

Differences Between Workplace Physical Activity Facility
Participants and Non-Participants

by

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A Thesis submitted to the Faculty of Graduate Studies of
The University of Manitoba
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ABSTRACT

Workplace physical activity programs benefit both employees and employers. Because of these benefits, it is important to further understand workplace physical activity participation in the hopes of being able to increase the level of participation.

The purpose of this study was to examine whether participants of a workplace physical activity program differed from non-participants in regards to commonly studied physical activity determinants and workplace-specific physical activity determinants.

The population studied was the Canadian Wheat Board (CWB), located in Winnipeg, Manitoba. A total of 163 CWB employees, 109 females and 54 males, participated in the study. The data were collected by means of a self-administered questionnaire distributed at the workplace.

A discriminant analysis determined that four variables differentiated between participants and non-participants – social support from co-workers, facility assessment, enjoyment of physical activity and self-efficacy. The last two variables were commonly studied physical activity determinants and the other two variables were work-specific. Additionally, neither age, denoted by generation, or gender were factors in physical activity participation at work.

The results of this study provide evidence that participants and non-participants of a workplace physical activity facility differ from one another.

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CHAPTER 1

INTRODUCTION

Due to its established channels of communication, existing support networks and opportunity to develop organizational behavior norms, the workplace is suggested as a favorable setting to encourage employees to adopt a healthy lifestyle (Shephard, 1996). Workplaces have the potential to reach large and diverse segments of the adult population, including both genders, various ages, levels of socioeconomic status and cultures. The workplace is a very fitting environment for such programs (Dishman, Oldenburg, O'Neal & Shepard, 1998). Adults typically spend the large majority of their waking hours at work. Further, the workplace is a very consistent place in one's life and offers structure to one's schedule (Mavis, Stachnik, Gibson & Stoffelmayr, 1992).

Since the mid 1980's, attention to workplace wellness has progressively increased (Gebhardt & Crump, 1990). In recent years, workplace wellness programs have attained acceptance in the corporate world and are now operational within numerous organizations (Aldana, Merrill, Price, Hardy & Hager, 2004). The goal of these programs is to incorporate the broader vision of health within the workplace setting. Workplace wellness programs have evolved over the years from employee health and safety regulations to on-site facilities and programs including physical activity classes, medical and dental staff, and a variety of healthy living classes.

There are a wide number of organizations sponsoring workplace wellness and physical activity programs including Fortune 500 companies, public safety (e.g., fire, police) organizations, insurance companies, federal and provincial agencies, and oil, manufacturing, and communications industries (Bernacki & Baun, 1984). Workplace

wellness programs are managed differently by each organization. The programs may be managed by various professionals, from occupational health nurses and other medical staff, to employees of the company's human resource department (Greiner, 1987).

Workplace physical activity is the focus of this study but it is important to understand that workplace physical activity is only one segment of a more comprehensive program known as workplace wellness. Therefore, it is important to understand workplace wellness. Workplace wellness can be described in various terms: workplace fitness, corporate fitness, workplace health programs, workplace health promotion, organizational health, organizational wellness and organizational health promotion. All these different names fundamentally describe any type of program, activity or intervention taking place at work (e.g. fitness classes on-site) or organized by the employer (e.g. fitness classes off-site) which promotes a healthy, balanced lifestyle. Many organizations do a variety of things to encourage employees to live a healthy lifestyle. Some organizations implement a comprehensive wellness program offering their employees a variety of programs and services and others simply hand out brochures supplied at no cost to the organization by local health associations (Walsh & Egdahl, 1989). Consequently, the definition of what constitutes a workplace wellness program varies. As mentioned, workplace wellness programs differ from one organization to another. These programs may range from offering health and nutrition information to employees, to subsidized healthy lunches, physical activity education, or an on-site physical activity facility. The types of programs offered are very dependent on the employer. However, typical wellness programs include:

- Ergonomic assessments

- Health risk assessments
- Health screenings
- Heart health education
- Diabetes education
- CPR instruction and certification
- Nutrition classes
- Healthy cafeterias
- Diversity management
- Addiction workshops
- Smoking cessation education
- Employee assistance programs
- Safety in the workplace
- Massage therapy
- Health events
- Stress management
- Financial management
- Weight management classes
- Injury prevention classes (e.g. healthy back)

Benefits of Workplace Physical Activity Programs

Workplace physical activity programs generate benefits for both the employee and the employer. They generate health and well-being for the employee and positive bottom line effects for the employer.

For the employee, it is well known that being physically active can improve their health and quality of life (Burton, McCalister, Chen & Edington, 2005; Corbin & Pangrazi, 1996). Associated with physical activity are positive health outcomes for the participant. According to Corbin and Pangrazi (1996), the major health benefits of physical activity for the individual, highlighted by the Surgeon General's Report, are the following:

- reduces the risk of premature mortality
- reduces the risk of coronary heart disease
- prevents or delays the development of high blood pressure
- reduces the risk of hypertension
- reduces the risk of colon cancer
- reduces the risk of diabetes
- improves mental health
 - appears to alleviate symptoms of depression and anxiety and improve mood
 - may reduce the risk of developing depression
- important for muscle, bone and joint health
- physiologically benefits the cardiovascular and musculoskeletal systems
- benefits the functioning of metabolic, endocrine, and immune systems
- may positively affect body fat distribution
- can benefit people of all ages, either gender

For the employer, workplace physical activity programs can also impact organizational expenditures in a positive manner. Numerous studies have conducted

economic evaluation research which has measured various work-related outcomes such as health care expenditures, absenteeism, turnover, employee productivity, employee morale and disability/sick days (Aldana, 2004; Anderson, Serxmer & Gold, 2001; Bly, Jones & Richardson, 1986; Cox, Shephard & Corey, 1981; Fries, Bloch, Harrington, Richardson, & Beck, 1993; Fries, Harrington, Edwards, Kent, & Richardson, 1994; Goetzel, Juday & Ozminkowski, 1999; Goetzel et al., 1998; Golaszewski, Snow, Lynch, Yen & Solomita, 1992; ; Proper et al., 2004; Sciacca, Seehafer, Reed & Mulvaney, 1993; Shephard, 1992a; Shephard, 1992b; Shephard, 1996; Stein, Karel, & Zuidema, 1999; Wilson, 1982). Some of the benefits for the employer include:

- decrease in absenteeism
- decreased turnover
- lower health care costs
- increased productivity

Due to the known benefits of physical activity for individual health and economic benefit, this study will specifically focus on workplace physical activity programs.

Workplace physical activity programs are any type of program, activity or intervention taking place at work or organized by an employer which promotes being active. Some organizations may offer an on-site physical activity facility only, without any other programs. Some popular workplace physical activity programs include:

- Walking/Running groups
- Fitness assessments
- Yoga/Pilates
- Discounts at off-site physical activity facilities

- Company sports teams/tournaments
- Aerobic classes

In spite of the obvious benefits of physical activity for both the employee and the employer, a serious limitation of any physical activity program is convincing employees to participate. The lack of participation limits the potential impact of such programs. The Surgeon General's Report on Physical Activity and Health (U.S. Dept of Health and Human Services, 1996) identified the main determinants of physical activity among adults as self-efficacy, enjoyment of physical activity, perceived benefits of physical activity, lack of perceived barriers to being active and social support. Also, demographic characteristics such as gender, age, occupation and education are considered important determinants of physical activity (Carron, Hausenblas & Estabrooks, 2003).

Most literature examining the determinants of adult physical activity has examined psychological factors, social support factors and environmental factors but has infrequently examined other personal and work-related factors such as life satisfaction, job satisfaction, perception of the work environment and generational differences as determinants of adult physical activity. It is relatively unknown whether these other variables are determinants of physical activity. For example, there is very limited and inconclusive research that has examined differences between participants and non-participants in terms of life satisfaction. As well, differences between participants and non-participants in terms of job satisfaction, perception of the work environment and generational differences in the workplace are all work-related factors that have been minimally researched and are worthy of further examination. Thus, the study examined

the most commonly studied determinants of physical activity, as well as other less studied determinants.

Many questions remain to be answered about differences between participants and non-participants of workplace physical activity programs. Therefore, the study examined these differences, including gender differences.

Statement of the Problem

The purpose of this study was twofold. Firstly, the study examined whether participants of a workplace physical activity program differed from non-participants in regard to the following variables:

1. Level of physical activity

- At work

- Outside of work

2. Determinants of physical activity:

- Demographic variables (age, gender)

- Psychological variables

 - Health perception

 - Self-efficacy

 - Enjoyment of physical activity

- Environmental variable

 - Facility assessment

- Social support variables

 - At work

 - Outside of work

Life satisfaction

Work-related factors

Job in general

Physical activity contributing to job satisfaction

Perception of work environment for physical activity

Generational differences

The secondary purpose of the study was to analyze the physical activity program and facility at the chosen workplace and to provide relevant feedback for planning future physical activity and wellness programs.

Rationale for the Study

Due to the benefits of physical activity for both the employer and the employee (Aldana, 2004), it is important to further understand what factors influence participation in workplace physical activity programs.

Previous research in this field has mainly concentrated on the differences between participants and non-participants in terms of the employee's individual lifestyle behavior, health habits, fitness levels and other health-related factors (Erfurt, Foote, Heirich & Gregg, 1989; Pelletier, 1991; Pelletier, 1993). A reasonable amount of research has examined these differences, however, the findings are contradictory and inconsistent. Other personal and work-related factors such as life satisfaction, job satisfaction, work environment and generational differences have not been extensively examined. This study investigated the most commonly studied determinants of physical activity, for example, demographic variables, self-efficacy and social support, as well as examined these less studied determinants of physical activity. Unlike other studies, this study

included all the individual variables simultaneously and determined which variables best distinguished between participants and non-participants in a workplace physical activity program.

Consequently, this study contributed knowledge to the field of adult physical activity determinants as well as the literature on participation in a workplace physical activity program. The study also provided practical implications for the studied workplace. It allowed for an analysis of the workplace physical activity facility by examining the characteristics of the employees, management and the workplace culture.

Overview of the Study

The Canadian Wheat Board (CWB), located in Winnipeg, Manitoba was the studied workplace. The CWB has an on-site physical activity facility available to all employees throughout the week and weekend. The employees were asked to participate in the research on-site by completing a self-administered questionnaire measuring the variables of the study. A total of 163 employees participated in the study.

Definition of Terms

Common physical activity, organizational behavior terms and other terms that are discussed throughout this thesis are summarized below. More in-depth descriptions will be included in Chapter Two.

Physical Activity: Sallis and Owen (1999) define physical activity as “any bodily movement that results in energy expenditure” (p.10) .

Exercise: Sallis and Owen (1999) categorize exercise as a subset of physical activity and define exercise as “physical activity being done with the purpose of improving or maintaining physical fitness or health” (p.11). For the purpose of this research, physical

activity is defined as strictly exercise, sport and active transport, including walking and cycling. For this research physical activity does not include house and yard work or occupational physical activity.

Workplace Wellness Program: any type of program or intervention in the workplace that is geared towards improving the health of employees

Workplace Physical Activity Program: any type of program, activity or intervention taking place at work (e.g. fitness classes on-site) or organized by the employer (e.g. fitness classes off-site) which promotes being physically active

Determinants of Physical Activity: individual characteristics that are related to participation in physical activity

Self-efficacy: individual's level of confidence in being able to perform successfully a specific activity (Bandura, 1977)

Social Support: social influences on physical activity.

Job Satisfaction: job satisfaction is an affective appraisal of one's job. In other words, job satisfaction simply refers to the extent to which employees like or dislike their work

Life Satisfaction: the degree of satisfaction or dissatisfaction with an individual's overall life, sometimes referred to as Quality of Life

Absenteeism: nonattendance at work

Retention: the capacity to maintain and keep employees working for the organization

Turnover: the ratio of the number of workers that have to be replaced relative to the average number of workers

Organization: described as any working unit such as a company, government agency, not-for-profit, association or university

Organizational Culture: climate and practices developed by organizations

CHAPTER 2

REVIEW OF LITERATURE

The following chapter will examine the literature relevant to the study. The review is separated into two sections. The first section will examine the benefits of workplace physical activity programs and the second section will review the determinants/variables related to physical activity participation.

Although this research focused on physical activity programs, references to workplace wellness programs are also included because many workplace wellness programs are composed of several components including a physical activity component. More research has concentrated on workplace wellness programs than workplace physical activity programs. Much of the literature merges wellness and physical activity programs together. Consequently, it can be challenging to separate the effects of physical activity programs from the more comprehensive wellness programs.

BENEFITS OF WORKPLACE PHYSICAL ACTIVITY PROGRAMS

Workplace wellness programs are worksite programs available to employees and geared towards improving their all around health. These programs may range from simply offering health and nutrition information to employees, to subsidized healthy lunches, physical activity education, and an on-site fitness facility. Some workplaces offer a variety of wellness programs to their employees, whereas other workplaces offer only physical activity programs.

The following section will firstly examine the benefits of workplace physical activity programs for the employer. Secondly, the benefits for the employee will be reviewed.

Economic Benefits of Workplace Wellness Programs for Employers

Workplace wellness programs can in fact impact organizational expenditure in a positive manner. Throughout the literature, economic evaluation research has measured various work-related outcomes such as health care expenditures, absenteeism, turnover, employee productivity, employee morale and disability/sick days. These outcomes will be reviewed below. The impact on health care costs and absenteeism has been the focus of most economic evaluation research to date (Aldana, 2004). Furthermore, several researchers consider wellness programs as having an economic impact on employee productivity (Anderson, et al., 2001).

Aldana's (2004) review of literature examined 32 wellness programs and their impact on organizational health care costs. In this review, four studies reported no health care cost benefits associated with program participation. Yet, there was a surprising level of consistency in the reported results among the other studies which observed differences in health care costs pre and post intervention. The majority of the published studies reviewed by Aldana (2004) did in fact report a decrease in health care costs among their program participants. From his literature review, one would conclude that wellness programs are associated with a reduction in organizational health care costs.

A portion of the literature examined in Aldana's (2004) review demonstrated a reduction of health care costs in a relatively short period of time. The period of time is described as being shorter than the time needed to avoid the commencement of many

chronic conditions and diseases. It is unknown how long these benefits would last or whether or not they would increase over time, for the average length of the studies was only 3.25 years. Of the 13 studies reviewed by Aldana (2004) that reported cost-benefit ratios, the mean benefit was \$3.72 in reduced health care costs per dollar invested in the program. In addition, Goetzel et al. (1999) reported that in the third year of an intervention, participants did in fact experience lower health care costs. Moreover, other published studies (Fries, et al., 1993; Fries et al., 1994; Goetzel et al., 1998; Stein et al., 1999) reported an association between short-term reductions in health care costs and employee program participation. Proper et al.'s (2004) study demonstrated lower sick leave costs for the intervention group in the year following the intervention. In addition, as time passed, the benefits due to a reduction in sick leave increased even further. Although each of these studies used a different workplace research setting, they provided a common observation. These overall findings support the conclusion that health improvement through workplace program participation may have limited effect on short-term health care costs; however in the long-run they may be economically beneficial as more costly chronic diseases are prevented.

According to Aldana (2004), most of the published studies researching the impact of an intervention on organizational health care costs for a period of at least three years reported significantly lower health care costs for program participants and indicated that the longer the follow-up time, the more substantial the savings. On the other hand, two studies (Bly et al., 1986; Sciacca et al., 1993) did not report significant health care cost savings. As yet, it is still unknown precisely at what point in time improvements or

maintenance in individual employee health will begin to reduce employee health care costs.

Aldana's (2004) comprehensive review of literature also addressed absenteeism. Of the 14 evaluations that included absenteeism as an outcome measure, all 14 reported that a wellness program reduced absenteeism. He suggested this relationship may be causal. Additionally, three of these studies also reported cost-benefit ratios. In these cases, the cost-benefit ratio represents a comparison of program costs versus organizational financial savings due to program outcomes. Of the studies reviewed by Aldana (2004) that reported cost-benefit ratios, the mean benefit was \$5.06 in reduced absenteeism costs per dollar invested in the program. In Shephard's (1992b) 12-year research on the Toronto Life Assurance Company, a cost-benefit of \$4.85 was reported, meaning that for every dollar spent by the company, it gained \$4.85. This economic benefit was explicitly due to absenteeism reductions in the workplace (Shephard, 1992b). Unfortunately, most ratios reported in the literature combined the economic benefits from both decreased absenteeism and health care costs. As a result it is impossible to determine the true economic benefits due to reduction in absenteeism. It is essential to differentiate between health care savings and reduced absenteeism savings in order to conclude clear causality between these variables. Therefore, although the relationship appears causal, there is not enough evidence to declare causality.

