The Development and Evaluation of the McGill Physical Activity Selection Service System

by

Kathleen Standish Finkelstein

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

Department of Physical Education

Division of Graduate Studies and Research
Faculty of Education
McGill University
Montreal, Quebec, Canada

December, 1990

Abstract

Although the majority of Canadians are aware of the benefits of an active lifestyle, at least 40 percent are considered to be completely sedentary. Of those who do initiate physical activity programs, at least half drop out within the first six months. No single strategy to increase adherence to physical activity has yielded dramatic results; therefore, the McGill Physical Activity Selection Service (MPASS) System was developed as a multi-faceted model to address the adherence problem. MPASS consists of a questionnaire administered on a computer program. The questionnaire was designed to assist individuals to recognize perceived physical, social, and environmental barriers; to increase their awareness of the benefits of physical activity; and ultimately to increase their awareness of suitable physical activities which would thus be perceived as enjoyable.

The purpose of this study was to develop and evaluate the effectiveness of the MPASS questionnaire and computer program (the MPASS Tour). In order to do this, an Evaluation Questionnaire consisting of 35 questions pertaining to physical activity awareness was developed. Forty female volunteers between the ages of 24 and 45 completed the MPASS Tour and subsequently the Evaluation Questionnaire. Results showed a positive response to the MPASS Tour. The participants generally enjoyed using the computer program and indicated that the MPASS Tour had increased their awareness of their attitudes, preferences, and goals related to physical activity. They also had an increased self-awareness of those barriers which had prevented them from maintaining regular physical activity in the past. To a lesser extent, the MPASS Tour increased their awareness of their personal fitness and sport skill levels.

Résumé

Bien que la plupart des Canadiens soient au courant des bienfaits l'avoir un style de vie actif, au moins 40 pourcent sont complètement sédentaires. Parmi ceux qui s'engagent dans des activités physiques, au moins la moitié abandonne dès les premiers six mois. Aucune stratigie en vue de mantenir un programme d'activités physiques n'a jusqu'à ce jour engendré d'importants résultats; c'est pourquoi le programme de l'Université McGill intitulé "Physical Activity Selection Service" (MPASS) a été çoncu comme modèle `a plusières volets dans le but de s'addresser particulièrement au problème persister. Le MPASS consiste en un questionnaire developpé sur ordinateur. Il a été conçu pour aider les personnes a reconnaitre les barrières physiques; socials, environnementales; a accroître leurs connaissances des bienfaits de l'activités physiques susceptibles de leur procurer de la détènte.

Le but de cette étude a été de conçevoir et de mesurer l'efficacité du questionnaire et programme informatisé MPASS (le MPASS Tour). Pour y arriver, un questionnaire d'évaluation comportant 35 questions reliées aux connaissances des activités a été conçu. Quarante femmes voluntaires agées 24 a 45 ans ont completé le MPASS Tour et répondre aux questions. Les résultats ont démontré que le programme informatisé et ont indiqué que le MPASS Tour avait réussir a les sensibiliser d'avantage aux activités physiques en démontrant leurs préférences et les buts qu'ils voulaient éventuellement atteindre. Ils ont également indiqué qu'elles étaient plus sensiblé aux barrières qui les avaient empechés de maintenir toute formes d'activité physique dans le passé. L'autres part, le programme les a sensibiliser a leurs propres conditions physiques et a leur habilités dans les sports.

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Chapter I

Introduction

The concept of "wellness" has become increasingly important during the past decade as society has endeavoured to improve the health status of its citizens. Wellness is a global concept that emphasizes self-responsibility for achieving an optimal state of health and well-being. It encompasses such factors as stress management, nonuse of tobacco, nutritional awareness, alcohol and drug awareness, environmental sensitivity, mental health, and physical fitness (Rosato,1986). Wellness is not merely an absence of disease or infirmity but is a "state of complete physical, mental, and social well-being" (World Health Organization, as cited by Hafen,Thygerson & Frandsen, 1988).

Of paramount importance in wellness or a healthy lifestyle is the notion of "active living" (Wall,1989), whether it encompasses simple activities such as walking , jogging and swimming, or sports such as basketball or hockey which require a higher degree of skill. Research has documented the importance of aerobic activity in the prevention of disease, in particular, cardiovascular disease. Exercise has been used effectively to reduce risk factors in the development of coronary heart disease such as hypertension (Astrand & Rodhal,1970; Boyer & Kasch,1970), and obesity (Adeniran & Tyrolia, 1988). Research has similarly illustrated the importance of exercise in the control of diabetes (Vranic & Berger, 1979),osteoporosis (Smith, Redden & Smith,1984), anxiety (Morgan, 1987), asthma (Strick,1969), and depression (Kavanagh, Shephard, Tuck & Quereshi, 1977; Morgan & Goldston, 1987).

The Canada Fitness Survey (1983) indicates that most individuals are convinced of the value of physical activity. However, despite a general

increase over the last decade in the number of regularly active adults, as well as an increase in the intensity of exercise involvement, 46% of Canadians age ten or over remain inactive in their leisure time. As well, the active population is not representative of the total population; it tends to be younger, better educated, more often single, working in managerial or professional occupations and living in the west. Similar trends have been reported in the United States (Lupton, Ostrove & Bozzo, 1984) where only 36% to 59% of the population have been found to partake in regular exercise. Moreover, two-thirds of adults do not exercise enough to receive any physical benefits (Dishman, 1984).

There have been numerous attempts to counteract the sedentary lifestyle trend of the majority of Canadians. Fitness Canada and Nutrition Canada have developed a number of surveys and reports to help promote a healthy lifestyle within the population. At the national, provincial, and municipal levels of government, promotional programs such as PARTICIPaction, Shape up Alberta, Re Nu Manitoba, Fitness Ontario and Kino-Quebec have been established (Godin & Shephard,1983). This health education approach is based on the assumption that if individuals are informed about beneficial health behaviors, they will utilize this information to achieve a healthy lifestyle (Wankel, 1985). According to this perspective, education pertaining to the health benefits of regular exercise should lead to an increase in physical activity. The results of the Canada Fitness Survey (1983) and the more recent Campbell's Survey (Stephens & Craig, 1990) have not shown a drastic rise in physical activity corresponding to the educational input.

Although most individuals cite health benefits and enjoyment as the two primary reasons for participating in regular physical activity (Wankel,

1988), it is now apparent that adherence to regular exercise is difficult for many individuals to sustain (Noland, 1989; Dishman, 1988). Despite all educational promotions and subsequent increased public awareness, of those who enroll in structured exercise programs, it is predicted that approximately 50% will drop out in 3 to 6 months (Martin, et al.,1984; Oldridge, 1982). Dishman (1982) reports as many as 70% will not adhere to exercise programs.

There are a number of factors or barriers related to program adherence. Documented reasons for the high drop-out rate in exercise programs include accessibility (Wanzel,1977), motivation (Dishman, Ikes, & Morgan,1980; Boothby, Tungat & Townsend, 1981), poor health status (Oldridge,1982), financial constraints (Rosenstock,1975), lack of facilities (Heirzelman & Bagely,1970), lack of social support (Canada Fitness Survey, 1983), past experience in leisure-time physical activity (Oldridge, 1982) and lack of time (Desharnais, Boullion, & Godin, 1987).

It has been suggested that in order to understand the drop-out phenomenon it is imperative to study not only why individuals drop-out of physical activity programs but why they participate in the first place (Wankel, 1988). The goals of the individual may have important implications for continued involvement. For example, a highly skilled person may be excited and challenged by a competitive sport whereas a less skilled individual may prefer a non-competitive exercise program. Duda (1989) examined the relationship between goal perspective and persistence in sport and found that organized/recreational sport participants placed more emphasis on mastery-oriented accomplishments than dropouts who placed more emphasis on competitive outcomes (i.e., being better than others.). He concluded that matching people to activities which allow both personal improvement and skill mastery would facilitate adherence.

The importance of attitudes and perceptions towards physical activity in leisure time has also been noted with respect to adherence (Sallis & Hovell, 1990). Wankel (1988) stresses that the nature of the activity is not as crucial to the idea of leisure as the attitude towards that activity. Iso-Ahola (1981) purports that leisure satisfaction and perceived quality of life are significantly related to each other; the lower the satisfaction, the lower the perceived quality of life. He emphasizes the necessity of "intrinsic leisure motivation". Simply, what is intrinsically enjoyable to some, may be perceived as unbearable by others. Therefore, it is imperative to look at individual preferences when selecting appropriate physical activities.

Lack of skill has been identified as a factor deterring some of the population from participating in more physical activities (The Canada Fitness Survey,1983). Wall (1989) points out that skill level of the individual plays an important role in participation in high school physical education classes. Enrollment statistics show very significant drop-out rates when physical education becomes optional. In this situation, it is usually the unskilled or average individual who decides not to take physical education. Wall(1989) stresses the need for physical educators to promote leisure awareness by "developing an appreciation of one's interests, skills and fitness; developing an awareness of physical activities that are available in the community; understanding the demands of different tasks; and the use of decision-making processes to select a suitable activity menu...to help our students to chose and maintain a lifetime of active living" (p.18).

Thus, there are numerous variables affecting adherence to physical activity and there is no single approach which has substantially increased participation among the general population. Considering this, it seems that a multi-faceted approach which takes into consideration individual differences

in attitudes, lifestyles, interests, abilities and goals would be beneficial in promoting adherence to physical activity. This process could be facilitated by using a physical activity selection service based on a leisure education content model which promotes the concept of self-awareness.

A variety of conceptual models in leisure counseling have evolved over the past twenty years. Some models may be viewed as "process models" while others may be seen as "content" models (Stumbo & Thompson, 1986) depending on the emphasis of the model. For instance, process models generally give directives about the implementation of a program and use the word "counseling" whereas the content models stress the subject matter on which the programs should center and are more often related to "leisure education".

One of the most popular leisure education models is the Leisure Education Content Model (Peterson & Gunn, 1984) which is one component of a larger conceptualization of therapeutic recreation services. Peterson and Gunn (1984) have described leisure education in the following definition:

> Leisure education is a broad category of services that focuses on the development and acquisition of various leisure-related skills, attitudes, and knowledge. The establishment and expression of an appropriate leisure lifestyle appears to be dependent on the acquisition of diverse knowledge and skills. A repertoire of activity skills is not the only requirement. A cognitive understanding of leisure, a positive attitude toward leisure experiences, various participatory and decision-making skills, as well as a knowledge of, and ability to utilize resources appear *to be significant aspects of satisfying leisure involvement (p. 22).

The Leisure Education Content Model has four components: leisure awareness, leisure resources, social interaction skills and leisure activity

skills. The leisure awareness component emphasizes "the acknowledgement of the benefits and values of leisure, awareness of the self in relation to leisure, and related decision making and problem solving skills " (Stumbo & Thompson, 1986). The Social Interaction Skills component involves those skills necessary to successfully interact with either one other person, a small group or a large group situation. Aspects such as cooperation, competition, compromise, self-initiation and self-assertion are discussed. Within the Leisure Activity Skills section both traditional and nontraditional categories are covered and therefore include activities such as shopping and self-care as well as more traditional activities such as sports, drama and dance. The Leisure Resources component includes activity opportunities, personal resources, family and home resources, and community resources.

The adherence research has suggested the need to match individuals to activities which recognize their goals, interests and abilities (Duda,1989). Recognizing the potential of the leisure education approach to facilitate the development of self-awareness, the McGill Physical Activity Selection Service System (MPASS System) was developed using several aspects of the leisure education model. However, the MPASS System is unique for two reasons. First, it focuses on the individual within the context of an "active lifestyle" as opposed to a more general "leisure lifestyle" which encompasses both active and non-active pursuits. Second, it strongly considers physical ability or skill level in addition to assessing the individual's interests and preferences. These two factors enable the educator to more skillfully guide the individual towards an activity or activities which will suit his/her needs and ensure a sense of self-fulfillment throughout the process. This, in turn will encourage the participant to develop and maintain an active lifestyle.

The MPASS System uses an integrative approach to facilitate change in Canadians to pursue an active lifestyle. It draws on the research from a variety of areas including motor development, skill acquisition, leisure counseling, adherence and interactive computer technology. It incorporates Ball's physical activity delivery system (Smith,1988) which identifies and classifies the important components of physical activity participation across all ages, interests and abilities of the Canadian population. This model features opportunity options which reflect the different types and levels of participation in which people may be active, as well as levels of involvement and developmental processes (Smith,1988). Recognition of an individual's skill level is crucial to program adherence since an activity which is either too difficult or too easy will not be perceived as enjoyable and if an activity is not enjoyable the participant is likely to drop out (Lupton, Ostrove & Bozzo,1984; Wankel,1985).

MPASS was designed to facilitate "community networking" (Wall,1989). It is a service not only for individuals seeking active leisure alternatives, but also for those professionals within the community, such as teachers, physicians, and social workers who are interested in encouraging positive, healthy lifestyles among community members. Through the process of identifying and assessing appropriate activities within the community, MPASS would be able to identify facilities or services which are inadequate or lacking. This information could be disseminated to those individuals involved in providing and developing related services .

The MPASS educator would initially be responsible for guiding individuals through a computer program which is basically a questionnaire designed to collect information on current participation, activity interests, personal skill assessment, social influences and environmental factors. Based

on the assessment, the educator would suggest suitable activities, inform the individual of the reasons behind the choices and thus facilitate the decision-making process. By enhancing self-evaluative skills it is hoped the individual would be able to continue choosing successful, enjoyable activities in the future and ultimately maintain an active and self-fulfilling lifestyle.

Significance of the Study

Although the majority of the population is aware of the benefits of regular physical activity only about 20 percent exercise with an intensity and frequency recommended for cardiovascular benefit; an additional 40 percent may be active enough to receive some health benefits, and at least 40 percent are considered completely sedentary (Stephens, Jacobs & White, 1985). Of those who do initiate an exercise program, at least half will drop out within the first six months (Dishman, 1986; Oldridge, 1977). Reasons cited for this include environmental factors such as accessibility, travel time, or lack of facilities (Dishman,1982); social factors such as social interaction (Wankel,1988) and familial support (Andrew et.al.,1981); and psychological factors such as perceived competence (Burton,1988). The theoretical and conceptual literature also suggests that skill level and /or positive experiences are important determinants to selection, participation, and adherence to activities (Aguilar & Petrakis,1989; Duda,1989). Many people fail to maintain an interest in physical activity because they choose activities which are beyond their skill level (Wall, 1989).

There have been numerous strategies to promote adherence to physical activity such as goal setting (Keefe & Blumenthal,1980), self-monitoring (Oldridge & Jones, 1983) and a decision-balance sheet (Hoyt & Janis, 1975; Wankel, 1984) but no one strategy has yielded dramatic results. Therefore, a

multi-faceted model to assist individuals in the selection of physical activities which addresses the above physical, social and environmental factors may prove to be more effective. Thus, the MPASS System was developed to (1) assist individuals to recognize perceived physical, social and environmental barriers, (2) increase their awareness of the benefits of physical activity, (3) increase their awareness of their skill and abilities, (4) raise the awareness of physical activity opportunities, and (5) provide information pertaining to effective delivery of physical activity opportunities.

To implement the process it was necessary to develop MPASS in two stages (see figure 1.). The first stage is the MPASS Tour which consists of a questionnaire administered on a computer and deals with the first four factors mentioned above. The second stage is the MPASS Community Resource Inventory interview which involves a computerized system of delivering information to clients such as accessible facilities, costs of programs and equipment, purpose of the activities (eg. competitive vs. recreational) and phone numbers of the program leaders. Both the MPASS Tour and the MPASS Community Resource Inventory are computer-based, but informal discussion during the interviews is considered essential to the success of the program. Before implementing the MPASS System it is necessary to evaluate the effectiveness of the stated objectives of the first part of the system: The MPASS Tour.

The MPASS SYSTEM MODEL

STAGES	COMPONENTS	GOALS
The MPASS TOUR INTERVIEW	A) Questionnaire including: 1. Physical Activity History 2. Attitudes Towards Physical Activity 3. Lifestyle and Fitness 4. Skill Profile 5. Exercise Preferences 6. Cost 7. Transportation 8. Time 9. Goals B) Computer Program C) Discussion D) Assessment	**INCREASED SELF-AWARENESS** to facilitate making appropriate physical activity selection
The COMMUNITY RESOURCE INVENTORY INTERVIEW	**Computerized access to current physical activity programs in community.** Program information: -age -sex -purpose -entry skill -equipment cost -fee -times -frequency -accessibility -contact person (address & phone)	**INCREASED AWARENESS** of public and private Community Programs to facilitate **selection of appropriate programs** and making contact.
DECISION MAKING PROCESS continuous process in both of the above stages	The client, guided by the MPASS facilitator, selects activities with an **understanding of why these activities are suitable. The individual is reminded of his interests, abilities, fitness level, social and physical preferences and is prepared to make independent decisions regarding an active lifestyle.**	Increased capacity to make **independent decisions** regarding physical activity **INCREASED ENJOYMENT,** therefore a greater likelihood of **ADHERENCE** to **PHYSICAL ACTIVITY**

Figure 1: the stages of the Mpass System Model

Statement of the Purpose

The purpose of the study was to develop and evaluate the MPASS Tour which was designed to assist an individual select appropriate physical activities through a process of increased self-awareness.

Research Questions

1. Will the participants respond favourably to the questions concerning ease of administration of the program?

2. Will the response of the participants indicate an increased self-awareness with regard to their attitudes towards physical activity?

3. Will the response of the participants indicate that they have an increased self-awareness regarding their level of fitness and the degree to which they have been physically active in relation to their peers?

4. Will the response of the participants indicate an increased self-awareness with regard to their abilities in sports?

5. Will the response of the participants indicate an increased self-awareness concerning factors which may have prevented them from being physically active in the past?

6. Will the response of the participants indicate an increased awareness of their preferences regarding participation in physical activities?

7. Will the response of the participants indicate that they have become more aware of their goals regarding physical activities?

Delimitations

1. The subjects were forty adult females ranging in age from 25 to 45.

2. The subjects were from the same middle to upper-class community.

3. The study was confined to evaluating the use of MPASS with "healthy" adult females delimiting its present use with special populations. While it has potential for special populations such as the mentally or physically handicapped, these populations have been excluded in order to develop MPASS specifically for one population at a time. It would be necessary to add certain questions, and delete or modify others before MPASS would be appropriate for other populations.

Limitations

1. The validity of the information gathered was limited by the ability and willingness of the subjects to answer the questions honestly. Validity and reliability of self-report measures were a concern for numerous studies involved in measuring physical activity (Baranowski, 1989) but continue to be used due to high costs incurred in administering alternative methods.

2. The use of the questionnaire format restricts the response of the subjects. This was done to standardize the responses of the subjects to

facilitate interpretation of the data (Berdie & Anderson,1974) and to shorten the time required to complete each session. However, there were specific points where it was felt further explanation was warranted. As well, the researcher encouraged the participants to ask any questions and to offer any additional information which might be pertinent either to their personal assessment during the MPASS Questionnaire or afterwards while completing the Evaluation Questionnaire. This additional information was documented by the researcher.

