PERCEIVED BARRIERS TO PHYSICAL ACTIVITY BY OLDER ADULTS

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A Thesis Submitted to the Faculty
of Graduate Studies and Research in Partial
Fulfillment of the Requirements for the
Degree of Master of Arts (Physical Education)

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(C) August, 1983

ABSTRACT

The purpose of the present study was to investigate the perceived barriers to physical activity by older adults. It was also the intent of this study to review the specific types of barriers and the interaction of barriers with socioeconomic factors and physical activity levels. One hundred and ninety-nine male and female volunteer subjects over the age of 55 responded to a barriers to physical activity questionnaire. The Perceived Barrier Questionnaire(PBQ) was designed specifically for this study. The subjects resided in one of twelve chosen apartment residences for independent, healthy older adults.

The results indicated that the older adult perceived between 0-17 barriers to physical activity. The number of barriers per subject was significantly related to age and illness or handicap. The remaining factors which included gender, income, activity and educational levels were not related to barriers. There was also a significant difference between the four specific types of barrier groups (ie. Psychological, Administrative, Physical, Knowledge).

RESUME

Cette etude a pour objet l'investigation des barrieres a l'activite physique percues chez l'adulte age. L'etude veut egalement identifier la nature specifique de ces barrieres ainsi que leur interaction avec les facteurs socioeconomiques et les niveaux d'activite physique. Cent quatre dix neuf volontaires, hommes et femmes, ont repondu a un questionnaire concu dans le but de decouvrir quelles sont les barrieres a l'activite physique. Les sujets participants residaient dans l'un de douze immeubles residentiels choisis et reserves a des adultes ages, independants et en sante.

Les resultats du sondage ont revele que l'adulte age percoit entre 0 et 17 barrieres a l'activite physique. Le nombre de barrieres par sujet subissait une hausse importante a mesure qu'on atteignait des niveaux plus eleves d'age, de maladie ou de handicap. Nous n'avons pas constate de rapport significatif entre les barrieres et le sexe, le revenu, les activites et le niveau de scolarite. Nous avons par ailleurs observe une difference significative entre les quatre types de barrieres (psychologique, administrative, physique et de connaissance). Les secteurs de connaissance et de barrieres physiques se sont revelees etre les raisons principales de la reduction des activites physique.

ACKNOWLEDGEMENTS

I would like to extend a sincere thank-you to my advisor Dr. Greg Reid for his consistent patience, enthusiasm, and encouragement over the past couple years.

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CHAPTER I

INTRODUCTION

The average age of the Canadian population is increasing. As of June 1, 1981, there were approximately 3.2 million Canadians over the age of 60. Statistics Canada projects an increase to 4.5 million Canadians over the age of 60 by the year 2000 and 8 million by the year 2025. This means that 22% of the Canadian population will be over the age of 60 by the year 2025. (Canadian Governmental Report on Aging, 1982; Stone & Fletcher, 1981). Not only will there be a greater proportion of older adults, but they will also live longer. Statistics Canada states that as of 1975-1977 the life expectancy for a female was 77.48 years and 70.19 years for a male (Reference Canada, 1981-1982 edition).

The optimistic image portrayed by the media in describing the "golden years" or "aging gracefully" glosses over many of the problems of growing older. Butler (1975) refers to aging as the "neglected stepchild of the human life cycle". He argues that attempting to understand death becomes the predominant focus of old age, rather than "finding a use for the experience gained in a lifetime of learning and adapting." Grown up families, widowhood, reduced income, changes in bodily appearance, a feeling of reduced social status but yet a lifetime of knowledge and experience contribute to the profile of the elderly (Butler,

1975; Canadian Government Report on Aging, 1982). The issue now is how to reduce the effects of the negative elements of aging and find ways to maximize the positive. Then, each person would have an opportunity to enjoy quality years instead of quantity years.

The Activity Theory of Aging suggests that there is a positive relationship between life satisfaction and activity. If an individual maintains an active lifestyle, his/her adjustment to aging will be positive (Bromley, 1974; Burgess, 1954; Cavan, Burgess, Havens,1968; Havighurst & Albrecht, 1953; Havighurst, & Goldhammer, 1949; Lemon, Bengston & Peterson, 1972; Maddox, 1963; Tobin & Neugarten, 1961; Peppers, 1976). Activity and involvement have also been suggested by several authors as a major predictor for successful aging. In two Duke University longitudinal studies, higher socioeconomic status, health and activity ranked as the highest predictors for successful aging. This corroborates the views of Chebotarev (1971), Dychtwald (1980), and Palmore (1971, 1974, 1979). Thus there seems to be a positive relationship between activity, involvement and a quality lifestyle.

A key aspect of social involvement and activity is physical activity. As a person ages, there is a reduction in efficiency of basic physical and physiological functioning (Birren, 1976; Finch & Hayflick, 1977; Harris & Frankel, 1977). Repeatedly, research has demonstrated the benefits of a regular physical

activity program. With a guided and progressive plan, improvement in muscle tone, posture, joint flexibility, bone resiliency and maintenance or decrease in body weight have been documented (Barry, Daly, Pruette, Steinmetz, Page, Birkhead & Rodahl, 1966; Birren, 1976; Clarke, 1977; deVries, 1971, 1976; Espenschade, 1969; Kasch, 1976; Harris & Frankel, 1977; Massicotte, 1981; Shephard, 1978; Smith & Serfass, 1981).

Lack of physical ability due to disability and illness has been cited as one of the major reasons for reduced activity levels in the older adult (Fitness Canada, 1982; McAvoy, 1979). Approximately 50% of retirees suffer from a medical condition which restricts their physical activity (Shephard, 1982). The 1981 Fitness Canada Survey reported that 64% of those over fifty-five years displayed a limited ability to participate in activities and sport. Canadian geriatric medical costs total more than 3 billion dollars a year. This expensive health care will at least double within the next twenty five years due to the expanding older age group (Shephard, 1982). Thus a cyclical situation is created, reduction of the level of activity leading to decreased physical ability, a reduction in independent daily living and consequently, increasing health care costs. There is a definite need to develop, encourage and promote physical activity for the older adult. The implementation of effective fitness programs can reduce health care costs by approximately two-thirds, and increase the probability for the mature adult of

an independent healthy lifestyle (Shephard, 1982).

Fitness Canada reports increased participation levels for those over the age of sixty-five. Participation in general activity increased from 50% in 1976 to 63% in 1981 and sports participation went from 13% in 1976 to 34% in 1981 (Fitness Canada, 1982). Although 63% appears to be rather impressive, the data are based on statistics for "able-bodied" mature adults. When those with disabilities or illness are included, the involvement becomes 50% (Fitness Canada,1982). This reflects the effect of disability on age and activity levels. While the participation averages are increasing, there still remains approximately 50% of the older population not involved in either sport or general activity.

There must be reasons or barriers inhibiting the involvement of older adults in physical activity since only 50% are currently participating. Age, gender, habit, attitude, societal expectations and stereotypes have been suggested as influential factors in reduced participation levels (Conrad, 1976; Fitness Canada, 1982; McAvoy, 1979; Nielson, 1974; McPherson, 1980; Ostrow, 1980). Considering the value and positive effects of activity for the older adult, these barriers to physical activity should be thoroughly reviewed.

Significance of the Study

The focus of physical education in the past has concentrated largely on younger age groups. Programming, teaching and planning have been chosen according to the specific needs of the young. The philosophy and pedagogical methods have been developed partly due to a large demand of a younger population. Since there are merits in increasing physical activity for the older person, it appears necessary that methods for planning and teaching need to be developed. Before this programming can take place however, the individual must first be interested enough to start a program by themselves or register with an organization. Since the involvement for the older adult in physical activity is low (Clarke, 1974, 1977; Conrad, 1976; Fitness Canada, 1982; McAvoy, 1979) there must be barriers presently inhibiting such involvement.

There have been two major studies which have viewed specific aspects of the barrier question (Canada Fitness, 1982; McAvoy, 1979). Several other studies have focused on attitudes towards physical activity, reasons for joining and activity preferences. These findings were then used to generalize reasons for lack of involvement. The 1976 and 1981 Canadian Fitness Survey and a study by McAvoy (1979) each included a question on barriers to participation. The section on barriers in the Canada Fitness Survey listed only eleven options and more than half of these

options dealt with tangible reasons such as cost, facilities and health. This was similar to McAvoy. These potential barriers appear limited especially since a primary concern in the literature suggests attitude, habit, cultural and societal stereotypes influence participation by the older adult. In addition, ranking the barriers just by frequency reflects only an end product, a symptom of a problem. If the main objective involves suggesting solutions for future program development, then it is necessary to be familiar with factors related to these barriers such as socioeconomic factors, previous participation levels and specific types of barriers. Type of barrier refers to its particular focus such as psychological, administrative, knowledge or physical. For example, barriers related to transportation and facility problems would be an administrative type of barrier.

It would appear that an investigation to discover the specific types of barriers to physical activity and the factors to which they are related with the older adult and influencing factors is warranted. If this information can be obtained, then suggestions for adult fitness programming can be made effectively.

Statement of the Problem

The purpose of this study was to investigate the barriers to physical activity by the older adult. It was also the intent of

this study to create a research tool designed specifically to ascertain barriers and reasons for involvement in physical activty.

Hypotheses

(1) There will be no differences in perceived barriers to physical activity between gender.

(2) There will be no differences in perceived barriers to physical activity between age group.

(3) There will be no differences in perceived barriers across groups who differ in activity levels.

(4) There will be no differences in perceived barriers across groups who differ in education levels.

(5) There will be no differences in perceived barriers across groups who differ in income levels.

(6) There will be no differences in perceived barriers between groups who differ in illness or handicap.

(7) There will be no differences in the choice of specific types of perceived barriers by the older adult.

Delimitations

Considering the sample of subjects employed in the study, inferences must be confined to the representative population.

Specifically the delimitations are as follows:

(1) English speaking subjects from the island of Montreal were used as subjects.

(2) The age of the subjects chosen for this study was 55 years and over.

(3) The subjects were chosen from apartment housing designated for independent, healthy, older adults.

Limitations

A limitation of this study involves questions or response options which may not be included in the Perceived Barriers Questionnaire (PBQ). This was controlled by several methods. The first method refers to the development of the PBQ using several opportunities for scrutiny by professionals and older adults. Secondly, a space after several questions was left for comments if necessary. Lastly, the person who distributed the questionnaires encouraged and recorded the comments by participants to insure no major difficulties or misunderstandings had occurred.

A second limitation of the study involved the use of volunteers. Volunteers may not feel a commitment to answer the questionnaire in detail and immediately. To insure efficient and effective PBQ completion and return, a liason person was designated at each residence to follow up each questionnaire.

