an existing group as they have to become an integral part of the existing group. Instructors therefore require considerable knowledge in how group processes work. One third of participants in this study mentioned that liking their instructors was a factor for appreciating their program. Several comments indicated that participants appreciated that their instructors were similar in age and physical stature to their own: "not too young and not too thin".

When participants were asked what they expected as a result of continued participation in their program, physical benefits were cited most frequently (increased flexibility, preventive health benefits, increased well-being), which would indicate that older adults who are exercise maintainers, and who therefore know from experience of the proximal gains derived from exercising, will focus more on distal benefits. Instructors in exercise programs for older adults can periodically talk about these goals when instructing members of their exercise groups. Instructors are thus a crucially important factor for a successful exercise program and especially for long-term participation by older adults in their exercise groups.

Limitations of Research

Several methodological issues pertaining to this study indicate some limitations of this research. First, using a convenience sample of participants and drop-outs may limit the external validity of this research. Because respondents resided in the relatively small geographical area of Greater Vancouver, results may be limited to urban populations of older exercisers who participate in, or dropped out of community fitness programs geared towards older adults.

Second, the relatively small sample size of 125 respondents (75 participants, 50 drop-outs) provided relatively weak statistical power to detect small effects between the two groups, and, for two out of three enjoyment related variables, possibly prevented the opportunity for statistically significant differences to be uncovered. To deal with this limitation to some degree, the level of statistical significance was set at $p < .10$.

Third, the cross-sectional research design used in this study asked respondents to fill out their questionnaire only at one point in time. All information, present or past, was collected during this one contact with respondents. A longitudinal design, which would have allowed interviewing the same people at various points in time, would have been preferable to distinguish factors that lead to maintenance or discontinuation of regular exercise participation.

Fourth, collecting retrospective information from older subjects may be viewed as problematic. However, retrospective information relating to lifetime exercise behavior has been used extensively in the exercise literature (e.g., O'Brien Cousins, 1995; Sallis, Hovell, & Hofstetter, 1992). Observations from this study revealed that respondents for both groups answered questions regarding enjoyment and satisfaction while exercising, and exercise well-being for the remainder of the day, in a way that demonstrated considerable thought and consistency by revealing differences between groups, and consistency of answers within groups. It is therefore assumed that all retrospective information solicited in the questionnaires for this study is valid and that the results drawn from univariate, bivariate, and multivariate analyses are thus valid and significantly contribute to the literature that investigates exercise behavior among older adults.

Fifth, respondents for the drop-out group came from a greater variety of exercise programs for older adults than did respondents for the participant group, so that the type of program as a confounding factor may have affected results.

Future Research

Because of the limitations of research outlined in the last section, future research investigating factors relating to exercise behavior among older adults, and especially the role of enjoyment, would be well served to use a considerably larger sample size than the 125 respondents involved in this study. Ideally, a longitudinal study over several years, with an initial sample size of 500 older exercise participants, is recommended. Finding such a large number of older exercisers in one geographical area will become less problematic in years to come, as ever more baby boomers turn 50. These exercisers would fill out questionnaires at intervals of 6 months. Over time, as some exercisers drop-out of their programs, data for a drop-out group would accumulate. This method would avoid the inherent problems with retrospective information. This study has underlined the difficulty of exactly defining the subjective concept of enjoyment. Respondents clearly differentiated between positive physical feelings, or a sense of accomplishment, and enjoyment, in that scores for physical feelings while performing the exercise, as well as for the remainder of the day after exercising, differentiated participants significantly more from drop-outs than did feelings of enjoyment while exercising. Future studies can refine questions that investigate enjoyment related to exercise behavior. The questions used in this study to investigate group cohesion were difficult to understand; one or two clear questions regarding this factor would have been sufficient. A similar problem was revealed with investigation of group social support, again, one or two clear questions

would have been enough. Enjoyment as a concept, and how it relates to exercise maintenance among older adults, may hold the key to higher rates of long-term exercise participation in the older population. I sincerely hope that future research will increasingly address this issue.