3. While the study tried to touch upon all aspects of physical activity which would affect an individual's likelihood of leading a more active lifestyle, it is impossible to take into account all factors affecting each individual. Therefore, after a thorough review of the literature the most influential factors were identified and subsequently included in the study.

4. Subjects of this study may not be representative of the total population of adult females in this age category thus limiting the ability to generalize the findings.

Definitions

MPASS: The McGill Physical Activity Selection Service is a system which attempts to gather information on current participation, activity interests, personal skill assessment, social influences and environmental factors concerning an individual. Using this information, the individual is matched with an appropriate physical activity located within his or her community.

The MPASS System is comprised of:(1) the MPASS Tour and (2) the MPASS Community Resource Inventory. Both (1) and (2) are administered within the context of an interview.

MPASS Questionnaire: A questionnaire designed to evaluate the interests, abilities, barriers to participation in physical activities, and personal goals of the MPASS participants. The categories included in the questionnaire include: (1) Physical Activity History, (2) Attitudes Towards Physical Activity, (3) Lifestyle and Fitness Self-Assessment, (4) Skill Profile, (5) Exercise Preferences, (6) Cost Factors, (7) Transportation, (8) Time, and (9) Goals. The questionnaire is answered by the client on a MacIntosh, Fox-base computer program, with assistance given by the MPASS educator as required.

MPASS Community Resource Inventory: A list of all the available physical activities located within five neighbouring communities situated within greater Montreal. Information on each activity lists age, sex, purpose of the activity (instructional, competitive, socio-recreational. free play, special program and conditioning); entry skill (beginner, average, skilled and all levels); equipment cost; fee; times; frequency; program accessibility (for wheelchairs); availability to non-residents and the contact person's name and phone number. The inventory is coded to facilitate access.

MPASS Evaluation Questionnaire: A questionnaire composed of thirty-five questions designed to investigate the research questions proposed in this chapter. The Questionnaire was administered to each subject following completion of the MPASS tour.

MPASS Tour: A tour of the MPASS Questionnaire on the MacIntosh computer including a discussion between the client and the educator.

MPASS educator: A physical activity professional who is responsible for guiding the client through the MPASS System.

Chapter 2

Review of the Literature

Widespread interest in health and preventive medicine has developed over the last two decades. Scientific evidence has linked vigorous physical activity and positive lifestyle habits to better health, improved quality of life and total well-being. This literature review encompasses those factors concerned with the promotion and maintenance of physical activity and includes the following : (1) Well-Being and Active Living (2) Benefits of Physical Activity (3) Participation Patterns in Canada and the United States including Highlights of the 1988 Campbell's Survey (4) Determinants of Participation in Physical Activity (6) Strategies to Promote Adherence (7) Leisure Counseling Models and (8) Summary.

Well-Being and Active Living

The 1990's has begun with the challenge of helping individuals attain a healthier lifestyle in order to achieve a sense of total well-being. Governments are concerned with teaching people to take control of their personal health habits by practicing positive lifestyle activities which will not only decrease the risk of disease but will enhance the quality of the individual's life. The fitness fad of the seventies has developed into the "wellness" concept of the nineties and now incorporates such aspects as adequate fitness, diet/weight management, smoking cessation, alcoholism and drug abuse control, adequate nutrition, health education counseling and stress management (Hoeger,1986). In the past, exercise prescriptions for coronary heart disease prevention have been narrowly defined as twenty minutes of exercise, three times a week, at a certain heart rate.Now fitness is

defined not merely in physical terms but encompasses mental, social, and spiritual aspects as well (O'Brien Jewett, 1990).

Research has shown that single-minded strategies to enhance the well-being of the individual have generally failed and that a more comprehensive or multi-faceted approach is necessary. Within that approach, living an active lifestyle has become a very dominant factor, so much so that Fitness Canada as well as Health and Welfare Canada promote the slogan " Active living is environment friendly". The "active living" concept goes beyond the idea of physiological fitness to "total fitness" or well-being and is used to define the relationship between physical activity, well-being and quality of life (Fitness Canada, 1989). Active living has been defined by Fitness Canada as "Choosing a balanced way of living that includes a variety of physical activities within our daily routines and leisure pursuits" (p.31). Furthermore, active living is said to encompass the "processes, experiences and other benefits related to being physically active" and that being physically active improves our "health status, ability to function and life satisfaction". Although there is tremendous emphasis on the whole person in his/her environment and not just the mechanical aspect of physical activity (O'Brien Jewett,1990), it must be remembered that the active living model has been strongly influenced by the results of the research regarding the benefits of physical activity.

The Benefits of Physical Activity

Awareness of the importance of regular exercise in the prevention of disease and the promotion of good health has grown steadily in recent years. One reason that exercise is so significant is the broad spectrum of conditions that exercise allegedly influences, such as cardiovascular disease, hypertension, osteoporosis, diabetes, acute respiratory disease, low back pain and mental illness (Powell,1988; Shephard, 1989). Possible indirect effects of exercise and physical activity on other health related behaviours such as smoking, alcohol abuse and obesity have been suggested as well (Paffenbarger, Hyde & Wing, 1989;). Evidence is inconclusive but strongly suggests that active individuals are more likely to engage in other preventive health behaviors (Blair, Jacobs, & Powell,1985).

Several methodological problems are encountered when reviewing the research on physical activity and adherence (Blair et al., 1985). First, the definitions of these terms used by different authors are not consistent. Second, assessments of exercise and physical activity have been crude and imprecise allowing for misclassification which can obscure relations between physical activity and other diseases or behaviours. Third, some of the other health behaviours to which physical activity is said to be related to are equally difficult to assess.

Numerous studies have assessed the relationship between physical activity and coronary heart disease. There have been encouraging results with even relatively low levels of physical activity when the activity was performed on a regular basis (Morris, Everitt, Pollard, Chave, & Semmence, 1980; Paffenbarger, Wing, & Hyde, 1978). A study on the relationship between work activity and coronary heart disease mortality among San Francisco longshoremen found that the risk of coronary heart disease mortality was

higher for workers with lower levels of work-related activity, compared with workers who were more vigorous at work (Paffenbarger & Hyde, 1975). Morris et al.(1980) looked at the relationship between leisure-time activity and initial clinical coronary heart disease. In a large cohort of British civil servants they found that those who reported not engaging in vigorous leisure-time activity had a higher risk of clinical coronary heart disease compared to those who reported being vigorously active.

Paffenbarger et al.(1978) studied a large cohort of Harvard College Alumni. Results showed that the risk of first heart attack was higher in those alumni with low levels of contemporary leisure-time physical activity versus those alumni who were more active. Also, those engaged in strenuous sports seemed to have a reduced risk compared to those involved in activities with less energy expenditure. Generally, studies have revealed that although the risk of primary cardiac arrest is increased during the act of vigorous exercise, men who are routinely vigorous have a lower overall risk of primary cardiac arrest than sedentary men (Siscovick, Laporte, & Newman,1985) .

Relatively few of the studies have included women. In a recent study (Owens, Matthews, Wing, & Kuller,1990), the relationship between self-reported physical activity using the Paffenbarger Questionnaire and cardiovascular risk factors was evaluated. A population-based sample of 541 premenopausal women was classified according to quartile of weekly energy expenditure into groups of 1-500, 501-999, 1,000-1,999, and 2,000 kcal or greater. Results suggest that among middle-aged women, physical activity is associated with improved cardiovascular risk profiles , such as lower blood pressure, body mass index, skinfolds, and fasting insulin. The effect of modest levels of physical activity were still apparent when education and body mass index were considered.

Similar positive physiological results have been demonstrated regarding the effects of exercise on diabetes mellitus (Richter & Schneider, 1981). It appears that exercise reduces blood glucose levels, increases insulin receptors, and increases the effectiveness of insulin. More research is needed however, to determine the ability of exercise to prevent or postpone the onset of diabetes (Siscovick et al.,1985).

Related to cardiovascular disease and diabetes mellitus is obesity. There is increasing evidence that one very important contribution of daily physical activity is increased success in weight maintenance (Marston & Criss, 1984; Colvin & Olson, 1983). There has been difficulty however, in evaluating the effect of exercise in the treatment of obesity because of its varying impact on food intake, inaccurate caloric monitoring and inconsistent adherence of subjects to diet and/or exercise regimes (Stern & Lowney, 1986). Although the exact role of activity in the treatment and prevention of obesity remains unclear, several studies (Adeniran & Toriola, 1988; Gwinup,1975; Leon, Conrad, Hunninghake, & Serfass, 1979) have reported decreased percent body fat with exercise (Wilmore, 1983) and reputable weight reduction programs now promote exercise as an adjunct to restricted caloric intake.

Osteoporosis, a disease which concerns most post-menopausal women appears to be positively affected by weight-bearing exercise. Two observational studies involving nonrandomized prospective trials found retarded bone loss in older women who were in exercise training programs (Aloia, 1981; Krolner, Leon, Neilson & Tanwold, 1983).

Finally, when discussing the benefits of physical activity the aspect of exercise and mental health must be noted. The past decade has seen the increasing belief that exercise can be used to treat and prevent mental health

problems. In a survey of 1750 primary care physicians, it was found that 85% regularly prescribe exercise for depressed patients (Ryan, 1983). However, the evidence that physical activity is an effective means of coping with stress has been largely indirect and correlational (Morgan & Goldston, 1987). Gauvin (1989) studied 122 subjects aged 18 to 77 years who were categorized as being either autonomous exercisers, fitness program enrollees, fitness program dropouts or non-exercisers and found that there were no significant differences between categories of exercisers for frequency of positive affect and negative affect and satisfaction with life. On the other hand, when a vigorous twelve week exercise program (walking-jogging) at the University of Wisconsin was compared to two forms of psychotherapy, the exercise program was equal to one form and significantly superior to another in treating depression (Greist , 1987).

The potential efficacy of exercise will be important to establish as many depressed individuals do not respond to psychotherapy and there can be detrimental side-effects with drug therapy (Greist,1987). One of the problems encountered in studying the psychological effects of exercise is that about 50% of all individuals in an exercise program will drop out of the program before any physiological or psychological effects are apparent (Dishman, 1982; Martin & Dubbert, 1985).

Research is also showing promise in affirming the role of physical exercise as a stress-buffer. A longitudinal study of adolescent girls revealed that the negative impact of stressful life events on health declined as exercise levels increased (Brown & Siegel, 1988). The authors caution however, that the use of a very homogeneous sample of adolescents may limit generalizability, and that the data, based on self-report may be biased (see Washburn & Montoye, 1986). Nevertheless, numerous anecdotal reports in

both the popular press and in scientific journals, on the psychological benefits of exercise have become commonplace (Brown & Seigel, 1988).

Participation Patterns in Canada and the United States

It is now generally agreed that physical activity has positive health benefits and it appears that exercise is a cost-effective preventive health measure (Shephard, 1990). In spite of this increasing knowledge, participation in habitual physical activity is far below what it should be to receive the suggested benefits (Paffenbarger & Hyde, 1988). In the United States almost 53% of American adults participated at least once in moderate to high levels of physical activity, but only 18.6% were active on more than 60 days and it is estimated that only about 10% exercise vigorously enough to receive any cardiovascular benefits (Brooks,1987; Caspersen, Christenson, & Pollard, 1985). In Canada, the Campbell's Survey (Stephens & Craig, 1990) shows similar results. One-third of Canadians may be considered active (according to their total energy expenditure) but only 11% are active at moderate intensity or higher for 30 minutes or more every other day. Almost 40% are active at this duration and frequency but at a lower intensity. Another 14% are active every other day for less than 30 minutes, and 38% exercise irregularly and for less than 30 minutes at a time. It is likely that there will be other health benefits such as weight and blood pressure control with exercise of a lower intensity, therefore the proportion of Canadians benefitting from exercise is probably much greater than 11% (Stephens & Craig, 1990).

Canada has been a leader in attempting to assess the physical activity of its population. The Canada Fitness Survey, 1981, was the most comprehensive national population survey of physical activity ever carried out (Stephens, Craig & Ferris, 1986). It included questionnaire responses from

over 17,000 adults and a definition of "active" incorporating frequency, duration, and intensity of activity. In 1988 the Canadian Fitness and Lifestyle Research Institute completed the Campbell's Survey on Well-Being in Canada to provide an update of the 1981 information, to examine the contribution of exercise to health, and to investigate adherence over time to a regular exercise routine (Stephens & Craig, 1990). This included comparing activity patterns, motivations, barriers and social circumstances between 1981 and 1988. It is the first major study to gather information on fitness and lifestyle from the same individuals over time and across a whole nation. Long-term cohort studies have been done in the United States such as the Harvard Alumni study by Paffenbarger, Wing & Hyde (1978) and the Cooper Clinic patients (Blair, Mulder & Kohl, 1987). Such studies have added to the secular trends of adults in physical activity but generalizations from such special groups is difficult and unwarranted (Blair et al.,1987). Consequently, their scope is limited compared to the Canadian national surveys.

Highlights of the 1988 Campbell's Survey

As a whole, the Canadian population was more active in 1988 than in 1981 except for women and men between the ages of 20 and 24. Fifty-three percent of the population either maintained or started a regular activity program while 46 percent resisted or dropped out of a physical activity program. Participation was increased in most activities with the exception of jogging which declined in popularity. The 1981 Canada Fitness Survey reported equal proportions of males and females as being active without taking into account the intensity of the activity. In 1988 when intensity of the activity was considered, men were rated as more active than females in all age

groups. During the period 1981 to 1988, men were more likely than women to adhere to a program of regular exercise.

In general, it was found that participation in physical activity declines from younger to older generations after the end of adolescence. However, those most likely to meet age-specific criteria for regular, intense activity were not youth but seniors and their most popular activity was walking.

The definition of activity level based on the "amount of time" spent on physical activity during the week provides a different profile of the Canadian population than when the "consistency" of such activity during the year is taken into account. Results showed that 80% of the population spent an average of 3 or more hours a week at physical recreation for at least 9 months a year. Since walking was the most common leisure-time activity, this high percentage is not surprising.

There was some evidence of a modest narrowing of socio-economic differences between 1981 and 1988 but there still remained a direct relationship between amount of education and the probability of being active, particularly when the "time" definition was used. It was found that adherence was directly related to education level while resistance to exercise was inversely related and that adherence was most likely found among managers and professionals.

As noted, walking was the most popular form of physical recreation with 6 out of 10 Canadians choosing this activity. The next most popular activities were gardening, swimming, bicycling, social dancing and home exercise. These activities can be performed with minimal exertion. As well, they allow the participant to be fairly independent with the exception of social dance. The popularity of these activities was quite consistent from 1981 to 1988 with the exception of jogging which decreased in popularity. Those

activities done most consistently for the 3 months prior to the April and May survey were walking, home exercise, exercise class, and hockey. The survey revealed that "the most popular forms of physical recreation have several features in common: low cost, casual scheduling, proximity to home, and little need for supervision or training. In short, they can be an integral part of active living with only modest effort." (Stephens & Craig,1990, p.12). Only one in five was directed by an instructor, coach or supervisor and similarly, only 17% were involved in competitive activity.

Exercising alone or with friends did not change. Males reported an increasing tendency to exercise alone after age 20; for females, a decline in physical activity was noted in the 15 to 19 year age group. It is also noteworthy that during the nine year period between the surveys there was no apparent increase in exercising with co-workers, even though most working Canadians reported having recreation opportunities at, or near their work. Men had more access to showers and organized teams but women were more aware of walking places near work. Only about one-third of employed Canadians reported access to fitness classes or other organized activities at work.

It was reported that one-third of Canadians typically exercise outdoors, while one-quarter exercise at home or in a recreation facility. This is consistent with the report that "getting outdoors" was considered a very important goal for leisure time by the majority of Canadians and that walking was the most popular recreation activity. The higher the level of education, the more likely an individual was to use a club for physical activity. Only 10% exercised at work or school.

The Campbell's Survey (Stephens & Craig,1990) found no support for the hypothesis that workers in blue-collar jobs are sedentary in their leisure time because they are active at work. It is suggested by Stephens & Craig (1990) therefore, that socio-economic differences in active living may well be related to educational factors as was mentioned previously.

Health status was assessed by self-report and physical measurement in the Campbell's Survey (1988) but not in the 1981 survey, therefore no comparisons can be made. Other recent surveys however, have reported positive relationships between health and physical activity (Powell & Paffenbarger, 1985). The Campbell's Survey,1988, found that "activity in leisure time is positively associated with self-rated health, emotional well-being, frequency of sports injuries, and rate of recovery from sports injuries and was negatively related to depression, Body Mass Index, subcutaneous fat and use of physician services" (Stephens & Craig, 1990; p.28.). Gratton and Tice (1989) also reported evidence from the 1977 and 1980 General Houseshold Surveys. They found that the data from all three surveys suggest that sports participants seem to be healthier, lead healthier lifestyles, and have a more active attitude to other leisure pursuits than non-participants. With the growing evidence that exercise positively affects health, what are the major barriers or obstacles preventing at least half of the population from taking advantage of the health benefits of exercise?

Determinants of Participation in Physical Activity

It has been noted (Dishman, 1989; Sallis & Hovell,1990) that in a strict sense "determinants" is an inappropriate word to be used at this point in adherence research as very few variables have been isolated as determinants or "causes" of physical activity. Most studies have identified only correlates

or "potential determinants" of exercise and determinants should be understood as such (Sallis & Hovell,1990). As well, most of the "determinants" research has been carried out in clinical and laboratory settings which can help identify interventions for the particular settings but these interventions are specific and limited in their scope. On the other hand, studies which have involved the general population are also limited in that they rely on subjective, possibly inaccurate, estimates of activity and a narrow set of determinants. In all the studies there is the further problem of definition and assessment of determinants of physical activity (Dishman, Sallis & Orenstein, 1985). The following determinants therefore will be a compilation of what is known to date from the literature available.

Although there have been close to 200 studies dealing with adherence to exercise, there is almost no current knowledge on why people begin exercising in the first place (Sallis & Hovell,1990). One prospective study which attempted to determine why people adopt exercise (Sallis, Haskell, Fortmann, Vranizan, Taylor & Soloman,1986) assessed over 1400 adults with a battery of measures of potential determinants, and then examined their exercise behaviors one year later. The predictors of vigorous exercise for men and/or women were exercise self-efficacy (i.e. confidence in one's ability to exercise regularly), health knowledge, attitudes towards exercise and participation in moderate-intensity physical activity at baseline. An early study conducted in Finland (Terraslinna et al., 1970) looked at 1708 male manager executives who responded to a questionnaire developed to determine how people volunteering to participate in an exercise program differ from those unwilling to do so. The researchers found that the most important motives stated for willingness to participate were improvement of

health, improvement of physical fitness and improvement of mental work capacity.