Definitions and Abbreviations

Barrier Types.

Psychological. Those barriers related to individual self perceptions and attitudes with regard to his/her involvement in physical activity.

Administration. Those barriers related to tranportation,facilities,and types of activities.

Physical. Those barriers related to physical conditions that prevent the older adult from becoming involved in activities.

Knowledge. Those barriers related to belief in popular myths or lack of information which are not supportive of participation by older adults in physical activity programs.

Perceived Barrier Questionnaire (PBQ). A questionnaire designed specifically for this study to determine the barriers to physical activity as perceived by the older adult.

Older Adult. An individual over the age of 55.

Physical Activity. Movement manifested in activities such as physical recreation, exercise and sport.

Residence for Older Adults. An apartment block which rents specifically to healthy, independent older adults.

Liason Person. An older adult who lives at the residence and acts as a link between the subjects and the researcher.

CHAPTER II

REVIEW OF LITERATURE

With the increased number of older Canadians, research in the area of physical activity and aging has increased dramatically. Reasons for involvement, attitudes and motivation in physical activities for the older adult have been well documented (Shephard, 1978; Henzelman & Bagley, 1970; Brunner, 1955) but little data exists concerning the reasons for lack of involvement by older adults in physical activity (McAvoy, 1979). Suggested barriers to physical activity participation have appeared as additional information at the end of several research articles within recommendations for further research or as a minor component of research on physical activity and aging (eg. Conrad, 1976; Canadian Fitness Study, 1982; McAvoy, 1979; Ostrow, 1980). A comprehensive exploration of the reasons for lack of participation has not occurred.

In order to address the issue of aging, exercise and barriers fully, this chapter has been divided into three main sections. The first section reviews the definition and process of aging. The second section describes the effects of exercise on aging. The final section summarizes possible reasons for lack of involvement by mature adults in physical activity.

Definition and Process of Aging

The World Health Organization divides older adults into three groups, the young-old (55-65 years), the old (65-75 years) and the old-old (over 75 years). Other authors suggest that a distinction should be made between chronological and physical age. For example, Smith (1981) states that after 65, chronological age is not necessarily an indicator of an individual's ability to adapt to his/her environment. He suggests that "physiological age is expressed by one's continued ability to adapt to his environment in either normal life situations or life crises."

It is important to make the distinction between the effects of normal aging and effects of disuse or disease on aging. For example, age may be a sole criteria to be a subject in a study, yet the effect of illness on a person may influence the characteristics of the individual at a given chronological age. Thus, the particular characteristics of the older adult may be more indicative of illness than chronological age.

The aging process begins with conception.

> The fact that man changes through time is as much a reality as birth and death. As man passes through time, changes occur which limit his capability to adapt to his milieu. Thus, aging might be defined as the loss of man's ability to adapt to his environment. This decreased adaptability relates to the total phase of man's interaction with his environment, including the physical, social, psychological, emotional and economic aspects of life. No one interactive process can be totally separated from all the other aspects. (Smith, 1981)

In reviewing the process of aging, it is difficult to isolate the sole effects due to aging and effects due to disease or sedentary lifestyle (deVries, 1975; Harris & Frankel, 1977). The symptoms produced by either of the latter are often assumed to be part of the normal aging process. Sedentary lifestyle or hypokinetic disease describe "the whole spectrum of somatic and mental derangements induced by inactivity and may be of considerable importance as one factor involved in bringing about an age related decrement in functioning capacities." (Birren & de Vries, 1975). Periods of inactivity as short as three weeks can reduce the level of muscle strength, cardiovascular functioning, skeletal support and the functioning of the neuromuscular and nervous system regardless of age (Kottke, 1966; Birren, 1975; Wessel, Small, Van Hess, Anderson, & Cederquist, 1980). Smith indicates that 50% of the functional decline attributed to physiological aging can be associated with reduced activity (Smith & Serfass, 1981). Many authors describe effects of aging and intervention but do not make a clear distinction between change as a function of disuse, disease or inevitable aging (Barry, Daly, Pruett, Steinmetz, Page, Birkhead & Rodahl, 1966; Espenschade, 1969; Massicotte, 1981; Wessel, Small, Van Huss, Anderson & Cederquist, 1968; Wilson, Warren, Leavines & Kraus, 1981).

With regard to most dimensions of physiological functioning the human species reaches peak performance at approximately

thirty years of age (Astrand & Rodahl, 1970; Smith & Serfass, 1981). Afterwards, a decline of general physiological functioning occurs by approximately .75 - 1% per year (Harris & Frankel, 1977). Throughout this decline, a difference of 10 - 20% exists between active and sedentary individuals (Astrand, 1970; Smith & Serfass, 1981). The following discussion will elaborate on the changes in the body with age.

Between the ages of 30 and 70, muscle strength, endurance, muscle mass and ability to react decline by 25-30%. This rate of decline is greatest in the leg and trunk area muscles (Birren, 1976; Astrand, 1970; Bakerman; 1969). These losses are due to a reduction in muscle fiber type (Caccia, Harris & Johnson, 1979), as well as size (Campbell, McComas & Petito, 1973; Gutmann, Hanzlikova & Jabovbek, 1968) number (Gutman & Hanzlikova, 1966) and excitability of muscle fibres (Frolkis, Matynenko & Zamostyan, 1976).

A decrease in calcification reduces bone mass by approximately .75 -1% per year and begins at age 30 for women and 50 for men. By the age of 70, the female has lost up to 30% and the male 10-15% of their bone mass (Smith, Sempos & Purvis, 1981) This decrease in calcification reduces the strength of the bone therefore increasing the probability of disc degeneration, fractures and a loss of elasticity in the joints (Birren, 1976; Nordin, 1962; Stevens, Frieman, Nordin & Barnett, 1962).

There are several changes in the structure of the heart with

age. The elasticity of the blood vessels (Parizxkova, Eiselt, Sprynarova & Wachtlova, 1971) and heart muscle (Harrison, Dixon, Russell, Bidwar & Coleman, 1964) is reduced. This reduction in muscle elasticity also increases blood pressure (Shephard, 1978). Maximum heart rate steadily decrease after the age of 25 in addition to stroke volume efficiency under heavy workloads. By age 65, the maximum cardiac output is reduced by 20-30% (Brandforbrener, Landowne & Shock, 1955; Strandell, 1964).

Vital capacity declines by 40-50% and residual lung volume by 40% between the ages of 30-70 (Astrand, 1960; Donevan, Palmer, Varvis & Bates, 1955). With this reduction in oxygen level, there is a decrease in fuel reserves for the body, which in turn affect the protective and repair mechanisms of the body (Birren, 1976). A reduction in muscle strength and posture contributes to decreased lung expansion, increased dead air space and thus restricted ventilation (Harris, 1977; Liebow, 1964; Shock, 1961).

The efficiency of the senses decreases over time due to a change in nerve cell size and a reduction of numbers. This in turn may affect co-ordination, balance, vision, audition, tactile ability and taste at different levels (Timeras, 1972). This reduction in functioning levels varies greatly and is interwoven with other factors such as nutrition, blood flow and maintained levels of activity. For example, the sense of taste is not as acute for older adults due to the reduction of cells (Smith, 1981). Another illustration involves simple and choice reaction

time which increases with age. It has been suggested that increases in reaction time may be a function of lack of practice versus the aging process itself (Shock, 1962; Timiras, 1972).

Aging and Exercise

The benefits of a regularly monitored physical activity program for those over 65 have been well documented. If physical activity intervention occurs, individuals over the age of 65 may reduce the effects of aging. Some authors have suggested the effects of aging can be reduced by approximately twenty-five years (Harris & Frankel, 1977). Positive changes in flexibility, muscular strength, endurance, cardiorespiratory functioning and personality characterisitics have been attributed to increases in physical activity (Barry, Daly, Pruett, Steinmetz, Page, Birkhead & Rodahl, 1966; Benstad, 1965; Buccola & Stone, 1973; de Vries & Adams, 1972; Espenschade, 1969; Massicotte; 1981; Shephard, 1978; Shock, 1962; Wessel, Small, Huss, Anderson & Cederquist, 1968; Wilson, Warren, Leavines & Kraus, 1981). The greatest benefits in these areas are obtained by those with a lower level of fitness but improvement is possible for everyone who engages in a physical activity program (Laerum & Lerum, 1982).

Well planned exercise programs of 6-8 weeks can produce significant cardiovascular improvements for the older adult (Benestad, 1965; Buccula & Stone, 1973; de Vries, 1970; Sidney &

Shephard, 1976). These changes occur as a positive response to submaximal and maximal workloads. There is a reduction in resting heart rate (Adams & de Vries, 1973; de Vries, 1970; Niinimaa & Shephard, 1978; Stamford, 1973) decreases in blood lactic acid levels (Suominen, Heikkenen, Kinen, Lieson & Hollman, 1977) and decreased recovery time (Shephard, 1978).

The increase in respiratory functioning due to physical activity is closely linked to the increase in cardiovascular functioning. Furthermore, increased muscle tone in the torso area increases the efficiency of inspiration and expiration (de Vries & Adams, 1972; de Vries & Birren, 1970; Fischer & Parizkova, 1977; Niimimaa & Shephard, 1978).

There is controversy regarding the increase in muscular strength and endurance in the older adult with training. Several authors state the initial increases may be more due to initial motor learning and motor unit recruitment than muscle hypertrophy (Coleman, 1969; de Vries, 1968). Regardless of the reason, motor learning or motor unit learning, the concensus of research indicates substantial improvements in muscle function and work capacity with training (Barry, Daly, Pruett, Steinmetz, Page, Birkhead & Rodahl, 1966; Benestad, 1965; de Vries, 1970; Hartly, Grimby, Kilborn, Nilson, Astrand, Bjure, Ekblom & Saltin, 1969). In summary, muscle strength and size can be maintained or increased through physical activity. Activity provides increased stress on the bones, increased circulation to the bones and

nutrition. This increases the bone mineral content and strength thus reducing the effects of a osteoporosis (Nilsson & Westline, 1971; Smith, 1973).

Barriers to Physical Activity

Fitness Canada (1982) reported that approximately half of the older population is not involved in either sport or general activity. Conrad (1976) stated that only 39% of the older American population is involved in any type of physical activity. It is apparent that some form of barrier is occuring that affects adult participation. In view of the positive physical and psychological benefits associated with an active lifestyle, it becomes apparent that the barriers to physical activity are of major importance. If these barriers can be resolved, then healthy and independent older years may become a norm rather than a luxury for few.