In sum, this chapter discussed findings resulting from univariate, bivariate, and multivariate analyses that were derived from 125 questionnaires filled out by older adults. Seven hypotheses were tested, logistic regression evaluated which factors were predictors for exercise participation, and qualitative analyses addressed the process of exercise involvement and maintenance, as well as reasons for dropping out of an exercise program. Of particular interest was the role of enjoyment in exercise behavior among older adults. Implications for advertising and program design were discussed, as were suggestions for future research.

Chapter VI

SUMMARY AND CONCLUSION

The principal aim of this thesis was to investigate factors that promote or inhibit continued participation in community fitness programs for older adults, as well as the process of involvement, and the motivational factors for remaining, in such programs. Of particular interest was the investigation of the role of enjoyment at various points in time during the process of joining, and continuing an exercise program.

The selected review of the exercise literature (chapter 1) clearly demonstrated a great number of physiological and psychological health benefits from long-term exercise maintenance throughout the life span, and especially into old age. Alarming findings indicate, however, that the majority of older adults in Canada lead a sedentary lifestyle, which has been linked to increased morbidity and mortality.

Chapter 2 presented a selected review of Bandura's social cognitive theory, the theory of planned behavior, and the transtheoretical model with the aim to understand exercise behavior in older adults. Seven hypotheses flowing out of this discussion investigated several socio-psychological factors, especially the concept of enjoyment, as they relate to exercise behavior in older adults.

Chapter 3 discussed the research methodology which included a description of the study in which 125 questionnaires were filled out by older adults between the ages of 50 and 84 who resided in the communities of North Vancouver, West Vancouver, Lions Bay, Bowen Island, East Vancouver, and Vancouver's West End. The questionnaires, measurement and relevant methodological issues were described.

Chapter 4 included univariate, bivariate, multivariate, as well as qualitative analyses. The main findings resulting from examination of six socio-psychological variables at the bivariate level of hypotheses testing revealed that higher levels of 1) enjoyment and satisfaction while performing the exercise, 2) perceived exercise well-being for the remainder of the day after exercising, 3) perceived group social support, and 4) exercise self-efficacy, significantly distinguished participants from drop-outs. Multivariate analysis revealed that expected enjoyment prior to starting an exercise program was a significant predictor for participation in both logistic regression models that included relevant control variables. Group social support was a significant predictor in the logistic regression model that, because of collinearity, excluded the variable enjoyment/satisfaction while performing the exercise. These findings are crucial to understanding the motivations and mechanisms of exercise adherence. A detailed examination of the individual items included in the composite socio-psychological variables illuminated key findings of this study, specifically how enjoyment, as well as other psychological and physical factors, are involved in exercise behavior among older adults. Of all variables included in the analysis, preferring a group environment to exercise was the strongest predictor of group status, while perceived health status indicated a moderate positive relationship. Age, being female, and level of education were negatively related to exercise participation. Qualitative analysis examined both within-group and between group differences for some qualitative variables. The most important reasons cited by participants for remaining in their program were that they liked their group, derived health benefits, and liked their instructors. They expected increased flexibility, preventive health benefits, and increased well-being as a result of continued participation. Members of the drop-out group most often indicated

health problems, scheduling difficulties, lack of time, and dissatisfaction with the program as their reasons for leaving their exercise program.

A summary and discussion of the results and their integration into the three relevant theories were provided in chapter 5. Integration of these findings into social cognitive theory, the theory of planned behavior, and the transtheoretical model makes an important contribution to the exercise literature by establishing enjoyment as a key factor in exercise behavior among older adults. More specifically, this study includes the following important findings, some of which support earlier conclusions or arguments described in the relevant theories, while others are new results from this study. First, as related to social cognitive theory: 1) scheduling self-efficacy is confirmed as an important predictor of exercise maintenance; 2) expected enjoyment is newly established as a significant predictor of exercise participation at the multivariate level of analysis. Second, as related to the theory of planned behavior: 3) group social support is confirmed as a predictor of exercise behavior at the multivariate level of analysis; 4) new findings from this study reveal that feelings of enjoyment and feelings of interest while exercising are related, while feelings of accomplishment are perceived as different from feelings of enjoyment; 5) feelings of enjoyment, feelings of energy, and physical feelings while exercising are related and are predictors for exercise participation; 6) increasing levels of enjoyment with the exercise activity over time are an integral part of exercise participation; 7) findings add theoretical support to recent definitions of adequate amounts of exercise for health benefits among older adults by showing that feelings related to physical benefits of exercise decline significantly during the day after exercising; 8) new findings indicate that feelings of energy and physical feelings, both while exercising and for the remainder of the day after exercising, are predictors of exercise participation. Third, as related to the

transtheoretical model: 9) findings support the assumption that people who try to change health related behaviors advance and regress through a series of stages; and 10) further support the assumption that people tend to resist change once a habit, such as exercise behavior, is established over a long period of time. This study has thus made an important contribution to the exercise literature by establishing the concept of enjoyment as a key factor in exercise behavior among older adults.