Wankel (1988) reviewed the Canada Fitness Survey (1983) and The Miller Lite Report on American Attitudes Towards Sports,1983, and found that the two main reasons for participation in physical activity are health benefits and enjoyment. Which of the two is more important will depend on the priorities of the individual and will determine the type of program he or she will enter. For example, an individual more concerned with enjoyment will probably join a sport/recreational activity, whereas one who is interested in health benefits will be more likely to enter a formal exercise program. A retrospective study (Wankel, 1985) of 100 male employees in a fitness program revealed that both continuing participants and dropouts rated health oriented goals as the main reason for joining the program. This is consistent with the Campbell's Survey (1988) where 61% of the population reported that feeling better physically was their main reason for being physically active. Only 29% reported socializing as a goal and this reason decreased with age. The Canada Fitness Survey (1983) likewise rated reasons for being involved in physical activity and found that 60% of the population (65% of the active vs. 44% of the sedentary) selected "to feel better physically and mentally" as very important to them with other reasons being "fun and excitement" (49% of the active vs. 26% of the sedentary); "to control weight" (45% of the active vs. 30% of the sedentary: and "to improve flexibility" (47% of the active vs. 30 % of the sedentary). These findings indicated that considerably more importance is placed on physical activity by people who are already active.

There were considerable differences noted between men and women when individual goals were reported. "Looking better, controlling weight, relaxing, socializing,feeling better both mentally and physically, and

improving fitness were all more important to females than to males" (Stephens & Craig, 1990, p. 44). Men were more likely to rate "pleasure, fun or excitement" and "as a challenge to my abilities" as important goals. In a field study of racquetball players, results indicated that men and women utilize different criteria by which to assess their own perceived ability (Roberts & Duda, 1984). "For women, perceptions of ability seemed to be tied more to attributions of skill and luck rather than competitive outcomes.....and are less likely to utilize social comparison procedures in order to determine their own competence in sport contexts" (Roberts & Duda,1984, p.322).

Wankel (1985) noted differences between non-health-related goals of dropouts and continuing participants with respect to joining programs. Continuing participants tended to rate recreational skill development, developing social relationships, release of competitive drive and going out with friends as more important than did the dropouts.

The variety of reasons for being physically active, compounded by the gender differences, indicate the importance of offering different types of physical activities. Indeed, the factors involved in motivating individuals to lead an active lifestyle are multidimensional. Dishman(1982) and Dishman et al.,(1985) have categorized the known determinants of physical activity as past and present personal attributes, past and present environments, and physical activity itself.

Influence of personal attributes

Numerous studies have attempted to describe the exercise "dropout" and have found that there are similar characteristics in drop-outs from other health-care programs such as those dealing with alcoholism, smoking and weight reduction (Dishman, 1982). Massie and Shephard (1971) identified

certain characteristics of the exercise dropout in a comparative study of individual and group fitness programs. The dropout rate for the individual exercisers was 52.6%, compared to a dropout rate of 18.2% for the group exercisers. Characteristics of the dropouts were similar for both groups. The dropouts were significantly heavier, fatter, stronger and more likely to be smokers. Adherers scored higher on the Shephard Motivation Test but the difference was not significant. In the population it appears that smoking is unrelated to physical activity (Norman, cited in Dishman, 1989) but those who engage in high-intensity, high-frequency fitness regimens may be less likely to be smokers (Blair, Jacobs & Powell, 1985).

Dishman and colleagues (1985) found that those who could benefit the most from exercise are the most likely to resist, for example those with Type-A behavior who have been early dropouts from cardiac rehabilitation exercise programs (Oldridge, 1982) and have resisted joining corporate exercise programs (Shephard & Cox, 1980). Those who are overweight or obese are also less likely to adhere to an exercise program (Dishman, 1981; Epstein, Koeske & Wing, 1984; Massie & Shephard, 1971; Young & Ismail, 1977) and are more likely to join or adhere to less vigorous types of physical activity such as walking rather than fitness programs. It is felt that biologic traits may predispose an exerciser to dropping out. In a study of a 24 week aerobic exercise program (Inger & Dahl as cited by Dishman,1982) 8 of 15 sedentary adult females discontinued the program. The dropouts had all complained of discomfort from excessive exercise stress even though training for all participants was conducted with the same intensity, duration and frequency.

Physical activity history

In supervised settings it has been noted that past participation in the program is the most reliable predictor of current participation as individuals who are active at 6 months tend to be active a year later (Dishman et.al., 1985). The impact of previous activity in an unsupervised setting is less clear. Kriska and colleagues (1986) studied a walking program for postmenopausal women and found that there were differences in preprogram self-reports of daily stair climbing, number of city blocks walked per day, and daily caloric expenditure between those who persisted and those who dropped out.

Although one would expect previous participation in interscholastic sports to be a determinant there is no conclusive evidence to prove this. Powell and Dysinger (cited in Dishman,1988) reviewed six research articles on youth participation in sport and physical education as antecedents to adult physical activity and found that data were ambiguous and standardized definitions were lacking. They cautioned that results can be difficult to interpret since what is learned as a child can be overridden by more powerful, immediate adult experiences. In the Canadian population, it appears that patterns of maintenance or resistance to activity are lifelong, but the data are based on reports of self-rated activity at age 15, making the validity of these reports questionable (Stephens & Craig, 1990).

Results of The Campbell's Survey,1988, also reveal that Canadians who remained active between 1981 and 1988 were also more active than their peers at age 15. Although there has been no conclusive evidence to demonstrate that active youth will continue to be active adults, a study by Spreitzer and Snyder (1983) demonstrated a positive relationship between the interest and encouragement of parents, siblings, and peers in childhood and the influence of participation in sports in adolescence and adulthood. A competitive

emphasis in sports during one's youth may also affect future participation in physical activity. Orlick (1974) found that 61% of the subjects he interviewed discontinued participation in sport because of an emphasis on competition within the program while 31% dropped out for other reasons. Other studies have indicated that "other interests" was the main reason for dropping out, regardless of the age group (Gould, Feltz, Horn & Weiss, 1983).

Knowledge, attitudes, and beliefs

Many of the health promotion schemes for encouraging physical activity (eg."PARTICIpaction") are based on an education model stressing that increased awareness of the benefits of exercise will result in increased involvement. The expectation of the government has been that this type of strategy will improve community health and therefore reduce costs of health care (Godin & Shephard, 1983). From a review by Dishman, Ikes and Morgan (1982) it appears that exercise involvement research has too often been atheoretical and that findings have usually been based on situational factors rather than personal factors. Dishman et al.(1980) developed the Self-Motivation Inventory (SMI), by which a general personality trait, the "tendency to persevere or to be self-motivated" (p.5) may be assessed. Using the SMI with body weight and body composition in a psychobiological model, the inventory was effective in predicting eventual adherers and dropouts in three exercise programs involving 66 middle-aged men. Approximately 80 % of participants were correctly classified.

Godin, Cox and Shephard(1983) used Fishbein's psycho-social model to study the impact of fitness evaluation on behavioral intentions of 172 self-selected adults towards regular exercise. According to Fishbein's Theory of Reasoned Action, the intent to adopt a given behavior is governed by the

individual's personal attitude towards performing that behavior and the influence of the social environment upon behavior. Experimental subjects were given fitness testing and counselling, but this did not significantly change the intention to exercise compared to the controls. The results showed that an external factor, current physical activity habits, was a much stronger predictor of physical activity than intention to exercise.

There has been recent research into attitudes and beliefs about physical activity based on the Health Belief Model (HBM). This model was developed in the early 1950's by a group of social psychologists working for the public health service and has been used for predicting compliance to medical regimens (Rosenstock, 1975) or dietary compliance (Becker, Mailman, Kirscht, Haefner, & Drachman,1977). Originally, the theory stated that in order for an individual to engage in a behavior to prevent an illness, one must first believe that one is personally susceptible to the illness. Furthermore, an individual's perceptions of the severity of the illness will influence the likelihood of taking action and the perception of how beneficial the recommended action would be. In spite of these beliefs, there are other factors to be considered such as the beneficial action being unpleasant, inconvenient, expensive or upsetting. Health locus of control (Wallston & Wallston, 1976) was eventually added to the theory; this added the dimension that those who believe they control their health through their own behavior are regarded as "internal" and those who feel they are victims of illness are considered "external".

Slenker, Roberts and Jurs (1984) tested the validity and reliability of the HBM on 124 joggers and 96 non-exercisers using a questionnaire which examined the knowledge, attitudes and beliefs of these individuals. Sixty-one percent of the variance between joggers and non-joggers was explained

through an analysis based on the HBM but the most significant finding was the strength of the "barriers" variable in distinguishing joggers from non-joggers. It was found that "non- exercisers best explained their status by constraints such as lack of time, family or job responsibilities, unsuitable weather, and lack of desire or interest" (p.376). Although most of the research indicates that individuals cite health reasons for joining a program, it is clear that there are factors beyond the desire for improved health or fitness which govern whether or not an individual will stick with a program (Wankel, 1985; Dishman, Sallis & Orenstein, 1985).

Corporate fitness programs are growing as a result of increasing health and ultimately financial benefits (Morgan, Shephard, Finucane, Schimmelfing, & Jazmaji, 1984). In spite of these programs being offered, only about 20% of the employees join these programs (Morgan, et al.,1984) and of those who do join, approximately half cease participation in the program (Shephard,1988). Steinhardt and Carrier (1989) studied the interaction of social-environmental, physical-behavioral, and psychological factors on the participation of employees in a work-site health and fitness program. Several interesting results were noted. As in previous research, (Andrew et al., 1981; Teraslinna, 1970) perceived convenience of the centre discriminated adherers from non-adherers. The fact that attitudinal commitment was a significant variable supports the research of Snyder and Spreitzer (1984) which "suggests that the extent to which an individual's identity is invested in physical fitness reflects a level of commitment which in turn promotes adherence to physical activity" (Steinhardt & Carrier,1989, p. 123). Contrary to most findings on previous youth participation (Snyder & Spreitzer,1979; Sonstroem,1978) it was found that the employees who were sedentary during their youth were more likely to participate in the fitness

program initially. The authors suggested that those individuals who were active as youth were perhaps more independent and therefore not as interested in following a formal exercise program.

Environmental factors

Certain environmental factors continuously emerge in the literature as barriers to participation. Dishman (1989) cautions that environmental variables have usually been assessed using "self-reported perceptions by participants and non-participants" (p.84). Consequently, the validity and reliability of the self-reports must be verified before planning interventions for removing or modifying barriers. Are the reported barriers actually within the environment or are they within the individual; are they perceived or real?

Lack of time is the most often reported reason for dropping out of a supervised or free-living physical activity (Stephens & Craig, 1990; Canada Fitness Survey, 1983; Fitness Ontario, 1981; Dishman, 1982; Martin & Dubbert, 1982). It is not known whether the reported "lack of time" is simply a rationalization or a reality (Wankel, 1988). Gettman, Pollack and Ward (1983) studied 47 male police officers and found a lower attrition rate for those involved in an unsupervised program as opposed to a supervised program. They attributed the results to the time-saving advantage of exercising at home. In a recent study of supervised exercise participants at Laval University (Desharnais, Boullion, & Godin, 1987), time scheduling rather than family or peer support appeared to be the significant predictor of exercise adherence. A survey of 77 graduates of an eight week hospital sponsored exercise program revealed that adherers and non-adherers reported different barriers to exercise (Goodrick, Warren, Hartung, & Hoepful, 1984). In this

situation, most non-exercisers stated their relapse was due to a lack of time while the the majority of exercisers cited illness or injury for not adhering. It was suggested that "time management" may be a useful strategy for exercise maintenance.

Gender differences concerning lack of time were noted within the Canadian population (Stephens & Craig, 1990). Females attributed their lack of time due to family pressures, while males were more likely to state "lack of time due to work or other interests". Females, particularly in the 25-44 year age group were also more likely to report "lack of energy" as a barrier to physical activity.

Inconvenience is also a major reason cited for withdrawing from physical activity. In an industrial exercise program, 42.5% of dropouts stated that their primary reason for dropping out was that the program was located too far from home (Wanzel,1978). Studies by Wankel (1985) and Teraslinna et al. (1969) reported similar results regarding inconvenient times and locations.

Participation also seems to be influenced by the attitudes of significant others. Dropouts in the Ontario Heart Collaborative Study had wives who were less approving of their husband's participation and had more doubts about the benefits of exercise (Andrew & Parker, 1979). During a two year follow up the researchers found that "of all individual questions asked, those pertaining to spouse approval were most significant; the dropout rate of those with little or no spouse support being three times that of those with positive family encouragement" (Andrew, Oldridge, & Parker, 1981, p.167). Similarly, a study by Heinzelman & Bagley (1970) revealed that patterns of adherence increased significantly with positive spousal support.

A number of authors have reported the importance of positive social interaction for continuing involvement in physical activity programs (Massie & Shephard, 1971; Perrin, 1979). For a drop-in type of program, 62% of females tended to exercise with a friend or spouse whereas only 26% of the males did (Wanzel, 1978). In the most recent Canadian survey (Stephens & Craig, 1990), it was found that "Canadians who remained or became active between 1981 and 1988 were almost twice as likely to report social support as those who remained inactive or reported a lapse in active lifestyle" (p.39). Furthermore, the encouragement of a doctor, particularly as one becomes older, increased in importance from 1981 to 1988, and encouragement from children and spouse was regarded as important by those individuals who became more active between 1981 and 1988. With regards to companions for activity, the same survey (Campbell's, 1988) showed that exercising alone greatly increases with age and is consistent with young people playing team sports and older people selecting solitary activities, particularly walking. Men were somewhat more likely to exercise with friends, perhaps because of more opportunities for team sports, but there was not a significant difference between males and females. It was not asked whether or not they thought a partner would be likely to encourage more participation.

Physical activity characteristics

When an individual selects a physical activity there are several factors which appear to influence adherence to that activity. There is the issue of intensity of exercise. While most research has focused on aerobic activities requiring 60% or greater of aerobic capacity, there is now justification for examining the adherence rates and effects of moderate-intensity activities, especially walking (Sallis & Hovell, 1990). Walking is reported to be the most

common physical activity while participation in more vigorous activities decline with age (Stephens & Craig, 1990; Stephens et al., 1985). Paffenbarger and colleagues (1989) have found that large amounts of walking on a regular basis and stair climbing can significantly extend longevity although not to the same degree as more vigorous activity. Similarly, Haskell, Montoye and Orenstein (1985) reported that moderate-intensity activities increased cardiovascular fitness. Results of a series of studies by Pollock and his colleagues led Pollock (1988) to conclude that excessive duration (longer than one hour) and a high proportion of high-intensity exercise can be important deterrents to continued participation in an exercise program.

While the influence of type of activity is not clear (Dishman, 1989), there is evidence to indicate that different activities appeal to different individuals and ultimately will affect adherence. In selecting an activity, one factor to consider is the effect of the size of the group on the individual. In sports, size of the group has been shown to be inversely related to enjoyment and cohesion and affects variables such as exercise fatigue, responsibility and feelings of crowding (Widmeyer, Brawley, Carron, 1990). Genetics may also influence the type of activity selected. For instance, a tall, lean individual is much more likely to select and adhere to a running program than a short obese individual (Sallis & Hovell, 1990). Studies in youth sports have illustrated that there are different motivating factors such as improving the skills of the game, testing ability against others, personal accomplishment, excitement of the game, doing the skills, being with friends, being on a team etc.(Gill, Gross & Huddelston, 1983; Wankel & Kreisel, 1985). The importance of these factors and ultimately the enjoyment of the individual, depends on the intrinsic, social or extrinsic inclination of the individual (Wankel & Kreisel, 1985). Gill et al. (1983) found that boys placed more emphasis on

achievement/status than girls did, but generally, intrinsic rewards such as learning and increasing skill were more important to enjoyment of sport for both sexes.

For adults, the conceptual literature emphasizes that skill level and/or positive experiences are influential factors to selection, participation and adherence to activities (Deci, 1975; Harter, 1978; Iso-Ahola, 1980; Neulinger, 1975). Harter (1978) argues that individuals are motivated to engage in activities in which they feel competent. This may be a factor in the selection of walking becoming more popular as one becomes older (Canada Fitness Survey ,1981; Campbell's Survey ,1988) and that men are much more likely to be involved in competitive sports. Recently, as a result of the literature connecting skill with motivation and enjoyment, Aguilar and Petrakis (1989) developed an instrument to measure perceived competence and satisfaction in racquet sports. It is their belief that instruments of this type could be used by physical educators and recreation instructors to select appropriate activities, thus developing competence and consequently promoting lifetime leisure pursuits by enhancing pleasure.

In addition to being competent in an activity, there is the idea of choice and perceived freedom which has been shown to be a central component of leisure (Iso-Ahola, 1980; Kelly, 1972; Neulinger, 1974). Wankel (1985) suggests that it is desirable to offer a variety of activities to decrease the individual's chances of losing interest and ultimately dropping out. Offering a choice will augment the individual's sense of perceived freedom and will help to present a physical activity not just as an exercise workout but as a leisure experience. In a study of 393 college and high school basketball players it was found that "perception of one's involvement in the sport as leisure were most likely to occur among those individuals with a high intrinsic orientation and among

those who expressed a moderate liking for their sport. On the other hand, perceptions of participation in this sport as being primarily work were more likely to occur among male athletes and those on scholarship" (Wagner, Lounsberry, & Fitzgerald, 1989, p.164). In the same study, females were more likely to rate their participation as higher on the Intrinsic Motivation factor, but the basis for this finding was only speculation that male basketball players have greater chances for involvement in professional sport and therefore look upon the sport as a job. Ragheb (1980), using a stepwise analysis to study the relationships among leisure participation, leisure satisfaction and leisure attitudes, found "satisfaction" to be the strongest contributor and predictor of leisure participation.

Strategies to Promote Adherence

Physical fitness has been strongly promoted in the United States and Canada since the 1960's. Health and Welfare Canada and Fitness Canada are continuing to develop programs to promote participation in physical activity. Although research has shown that these educational mass media programs are capable of reaching up to 94% of the population (Jackson, 1976), there has been no systematic means of determining the impact of these efforts (Godin & Shephard, 1983).

On a much smaller scale, there have been attempts to alter health behaviors within school programs using a cognitive-behavioural approach. One such study (Parcel, Simons-Morton, O'Hara, Baranowski, & Wilson, 1989) involved the "Go for Health Program" which included classroom health education and environmental changes in school lunch and physical education to foster a healthy diet and good exercise habits among elementary school children. Using two intervention schools and two control schools,

statistically significant results were observed for exercise capability, self-efficacy, and frequency of participation in aerobic activity.

Another behavioral approach which produced favorable results is increasing exercise cues. Keefe and Blumenthal (1980) coached three subjects who had previous difficulties in exercise maintenance, to exercise at the same time each day and to consistently warm-up beforehand. After two years all three subjects were still exercising at a high level.

Goal-setting and self-monitoring have been observed to promote adherence to physical activity (Keefe & Blumenthal, 1980; King & Fredricksen, 1984; Martin et al., 1984). Locke (in Wankel, 1985) has found that goal-setting is helpful if it is specific and reasonably attainable. Different types of goals may affect adherence to an activity. Elliott and Dweck (1988) studied the effects of performance goals and learning goals on children and found that the nature of the goal appears to significantly determine achievement patterns. When testing children of equal ability, it was noted that those who had "performance" goals (i.e. individuals seek to gain favourable judgements of their competence) responded with a negative affect characteristic of learned helplessness if they believed their ability was not satisfactory. When they perceived their ability was high, they responded in a mastery-oriented manner when faced with obstacles. On the other hand, those children who perceived that a learning goal was relevant, sought to increase their level of competence, regardless of how they perceived their skills.