Several authors have made suggestions to explain reduced activity levels for the older adult. These have included:
(1) previous physical activity patterns (Campbell, 1969; Fitness Canada, 1982; Harris, 1970, Leslie, 1980; McAvoy, 1979; McPherson, 1980)
(2) negative attitudes of the individual and cultural stereotypes (Astrand, 1970; Butler, 1975, Conrad, 1976; Heikkinen & Kayhty, 1977; Hess, 1980; Shephard, 1978)

(3) a negative view of his/her bodyimage (Krietler & Krietler, 1970; Sidney & Shephard, 1976)

(4) reduced physical ability or health problems (Canada Fitness Study, 1982; Heikken & Kayhty, 1977; McAvoy, 1979; Shephard, 1982)and

(5) inappropriate activity availability, transportation and facilities (Canada Fitness Study, 1982; Heikkinen & Kayhty, 1977; McAvoy, 1979; Sidney & Shephard, 1982).

The problem thus far in the literature is that these barriers have not been systematically studied. They have been generally offered as suggestions or recommendations in research articles. This approach does not offer detailed information and understanding of barrier responses (Administration, Physical, Psychological, Knowledge) or influencing factors such as previous physical activity, history or socioeconomic status. It is this type of specific information which may help program planners increase the participation of older adults in physical activity.

(1) Previous Physical Activity Patterns

The roots of inactivity may be in a lifestyle born many years ago. The person who is now 65 years old was brought up under very different circumstances from those of today. During his or her youth, lifestyles involved much more physical activity in order to accomplish daily chores. Thus, many people associated this physical activity with work and when they retired, they

could look forward to not doing things that were physically demanding and active (Leslie, 1980).

Physical activity and leisure habits are developed at an early age and must be firmly established if they are to continue to exist over 40-50 years (Campbell, 1969; McPherson, 1980). If involvement in physical activity begins at an early age the chances of continued involvement with age are increased (Harris, 1970). In a study using non-institutionalized persons over the age of 65, McAvoy (1979) found over 92% of his sample began participating in their favorite activity before the age of 50.

The Canadian Fitness Survey (1982) displayed a direct relationship between the decline in physical activity and age. Participation rates in sports and exercise activity were 92% and 77% respectfully at 10-14 years old and decreased to 22% and 40% by age 65. While activity patterns in pre-retirement have been studied, there appears to be little information regarding specific participation rates or activity choice; most research having been rather global in definition and amount.

(2) Negative Attitudes of the Individual and Cultural Stereotypes

The concept by society of aging has not been positive (Butler, 1975; Hess, 1980). Astrand (1970) suggested "unfortunately, age functions as a socially contrived category that defines appropriate role behaviors at specific points in the life cycle." Ageism is a term used to describe the negative stereotypes and

patronizing attitude society demonstrates towards older people (Butler, 1975). It affects our views and expectations. Unfortunately, this begins to affect the self perception of the older person. Shephard (1982) stated that society provides a cultural expectation that mature adults do not maintain a high activity level thus reinforcing the attitude that older adults should be sedentary.

Individual attitudes have also been suggested as major barriers to physical activity (Heikkinen & Kayhty, 1977). Conrad (1976) stated that aging Americans perceive a reduced need for exercise with age, overrate the value of light, sporadic exercise and underate their own abilities. The Canada Fitness Survey revealed that 21% of the survey respondents over the age of 65 did not want to increase their level of physical activity and 18% said nothing would increase their current level. The 1972 American National Fitness Survey indicated that older adults exhibited the most negative attitudes towards physical activity compared to any other age group. These attitudes were strongly pronounced in older adults with low levels of income and education (Clarke, 1973). This negative attitude towards physical activity had to begin somewhere. Possibly, the lack of role models or participation in activity contributed to the development of these negative attitudes. The reasons precipitating development of these negative attitudes must first be made clear so they can be changed.

(3) Body Image

Another potential barrier may be body image. Krietler and Krietler (1970) suggest that the pleasure a person derives from motor activities is steadily reduced for the aging adult. They argue that a sedentary lifestyle leads to reduced levels of physical fitness and consequently psychological changes. The major psychological change is an inaccurate assessment of body image. Mature adults perceive their bodies as heavier, broader and clumsier than they actually are. These perceptions initiate a self-perpetuating situation which is not conducive to an active lifestyle. Reduction in environmental stimuli contribute to a decrease in body image perceptions thus reducing the chances of an individual engaging in physical activity. Using the Kenyon "My Body" and McPherson "Real Me" test, Sidney and Shepard (1976) revealed a discrepancy between the perceived and actual body image of older adults. Before a training program, the women in particular demonstrated a wider discrepancy between perceived and actual body image. The conditioning program led to changes in body image scores which were directly related to the intensity of training. Those involved in heavy workouts began to perceive their body image as more closely related to their actual body image. It appears that lack of involvement in physical activity may affect perceptions of body image. These perceptions have been suggested to be more negative for older adults, thus increasing their self consciousness and reducing the desire to

participate.

(4) Reduced Physical Ability or Health Problems

Injury and ill health have been cited as the top two barriers to physical activity in several studies (Fitness Canada, 1982; Heikkinen & Kayhty, 1977; McAvoy, 1979). As much as 50% of the older adult populations suffer from an illness which inhibits their involvement in physical activity (Shephard, 1982).

Fitness Canada (1982) reported that 16% of those between the ages of 55-64 and 19% of those over 65 report ill health as a top barrier. Twelve percent of those between 55-64 and 11% of those people over the age of 65 reported injury as the second barrier choice. This ranking and barrier choice was also reported by Heikkinen and Kayhty (1977) and McAvoy (1979). There can be many degrees of an injury or illness and cause. The next step in the research would involve specifying the type of injury or illness and its relation to actual and perceived levels of physical activity.

(5) Activity Availability,Transportation, and Facilities

The last major barrier involves transportation and facilities. Fitness Canada (1982), Heikkinen & Kayhty (1977) and McAvoy (1979) recommended available, accessible, appropriate programs in physical activity for older adults. Sidney and Shephard (1976) advocate that improved accessibility would be a major motivator

for participation. These findings are similar with the Canada Fitness Survey which lists facilities (11%), cheaper facilities (5%) and organized sports (2%) or classes (6%) as participation incentives for those over 55 years. If an individual is truly motivated to become active, exercises at home with friends or neighbourhood walks could also be a possibility for a program. In a study by Sidney and Shephard (1976), lack of facilities was cited as a barrier to participation in the city of Toronto.

In conclusion, research to date has provided suggestions of possible barriers, but they occur as after thoughts to most studies. The research lacks a systematic approach which would identify and isolate specific types of barriers and their relationship to various factors for the older adult. Research has not consistently acknowledged the age related differences of those people over the age of 55 years or included the differences between chronological and physiological aging. Socioeconomic factors and previous activity levels have also not been included as contributing factors to barriers to physical activity. If this type of information can be provided, recommendations can effectively be made to help increase older adult participation in physical activity.

CHAPTER III

METHODOLOGY

The purpose of this study was to investigate the barriers to physical activity by the older adult. It was also the intent of this study to create a research tool designed specifically to ascertain barriers and reasons for involvement in physical activity. The following chapter is subdivided into four sections: (1) subject selection (2) questionnaire development (3) procedures (4) treatment of the data.

Subject Selection

A sample of 199 English, volunteer male and female subjects over the age of 55 participated in the study. This total was comprised of 152 women and 47 men. Five hundred and ninety potential subjects had been given questionnaires (PBQ) of which 268 were returned to the liason people. Sixty-nine of these questionnaires were deleted due to overcompletion (checking every single response) or under completion (response rate less than 50%). Each of these subjects lived in public apartment residences in Montreal specifically designated for older independent adults.

Questionnaire Development

A questionnaire was chosen as the research tool since its advantages outweighed those of a second option, the interview technique. The following summarizes suggested advantages and disadvantages of the questionnaire (Berdie & Anderson,1974).

Questionnaire Advantages:

1) The researcher is able to obtain a large amount of information at a low cost.

2) Establishing contact with people who might be working during the day is easier. Upon receipt of the Perceived Barrier Questionnaire, subjects can complete it at their leisure.

3) The questionnaire approach facilitiates information collection from large samples in a short period.

4) The ease of questionnaire distribution allows for coverage of larger geographic areas.

5) Individuals will be more amenable to respond to a questionnaire at their own convenience and if it is anonymous.

6) The questionnaire offers a standardized line of questioning.

7) The scores obtained from a questionnaire are objective and do not require interpretation.

Questionnaire Limitations:

1) There is a tendency for reduced response rates when this

method is used.

2) Due to the nature of the questionnaire the methods to check reliablity and validity are limited.

3) The questions are standardized thus obtaining only the information requested.

4) Individuals receive so many requests to fill in questionnaires that they may be prejudiced against them.

In the present study, it was decided to use a questionnaire since the main research priorities could be effectively met. These included maximizing the number of people involved, reducing costs, and not inhibiting the older adult when responding.

PBQ Development

There were no readily available questionnaires on barriers to physical activity, thus one had to be developed. A review of the currently available fitness questionnaires was conducted. Two questionnaires were found which dealt with general aspects of fitness and a question on barriers to physical activity (McAvoy, 1979; Fitness Canada, 1982). These response options for barriers, in addition to questions on socioeconomic factors and present activity levels, were included in the PBQ development.

The development of the first draft began with the material gleaned from McAvoy (1979) and the Canadian Fitness Study (1982) barrier suggestions and from ten volunteer older adults from an

activity program at McGill University. Each individual was asked in a private, open ended interview "What prevents you or makes it difficult for you to become involved in physical activity?" Forty six descriptive phrases were collected from the literature review and interviews. Many of the phrases were duplications or unclear, thus reducing the number of barrier responses to 20. The 20 suggestions chosen were reviewed and categorized according to four apparent areas. The four categories of barriers were:

(1)Psychological

(2)Administrative

(3)Physical

(4)Knowledge (See Appendix B).

The first draft of the PBQ was tempered with practical suggestions for layout, type size, paper and questionnaire format (Bachstrom, 1963; Berdie and Anderson, 1974; Erodos, 1957; Isaac, 1971; Moser, 1971; Nixon, 1954; Payne, 1951; Robinson, 1952). For example, response boxes were organized and placed on one side of the page to facilitate subject responses and tabulation afterwards. The initial draft contained twenty-four questions and was circulated within the McGill department of Physical Education for evaluation by the faculty and graduate students. Comments from these twelve responses were incorporated into the second draft.

The second draft was reduced to thirteen questions. For construct validity, it was circulated for comments to six

professionals involved with older adults, three from McGill University and three from a Montreal Social Service Agency. The professionals were given the list of definitions for each of the barrier areas (See Chapter 1) and the list of 20 barriers from the PBQ. Based upon this criteria the professionals independently reviewed the PBQ and classified the barriers into one of four category types: Administrative, Psychological, Knowledge or Physical. In addition, a group of twelve older adults from a local community center volunteered to help with the PB pilot. The procedures for formal testing were used in the pilot study. Following questionnaire completion, the researcher conducted a verbal open ended evaluation asking each participant about questionnaire completion time, clarity, comprehension in addition to any suggested modifications. Information from this pilot and comments from the six professionals were then integrated into the third and final PBQ.