Implications regarding both the processes of signing up for an exercise program, as well as exercise maintenance, were discussed and recommendations for program design and advertising that include the concept of enjoyment have been proposed. These will hopefully encourage continued investigation of the important role of enjoyment in exercise participation and maintenance among older adults.

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Appendix A

EXERCISE PARTICIPANT QUESTIONNAIRE

I.D. #

EXERCISE PARTICIPANT QUESTIONNAIRE

This first series of questions relates to your health.

1 - a) How do you describe your overall health? (Please circle the appropriate answer by choosing a number from 1 to 4)

4 very good 3 good 2 fair 1 poor

b) How do you describe your overall mood?

4 happy 3 somewhat happy 2 somewhat depressed 1 depressed

2 - Are you limited in the kind or amount of activity you can do because of a long term physical condition or health problem? (Long term means a condition that has lasted or is expected to last more than 6 months).

Very limited ____ Somewhat limited ____ A little limited ____ Not limited ____

If limited, please explain the nature of your limitation:

3 - Do you have any of the following medical conditions?

Heart or blood vessel disease? Yes ____ No ____

High blood pressure? Yes ____ No ____

Cancer? Yes ____ No ____

Arthritis, rheumatism or joint disease? Yes ____ No ____

Osteoporosis? Yes ____ No ____

Other _____

4 - Your weight: _____ lbs
Or: _____ kg

Your height: _____ feet _____ inches
Or: _____ cm

- 5 - How many times have you visited a Medical Doctor within the last 6 months?
_____ times
- 6 - How many times have you visited another health care specialist (such as a Chiropractor, Counsellor, Massage Therapist, Naturopath, Physiotherapist, etc) within the last 6 months?
_____ times
- 7 - How many different prescription drugs do you take every day?
Please indicate number _____
- How many Non-prescription drugs do you take on a regular basis? (More than once per week)
Please indicate number _____
- 8 - Do you smoke ?
Regularly _____ Only occasionally _____ Never _____
- 9 - During the past 6 months, how often, on average, did you drink alcoholic beverages? (One drink means 1 bottle of beer or glass of draft, or 1 small glass of wine, or one shot or mixed drink with hard liquor).
Never _____ 1 or 2 drinks a month _____ 1 drink a week _____
2 to 5 drinks a week _____ 1 drink a day _____
2 drinks a day _____ 3 or more drinks a day _____

The following questions relate to exercise.

Regular exercise means 3 or more times a week for 20 minutes or more at each time. Exercise can be weight training, aerobics, swimming, brisk walking, aquacize, etc.

- 10 - Please check ONE of the following statements:
- 1 - I currently exercise some, but not regularly. _____
- 2 - I currently exercise regularly, but I have only begun doing so within the last 6 months. _____
- 3 - I currently exercise regularly, and have done so for longer than 6 months. _____
- 11 - How long have you participated in this program? _____ years _____ months

12 - Physical activity

Please indicate in which of the following activities you presently participate and what the frequency and duration of these activities are: (include present program)

Please check the appropriate boxes

	Never	less than 1 x per month	1 - 3 x per month	1 - 2 x per week	3 x per week	4 or more x per week	Duration in min / session	with others	alone
Weight train									
Walk									
Aerobics									
Swim									
Jog/run									
Hike									
Ski									
Yoga									
Other									

- 13 - Exercise history: (Group exercise can be weight training, aerobics, yoga, team sports etc.; individual exercise means any exercise done alone for at least 20 minutes, 3 or more times a week).