In a recent study by Noland (1989) involving 35 moderately fit persons and 42 sedentary individuals in one of three conditions, it was found that behavioral interventions had little differential effect on adherence by those subjects who were already exercisers, but that self-monitoring and reinforcement techniques were somewhat effective in helping sedentary types

to adhere. The reinforcement technique however, was much more difficult to administer and considerably more time-consuming.

Oldridge and Jones (1983) had only limited success in a study of cardiac patients who not only followed self-monitoring but had written contracts. Wankel and Thompson (1977) used telephone calls as reminders and Martin et al. (1984) found that self-setting of realistic goals, positive self-talk and concentrating on pleasant environmental stimuli during exercise were more effective than concentrating on high performance standards and bodily sensations. The results emphasized the importance of social support, feedback, and praise during exercise.

Bélisle, Roskies and Lévesque (1987) tested Martlatt and Gordon's relapse-prevention model in an ongoing community exercise program. The intervention delivered by group leaders in the regular program was designed to increase awareness of obstacles to exercise and to develop appropriate techniques for coping with them. A small but consistent increase in adherence was observed in the experimental group.

One technique which has yielded promising results in increasing exercise adherence is the use of the decision balance-sheet (Hoyt & Janis, 1975; Wankel & Thompson, 1978; Wankel, Yardley & Graham, 1985). This technique is designed to help individuals think through the costs and benefits of any potentially stressful decision to strengthen their commitment to that decision. One of the main advantages of this technique is that it is easy to administer and requires only 10 to 15 minutes per individual (Wankel, 1980). Unfortunately, these studies were not carried out on sedentary individuals but with volunteers already involved in an exercise program (Hoyt & Janis, 1975).

Leisure Counseling

It has been suggested (Ferris, 1985; Lupton et al., 1984; Massie & Shephard, 1981; Morgan et al., 1984; Wankel, 1985) that to facilitate exercise adherence, exercise must be perceived as "fun". Summerfield and Preist (1987) believe that recreation professionals need to promote the liberating effects of exercise and assist individuals to approach physical activity with a more playful attitude as children do. Thus, physical activity will become more intrinsically rewarding and the activity will be maintained. One of the ways that professionals have attempted to assist individuals to find rewarding leisure activities (with physical activity and recreation being one aspect of leisure) is through leisure counseling.

Tinsley and Tinsley (1981) have identified three main models of leisure counseling which vary greatly in their theoretical base. The authors put them on a continuum with one atheoretical extreme focusing very narrowly on helping the client decide which leisure activity to pursue. At the other extreme of the continuum there is the general goal of facilitating the client's personal growth.

The leisure counseling model that relies primarily on information giving techniques and basically assists the client to choose an appropriate leisure activity is the "leisure guidance model" (McDowell, 1977). In this type of counseling, the interviewer focuses on the gathering of factual information. Edwards (1977) developed the Constructive Leisure Interview Sheet which includes factual data, biographical data, occupation, past and current leisure activities, practical considerations, leisure activity preferences and personal skills. On the basis of this interview, the counselor studies the information and is primarily responsible for decision-making. Several have criticized Edward's manual, judging that it offers little in psychological

counseling and has the disadvantage of getting unsophisticated people involved in leisure counseling (Osipow, 1977).

Connolly (1977) has suggested that although the ultimate goal is still the selection of an appropriate leisure activity, one should first use the values of clarification and assertive training techniques in leisure counseling. Furthermore, he broadens the goals of leisure counseling by maintaining that both the counselor and client have certain responsibilities for working together within a counseling relationship (Tinsley & Tinsley, 1981).

After the Leisure Guidance model, Tinsley and Tinsley (1981) have placed the Leisure Decision-Making model on the continuum of leisure counseling models. It is their opinion that this approach not only obtains the necessary information for appropriate leisure choices but conceptualizes the goals of leisure counseling more broadly and regards the affective qualities of the relationship as important. Within this category, there are varying approaches. Montagne (1976) focuses on activity selection via reality therapy. Haye's "Leisure Education and Recreation Counseling Service" model purports to involve the individual in appropriate leisure activities, involve the individual in total community living, and facilitate the development of positive feelings towards self and community living. This model resulted from work in helping mentally disabled individuals adjust to community life.

McDowell's leisure decision-making approach is a nine-stage leisure counseling process which focuses on the client's goals and needs (McDowell, 1977). There is a process of identification of any possible barriers or obstacles preventing the attainment of these goals. Furthermore, a follow-up evaluation occurs once the selected activities have been adopted.

The most popular model used in the literature is that developed by Overs and his associates (Tinsley & Tinsley, 1981). This model differs from McDowell's in that there is more emphasis on the individual and the counseling relationship. This results from the idea that problems associated with making a leisure choice involve lack of knowledge about self, choice anxiety, or problems associated with one's self-concept. They developed the Milwaukee Avocational Satisfaction Questionnaire to test the perceived causes of leisure difficulties. Although this model is partially devoted to personal adjustment counseling, those in need of psychotherapy would be referred elsewhere (Overs, Taylor & Adkins, 1977).

The final model on the continuum is the"Leisure Counseling" model. Remple (1977), Peterson and Gunn (1977), and Tinsley and Lindrud (cited in Tinsley & Tinsley, 1981) are examples of this approach and are said to emphasize the following aspects: (1) focusing on the individual, not just the individual as a problem in leisure choice; (2) establishing a counseling relationship; and (3) self-actualization of the individual (Tinsley & Tinsley,1981). These models stress an empathetic counseling process during which barriers are identified and then removed so that the individual may realize his or her full potential. In the Remple model, a leisure information file helps to choose the appropriate group or activity.

Peterson and Gunn (1977) define leisure as a state of mind in which the individual has maximum freedom for self-regulation. "Leisure counseling is specifically concerned with the meaningful play behavior as a component of total development....a counseling approach which focuses on removing blocks to play behavior may well contribute to developing lasting feelings of significance and self-worth" (Peterson & Gunn, p.29 & 30). The process involves six components: assessment, goal determination, program planning,

program implementation, evaluation, and post programming. Basically, the gathering of information is broad based to help clients become aware of their problems, needs, interests, and expectancies, rather than a narrow focus on leisure activity selection (Tinsley & Tinsley, 1981).

More recently, Peterson and Gunn (1984) developed the Leisure Education Content Model which emphasizes the acquisition of knowledge related to leisure activity skills, leisure awareness, leisure resources and social skills. By increasing leisure-related self-awareness, this approach purports to strengthening decision-making skills, necessary in maintaining satisfactory leisure involvement. The MPASS System was designed to incorporate this educational approach emphasizing physical activity leisure as opposed to the broader concept of leisure.

Summary

In conclusion, research on the determinants of physical activity and exercise to date, indicates that there has been relatively little progress in substantially attracting individuals to increase their level of physical activity. At this point in time it is estimated that only 25% of Canadians are regularly active and even less Americans (approximately 10%) participate in any form of regular exercise. Although there are numerous models of intervention, there is no panacea to change people's attitudes and/or habits towards physical activity. The limited success is due in part to the complexity of human behavior and particularly as it pertains to physical activity which is affected by psycho-social factors, environmental factors as well as physiological factors.

Realizing this, it seemed that a multi- dimensional approach for physical activity selection was necessary to improve adherence to an active

lifesyle. MPASS was developed to help the individual realize the above physical, environmental and social factors involved in choosing appropriate, enjoyable activities. This self-awareness process was facilitated using a leisure education content model. Thus, MPASS would be able to help the individual develop a cognitive understanding of physical activity experiences, develop decision-making skills and utilize resources. This educational approach would lead to more satisfying physical activity experiences which would result in increased adherence to physical activity.

Chapter 3

Methodology

The purpose of this study was to develop and evaluate the McGill Physical Activity Selection Service (MPASS) Tour which is the first stage of the MPASS System. The MPASS Tour includes the MPASS Questionnaire administered on a MacIntosh computer program, a viewing of the results on the computer screen, followed by an informal discussion. The MPASS Questionnaire consists of a series of questions designed to help an individual assess his or her own lifestyle, fitness level, social preferences, attitude towards physical activity, as well as create a physical skill profile in order that appropriate physical activities can be selected. The MPASS Questionnaire was evaluated using the "Evaluation Questionnaire".

This chapter deals with the following sections: (1) Subjects; (2) Instrumentation (2.1) Development of the MPASS Questionnaire and Tour (2.2) Development of the MPASS Community Resource Inventory (2.3) Development of the MPASS Evaluation Questionnaire (3) Procedures (4) Treatment of the data.

Subjects

The subjects were forty female volunteers between the ages of 25 and 45. It was felt that 25 was a good minimum age for assessment purposes because research has indicated that physical activity declines with age after adolescence (Canada Fitness Survey, 1983). Subjects were restricted to the female population as major gender differences in perceived barriers to physical activity have been noted in the Campbell's 1988 Survey on Well-Being (Stephens & Craig, 1990).

The subjects were volunteers who responded to various flyers posted in the local YMCA, library, community recreation department, grocery store, and family medical clinic situated within a fairly affluent community in Montreal. The flyers requested that individuals interested in leading a more active lifestyle contact the researcher. In addition to theses flyers, there was a local newspaper article which briefly described the project and invited interested persons to telephone the researcher for an appointment. Eighteen volunteers responded to the written advertisements, another twelve volunteered as a result of an announcement made during a community recreation aerobics class and the remaining ten volunteers were informed of the project by their friends. Of the 40 volunteers, 26 were married with children, seven were single parents and seven were single with no children. Twenty-eight of the volunteers were considered to be active according to a recent definition (in Stephens & Craig, 1990). They exercised at a moderate intensity or more at least every other day and the most popular mode of exercise was aerobics and/or walking. Twelve were considered to be inactive at the time of the study.

When the volunteers contacted the researcher by phone they were asked if they had any known medical problems which might possibly exclude them from participating in physical activity. The MPASS Community Resource Inventory did not include medically supervised programs (eg. cardiac exercise programs within hospital settings). Assuming that individuals who responded to the advertisements did so because they were interested in participating in activities deemed appropriate for them, it seemed prudent and ethical to exclude, at the outset, those who would not benefit from the MPASS program.

Instrumentation

Development of the MPASS System

The MPASS System is composed of two primary sections: (1) the MPASS Questionnaire which is administered on a computer program (the "tour") and (2) the MPASS Community Resource Inventory interview.

Development of the MPASS Questionnaire and Tour

It is apparent that there are several factors involved in the high drop-out rate of participants who initiate physical activity programs. Some of these factors include motivation or lack of interest (Dishman et al., 1980), poor health status or low physical fitness (Oldridge,1982), accessibility, lack of skills, lack of time (Canada Fitness,1983) and poor activity selection (Wankel,1985).

The review of the literature indicated that although several strategies have been employed to promote adherence to physical activity, there was no instrument which attempted to increase the self-awareness of the individual using a multi-faceted approach. Therefore, the MPASS Questionnaire which consists of a series of questions related to the above factors was developed.

Bimonthly meetings were established and over a period of six months two McGill professors and two graduate students organized and developed the categories deemed necessary to fully evaluate the abilities, interests, barriers to participation, and goals of the MPASS participants. The following categories were included in the instrument: (1) Physical Activity History; (2) Attitudes Towards Physical Activity; (3) Lifestyle and Fitness Self-Asessment; (4) Skill Profile; (5) Exercise Preferences; (6) Cost Factors; (7) Transportation; (8) Time, and (9) Goals. Categories were assigned to each member of the research group. The questions for each category were researched and gleaned from the literature by the assigned individual. The questions were then reviewed and revised by the other members of the team. This process was

reviewed and revised by the other members of the team. This process was repeated until all members agreed that each category was adequately constructed. The MPASS Questionnaire is found in Appendix A.

It was decided that the MPASS Questionnaire, administered via a computer-based program, would be more advantageous than a face-to-face interview or self-completed questionnaire. The following advantages of computers were identified:

1) Computers are now commonly regarded by the public as educational tools.
2) They offer a standardized form of questioning.
3) The length of time to complete the computer program is more predictable than using an open-ended interview format.
4) They allow the information to be graphically displayed on a screen or printout for both the individual and the researcher.
5) Computers give the user a sense of controlling the process which will enhance the development of self-awareness.
6) "User friendly" computers may be perceived as fun to use.
7) Information can provide the basis for future cross-sectional or longitudinal research.

The following limitations were also acknowledged:

1) Only one participant can be interviewed at a time as opposed to a questionnaire format which can be administered to a group of individuals.
2) Computers may be perceived by some as impersonal.
3) The program is more costly to administer initially (eg., equipment).
4) The program is specific to the MacIntosh computer and therefore it can only be used in centres which use the MacIntosh system.
5) The process is terminated if there is a power failure or any computer malfunction.
6) The standardized questions limit responses.

The most serious limitation, apart from technical problems, would appear to be the use of standardized questions which limits the response of the client and may therefore minimize valuable feedback. To combat this problem there was time allotted at the end of each session for informal discussion which gave the subject the opportunity to offer additional information. Furthermore, the subject was encouraged to ask any questions or offer suggestions to the researcher during the MPASS Tour interview.

The MPASS Questionnaire, as was mentioned, is broken down into nine categories of assessment. The following is a brief description of the purpose and reasoning behind each category.

Physical Activity History

It is important for the educator administering the program to evaluate the participant from a historical perspective. This will allow a greater appreciation of the participant's perceived competence and satisfaction in

relation to his or her past physical activity pursuits. It has been suggested that an individual's perceived competence contributes to the selection, participation and adherence to activities (Csikzentmihalyi, 1975; Deci,1975; Harter,1978; Rudisill,1989). Therefore, it is important to include some questions about the participant's past experiences with physical activity and sports to determine how competent the individual feels with respect to these activities. The history also gives the educator a general idea as to the participant's degree of exposure to sports and physical activity. Included in this section is a question regarding whether the participant has ever stopped exercising regularly. If the answer is "yes", the participant must check off the reason(s) why this has occurred as well as the perceived importance (very important; important; not at all important) of each barrier. A list of 20 different reasons covering areas such as lack of time, cost, injury, lack of support, lack of skill, and lack of facilities is provided. A similar format has been used in the Canada Fitness Survey (1983) to discover obstacles to increased physical activity.

Attitudes Towards Physical Activity

This segment includes eleven questions concerning attitudes towards physical activity. The response format is a five-point scale that ranges from strongly disagree to strongly agree. The questions are related to general physical activity as opposed to specific sports in order to assess the participant's beliefs about the importance of physical activity as well as his/her knowledge concerning its benefits. Attitudes are deemed to be important in adherence to physical activity (Wankel,1988). Therefore this section was designed to assist the individual to be more cognizant of his/her

own beliefs. It is felt that people generally tend to act according to what they perceive is important (Canada Fitness Survey, 1983).

Lifestyle and Fitness

The instrument includes a self-report measure of lifestyle and fitness. While there are limitations to any measure of activity concerning validity and reliability,(Baranowski,1989) self-report is commonly used since its advantages outweigh the disadvantages. The questions were gleaned from a variety of surveys including the Canada Fitness Survey (1981). Assessing an individual's lifestyle and degree of fitness helps the client set more realistic goals and thus facilitates exercise adherence (Danielson & Wanzel,1978; Martin et. al.,1984; Rejesky & Kenny,1988). This section consists of ten questions, and includes such factors as diet, smoking, alcohol consumption, awareness of existing physical activity programs, perceived state of health in relation to others and degree of involvement with physical activity. The first nine questions were rated on a five-point scale with an answer of "1" indicating an unhealthy lifestyle and "5" indicating a healthy lifestyle. One section involves determining the number of hours per week spent on a variety of primarily sedentary activities such as reading, volunteer work or visiting friends or relatives. This information was deemed important to increase self-awareness of priorities and time-management. It should be noted that "lack of time" is by far the most reported obstacle to increasing physical activity (Stephens, Craig & Ferris, 1986).

Skill Profile

An individual's skill level is crucial to exercise adherence since an activity which is either too difficult or too easy will not be perceived as enjoyable; consequently, the participant is likely to drop out (Wankel,1985). Although lack of ability has been suggested as a deterrent to sport participation by numerous authors, no one has attempted to try to match individuals to specific physical activities according to skill level. The Skill Profile was divided into three sections: simple skills such as walking; reactive skills such as those involved in tennis; and complex skills which are required for team sports such as basketball (Smith, 1988). Wide individual differences in skill exist within the general population. Therefore a skill self-assessment would be beneficial in determining which sports and/or physical activities would be suitable for the client. By arranging these activities developmentally, according to the degree of difficulty, the individual is able to see where s/he fits and also to increase his/her own awareness of the developmental processes leading to skill mastery.

Exercise Preferences

The questions in this section covered social factors, sports and physical activity preferences and desire for competition. The responses to these statements were measured on a 5 point Likert type scale ranging from "strongly disagree" to "strongly agree" with the middle response being "not sure". The Canada Fitness Survey (1983) indicated that individuals tend to favour "fitness activities" more than sports and that this trend may accelerate as the population ages. Therefore, this series of twenty-six questions was arranged to help the participant more clearly understand his/her preferences

and to realize the different emphasis which exists between fitness and sport activities.

Cost Factors

The eight questions in this section were constructed to determine an approximate amount the individual would be prepared to pay for physical activities, equipment or transportation costs incurred. This information is vital to appropriately match an individual to an activity. In the Canada Fitness Survey (1983) it was found that cost was one of the barriers to increased physical activity and that active Canadians tended to be in mid to upper income brackets. Economic factors must be considered when advising participants of their options as budget constraints can severely limit the options available to them.

Transportation

This section requested the individual to indicate what mode of transportation would be used commute to recreational physical activities. Like cost, this question is of practical importance to ascertain whether activities will be accessible to the participant.

Time

Lack of time, as noted previously, has been the most frequently reported obstacle to increased physical activity (Stephens, Craig & Ferris,1986). There were six questions in this section pertaining to convenient times for activities as well as the amount of time the participant was willing to devote to extra physical activity. This allowed both the researcher and participant to see what time slots were available for increased activity and to match these times to programs available within the community. This also helped to

determine whether a client could commit to specific times or whether a flexible program was required.

Goals

There is growing evidence that a strong relationship exists between goal perspectives and participation and persistence in sport (Duda, 1989; Elliot & Dweck,1988). Danielson and Wanzel (1978) found that people who did not attain their objectives tended to drop out of a program much faster than those who did attain them. The "goals" section of the MPASS questionnaire consisted of a list of fourteen goals. The degree of importance of each goal was indicated using a four point scale ranging from "not at all important" to "very important". Taking into account the previous answers concerning fitness, lifestyle, exercise preferences and skill profile, the researcher was able to assess whether or not the participant had realistically set her goals.

Upon completion of the entire questionnaire, a computer programmer was contacted and given the questionnaire along with a description of how the researchers wanted the material to be displayed. Following several discussions between the graduate student, the two faculty advisors and the computer programmer, a relatively "user friendly" format was agreed upon. Not only was it easy to administer, but the results were arranged such that both the researcher and the subject could easily review the responses to the questions. Rewording of some of the questions was necessary in order to graphically display the data, such that the individual's strengths and weaknesses could easily be identified.