The final draft was six pages and contained 13 questions. The pages were professionally type set printed with black ink on 8-1/2 x 11" white bond and stapled together (Appendix A). The question responses were checklist format thus the answer boxes were arranged and coded for ease of tabulation. Additional plans were also made at this time and incorporated to maximize the PBQ return rate. This included a short checklist format (Isaac, 1971; Bachstrom, 1963; Erodos, 1957), a covering letter from the department chairman urging participation by the individual, a

liason person available at each apartment complex to act as a contact (Gullahorn, 1959); anonymity of the test subjects (Klein, Maher & Dunnington, 1967); and two personal followup reminders (Hochstim & Athanasopoulos, 1970; Robinson, 1952).

Procedures

Eighteen apartment residences for predominantly English older adults, were selected from a listing of over forty Montreal apartment blocks. The initial list of forty apartment residences was developed by the Montreal Social Services to assist people in finding lodging and was available to the public. The residences supply apartments for independent, self sufficient adults over the age of fifty to fifty five. The selection of these eighteen complexes was based upon the largest percentage of English speaking tenants. Final recommendations were made by three Social Service Centers and a concensus was reached based on highest percentages of English tenants (Operation Contact, Metro C.L.S.C., Senior Citizen's Forum).

Following selection of the 18 residences, the administrative director at each residence was phoned by the researcher to briefly introduce the study and invite the participation by the residents. A two to three week period was allotted for a decision after which the director was phoned to confirm involvement. Twelve residences agreed to participate. At this

time, the director was asked to suggest an older adult in the unit to act as a liason person with the researcher. Within two weeks an individual had been appointed and contacted by the researcher to confirm his/her involvement. His/her role was to distribute, and pick up the questionnaires as well as answer any questions from the respondents. A twenty-five dollar honorarium was given to each individual after the completion of his or her services.

The administrative procedures were explained individually to each liason person during a home visit by the researcher. The purpose of these home visits was to meet the liason individuals, give them the questionnaires and explain the administrative procedures. They were instructed to be objective, concise and pleasant when dealing with the participants. The contact person was encouraged to call the researcher if they had any problems or queries. Dates for questionnaire distribution and follow-up were arranged with each liason person during the home visit. All of the questionnaires were distributed to each resident on a Monday. Subject participation was determined by the liason person approaching each resident, explaining the research and asking whether or not the individual would like to participate. Those who did not fulfill the pre-requisites (mother tongue English and over fifty five years) still filled in a questionnaire but the data was not included in the analysis. This was done for ease of administration. Failure to return a questionnaire within two

weeks meant a follow-up visit the following day and if necessary, three days later by the liason person. If the questionnaire had not been handed in after this time, no further reminders occurred.

Design and Treatment of the Data.

The 13 questions of the PBQ were analyzed by four methods: (1) Frequency distribution (2) Mann Whitney test (3) Kruskal Wallis test (4) Chi-Square test. Eleven questions (excluding the language question and age by written date) were listed by frequencies. Differences in barriers according to gender and illness or handicap were analyzed by the Mann Whitney test and barriers across age, income, education, and activity levels were analyzed by the Kruskal Wallis test. The differences between specific types of barriers (Psychological, Administrative, Physical, Knowledge) were analyzed by the Chi-Square test.

CHAPTER IV

RESULTS

The purpose of this study was to investigate the perceived barriers to physical activity by older adults. It was also the intent of this study to create a research tool designed specifically to ascertain barriers and reasons for involvement in physical activity. The present chapter is divided into the following three sections: (1) Personal Profile of Subject (2) Subject Activity Level Profile (3) Perceived Barriers to Physical Activity.

(1) Personal Profile of Subject

Age and Gender. The 199 English speaking subjects consisted of 152 females and 47 males. The age span extended from fifty five to ninety years old with the majority of the people falling in the 65-84 year old range.

The age of each individual was solicited in two questions, one by age groups, each spanning five years and the second by day, month and year. The age group frequencies are displayed in Table 1 since the second question illicited only a 50% response rate.

Table 1

Percentage of Females and Males in each Age Category

Age in Years	Female	Male	Total Group
55-59	2.64(4)*	4.26(2)	3
60-64	4.61(7)	4.26(2)	5
65-69	13.16(20)	23.40(11)	15.5
70-74	21.05(32)	27.66(13)	22.5
75-79	23.68(36)	17.02(8)	22
80-84	21.71(33)	12.76(6)	19.5
85-89	6.58(10)	4.26(2)	6
Over 90	.66(1)	6.38(3)	2
missing data	5.91(9)	0	4.5
TOTAL	100(152)	100(47)	100

*( ) denotes frequency

Education. The data on educational level is described in Table 2. Almost half of the population (48%) had obtained some high school education. The females exhibited lower levels of education than males in the technical and university levels but ranked higher in the elementary levels. This difference was most pronounced in the elementary level (females, 23.37%; males,12.77%).

Table 2

Percentage of Females and Males in each Level of Education

Level of Education	Female	Male	Total Group
no formal education	1.97(3)*	6.28(3)	3
elementary	23.37(34)	12.77(6)	20
secondary	46.68(74)	44.68(21)	48
Technical College	9.21(14)	14.89(7)	10.5
University	11.18(17)	19.15(9)	13
missing data	6.58(10)	2.13(1)	5.5
TOTAL	100(152)	100(47)	100

* ( ) denotes frequency

Income. The percentage of males and females in each income group is shown in Table 3. In contrast to the other twelve questions on the PQB which had response rates in the 90 to 99 percent range, this question elicited only a 63% rate of response. The highest ranking income bracket with 19% was $4,000-$6,999, followed by $7,000-$9,999 (16.5%) and $10,000-$14,000 (9.5%). The average income level ranked highest, by the females was the $4,000-$6,999 category which was in contrast to the males with a major income bracket being $7,000-$9,999. Furthermore, the income level for males was more evenly distributed across the range of $4,000-$29,999 than females.

Illness or Handicap. Table 4 illustrates the percentage of males and females displaying an illness or handicap which prevented participation in physical activity. The majority of respondents (57.5%) stated there existed no handicaps while 40% responded that they were inhibited by illness or handicap. The "no handicap" category was largest for both men (72.34%) and women (53.29%). Proportionally, there were more females (44.08%) with handicaps than males (25.53%).

Table 3

Percentage of Females and Males in each Income Bracket

Income Bracket	Female	Male	Total Group
none	1.97(3)*	0	1.5
Below $4,000	5.26(8)	2.13(1)	4.5
$4,000-$6,999	21.71(33)	10.64(5)	19
$7,000-$9,999	12.50(19)	29.79(14)	16.5
$10,000-$14,999	8.55(13)	12.77(6)	9.5
$15,000-$19,999	2.63(4)	12.77(6)	5
$20,000-$29,999	3.29(5)	10.64(5)	5
Above $30,000	1.97(3)	2.13(1)	2
missing data	42.12(64)	19.13(9)	37
TOTAL	100(152)	100(47)	100

* ( ) denotes frequency

Table 4

Percentage of Females and Males Displaying a Handicap or Illness.

Handicap or Illness	Female	Male	Total Group
suffer from illness or handicap	44.08(67)*	25.53(12)	40
do not suffer from illness or handicap	53.29(81)	72.34(34)	57.5
Missing Values	2.63(4)	2.13(1)	2.5
TOTAL	100(152)	100(47)	100

* ( ) denotes frequency

(2) Activity Level Profile of Subject

Present Level of Physical Activity. As seen in Table 5, the majority of the older adults felt they participated in enough physical activity (58%) while only 23.5% indicated they "don't get enough" and 16% "don't get enough but want more". More females (62.5%) than males (44.68%) responded that they "get enough physical activity" while more males (23.4%) than females (13.8%) responded that they "get enough physical activity but would like more."

Table 5

Percentage of Females and Males in Present Levels of Physical Activity

Present Level of Physical Activity	Female	Male	Total Group
get enough	62.5(95)*	44.68(21)	58
don't get enough	21.05(32)	29.79(14)	23.5
get enough but wants more	13.82(21)	23.40(11)	16
missing values	2.63(4)	2.13(1)	2.5
TOTAL	100(152)	100(47)	100

* ( ) denotes frequency

Level of Physical Activity over the Past 12 Months. Table 6 displays the activity levels over the past 12 months. The question pertaining to activty level was broken down into activity (18 choices), season (October - March, April - September), number of sessions (4 choices) and time per session (4 choices). A cumulative score for each activity in each season was tallied by adding scores from the number of sessions per week and time per season. Each of the four choices from the number of sessions and time per session had been designated a score from one to four. For example, involvement less than once a week was assigned a score of one and one to two times per week was assigned a score of 2. Thus, if a person checked the first response box in number of sessions and time per session, the total score for that season was two. The scores for each individual were tallied and divided into low (total score <4), medium (total score > 4 but < 9) and high (total score > 9).

Females tended to be less active than males, scoring 67.83% and 31.47% in the low and medium activity levels as compared to 55.31% and 40.43% for the males. The most frequently chosen activities ranked according to preference were walking, swimming, calisthenics, bowling and dance.

Table 6

Percentage of Males and Females in Physical Activity Levels

Gender	Activity Level			
	LOW	MEDIUM	HIGH	TOTAL
Female	67.83(96)*	31.47(44)	.7(1)	100(141)
Male	55.31(26)	40.43(19)	4.26(2)	100(47)

* ( ) denotes frequency

Pre and Post Retirement Activity Levels. The percentage of pre and post retirement activity levels is displayed in Table 7. The major difference between pre and post retirement activity levels was an increase in walking for the females and a decrease in activity which involved lifting or heavy manual labour for both males and females. Across gender in both pre and post retirement levels, males exhibited higher levels of activity involving lifting and heavy manual labour.

Table 7

Percentage of Females and Males in

Pre and Post Retirement Activity Levels

Activity Levels	Pre-Retirement			Post-Retirement		
	Female	Male	Group	Female	Male	Group
sitting down	33.55(51)*	25.53(12)	31.5	24.34(37)	29.79(14)	25.50
walking alot	30.26(46)	40.43(19)	32.5	43.42(66)	42.55(20)	43.0
walking & lifting	13.16(20)	21.28(10)	15.0	5.92(9)	12.77(6)	7.5
heavy manual labour	.66(1)	8.50(4)	2.50	0	2.12(1)	.5
missing values	22.37(34)	4.26(2)	18.5	26.32(40)	12.77(6)	23.50
TOTAL	100(152)	100(47)	100	100(152)	100(47)	100

* ( ) denotes frequency

Reasons for Involvement in Physical Activity. The top ranking reasons for involvement in physical activity displayed in Table 8 were physical health (57.5%) and social (56%). The ranking of the remaining responses were in the 40 percent response range for the third and fourth choices and lower for the remaining. The lowest response with 14 percent was the "other" category. These responses reflected similar answers to those suggested in the check list such as "I want to be in shape" or "I want to be healthy".