According to Aldana (2004), the majority of published studies investigating the relationship of workplace wellness programs and short-term absenteeism found that participants had lower levels of absenteeism than non-participants. The observed absenteeism reductions are approximately 3% to 16%. Previously published cost-benefit

ratios also demonstrate a relationship between workplace health programs and absenteeism savings (Shephard, 1992a). Shephard (1996) questions whether or not participants in voluntary wellness programs have a greater sense of devotion to their employer and as a result are less comfortable missing work than non-participants. In these cases, it is unknown if the differences in absenteeism are associated with health improvements or employee morale. In such a case, a more comprehensive study would be required to differentiate reduced absenteeism from either improved morale or increased health. In either case, health interventions would still have a positive cost impact on the corporation. Health interventions appear to provide a mechanism to decrease absenteeism, although the explanation for this phenomenon is not clear at this time. Consequently, it is believed that workplace wellness programs may offer relevant cost savings to companies regarding absenteeism (Proper et al., 2004) and are worth considering.

Aldana et al. (2004) conducted a study on the impact of a comprehensive workplace health program on employee health care costs and rates of absenteeism over a two-year period. They indicated no short term differences in health care costs between participants and non-participants in the program. However, there was a significant difference in absenteeism between participants and non participants. Conclusions from the Aldana et al. (2004) study indicate that employees who participated for two years of a two-year program had a 20% difference in absenteeism compared to non-participants. The cost-benefit linked to a 20% variation in absenteeism is significant. Illness-related absenteeism was higher amongst non-participants. According to Aldana et al. (2004), combating increasing employee health care costs is one of the most common reasons

corporations implement workplace wellness programs. However, this particular two-year study did not observe any health care costs reduction in program participants. Moreover, the results stated above are not unique to this particular study.

By combining health care costs savings and absenteeism savings, Fries et al. (1994) calculated a cost-benefit ratio of \$5.90 for their wellness intervention. For every dollar spent by the organization, they gained \$5.90 in benefits. Similarly, Golaszewski et al. (1992) showed a \$3.40 cost-benefit ratio for their program. The cost-benefit studies reported in the literature tend to support the hypothesis that wellness programs are associated with economic benefits. However, conspicuously absent from the literature are negative cost-benefit studies. Most studies do not report cost-benefit ratios. This leads one to wonder whether or not these ratios would have been neutral or even negative. The cost benefit analysis in Proper et al.'s (2004) study demonstrated no significant cost savings. The intervention was so costly that even though the difference in sick leave from the control group and the intervention group was large, no significant cost saving was reported. It is obvious that the cost of the intervention plays a significant role in economic results. However, although the cost-benefit may not prove significant, the employer might still consider the difference in sick leave relevant.

Lastly, Goetzel, et al.'s (1998) review reported a median benefit of \$3.14 per dollar invested in wellness education programs. These are very encouraging results; however, it is evident based on the literature that more studies with experimental designs and longer study periods need to be done before causality can be conclusive. Moreover, it is evident that the support of senior management is necessary to implement most wellness interventions since the cost/benefit ratios are not incredibly attractive in the short-term.

Another economic benefit of workplace wellness programs stems from a reduction in employee turnover. In the first year of the Toronto Life Assurance program, the turnover rate dropped from 18% to 1.8% per year for program participants (Cox, et al., 1981). Moreover, Wilson (1982) established in his study that participants of a wellness program had one-third of the turnover rate of non-participants. Employers are definitely interested in ways to reduce employee turnover, as turnover can be very expensive. For this reason, high quality research is still needed to determine whether health programs impact employee turnover (Proper et al., 2004).

Yet, another economic benefit of workplace wellness programs illustrated in the literature is that of increased productivity. In Shephard's (1992b) Toronto Life Assurance study, the experimental group showed a 7.0% productivity increase one year following the implementation of a physical activity program. However, the control group also experienced a 4.3% jump in productivity. Thus, it is difficult to blindly implement programs within organizations as often the benefits of such programs extend beyond the participant group. It is unknown what sort of productivity increase organizations would consider significant, for the productivity increase would be heavily dependent on the sum of their investment. According to Proper et al. (2004) the majority of studies attempting to demonstrate the effects of workplace physical activity programs on worker productivity have not been successful. This can partially be attributed to the difficulty in finding reliable methods for measuring worker productivity. Additionally, the limited support from the literature in this area can be somewhat explained by the rare efforts to quantify and analyze the benefits of workplace health programs on employee productivity.

Limitations of Economic Benefits Research

There is information available in the literature on how to execute economic evaluations, yet, research on economic impacts of workplace wellness programs frequently contains methodological weaknesses. The literature reviewed demonstrated a lack of standardization in the methodology used in economic evaluation of workplace wellness interventions (Aldana, 2004; Bly et al., 1986; Fries et al., 1993; Fries et al., 1994; Goetzel, et al.; 1998; Goetzel, et al., 2002; Lynch, Golaszewski, Clearie, Snow, & Vickery, 1990; Proper et al., 2004; Wilson, 1982). Each study employed different measurement methods, used varying categories of economic variables for measuring economic return, and used alternative research designs and statistical tests. These differences all shed light on the lack of methodological consensus within this field.

One of the most common challenges in this field is the selection bias within the samples. As cited by Lynch, Golaszewski, Clearie and Vickery (1989), selection bias refers to the likelihood that individuals who volunteer for a wellness program differ from non-participants, perhaps in terms of their health status or their motivation to take care of themselves. In other words, a common limitation impacting the effectiveness of most workplace wellness programs is that voluntary participants are likely healthier individuals than non-participants. Reducing bias is a key concern in any form of research, therefore it would be ideal if participants were randomly assigned to either the intervention or control group. However, in a work setting, randomization is seldom feasible (Anderson et al., 2001). Researchers cannot force employees to participate in the program or prevent other employees from participating. Unfortunately, this limitation may lead to significant differences between participants and non-participants. There is concern that

these individual biases could possibly impact the outcomes observed among the participants (Ozminkowski & Goetzel, 2001). This is an indication that there is a strong need for further research to distinguish between the individual characteristics of program participants and non-participants with the hopes of reducing this phenomenon.

Most interventions found in the literature have a common challenge of small sample sizes. It is evident that small sample sizes typically lead to large discrepancies in the economic outcomes. Thus, small sample sizes create difficulties in stating statistically significant differences between intervention and control groups (Chapman, 2005; Ozminkowski & Goetzel, 2001).

In a review, Goetzel, et al. (1998) discussed that many studies failed to adjust for inflation and the changing value of money over time in their published economic evaluations. Consequently, future costs and benefits of workplace wellness interventions were probably overstated. This error in economic evaluations would equate to overly pessimistic results, for over time program costs typically decrease and program benefits increase.

According to Duan, Manning, Morris and Newhouse (1983), typically 15 to 30% of the insured employees of a health plan do not use any medical services within a given year. A great percentage of employees will not utilize any sick days nor use short term or long term disability programs within the year. Thus, the health care expense data and absenteeism data will include multiple zero values and a large fraction of the costs attributable to the few employees who are extremely ill. According to Ozminkowski and Goetzel (2001) this phenomenon causes estimation issues, for the distribution of these

outcome measures are not statistically representative of a normal distribution, and standard statistical techniques are more effective with normal distributions.

Another frequent limitation of economic evaluation research is the sensitive nature of the financial data. A company's financial and employee data are typically confidential and are not usually public knowledge. It is imperative that each employee remain unidentifiable in the data and the data remain secure. Furthermore, it is expected that some of the data are subject to policies such as provincial health policies (Anderson et al., 2001). Also, these data are not readily available and it can be a challenge to get access to organizational financial data in a manageable format. Even in best case scenarios, the data are spread among several organizational databases. In addition, it can be difficult to distinguish between personal and family claims on certain company databases which create analysis problems.

Lastly, a common limitation of economic evaluation is the time period of the research studies (Bly et al., 1986). What is a reasonable time period to see the impacts of health interventions? An integral problem in assessing health care costs relates to this question. Health care costs necessitate a long time horizon for actual changes in one's health. Illnesses such as cancer and heart disease that are addressed with the implementation of workplace wellness programs develop over a lifetime. As a result, a reduction in participants' health risk will most likely not be reflected instantaneously in organizational health care costs. It is therefore imperative that economic evaluations run for an extended period of time in order to capture these long-term cost effects (Bly et al., 1986).

As shown in the literature review, research on the economic effects of wellness interventions in the workplace varies tremendously. Nevertheless, a growing body of literature does provide evidence that the implementation of wellness programs can decrease organizational levels of absenteeism and health care costs. Thus, these interventions can have a positive economic impact for the sponsoring corporation. Long-term effects still remain unknown, however, in the short-term workplace wellness programs appear to yield organizational benefits that more than match program costs. Nevertheless, these conclusions still need to be strengthened by more controlled experiments.

Benefits of Workplace Physical Activity Programs for Employees

To begin this section, the general health benefits of physical activity will be reviewed. Secondly, the benefits of workplace physical activity programs on employees fitness and health will be examined.

General Health Benefits of Physical Activity

The Surgeon General's Report on Physical Activity and Health (U.S. DHHS, 1996) states that moderate amounts of daily physical activity (e.g., 30 minutes of brisk walking, 15 minutes of running, or 45 minutes of playing volleyball) can considerably improve one's health and quality of life. Almost all individuals can benefit from being physically active. Physical activity has become a recognized method to improve health and prevent diseases. The purpose of this section is to highlight the health benefits of physical activity, including the impact on longevity, cardiovascular health, blood pressure, body fat, cancer risks, non-insulin-dependent diabetes mellitus, osteoporosis, low-back pain and mental health.

Individuals who are physically active typically outlive sedentary individuals. Physical activity reduces the risk of dying and thus can positively influence longevity (adding years to one's life) (Sallis & Owen, 1999). However, not every physically active person experiences an increase in their life span, since other factors, such as hereditary diseases, influence longevity.

According to Sallis and Owen (1999), in most cases, physical activity also reduces the risk of premature mortality (dying early). The Surgeon General's Report on Physical Activity and Health (U.S. DHHS, 1996) states that higher levels of regular physical activity are associated with lower mortality rates in adults. Even those who are moderately active on a regular basis have lower mortality rates than those who are less active. Inactivity is a strong contributor to many diseases and health conditions. The most common cause of death in the world is cardiovascular disease (Sallis & Owen, 1999). Regular physical activity decreases the risk of cardiovascular disease and prevents or delays the development of high blood pressure.

Sallis and Owen (1999) state that physical inactivity can cause individuals to become overweight or obese. Overweight and obesity is associated with various diseases. Many studies have found that physical activity can reduce one's risk of becoming overweight. Physical activity positively affects body fat distribution (U.S. DHHS, 1996), thus reducing the likelihood of diseases associated with obesity.

Non-insulin-dependent diabetes mellitus (NIDDM) is an increasing problem in modern day society (Sallis & Owen, 1999). NIDDM is a problem of insufficient insulin production that is typically caused by genetics and obesity. One of the treatment methods for NIDDM is weight loss. Physical activity is used in the treatment of NIDDM and as

well in the prevention of the disease. Regular physical activity can decrease the risk of developing NIDDM (U.S. DHHS, 1996).

Cancer (lung, breast, prostate and colon) is the second leading cause of mortality in North America (Sallis & Owen, 1999). Every cancer is a unique disease and therefore each cancer may have distinctive causes. It is known that regular physical activity is associated with a decreased risk of colon cancer (U.S. DHHS, 1996). However, there is no association between physical activity and rectal cancer and inconsistent data regarding an association between physical activity and prostate cancer.

Osteoporosis (decreased bone density) occurs typically in older women. There is evidence to suggest that weight-bearing physical activity is essential for normal skeletal development throughout childhood and adolescence, as well as for attaining peak bone mass in young adults, and would reduce the risk of osteoporosis (U.S. DHHS, 1996).

The majority of adults will experience low-back pain at one point in their life (Sallis & Owen, 1999). Physical activity can reduce the risk by strengthening the muscles around the spine, maintaining spine flexibility and reducing body mass which helps decrease the weight on the spine. Furthermore, regular physical activity helps maintain muscle strength, joint structure, and joint function (U.S. DHHS, 1996).

Physical activity has also been found to positively impact mental health (Sallis & Owen, 1999). Physical activity appears to relieve symptoms of depression and anxiety and improve disposition. Furthermore, physical activity may even reduce the risk of developing depression. Physical activity enhances psychological well-being by improving physical functioning which improves one's quality of life (U.S. DHHS, 1996).

Consistent physical activity can lead to a wide array of physical and mental health benefits (Pate et al., 1995). However, even though it is a well publicized fact that physical activity is necessary for good health, most adults do not meet the recommended levels of physical activity (Craig & Cameron, 2004).

Specific Benefits of Workplace Physical Activity Programs for Fitness and Health

Since the majority of adults spend most of their days at work, the workplace appears to be a great place to encourage adults to adopt an active lifestyle. Workplace physical activity programs are a great tool to enhance the levels of physical activity among adults (Dishman et al., 1998). The following section will review the literature that examines the effectiveness of workplace physical activity programs on employee fitness and health.

The effectiveness of workplace physical activity programs on several fitness components such as cardiorespiratory fitness, flexibility, muscle strength, body weight and body composition will first be examined. According to Proper et al.'s (2004) review, there is inconclusive evidence about the effectiveness of workplace physical activity programs on cardiorespiratory fitness. One study demonstrated that the intervention group had a significantly greater increase in maximum oxygen consumption compared to the control group but another study did not observe any differences between groups in terms of maximum oxygen consumption. Proper et al. (2004) argue that in order to increase one's cardiorespiratory fitness, it would take intensive training which in most workplace physical activity programs is not likely. Cox et al. (1981) examined the impact of a workplace physical activity program on aerobic fitness variables in two Canadian Assurance Companies. One workplace was identified as the intervention group, whereas

the other workplace served as the control group. Participants in the six-month workplace physical activity program demonstrated significant increases in aerobic fitness.

Proper et al. (2004) also reviewed studies that examined flexibility and muscle strength. They were unable to provide conclusive evidence for either. One study demonstrated positive findings in terms of flexibility in the employees' lower back and hamstrings. However, the remaining studies reviewed did not find any positive correlations between workplace physical activity and flexibility. Muscle strength was reported to have increased significantly in one study and specifically abdominal strength increased significantly in another study in the participant groups. However, another study examining handgrip strength reported no effect of their physical activity program on handgrip strength.

Proper et al.'s (2004) review also examined the effect of workplace physical activity programs on body weight. One study observed significant differences in body weight between participants and non-participants. However two other reviewed studies concluded that workplace physical activity programs did not have a positive effect on participants' body weight. Body composition (dividing the body into fat and lean body mass) was also reviewed. Two studies identified positive changes in body composition in the physical activity group. However, a few studies did not observe any positive changes in favor of the physical activity groups. Oden, Crouse and Reynold's (1989) study did not observe a difference in body fat reduction between the two groups; however, this may be explained by the extreme body fat loss by two participants in the control group. Their study did not control for dietary change and thus these two control group subjects indicated dietary changes which resulted in extreme weight loss. Proper et al. (2004)

argue that the lack of significant positive changes in body weight and body composition may likely be explained by the fact that the subjects in the studies are generally healthy, normal weight employees.