Development of the MPASS Community Resource Inventory

A necessary component of the MPASS System is the Community Resource Inventory (Appendix B) which is a list of all the available physical activities located within the community. Although the Community Resource Inventory was not used for the purpose of the present study, it is described here to inform the reader of all components of the system which will be utilized in the future.

Initially, a coding procedure was developed to enter data onto the computer program facilitating access to all the information concerning physical activities located within the community and surrounding area. The information on each activity included the following: (1) age of participants; (2) gender; (3) purpose (instructional,competitive,socio-recreational,free play, special program, and conditioning); (4) entry skill (beginner,average,skilled and all levels); (5) equipment cost; (6) fee; (7) times; (8) frequency; (9) program accessibility (for wheelchairs); (10) availability to non-residents and (11) the contact person's name and phone number.

The two graduate students went into five neighbouring communities within Montreal. The five communities were all located centrally, in middle to upper income areas and contain a relatively large proportion of English speaking citizens. The graduate students contacted the key personnel in the local Y's, community centres, as well as private institutions offering various physical activities. The inventories were either completed by the personnel themselves or done with the help of the graduate students during a pre-arranged meeting. (An example of an inventory is illustrated in Appendix. B)

Development of the MPASS Evaluation Questionnaire

In order to evaluate the MPASS Tour it was decided that a standardized questionnaire would be the most efficient means of assessment to effectively meet the research priorities. The questionnaire, as opposed to an open-ended interview, is more feasible in terms of cost. Further, it ensures a standardized line of questioning, which facilitates accurate interpretation of the data (Berdie & Anderson,1974).

The Evaluation Questionnaire (Appendix C) consisted of thirty-five questions developed by the researcher to investigate the research questions proposed in the first chapter. The research questions were concerned with:

1) the participant's response regarding ease of administration of the program.
2) the participant's response to questions regarding an increased self-awareness of attitudes towards physical activity.
3) whether the participant achieved a greater sense of self-awareness regarding his /her level of fitness.
4) the participant's response concerning an increased self-awareness regarding abilities in sports.
5) the participant's response regarding an increased self-awareness of barriers to physical activity.
6) the participant's response regarding an increased self-awareness of physical activity preferences.
7) the participant's response regarding an increased self-awareness of physical activity goals.

The process of developing the questionnaire was such that the researcher created four to six statements which corresponded to each specific research question (Appendix D illustrates the question groupings in relation to the

seven research questions). The questionnaire was reviewed and revised by two professors. A five-point scale format using the guidelines outlined in Berdie and Anderson (1974) and Sudman and Bradburn (1983) was constructed to respond to the thirty-five statements. This format helps to avoid confusion and promote clarity since all responses are answered on the same scale which ranges from 1 = strongly agree to 5 = strongly disagree. The answers were arranged horizontally to save space and the chosen responses were indicated by checking the corresponding box.

Pilot Study

A pilot study of five adult volunteers was conducted to determine any necessary alterations to the MPASS Tour, the Evaluation Questionnaire or the procedure. As a result of the pilot study the wording was changed in some sentences to enhance clarity of the questionnaires. It was also noted that a warm-up period would be preferential for those who had never used the MacIntosh "mouse". At this time, the researcher was able to determine that the average time for completion of the MPASS Tour, discussion and the subsequent Evaluation Questionnaire would be approximately ninety minutes. Originally, the results of the computer program were to be printed and reviewed by the subject and researcher. However, as the printing process was lengthy, it was more propitious for the researcher and subject to view the results on the computer screen.

Procedures

Interviews were held in an office within the researcher's home in the same community to accommodate those volunteers who were available for interviews only in the late afternoons or evenings. During the interview, the

researcher attempted to put the subject at ease by explaining the purpose of the study, the format of the session and the use of the computer. Practice-time was allowed for using the MacIntosh "mouse" if the subject had no previous experience. The subject was encouraged to ask any necessary questions at any point and to offer additional information which could be pertinent to the program. The answering of questions throughout the interview eliminated the need for a lengthy discussion. However, this caused the length for completion of the MPASS Tour to fluctuate. After completing the computer program, the subject and researcher reviewed the responses to the MPASS Questionnaire on the screen. This was done to check the accuracy of the responses and to promote further discussion. When the MPASS review and discussion were completed, the subject was asked to fill in the MPASS Evaluation Questionnaire. The time required for this was usually about ten minutes. The subject was advised to answer all questions as honestly as possible to ensure validity and reliability of the study.

Treatment of the Data

The reliability of the Evaluation Questionnaire was assessed by comparing the responses of five sets of parallel questions (Rosenthal & Rosnow, 1984) to determine the percentage of agreement.

Descriptive statistics were used to analyze the data. Means and percentages were used on a question by question basis to ascertain the effectiveness of the MPASS System. Scores rated three or below were accepted as good or better. Responses with a score of more than three indicated a weakness in the MPASS Tour. Averages were taken of the questions in each grouping to assess the response to the seven research questions.

Chapter 4

Results and Discussion

The purpose of this study was to develop a tool designed to increase self-awareness with regard to various physical, social and psychological factors involved in selecting appropriate physical activities. It was also the intent of this study to assess the effectiveness of this tool, i. e., the MPASS Tour. The present chapter is divided into the following sections:
(1) Reliability of Evaluation Questionnaire (2) Results of Responses to Evaluation Questionnaire (3) Average Responses to Research Questions (4) Summary.

Reliability of Evaluation Questionnaire

A method of internal consistency was used to determine the reliability of the Evaluation Questionnaire (Rosnow & Rosenthal, 1984). Five sets of parallel questions were asked in the questionnaire (Table 1). When responses on comparable sets of measures tap the same construct, there should be a high percentage agreement between the parallel questions. Since the wording of the questions was not identical and the magnitude of difference on the "Likert-type" interval is by nature not easily defined, a discrepancy of one position on the set of responses was considered to be in high agreement. Thus, if an individual responded "strongly agree" to one question but only "agree" to it's parallel question, he/she was deemed to have deviated by one point or position and the response was considered to be in "high" agreement". However, if there was a discrepancy of two or more,

Table 1: Reliability: Parallel questions from Evaluation Questionnaire and percentage agreement.

		* PERCENT AGREEMENT		
		1	2	3
8. I now have a better understanding of how I feel about physical activity.	14. I have a clearer understanding of my attitudes towards participation in sports and physical activity.	40	55	5
10. The program has helped me take a look at what prevents me from being physically active.	24. This has helped me realize some of the barriers or obstacles which have prevented me from being as physically active as I would have liked.	53	43	4
18. This has made me more aware of my skill(or lack of skill) in various sports.	23. This has increased my awareness of the types of sports in which I could be successful.	43	52	5
19. I am more aware of my social needs in relation to physical activities.	29. I have an increased understanding of my social needs and preferences in physical activity.	55	45	0
31. The program has helped me to focus on which goals are most important to me.	33. This has given me the opportunity to reflect on my physical activity goals.	63	28	5

* Percent Agreement
1 = total agreement
2 = 1 point difference
3 = 2 point difference

the response was not considered to be in close agreement and thus indicated low reliability.

The first set of parallel questions was *eight* and *fourteen* (Table 1) which examined attitudes towards physical activity and sports. There was a 40 percent total agreement of the responses, with an additional 55 percent having a discrepancy of only one position. Five percent of the responses varied by two points.

The second set of questions, *ten* and *twenty-four* asked the respondents about their awareness of barriers to participation in physical activity. Fifty-three percent of the responses were in total agreement, 43 percent varied by one point and four percent had a two point difference.

Questions *eighteen* and *twenty-three* are similar questions regarding self-awareness of skill in sports. The total agreement response was 43 percent; agreement with a one point discrepancy was 52 percent, and five percent of the responses varied by 2 positions.

The fourth set of questions (*19* and *29*) similarly asked the respondents about their social needs and preferences. Fifty five percent of the responses were identical and 45 percent varied by one point.

The final set of questions (*31* and *33*) asked the respondents in a similar fashion whether the program had helped them reflect on their physical activity goals. There was a total agreement response of 63 percent. Twenty-eight percent of the responses varied by one point and five percent had a 2 point discrepancy.

When the sets of parallel questions were considered as a whole, there was 50.8 percent total agreement, 44.6 percent agreement with a one point difference and only 3.8 percent of the questions differed by two points.

Individually, and as a whole, the high percentage agreement between the parallel questions indicated that the Evaluation Questionnaire was reliable.

Response to the Evaluation Questionnaire

The results of the Evaluation Questionnaire generally revealed a positive response to the MPASS Tour. Table 2 lists the seven research questions and the corresponding means to the Evaluation Questionnaire items associated with each research question. The mean responses to all seven research questions ranged from 1.62 to 2.82 which indicated that all areas were in the "acceptable" range, that being a mean of less than three.

There was an initial comparison of subjects who were single without children, single with children, and those who had children and were living with a spouse . Of the forty women, twenty-six were married with children, seven were single parents, and seven were single with no children. An analysis of variance revealed no significant differences between the three groups for any of the seven research questions.

A t-test was also done to compare the inactive vs. the active participants . Of the forty, there were twenty-eight or seventy percent who were considered to be physically active in their leisure time. That is, they exercised at moderate intensity or higher for 30 minutes or more every other day (definition of "physically active" taken from the Campbell's Survey, 1988, cited in Stephens & Craig, 1990). The thirty percent considered inactive were not involved in any form of regular physical activity. Unpaired t-tests showed no significant differences between the active and the non-active subjects for any of the research questions. Due to these insignificant results,

Table 2

Summary of mean responses to research questions 1 through 7.
* = unacceptable average response

Research Questions	Means of corresponding questions	Standard Deviations	Mean response for research questions
1. Will the participants respond favourably to the questions concerning ease of administration of the program?	(1) 1.35 (2) 1.38 (3) 1.48 (4) 1.68 (5) 1.53 (6) 2.36	(1) .54 (2) .59 (3) .55 (4) .62 (5) .64 (6) 1.20	X=1.62
2. Will the response of the participants indicate an increased awareness with regard to their attitudes towards physical activity?	(7) 2.45 (8) 2.45 (9) 2.40 (10) 2.50	(7) .96 (8) .96 (9) .84 (10) .82	X=2.45
3. Will the response of the participants indicate that they have an increased self-awareness regarding their level of fitness and the degree to which they have been physically active in relation to their peers?	(11) 2.85 (12) 2.53 (13) 3.08* (14) 2.60	(11) .92 (12) .85 (13) 1.00 (14) .87	X=2.76
4. Will the response of the participants indicate an increased self-awareness with regard to their ability in sports?	(15) 2.93 (16) 2.70 (17) 2.48 (18) 3.30* (19) 2.90	(15) .76 (16) .85 (17) .85 (18) .76 (19) .84	X=2.82
5. Will the response of the participants indicate an increased self-awareness concerning factors which may have prevented them from being physically active in the past?	(20) 2.7 (21) 2.53 (22) 2.78 (23) 2.75	(20) .85 (21) .91 (22) .89 (23) .87	X=2.69
6. Will the response of the participants indicate an increased awareness of their preferences regarding participation in physical activities?	(24) 2.78 (25) 2.55 (26) 2.58 (27) 2.50 (28) 2.48 (29) 2.63 (30) 2.53	(24) .80 (25) .93 (26) .90 (27) 1.01 (28) .88 (29) 1.03 (30) .91	X=2.58
7. Will the response of the participants indicate they have become more aware of their goals regarding physical activities?	(31) 2.15 (32) 2.50 (33) 2.30 (34) 2.55 (35) 2.37	(31) .98 (32) .68 (33) .72 (34) .82 (35) .88	X=2.39

there was no further analysis of the subjects according to marriage status or degree of involvement in physical activity. The following results therefore, are representative of the group as a whole.

The next section will reveal the means of the 35 individual responses to the Evaluation Questionnaire statements (these are illustrated in bold print), followed by a discussion of each research question.

Research Question One

"Will the participants respond favourably to the questions concerning ease of administration of the program?"

1. **Overall, the program was easy to use.**
   The average rating given was 1.35 which denoted a very strong agreement. The largest number of respondents (65.7 percent) strongly agreed with this statement.
2. **The instructions to operate the computer program were clear.**
   Average rating was 1.38 with the largest number of respondents (65.7 percent) again strongly agreeing.
3. **The questions regarding Physical Activity History, Skill Profile, etc. were easy to understand.**
   The mean response of question three was 1.48 with 55 percent strongly agreeing.
4. **The time involved to complete the program was appropriate.**
   The average response was 1.68 with the largest number of responses (52.5 percent) being "2" (agree).
5. **I enjoyed using the computer.**
   Average rating was 1.53 with 55 percent strongly agreeing.

6. **I found using the computer to be motivating.**

   Average response was 2.36 with 33 percent strongly agreeing and 28 percent agreeing.

The first research question which dealt with ease in handling the computer was very positive. With the mean response of the statements covering this area being 1.62 (Table 2) it was clearly the most favourable response of the seven research questions. The largest number of respondents answered *strongly agree* to "clarity of questions", "clarity of instructions" and "enjoyment of using the computer". Less favourable, yet still having a positive response of 1.68 was "the time involved to complete the program. Fifty-two point five percent "agreed" with the time involved rather than strongly agreeing. When informally asked about the length of the time to complete the program, some stated that it could be shorter but that this was not necessary. Time to complete the program varied from seventy-five minutes to ninety minutes depending on the amount of discussion which arose as a result of the questions in the program, as well as the degree of manual dexterity which the participant possessed in handling the "mouse".

The least favourable response in the "administration" section was "I found using the computer to be motivating". Here 32 percent strongly agreed, but 20 percent disagreed. Several respondents verbally reported that they were indifferent to using the computer. However, they felt it could be motivating for children. About twenty percent of the subjects initially felt uncomfortable or awkward using the mouse and three appeared to have minor difficulties maneuvering the mouse even towards the end of the program. This increased the time involved for completion and may have created a negative bias towards the program.

Research Question Two

"Will the response of the participants indicate an increased awareness with regard to their attitudes towards physical activity?"

7. **I now have a better understanding of how I feel about physical activity.**
   Average response was 2.45 with 35 percent agreeing.
8. **This program has helped me to recognize my feelings towards physical activity.**
   Average response was 2.45 . Thirty-five percent answered "2" (agree).
9. **This program has helped me to focus on the reasons for my involvement in physical activity.**
   The mean response for question 9 was 2.4 with 45 percent or 18 individuals answering "2" and 32.5 percent answering "3" (moderately agree).
10. **I have a clearer understanding of my attitudes towards participation in sports and physical activity.**
    The mean response was 2.5 with 47.5 percent moderately agreeing.

There were four questions dealing with the research question "Will the participants indicate an increased awareness with regard to their attitudes towards physical activity?" These questions were answered fairly uniformly with the majority either agreeing or moderately agreeing. Overall, only 12 percent responded negatively. Verbal responses from those who responded negatively, indicated that they were already very aware of their attitudes towards physical activity and that MPASS did not heighten their awareness. However, with 88 percent agreeing that the program had helped them clarify

and focus on their attitudes towards sports and physical activity, it appears that MPASS may be useful in helping clients recognize their attitudes.

Although a positive attitude has not been able to discriminate between adherers and dropouts (Dishman, Ikes, & Morgan, 1980), a belief in the health benefits of exercise, and confidence in the ability to control health outcomes, is linked to program initiation (Morgan et al., 1984). Sidney and Shephard (1976) have also indicated that perceived value or attitude can also influence the types of activities chosen. For instance, evidence has shown that women place more value on exercising for physical appearance than do men (Stephens & Craig, 1990) which could be a significant factor in the popularity of exercise programs for women rather than sports. Therefore, determining attitudes and values should be an integral element when establishing appropriate physical activities for the individual. MPASS appears to have been successful in increasing the participants' self-awareness of their attitudes towards physical activity.

Research Question Three

"Will the response of the participants indicate an increased self-awareness regarding their level of fitness and the degree to which they have been physically active in relation to their peers?"

11. **This program has increased my awareness of my fitness level.**

    The average response was 2.85 with the largest group answering "3" (moderately agree).

12. **This has helped me to consider how important physical fitness is for my health.**

    The average response was 2.53 with 40 percent of the responses being "2" (agree).

13. **This has made me more aware of my fitness level in relation to my peers.**

    The mean response was 3.08 with the largest response being "4" (disagree).

14. **The program has helped me appreciate the many different ways to increase my level of physical activity.**

    The average response was 2.6 with the largest number (47.5 percent) of the respondents answering "3" (moderately agree).

Research question three asked, "Will the response of the participants indicate they have an increased self-awareness regarding their level of fitness?" The average response to the four statements covering this area was 2.8 indicating that the respondents generally agreed or moderately agreed that they had become somewhat more cognizant of their fitness level. One statement, "This has made me more aware of my fitness level in relation to my peers " received the least favourable response (X=3.08) and was the only statement to have an unacceptable rating. Forty-five percent of the subjects "disagreed" with this statement. As one would expect, the statement "This program has increased my awareness of my fitness level" was similarly negatively rated. Many subjects questioned who their "peers" were. The researcher verbally clarified the meaning of "peer" in this situation as "those in a similar age bracket, friends and/or associates." Most still felt that they had not really had the occasion to compare their fitness level to their peers

and that without fitness testing they would not be able to judge adequately. These responses indicate that MPASS helped the participants to focus on their own fitness level but that the questionnaire was not successful in helping the participants to compare their level of fitness in relation to their peers. Professional fitness evaluations may be necessary to motivate those individuals who are dubious about their need to increase their level of fitness. For some, this may be a way to determine goals with subsequent fitness testing establishing the success of these goals.

The mean response for "The program has helped me appreciate the many different ways to increase my level of physical activity " was 2.6. One might have expected a stronger positive response here since the participants were exposed to a wide variety of sports during the skills section of the MPASS Questionnaire. However, because of the fact that the favourite physical activity for women in this age group is walking (Canada Fitness Survey, 1983; Stephens & Craig, 1990), it may be that these women were not interested in changing the activities they were already involved in and therefore did not consider different ways to increase their physical activity as they progressed through the MPASS program. This could also be true for those who felt they had no need to increase their level of physical activity. Perhaps an appreciation of the variety of sports available is more interesting to males who have typically been more involved in team sports during their childhood and teen years. It is also possible that children or teens of both sexes would be more interested in considering a variety of physical activities since more programs are offered to this age group. Furthermore, their perception of their ability to learn a new skill is probably greater.

The strongest positive response in this section was whether or not the program was helpful in considering the importance of physical fitness for

health. Almost 90% agreed that it did help them. In light of this positive response, it would appear that the MPASS Questionnaire has been successful in positively promoting the importance of physical fitness for health. Evidence suggests that people act on their beliefs (CFS Highlights,1983). If this is true, then MPASS, by reinforcing positive beliefs about the benefits of physical activity, will be also instrumental in the initiation and maintenance of physical activity.

Research Question Four

"Will the response of the participants indicate an increased self-awareness with regard to their abilities in sports?"