Have you regularly participated in group or individual exercise between the ages of:
(Please check the appropriate boxes)

	In a group	individual exercise	no exercise
10 - 19			
20 - 29			
30 - 39			
40 - 49			
50 - 59			
60 - 69			
70 - 79			
80 +			

14 - Do you prefer to exercise :

a) in a group _____ b) alone (but out of home) _____ c) at home _____

The following questions relate to your enjoyment and satisfaction associated with this exercise program.

15 - Please rate how you usually feel about the physical activity you are doing in this program, while you are doing it. For each statement, please circle the most appropriate number from the rating scale of 5 choices.

5 I enjoy it	4	3 indifferent	2	1 I hate it
5 I find it energizing	4	3 no change	2	1 I find it tiring
5 I feel interested	4	3 indifferent	2	1 I feel bored
5 I feel good physically	4	3 indifferent	2	1 I feel bad physically
5 It gives me a strong sense of accomplishment	4	3 indifferent	2	1 It does not give me any sense of accomplishment

Please rate how you usually feel for the remainder of the day after you exercised.

5 I feel energized	4	3 no change	2	1 I feel tired
5 I feel relaxed	4	3 no change	2	1 I feel tense
5 I feel happy	4	3 no change	2	1 I feel depressed

5
I feel good
physically

4

3

2

1
I feel bad
physically

- 16 - Please think back to when you started this program. How much enjoyment did you expect to get from this exercise program, when you first signed up.

5
very much

4

3
a little

2

1
none at all

- 17- Now think back to when you had been in this program for a while. How much overall enjoyment did you get from this exercise program 2 months after starting.

5
very much

4

3
a little

2

1
none at all

- 18 - Please indicate how much overall enjoyment you presently get from this exercise program.

5
very much

4

3
a little

2

1
none at all

The following questions assess your feelings about your personal involvement with this exercise group.

- 19 - Please circle a number from 1 to 5 to indicate your level of agreement with each of the statements.

a) I do NOT enjoy the social interaction occurring in this group.

1
strongly
disagree

2

3

4

5
strongly
agree

b) Some of my best friends are in this exercise group.

1
strongly
disagree

2

3

4

5
strongly
agree

c) I enjoy other social events more than the social activities associated with this exercise group.

1
strongly
disagree

2

3

4

5
strongly
agree

d) For me this exercise class is one of the most important social groups to which I belong.

1	2	3	4	5
strongly disagree				strongly agree

The following questions assess your perceptions of your exercise group as a whole.

20 - Please circle a number from 1 to 5 to indicate your agreement with each of the following statements.

a) Members of our group would rather socialize alone than get together as a group.

1	2	3	4	5
strongly disagree				strongly agree

b) Members of our exercise class rarely socialize together.

1	2	3	4	5
strongly disagree				strongly agree

c) Members of our exercise class would like to spend time together after the program is over.

1	2	3	4	5
strongly disagree				strongly agree

d) Members of our group do NOT stick together outside of exercise class.

1	2	3	4	5
strongly disagree				strongly agree

21 - Please circle a number from 1 to 5 to indicate your level of agreement with the following statements:

I am confident I can participate in regular exercise when:

a) I am tired

1	2	3	4	5
not at all				very
confident				confident

b) I am in a bad mood

1	2	3	4	5
not at all				very
confident				confident

c) I feel I don't have the time

1	2	3	4	5
not at all				very
confident				confident

d) I am on vacation

1	2	3	4	5
not at all				very
confident				confident

e) It is raining

1	2	3	4	5
not at all				very
confident				confident

f) It is snowing

1	2	3	4	5
not at all				very
confident				confident

g) I am exercising alone

1	2	3	4	5
not at all				very
confident				confident

22 - Again, think back to just before you started this program. Please complete ONLY ONE of the following statements. Complete the one that was most applicable to you just PRIOR to joining this exercise program:

1) I should join this exercise program because _____

2) I have been instructed to join this exercise program because _____

3) I would like to join this exercise program because _____

23 - How did you become aware of this exercise program?

Were you a participant in other programs at this centre?Yes ____ No ____

Through a friend or acquaintance ?Yes ____ No ____

Through advertising?Yes ____ No ____

Other (please name) _____

24 - Were you referred to this program?

By your Medical Doctor? Yes ____ No ____

By a Physiotherapist ? Yes ____ No ____

Other (please name) Yes ____ No ____

25 - What makes this program special to you? _____

26 - What are your expectations as a result of continuing participation in this exercise program? _____

These last questions relate to demographic information.