Proper et al. (2004) also reviewed several other aspects of employee health such as: fatigue levels, musculoskeletal disorders, blood serum lipids, blood pressure and health complaints. For fatigue levels, their review concluded that limited evidence exists; however from what is known, both mental and physical fatigue is greater among non-participants than participants of workplace physical activity programs. In their review of studies that examined the impact of workplace physical activity programs on musculoskeletal disorders, they concluded that workplace physical activity programs have a positive effect on both neck and back pain. Proper et al. (2004) argue that this finding may indicate that workplace physical activity programs reduce and prevent the occurrence of musculoskeletal disorders. Gerdle, Brulin, Elert, Eliasson and Granlund (1995) studied the effect of a one-year physical activity intervention on a group of home care workers' musculoskeletal symptoms. The physical activity intervention consisted of a 1-hour training program twice a week for a year. The program was directed toward home care personnel to deal with the high number of reported occupational illnesses that exists among this group of workers. The study did not provide any evidence of changes in prevalence of musculoskeletal symptoms between participants and non-participants of the physical activity program.

Proper et al.'s (2004) review also concluded that workplace physical activity programs have no effect on blood serum lipids. Lastly, Proper et al. (2004) reviewed the impact of workplace physical activity programs on blood pressure. Limited evidence

exists but as of yet no research, with one exception, has demonstrated any positive changes in systolic and diastolic blood pressure in participants from pre-exercise state to follow-up. One study showed significant change in systolic blood pressure in participants after 24 weeks of physical activity.

Gronningsaeter, Hytten, Skauli, Christensen and Ursin (1992) examined the impact of an aerobic physical activity program on participant employees of a European insurance company. Prior to the implementation of the physical activity program, participants reported more health complaints than non-participants. There was a higher decrease of health complaints in the participants compared to the non-participants, however the decrease was not statistically significant. Gerdle et al.'s (1995) study reported a slight increase in complaints regarding pain in the neck, shoulders, and lower back. This finding was not significant but it was evident that positive changes had occurred in the exercise group.

In conclusion, the reviewed literature presents evidence that workplace physical activity programs can impact the health of participants. However, despite the existence of such programs in workplaces, participation rates remain low (Jones & Burkett, 1995). Therefore, understanding physical activity determinants and barriers in workplace physical activity programs may help managers recognize the weaknesses of the programs and may lead to more effective programs in the future.

DETERMINANTS/VARIABLES RELATED TO PHYSICAL ACTIVITY PARTICIPATION

The following section will begin by reviewing the commonly studied physical activity determinants literature. Secondly, workplace-specific factors will be investigated and lastly less studied determinants will be described.

Physical Activity Determinants Frequently Examined

For many years regular physical activity has been viewed as an essential part of a healthy lifestyle. Yet, despite the widespread evidence, many adults still choose to remain inactive (Craig & Cameron, 2004). It is important to analyze the factors that determine whether or not people choose to be active. Consequently, researchers have devoted many efforts to understanding physical activity participation. The following section will discuss the individual characteristics that influence physical activity in adults, referred to as determinants, including demographic, behavioral, psychological, social support and environmental factors.

Demographic Variables

Demographic characteristics of individuals are variables such as gender, age, occupation and education. Many studies have found that women tend to be less active than men in regards to vigorous activities; however, as the intensity level of the activity diminishes, the gender differences also narrow (Sallis et al., 1985; Stephens & Jacobs, 1985). Many studies have also found that physical activity levels decrease with age. As adults progress through life, their activity level diminishes (Leslie et al., 1999). King et al. (1994) state that the evidence examining whether or not a relationship exists between physical activity level and occupation is uncertain. Some studies have demonstrated a

relationship between occupation and activity level while other studies have reported no relationship. Studies have found a consistent positive relationship between education level and activity level (King et al., 1994). Some studies have examined the relationship between marital status and physical activity. The findings of such research are not consistent. Some studies reported a positive relationship between marital status and activity level (King, Kiernan, Ahn & Wilcox, 1998; Salmon, Owen, Bauman Schmitz & Booth, 2000), whereas other studies did not discover the existence of any relationship between the two variables (Booth, Owen, Bauman, Clavisi & Leslie, 2000; King et al., 2000).

Behavioral Variables

One of the main behavioral determinants of physical activity is an individual's past physical activity patterns and habits (Troost, Owen, Bauman, Sallis & Brown, 2002). Research has found that there is a positive relationship between an individual's adult activity history and their current physical activity behavior. There is also a positive relationship between healthy dietary habits and levels of physical activity (Troost et al., 2002).

Research has demonstrated that healthy individuals tend to be more active than individuals with medical problems or conditions (King et al., 1994). Additionally, overweight or obesity has a consistent negative relationship with physical activity. Compared to normal weight individuals, overweight and obese individuals tend to participate less in physical activities (Troost et al., 2002)

Psychological Variables

Psychological variables are also related to physical activity. Sallis and Owen (1999) examined the literature in the field from 1985-1997 and concluded that there are psychological factors that positively influence physical activity and factors that negatively influence activity. The following factors are positive influencers on physical activity: enjoyment of the activity, expectation of positive benefits, intention to exercise, perceived fitness or health, self-efficacy, self-motivation, self-schemata for exercise and extraversion. The negative influencers are perceived barriers and mood disturbances. Interestingly, some examined factors were found to have no association with physical activity. Knowledge of health effects of exercise and perceived susceptibility to illness had no impact on whether or not individuals were active.

Trost et al.'s (2002) review of literature concluded that self-efficacy was one of the most consistent correlates of physical activity behavior. Self-efficacy is defined as an individual's level of confidence in being able to successfully perform a specific activity (Bandura, 1977). Several studies have examined the influence of self-efficacy on participation in physical activity. Oman and King's (1998) research examined the influence of self-efficacy in males and females aged 50-64 participating in a home based activity program. The study concluded that an individual's perception of activity self-efficacy was a strong predictor of exercise adherence. Sternfeld, Ainsworth and Quesenberry's (1999) research concluded that women with high levels of physical activity self-efficacy were two to four times more likely to be active than women with low physical activity self-efficacy.

Barriers to physical activity are also a strong negative influence on an individual's level of activity. The following barriers emerged from the Trost et al. (2002) literature review: lack of time, too tiring, too weak, fear of falling, bad weather, no facilities and no exercise partner.

Sallis and Owen (1999) indicate intention as a psychological variable that may influence physical activity participation. An individual's intention to exercise is a determinant of physical activity when it is under the control of the individual. They also indicate enjoyment as a variable that may influence activity behavior. It is evident that many individuals choose to do things they enjoy rather than do things they do not enjoy and many do not enjoy exercising.

Social Support

Several studies have shown the importance of social support in physical activity participation (Carron, Hausenblas & Mack, 1996). Social influence can come from a variety of sources: friends, family, co-workers or fitness staff. Trost et al.'s (2002) review of literature concluded that all research studies that evaluated the influence of social support of physical activity behavior discovered a positive relationship between social support and activity levels. Baker, Brennan, Brownson and Houseman (2000) define social support as being either direct and tangible or informational. Direct and tangible social support would be giving a non-driver a ride to an exercise class. Informational support would be encouraging a friend to attend a fitness class by describing the class. Eyler et al.'s (1999) research of US minority women discovered that social support was associated with physical activity. Women with higher levels of social support were much more likely to be active than women with lower social support.

Environmental Variables

Lastly, researchers have identified several environmental factors associated with physical activity. Characteristics of the home, neighborhood, wellness facilities and workplace can either encourage or discourage participation in physical activity behavior (King et al., 1994, Sallis, Bauman & Pratt, 1998). According to Owen, Leslie, Salomon and Fotheringham (2000), the environment can influence physical activity by providing opportunities that are accessible, convenient, safe and aesthetically appealing. The environment can also remove barriers to encourage individuals to be more active in their lives. Environments with clean and safe sidewalks and bike paths would be considered environments that facilitate physical activity. However, an environment lacking sidewalks and bike paths could discourage physical activity. Certain aspects of the physical environment that may influence physical activity include weather, distance to facility and safety of the environment.

Workplace-Specific Determinants

Current research does not properly address an essential question of workplace wellness programs: are they reaching the employees with the greatest health needs or those who could benefit most from these efforts? Although a large body of scientific evidence has established the role of physical activity as a major contributor to health and well-being, physical activity levels remain suboptimal (Craig & Cameron, 2004). Nevertheless, since the mid 1980's, attention to workplace wellness has progressively increased in both the private and public sectors. Interest in workplace wellness programs has raised important questions regarding these programs' ability to attract participants.

Although hundreds of employee wellness programs exist in North America, program participation remains a challenge for many of these programs (Jones & Burkett, 1995).

The subsequent review will examine the relevant literature on participation in two types of programs: workplace physical activity programs and workplace wellness programs. The published differences between participants and non-participants of these two types of programs will be outlined. Lastly, this section will examine the limitations of this participation research.

Workplace Physical Activity Programs

Currently, limited research exists pertaining to participant characteristics in workplace physical activity programs. The majority of organizations do not collect data that allow comparisons between participants and non-participants and fewer publish such data. However some studies have been conducted to evaluate the differences between program participants and non-participants.

The information available on the characteristics of employees participating in workplace programs is limited and inconsistent. Several studies have found no differences in demographic variables between participants and non-participants in workplace health programs (Davis, Jackson, Kronenfeld & Blair, 1987). However, other studies highlighted below have identified particular differences between the two groups.

Differences between participants and non-participants. Alexy's (1991) study evaluated differing characteristics between participants and non-participants in a chemical manufacturing company's workplace physical activity centre. Approximately 80% of the workforce at this company were considered blue-collar who worked varying shifts. The physical activity centre was on-site and was comprised of a 7,500 square foot

fitness centre with various weights and aerobic equipment, indoor track and an aerobic room. Approximately one quarter of the employees used the physical activity centre. Alexy (1991) found a difference between participants and non-participants when comparing the self-efficacy variables. She also found that non-participants generally felt they were too old, too unfit and lacked the necessary energy to participate. Non-participants also mentioned that they would find it difficult to stay motivated to participate. The study concluded that environmental factors and more specifically convenience factors such as hours of operation and location influenced participation. Social support was also a determinant of physical activity. Several of the participants in Alexy's (1991) study stated that they received and gave each other encouragement to attend the wellness centre. Alexy (1991) conducted a discriminant analysis to determine which factor (perceived benefit, perceived physical barriers, perceived self-efficacy, perceived psychological barriers, convenience factors and social support) best predicted group membership. The analysis suggested that self-efficacy was the factor that best distinguished participants from non-participants.

Shephard and Cox's (1980) study examined the characteristics of participants in two large insurance companies' workplace physical activity programs. One company was used as the control group while the other company was used as the experimental group. The physical activity program consisted of rhythmic calisthenics and endurance-type activities three times a week for 30 minutes over the course of six months. Shephard and Cox's (1980) examined the employee's attitudes towards physical activity. They found that female employees valued the aesthetics and health benefits of physical activity more than male employees.

Lechner and DeVries (1995) examined physical activity determinants among 488 Dutch National Police employees in a workplace physical activity program. The physical activity program was a supervised exercise program twice a week. The exercise program took place at an off-site facility. Participants had a more positive attitude than employees who were contemplating participating in the physical activity program. Even though the work environment consisted of similar people, participants perceived greater social support from their peers, co-workers and managers than non-participants. This suggests that support may be more significant when employees are participating in the program. Self-efficacy was higher among participants than non-participants.

Hooper and Veneziano (1995) demonstrated that participants and non-participants in an employee physical activity program can be distinguished from one another on a variety of lifestyle characteristics, health locus of control measures, and physiological measures. The following outlines the key differences delineated in Hooper and Veneziano's (1995) review of literature and analysis. Cigarette smokers were less likely to participate in the workplace physical activity program, program participants had weaker than average social ties with friends, and non-participants experienced a higher level of stress than participants. Gottlieb and Green's (1984) research found that participants usually demonstrate stronger social support networks than non-participants which was contradictory to Hooper and Veneziano's finding. One of the benefits of participating in group programs is the opportunity to meet new individuals and possibly forge new social networks or even strengthen existing relationships. Furthermore, Hooper and Veneziano reported non-participants as experiencing a higher level of stress than

participants. This is in contrast to research that found that participants were more likely to have higher levels of stress (Lovato & Green, 1990). These findings are inconsistent.

Hooper and Veneziano (1995) found that physical activity program participants reported being in better perceived physical health than non-participants. Program starters had already exercised for a longer period of time prior to starting the program compared to their nonstarter counterparts. Additionally, the participants were more likely to have recently received a medical examination than non-participants. In terms of physiological factors, non-participants were typically at higher risk for cardiovascular disease by having higher diastolic blood pressure, greater abdominal adiposity, higher body fat and higher total cholesterol levels (Hooper & Veneziano, 1995; Rost, Connell & Schechtman, 1990). Moreover, non-participants typically weighed more and had a higher caloric intake. According to Hooper and Veneziano (1995), program starters were more likely to believe that they could exert control over their own health status, while nonstarters believed that their health was controlled by others, fate, luck or chance. Additionally, starters reported that their families were more likely to reinforce their desire to maintain good health. In summary, these results suggest that participants were in better physical condition than were non-participants, even prior to commencing the physical activity program.

In another study on participation in a workplace physical activity program, Eakin, Gotay, Rademaker and Cowell (1988) found that participants were more likely to have engaged in physical activities in the past, viewed physical activity as high priority and had a more positive attitude about physical activity. Furthermore, in Zavela, Davis, Cottrell and Smith's (1988) study on intent to participate, employees who indicated that

they did not intend to participate in the program tended to be older and perceived their health as “excellent”. Additionally, both intenders and non-intenders reported similar lifestyle patterns in all but one area: smokers were less likely to indicate the intention to participate in the program. Zavela et al.’s (1988) analysis revealed that program intenders were primarily younger females in clerical positions with lower family incomes.

The differences between participants and non-participants in physical activity programs at a medical technology company with approximately 600 employees were surveyed by Conrad (1987). Four significant differences emerged between the groups. The program participants were less likely to be smokers, less likely to have been hospitalized in the past five years, more likely to rate their health better, and more likely to agree that they were more interested in health than most people. Non-participants in the programs claimed that they did not participate because the program schedule ran during their work hours and they did not have any extra time for physical activity classes. In this study, Conrad (1987) concluded that the participants of the program were healthier than the non-participants.

Lewis, Huebner and Yarborough’s study (1996) measured employees’ health risk factors. The administered questionnaire included questions related to personal and family health history, health habits as well as quantified biochemical and physiological risk indicators. More specifically, Lewis et al.’s (1996) study examined tobacco use, stress, fitness, nutrition, blood pressure, cholesterol and obesity. The study indicated that the workplace on-site physical activity facility attracted only nine percent of the employees considered at risk for fitness-related problems. Further analysis showed that women with higher health risk-behaviors such as high blood pressure, high level of cholesterol, high

stress levels, participated in substantially higher proportions than males. Furthermore, the study demonstrated significantly greater participation among more fit and less obese employees. In conclusion, the on-site physical activity facility failed to attract employees who could benefit greatly from physical activity.

As outlined above, many differences exist between physical activity program participants and non-participants and similarly between program intenders and non-intenders. Not surprisingly, program participants tend to be health conscious individuals who typically do not smoke, presently participate in physical activities or have in the past, are currently in better physical condition than non-participants, have better perceived health and believe that their health status is in their own hands. These employees value their health and take the appropriate steps to remain healthy. These individuals have proven to be comfortable in physical activity settings and therefore it is not surprising that they would be willing to participate in a work physical activity setting. They do not appear intimidated by participating among their co-workers, peers and superiors. Non-participants tend to report higher levels of stress (Hooper & Veneziano, 1995).

Factors affecting participation. Most workplace data have revealed that employee physical activity programs experience drop-out rates during the first six months of the program ranging from 30-70% (Landgreen & Baum, 1984). Jones and Burkett (1995) determined that employees who exercised at a workplace physical activity facility also exercised at other non-workplace, off-site facilities with 16% exercising at more than one site. Additionally, these employees had a higher activity level than those employees who exercised on their own. Employees who did not exercise commonly cited barriers such as

“lack of time”, “don’t like getting sweaty” and “lack of interest” to explain their lack of exercise at work.

Lechner and DeVries (1995) analyzed the reasons why employees participated in a workplace program using the Stages of Change Model. There are five stages within this model: precontemplation, contemplation, preparation, action, maintenance and possible relapse. Individuals move through these stages of the model as they prepare themselves for change. Lechner and DeVries (1995) demonstrated that employees in the preparation and action stages in the Stages of Change Model have a significantly more positive attitude towards the workplace physical activity program than employees in the precontemplation and contemplation stages.