15. **This has made me more aware of my skill in various sports.**
    Mean response was 2.93 with "3" as the most common response (50 percent).
16. **This has helped me to understand why I have enjoyed participating in some sports and not in others.**
    Mean response was 2.7 with 50 percent moderately agreeing (3).
17. **The program has highlighted the many different types of sports available.**
    Average response was 2.48 with 40 percent moderately agreeing (3) and 37.5 percent agreeing (2).
18. **This program has given me a greater appreciation of the difference between physical activities involving simple skills such as running and those with more complex skills such as hockey.**
    Mean response was 3.3 with 45 percent disagreeing (4) and 42.5 percent moderately agreeing (3).

19. **This has increased my awareness of the types of sports in which I could be successful.**

    Average response was 2.9 with 45 percent of the respondents moderately agreeing (3): 25 percent agreed (2) and 25 percent disagreed (4).

The questions in part four related to increasing self-awareness with regard to abilities in sports. These were not highly rated but the average of 2.82 was still within the "acceptable" range. The most negative response (mean=3.3) within this section, and indeed among all the questions, was to "This program has given me a greater appreciation of the difference between physical activities involving simple skills such as running and those with more complex skills such as hockey".

Questions *15* and *19* , dealing with self-awareness of skill level in sports were similarly answered with mean responses of 2.93 and 2.9 respectively. The reaction to these statements is not dissimilar to those involving self-awareness of fitness level (Research Question 3). It appears that either the respondents were already aware of their degree of skill in sports and thus did not increase their self-awareness, or that they did not feel competent to judge their own abilities. Responses to statements in the MPASS Questionnaire indicated that the majority of participants were not highly involved in sports during their youth. As adults, none were presently involved in team sports although several felt it would be fun to be on a women's team given the time, opportunity, and ability. The researcher noted that many were reluctant to judge their present abilities in sports because they had not been involved in these sports for many years. Very few were aware of any opportunities for women in recreational team sports.

When asked if the MPASS tour had been helpful in highlighting the many different types of sports available, the reply was favourable with only 10 percent disagreeing. This may prove beneficial in looking for alternative activities, not only for this population, but for children who have not had the opportunity to be exposed to a variety of physical activities. An awareness of a wide choice in sports may be useful in promoting adherence. Wankel and Thompson (1980) found that when individuals perceived that they had a choice in the type of exercise activity to be involved in, attendance in the program improved; the more choice that was perceived, the greater the adherence.

Another cognitive aspect which has been investigated in relation to exercise adherence is the effect on the exerciser of setting goals and/or objectives. It has been observed that when individuals fail to meet the objectives they establish at the beginning of a program, they are much more likely to drop out of that program (Danielson & Wanzel, 1977). In order to set realistic, attainable goals it is necessary to know the ability and fitness level of the participant. Since the majority of women were not clear about their present abilities in sports, it may be beneficial to do skill testing before helping individuals set sport related goals. A skill assessment could be a valuable aid to restore confidence in the individual and therefore increase the likelihood of participation. One of the purposes of the MPASS Community Resource Inventory will be to identify not only accessible facilities for a wide variety of physical activities but to identify key contact people within those facilities who will be able to assess fitness and skill for particular activities.

Research Question Five

"Will the response of the participants indicate an increased awareness concerning factors which may have prevented them from being physically active in the past?"

20. **This has helped me realize some of the barriers or obstacles which have prevented me from being as physically active as I would have liked.**
    The mean response was 2.7 with 42.5 percent moderately agreeing (3) and 32.5 percent agreeing (2).
21. **The program has helped me take a look at what prevents me from being physically active.**
    The mean response was 2.53 with the largest number of respondents answering "3" (moderately agree) while 35 percent answered 2 (agree).
22. **I am more aware of the factors which prevent me from making physical activity a priority in my daily schedule.**
    Average response was 2.8 with 40 percent moderately agreeing (3) while 35 percent agreed (2).
23. **I feel I have a greater knowledge of the barriers which have prevented me from maintaining regular physical activity in the past.**
    Average response was 2.8 with 42.5 percent moderately agreeing (3) and 30 percent agreeing (2).

Research question five was concerned with the participant having an increased awareness of barriers which have prevented past physical activity participation. The mean response of the four statements related to "barriers" was 2.69 and all responses were within a narrow range of 2.5 to 2.8, indicating

that the program was helpful in identifying or reminding the participants of the barriers preventing them from being more physically active.

Without exception, all participants, whether sedentary or active, indicated on the MPASS Questionnaire, that "lack of time" due to work, school, or other interests had been a major barrier preventing participation in regular exercise at various points in their lives. Although there were no significant results when comparing single participants to those with children, the researcher observed that single participants with no children, tended to indicate "lack of time due to work or school", whereas those women with children verbally reported that "lack of time" was most often related to family interests or responsibilities. "Lack of baby-sitting", either due to inaccessibility or financial considerations had been a problem for most when their children were preschool age. If they did have baby-sitters they often felt that their so-called free time must be used for outings with siblings or for household related errands etc.

The next most popular reasons cited for stopping regular exercise, particularly among those who were sedentary, was "lack of discipline" and "lack of energy". These reasons concur with those reported in the Campbell's Survey (Stephens & Craig,1990) where the factor most likely to keep Canadians from being regularly active was "lack of time due to work or school" with a greater emphasis by females than males on family time pressures, lack of energy and lack of ability. Although "lack of ability" was not perceived in this study to be a major barrier to participation since most participants were involved in exercise programs or walking, many indicated that they would have liked to have been involved in more sports as they were growing up but that their physical education programs did not adequately prepare them for sports. Many perceived that only boys and "the

best" female athletes were given the opportunity to play on high school teams. This was true for both public coeducational schools and private girls' schools.

Stephens and Craig (1990) point out that the data from the Campbell's Survey supports the hypothesis that "time is a perceived barrier rather than a real barrier... since it is self-discipline, not more time which distinguishes those who maintain or increase their activity levels" (p. 42). Since barriers may often only be "perceived" barriers it may be that a program such as MPASS could help participants distinguish between perceived and real barriers to participation. The "time" section in the MPASS questionnaire helps establish realistic times for each individual to exercise according to their needs and schedules. Some may need flexible schedules because of their work while others would be more likely to adhere to a more structured program. "Perceived" barriers may also become less important if appropriate activities are selected by the participant. MPASS is based on the premise that if an individual participates in appropriate activities then these activities will be perceived as enjoyable and therefore participation is more likely to continue. There is a need for more research in this area because there is an increasing trend for women with children to work outside the home , limiting time for physical activity. As research has already indicated (Stephens & Craig,1990), women, more than men, perceive family pressures as obstacles to physical activity and have more conflicts that interrupt their regular exercise schedule (Andrew & Parker,1979; Dishman et al., 1985). It is also recognized that lack of family or spousal support can prevent many women from maintaining regular physical activity (Andrew et al., 1981; Oldridge, 1982). Since working outside the home is very likely to decrease the amount of time available for

physical activity, effective time management will be more crucial than ever for these women.

Research Question Six

"Will the response of the participants indicate an increased awareness of their preferences regarding participation in physical activities?"

24 **I am more aware of my social needs in relation to physical activities.**

Mean response was 2.78 with the greatest response being "3" (40 percent moderately agreed) and the next largest response being "2" (30 percent agreed).

25. **This has helped me to think about whether or not I enjoy competitive physical activities.**

Mean response was 2.55 with the largest number of respondents answering "2" (42.5 percent agreed) and 30 percent answered "3" (moderately agree).

26. **I have an increased understanding of my social needs and preferences in physical activities.**

Mean response was 2.58 with 40 percent answering "3" (moderately agree) while 32.5 percent answered "2" (agree).

27. **I am more aware of whether or not I need other people to motivate me to be physically active.**

Mean response was 2.5 with 35 percent answering "2" (agree) while 27.5 percent answered "3" (moderately agree).

28. **I have a better understanding of what motivates me to be physically active.**

    Mean response was 2.48 with 47.5 percent answering "2" (agree) while 27.5 percent answered "3" (moderately agree).

29. **I am more aware of what types of sports I enjoy.**

    Mean response was 2.63 with 37.5 percent answering "2" (agree) while 27.5 percent answered "3" (moderately agree).

30 **I feel I am more conscious of what types of physical activity I enjoy.**

    Average response was 2.53 with 45 percent answering "2" (agree) while 27.5 percent answered"3" (moderately agree).

The "Preferences" section of the MPASS questionnaire covers a variety of variables which have been suggested as motivating factors for exercising. These include physiological, sociological and environmental factors. This should be helpful in defining the individual's needs and in looking for programs which suit the individual. Seven statements were included in the Evaluation Questionnaire to assess the effect of the MPASS tour on increasing the participants' self-awareness of exercise preferences. The responses were quite favourable, ranging from 2.775 to 2.475. The response to statement twenty-eight, *"I have a better understanding of what motivates me to be physically active'"* is quite promising. Twenty-eight percent moderately agreed, forty-eight percent agreed, and ten percent strongly agreed with this statement.

Knowing what motivates an individual to be physically active is crucial in planning an enjoyable physical activity program. In a study conducted in a male fitness employee program, objectives of a non-health-related nature such as competition, developing recreational skills, curiosity

and going out with friends were reported to be more important to adherers than dropouts (Wankel, 1985). In the same study, other significant factors affecting adherence included both type and intensity of activities. It is evident that different individuals prefer different activities, different levels of competition, and while some may perceive a "hard" workout as enjoyable, others prefer less intensive activities. Cheek and Burch (cited in Wankel, 1988) have determined that the social group can be just as important to enjoyment as the nature of the activity itself, or the place that activity is performed. Therefore, in selecting physical activity programs, the social preferences of the individual must be considered. The results of the Evaluation questionnaire suggest that the MPASS tour is capable of assisting individuals to assess their own social, physical and competitive preferences.

Research Question Seven

"Will the response of the participants indicate that they have become more aware of their physical activity goals?"

31. **This has given me the opportunity to reflect on my physical activity goals.**

    Average response was 2.15 with 35 percent answering "2" (agree) while 25 percent answered "3" (moderately agree).

32. **This has helped me to focus on what my objectives are in relation to physical activity.**

    Average response was 2.5 with 45 percent answering "2" (agree) and 45 percent answering "3" (moderately agree).

33. **The program has helped me to realize that there can be more than one goal involved when selecting a physical activity.**

    Mean response was 2.3 with 47.5 percent answering "2" (agree) while 37.5 percent answered "3" (moderately agree).

34. **The program has helped me to focus on which goals are most important to me.**

    Average response was 2.55 with 42.5 percent answering "2" (agree) while 27.5 percent answered "3" (moderately agree).

35. **Deciding what my goals are has helped me to realize the types of activities in which I should be involved .**

    Mean response was 2.37 with 46.2 percent agreeing (2) while 30.8 percent moderately agreed (3).

The series of five questions pertaining to "goals" received a positive mean response of 2.39 indicating that the participants perceived that they had become more aware of their goals as a result of the MPASS Questionnaire. Out of the seven research questions, this question received the second highest mean response following the "administration" research question (Table 2). The responses to this section indicated that by responding to the questions in the MPASS Questionnaire, the participants were able to think about what goals they had in relation to physical activity, and then to determine what types of activities would bring them closer to their goals.

Goal setting or decision-making approaches have been found to facilitate adherence to physical activity (Heinzelman & Bagley,1970; Wankel & Thompson, 1977). Research has shown that for goals to be effective they must be attainable and yet be challenging (Desharnais & Godin, 1986). In the present study, it was noted that "challenging my abilities" along with "taking

risks, seeking adventure" were the least popular goals indicated by the participants during the MPASS Questionnaire tour. The women in this study were much more concerned with "feeling better physically and mentally", "controlling weight", "socializing", and "maintaining or increasing fitness". This concurs with the goals of women in this same age group in both the Canada Fitness Survey (1983) and the Campbell's Survey (Stephens & Craig, 1990). Men, in these surveys, were far less likely than women to express "looking better, weight control, or socializing" as important goals. If women are setting long term goals for themselves such as losing weight and improving muscle tone, they must be advised as to a realistic time period to achieve the desired results. If social goals are more important, then finding a group with common interests may prove beneficial in motivating the individual to maintain the activity.

In the present study, the response of the participants to increasing their awareness of their physical activity goals was quite positive. Positive responses to statements such as "deciding what my goals are has helped me to realize the types of activities in which I should be involved" and "this has given me the opportunity to reflect on my physical activity goals " indicate that the MPASS program could be effective in assisting the individual to determine appropriate activities based on their goals. As the goals stated in the MPASS Questionnaire are very general, it is likely that the effectiveness of the program in relation to goal-setting will depend on the ability of the educator administering the program to break down these goals into reasonable objectives. Furthermore, follow-up evaluations are likely to enhance the MPASS System in motivating the client to maintain an activity. Dzewaltowski (1989) has suggested that if individuals can set goals such as improved fitness and then are able to gain information about these goals,

stronger efficacy and outcome expectations may occur, resulting in continued exercise participation.

Summary

The responses to the Evaluation Questionnaire, in general, were favourable. All of the average responses to the research questions were below three which indicated that the participants perceived that they had gained a greater sense of self-awareness in relation to physical activity and how it affects them. The results indicated a very favourable response to using the computer program. The computer was found to be an enjoyable experience for most, but not necessarily motivating. The MPASS tour appeared to be most effective in the area of increasing self-awareness with respect to physical activity goals, attitudes and preferences. MPASS did not appear to be as strong in the area of increasing self-awareness of abilities in sports or personal fitness levels.

Chapter 5

Summary and Conclusions

The purpose of the study was to develop and evaluate the MPASS Tour, the first stage of the MPASS System. The tour was designed to assist an individual select appropriate physical activities through a process of increased self-awareness. The present chapter outlines the summary and conclusions of the research and is divided into the following sections: (1) Summary of the Methodology (2) Summary of the Findings (3) Conclusions (4) Implications (5) Recommendations for Further Study (6) Recommendations for Revision of MPASS

Summary of the Methodology

Forty English speaking females between the ages of 25 and 45 responded to requests for volunteers who were interested in choosing appropriate physical activities which would facilitate maintenance of an active lifestyle. These requests were in the form of flyers, word of mouth and a local newspaper article which described the project. All of the subjects lived within the same community and were in a middle to upper income bracket. Seventy percent of the women were considered to be fairly active while thirty percent were classified as sedentary.

The MPASS Questionnaire was designed to address a number of areas which have been suggested in the research as having an impact on adherence to regular physical activity. The areas included in the instrument were: (1) Physical Activity History (2) Attitudes Towards Physical Activity (3) Lifestyle and Fitness Self-Assessment (4) Skill Profile (5) Exercise Preferences (6) Cost Factors (7) Transportation (8) Time and (9) Goals. These sections were

divided among four members of a team which included two professors and two graduate students. Each team member developed related questions for the assigned sections by researching the literature. The questions were then reviewed and revised by the other members of the team for content and clarity as often as necessary, until all members were satisfied with each section of the questionnaire.

The next stage involved a computer programmer who designed a Fox-base computer program which was called the MPASS Tour. Thus , the computer program allowed the questionnaire to be administered on a MacIntosh computer. Several trials and revisions of the MPASS Tour by the team members were necessary to develop a "user friendly" format, which would be easy to administer and best complement the MPASS Questionnaire.

In order to evaluate the effect of the MPASS Tour on the participants, it was necessary for the researcher to develop an evaluation questionnaire. The effect of the tour was to be evaluated by the response to the seven proposed research questions. Therefore, a series of four to six questions were created which corresponded to the specified research questions. Following a pilot study and revisions by two professors, the final draft consisted of thirty five statements which were answered on a Likert-type scale, as well as two open-ended questions.

Interviews were conducted individually and included practice with the "mouse", completion of the MPASS Tour, reviewing the results of the tour on the screen, completing the Evaluation Questionnaire, and informal discussion. The time involved was approximately ninety minutes per subject. The subjects were encouraged to ask any questions or to add additional information to the Evaluation Questionnaire. The researcher recorded any information pertinent to the subject which resulted from

informal discussion. Reliability of the evaluation questionnaire was evaluated by determining internal consistency (Rosenthal & Rosnow, 1984) using five sets of equivalent questions.

Descriptive statistics were used to analyze the data. Means and percentages were determined for each individual question as well as for the seven groups of related questions. Scores were judged in the following manner: a mean score of less than three indicated a positive response to the corresponding research question; a mean score of three or higher was indicative of a weakness in the MPASS Tour.

Summary of the Findings

The results of the MPASS Evaluation questionnaire indicated that the objectives of the MPASS Tour were successfully met. That is to say that since the mean responses to the seven research questions were all below the acceptable level of three, it can be assumed that the MPASS Tour was easy and fun to use as well as being instrumental in increasing the self-awareness of the participants with respect to those factors deemed important by the literature in maintaining regular physical activity.

Some areas of the MPASS Tour were stronger than others. For instance, the most favourable response was observed for research question one which was concerned with the administration of the program. The instructions to use the computer appeared to be clear and the actual use of the computer was reported by most to be an enjoyable experience. The most negative responses were observed for the fitness and sports sections. Although these mean responses were acceptable, they did indicate a degree of weakness in comparison to the other areas. In particular, the subjects felt that

the questions in the MPASS Tour did not allow for accurate depiction of either their sport skills or personal fitness levels.

The response to those research questions dealing with barriers to participation, attitudes towards physical activity and physical activity preferences, indicated that the participants perceived a sense of increased self-awareness with respect to these factors. The response to the final research question concerning goals was very positive. It appears that the participants became more aware of their physical activity goals as a result of the MPASS Tour.

There were two open-ended questions at the end of the Evaluation Questionnaire. In answer to "Would you recommend this to a friend?" the response was unanimously "Yes". Response to the final question dealing with enjoyment of the program indicated that most participants felt that the computer program was more fun than filling out a questionnaire but not a necessary component of the system. Some suggested that using the computer, rather than a questionnaire, would definitely be a motivating factor for children.

Conclusions

Based upon the findings , and within the limitations and delimitations of this study, the following conclusions have been made.

1. The response of the participants to using the MacIntosh computer was positive. The program was easy to use and enjoyable.

2. The participants reported an increased self-awareness about their attitudes towards physical activity.

3. The participants' response indicated an increased self-awareness regarding their fitness level, but this response, although within the acceptable level, was weak.

4. The participants felt that the MPASS tour had only minimally increased their awareness of their abilities in sports.

5. The MPASS tour appeared to have increased the participants' self-awareness regarding barriers which have prevented them in the past from maintaining regular physical activity.

6. The participants' response indicated that the MPASS tour had helped them become more aware of their physical activity preferences.

7. The participants reported that they had become more aware of heir physical activity goals as a result of having completed the MPASS tour.

Implications/Applications of this Research

The findings of this study suggest that the MPASS Tour is capable of increasing the awareness of women between the ages of 24 and 45 with regard to their attitudes, preferences, lifestyle, history and goals related to physical activity. The results are encouraging since the literature has indicated that personal attributes, environments, and physical activity characteristics, all affect adherence to regular physical activity (Dishman, 1989).

The MPASS Tour only moderately increased the self-awareness of the participants' ability or skill level. Therefore, objective skill testing may be required in addition to MPASS, for those who are hesitant or feel incapable of

judging their own abilities. The same could be said for self-assessment of fitness level. When the client lacks confidence in this area, determining appropriate physical activities is less valid. It will be necessary for the MPASS educator to determine which clients would significantly gain from professional fitness testing. Follow-up fitness testing may also be beneficial to further motivate these individuals to maintain an increase in physical activity.