Table 8

Reasons for Involvement in Physical Activity*

Ranking	Percent Response	Reason(s) for Involvement
1	57.5	It is good for my health
2	56	It gets me out of the house
3	41	It gives me a sense of well being
4	40	It helps me to meet new people
5	34	It makes me feel younger
6	23.5	I enjoy the company of the young people involved
7	14	Other

* Respondents were asked to choose as many as they felt were appropriate

Reasons which would Increase Interest in Physical Activity. As displayed in Table 9 the most frequently occurring reason for increased interest in physical activity was "attaining a better physical condition" (34%) followed by "my friends joining me" (31.5%), "the presence of people to assist me" (27%) and "facilities close to home" (27%). The lowest ranking was "more leisure time" (11%) and "other" (11.5%). The difference between highest and lowest ranking reasons was 23%.

Table 9

Reasons for Increase in Future Physical Activity*

Ranking	Percent Response**	Reason(s) for Future Increase in Physical Activity
1	34	Attaining a better physical condition
2	31.5	My friends joining me
3	27	Facilities closer to my home
3	27	The presence of people to assist me if I need help
4	25.5	Attaining a better state of health
5	24.5	Learning new activities
6	24	Accesible facilities, (eg. not too many stairs
7	23.5	My doctor giving me suggestions for physical activity to do at home
8	19.5	Readily available organized activity classes
9	18.5	Less expensive facilities
10	15.5	More information on the benefits
11	11.5	Other
12	11	More leisure time

* Respondents were asked to chose as many as they felt were appropriate.
**Percentage response for specific reason by the total group

(3) Perceived Barriers to Physical Activity:

Ranking of Barriers. Table 10 lists the responses for each of the twenty barriers in percentages (range from 5%-36.5%). The top ranking barrier to physical activity was "I get enough physical activity already in my daily routine" (36.5%) followed by "I get tired easily (35%) and "My state of health" (29.5%). The fourth and fifth ranked barriers dealt with attitudes and preconceptions about aging and exercise. The seventh to fourteenth barriers ranged from 17.5% to 12.5% which included transportation and difficulties due to physical impairment. The fifteenth to eighteenth ranked barriers involved tangible reasons for lack of participation such as cost, scheduling and type of activities available.

Total Number of Barriers. Table 11 illustrates the total number of barriers per person. The range of barriers extends from 0 - 17 with most of the barriers occurring in the 0 - 8 range. The differences in proportion across gender is minimal. The largest difference occurs at the barrier total of one for males as they ranked 13.25% higher than the females.

Table 10

Barriers to Physical Activity*

Ranking	Percent Response**	Suggested Barrier
1	36.5	I get enough physical activity already in my daily routine
2	35	I get tired easily
3	29.5	My state of health
4	22.5	I'm not disciplined enough
4	22.5	I do not need as much physical activity now that I'm older
5	22	I have worked hard my whole life and now I want to relax and do things I have always wanted to do
6	19.5	There are many risks to my health if I get too active at my age
7	17.5	My balance is poor and I fall often
8	16	My doctor told me to be careful and not overexert myself
9	15.5	I am too old
10	15	I do not have the skills or capability to be physically active
11	14.5	Transportation is difficult
12	14	I am overweight
13	13	I don't have enough time
14	12.5	I do not know anyone who would like to be physically active with me
15	10.5	The activites do not appeal to me
16	10	I don't know how to start a physical

		activity program
17	6	It is too expensive
18	5	The times of the classes are not convenient
18	5	Other

* Respondents were asked to respond to as many as they felt appropriate.
**Percentage response for specific barriers by the total group

Table 11

Percentage of Females and Males per Number of Barriers

Total # of Barriers	Female	Male
0	13.71	8.5
1	14.37	27.62
2	17.64	14.88
3	13.81	14.88
4	10.45	12.77
5	7.83	6.53
6	5.87	2.11
7	7.18	0
8	3.26	4.27
9	1.31	2.11
10	1.31	0
11	1.31	2.11
12	0	0
13	1.31	0
14	.65	0
15	0	2.11
16	0	0
17	0	2.11
TOTAL	100	100

* Respondents were asked to respond to as many as they felt appropriate.

The Relationship of Perceived Barriers with Various Factors. In order to ascertain the relationship between barriers and gender, illness, age, education, activity and income levels, a score for each subject was determined. The score was simply the number of barriers indicated. Thus a continuous variable of ordinal measurement was derived for each subject.

To determine if there was a significant difference between females and males and levels of illness or handicap, a nonparametric Mann Whitney test was used. A Kruskal Wallis test was used to analyze any differences among age, activity, education and income levels. The two interactions which displayed significance were age ($p < .04$) and illness or handicap ($p < .0001$) as displayed in Table 13 and 17 respectively. The remaining four interactions illustrated in Table 12, 14,15 and 16 were gender ($p < .50$),activity levels ($p < .09$), education levels ($p < .37$) and income levels ($p > .25$) which were not significant,although a slight trend was evident in activity levels.

Table 12

Influence of Gender on Number of Barriers

Gender	N	X
Female	152	3.49
Male	47	3.43
Mann Whitney Test	.6796	p< .4968

Table 13

Influence of Age Level on Number of Barriers

Age Level in Years	N	X
55-59	6	6
60-64	9	3.56
65-69	31	2.32
70-74	45	2.36
75-79	44	3.93
80-84	39	4.95
85-89	12	3.33
Over 90	4	5.25
Kruskal Wallis 15.94	DF 8	p< .0432

Table 14

Influence of Activity Levels on Number of Barriers

Activity	N	X
Low	133	3.8
Medium	64	2.83
High	3	2

Kruskal Wallis Test 4.76 DF 2 p< .0925

Table 15

Influence of Education Level on Number of Barriers

Education Level	N	X
No Formal Schooling	6	2.83
Elementary	40	4.75
Secondary	95	3.07
Technical	21	3.52
University	26	3.15

Kruskal Wallis Test 4.24 DF 4 p< .3746

Table 16

Influence of Income Level on Number of Barriers

Income Level	N	X
None	3	3
Under $4,000	8	2.78
$4,000-$6,999	38	4.24
$7,000-$9,999	33	4.21
$10,000-$14,000	19	3.11
$15,000-$19,000	10	2.7
$20,000-$29,000	10	2.4
Over $30,000	4	3.5

Kruskal Wallis Test 9.02 DF 7 p< .2510

Table 17

Influence of Illness or Handicap Level on Number of Barriers

Illness or Handicap Levels	N	X
Displays Illness or Handicap	80	4.79
Does not Display Illness or Handicap	115	2.49

Mann Whitney Test 5.64 p< .0001

Specific Types of Barriers. Table 18 lists the four groups of specific barriers ranked according to percentage response across gender. Knowledge barriers (61.5%) were ranked first followed by physical barriers (53%), psychological barriers (46.5%) and administrative barriers (28%). Table 19 displays the chi-square analysis values across the four specific barrier groups (Administration, Psychological, Physical, Knowledge), followed by combinations of the individual groups. There was significance across the four groups at the .005 level. There was a significant difference across all pair combinations with the exception of the pair combination of psychological and physical barriers. The knowledge barriers area of barriers ranked first in percentages, but was also significant in all combinations.

Table 18

Specific Barrier Types Ranked by Percentage

Ranking	Type of Barrier	Percentage Response
1	Knowledge	61.5%
2	Physical	53.0%
3	Psychological	46.5%
4	Administration	28.0%

Table 19

Specific Types of Barriers

Types of Barriers	Chi-Square Analysis			
Between all Four Groups	25.702	DF	3	*p< .005
Psychological and Physical	1.422	DF	1	NS
Psychological and Knowledge	8.168	DF	1	*p< .005
Physical and Knowledge	9.994	DF	1	*p< .005
Administration and Physical	15.70	DF	1	*p< .005
Administration and Physical	17.084	DF	1	*p< .005
Administration and Knowledge	24.28	DF	1	*p< .005

CHAPTER V

DISCUSSION

The purpose of this study was to investigate the perceived barriers to physical activity by older adults. It was also the intent of this study to create a research tool designed to ascertain barriers and reasons for involvement in physical activity. The following chapter will be broken down into four main areas: (1) Personal Profile of Subject (2) Activity Level Profile of Subject (3) Perceived Barriers to Physical Activity (4) PBQ Assessment

(1) Personal Profile of Subject

Females outnumbered the males by three to one in the present study. The majority of the subjects (84.5%) were between age 65-84 but the range extended from 55 to 90 years old. Ninety-four percent of the participants had obtained some degree of education. The average level obtained for both men and women was secondary education with general levels for men being slightly higher. Average income was between $4,000 - $9,999 with males exhibiting a slightly higher income.

Forty percent of the sample displayed an illness or handicap which prevented participation in physical activity during the

past 12 months. However, the illness or handicap did not appear to adversely affect the independent daily living skills of the subject. This level of incapacitation which affected physical activity is concurrent with findings by Shephard (1982). Comparison of subjects with those from other studies (McAvoy, 1979; Fitness, 1982) is not possible since the profile data presented was not as detailed as in the present study.

(2) Activity Level Profile of Subject

Overall, the participants perceived themselves as fairly active. Fifty-eight percent stated they were presently involved in enough physical activity and 16% felt they were active and would like to increase their levels. The majority of adults therefore felt their present level of physical activity was adequate. These findings are similar to the study by Conrad (1976) in which older adults were pleased with their level of activity, actually overestimating the benefits of light sporadic exercise and the accompanying benefits.

The two major reasons for present involvement and future increases in physical activity were related to health and social factors. This augers well with the Fitness and Aging Report (1982) which reported "to feel better" as the main reason for participation for adults over the age of 55. In this same study, health related reasons such as improvement in flexibility,

controlling weight and reducing stress ranked third, fourth, fifth respectively while the need to be with people ranked sixth in the present study.