To understand why substantial numbers of North Americans are unwilling or unable to participate in workplace physical activity programs, it is important to examine the barriers to program participation. Jaffee and Rex’s (1999) research documented barriers for women only, such as lack of time in the workday, concern about employee’s appearance after exercising and confidence issues with exercising which prevented women from participating in workplace physical activity programs. Despite the benefits of physical activity, lack of discipline and time were the most common obstacles reported by women. Additionally, lack of flexible works hours and lack of support from management were reported by a few employees as barriers to being active (Jaffee & Rex, 1999). Similarly, Worth, Green and Bliss’ (2001) study affirmed that the most common reasons for employee’s nonparticipation included lack of time and lack of motivation.

Individual lack of time and existing good health were also among the most common reasons for nonparticipation in Stange et al.’s (1991) study. However, it was

argued by Dishman (1990) that lack of time may be a rationalization as opposed to reality.

The reasons why employees prefer not to use workplace physical activity facilities vary. Some active people prefer exercising on their own, either at home or at a facility closer to home, or playing a sport (Eakin et al., 1988). No research was found that showed specific reasons for not participating in workplace physical activity facilities. Nonetheless, programs that are held throughout the workday remove several barriers such as transportation, parking and bad weather (Jaffee & Rex, 1999).

Erfurt et al.'s (1989) study compared four types of workplace wellness programs and they made the following conclusions: engaging the "eager" employees in the program is easy and engaging the "reluctant" employees is feasible but requires a one-to-one approach. Eager employees are typically employees who are ready to make behavior changes and therefore encouraging these employees to participate is not a difficult task. However, reluctant employees are individuals who are not quite ready to make changes or who are unwilling to participate in programs. It is evident that sometimes the barriers and limitations of these programs are the employee's personal mind-sets and acceptance levels to making lifestyle changes.

Other Workplace Wellness Programs

In addition to offering physical activity programs to employees, organizations also offer other programs and activities as part of their wellness efforts. These initiatives differ from one organization to another and include: smoking cessation courses, nutrition classes, stress management classes, health risk assessments, etc. Some organizations offer

a wide variety, while other organizations may only offer one activity or program as part of their wellness program.

Differences between participants and non-participants. Several studies on workplace wellness programs have attempted to define the characteristics of employees who participate in these programs. In some studies, participants tend to be healthier than non-participants (Glasgow, McCaul & Fisher, 1993), whereas other research found no differences between participants and non-participants (Lynch et al., 1989). Men and older employees (Crump, Shegog, Gottlieb & Grunbaum, 2001), less educated employees and minority employees (Brill, Kohl & Rogers, 1991) are frequently underrepresented in workplace wellness programs. Women are more likely than men to participate in specific workplace wellness programs which include stress control and weight loss (Crump et al. 2001). Lewis et al.'s study (1996) reported that participation levels were higher amongst employees aged 21 to 30. The study also analyzed possible race differences but concluded that none of the differences by race were statistically significant. Furthermore, unlike the physical activity programs, nutrition programs attracted a greater participation rate among high-risk employees (Lewis et al., 1996).

Factors affecting participation. Low participation rates are not unique to workplace physical activity programs but are common in a variety of health promotion programs (Lovato & Green, 1990). The majority of workplace wellness programs have estimated participation rates ranging from 20 to 40% for on-site programs (McKenzie, Luebke & Romas, 1992). Workplace program participation rates have been measured in a variety of ways and ultimately the definition of what is defined as participation varies

from one organization to another. Thus, one of the major challenges in assessing the literature is that the definition of participation varies.

Stange et al. (1991) reported that anecdotal evidence exists to support the notion that participation rates are higher in programs with greater management support, employee involvement and attention to confidentiality and convenience. Similarly, Baun and Bernacki (1988) stated that program success (in other words high participation rates) is highly dependant on management support. Furthermore, organizations that design programs that are flexible enough to meet the needs of a larger employee population can help the program achieve greater success.

McKenzie et al.(1992) suggests that if a company wants to increase participation in their wellness programs and usage of their facilities, they should consider offering employee incentives. Incentives such as financial breaks on the employee's health plan, reduced work hours, or work time participation, as well as social reinforcers such as recognition, group socialization in the program, encouragement and praise may increase the participation rates of those who would not typically participate.

Nevertheless, Crump et al.'s (2001) research demonstrated that several workplace health promotion activities reach employees who do not obtain similar services outside of the worksite in the community. This research suggests that certain workplace programs are reaching participants who otherwise would not reach out to receive these services in their community.

Summary and Conclusions of Factors Affecting Participation in Workplace Programs

While the studies cited above are not meant to present a complete review of the characteristics of employee participants and non-participants in workplace wellness and

physical activity programs, the findings are largely consistent from one review to another. Overall, research demonstrates that workplace wellness program participants differ from non-participants in demographics, health beliefs, lifestyle characteristics and physiological characteristics. In summary, the literature suggests that participants tend to be nonsmokers, are more health oriented, are more knowledgeable about the benefits of physical activity and are younger.

Traditionally, workplace wellness and physical activity research has focused on the economic benefits and health benefits of programs showing positive benefits for both the employer and the employee. Furthermore, numerous studies regarding the benefits produced from participation and adherence in such programs exist. Few studies, however, specifically address the issue of participation in wellness and physical activity programs conducted in the workplace. Interest in workplace wellness and physical activity programs has raised important questions regarding the programs' ability to attract participants who could benefit most from these efforts. Going forward, it is essential to understand participants and non-participants in order to properly meet the needs of all employees.

Physical Activity Determinants Less Frequently Examined

The following section will examine other less studied determinants: life satisfaction, job satisfaction, organizational culture/work environment and generational differences.

Life Satisfaction

In the literature examining the differences between participants and non-participants, life satisfaction has been minimally researched. Life satisfaction is very

important in human existence as it greatly influences the course of an individual's overall life. Everyone is affected by their level of satisfaction with their lives. The impact of life satisfaction is felt by every individual daily. Life satisfaction is a universal concept that demands individuals to reflect upon their life and complete an honest appraisal of their life situation. This section will review the definition of life satisfaction and will examine the several predictors of life satisfaction.

Definition. Rice (1984) describes life satisfaction as the degree to which the experience of an individual's overall life satisfies the wants and needs of that particular individual. Every individual's wants and needs exist in several different life spheres and will most likely evolve throughout an individual's life. Diener, Emmons, Larson and Griffin (1985) define life satisfaction as a global evaluation by the individual of their own life. Schimmack, Oishi, Radhakrishnan and Dzokoto (2002) define life satisfaction as the "evaluations of one's life according to subjectively determined standards" (p.582). Thus, the standards to which the individual compares their life are subjectively imposed by themselves and are not externally imposed by someone other than the individual examining their overall situation.

Life satisfaction is also frequently referred to in the literature as Quality of Life (Cummins, 1996). Cummins (1996) reviewed 27 definitions of quality of life to determine which domains were identified as being aspects of quality of life/life satisfaction. Of the 27 definitions examined, 85% incorporated emotional well-being in their definition of quality of life/life satisfaction. Emotional well-being was expressed in various forms, for example, leisure, spiritual well-being and morale. Further, 70% of the

definitions included health, 70% included social and family connections, 59% included material wealth and 56% included work.

What Predicts Life Satisfaction? Diener, Suh, Lucas and Smith's (1999) research has demonstrated that personality variables such as self-esteem, optimism and regular positive emotional experiences are predictors of life satisfaction levels. Diener's (1984) review of research suggested a number of demographic influences on life satisfaction. His review suggested that life satisfaction increases with age and that women are more likely to be satisfied with their lives than males. However, Myers and Diener (1995) state that women also have more passionate sorrow given dire circumstances, yet women also demonstrate greater capacity for happiness in positive circumstances. He also concluded that minorities typically have lower life satisfaction. Diener (1984) also suggested that virtually all relationships between marital status and life satisfaction are positive. Therefore, married individuals are typically believed to rate higher levels of life satisfaction than unmarried individuals. Lastly, Diener's (1984) review suggests that health increases life satisfaction.

Oishi, Diener, Lucas and Suh (1999) state that the norms established to examine life satisfaction differ between cultures. The cultural variations in shaping the standards for life satisfaction are related to differing cultural values. For example, individuals in poorer countries weight their judgment on their individual life satisfaction level more heavily on financial satisfaction compared to individuals in richer countries. Further, countries do differ noticeably in satisfaction levels even when disparities in income are controlled for (Myers & Diener, 1995).

Many believe that increased income would increase their satisfaction level. Once individuals can afford life's basic necessities such as food, shelter and safety, increased income levels have a very small impact on satisfaction. Although the correlation between income and satisfaction is not negative, it is modest (Myers & Diener, 1995).

Job Satisfaction

Employee satisfaction and retention have always been important issues for employers, because high levels of absenteeism, employee turnover, recruitment and retention efforts directly affect any organization's bottom line. The consequences of job dissatisfaction are very costly to organizations. They include high turnover, lateness, absenteeism, poor performance and low productivity. Despite these costs, many organizations still fail to understand the importance of keeping their employees satisfied. As a result, job satisfaction is a major area of research for scholars, practitioners and organizations. It is evident that when employees are satisfied in their jobs, they are more likely to remain with their present employer despite the stresses associated with the job. Unsatisfied employees are more likely to be absent from work and produce work at lesser quality (Brand, Schlicht, Grossman & Duhnsen, 2005).

To begin, the subsequent review will define the term job satisfaction. As well, this section will review existing relationships between job satisfaction and personal characteristics and it will examine the relationship between job satisfaction and life satisfaction.

Definition. Grandey, Cordeiro and Crouter (2005) cited Brief's 1998 description of job satisfaction: "Job satisfaction is an internal state that is expressed by affectively and/or cognitively evaluating an experienced job with some degree of favor or disfavor"

(p. 306). Job satisfaction is an emotional appraisal of one's job. In other words, job satisfaction simply refers to the extent to which employees like or dislike their work. Job satisfaction can be influenced by a variety of factors, for example, the quality of one's relationship with their supervisor, the quality of the physical environment in which they work, or the degree of fulfillment in their work, etc.

Relationship between Job Satisfaction and Personal Characteristics. Many studies have researched the relationships between an employee's personal characteristics and their level of job satisfaction. Long (2005) included a thorough review where he cited various findings and conclusions from past studies. One of the studies discovered a u-shaped relationship between job satisfaction and age. In this study, both the younger employees and older employees reported themselves as being happier in their work than their middle-aged counterparts. Long (2005) also cited studies that showed that union membership is negatively linked to job satisfaction, the organization's size is related to job satisfaction- small to medium sized organizations have happier employees than those working in large organizations; and casual and non-permanent employees are more satisfied with their employment situation as opposed to employees in permanent or part-time employment situations.

Long's (2005) research investigated the issues of job satisfaction in Australia. He discovered a positive relationship between the employee's opinion regarding the value of work and their level of reported job satisfaction. As the level of work importance diminished the probability of the employee being highly satisfied was also reduced. Interestingly enough, it was also determined that the importance placed on leisure activities and involvement in the local community had noteworthy positive relationships

with job satisfaction. Furthermore, the importance placed by the employee on their individual health was found by Long (2005) to have a significant positive effect on job satisfaction.

Long's (2005) research supported other research in the field. It supported the conclusion that a negative relationship is present between higher levels of education and job satisfaction. One of the probable explanations for this negative relationship is that employee's job satisfaction is influenced by the gap between aspirations and outcomes (Long, 2005). In other words, as education levels increase, aspiration also tends to increase, however, job satisfaction may decrease when the additional education level remains unrecognized by the employer in terms of either increase in responsibility or pay. Also, Long's (2005) research supported research that concluded there is a clear distinction between "surplus" education and "required" education. Surplus education is defined as the level of education attained by an individual minus the required level of education necessary for the individual's role. It was determined that required education has a positive correlation with job satisfaction. However, surplus education was found to have a negative relationship with job satisfaction. Long (2005) discovered that the employee's perception of their level of pay, as compared to their co-workers', is a highly important feature in their level of job satisfaction.

The importance and priority placed on the employee's family also affects job satisfaction. As family importance and priority decrease also does the likelihood of the being satisfied with work (Long, 2005). Grandey et al. (2005) proposed that one's family role is an important source of self-identity and when a situation seems to threaten an aspect of one's self-identity, negative feelings are directed at the source of threat. In

other words, the more that work interferes with one's family life, the greater the level of employee dissatisfaction. According to Grandey et al. (2005), evidence suggests that work-family conflict negatively impacts job satisfaction.

Duffy and Richard (2006) propose that job satisfaction may be equally affected by work-related issues as well as personality traits. As cited by Duffy and Richard (2006), Judge and Illies' (2004) research suggests that personality traits correlate with job satisfaction. Certain personality traits such as extraversion, agreeableness and conscientiousness are positively related to job satisfaction. However, other personality traits such as neuroticism are negatively related to job satisfaction (Duffy & Richard, 2006). Furthermore, Judge and Illies' (2004) research determined that employees with positive moods tend to report greater job satisfaction. Duffy and Richard (2006) found no significant job satisfaction differences between male and female participants, years of medical practice or geographic location.

Feather and Rauter (2004) concluded that individuals who perform at high levels in their jobs, are committed to their work organization, are secure in their jobs and satisfied with their income tend to report higher job satisfaction.

Cetin's (2006) research revealed no significant differences between job satisfaction and the employee's level of loyalty and commitment to their employer. On the contrary, as cited by Cetin (2006), Meyer's study showed that job satisfaction was positively related to commitment to both the occupation and the organization. King, Murray and Atkinson's study, as cited by Cetin (2006), concluded that marital status is related to job satisfaction. Married women tend to be more satisfied with their job than unmarried or divorced women.

It is evident from this review of literature that relationships between job satisfaction and age, gender, experience, marital status, race, education and levels of commitment do exist. Additionally, workplace-specific characteristics, such as the size of the organization, which differs from one workplace to another, as well as employee-specific characteristics such as employee's attitude toward the job, are also likely to play a definite role in job satisfaction among employees.

Life Satisfaction and Job Satisfaction. A job is assumed to have a significant impact on one's life. Therefore, it seems very logical that being satisfied at work would influence one's overall satisfaction level. Tait, Youtz, Padgett and Bladwin's (1989) meta-analysis of the relationship between life and job satisfaction supports the existence of a relationship between the two types of satisfactions. Further, Adams, King and King's (1996) research concluded that job satisfaction has a positive relationship with life satisfaction. It provides evidence that life satisfaction for some individuals may be to a degree attributed to having a good job. Additionally, Adams et al. (1996) discovered that the relationship between work life and family life may possibly influence job and life satisfaction. However, research conducted by Near, Smith, Rice and Hunt (1983) discovered that nonwork satisfaction was a stronger predictor of overall satisfaction compared to job satisfaction. Similarly, Heady, Glowacki, Holmstrom and Wearing's (1985) longitudinal study discovered that satisfaction with health, marriage and sex, and standard of living individually accounted for between 10 to 25 % of the variance in overall life satisfaction, while job satisfaction only accounted for three percent of the variance. These results are consistent with Adams et al.'s (1996) findings that job

satisfaction accounted for only three percent of the variance in overall life satisfaction; however, job satisfaction did have a positive relationship with life satisfaction.

Rain, Lane and Steiner (1991) suggest that an individual's job satisfaction impacts the life satisfaction of that individual; however, the individual's life satisfaction does not impact the individual's job satisfaction. They believe that there is little evidence in the literature to support the belief that a small positive relationship between life and job satisfaction does exist. Even so, Judge and Watanabe's (1993) study is among the few studies that support the reciprocal relationship. Their study does, in fact, indicate that job satisfaction and life satisfaction are positively and reciprocally related, that life and job satisfaction have a significant influence on each other. Nevertheless, as previously outlined, the influence of job satisfaction on life satisfaction was considerably stronger than the inverse relationship.

Lastly, Rice (1984) suggests that an individual job has a significant impact on overall life satisfaction through the perceptions of the quality of life at work and out of work. Rice also proposed that organizational environment influences life satisfaction.