27 - How old were you on your last birthday? _____

28 - Sex: Male _____ Female _____

29 - Are you: Married _____ Widowed _____
Divorced or separated _____ Never married _____

30 - Do you live: Alone _____ With spouse only _____ With other family _____

Or other (please specify) _____

In Apartment: _____ Single family house _____

Or other (please specify) _____

31 - Are you the main caregiver of another person? Yes _____ No _____

32 - Combined yearly family income: less than \$10,000 _____
 10,001 - 20,000 _____
 20,001 - 30,000 _____
 30,001 - 40,000 _____
 40,001 - 50,000 _____
 50,001 - 60,000 _____
 more than 60,001 _____

33 - Are you a first generation immigrant? Yes _____ No _____
If yes, from which country? _____

34 - What is the highest level of education you have ever completed?
Elementary school _____ Some Secondary school _____
Secondary school _____ Some college or university _____
University _____

35- Are there any other comments you would like to add? _____

Appendix B

EXERCISE PARTICIPATION QUESTIONNAIRE TWO

I.D. #

EXERCISE PARTICIPATION QUESTIONNAIRE TWO

This first series of questions relates to your health.

- 1- a) How do you describe your overall health? (Please circle the appropriate answer by choosing a number from 1 to 4)

4	3	2	1
very good	good	fair	poor

- b) How do you describe your overall mood?

4	3	2	1
happy	somewhat happy	somewhat depressed	depressed

- 2 - Are you limited in the kind or amount of activity you can do because of a long term physical condition or health problem? (Long term means a condition that has lasted or is expected to last more than 6 months).

Very limited ___ Somewhat limited ___ A little limited ___ Not limited ___

If limited, please explain the nature of your limitation:

- 3 - Do you have any of the following medical conditions?

Heart or blood vessel disease? Yes ___ No ___

High blood pressure? Yes ___ No ___

Cancer? Yes ___ No ___

Arthritis, rheumatism or joint disease? Yes ___ No ___

Osteoporosis? Yes ___ No ___

Other _____

- 4 - Your weight: _____ lbs Your height: _____ feet _____ inches
 Or: _____ kg Or: _____ cm

5 - How many times have you visited a Medical Doctor within the last 6 months?

_____ times

6 - How many times have you visited another health care specialist (such as a Chiropractor, Counsellor, Massage Therapist, Naturopath, Physiotherapist, etc) within the last 6 months?

_____ times

7 - How many different prescription drugs do you take every day?

Please indicate number _____

How many Non-prescription drugs do you take on a regular basis? (More than once per week)

Please indicate number _____

8 - Do you smoke ?

Regularly ____ Only occasionally ____ Never ____

9 - During the past 6 months, how often, on average, did you drink alcoholic beverages? (One drink means 1 bottle of beer or glass of draft, or 1 small glass of wine, or one shot or mixed drink with hard liquor).

Never ____ 1 or 2 drinks a month ____ 1 drink a week ____

2 to 5 drinks a week ____ 1 drink a day ____

2 drinks a day ____ 3 or more drinks a day ____

The following questions relate to exercise.

Regular exercise means 3 or more times a week for 20 minutes or more at each time. Exercise can be weight training, aerobics, swimming, brisk walking, aquacize, etc.

10 - Please check ONE of the following statements:

1 - I currently do not exercise, and I do not intend to start exercising in the next 6 months. _____

2 - I currently do not exercise, but I am thinking about starting to exercise in the next 6 months. _____

3 - I currently exercise some, but not regularly. _____

- 4 - I currently exercise regularly, but I have only begun doing so within the last 6 months. _____
- 5 - I currently exercise regularly, and have done so for longer than 6 months. _____

11 - Physical activity

Please indicate in which of the following activities you presently participate and what the frequency and duration of these activities are: (Please check the appropriate boxes)

	Never	less than 1 x per month	1 - 3 x per month	1 - 2 x per week	3 x per week	4 or more x per week	Duration in min / session	with others	alone
Weight train									
Walk									
Aerobics									
Swim									
Jog/run									
Hike									
Ski									
Yoga									
Other									

12 - Do you prefer to exercise :

- a) in a group _____
- b) alone (but out of home) _____
- c) at home _____

- 13 - Exercise history: (Group exercise can be weight training, aerobics, yoga, team sports etc.; individual exercise means any exercise done alone for at least 20 minutes, 3 or more times a week).