The expressed need by participants for activity to promote health and socialization conflicts with their low levels of physical activity. Seventy-four percent of the participants rated their present involvement in physical activity as positive yet the majority of females (67.83%) and males (55.31%) responded in the low activity level. An example of someone falling in the low activity level would be an individual who exercised 3 times per week for less than 15 minutes. Thus, therere appeared to be a discrepancy between actual levels of physical activity and perceived needs. There was also a slight difference in activity levels between males and females. The majority of females rated their activity levels as lower than the males. This is similar to findings by McPherson (1980) and Nielson (1974) in which physical activity declined earlier and more frequently for women.

The top ranked activities in the PBQ were walking, swimming, calisthenics, bowling and dance which coincided with findings by Clarke (1974), Fitness Canada (1982) and McAvoy (1979). The importance of walking as an activity is substantiated further by the PBQ pre and post retirement daily work/activity levels in which "walking quite alot during the day but no lifting and/or carrying of heavy items" ranked highest of both the pre and post retirement lifestyle options. It was the only option which

increased after retirement.

In discussions with respondents after PBQ completion, there appeared to be a discrepancy between attitudes and ideas expressed at the beginning of a conversation compared to those at the end of a conversation. Initial discussion focused on what it was like to be old and the accompanying adjustments. The tone of this discussion was fairly pessimistic in most cases,as the participants described the movements and activities they were no longer capable of. The onus of responsibility for this reduced activity level was placed on outside factors and the participant did not appear to take responsibility for their actions. Excuses such as "normal aging process" or "too old" dominated the conversations as justification for reduced activity levels. Throughout the initial phase of conversation, the subjects displayed an acceptance of these attitudes and activity levels as inevitable.

Upon further discussion, these negative attitudes began to change. As the participants spent more time with the researcher, they began to share experiences from their active youth and expressed a desire to continue this activity level. Throughout discussion, these past activity patterns were usually associated with friends or family. When the researcher suggested involvement in physical activity,the subject usually replied with an excuse such as "It's been too long" or "I can't" as excuses. The researcher felt that if prompting and encouragement had

occurred, the subjects would have been interested in beginning a physical activity program.

Perceived Barriers to Physical Activity

Approximately 87% of the sample perceived that barriers prevented involvement in physical activity. The range of barriers extended from 0-17 with the majority of subjects exhibiting one to five barriers. This suggests that the barrier issue may not be as simple as dealing with and reducing the effects of one barrier in order to increase activity levels. There appears to be more than one barrier per person and various barrier types. The average number of barriers for individuals with an illness or handicap was 4.7 as compared to 2.4 for those without an illness or handicap. It is possible these perceived barriers are interrelated and dependent upon one another. For example, a problem with body image may initially begin with feelings about the subjects body (ie.I am overweight). These feelings about his/her physical body may act as a catalyst for the development of attitudes concerning his/her attractiveness and appeal to others. Without intervention, these attitudes may develop and promote excuses to mask the initial problem. For example, "I do not have the skills or capability to be physically active" or" I don't have enough time." The barriers to physical activity are numerous and interelated which reflects the

complexity of the initial problems inhibiting involvement in physical activity.

The number one reason for reduced activity was "I get enough physical activity already in my daily routine (36.5%). This barrier is substantiated by the 58% response to "I get enough physical activity already" in the question concerning daily physical activity levels. Similar responses are noted in Fitness & Aging (1982) which reported 30% between 55-64 years and 50% of those over the age of 65 did not want to increase their level of activity. In this same study, 36% and 57% respectively state "nothing would increase their level of physical activity." It would appear that these people are satisfied with their current activity levels.

Several authors suggest these statements may be more representative of negative pre-conceptions and attitudes about exercise and activity (Conrad, 1976; Clarke, 1974; Nielson; 1974; Ostrow, 1980). These pre-conceptions can negatively affect the person's desire for involvement in physical activity. As noted in the review of the literature, these attitudes can be influenced by previous activity patterns, cultural stereotypes, or feelings towards ones body.

Krietler and Krietler (1970), for example suggest that the attitude concerning reduced needs for physical activity may be linked to the distortion of an individuals body image. As the person ages, his/her "conquest of physical space is completed"

and the individual begins to focus on social and intellectual development.

> ". . . People over fifty are bent upon the exploration of the emotional or intellectual sphere. Conquest of these spheres may be exciting, but they do not involve or necessitate discharges of energy to a degree comparable to those accompanying bodily movements."
>
> (Krietler, p. 303).

The reinforcement a person receives from physical activity is reduced as they become more involved with the "intellectual sphere". The individual then perceives his/her body image as broader and heavier than it actually is because they do not receive adequate stimuli to challenge and reinforce perceptions of his/her body. Thus, a cyclical pattern is created. It begins with reduced activity levels, little reinforcement of the physical self,and consequently the development of faulty body image perceptions. As the person ages and this pattern continues, the gap between actual and perceived body image becomes larger. Due to this perception of body image, the individual may now have an increasingly negative view of his or her body, has not participated in physical activity and feels defensive about present or future opportunities to participate.

Another example of developing negative attitudes involves the stereotypes of older people. Ostrow (1980) suggests negative pre-conceptions of the capabilities of an older person are developed. Research has demonstrated that these age related social and cultural expectations of the older adult are developed at an early age and continue to develop throughout our lifetime

(Ahammai & Baltes, 1972; Hickey, Hickey & Kalish, 1975; Ostrow, 1980). By the time an individual is sixty years old, they have developed strong age related stereotypes which are further reinforced by media and others expectations. In a 1972 American Adult Fitness Survey, the most frequent reason for lack of participation was "I'm too old" (Clarke, 1974). These individuals are expected to "slow down" and take a "well earned rest" (Sidney & Shephard, 1976). Thus, the response of "I get enough physical activity already" may not totally reflect adequate amounts of physical activity but rather negative attitudes and assumptions based on individual and societal expectations.

The second and third ranked barriers were"I get tired easily" (35%) and "My state of health" (29.5%). These two statements are both health related which corroborates with findings suggesting lack of physical ability and poor health as major barriers to physical activity (Fitness & Aging, 1982; McAvoy, 1979). Adequete health can no longer be assumed, and its growing importance as a barrier is suggested by the Fitness & Aging report (1982). The 10-24 age cohort views health as a minor consideration for involvement in activity. By age fifty-five this "minor consideration" has grown to 16%, and 19% by age sixty-five. The statement concerning fatigue may again relate to underestimating the ability of an individual and over rating physical exertion efforts involved with activity.

The next four barriers were related to attitudes and pre-conceptions of aging. These involve lack of discipline (22.5%), reduced need for physical activity (22.5%), deserved relaxation (22%) and risks to health due to exercise (19.5%). Poor balance and falls were ranked at seventh place (17.5%).

The eighth barrier "My doctor told me to be careful and not overexert myself"was quite high(16%) considering the doctor should be recommending some form of minimal activity. This reflects a lack of educated intervention by the medical profession. If these key people were more familiar with training principles and choices for physical activity, they could make valuable suggestions to their patients.

The ninth and tenth ranked barriers "I am too old" (15.5%) and "I do not have the skills or capability to be physically active" (15%) again reflect negative stereotypes of the older adult. These attitudes were evident during discussion with the liason people at each residence. Commentary often heard from participants concerning their involvement in physical activity included "I can't", "I shouldn't" or "I am not able". In many instances, the participants thought a fitness class was being organized and their first reaction was negative followed by a complaint of old age or illness to justify lack of attendance.

After these comments had subsided, individuals would often speak of his/her younger, more active and exciting years. Unfortunately, these descriptions appeared to be reflective of

his/her past youth followed by an acceptance and expectancy of old age and reduced activity levels.

The barrier of transportation ranked eleventh. The placement of transportation (14.5%), activity choices (10.5%), scheduling (5%) and cost (6%) were quite low considering these barriers were often suggested as major reasons for reduced activity levels. These rankings are similar to those in the Fitness & Aging Review (1982) in which cost, quality and proximity of facilities ranked as several of the lowest barriers. This is in contrast with general suggestions to provide and upgrade facilities, transportation and reduce costs in order to increase participation (McAvoy, 1979; Ostrow, 1980; Sidney & Shephard, 1976).

The results of the PBQ indicated that age,and illness or handicap significantly influenced the number of barriers to physical activity for the older adult. Therefore, hypothesis two and six were rejected. The number of barriers per person across age groups ranged from 2.3 to 5.25 in the present study. With exception of the 55-64 age group, there was a progressive increase in the number of barriers to physical activity with age. This increase in the number of barriers with age probably occurred for several reasons. Conrad (1976) suggests that older persons perceive a reduced need for exercise as compared to younger persons and this attitude increases with age. Secondly, societal attitudes towards the older person and his/her

capabilities have not been positive and are suggested to be linked with age (Butler,1975, Harris & Frankel, 1977). For example, a 75 year old would be perceived as less competent than a 60 year old due to age. The reinforcement of these age related expectations and attitudes help confirm the older individuals perception of themselves, their reduced capabilities and consequently increase the number of reasons not to be active.

Illness was also significantly perceived as a barrier to physical activity. The average number of barriers for individuals with an illness or handicap was 4.7 as compared to 2.4 for those without an illness or handicap. These findings corroborate those by Fitness Canada (1982), Heikken and Kayhty(1977) and McAvoy(1979). Shephard(1982) stated that approximately 50% of the older adult population suffered from an illness which inhibited their involvement in physical activity. In the Fitness and Aging Review(1982), 16% of those between 55-64 years and 19% of those over the age of 65 reported ill health as a major deterrent for involvement in physical activity. The effects of illness or handicap on a person were seen as a large concern by the PBQ participants. Throughout conversation, health status was a major discussion point. Ill health of any degree was discussed with great caution and concern. For example, an ache in a joint would sometimes be self diagnosed as the beginning of arthritis and the person consequently restricted his/her activity pattern.

The remaining factors which included gender, activity, education and income levels were not significantly related to barriers. Therefore, hypothesis one, three, four and five were not rejected. Although there is little profile data on the older adult and barriers, it has been suggested that gender may have an effect on barrier selection. For example, women over the age of 60 display reduced activity levels compared to men(Clarke, 1977; Fitness Canada, 1982). It is difficult to compare the effect of activity levels on the number of barriers since this question has not been specifically studied for the older adult, although it has been suggested that a reduction in barriers may increase activity levels (McAvoy, 1979). Through discussion with the participants, it was not apparent that the active individuals exhibited fewer barriers but they perceived fewer barriers. The major difference which appeared between high active and low active people was attitude. Although transportation or physical ailments may have been a problem for a high active person, they found a way to deal with the problem or develop an adaptation strategy. High active participants appeared to be more positive and flexible throughout discussion. This was in contrast with several of the low active individuals who magnified the inconvenience incurred with class times and inappropriate facilities. For younger Canadians, increased levels of education and employment have been related to increased activity levels(Fitness Canada, 1982). The variables of education,

activity and income levels did not significantly affect barrier selection in the present study, but this may have been due to the homogeneity of the sample. It is suggested that future studies consider inclusion of individuals from a broader socioeconomic background.