To conclude, the research supports the notion that life satisfaction is positively related to job satisfaction. Therefore, an individual with higher life satisfaction may be more satisfied with their job than individuals with lower life satisfaction levels. Even though life satisfaction may not be the main contributor of job satisfaction it may be a minor contributor. It is advantageous for organizations to ensure that their employee's satisfaction levels in both life and job remain positive.

Workplace Wellness Programs and Job Satisfaction. Peterson and Dunnagan (1998), in a study of a northern state university's employees, attempted to determine if

differences exist between participants and non-participants of a workplace wellness program in terms of job satisfaction. They specifically examined demographic and socioeconomic information, health behavior and job satisfaction. There were no statistically significant differences in terms of job satisfaction between participants and non-participants of the wellness program. The wellness program included exercise classes, nutrition classes, health screenings and health education classes. A significant difference existed in job satisfaction between employees who exercised regularly for the past six months, compared to those who did not. Employees who exercised regularly reported higher job satisfaction scores but this was independent of participation in the sponsored workplace wellness program. This provides evidence to suggest that any form of physical activity is positively related to job satisfaction.

Oden et al. (1989) examined the effects of a physical activity intervention in a Texas workplace. Job satisfaction was evaluated for both the participant and non-participant groups. Job satisfaction did not change significantly for either group throughout the course of the study although the participants did demonstrate improvement compared to the non-participants.

Shephard and Cox's (1980) study compared several satisfaction ratings between participants and non-participants. Female participants had higher job satisfaction scores, and male non-participants had lower pay satisfaction scores. Life satisfaction was also assessed but no differences were found. Interestingly, Zavela et al. (1988) reported that the yearly work absenteeism rate was higher among employees who intended on participating. Furthermore, a significantly higher portion of employees who were disinterested in participating felt they were satisfied with their lives. As well, even though

the majority of employees in both groups were also satisfied with their jobs and their lives, more non-intenders were very satisfied with their lives and their jobs rather than intenders.

It is important to understand the sources of satisfaction because they have important implications for organizational productivity, performance and ultimately the bottom line. Some employers implement workplace wellness programs on the assumption that they affect feelings and attitudes of the employee and consequently behaviors. They also may impact culture, as satisfaction at work significantly affects overall levels of individual's well-being. Happiness with work impacts one's overall wellness.

Organizational Culture/Work Environment

The definition and importance of organizational culture will be briefly explored in this section. The section will then discuss a few influences of organizational culture on the organization and how organizational culture is formed. Lastly, organizational health promotion will briefly be discussed.

There are particularly few data on the relationship between organizational factors and participation in workplace wellness programs. Although there has been recognition of the importance of investigating the organizational context (Sloan & Gruman, 1988), any published studies that systematically evaluated the relationship of organizational factors to participation in workplace wellness programs were difficult to identify.

Definition. Every organization has an organizational culture (also known as climate or environment) and that culture is unique to that specific organization. Culture is a dynamic phenomenon that occurs at all times. An organization is described as any working unit such as a company, government agency, not-for-profit, association or

university. It is evident that organizational culture plays a key role in organizational life and the life of the employee. Some people thrive in certain cultures while in other cultures that same individual may fail (O'Reilly, Chatman & Caldwell, 1991).

Organizational culture is the notion of shared beliefs and values among the members of the organizational community (Sathe, 1983). An organization's culture is buried deep within its soul. Culture is found in the many ways in which the company does day-to-day business (Fairfield-Sonn, 2001). Business practices, habits, rules, and employee attitudes all add up to the ties that bind a company. Organizational culture is a complex notion that is difficult to pin point.

Every organization develops its own way of working over time. Many definitions have been used over the years to describe organizational culture. Schein (2004) states that anthropologists describe culture as the customs and rituals developed by society over time. Applying that definition to an organization's culture would refer to the climate and practices developed by organizations. Sathe (1983) describes one view of organizational culture as the patterns of behavior, speech and use of material objects. Another view is that organizational culture is what is shared in the community members' minds.

DeJoy and Wilson (2003) view organizational culture as three separate domains: job design, job climate and job future. The employee demands and the individual characteristics of each job are defined as job design. Job climate is defined as employee perceptions in terms of organizational communication, involvement and the day to day environment at work. Lastly, job security, equity and career development issues are considered as job future.

Why is Organizational Culture Important? The notion of organizational culture has been important in the study of organizational behavior for the last two decades (O'Reilly et al., 1991). Ashkanasy, Broadfoot and Falkus (2000) state that more and more managers are discussing their organizational culture. They want to change their culture, create new cultures, determine the impacts of their cultures and for some, preserve their culture.

Organizational culture involves analysis of the environment and context in which people work and breaks down into organizational behaviors, leadership, group dynamics, job characteristics and satisfaction (O'Reilly et al., 1991). It can be important for employers to examine their culture to address possible linkages between the culture and the performance of their organization. Additionally, the study of organizational culture helps managers determine how well an individual fits within the organizational context. It is evident that certain cultures will be more or less attractive to certain individuals. O'Reilly et al. (1991) suggests that person-culture fit increases commitment, satisfaction and performance which consequently are beneficial for the organization. Also, O'Reilly et al. (1991) determined that person-culture fit is a predictor of commitment, job satisfaction and intention to leave, independent of age, gender and tenure.

The Influences of Organizational Culture. Beugelsdijk, Koen and Noorderhaven (2006) argue that organizational culture is an important element influencing interorganizational relations. They argue that the behaviors of employees of the organization are driven by the norms and the values of the particular organization. Their research found that organizational culture is in fact significantly related to relationship skills. It is positively related to innovation orientation and stability orientation yet

negatively related to results orientation. This finding is related to the fact that employees in innovation-oriented companies are typically more empowered and motivated to develop relational power sources. Generally, organizations that are more stability-oriented are also more predictable, which may cause employees to perceive them as more trustworthy. However, the organizational cultural dimensions of employee orientation, communication orientation and team orientation are unrelated to the organization's relationship skills.

Culture is a powerful influencer and predictor of organizational behavior. Culture influences organizational communication, cooperation, commitment, decision making and implementation (Sathe, 1983). Although culture does not reduce every organization's communication problems it does set the precedent for employees on how to communicate. Additionally, the degree of cooperation within an organization is strengthened by shared beliefs and values. Culture also affects one's level of commitment. When individuals identify and agree with the organization's vision, mission, objectives and strategies, they commonly feel a greater sense of commitment to the organization. The decision making process is affected by the culture. The culture of the organization sets out a set of basic assumptions but the decision making process is decided by the employees. This leads to less confusion and disparity in the crucial decision making process. Lastly, culture pushes people down the right paths and provides guiding principles to employees. The underlying premises help employees reach decisions. Sathe (1983) found that cultures with more shared beliefs and values have a stronger influence on behavior because there are more taken-for-granted assumptions that guide people's behavior.

Sloan and Gruman (1988) examined the impact of health and organizational factors relative to employee participation in workplace programs. One of the three measurement instruments employed by them was a 26-item set of questions based on several sources to examine the perceptions of work climate. This included supportiveness of supervisor, relationships with co-workers, perceived control over matters at work, heavy workload and clarity of responsibilities. The study demonstrated that health variables such as perceived overall risk of disease, overall health satisfaction and intention to change minimally impacted participation, while a positive organizational climate such as greater control of workload and greater support by managerial leader had a strong impact on employee participation levels. Participants demonstrated having a slightly better understanding of their responsibilities at work compared to non-participants.

How is Organizational Culture Formed? Schein (2004) argues that culture is formed in two separate ways. One way that culture is formed is by unprompted interactions within an unstructured group that with time lead to patterns and norms of behavior. These norms define the culture of the group. Also, culture can be formed in a more formalized group by one individual becoming the leader of the group. The leader's vision, goals, beliefs and values will influence strongly the group's culture. The leader generally imposes certain personal beliefs and values on the group and they create the culture of the members of the group.

Organizational Health Promotion. Health promotion in the workplace is grounded in the concept that the determinants of health are complex but include the context of the work environment (DeJoy & Wilson, 2003). The environment may influence the

employee's health positively or negatively as well as their performance. Health promotion actively attempts to provide opportunities to improve the employee's health through organized programs within the work setting. Organizational influences have been acknowledged as being essential variables in the research of workplace wellness, however, little research has examined these variables. The research in this field needs to dig deeper and consider the impacts of the organization's structure and the characteristics of the work environment. These include job demands, schedules, employee interactions, management style, organizational practices and norms (National Institute of Occupational Safety and Health, 1996).

Generational Differences

A generation is a grouping that is used to recognize inevitable natural social groupings based on various age categories. The categorization of groups allows one to observe the various dynamics between the young and the old. As defined by Kupperschmidt (2000), generations are identifiable clusters that share birth years, momentous life events and historical and social life experiences. A generation shares a common history.

For the first time in the history of industrial North America, four generations are working side by side. As the North American workforce ages and moves closer to retirement, awareness of generational differences is a crucial necessity in today's work environment. When employers anticipate hiring new employees, it would be in their best interest to understand the values of the younger generations. It is essential for employers to pay attention to generational differences as they start to focus on attracting and retaining young employees in a fierce competitive environment.

This section will present the four generations that are currently in the workforce: Veterans, Baby Boomers, Generation X and Generation Y. Even though ages have been set for each generation, Lancaster and Stillman (2003) caution that the age ranges outlined are strictly guidelines. In fact, there is no magic birth date that makes a person part of a specific generation. Personalities and values are a better indicator of one's generation.

The Veterans. Generational experts categorize veterans as individuals born between 1922 and 1945 (Allen, 2004; Francis-Smith, 2004; Pelletier, 2005). Also known as the Forgotten or Silent generation (Harris, 2005), this generation accounted for roughly 21% of Canada's population in 2001 and comprised approximately 23% of the labour force in 2000¹. This generation grew up throughout the toughest economic times in recent history- the Great depression and one world war. During their childhood, the Veterans experienced scarcity and adversity.

Known for their loyalty and self-sacrifice (Francis-Smith, 2004), Veterans tend to have the following core values: prefer to defer rewards, tend to build for a better future, religiosity, black and white world view, traditionalists, nostalgic, deferent to authority and a strong emphasis on team work (Duxbury, 2005; Pelletier, 2005).

In their professional work life, Veterans tend to be loyal, dependable, persistent, hard working, full of wisdom and authoritarian (Duxbury, 2005). Moreover, according to Allen (2004), Veterans tend to be disciplined and respectful, take pride in their work and get satisfaction from a job well done. Unlike the younger generations, the Veterans do not appreciate change in their environment, but rather consistency (Allen, 2004;

¹ All population estimates are from Statistics Canada CANSIM II Table 282-0002 as indicated by Lyons (2003). The figures are approximates as the Statistics Canada population statistics are aggregated into age-bands that do not correspond to the generational boundaries specified.

Duxbury, 2005). In fact, many Veterans experience anxiety when change is taking place or necessary (Yeatts, Folts & Knapp, 1999). This is reflected in Veterans' career choices and paths. Most Veterans remain with one company for the entire length of their career (Allen, 2004). Veterans are very loyal to their organizations. For Veterans, a career is one's legacy (Duxbury, 2005). Furthermore, Veterans were originally part of paternalistic organizations that took care of their employees (Lancaster & Stillman, 2002). Most Veterans believe that hard work pays off. They strongly believe that everyone needs to pay their dues and in time they will be rewarded; they are intrinsically motivated.

The Baby Boomers. In the generational literature, there seems to be little agreement about the years encompassing Baby Boomers. Birth years are reported to begin anywhere from 1940 to 1946 and to end in 1960 to 1964 (Francis-Smith, 2004; Smola & Sutton, 2002). During this 20-year period, a baby was born every 17 minutes in the United States (Francis-Smith, 2004), which resulted in a generation of over 78 million individuals (Smola & Sutton, 2002). This influx of people into the world resulted in an increase of young people all at once before the appropriate infrastructure was developed. Currently, the Baby Boomers are approximately 24% of Canada's population and about 30% of the labour force¹. Baby Boomers were born having to compete for space: competing for their mother's attention, room on the playground, a spot on the basketball team, college admission and finally for jobs in the marketplace (Francis-Smith, 2004).

The 1960s and 1970s were an era that believed in development, growth, post-war prosperity and job security. Baby Boomers were surrounded by extreme optimism, opportunity and progress (Pelletier, 2005). This generation was raised accepting the

psychology of entitlement and always expecting the best from life (Kupperschmidt, 2000). Additionally, Baby Boomers grew up in a neighborhood of opulence and safety: terrorism free, pollution free, child abduction free. Pessimism was not part of most Baby Boomers' vocabulary (Allen, 2004). The vast majority of Baby Boomers grew up within a nuclear family – two parent households, where the “father knows best” (Pelletier, 2005, Wiethoff, 2002). As a result of their childhood, Baby Boomers are best known for their optimism, self-confidence and competitiveness.

Baby Boomers' core values include: optimism, entitlement, self-fulfillment, non-conformism and experimentation. Work values of Baby Boomers consist of working long hours, acceptance of stress, team-oriented, importance of title/status symbols and demanding of respect and sacrifice from subordinates (Duxbury, 2005). Baby Boomers are often categorized as workaholics with a live-to-work mentality. Career equates to self-worth in the mind of a Baby Boomer (Duxbury, 2005). Like Veterans, they tend to pursue promotions by working long hours and demonstrating loyalty to their employer (Allen, 2004). This generation is very driven and tenacious, and measures success materially (Eisner, 2005).

Generation X. Generation X is the smallest generation of the four living generations, for this generation represents 27% of the Canadian population and approximately 34% of the Canadian labor force¹. This generation was born somewhere between the early 1960s and the late 1970s, between two big demographic bulges and into a rapidly changing social climate and economic recession. Many of their parents were being downsized and bringing home pink slips.

Generation X includes the children of workaholic parents who devoted their life to working long hours for one company, only to be downsized at the pinnacle of their careers. Consequently, Generation Xers are skeptical and cynical of organizations and are not devoted to any one company (Allen, 2004; Kupperschmidt, 2000). Many Generation X individuals are considered latchkey kids. More than 40% of these individuals grew up in broken homes or in dual income households. Additionally, they are the first generation to spend considerable time in daycare (Losyk, 1997). As a result of these changing family dynamics, they are the first generation in history to partially raise themselves.

Generation Xers are quick to change jobs. If their current employment is not meeting their immediate needs, they will not think twice of going elsewhere. Unlike previous generations, they embrace change. According to Jurkiewicz (2000), Generation Xers rotate jobs on average every 18 months. They are more than willing to capitalize on job opportunities elsewhere, if they do not get their way. They tend to remain in work relationships only as long as the fit between employee and employer is mutually beneficial. This generation takes career independence to a new level; being raised in an environment in which the employer-employee relationship is written in invisible ink, they do not depend on an organization to provide them with a career path (Lancaster & Stillman, 2002). This is the first generation in history willing to sacrifice salary and status for more time to themselves and a greater variety of options (O'Bannon, 2001).

Generation Xers have very different work values than their parents' generation. They are very interested in implementing policies and practices that focus on lifestyle behaviors (Duxbury, 2005). This generation has made a conscious effort to maintain a

healthy work-life balance. They strive to achieve a balance between their professional and personal life. Unlike their parents, they do not live to work but rather work to live.

They do take work seriously and work hard, however, they disregard the workaholic mentality of their parents and bosses. For this generation, work is only a means to an end: money, fun and leisure. Creating and working in a culture of fun is very important to Generation Xers. They believe that making money is not as important as experiencing life (Losyk, 1997). When the time comes for Xers to control the organizations of tomorrow, a shorter work week may be introduced placing a greater emphasis on family and personal time (Losyk, 1997).

Generation Y. This newest addition to the workforce is sometimes referred as the Schizophrenic Generation, the Swing Generation, the Paradox Generation, Post-boomers, Nexus Generation, Hip-Hop Generation, Endangered Generation, Generation XX, “Don’t label Us” Generation, Generation.com, Generation 2000, Boomer Babies and the Baby Bust Generation (Howe & Strauss, 2000). Nevertheless, the most common name for this generation is Millennials. They equate to approximately 25% or eight million of the Canadian population and 36% or 69.7 million in America (Howe & Strauss, 2000; Pelletier, 2005; Zemke, Raines & Filipczak., 2000). They are categorized as being born from 1979 to 1999 (Smola & Sutton, 2002).