Have you regularly participated in group or individual exercise between the ages of:
(Please check the appropriate boxes)

	In a group	individual exercise	no exercise
10 - 19			
20 - 29			
30 - 39			
40 - 49			
50 - 59			
60 - 69			
70 - 79			
80 +			

- 14 - Name of the exercise program you participated in _____

- 15 - How long did you participate in the exercise program before you decided to end your participation?

Less than 1 month _____ 1 to 2 months _____ 3 to 4 months _____

5 to 6 months _____ 6 to 12 month _____ more than 1 year _____

The following questions relate to your enjoyment and satisfaction associated with the exercise program.

- 16 - Please rate how you usually felt about the physical activity you were doing in the program, while you were doing it.
For each statement, please circle the most appropriate number from the rating scale of 5 choices.

5 4 3 2 1
I enjoyed it indifferent I hated it

5 4 3 2 1
I found it energizing no change I found it tiring

5 4 3 2 1
I felt interested indifferent I felt bored

5	4	3	2	1
I felt good physically		indifferent		I felt bad physically
5	4	3	2	1
It gave me a strong sense of accomplishment		indifferent		It did not give me any sense of accomplishment

Please rate how you usually felt for the remainder of the day after you exercised.

5	4	3	2	1
I felt energized		no change		I felt tired
5	4	3	2	1
I felt relaxed		no change		I felt tense
5	4	3	2	1
I felt happy		no change		I felt depressed
5	4	3	2	1
I felt good physically				I felt bad physically

17 - Please think back to when you started the program. How much enjoyment did you expect to get from the exercise program, when you first signed up.

5	4	3	2	1
very much		a little		none at all

18 - Now think back to when you had been in the program for a while. How much overall enjoyment did you get from the exercise program 2 months after starting.

5	4	3	2	1
very much		a little		none at all

The following questions assess your feelings about your personal involvement with the exercise group, while you were part of it.

19 - Please circle a number from 1 to 5 to indicate your level of agreement with each of the statements.

a) I did NOT enjoy the social interaction occurring in the group.

1	2	3	4	5
strongly disagree				strongly agree

b) Some of my best friends were in the exercise group.

1	2	3	4	5
strongly disagree				strongly agree

c) I enjoyed other social events more than the social activities associated with the exercise group.

1	2	3	4	5
strongly disagree				strongly agree

d) For me the exercise class was one of the most important social groups to which I belonged.

1	2	3	4	5
strongly disagree				strongly agree

The following questions assess what your perceptions were of the exercise group as a whole.

20 - Please circle a number from 1 to 5 to indicate your agreement with each of the following statements.

a) Members of our group preferred to socialize alone rather than get together as a group.

1	2	3	4	5
strongly disagree				strongly agree

b) Members of our exercise class rarely socialized together.

1	2	3	4	5
strongly disagree				strongly agree

c) Members of our group did NOT stick together outside of exercise class.

1	2	3	4	5
strongly disagree				strongly agree

21 - Please circle a number from 1 to 5 to indicate your level of agreement with the following statements:

I am confident I can participate in regular exercise when:

a) I am tired

1	2	3	4	5
not at all confident				very confident

b) I am in a bad mood

1	2	3	4	5
not at all confident				very confident

c) I feel I don't have the time

1	2	3	4	5
not at all confident				very confident

d) I am on vacation

1	2	3	4	5
not at all confident				very confident

e) It is raining

1	2	3	4	5
not at all confident				very confident

f) It is snowing

1	2	3	4	5
not at all confident				very confident

g) I am exercising alone

1	2	3	4	5
not at all confident				very confident

22 - Again, think back to just before you started the program. Please complete ONLY ONE of the following statements. Complete the one that was most applicable to you just PRIOR to joining the exercise program:

1) I should join this exercise program because _____

2) I have been instructed to join this exercise program because _____

3) I would like to join this exercise program because _____

23 - How did you first become aware of the exercise program?