There was a significant difference between the four groups of barriers (Administration, Physical, Psychological, Knowledge; $p < .005$) in addition to five of the six pair combinations (ie. Administration & Psychological; $p < .005$). Therefore hypothesis seven was rejected. The barrier area which ranked highest for response rate was the area of knowledge followed by physical, psychological and administrative barriers. The importance of knowledge as a specific barrier area was further reinforced in the post hoc comparisons. When the knowledge barrier responses were compared with each of the remaining three types, the mean number of barriers were significantly different. This is in contrast to findings by the Fitness Canada Survey(1981) in which only four percent of the people over the age of 55 stated "more information about benefits of physical activity" would increase their activity levels. This discrepancy in findings could be due to the homogeneity of subjects in the PBQ versus those in the Fitness Canada study. In addition, the PBQ was designed to specifically view barriers to physical activity. It contained 20 barrier options to choose from, of which five were knowledge options, The Canada Fitness Survey did not include a question on

knowledge in the barrier question. The knowledge option was placed in the question "Which one of the following would increase your present level of physical activity?" The display of physical barriers as the second barrier area further substantiates the important effect of illness or handicap on activity levels. The psychological barriers were the third perceived group of barriers with a percentage score of only seven percent less than physical barriers. These findings are concurrent with research which suggests older adults have negative attitudes about their bodies (Krietler & Krietler, 1970) and the most negative attitude of all age groups towards physical activity (McAvoy, 1979). This was further augered by comments throughout the PBQ interview such as "I can't", "I'm too old" or "I shouldn't." The administrative section of barriers was rated fourth place. This was surprising since recommendations in the study by McAvoy (1979) and Sidney and Shephard (1978) suggest improvements in transportation and facilities to encourage involvement of older adult in physical activity. In discussion with low active adults, initial blame was frequently placed on transportation or facilities. If pressed for further information, replies would include "I can't..." The focus of barriers appeared to change as the discussion developed. The first response was to blame reduced activity levels on outside factors, followed by personal factors.

In conclusion, specific types of barriers differently

influence involvement in physical activity for the older adult in different ways. The uniqueness of each of these barriers should be considered when developing physical activity programs for the older adult.

(4) PBQ Assessment

Information was collected from informal interviews between the liason people and participants after PBQ completion. Initially, an informal discussion had been planned with approximately 6-8 people at each residence after PBQ completion. The unsolicited response far exceeded our initial estimates with an average of 12-15 participants at each residence. It is believed this occurred for several reasons.

First, many of these older adults attached a great deal of importance and felt personal responsibility when completing the questionnaire. They felt part of a "McGill University research project". Secondly, many of the participants had little social contact and the PBQ appeared to offer an opportunity to discuss and exchange ideas. Furthermore, many of the adults had not answered a questionnaire recently and their first reaction was nervousness. Several participants went back to the liason person to confirm understanding of a particular question and receive reassurance.

After the comments had been collected, three general areas

of concern emerged: (1) Personal Information (2) PBQ Appearance and Format (3) Single vs. Multiple Response Choices. The following section will summarize the discussion for each.

1) Personal Information.

The section questioning levels of income, education and language received a large amount of commentary. Participants argued, questioned and berated the liason people for asking this type of information. Comments such as "personal" and "none of your business" were often heard, even after a reminder of subject anonymity. This reaction did not affect the response rate for questions on education (94%) or language (99.5%) as much as income (63%). At first, the placement of the income question at the end of the PBQ was thought to account for the low ranking yet three questions which followed income were consistently answered, over 90% response. Thus the income question was definitely interpreted as an invasion of privacy.

2) PBQ Appearance and Format.

Several participants mentioned the small size of the lettering (4mm) and the difficulty in knowing where to respond. Any extra words or numbers appeared confusing to the respondent. For example, the small numerals beside each response box for computer tabulation were questioned. The format was generally well received with the exception of question six (activity levels for the past twelve months) and question seven (pre and post retirement levels).

These were two and three part questions and the tendency was to only fill out the first part and leave the remainder of the question blank.

3) Single versus Multiple Response Questions.

Respondents commented on the "so many choices" for several questions. These comments occurred more frequently for the "check as many as you thing are important" versus the "check one statement." It appeared to be more direct and clearer for the participants when asked to respond only once instead of several times.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this study was to investigate the perceived barriers to physical activity by older adults. It was also the intent of this study to create a research tool designed specifically to ascertain barriers and reasons for involvement in physical activity. This chapter outlines the summary and conclusions of the research and is divided into the following sections: (1) Summmary of the Methodology (2) Summary of the Findings (3) Conclusions (4) Implications (5) Recommendations for Further Study.

Summary of the Methodology

One hundred and ninety-nine English speaking males and females over the age of 55 answered a questionnaire to determine perceived barriers to physical activity. Eighteen residences in the Montreal area were suggested by three social service agencies which dealt with older adults. The criteria for selection included individuals in apartment housing for predominantly English speaking, independent, healthy older adults. All eighteen residences were approached for participation in the research, of which twelve agreed. At each of these apartment

blocks, a resident was suggested by the director to act as a liason person with the researcher. His/her responsibility involved distribution and collection of the questionnaires, in addition to answering the questions of residents. For this service, a $25 honorarium was given.

The Perceived Barriers Questionnaire was designed specifically for this study. Information was gleaned from the Canadian Fitness Study (1981) and a study by McAvoy (1979) which included questions on barriers to physical activity. These questions in addition to suggestions in the literature on aging & fitness contributed to the development of the first draft of the PBQ. Following the literature review, content validity procedures, three drafts and a pilot study, the PBQ was ready for administration. The final questionnaire was comprised of thirteen closed end questions. The specific barrier question listed twenty barrier options. These twenty choices were comprised of four specific types of barriers such as knowledge barriers, psychological barriers, administration barriers and physical barriers. When presented in the question, the four areas were randomly listed.

The 199 research subjects were volunteers. Each liason person approached members in his/her apartment complex to answer the PBQ. The subjects were instructed to complete the questionnaire at their leisure. They were also encouraged to ask questions or make comments to the liason person during or after

questionnaire completion. Each subject was allotted two weeks to complete the questionnaire. If the PBQ had not been returned within this time, two follow-up visits by the liason person were arranged.

Five hundred and ninety questionnaires were distributed, of which 268 were returned. Sixty-nine of those returned were deleted due to an over or under response. The information from the remaining 199 questionnaires was recorded by a terminal operator. Four main methods of analysis were used for various parts of the PBQ. These included frequency distribution, Krushal Wallis test, Chi-Square test and Mann Whitney test.

Upon completion of the research, a summary of the PBQ results in addition to a thank you letter were sent to each of the resident directors and liason people.

Summary of the Findings

Results of the PBQ study indicate significant findings in several areas. Two of the six variables (age and illness or handicap) suggested as influencing factors on barrier selection were significant. In addition, there was significance across the four groups of barrier types and five of the six pair combinations. Thus, there is a difference in types of barriers chosen. The types of barriers ranked according to response rate were knowledge, physical, psychological and administration. The

findings with regard to the effect of illness and handicap on physical activity corroborate with existing research. The remaining information on specific barrier types and profile data offer further insight into the profile of older adults and their perceptions of physical activity.

Conclusions

Based upon this research, the following conclusions were made.

1) There are no significant differences in perceived barriers to physical activity between gender.

2) There are significant differences in perceived barriers to physical activity between age groupings.

3) There are no significant differences in perceived barriers to physical activity across groups who differ in activity levels.

4) There are no significant differences in perceived barriers to physical activity across groups who differ in education levels.

5) There are no significant differences in perceived barriers to physical activity across groups who differ in income levels.

6) There are significant differences in perceived barriers to physical activity across groups who differ in illness or

handicap.

7) There are significant differences in types of barriers to physical activity chosen.

Implications

The PBQ study suggest there are barriers to physical activity. These barriers can vary in number and type. For example, varying degrees of illness/handicap can influence the number of barriers. The following discussion will focus on specific information suggested by the PBQ and accompanying implications for program participants and professionals.

The most important result of the PBQ is the specific information available on barriers to physical activity. This information can help professionals develop teaching strategies and general program principles for the older adult. For example, the top ranking PBQ barriers involved knowledge. The older adult did not perceive a need to become active. This attitude is compounded by the negative views of older adults held by children and young adults (Ahammai & Bates, 1972; Hickey, Hickey & Kalish, 1975). Poor attendence and lack of motivation by older adults to become active resulted. With this type of information, program co-ordinators can begin to re-direct the development of physical activity programs.

Standard methods of advertizing program titles, dates and

costs are not enough to encourage an unmotivated older adult. The program co-ordinator must re-evaluate priorities in programming and now include an intensive educational and promotional strategy. Fallacies, myths and concerns about physical activity and personal ability must be dealt with before involvement can begin. If physical activity is not perceived as necessary and meaningful to an individual, his/her involvement will never become a reality.

Professionals must realize that everyone over the age of 55 is not homogenous in characteristics. In the present study, there was a significant difference in age groups and perceived barriers. The age bracket of 55-95 contains people with just as many differences as those between the ages of 15-55. Programs must be developed to reflect these differences. Varying physical abilities contribute largely to the profile of the older adult yet programmers are hesitant to organize classes for the homebound elderly, beginner or advanced fitness enthusiast. The older adult needs to be reinforced in his/her efforts to pursue physical activity. If the program can meet these needs more appropriately, then chances of success are increased.

The individuality of programming needs is also reflected in types of activities offered or encouraged. Walking, dancing and aquatics are ranked as the top choices in physical activity. Walking, the first choice activity is seldom seen as a programmed activity in clubs or recreation centers. This activity could be

promoted in a graduated progression similar to those used by jogging or running clubs.

Activities should also reflect a degree of challenge to the person. A common problem in the existing programs for the older adult is the lack of risk orientation. If an individual always functions within limited parameters of his/her ability, it is difficult to expand personal capabilities. This contributes to the underestimation of an individuals ability. Programs with varing degrees of difficulty or opportunities to learn should be developed to challenge the abilities of participants.

If these latter suggestions are to be used successfuly, planning which involves progressive program development with short term and long term goals must occur. For example, a local community center may have offered a music and fitness class for the past four years, yet the content has remained the same. The instructor has neglected to acknowledge the growth and developing interest of the participant. If goals were identified, the educational component and physical demands of the program could be developed progressively. Thus, the needs of the participant would be met, encouraged to develop and problem areas could be identified earlier. These changes must be made by someone. At this point in time, role models for the older adults and professionals educated in dealing with their needs are few. This should be kept in mind when the program uses only young instructors. Often times, a blend of ages can meet many needs of

the adult group. Training sessions and clinics should be offered for staff to increase awareness of the options available for older adults. Often times those who promote programs are the greatest offenders in maintaining age related stereotype capabilities.