Generation Y grew up in a time of economic prosperity and expansion but as these youths aged the era of economic uncertainty arrived. Moreover, 16% of this generation grew up in economic uncertainty in their home life – they grew up in poverty (Raines, 2002). This generation is technologically advanced, and has learned to master

technology at a young age, which has allowed them to perfect multi-tasking skills (Francis-Smith, 2004).

According to Francis-Smith (2004) this generation is incredibly inquisitive and energetic. This generation frowns upon the widespread negativity in the older age groups. They tend to have a very strong sense of morality, patriotism and fight for freedom and they want to contribute to society in any way they can (Allen, 2004). This generation is socially, culturally, environmentally and emotionally conscious, and volunteer minded (Eisner, 2005). They have few reservations about changing cities or countries, for they are often in the pursuit of the next experience. They are a mobile group that can adapt to change.

Similar to their preceding generation, Generation Yers refuse to make personal sacrifices for the sake of the corporation. This generation is not motivated by monetary gains or material possessions like the Baby Boomers. They tend to gravitate to employment opportunities that allow them to be themselves at work (Wiethoff, 2002). They choose to perform work that is meaningful to their community and that will better the world. They are focused on making a difference while working with committed co-workers who share their same values. They do not want to work long hours while neglecting their family, friends and their own pursuits (Allen, 2004). They are lifestyle centered. This child-care generation who developed into self-reliant, individualistic individuals are determined to maintain a strong work-life balance (Allen, 2004).

For most Generation Yers, work is simply another opportunity to add value in life. Generation Yers are more likely to equate job satisfaction with a positive work

climate, flexibility and the opportunity to learn and grow more than any prior generation (Eisner, 2005).

Generation Y is just beginning to impact the workforce in a profound way. If organizations do not provide alternative work schedules, daycare, time for eldercare, and other work life initiatives, this younger generation will not think twice about pursuing other opportunities (Farren, 1999).

What Does This Mean To Employers?

The employee pool, especially the higher skilled employees is shrinking and it is evident that organizations will need to evaluate their workplace environment.

Organizations need to educate themselves about the generational differences if they hope to stand a chance of succeeding in this competitive world. Organizations will have to work hard at recruiting and retaining the best and the brightest.

It is imperative that organizations understand what employees want from a job and from their boss. It is important for employers to be aware of what generation they are targeting and to make sure they are putting the right message forward (Lancaster & Stillman, 2002). Employees have become more sophisticated consumers of employment opportunities and the market for talent is now global (Duxbury, 2005). Offering benefits and creating an appealing work environment for each generation will assist in recruiting and maintaining the best employees.

Implications for Workplace Wellness

As previously mentioned, Generation Xers are very attracted to employers who have policies and practices that focus on lifestyle behaviors (Duxbury, 2005). A balance between their professional and personal life is essential for this generation. Furthermore,

Generation Yers are also very lifestyle centered. This generation is determined to maintain a strong work-life balance (Allen, 2004). Thus, it is important for organizations to provide programs that will provide this balance. Southard and Lewis (2004) recommend implementing programs that address the needs and desires, personal and professional, of all employees regardless of their generation.

It is evident that workplace generational differences may impact workplace physical activity programs. Each generation will have their own wants and needs in terms of employer sponsored workplace physical activity programs. Employers need to be aware of the generational implications as they implement new programs and make changes to their current programs.

Summary of Relevant Literature

A well established body of literature has arisen in the area of workplace physical activity programs. The literature review attempted to outline the main findings relevant to the proposed study.

The literature supports the fact that consistent physical activity leads to a wide array of physical and mental health benefits. Since the majority of adults spend most of their days at work, the workplace appears to be a great place to encourage physical activity. The reviewed literature presented evidence that workplace physical activity programs can impact the health of participants.

Certain physical activity determinants such as demographic, behavioral, psychological, social support and environmental factors have been included extensively in physical activity research. There is also a small amount of literature that examines physical activity determinants specific to workplace physical activity programs. The

literature indicates that differences between participants and non-participants of workplace physical activity programs do exist. This body of literature is mainly focused on the differences in terms of demographics, health beliefs, lifestyle characteristics and physiological characteristics of participants and non-participants of workplace physical activity programs. Other personal and work-related factors such as life satisfaction, job satisfaction, work environment and generational differences have not been extensively examined.

CHAPTER 3

METHODS

This chapter contains information regarding the population, a description of the CWB's wellness program and physical activity facility, sample, response rates, instruments, pilot study, procedures and analytical methods that were used to examine the purpose of this study.

The Population

The studied worksite was the Canadian Wheat Board (CWB) located in downtown Winnipeg (423 Main Street). The CWB is a marketing agency for wheat and barley producers in Western Canada. The CWB has 421 permanent and temporary employees.

CWB Wellness Program. In 1982, the CWB introduced a wellness program with the goal of educating employees about the benefits of a healthy lifestyle and providing them with opportunities to be active. Over the past 25 years, the program has evolved from strictly physical activity promotion to an extensive wellness program. The physical activity aspect is now only one part of their broader wellness program. Over the years, the CWB has offered many different types of educational opportunities and activities such as: golf tournaments, baseball teams, seminars on a wide variety of topics, massage therapy, meditation courses, smoking cessation courses, nutrition courses, CPR training, First Aid training, just to name a few.

The CWB has an employee dedicated full-time to the wellness program (K. Chase, personal communication). She has been employed by the CWB for the past 15 years and her job scope has expanded every year since her commencement. She is

completely responsible for the workplace physical activity facility and all the wellness initiatives at the CWB. Further to those responsibilities, she is also responsible for the cafeteria, short-term disability and ergonomic assessments at the CWB. She is also the chair of the Workplace Health and Safety committee.

CWB Physical Activity Facility. To promote physical activity, the CWB built an on-site physical activity facility in 1982. The facility was originally 1700 square feet. In 2003, the facility was renovated and an additional 1000 square feet were added to the existing facility. Currently, the physical activity facility is 2700 square feet which includes the changing rooms. The facility has the following equipment:

- 5 Treadmills
- 2 Elliptical cardiovascular machines
- 2 Stationary bikes
- 1 Rowing machine
- 1 Stair climber
- 1 Universal gym
- Stability balls
- Body bars
- Free weights
- Resistance training tubing
- Steps (typically used for fitness classes)

The physical activity facility includes separate female and male changing rooms. The female changing room includes four showers, 20 full length lockers and 84 storage boxes. The male changing room includes four showers, 20 half lockers, four full lockers

and 84 storage boxes. Fitness classes are also offered at the facility. The class schedule changes seasonally, however, eight to nine classes are offered each week. The classes offered are: step aerobics, high low aerobics, muscle toning, stretching, yoga and pilates classes. A total of 36% of employees who participate at the physical activity facility actively participate in fitness classes (K. Chase, personal communication).

The facility is open 24 hours a day, seven days a week. Employees have access to the gym through a digital access card. A security guard is on duty at the reception desk of the building at all times for security and safety reasons. Additionally, an emergency switch directly linked to a 911 operator is located in the gym. The membership fee for CWB employees is \$2.00/week.

According to K. Chase (personal communication), 44% of the employees at the CWB participate at the workplace physical activity facility, 67% are females and 33% are males. Similar to the average age of the entire workforce, the average age of the participants is 43 years.

The Sample

A total of 163 (109 females and 54 males) CWB employees participated in the study. All 163 employees met the following inclusion criteria.

- Being employed at the specified workplace
- Being 18 years of age or older
- Ability to read English
- Employed either full-time, part-time, contract, temporary

Table 1 contrasts the age and gender differences of the CWB workforce, the workplace physical activity participants as reported by the CWB wellness consultant, the total sample and the sample divided into participant and non-participant groups.

The percentage split between females and males in the sample was identical to the reported percentage split females and males of participants at the workplace.

Table 1

Comparison of the Population and Sample Demographics

	CWB workforce (n=421)	Workplace reported PA participants (n=183)	Total Sample (n=163)	Sample	
				Participants (n=80)	Non-participants (n=83)
Mean Age	43	43	42.53	42.56	42.49
Female	264 (63%)	122 (67%)	109 (67%)	63 (79%)	46 (55%)
Male	157 (37%)	61 (33%)	54 (33%)	17 (21%)	37 (45%)

Response Rates

The response rate of the total CWB workplace completing the survey was 39%. Female participants (52%) had the highest response rate compared to male non-participants (39%), female non-participants (32%) and male participants (28%).

Instruments

The literature was reviewed to determine which instruments were available for measuring the variables included in the study. Additionally, several elements were considered prior to selecting the measurement instruments to be used. Due to the number of variables to be examined, it was determined that each instrument needed to be short, concise and easy to understand. Further, the instruments had to be both reliable and

valid. Several instruments were combined to create one single questionnaire, designed to collect self-reported data.

Overall, the questionnaire measured several categories of variables:

1. Level of physical activity
 - i. at work
 - ii. outside of work
2. Determinants of physical activity:
 - i. demographic variables (age, gender)
 - ii. psychological variables
 - a. perceived health
 - b. self-efficacy
 - c. enjoyment
 - iii. environmental variable
 - a. facility assessment (clean, safe, convenient, occupied)
 - iv. social support variables
 - a. at work
 - b. outside of work
 - v. life satisfaction
 - vi. work-related factors
 - a. job satisfaction
 - b. physical activity contributing to job satisfaction
 - c. perception of work environment for physical activity

d. generational differences

Lastly, a separate instrument was used to provide information on the workplace physical activity program. The purpose of this instrument was to gather, for the wellness consultant at the CWB, relevant information for future planning purposes. The questionnaire utilized both fixed response and open-ended questions.

The specific instruments used in the study are outlined below including the reported measures of reliability and validity. For the author-constructed instruments, the test-retest reliabilities of the pilot study are stated, however, please note that the pilot study will be described in detail in the following section.

One-Week Physical Activity Recall Instrument

The basic format of the widely used Minnesota Leisure-Time Physical Activity (MLTPA) (Pereira et al., 1997) questionnaire was used in this study. In this instrument the subjects are asked to indicate which activities they performed, the number of times per week and the number of minutes each time. Total physical activity is calculated by multiplying frequency times the time for each activity. The original MLTPA was slightly modified for this study. The MLTPA listed specific activities and included one open-ended "other" category for the respondents to list activities. The instrument used in this study consisted of several blanks which required the subject to list all activities performed. The MLTPA required subjects to recall their physical activity for the period of one month while this instrument was for one week.

The instrument used in this study was divided into two sections. One section asked the subject to recall their physical activity that took place at work and the second section asked the subject to recall their physical activity that took place outside of work.

The one-week physical activity recall instrument was chosen to minimize subject burden. It is easier and more accurate for subjects to recall one week of physical activity behavior compared to one month. The researcher does acknowledge that a one-week recall is a trade-off between seasonal representiveness and accuracy.

Reliability for the original MLTPA has been demonstrated by Folsom, Jacobs, Caspersen, Gomez-Marin and Knudsen (1986) with a Spearman correlation of 0.88 and by Richardson, Leon, Jacobs, Ainsworth and Serfass (1994) with a Pearson correlation of 0.92.

The test-retest reliability of the modified one-week physical activity instrument examined in the pilot study had correlations of .89 and .83 respectively for physical activity at work and outside of work. A copy of the One-Week Physical Activity Recall instrument can be found in Appendix A.

Perceived Health Instrument

Perceived health was measured using an author-constructed question. Subjects were asked to rate their health from 1 to 5 with one representing “excellent” and five representing “poor”. The health perception scores were also recoded. To be consistent with the other instruments in the study, the health perception scores were reversed (5=1, 4=2, 2=4, 1=5) so that higher scores signified greater health. The test-retest reliability of the perceived health variable was examined in the pilot study and had a correlation of .61.

A copy of the Perceived Health instrument can be found in Appendix B.

Enjoyment of Physical Activity Instrument

The enjoyment of physical activity variable was measured using an author-constructed question. Subjects were asked to rate, on a scale from one to five, how much

they enjoy physical activity. One represents “not at all” and five represents “a great deal”. The test-retest reliability of the enjoyment of physical activity variable was examined in the pilot study and had a correlation of .75.

A copy of the Enjoyment of Physical Activity instrument can be found in Appendix B.

Self-Efficacy Instrument

Physical activity self-efficacy was measured using Zakarian, Hovell, Hofstetter, Sallis and Keating’s (1994) instrument. The instrument is concise, containing only four items, and requires approximately one minute to complete. The brief format is simple to administer and analyze. Subjects were asked to rate their level of comfort in being physically active in four different scenarios by rating each statement on a scale of one to five. The 5-point scale is: 1 = know I cannot, 3 = maybe I can and 5=know I can. The total scores can range from 4 to 20. Internal reliability has been demonstrated with an alpha coefficient of .78 (Zakarian et al., 1994).

A copy of the Self-efficacy instrument can be found in Appendix B.

Facility Assessment Instrument

The assessment of the physical activity facility was measured using author-constructed questions. Subjects were asked to rate four questions, as follows:

- Convenience of physical activity facility
- Cleanliness of physical activity facility
- Occupancy of physical activity facility (crowded/busy)
- Safety of physical activity facility

Subjects were asked to rate each statement on a scale of one to seven. The 7-point scale is: 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = agree, 7 = strongly agree. One item (item #3) was re-coded because it was negative in nature (1=7, 2=6, 7=1 etc.). Thus all items reflected a positive direction. The test-retest reliability of the facility assessment was examined in the pilot study and had a correlation of .77.

A copy of the Facility Assessment instrument can be found in Appendix C.

Social Support Instrument

Physical activity social support was measured using a slightly modified version of Zakarian et al.'s (1994) instrument. Zakarian et al.'s (1994) instrument measured social support from family and friends separately, whereas the modified instrument measured social support from family/friends combined and social support from co-workers separately. Prior to answering the questions, subjects were asked to choose either family or friends based on who they felt were currently more influential in their lives. They were then asked to respond to the family/friends instrument based on that choice. Subjects were asked to indicate the frequency that both family/friends and co-workers encourage, reward, remind, complain, criticize, participate or offer to participate with the subject in regards to physical activity. Subjects were asked to rate each statement on a scale of one to five. The 5-point scale is: 1 = never, 2=rarely, 3 =a few times, 4=often and 5=very often. Two items (item #5 and #6) were re-coded because they were negative in nature (1=5, 2=4, 5=1, etc.). Thus all items reflected a positive direction. The total score for each individual variable (family/friends and co-workers) can vary from 7-35. Internal

reliability has been demonstrated with an alpha coefficient of .75 for family support and .67 for friend support (Zakarian et al., 1994).

A copy of the Social Support instrument questions can be found in Appendix D.

Life Satisfaction Instrument

Developed by Diener et al. (1985), the Satisfaction with Life Scale (SWLS) was used to assess the overall life satisfaction of the subjects. The SWLS is an instrument that evaluates one's overall life satisfaction and not specific aspects of one's life. For example, the instrument does not specifically address satisfaction with health, relationships or finance. Rather, the instrument is designed to allow each subject to examine and weight together every aspect of life that affects their level of satisfaction (Diener et al., 1985). The SWLS is a global measure of life satisfaction (Pavot & Diener, 1993).

The SWLS is concise, containing only five items, and requires approximately one minute to complete. The brief format is simple to administer and analyze. The reading level of the instrument is stated to be between the sixth grade and the tenth grade level.

Subjects were asked to rate each statement on a scale of one to seven. The 7-point scale is: 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = agree, 7 = strongly agree. The total scores can range from 5 to 35. A score of 20 reflects a neutral score. At the neutral point, the subject is considered to be equally satisfied and dissatisfied. A score of 15-19 reflects a slightly dissatisfied score and a score of 5-9 reveals an extremely dissatisfied score. On the other hand, a score of 26-30 represents a satisfied score and a score of 30-35 is an extremely satisfied rating (Pavot & Diener, 1993).

The SWLS is shown to be a valid and reliable measure of life satisfaction (Pavot & Diener, 1993). Strong internal reliability has been demonstrated with an alpha coefficient of .87 and a 2 month retest stability coefficient of .82. Significant support for the convergence of the SWLS with numerous measures of life satisfaction has been presented by both Diener et al. (1985) and Pavot, Diener, Colvin & Sandvik (1991).