Many individuals become bored with exercise programs and drop-out (Wankel, 1985). Some resist initiating other types of physical activity because they are unaware of the vast number of physical activity options available to them. There seems to be no dispute with the idea that enjoyment is critical to adherence and that variety can help maintain enthusiasm. A program such as MPASS will not only be able to illustrate a wide variety of activities to the client but will also indicate the types of activities in which the client can expect to achieve a sense of satisfaction and enjoyment. Although the client may not have the time to participate in all the activities suggested, his or her self-awareness of those options and the reasoning behind these selections, can be utilized in the future as needs and lifestyles change.

Fitness Canada, along with Health and Welfare Canada, are now developing "The Integrated Approach" (1990). The ultimate goal of this approach is to enhance Canadians' physical, mental and social well-being by encouraging them to adopt "healthy eating, enjoyable physical activity and positive self and body image" (p 5). The strategies involved to implement this national program include changing behavior through raising awareness, transition to initial action, and reinforcement of sustained action. It appears that the MPASS System, including the Community Resource Inventory, will be a positive tool to implement these ideas in the physical activity realm.

MPASS will also be implementing other guidelines of the Integrated Approach. It will use existing networks of professional and voluntary groups to initiate activities and to identify needs of both individuals and communities. The development of the Community Resource Inventory will be a valuable resource tool for numerous health professionals. Furthermore, MPASS, as The Integrated Approach has suggested, is adopting a positive, contemporary approach by encouraging people to take control of their own lives.

The fact that the MPASS System is computerized leads to increased opportunities to compile data on Canadian's lifestyles, physical activity history, preferences, attitudes and goals. This could be useful in determining not only why individuals drop-out of activities, but why they initiate them in the first place. Very little is known about the latter.

There is increasing concern for all Canadians to adopt a healthy lifestyle. This is evident in The Blueprints for Action documents which outline plans of action to facilitate social change (Fitness Canada, 1989). The ultimate goal of these plans is that all Canadians will maintain an optimal level of activity throughout their lives. Blueprints for Action have been developed for Canadians with disabilities, employees, older adults, children and youth, leadership development and research. With adaptations to the MPASS Questionnaire, MPASS has the potential to offer a service to all of these populations. It would be necessary not only to make specific modifications for these populations but to have these people actively involved in the process.

The MPASS System could be marketed on a large scale to institutions such as schools, community recreation centres, YMCA's, and wellness centres. Such large scale development would necessitate the implementation

of a training service for those professionals who would be running the MPASS program. Furthermore, it would be necessary to develop and update the Community Resource Inventory for each community. An expanding inventory of resources across Canada could be beneficial for individuals or families who are changing communities. This was the case for one of the volunteers in the study who had recently moved from the United States. She reported that MPASS had initiated her decision to resume an active lifestyle in her new environment. A network of Community resource inventories across Canada would also enhance research and development in the area of physical activity services and programs being offered nationally.

Recommendations for Further Study

1. During the interviews, informal discussions suggested to the researcher that women without children were more open to various suggestions to increase their level of physical activity. Furthermore, the Canada Fitness Survey (1983) suggests that active Canadians tend to be single . The results of the Evaluation Questionnaire however, were not significant between those with or without children The results were also insignificant when comparing active and sedentary women. A replication of the study with a much larger sample may illustrate significant differences between these groups.

2. The population in this study was primarily from one socio-economic background, that being a middle to upper class, well-educated, English speaking community. It is generally agreed that there is an association between activity and amount of education (Stephens & Craig, 1990). Since the volunteers in this study tended to be active individuals, it is not clear how the MPASS Tour would affect a more sedentary population. Since one of the goals of the MPASS System is to facilitate adoption of and adherence to an active lifestyle, it is recommended that the study be replicated using a larger sedentary population.

3. Future plans of the MPASS System include the completion and computerization of the MPASS Community Resource Inventory. The present study did not include any research on the potential impact of the MPASS System in its totality. It is recommended then, that upon completion of the MPASS System, a longitudinal study be conducted to investigate the potential of the whole system to promote adherence to regular physical activity.

Recommendations for Revision of the MPASS Tour

Part of the intent of this research was to further develop the first phase of the MPASS System. As a result of the study, the following recommendations were considered to be advantageous to the development of the MPASS Questionnaire and computerized tour:

1. Accuracy of responses was disturbed for two of the forty participants who tended to click the "mouse" very quickly and advance to the next

question before checking their answers. This created a problem as the computer program was not able to return to a previous question. Therefore, it would be advisable to develop the computer program such that the "pages" could be turned back.

2. In order to check an answer on the computer, one must go through the tour from the beginning. As this is time consuming, it would be preferential to be able to go directly to the proposed question on the screen.

3. Given that two of the forty participants had difficulties maneuvering the mouse, it may be advisable to give them a longer practice period so that the tour will not be a source of frustration. Practice on an unstructured program such as MacPaint would probably be the most beneficial. An alternative would be for the educator to handle the mouse but this would lessen the control of the participant.

4. In the "transportation" and "time" sections the use of the mouse is different from the rest of the tour and therefore must be explained to the participant. Although this is an expedient programing procedure, the interruption to explain the procedure breaks the flow of the tour. Setting up these two sections in a format identical to the previous sections may be beneficial.

5. In the Lifestyle and Fitness self-assessment there were two questions which started with "Compared to my peers...". The word "peers" had

to be explained to the participants. It may be more expedient to use a phrase such as "Compared to my friends."

6 In the"Preferences" section there was a statement "I like exercising on my own so that I can go at my own pace." Participants found this too general and rather than answer "strongly agree to strongly disagree" they would have liked to reply "For some sports yes; for others no." Although the specifics came out during the discussion, offering the above phrase or "It depends." as additional responses may be more advantageous. Another way to clarify this question and to understand the participant better, might be to phrase the question thus: "Do you feel pressure to keep up with the group or are you comfortable sticking to your own pace regardless of what others are doing?"

7. The responses to the statements in the MPASS Questionnaire were often on a scale from "strongly disagree to strongly agree". Many of the subjects erroneously clicked "strongly disagree" when they meant "strongly agree" due to the habit of seeing the positive response being in the left hand position in previous questionnaires. Therefore, it is recommended that the responses be arranged in the reverse order, i. e. from "strongly agree to strongly disagree".

8. The question "How many days a week do you want to be involved in recreational activities should be broken down into two separate questions such as "How many days a week do you want to be involved in organized physical activities?" and "How many days a week do you want to be involved in unstructured or *free-living* physical activity?"

This would give a clearer idea of the participant's desires and goals when planning a schedule.

9. The skill section requires the participant to rate his or her skill in running and walking. The participants stated that the meaning was ambiguous in that there was no distinction between style, intensity or endurance. Clarification of these skills was discussed informally during the tour but perhaps it could be rephrased more specifically as "long distance running", etc.

10. The participants noticed several activities missing in the "Skills" section. Furthermore, several felt that "water sports" needed to be broken down into more specific sports. The following skills to be added to the list were suggested: fencing, yoga, mountain climbing, track and field, kayacking, canoeing, snorkeling, and aerobics as opposed to aerobic dance.

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APPENDIX A

MPASS QUESTIONNAIRE

(Note that not all commands or instructions which show up on the screen were able to be reproduced in the printout of the MPASS Questionnaire. Eg: pg. 112 questions 8 to 27. Here the instructions on the screen would read , "If you have ever stopped exercising regularly, please indicate how important the following factors were." Similarly, instructions are absent on this printout for Goals, Transportation and Time.)

Physical Activity History

1 I have no physical or medical condition which prevents me from being physically active
Strongly Disagree | Disagree | Moderately Agree* | Agree | Strongly Agree

2 As a child I was highly involved in sports
Strongly Disagree | Disagree | Moderately Agree* | Agree | Strongly Agree

3 As a child I was very active
Strongly Disagree | Disagree | Moderately Agree* | Agree | Strongly Agree

4 During my childhood I was exposed to (participated in) a wide variety of typically Canadian sports
Strongly Disagree | Disagree | Moderately Agree* | Agree | Strongly Agree

5 I continued to be active in sports during my adolescence
Strongly Disagree | Disagree | Moderately Agree* | Agree | Strongly Agree

6 I have never stopped being physically active
Strongly Disagree | Disagree | Moderately Agree* | Agree | Strongly Agree

7 In sports I have felt as good or better than my peers
Strongly Disagree | Disagree | Moderately Agree* | Agree | Strongly Agree

8 Lack of time due to work or school
Not Important* | Somewhat Important | Important | Very Important

9 Lack of time due to other interests
Not Important* | Somewhat Important | Important | Very Important

10 Transportation problems
Not Important* | Somewhat Important | Important | Very Important

11 Lack of energy
Not Important* | Somewhat Important | Important | Very Important

12 Lack of athletic ability
Not Important* | Somewhat Important | Important | Very Important

13 Lack of programs or leaders
Not Important* | Somewhat Important | Important | Very Important

14 Lack of accessible facilities
Not Important* | Somewhat Important | Important | Very Important

15 Lack of a partner
Not Important* | Somewhat Important | Important | Very Important

16 Lack of support from family or friends
Not Important* | Somewhat Important | Important | Very Important

17 Lack of babysitting services
Not Important* | Somewhat Important | Important | Very Important

18 Lack of self-confidence
Not Important* | Somewhat Important | Important | Very Important

19 Cost
Not Important* | Somewhat Important | Important | Very Important

20 Lack of self-discipline
Not Important* | Somewhat Important | Important | Very Important

21 Self-conscious, ill at ease
Not Important* | Somewhat Important | Important | Very Important

22 Long-term illness or injury
Not Important* | Somewhat Important | Important | Very Important

23 Fear of injury
Not Important* | Somewhat Important | Important | Very Important

24 Not realizing my goals
Not Important* | Somewhat Important | Important | Very Important

25 No clear idea what my goals were
Not Important* | Somewhat Important | Important | Very Important

26 Lack of enjoyment
Not Important* | Somewhat Important | Important | Very Important

27 Embarassed about how I look
Not Important* | Somewhat Important | Important | Very Important

Attitudes Towards Physical Activities

1 Physical activity is of paramount importance to one's sense of total well-being

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

2 People must make physical activity a priority

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

3 It is important for children to learn about the importance of being physically active

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

4 Exercising regularly helps one feel more energetic

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

5 One does not have to be highly coordinated to lead an active lifestyle

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

6 One must prioritize time for exercise no matter how busy s/he is

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

7 It is never toolate to lead an active lifestyle

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

8 Exercising will result in both physical and psychological benefits

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

9 exercise can be enjoyable if one chooses the appropriate activity

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

10 exercise if done properly, does not result in injury; it can prevent injury

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

11 Physical activity is equally important for both sexes

Strongly Disagree	Disagree	Not Sure*	Agree	Strongly Agree

Lifestyle and Fitness Self-assessment

1 Compared to my peers, I would say my lifestyle is...

Much less active	Less active	As active*	More active	Much more active

2 Compared to my peers, I feel I am...

Much less fit	Less fit	As fit*	More fit	Much more fit

3 Regarding my weight, I would consider myself to be .

Obese	Somewhat overweight	Slightly overweight*	Slightly underweight	A desireable weight

4 Regarding eating a balanced diet, I would say...

I eat very poorly	Habits fluctuate	Could be more careful*	I eat fairly well	I eat very well

5 I currently smoke .

>1 pack of cigs	Half a pack	A pipe or cigar daily*	Occasionally	Given up smoking	Never smoked

6 One drink being a pint of beer, a glass of wine or 1 oz of liquor, I usually drink alcohol...

More than once a day	4-7 times a week	1-3 times a week*	Occasionally	Never

7 In general, I would describe my state of health as...

Very poor	Poor	Average*	Good	Very good

8 In general, regarding my state of health I would say .

I am very unhappy	I'm dissatisfied	There's room to improve	I'm doing fairly well	I'm doing very well

9 I am very aware of the physical activity options or programs in my community

Strongly disagree	Disagree	Agree*	Strongly agree

10 Watching TV

Never*	1 2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs

11 Reading

Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs

12 Crafts or hobbies

Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs

13 Visiting relatives

Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs

14 Visiting friends					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
15 Attending cultural events					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
16 Coaching physical activities					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
17 Involvement with religious groups					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
18 Involvement with service organizations					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
19 Involvement with entertainment groups					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
20 Gardening					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
21 Housework					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
22 Helping children with homework					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs
23 Carpooling children or commuting yourself					
Never*	1-2 hrs	3-4 hrs	5-9 hrs	10-14 hrs	15+ hrs

Skill Profile

1 Walking				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
2 Running				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
3 Skipping				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
4 Skating				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
5 Swimming				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
6 Biking				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
7 X-skiing				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
8 Balance				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
9 Aerobic dance				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
10 Body Building				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
11 Scuba diving				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
12 Modern/Jazz Dance				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
13 Throwing				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
14 Catch				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
15 Kick				
Highly skilled*	Skilled	Average	Little Skill	Never Tried
16 Hitting				
Highly skilled*	Skilled	Average	Little Skill	Never Tried

17 **Rope Skipping**
Highly skilled* Skilled Average Little Skill Never Tried

18 **Figure Skating**
Highly skilled* Skilled Average Little Skill Never Tried

19 **Gymnastics**
Highly skilled* Skilled Average Little Skill Never Tried

20 **Downhill Skiing**
Highly skilled* Skilled Average Little Skill Never Tried

21 **Racquet Sports**
Highly skilled* Skilled Average Little Skill Never Tried

22 **Martial Arts**
Highly skilled* Skilled Average Little Skill Never Tried

23 **Curling**
Highly skilled* Skilled Average Little Skill Never Tried

24 **Golf**
Highly skilled* Skilled Average Little Skill Never Tried

25 **Windsurfing**
Highly skilled* Skilled Average Little Skill Never Tried

26 **Horseback riding**
Highly skilled* Skilled Average Little Skill Never Tried

27 **Sailing**
Highly skilled* Skilled Average Little Skill Never Tried

28 **Softball/ Baseball**
Highly skilled* Skilled Average Little Skill Never Tried

29 **Dodgeball**
Highly skilled* Skilled Average Little Skill Never Tried

30 **Soccer**
Highly skilled* Skilled Average Little Skill Never Tried

31 **Touch football**
Highly skilled* Skilled Average Little Skill Never Tried

32 **Ringette**
Highly skilled* Skilled Average Little Skill Never Tried

33 **Basketball**
Highly skilled* Skilled Average Little Skill Never Tried

34 **Hockey**
Highly skilled* Skilled Average Little Skill Never Tried

35 **Volleyball**
Highly skilled* Skilled Average Little Skill Never Tried

36 **Field hockey**
Highly skilled* Skilled Average Little Skill Never Tried

Excercise Preferences

1 **I like exercising on my own**
Strongly Disagree Disagree Not Sure* Agree Strongly Agree

2 **I like exercising with a partner**
Strongly Disagree Disagree Not Sure* Agree Strongly Agree

3 **I like exercising with a group**
Strongly Disagree Disagree Not Sure* Agree Strongly Agree

4 **I would exercise more if I had a partner to do it with**
Strongly Disagree Disagree Not Sure* Agree Strongly Agree

5 **I enjoy following an instructor**
Strongly Disagree Disagree Not Sure* Agree Strongly Agree

6 **I participate in physical activities as much for the socialization as the health benefits**
Strongly Disagree Disagree Not Sure* Agree Strongly Agree

7 I enjoy the social aspects of sport
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

8 I enjoy the socialization that takes place after an activity
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

9 I need to be with other people to be motivated
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

10 I like exercising on my own so that I can go at my own pace
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

11 As far as exercising goes, I want to be independent
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

12 Organized physical activities are my primary sources of socializing
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

13 I need the challenge of a sport to motivate me to exercise
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

14 I like team sports
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

15 I like to sweat when I work out
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

16 I like sports that involve partners (e.g. Tennis)
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

17 I like sports that involve one on one competition (e.g. Squash)
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

18 I am interested in individual competition (e.g. Slalom racing)
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

19 I enjoy physical activities where I get a 'good' workout
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

20 I am interested in competing only against myself (e.g. Training for a marathon)
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

21 I would like to be involved in sports with my family as much as possible
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

22 I would like to be involved in sports but I don't think I have the necessary ability
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

23 I like sports with some element of danger
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

24 Sport participation for me is a way to achieve a feeling of excitement
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

25 I enjoy water sports
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

26 I enjoy physical activities like jazz dance which involves music and rhythm
Strongly Disagree | Disagree | Not Sure* | Agree | Strongly Agree

Cost Factors

1 For recreational activities, I am willing to spend up to
Over $1000 | $500-$999 | $200-$499* | $100 $199 | Under $100 | Free Only

2 I am prepared to pay for membership to a private club
Very Willing | Willing* | Not Interested

3 I am prepared to pay for the social benefits of a club
Very Willing | Willing* | Not Interested

4 I am prepared to pay for group instruction to learn new skills
Very Willing | Willing* | Not Interested

5 I am prepared to pay for individual instruction
Very Willing | Willing* | Not Interested

6 I am prepared to pay for equipment for my favorite activities
Very Willing | Willing* | Not Interested

7 I am prepared to pay for travel expenses for activities such as skiing or scuba diving
Very Willing | Willing* | Not Interested

8 I am prepared to pay for parking if necessary
Very Willing | Willing* | Not Interested

Goals

1 Just relaxing, forgetting about your cares
Not at all* | A little | Quite | Very

2 Getting together with other people
Not at all* | A little | Quite | Very

3 Having fun
Not at all* | A little | Quite | Very

4 Getting outdoors
Not at all* | A little | Quite | Very

5 Competing, winning
Not at all* | A little | Quite | Very

6 Feeling independent
Not at all* | A little | Quite | Very

7 Feeling better mentally
Not at all* | A little | Quite | Very

8 Feeling better physically
Not at all* | A little | Quite | Very

9 Improving fitness
Not at all* | A little | Quite | Very

10 Maintaining fitness
Not at all* | A little | Quite | Very

11 Challenging my abilities
Not at all* | A little | Quite | Very

12 Toning my muscles
Not at all* | A little | Quite | Very

13 Losing weight
Not at all* | A little | Quite | Very

14 Taking risk, seeking adventure
Not at all* | A little | Quite | Very

Transportation

1 Car
Yes* | No

2 Bus
Yes* | No

3 Metro
Yes* | No

4 Bicycle
Yes* | No

5 Walking
Yes* | No

Time factors

Convenient Hours .
Early Morning . 1
Mid Morning . 1
Noon . 1
Afternoon : 1
Evening . 1
Other :

Convenient Days ..
Monday . 1
Tuesday . 1
Wednesday · 1
Thursday . 1
Friday . 1
Saturday : 1
Sunday : 1

Days per week I'm interested in doing activities . 1

Hours per day I'm interested in doing activities . 1

Transportation is a barrier : Yes

I'm interested in finding more time to do activities . Yes

Appendix B

McGill Physical Activity Selection Service
Community Resource Inventory

Coding Procedure:

1.	Age	1. Preschool 2. Primary 3. Elementary 4. Junior High 5. Senior High 6. Young Adult 18-20 7 Adult 22-60 8. Senior 60 plus 9. Open to All
2.	Gender	1. Male 2. Female 3. Co-ed
3.	Purpose	1. Instructional 2. Competitive 3. Socio-recreational 4. Free-play 5. Special Program
4.	Entry Skill	1. Beginner 2. Average 3. Skilled
5.	Equipment Cost	1. $100 or less 2. $100 - $200 3. $200 and up 4. Second hand sale
6.	Fee	1. Free 2. $25 and less 3. $25 - $50 4. $50 - $100 5. $100 and up 6. All inclusive membership

7.	Time	1. 7 - 9 2. 9 - 12 noon 3. 12 - 13:30 4. 13:30 - 17:00 5. 17:00 - 19:00 6. 19:00 + 7. A variety of times
8.	Frequency	1. 1 per week 2. 2 per week 3. 3 per week 4 4 per week 5. 5 per week 6. 5 +
9.	Accessibility	1. Readily accessible 2. Ramp available 3. Elevator Available 4. Inaccessible
10.	List contact person's name and phone.	_____ _____

Community Resources Inventory

Agency ____

Contact Person ____________________________________

Address ____________________ Phone _______________

Program	age	sex	purpose	entry skill	equip cost	fee	time	frequency	access

Appendix C

Evaluation Questionnaire

This questionnaire pertains to the MPASS computer program which you have just completed Please bear in mind that this computer program is one phase of the total MPASS System which is presently being developed. Please answer the questions as honestly as possible There are five possible answers ranging from 1=strongly agree to 5=strongly disagree Read each statement carefully and check the box beside the number which most closely resembles your response to the statement.