Were you a participant in other programs at the same centre? Yes ___ No ___

Through a friend or acquaintance ? Yes ___ No ___

Through advertising? Yes ___ No ___

Other (please name) _____

24 - Were you referred to the program?

By your Medical Doctor? Yes ___ No ___

By a Physiotherapist ? Yes ___ No ___

Other (please name) Yes ___ No ___

25 - What were your reasons for leaving the exercise program?

Health problems ___ Scheduling difficulties ___ Financial ___

Care giving responsibilities ___ Lack of time ___

Transportation problems ___ Dislike of the program ___

Dissatisfaction with the program ___

In your own words, what would you say was (were) the main reason(s) for leaving the program: _____

These last questions relate to demographic information.

26 - How old were you on your last birthday? _____

27 - Sex: Male ___ Female ___

28 - Are you: Married _____ Widowed _____
Divorced or separated _____ Never married _____

29 - Do you live: Alone _____ With spouse only _____ With other family _____
Or other (please specify) _____
In Apartment: _____ Single family house _____
Or other (please specify) _____

30 - Are you the main caregiver of another person? Yes _____ No _____

31 - Combined yearly family income: less than \$10,000 _____
 10,001 - 20,000 _____
 20,001 - 30,000 _____
 30,001 - 40,000 _____
 40,001 - 50,000 _____
 50,001 - 60,000 _____
 more than 60,001 _____

32 - Are you a first generation immigrant? Yes _____ No _____
If yes, from which country? _____

33 - What is the highest level of education you have ever completed?
Elementary school _____ Some Secondary school _____
Secondary school _____ Some college or university _____
University _____

34- Are there any other comments you would like to add? _____

Appendix C
 Logistic Regression for Exercise Maintenance and Independent Variables
 (5 Socio-Psychological variables)

Variables	Model 3			Model 4		
	B	S.E.	Odds ratio	B	S.E.	Odds ratio
Expected enjoyment	.23	.23	-	.66*	0.31	1.93
E. 2 months after starting	-.43	.32	-	-.55	.45	-
Group social support	.38*	.17	1.46	.40+	.23	1.49
Exercise well-being	.17+	.10	1.18	.08	.13	-
Exercise self-efficacy	.05	.05	-	.08	.07	-
Perceived health				1.41+	.73	4.08
Perceived mood				-.77	.59	-
BMI				-.08	.08	-
Age				-.10*	.04	.91
Sex				-2.42**	.79	.09
Objective health				-.20	.30	-
Limitation						
Limitation (1)				-.47	.81	-
Limitation (2)				-1.32	.81	-
Preferred ex. environment				2.82***	.75	16.80
Marital status				.65	.72	-
Minutes/week total				-.00	.00	-
Income				-.08	.20	-
Education						
Education (1)				-1.76*	.80	.17
Education (2)				-2.56**	.91	.08
Constant				10.06*	4.93	

+ $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

Model Chi-Square = 18.87, $p < .01$ (Model 3)

Model Chi-Square = 66.36, $p < .001$ (Model 4)

^ Limitation (1) compares some limitation to high limitation (reference category)

 Limitation (2) compares no limitation to the reference category (high limitation)