A copy of the Satisfaction with Life Scale can be found in Appendix E.

Job Satisfaction Instrument

Employees' satisfaction with their jobs was measured by a scale from Smith, Kendall and Hulin's (1969) Job Descriptive Index (JDI). The JDI was first developed more than 40 years ago (Smith et al., 1969), and has since become the most widely used measure of job satisfaction (Rain et al., 1991, Kinicki, Mckee-Ryan, Schriesheim & Carson, 2002). The instrument used in this study is the Job In General (JIG) that was developed based on the JDI.

Although the JDI has been in extensive use, Smith and her colleagues felt that due to the constant evolution in the work environment revisions of the instrument were required (Smith et al., 1987). The JDI introduced in 1969 was modified and renamed in 1985. The original JDI norms were revised and the new instrument was renamed the Revised JDI. The revised instrument maintained the same high levels of internal consistency reliability with an average alpha of .88 (Smith et al., 1987).

A new measurement instrument was created to measure satisfaction with the job in general. This scale was called the JIG. The addition of this scale complemented the JDI and was designed to provide an overall evaluation of the job, which was a missing facet of the JDI. The JIG scale differed from the JDI in three important respects: more

global, more evaluative, and longer in time frame (Ironson, Smith, Brannick, Gibson, & Paul, 1989). Its average alpha of .91 was consistent with the high alpha levels of the Revised JDI (Smith et al., 1987). The JIG scale was the instrument used for this research and the other five JDI instruments (employee satisfaction: satisfaction with the work itself, satisfaction with pay, satisfaction with opportunities for promotion, satisfaction with supervision, satisfaction with co-workers) were not used.

The JIG is comprised of 18 items. For each question a short, descriptive adjective or phrase is provided. Subjects are asked for each item to circle "Yes" if the item describes his or her job, "No" if the item does not describe his or her job, or "Undecided" if the subject cannot decide. For example, adjectives and phrases included "pleasant", "bad", "ideal" and "waste of time". "Yes" answers or "No" answers were scored three or zero depending on the wording of the item, and a "Cannot Decide" response was scored one (Smith et al., 1987). This is not the standard approach to scaling response categories, however, research in response format has concluded that the reliability, stability, and validity of the JDI subscales were not significantly different than a likert-type format or polychotomous format (Johnson, Smith, & Tucker, 1982). Furthermore, Hanisch's (1992) assessment of the scoring system using yes/no item responses led her to conclude that "the overall scoring procedure is still justified today" (p. 382). Once the subject completed the JIG, the points were totaled. In essence, higher scores reflect greater satisfaction. It is relatively simple to administer, score, easy to read and simple in format for participants.

Ironson et al. (1989) established convergent validity by examining the correlation with four other general scales of job satisfaction: the Brayfield-Rothe scale; the Faces

scale; a rating scale anchored by adjectives prescaled for favorableness (Adjectives scale); and a numerical rating scale (-100 to +100). The results ranged from .66 for the numerical scale to .80 for the Brayfield-Rothe scale (Ironson et al., 1989).

A copy of the Job In General scale can be found in Appendix F.

Physical Activity Contributing to Job Satisfaction Instrument

In addition to job satisfaction, it was interesting to examine subjects' perception of whether or not the workplace physical activity facility improved their job satisfaction. Consequently, an author-constructed "physical activity contributing to job satisfaction" question was also included in the questionnaire. The question directly asked the subjects whether or not their workplace physical activity program impacted their job satisfaction. The test-retest reliability of the job satisfaction variable was examined in the pilot study and had a correlation of .61. A copy of the Physical Activity Contributing to Job Satisfaction instrument can be found in Appendix F.

Work Environment for Physical Activity Instrument

Five author-constructed questions were developed to examine the environment in which participants and non-participants work, as it pertains to physical activity. These questions provided information about whether or not the work environment encouraged participation in physical activity at work. These questions were constructed because no appropriate instrument exists to measure this variable. Subjects were asked to rate each statement on a scale of one to seven. The 7-point scale is: 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = agree, 7 = strongly agree. The total scores can range from 5 to 35. A score of 20 reflects a neutral score. At the neutral point, the subject is considered to be equally satisfied and

dissatisfied. A score of 15-19 reflects a slightly dissatisfied score and a score of 5-9 reveals an extremely dissatisfied score. Further, a score of 26-30 represents a satisfied score and a score of 30-35 is an extremely satisfied rating. The test-retest reliability of the environment variable was examined in the pilot study and had a correlation of .88.

A copy of the Work Environment for Physical Activity instrument can be found in Appendix G.

Demographic Information

The following demographic variables were measured: gender, age, and desk or non-desk job classification.

A copy of the Demographic questions can be found in Appendix H.

Generational Description. In order to assess the generational differences in the workplace, the subjects' reported ages were categorized into one of three generations. Because there were only three Veterans, subjects aged 62 and over were grouped with subjects aged 43 to 61 years categorized as Baby Boomers. Subjects aged 29 to 42 were categorized as Generation X. Lastly, subjects aged 18 to 28 were categorized as Generation Y.

Descriptive Information of Workplace Physical Activity

The purpose of this instrument was to gather important feedback from employees on the available physical activity and wellness programs. These questions were developed in consultation with the CWB wellness consultant. The information collected is valuable for the employer to monitor their current programs and further plan their programs for the upcoming years.

The descriptive information was gathered from both participants and non-participants. The following questions were asked:

- Do you currently exercise at your workplace fitness facility?
- What day (s) of the week do you participate?
- When do you exercise at your workplace fitness facility? (e.g. before work, lunch)
- What do you do you when you exercise at the workplace fitness facility? (e.g. weights, cardio, classes)
- Why do you participate?
- Why don't you participate?
- What additional programs are offered at work?
- Which do you attend?
- What additional programs would you attend if they were offered at work?
- Additional Comments?

A copy of the Descriptive Information of Workplace Physical Activity can be found in Appendix I.

A complete copy of the questionnaire with the instruments in the order presented for data collection can be found in Appendix J.

Pilot Study

A pilot study was conducted to: (1) assist the researcher in finalizing the data collection procedures, (2) ensure the cover letter and questionnaire were clear and concise, (3) obtain feedback from subjects regarding the questionnaire, and (4) evaluate the test-retest reliability of the author-constructed instruments.

A total of 20 subjects, (nine females, 11 males) from various worksites participated in the pilot study. The subjects were recruited by personal communication with the researcher. Subjects were asked to complete the questionnaire twice, on two separate occasions, one week apart (A copy of the cover letter can be found in Appendix K). The data collected in the pilot study were not used in the final analysis.

The majority of the subjects reported that the cover letter and questionnaire were clear. As well, the subjects did not experience any difficulties in completing the questionnaire. A few minor changes such as spelling mistakes and formatting ideas were suggested by subjects. The researcher did review all the comments and made the appropriate changes to the cover letter and questionnaire.

The author-constructed questions were completed twice in order to assess the test-retest reliability of the instruments. The reliability of the one-item instruments was examined using Spearman's Rank Order Correlation (non-parametric test) and the other instruments were examined using Pearson Product-Moment Correlation. The results of the test-retest reliability correlations are summarized in Table 2.

Table 2
Test-Retest Correlations of Author Constructed Items.

<u>Level of Physical Activity</u>	
Physical activity at work	0.89*
Physical activity at home	0.83*
<u>Psychological Variables</u>	
Perceived health	0.61**
Enjoyment of physical activity	0.74**
<u>Environmental Variable</u>	
Facility assessment	0.77*
<u>Work-Related Factors</u>	
PA contributing to job satisfaction	0.66**
Work environment for PA	0.88*

* Pearson product-moment correlation

**Spearman's rank order correlation

The correlations of the physical activity instruments were not usual test-retest reliability scores as respondents were asked to recall their physical activity over the course of two different weeks. However, these scores verify the similarities in physical activity from week to week.

The test-retest reliability was well over 0.70 for the enjoyment of physical activity instrument, facility assessment and work environment for physical activity instrument. The test-retest reliability of perceived health and physical activity contributing to job satisfaction was slightly below 0.70. These two instruments were both single item instruments and consequently the results would be affected by a one-value change on the five or seven item scales.

Collection of Data

Ethics approval for the study was received from the University of Manitoba's Education and Nursing Research Ethics Board prior to commencing the collection of data

(A copy of the Ethics approval certificate can be found in Appendix M). As well, permission was obtained from the CWB to collect data from employees.

Data collection took place at the workplace over the course of a lunch-hour (11 a.m. to 2 p.m.) in late April. One week prior to the data collection, the CWB wellness consultant advertised to the entire company via e-mail the purpose, time and place of the survey. She also encouraged all employees to take part in this event and as recognition for their time indicated that they would receive a pedometer. First thing the morning of the survey (9:00 a.m.), as well as halfway through the lunch hour (12:30 p.m.), the CWB wellness consultant sent out an e-mail reminder of the event to all employees. The CWB wellness consultant also spread the news of the data collection to employees with whom she was in personal contact during that day.

As employees entered the cafeteria, they were asked whether or not they would like to participate in the study. If they agreed, the researcher handed them a cover letter (a copy can be found in Appendix M) and questionnaire. The majority of employees agreed to participate. The wellness consultant was present during the entire data collection and was instrumental in encouraging employees to fill out the questionnaires. As many employees entered the cafeteria at the same time some employees were not approached initially. She approached some of these employees who were eating in the cafeteria and asked them to participate. The questionnaire was self-administered by the employees. Employees were not asked if they were participants or non-participants, as both groups completed the same questionnaire.

Once employees returned the completed questionnaires, they received a pedometer (value \$5.50) stamped with the CWB wellness logo. A total of 132

questionnaires were completed and returned during that lunch hour. Employees who indicated they did not have the time to complete the questionnaire over the allotted time were encouraged to drop off the questionnaire to the CWB wellness consultant within the next couple of days. When these employees dropped off the completed questionnaire, they were also given a pedometer. The researcher picked up the additional 31 questionnaires from the CWB wellness consultant a week after the data collection event.

Data Preparation and Input

The questionnaires remained completely anonymous. The employees did not write their name on the questionnaire. Instead, an identification number (from 1 to 163) was attached to each questionnaire by the researcher. This step was done so that if the researcher needed to review the raw data from a particular questionnaire, it would be easy to retrieve. Once all the questionnaires were received, they were categorized into two separate piles: participants and non-participants.

Definition of Participant

A participant was defined as an employee who answered “Yes” to the question about whether they participated at the physical activity facility. This was checked by verifying that they listed physical activities taking place at work in the one-week physical activity recall instrument. If both items matched, these employees were categorized as participants. However, 15 respondents did indicate they participated at the facility but did not list any physical activity taking place at work. A total of 14 of the 15 respondents indicated that their list of physical activities was not representative of their typical week and therefore it was decided to include them as participants. Furthermore, if the respondent did not indicate “Yes” to the question about whether they participated at the

physical activity facility but indicated in the one-week physical activity recall that they were active at the facility, they were categorized as a participant.

On the other hand, a non-participant was defined as an employee who indicated that “No” they did not participate at the facility. This was checked by verifying that they did not list physical activities taking place at work in the one-week physical activity recall instrument. If both items matched, these employees were categorized as non-participants. If a respondent indicated that they used the facility’s showers (e.g. after cycling to work) but did not indicate any activity at the facility (and did not consider themselves a participant) they were categorized as a non-participant.

A total of 24 subjects indicated that they used active transport to get to and from work. A total of 19 of these subjects were also active at the workplace physical activity facility and thus categorized as participants, however the other five subjects did not participate at the physical activity facility and were categorized as non-participants.

The physical activity scores were manually calculated for each activity listed in the questionnaire by multiplying the frequency times the minutes and then all activities were summed together, for both physical activities at work and outside of work. Both scores were then added together to compute the total physical activity score. A total of 19 subjects listed house and yard work as physical activity while the rest did not. To ensure consistency, only leisure time physical activity was considered in the score and house and yard work was omitted.

The scores for all items from the instruments were manually entered into a database. Responses to the open-ended questions were manually coded by giving each

type of response an individual code and then combining codes into categories. Once the data were entered it was visually inspected to ensure accuracy.

Psychometric Analyses of Instruments

Prior to the statistical analysis, psychometric analyses of the instruments were completed including reliability and validity. All data were analyzed using a statistical package, SPSS for Windows. To examine reliability, test-retest reliability as previously discussed was first assessed. Then, the internal consistency reliability of the multi-item instruments was analyzed using Cronbach's coefficient alpha. It was re-examined depending on the validity results of the instruments. To examine validity, factor analysis was used to examine the multi-item instruments.

Reliability

Test-retest reliability measures how much an individual's responses vary from one week to another. This reliability was assessed in the pilot study. Another important test of reliability is internal consistency which measures how well each item relates independently to the rest of the items in the instrument (Leech, Barrett & Morgan, 2005). It was measured using Cronbach's coefficient alpha.

For each instrument, the computed reliability will be stated first and then compared to previous research. The reliability coefficient of Zakarian et al's (1994) self-efficacy instrument was determined to be 0.78 which matches the reliability coefficient reported by Zakarian et al. (1994). This study examined social support by family/friends combined and social support by co-workers separately. Based on this study's data, the reliability coefficient of social support by family/friends was 0.73 and social support by co-workers was 0.76. Zakarian et al. (1994) examined social support by family and by

friends separately. Zakarian et al. (1994) previously determined the reliability coefficients of the social support instrument: social support by friends had a 0.67 reliability coefficient while social support by family had a 0.75 reliability coefficient. The reliability coefficient for the Satisfaction with Life Scale was 0.86 in this study which resembles the previously determined reliability of 0.87 by Pavot & Diener (1993). Finally, the reliability coefficient of the Job In General Inventory in this study was 0.90 which resembles the previously determined reliability by Smith et al. (1987) of 0.91.

The reliability of the two author-constructed instruments was slightly lower than the established instruments. The reliability coefficient of the facility assessment instrument was 0.55 while the reliability coefficient of the work environment for physical activity instrument was 0.70.

Since health perception, enjoyment and physical activity contributing to job satisfaction were single item instruments, reliability coefficients were not calculated for these instruments.

Validity

Construct validity of the multi-item instruments was assessed to help the researcher determine which instruments were appropriate for further statistical analysis and was examined by factor analysis. The main purpose of factor analysis is to validate an instrument by demonstrating that its similar items load on the same factor, and to drop items that cross-load on more than one factor (Leech et al., 2005). In this study, principal components analyses were used to complete the factor analysis. For the instruments, all items were input into the analysis and SPSS extracted factors. Each item received a correlation value called a factor loading or component value. The factors were labeled

by the researcher based on the items that loaded on the individual factors. Lastly, the output stated the percentage of variance accounted for by each factor.

For each instrument, an initial factor analysis was conducted, and based on the result, a second factor analysis may have been conducted. In the end, based on the factor analysis, the researcher determined whether instruments needed to be modified. The detailed information of the factors can be found in Appendix N.

For self-efficacy, all four items loaded on factor 1 which accounted for 61.8% of variance and was labeled “capable of being active”. Therefore, the self-efficacy instrument was considered a valid instrument.

The original factor analysis for social support from family/friends determined that two factors existed, a “positive” factor which accounted for 42.3% of the variance and a “negative” factor that accounted for 24.1% of the variance. It was decided that component values below 0.50 would be considered low and removed from the instruments (Leech et al, 2005). Therefore, the factor analysis was rerun without the two items in Factor 2 and also without item #7 as it had a low component value of 0.457. All four items now loaded on one factor which accounted for 70.2% of the variance. This new instrument was retested for internal consistency - the reliability coefficient increased from 0.73 to 0.85.

Similarly, the factor analysis for social support from co-workers also determined two factors, a “positive” factor and “negative” factor. The factor analysis was rerun without the two items in Factor 2 and once again without item #7 as it had a low component value of 0.396. The factor analysis of the now four-item social support instrument determined one factor which accounted for 77.8% of the variance.

Eliminating these three items from the instrument also increased the reliability coefficient from 0.76 to 0.90. The new 4-item social support measures were used in the subsequent analyses.

The factor analysis of the Satisfaction with Life Scale determined that only one factor existed, accounting for 67.2% of the variance. These results are similar to Diener et al.'s (1985) validity assessment that determined one factor accounting for 66% of the variance.