The PBQ information can also help the older adult participant. It can act as a catalyst to promote and increase activity levels. If a person can be educated at an earlier age about the need for activity, identify the roots of attitude problems, recognize contributing factors to barriers, then activity levels may increase. Reducing barriers to physical activity implies increased activity levels, increased efficiency of daily functioning, increased quality of life, independence and decreased medical costs due to illness.

Recommendations for Further Study.

Throughout the recommendations for future study, the general theme of specific and individual assessment of the older adult is evident. The present lack of acknowledgement of individual differences in research and programming masks subject individuality and contributes to the homogenous stereotyping of the older adult. Specific socioeconomic information and past activity history should be included in all future research on the older adult and physical activity. If the aging process can be

described in this detail, hopefully subsequent introductions to research studies and programs will no longer be prefaced by "... for all those over the age of sixty-five."

Based upon findings in this study, several recommendations have been made for further study.

1) Since the present barrier studies available are limited (Fitness Canada, 1976, 1981; McAvoy, 1979) a replication of the PBQ with a larger sample and over a broader range of cultural and socioeconomic backgrounds should be performed. This would provide detailed information concerning possible effects of cultural, socio-economic and physical functioning differences on perceived barriers to physical activity.

2) The developmental nature of the perceived barriers to physical activity under specific conditions should be acknowledged. Research focusing on the stages of barriers along the aging continuum would provide "process-oriented" data. If the developments contributing to barriers were evident the interventions could be devised more accurately and occur earlier. Thus, factors contributing to barrier development would be the focus of study rather than already developed barriers.

3) With the exception of the present study, specific type of barriers (Knowledge, Administrative, Psychological and Physical) have not been studied in detail. For example, the high response to knowledge barriers in the present study indicates a strong need for education within physical activity program structure.

If professionals can be provided with this detailed information, encouragement and promotion of the older adult to become involved in physical activity will become more effective.

4) There is a paucity of information on barriers to physical activity by the older adult. The PBQ was used to initiate the research on barriers but low cost, ease of tabulation and analysis should not always dictate all future choices of research tools with the older adult. The questionnaire at this point may repress the individuals desire to communicate, mask the individuality of responses and not provide an opportunity for obtaining information outside the question parameters. For this reason, future research should utilize different techniques such as interviews to obtain this information. The PBQ was used to initiate the research on barriers to physical activity but different information collection techniques may be valuable tools in detecting the specific nuances of the older adult and stimulating new ideas for future research.

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APPENDIX A

McGILL UNIVERSITY
DEPARTMENT OF PHYSICAL EDUCATION

Dear Respondent,

The Department of Physical Education would appreciate your assistance in its effort to carry out research in the area of physical activity and aging.

The questionnaire which we are requesting you to fill out will help us gather valuable research information about physical activity and senior citizens.

We feel confident that information of this type will be of great assistance to us in designing future programs of physical activity for seniors like yourself.

D. R. Riley

Chairman

Physical activity can involve many things — a walk or bike ride to the store, a game of horseshoes, an afternoon of raking your lawn, a game of tennis or an exercise class at your local "Y". The common element of all these activities is that you are **moving!** It is this idea of physical activity which we would like you to keep in mind when answering this questionnaire. It is not necessary to sign your name on the questionnaire. If you have any questions, please feel free to ask.

(1). Check the **one** statement which **best** describes your present level of physical activity.

1-1 ☐ I get enough physical activity to maintain my health.
1-2 ☑ I don't get enough physical activity to maintain my health.
1-3 ☐ I get enough physical activity to maintain my health **but** would like more.

(2). Do you suffer from any illness or handicap which prevented your participation in physical activity during the last twelve months?

2 1 ☑ Yes
2 2 ☐ No

(3). If you answered "get enought physical activity to maintain my health" for Question No. No 1, which of the following describes why you are involved in physical activity **(check as many many as you feel are important)**

3 ☑ It helps me to meet new people.
4 ☐ It gives me a sense of well being.
5 ☐ It gets me out of the house.
6 ☐ I enjoy the company of the young people involved.
7 ☐ It is good for my health.
8 ☐ It makes me feel younger.
9 ☐ It gives me more energy.
10 ☐ Other: _____
(Please specify)

(4). Which of the following would **increase** your interest in becoming more physically active in the future? **(Check as many as you feel are important)**

11 ☐ Accessible facilities (e.g. not too many stairs.)
12 ☐ More leisure time.
13 ☑ My friends joining me.
14 ☑ Facilities closer to my home.
15 ☐ More information on the benefits of physical activity.
16 ☐ Less expensive facilities.
17 ☐ Attaining a better state of health.
18 ☐ Learning new activities.
19 ☑ Readily available organized activity classes.
20 ☐ My doctor giving me some suggestions for physical activity to do at home.
21 ☐ The presence of people to assist me if I need help.
22 ☐ Attaining a better physical condition.
23 ☐ Other: _____
_____
(Please specify)

(5). Which of the following reasons describe why it is or was difficult to start or maintain a physical activity program. **(Check as many as you think are important)**

24 ☐ I don't have enough time.
25 ☐ I'm not disciplined enough.
26 ☐ My state of health.
27 ☐ I do not need as much physical activity now that I'm older.
28 ☑ I do not know anyone who would like to be physically active with me.
29 ☐ I am overweight.
30 ☐ The times of the classes are not convenient.
31 ☐ There are many risks to my health if I get too active at my age.
32 ☐ I get enough physical activity already in my daily routine.
33 ☐ The facilities are unpleasant.
34 ☐ I have worked hard my whole life and now I want to relax and do things I have always wanted to do.
35 ☐ The activities do not appeal to me.
36 ☐ I do not have the skills or capability to be physically active.
37 ☐ My doctor told me to be careful and not to overexert myself.
38 ☐ It is too expensive.
39 ☑ My balance is poor and I fall often.
40 ☐ I am too old.
41 ☐ I get tired easily.
42 ☐ I don't know how to start a physical activity program.
43 ☐ Transportation is difficult.
44 ☐ Other: _____

_____

(Please specify)

(6). From the following list of activities, **check those in which you have been involved over the past 12 months.**

Activity	Season	Number of Sessions per week: Less than 1 time	1 - 2 times	3 - 5 times	More than 6 times	Time per Session: Less than 15 mins	15-30 mins.	30 mins. - 1 hr.	More than 1 hr.	
Dance:	☐ Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	45 ☐
	☐ Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	46 ☐
Walking:	☐ Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	47 ☐
	☐ Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	48 ☐
Bicycling:	☐ Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	49 ☐
	☐ Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	50 ☐
Swimming:	☐ Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	51 ☐
	☐ Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	52 ☐

Activity	Season	Number of Sessions per week: Less than 1 time	1 - 2 times	3 - 5 times	More than 6 times	Time per Session: Less than 15 mins.	15-30 mins.	30 mins. - 1 hr.	More than 1 hr	
Calisthenics:	Oct-Mar	☐	☑	☐	☐	☑	☐	☐	☐	53 ☑
	Apr-Sept	☐	☑	☐	☐	☑	☐	☐	☐	54 ☑
Jogging:	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	55 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	56 ☐
Gardening & Yard Work:	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	57 ☐
	Apr-Mar	☐	☐	☐	☐	☐	☐	☐	☐	58 ☐
Boating:	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	59 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	60 ☐
Fishing:	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	61 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	62 ☐
Camping:	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	63 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	64 ☐
Outdoor Games: (Horseshoes, Shuffleboard)	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	65 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	66 ☐
Golf:	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	67 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	68 ☐
Raquet Sports: (e.g. Badminton)	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	69 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	70 ☐
Skiing: (e.g. X-country, downhill)	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	71 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	72 ☐
Skating:	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	73 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	74 ☐
Team Games: (e.g. Baseball, Soccer)	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	75 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	76 ☐
Bowling: (e.g. lawn-, pin-bowling)	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	77 ☐
	Apr-Sept	☐	☐	☐	☐	☐	☐	☐	☐	78 ☐
Other: Cross Walk (Please specify)	Oct-Mar	☐	☐	☐	☐	☐	☐	☐	☐	79 ☐
	Apr-Mar	☐	☑	☐	☐	☐	☑	☐	☐	80 ☑

(7). Check **one** of the following paragraphs that **best** describes the work you did prior to retirement and after retirement. **(Check one item from the "before" column and one from the "after" column).**

Before Retirement	After Retirement	
1-1 ☐	2-1 ☐	Usually sitting down during the day with little walking (e.g. desk work, sewing, taking courses).
1-2 ☐	2-2 ☑	Walking quite a lot during the day but no lifting and/or carrying of heavy items (e.g. light industrial, supervisory, educational work, light housework).
1-3 ☑	2-3 ☐	Mostly walking and/or lifting (e.g. heavy industry, carpentry, house cleaning).
1-4 ☐	2-4 ☐	Heavy manual work (e.g. heavy farm work, construction).

(8). Age

3-1 ☐	Under 55 years	3-5 ☐	70 - 74 years
3-2 ☐	55 - 59 years	3-6 ☑	75 - 79 years
3-3 ☐	60 - 64 years	3-7 ☐	80 - 84 years
3-4 ☐	65 - 69 years	3-8 ☐	85 - 89 years
		3-9 ☐	Over 90 years

(9). Birthdate 4/5 _____ 6/7 _____ 8/9 _____

Month Day Year

(10). What was your total personal income before taxes and deductions in the last 12 months from all sources (include earnings from employment, pensions, family allowances, interests and rents).

Please check one box.

10-1 ☐	None	10-5 ☐	$10,000 - $14,999
10-2 ☐	Less than $4,000	10-6 ☐	$15,000 - $19,999
10-3 ☐	$4000 - $6999	10-7 ☐	$20,000 - $29,999
10-4 ☑	$7000 - $9999	10-8 ☐	$30,000 or over.

(11). Indicate the highest level of education you have attained.

11-1 ☐ No formal schooling
11-2 ☐ Elementary: Grade 1-6
11-3 ☑ Secondary: Grade 7-11
11-4 ☐ Technical College
11-5 ☐ University

(12). Sex

12-1 ☐ Female
12-2 ☑ Male

(13). Mother tongue

13-1 ☑ English
13-2 ☐ French
13-3 ☐ Other: _____
(Please specify)

Thank you very much for your time!

APPENDIX B

SPECIFIC TYPE OF BARRIER	RESPONSE NUMBER
Administration	= 30,33,35,38,43
Psychological	= 25,28,34,36,40
Knowledge	= 24,27,31,32,42
Physical	= 26,29,37,39,41