1=strongly agree, 2=agree, 3=moderately agree, 4=disagree, 5=strongly disagree

.a) Administration questions

		strongly agree	agree	moderately agree	disagree	strongly disagree
1	•Overall, the program was easy to use.	1☐	2☐	3☐	4☐	5☐
2	•The instructions. to operate the computer program were clear.	1☐	2☐	3☐	4☐	5☐
3	•The questions regarding Physical Activity History, Skill Profile, etc. were easy to understand.	1☐	2☐	3☐	4☐	5☐
4	•The time involved to complete the program was appropriate.	1☐	2☐	3☐	4☐	5☐
5	•If you answered either (4) or (5) for the preceding question please explain whether the time involved was too long or too short.	_____ _____ _____ _____.				
6	•I enjoyed using the computer.	1☐	2☐	3☐	4☐	5☐
7	•I found using the computer to be motivating.	1☐	2☐	3☐	4☐	5☐

b) Content of the Program

		strongly agree	agree	moderately agree	disagree	strongly disagree
8	•I now have a better understanding of how I feel about physical activity.	1☐	2☐	3☐	4☐	5☐
9	•This has helped me to understand why I have enjoyed participating in some sports and not in others.	1☐	2☐	3☐	4☐	5☐
10	•The program has helped me take a look at what prevents me from being physically active.	1☐	2☐	3☐	4☐	5☐
11	•This program has helped me to focus on the reasons for my involvement in physical activity.	1☐	2☐	3☐	4☐	5☐
12	•This has helped me to focus on what my objectives are in relation to physical activity.	1☐	2☐	3☐	4☐	5☐
13	•This program has increased my awareness of my fitness level.	1☐	2☐	3☐	4☐	5☐
14	•I have a clearer understanding of my attitudes towards participation in sports and physical activity.	1☐	2☐	3☐	4☐	5☐

		strongly agree	agree	moderately agree	disagree	strongly disagree
15	•This has made me more aware of my fitness level in relation to my peers.	1☐	2☐	3☐	4☐	5☐
16	•The program has helped me appreciate the many different ways to increase my level of physical activity.	1☐	2☐	3☐	4☐	5☐
17	•This has helped me to think about whether or not I enjoy competitive physical activities.	1☐	2☐	3☐	4☐	5☐
18	•This has made me more aware of my skill(or lack of skill) in various sports.	1☐	2☐	3☐	4☐	5☐
19	•I am more aware of my social needs in relation to physical activities.	1☐	2☐	3☐	4☐	5☐
20	•The program has highlighted the many different types of sports available	1☐	2☐	3☐	4☐	5☐
21	•This has helped me to consider how important physical fitness is for my health.	1☐	2☐	3☐	4☐	5☐

		strongly agree	agree	moderately agree	disagree	strongly disagree
22	•This program has given me a greater appreciation of the difference between physical activities involving simple skills such as running and those with more complex skills such as hockey.	1☐	2☐	3☐	4☐	5☐
23	•This has increased my awareness of the types of sports in which I could be successful.	1☐	2☐	3☐	4☐	5☐
24	•This has helped me realize some of the barriers or obstacles which have prevented me from being as physically active as I would have liked.	1☐	2☐	3☐	4☐	5☐
25	•I am more aware of the factors which prevent me from making physical activity a priority in my daily schedule.	1☐	2☐	3☐	4☐	5☐
26	•I feel I have a greater knowledge of the barriers which have prevented me from maintaining regular physical activity in the past.	1☐	2☐	3☐	4☐	5☐
27	•I feel I am more conscious of what types of physical activity I enjoy.	1☐	2☐	3☐	4☐	5☐

		strongly agree	agree	moderately agree	disagree	strongly disagree
28	•The program has helped me to realize that there can be more than one goal involved when selecting a physical activity.	1☐	2☐	3☐	4☐	5☐
29	I have an increased understanding of my social needs and preferences in physical activity.	1☐	2☐	3☐	4☐	5☐
30	•I am more aware of whether or not I need other people to motivate me to be physically active.	1☐	2☐	3☐	4☐	5☐
31	•The program has helped me to focus on which goals are most important to me.	1☐	2☐	3☐	4☐	5☐
32	•I am more aware of what types of sports I enjoy.	1☐	2☐	3☐	4☐	5☐
33	•This has given me the opportunity to reflect on my physical activity goals.	1☐	2☐	3☐	4☐	5☐
34	•I have a better understanding of what motivates me to be physically active.	1☐	2☐	3☐	4☐	5☐
35	•This program has helped me to recognize my feelings towards physical activity.	1☐	2☐	3☐	4☐	5☐

		strongly agree	agree	moderately agree	disagree	strongly disagree
36	•Deciding what my goals are has helped me to realize the types of activities in which I should be involved .	1☐	2☐	3☐	4☐	5☐

Additional
Comments:_____

_____

_____

_____

_____

_____

_____

Would you recommend this to a friend?

_____

_____

_____

_____

_____

_____

_____

Is this any better, in your opinion, than filling in a questionnaire?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Age:_____
Sex: F__ M__

Appendix D

Evaluation Questionnaire	Research Questions
a) Administration	
Overall, the program was easy to use.	Will the participants respond favourably to the questions concerning ease of administration of the program?
The instructions to operate the computer program were clear	
The questions regarding Physical Activity History, Skill Profile, etc were easy to understand.	
The time involved to complete the program was appropriate.	
If you answered either (1) or (2) for the preceding question please explain whether the time involved was too long or too short. _____ _____ _____.	
I enjoyed using the computer.	
I found using the computer to be motivating.	
b) Content of the Program	
•I now have a better understanding of how I feel about physical activity.	Will the response of the participants indicate an increased self-awareness with regard to their attitudes towards physical activity?
This program has helped me to recognize my feelings towards physical activity	
This program has helped me to focus on the reasons for my involvement in physical activity.	
I have a clearer understanding of my attitudes towards participation in sports and physical activity.	

•This program has increased my awaress of my fitness level.	Will the response of the participants indicate an increased self-awareness regarding their level of fitness and the degree to which they have been physically active in relation to their peers?
This has helped me to consider how important physical fitness is for my health.	
This has made me more aware of my fitness level in relation to my peers.	
The program has helped me appreciate the many different ways to increase my level of physical activity	
•This has made me more aware of my skill in various sports	Will the reponse of the participants indicate an increased awareness of their own skills in sports as well as the skills necessary for different types of sports?
This has helped me to understand why I have enjoyed participating in some sports and not in others	
The program has highlighted the many different types of sports available	
This program has given me a greater appreciation of the difference between physical activities involving simple skills such as runnning and those with more complex skills such as hockey	
This has increased my awareness of the types of sports in which I could be successful.	

•This has helped me realize some of the barriers or obstacles which have prevented me from being as physically active as I would have liked.	Will the reponse of the participants indicate an increased awareness of the barriers to participation in physical activity?
The program has helped me take a look at what prevents me from being physically active	
I am more aware of the factors which prevent me from making physical activity a priority in my daily schedule.	
I feel I have a greater knowledge of the barriers which have prevented me from maintaining regular physical activity in the past.	
•I am more aware of my social needs in relation to physical activities.	Will the response of the participants indicate an increased awareness of their preferences regarding participation in physical activities?
This has helped me to think about whether or not I enjoy competitive physical activities	
I have an increased understanding of my social needs and preferences in physical activities	
I am more aware of whether or not I need other people to motivate me to be physically active	
I have a better understanding of what motivates me to be physically active.	
I am more aware of what types of sports I enjoy	
I feel I am more conscious of what types of physical activity I enjoy.	

•This has given me the opportunity to reflect on my physical activity goals.	Will the reponse of the participants indicate that they have become more aware of their physical activity goals?
This has helped me to focus on what my objectives are in relation to physical activity.	
The program has helped me to realize that there can be more than one goal involved when selecting a physical activity.	
The program has helped me to focus on which goals are most important to me.	
Deciding what my goals are has helped me to realize the types of activities in which I should be involved .	

Appendix E

The average response of individual questions with frequencies of responses. (Questions 1 through 35).

QUESTION	ANSWER	COUNT	PERCENT	X RESPONSE
1	1	27	67.5	1.35
	2	12	30	
	3	0	0	
	4	1	2.5	
	5	0	0	
2	1	27	67.5	1.375
	2	11	27.5	
	3	0	0	
	4	2	5	
	5	0	0	
3	1	22	55	1.475
	2	17	42.5	
	3	0	0	
	4	1	2.5	
	5	0	0	
4	1	16	40	1.675
	2	21	52.5	
	3	0	0	
	4	3	7.5	
	5	0	0	
5	1	22	55	1.525
	2	15	37.5	
	3	0	0	
	4	3	7.5	
	5	0	0	
6	1	13	32.5	2.359
	2	11	27.5	
	3	7	17.5	
	4	8	20	
	5	1	2.5	
7	1	7	17.5	2.45
	2	14	35	
	3	13	32.5	
	4	6	15	
	5	0	0	

8	1 2 3 4 5	7 14 13 6 0	17.5 35 32.5 15 0	2.45
9	1 2 3 4 5	5 18 13 4 0	12.5 45 32.5 10 0	2.4
10	1 2 3 4 5	5 13 19 3 0	12.5 32.5 47.5 7.5 0	2.5
11	1 2 3 4 5	2 13 15 9 1	5 32.5 37.5 22.5 2.5	2.85
12	1 2 3 4 5	4 16 15 5 0	10 40 37.5 12.5 0	2.525
13	1 2 3 4 5	3 9 10 18 0	7.5 22.5 25 45 0	3.075
14	1 2 3 4 5	5 11 19 5 0	12.5 27.5 47.5 12.5 0	2.6
15	1 2 3 4 5	1 10 20 9 0	2.5 25 50 22.5 0	2.925
16	1 2 3 4 5	4 10 20 6 0	10 25 50 15 0	2.7

17	1 2 3 4 5	5 15 16 4 0	12.5 37.5 40 10 0	2.475
18	1 2 3 4 5	1 4 17 18 0	2.5 10.3 42.5 45 0	3.3
19	1 2 3 4 5	2 10 18 10	5 25 45 25	2.9
20	1 2 3 4 5	3 13 17 7 0	7.5 32.5 42.5 17.5 0	2.7
21	1 2 3 4 5	5 14 17 3 1	12.5 35 42.5 7.5 2.5	2.525
22	1 2 3 4 5	2 14 16 7 1	5 35 40 17.5 2.5	2.775
23	1 2 3 4 5	3 12 17 8 0	7.5 30 42.5 20 0	2.75
24	1 2 3 4 5	2 12 19 7 0	5 30 47.5 17.5 0	2.775
25	1 2 3 4 5	4 17 13 5 1	10 42.5 32.5 12.5 2.5	2.55

26	1 2 3 4 5	5 13 16 6 0	12.5 32.5 40 15 0	2.575
27	1 2 3 4 5	7 14 11 8 0	17.5 35 27.5 20 0	2.5
28	1 2 3 4 5	4 19 11 6 0	10 47.5 27.5 15 0	2.475
29	1 2 3 4 5	5 14 11 8 1	12.5 37.5 27.5 20 2.5	2.675
30	1 2 3 4 5	4 18 11 7 0	10 45 27.5 17.5 0	2.525
31	1 2 3 4 5	12 14 10 4 0	30 35 25 10 0	2.15
32	1 2 3 4 5	2 18 18 2 0	5 45 45 5 0	2.5
33	1 2 3 4 5	5 19 15 1 0	12.5 47.5 37.5 2.5 0	2.3
34	1 2 3 4 5	3 17 15 5 0	7.5 42.5 37.5 12.5 0	2.55

35	1 2 3 4 5	5 18 12 3 1	12.8 46.2 30.8 7.7 2.5	2.368

APPENDIX F

Descriptive Statistics : Evaluation Questions

X_1 : question 1

Mean	Std Dev	Std Error	Variance	Coef Var	Count
1 35	.533	084	285	39 518	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	*** Missing**
1	3	2	54	84	0

1

X_2 : question 2

Mean:	Std Dev.	Std Error.	Variance:	Coef Var	Count.
1.375	586	.093	343	42.59	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	*** Missing**
1	3	2	55	89	0

2

X_3 : question 3

Mean	Std Dev	Std. Error.	Variance.	Coef Var	Count
1 475	554	088	.307	37 568	40
Minimum.	**Maximum**	**Range**	**Sum**	**Sum Squared**	*** Missing**
1	3	2	59	99	0

3

X_4 : question 4

Mean	Std Dev	Std Error	Variance	Coef Var	Count
1 675	616	097	379	36 747	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	*** Missing**
1	3	2	67	127	0

4

X_5 : question 5

Mean	Std Dev	Std Error	Variance	Coef Var	Count
1 525	64	101	41	41 968	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	*** Missing**
1	3	2	61	109	0

5

X_6: question 6

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2.325	1.207	.191	1.456	51.895	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	5	4	93	273	0

6

X_7: question 7

Mean	Std Dev	Std Error	Variance	Coef. Var.	Count
2.45	.959	.152	.921	39.161	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	98	276	0

7

X_8: question 8

Mean	Std Dev	Std Error	Variance	Coef. Var	Count
2.45	.959	.152	.921	39.161	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	98	276	0

8

X_9: question 9

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2.4	.841	.133	.708	35.052	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	96	258	0

9

X_{10}: question 10

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2.5	.816	.129	.667	32.66	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	100	276	0

10

X_{11}: question 11

Mean	Std Dev	Std Error	Variance	Coef. Var	Count
2.85	.921	146	.849	32 325	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	5	4	114	358	0

11

X_{12}: question 12

Mean	Std Dev	Std. Error	Variance	Coef Var	Count
2.525	.847	.134	.717	33 542	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	101	283	0

12

X_{13}: question 13

Mean	Std Dev	Std Error	Variance	Coef Var	Count
3 075	997	.158	994	32 426	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	123	417	0

13

X_{14} question 14

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 6	871	138	759	33 507	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	104	300	0

14

X_{15}. question 15

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2.925	764	121	584	26 126	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	117	365	0

15

X_{16}: question 16

Mean	Std Dev	Std Error	Variance	Coef. Var..	Count
2.7	853	135	728	31.606	40
Minimum	**Maximum**	**Range**	**Sum.**	**Sum Squared.**	**# Missing:**
1	4	3	108	320	0

16

X_{17}: question 17

Mean.	Std. Dev .	Std Error:	Variance:	Coef. Var.:	Count:
2.475	.847	.134	.717	34.22	40
Minimum	**Maximum:**	**Range**	**Sum:**	**Sum Squared:**	**# Missing**
1	4	3	99	273	0

17

X_{18}: question 18

Mean	Std Dev.·	Std Error	Variance:	Coef Var.:	Count·
3.3	758	12	574	22.966	40
Minimum	**Maximum·**	**Range**	**Sum:**	**Sum Squared**	**# Missing**
1	4	3	132	458	0

18

X_{19}: question 19

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 9	841	133	708	29 008	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	116	364	0

19

X_{20}: question 20

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 7	853	135	.728	31 606	40
Minimum·	**Maximum**	**Range.**	**Sum**	**Sum Squared.**	**# Missing.**
1	4	3	108	320	0

20

X_{21} : question 21

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2.525	905	143	82	35 86	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	5	4	101	287	0

21

X_{22}: question 22

Mean:	Std. Dev.:	Std Error:	Variance	Coef. Var	Count
2.775	.891	.141	.794	32 115	40
Minimum:	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	5	4	111	339	0

22

X_{23}: question 23

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 75	87	138	756	31 626	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	110	332	0

23

X_{24}: question 24

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 775	8	127	64	28 837	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	111	333	0

24

X_{25}: question 25

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 55	932	147	869	36 562	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	5	4	102	294	0

25

X_{26}: question 26

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 575	903	143	815	35 054	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	103	297	0

26

X_{27}: question 27

Mean:	Std Dev :	Std Error:	Variance	Coef Var :	Count
2 5	1 013	.16	1.026	40.51	40
Minimum	**Maximum**	**Range**	**Sum:**	**Sum Squared**	**# Missing**
1	4	3	100	290	0

27

X_{28}: question 28

Mean	Std Dev	Std Error:	Variance	Coef. Var.	Count.
2 475	877	139	.769	35 422	40
Minimum	**Maximum**	**Range**	**Sum.**	**Sum Squared**	**# Missing**
1	4	3	99	275	0

28

X_{29}. question 29

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 625	1 03	163	1 061	39 238	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	5	4	105	317	0

29

X_{30}: question 30

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 525	905	143	82	35 86	40
Minimum	**Maximum**	**Range**	**Sum**	**Sum Squared**	**# Missing**
1	4	3	101	287	0

30

X_{31} : question 31

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2.15	975	.154	951	45.365	40

Minimum	Maximum	Range	Sum	Sum Squared	* Missing
1	4	3	86	222	0

31

X_{32}: question 32

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
2.5	679	.107	.462	27.175	40

Minimum	Maximum	Range	Sum	Sum Squared	* Missing
1	4	3	100	268	0

32

X_{33}: question 33

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 3	723	114	523	31 445	40

Minimum	Maximum	Range	Sum	Sum Squared	* Missing
1	4	3	92	232	0

33

X_{34}: question 34

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 55	815	129	664	31 958	40

Minimum	Maximum	Range	Sum	Sum Squared	* Missing
1	4	3	102	286	0

34

X_{35}: question 35

Mean	Std Dev	Std Error	Variance	Coef Var	Count
2 41	91	146	827	37 736	39

Minimum	Maximum	Range	Sum	Sum Squared	* Missing
1	5	4	94	258	1

35