Education (1) compares medium education (some university) to low education

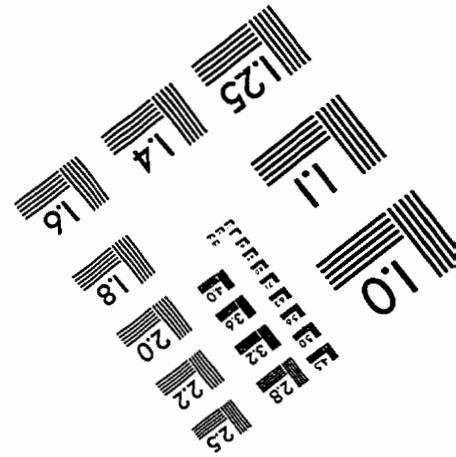
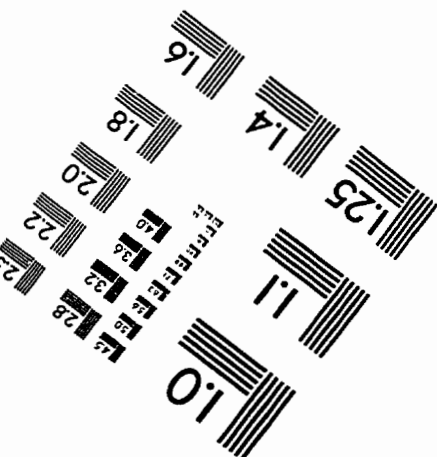
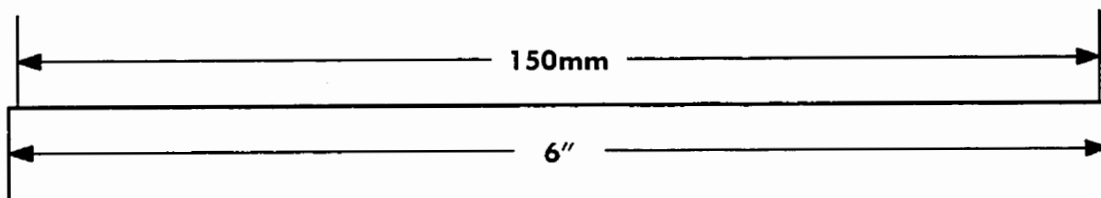
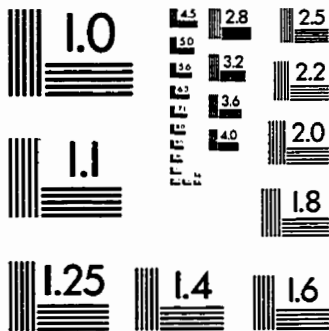
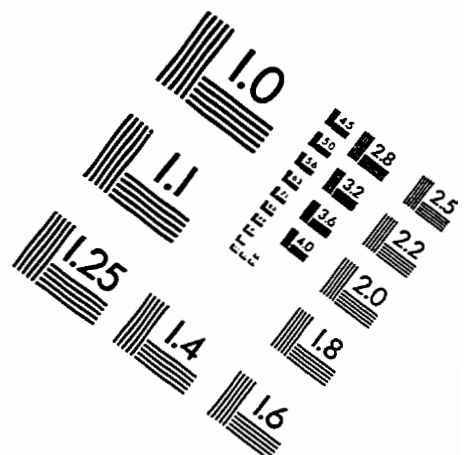
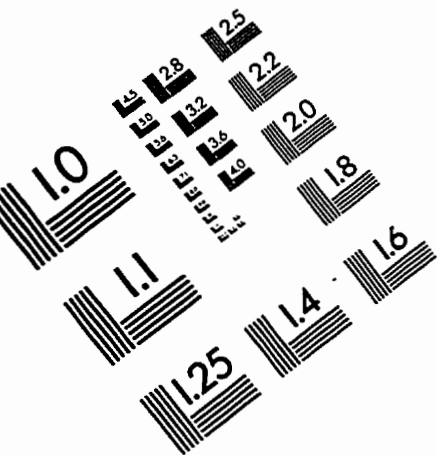
(\leq secondary school) which represents the reference category

 Education (2) compares high education (university degree) to low education

Appendix D
Frequency Distributions for Enjoyment Variables

Variables	Interval scales	Participants N = 75		Drop-outs N = 50	
		Frequency	valid %	Frequency	valid %
Expected enjoyment	1 - none at all	1	1.3	1	2
	2 -	5	6.7	2	4
	3 - a little	25	33.3	24	48
	4 -	22	29.3	13	26
	5 - very much	22	29.3	10	20
Overall enjoyment 2 months after starting	1 - none at all	-	-	-	-
	2 -	1	1.3	1	2
	3 - a little	6	8	6	12
	4 -	22	29.3	14	28
	5 - very much	46	61.3	29	58
Enjoyment while exercising	1 - I hate it	1	1.3	-	-
	2 -	-	-	2	4
	3 - indifferent	3	4	3	6
	4 -	7	9.3	6	12
	5 - I enjoy it	64	85.3	39	78
Overall enjoyment at present (participants only)	1 - none at all	-	-	-	-
	2 -	1	1.3	-	-
	3 - a little	3	4.0	-	-
	4 -	17	22.7	-	-
	5 - very much	54	72	-	-

IMAGE EVALUATION TEST TARGET (QA-3)



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