The factor analysis for the Job In General Inventory determined that two factors existed. Factor 1 accounted for 42.8% of the variance while Factor 2 accounted for 13.3% of the variance. According to Ironson et al. (1989), a principal-components factor analysis of the 18 items resulted in one large factor, accounting for 87% of the variance. Given the previously determined validity of this instrument and the small sample size of the current study, the Job in General Inventory was used in its entirety (Ironson et al., 1989).

The factor analysis of the facility assessment instrument determined that a "positive" factor explaining 49.1% of the variance and a "negative" factor explaining 25.3% of the variance existed. The analysis was redone by dropping the item from Factor 2 "too crowded/too busy" from the analysis. The factor analysis of the now three-item facility assessment instrument resulted in one factor which accounted for 65.2% of the variance. Eliminating that one item from the instrument also increased the internal reliability coefficient from 0.55 to 0.73. Based on the validity assessment, the new 3-item instrument was used in the subsequent statistical analysis.

The factor analysis of the author-constructed work environment for physical activity instrument determined that two factors existed. One factor labeled “related to an individual’s job” explained 46.2% of the variance, while the other factor labeled “related to the workplace” accounted for 24.6% of the variance. Therefore, the work environment for physical activity instrument was considered a valid instrument with two distinct factors and was included in the statistical analysis as originally designed.

In summary, the seven multi-item instruments were examined using factor analysis. Social support family/friends, social support co-workers and facility assessment were found to have invalid factor structures, consequently items were eliminated from the instruments and the factor analysis was rerun. These new instruments were used in the statistical analysis. The other four multi-item instruments were used as originally designed.

Statistical Analysis

A summary of the analyses will be presented followed by the details of each statistical procedure.

The variables were first examined to determine if a gender, participation group or interaction effect existed (MANOVA). Secondly, the differences between participants and non-participants were examined for each variable individually (t-tests) and for the group of variables together, using discriminant analysis. This procedure indicated which variables best discriminated between participants and non-participants. Finally, the relationship between the level of total physical activity and each individual variable was measured using correlations to provide further insight.

Multiple Analysis of Variance (MANOVA)

MANOVA was used to determine whether an overall gender, group (participant or non-participant) or interaction effect existed.

T-Tests

Differences in means between the participants and non-participants in the workplace physical activity program were tested for significance using T-Tests for each variable in the study.

Analysis of Variance (ANOVA)

ANOVA was used to compare the differences between the three generations.

Discriminant Analysis

Discriminant analysis was used to determine which variables were the best discriminators between participants and non-participants of the CWB physical activity facility. The following variables were included in the analysis: age, perceived health, enjoyment of physical activity, self-efficacy, facility assessment, social support from family/friends, social support from co-workers, life satisfaction, job in general and perception of the work environment for physical activity. A stepwise entry method was employed in which independent variables were entered one at a time from the discriminant function. In the stepwise method, a model of discrimination is built step-by-step. Specifically, at each step all variables are reviewed and evaluated to determine which one will contribute most to the discrimination between groups. That variable will then be included in the model, and the process starts again (Leech et al., 2005). The discriminant function that was obtained from the discriminant analysis included the respective weights that best differentiated the participants and non-participants.

Correlations

Correlations were calculated to measure the strength of the relationship between the individual determinants and the level of total physical activity for the total sample and each gender separately.

Handling Missing Data

Proper handling of missing data is important in research. Since the number of cases of missing data was small (<5%), the researcher dropped the missing cases for the T-tests, ANOVA and Discriminant analyses. This was done by default by SPSS by using listwise deletion. Listwise deletion omits cases with missing values. Following deletion, estimates are derived based on the remaining complete cases. This approach is commonly used when dealing with missing data (Allison, 2001). However, pairwise deletion was employed for the correlation analysis. This method required SPSS to estimate each correlation separately using complete pairs of data (Allison, 2001). This approach was also done by default by SPSS.

Descriptive Statistics for Demographic Variables

Descriptive statistics such as frequency counts and percentages were examined for the demographic variables.

Analysis of the CWB Program

Quantitative. The descriptive information gathered was examined. Frequencies and means were analyzed from the fixed response questions (e.g. day/time of week). The open ended questions were coded into categories of responses and frequencies were calculated for each category.

Qualitative. Additionally, the CWB wellness coordinator was consulted prior to the research to obtain information on the workplace physical activity facility and programs. She was also consulted after the research to assist in the interpretation of the results. Both the qualitative and quantitative analysis of the CWB program is located in Appendix O.

CHAPTER 4

RESULTS

This chapter will report the findings of the study including the description of the sample, a summary of the study variables, differences in the sample, differences between participants and non-participants, differences of participants and non-participants separately by gender, relationships between physical activity and the study variables, differences in generations and results of the discriminant analysis

Descriptive Statistics of the Sample

A total of 163 subjects participated in this study including 109 females and 54 males. All subjects were employees of the CWB. The sample was divided into 2 groups: 80 subjects who participated at the CWB physical activity facility (categorized as participants) and 83 subjects who did not participate (categorized as non-participants). The descriptive data for the sample are illustrated in Table 3. Both groups had almost the exact same mean age of 42.5. Almost three-quarters of the subjects in the participant group were females, whereas the non-participant group had a more equal gender split, with approximately 55% of the group being females. Almost the entire sample were employees with desk-jobs, as only four respondents had non-desk jobs.

Table 3

Sample Characteristics

	Participants (n=80)	Non-Participants (n=83)
Age		
Mean	42.6	42.5
S.D.	8.7	9.9
Gender		
Female	78.8%	55.4%
Male	21.3%	44.6%
Job Classification		
Desk Job	100.0%	95.1%
Non-Desk Job	0.0%	4.9%

Variables included in the Study

Table 4 provides a summary of the variables included in the study with the possible range of scores and the means for the total sample.

Table 4

Values of Major Variables

	Range of Values	Total Sample Mean
<u>Level of Physical Activity</u>		
Physical activity at work (min.)	0 to 10080	57.7
Physical activity outside of work (min.)	0 to 10080	205.7
Total physical activity (min.)	0 to 10080	263.5
<u>Determinants of Physical Activity</u>		
<u>Demographic Variables</u>		
Age	18 +	42.5
<u>Psychological Variables</u>		
Perceived health	1 to 5	3.5
Enjoyment of PA	1 to 5	3.9
Self-efficacy	4 to 20	13.5
<u>Environmental Variable</u>		
Facility assessment*	3 to 21	17.6
<u>Social Support Variables</u>		
Family/friends*	4 to 20	12.0
Co-workers*	4 to 20	9.6
<u>Life Satisfaction</u>		
Satisfaction with life scale	5 to 35	24.4
<u>Work-Related Factors</u>		
Job in general	0 to 54	40.9
PA contributing to job satisfaction	1 to 7	5.3
Work environment for PA	5 to 35	25.9

*New instruments derived from the Factor Analysis

Differences in Sample - Examining Group and Gender Effects

To determine if there was a gender, group (participant or non-participant) or interaction effect, a two-way multivariate analysis was conducted. The following

variables were simultaneously examined in the analysis: physical activity at home, age, perceived health, enjoyment of physical activity, self-efficacy, facility assessment, social support from family/friends, social support from co-workers, life satisfaction, job in general, physical activity contributing to job satisfaction and perception of the work environment for physical activity.

The analysis determined that there was no gender effect ($F\text{-value}=1.008$, $p=0.437$) or interaction effect ($F\text{-value}=0.991$, $p=0.451$) but there was a significant participant group effect ($F\text{-value}=11.016$, $p=.000$). Given that there were no significant gender or interaction effects, the subsequent analyses focused on the group effect between participants and non-participants. Firstly, differences between participants and non-participants in regards to each individual variable were examined and secondly all the variables were analyzed simultaneously by way of discriminant analysis.

Differences between Participants and Non-Participants - Individual Variables

Total Sample

In order to test the differences between participants and non-participants at the physical activity facility, 15 t-tests were performed. Table 5 provides the means and standard deviations for participants and non-participants, t-values and significance levels. Based on an alpha of 0.05, there were several significant differences between the means of participants and non-participants.

Table 5

Differences Between Participants and Non-participants

	Participants		Non-Participants		T-Value
	Mean	SD	Mean	SD	
<u>Level of Physical Activity</u>					
Physical activity at work (min.)	117.7	109.1	NA	NA	9.825**
Physical activity at home (min.)	194.0	166.0	217.0	216.4	-0.758
Total physical activity (min.)	311.7	210.0	217.0	216.4	2.835*
<u>Determinants of Physical Activity</u>					
Age	42.6	8.7	42.5	9.9	0.044
<u>Psychological Variables</u>					
Perceived health	3.7	0.7	3.4	0.8	2.792*
Enjoyment of PA	4.3	0.8	3.6	0.8	6.024**
Self-efficacy	14.8	3.4	12.2	3.6	4.641**
<u>Environmental Variable</u>					
Facility assessment	18.6	1.8	16.6	3.0	4.975**
<u>Social Support Variables</u>					
Family/friends	12.1	3.9	11.9	4.2	0.275
Co-workers	11.9	4.6	7.4	3.3	7.119**
<u>Life Satisfaction</u>					
Satisfaction with life scale	25.4	5.7	23.5	5.5	2.184*
<u>Work-Related Factors</u>					
Job in general	41.2	10.8	40.6	10.5	0.355
PA contributing to job satisfaction	6.2	01.0	4.4	1.3	9.766**
Work environment for PA	26.6	4.8	25.2	5.1	1.857

*p<.05

**p<.001

Physical Activity. Firstly, physical activity at work differed significantly between participants and non-participants due to the essence of the groups. Physical activity at home did not differ significantly between the groups but non-participants were slightly more active than participants outside of work. In terms of total physical activity, there

was a significant difference between the two groups with participants reporting more physical activity than non-participants.

The standard deviations for the physical activity variables were high compared to the means of these variables. The probable cause of this is that the range of values was high. For participants, the values of physical activity at work and at home ranged from 0 to 640 minutes and 0 to 690 minutes per week, respectively. Also, the standard deviation for physical activity at work would have been influenced by the 15 respondents who were categorized as participants (based on the criteria) but who did not report any physical activity at the facility in the past week. Of those 15 respondents, 14 indicated that the list of activities was not representative of their typical physical activity behavior while one respondent did not indicate whether it was representative or not.

For non-participants, the values of physical activity at home ranged from 0 to 1230 minutes. The high standard deviation would have been influenced by the respondent who completed 1230 minutes of physical activity. Without the data of this one respondent, the range of physical activity at home would have equaled 870 minutes. This individual could have been considered an outlier but it was decided to keep the subject as part of the sample.

Figure 1 graphically presents the percentage of each group participating in differing amounts of total physical activity (minutes per day). It is a pictorial representation of the percentage of employees reaching Canada's Physical Activity Guideline of 30 minutes of daily total physical activity. It also demonstrates the percentage of employees participating in more than 30 minutes and less than 30 minutes of total physical activity daily.

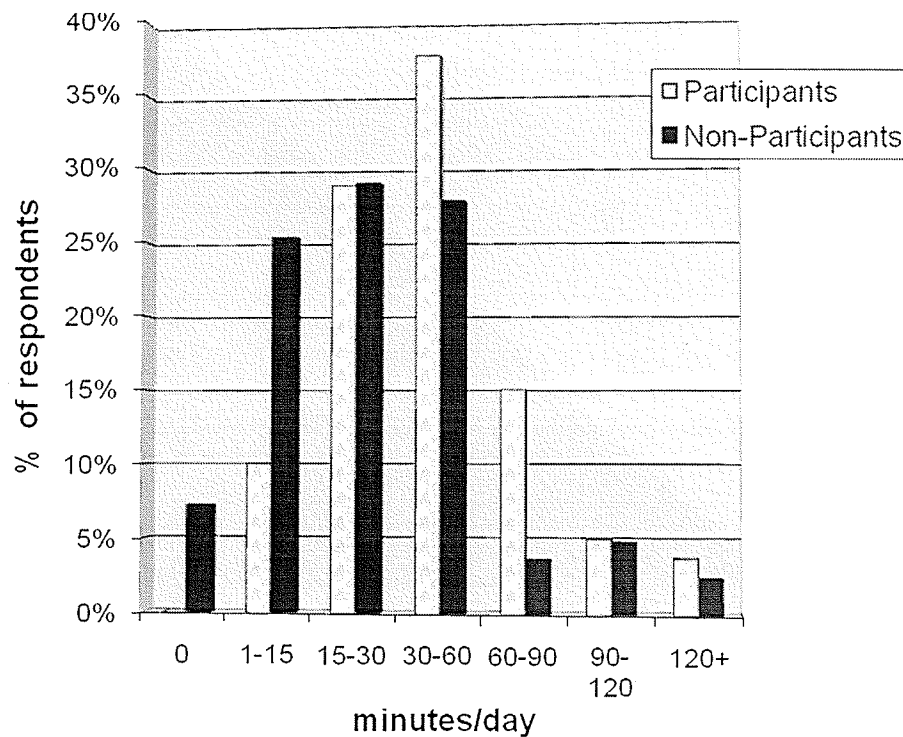


Figure 1. Percentage of Participants and Non-participants Participating in Differing Amounts of Total Physical Activity per Day

Determinants. The physical activity determinants were compared between participants and non-participants of the workplace physical activity facility. As shown in Table 5, the only variables that did not differ between the two groups were: social support from family/friends, job in general and perception of the work environment for physical activity. The following variables were highly significantly different ($p < 0.001$): enjoyment of physical activity, self-efficacy, social support from co-workers, facility assessment and physical activity contributing to job satisfaction, and the following variables were significantly different ($p < 0.05$): perceived health and life satisfaction.

Separately by Gender

Table 6 outlines differences between participants and non-participants separately by gender. For females, there were several significant differences between participants and non-participants, based on an alpha of 0.05, including: total physical activity, perceived health, enjoyment of physical activity, self-efficacy, facility assessment, social support from co-workers, life satisfaction and physical activity contributing to job satisfaction. For males, there were also several significant differences between participants and non-participants including: enjoyment of physical activity, self-efficacy, facility assessment, social support from co-workers and physical activity contributing to job satisfaction.

Table 6

Differences Between Participants and Non-participants Separately by Gender

	Female					Male				
	Participant		Non-Participant		T-Value	Participant		Non-Participant		T-Value
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
<u>Level of Physical Activity</u>										
Physical activity at work	113.6	113.7	NA	NA	6.77**	132.9	91.9	NA	NA	8.90**
Physical activity at home	180.3	158.5	167.0	150.7	0.44	244.7	187.4	279.1	266.6	-0.48
Total physical activity	293.9	202.2	167.0	150.7	3.59**	377.7	231.2	279.1	266.6	1.31
<u>Determinants of Physical Activity</u>										
<u>Demographic Variables</u>										
Age	42.3	8.4	42.6	9.1	-0.17	43.4	9.9	42.3	11.0	0.33
<u>Psychological Variables</u>										
Perceived health	3.7	0.7	3.2	0.8	3.22*	3.7	0.5	3.5	0.7	0.57
Enjoyment of PA	4.2	0.8	3.4	0.8	5.24**	4.6	0.5	3.8	0.7	4.18**
Self-efficacy	14.4	3.5	11.5	3.5	4.29**	15.9	2.5	13.1	3.6	2.92*
<u>Environmental Variable</u>										
Facility assessment	18.3	1.8	16.7	2.7	3.49**	19.6	1.5	16.4	3.4	3.71**
<u>Social Support Variables</u>										
Family/friends	12.1	4.0	11.8	4.3	0.29	12.2	3.3	12.0	4.0	0.13
Co-workers	11.9	4.6	8.0	3.6	4.73**	11.7	5.0	6.6	2.7	4.86**
<u>Life Satisfaction</u>										
Satisfaction with life scale	25.4	6.0	23.0	6.1	1.98*	25.6	4.4	24.1	4.7	1.13
<u>Work-Related Factors</u>										
Job in general	41.1	10.8	40.4	10.9	0.31	41.8	11.2	40.9	10.1	0.30
PA contributing to job satisfaction	6.1	1.0	4.4	1.2	8.59**	6.5	0.9	4.5	1.5	5.00**
Work environment for PA	26.7	4.8	24.9	5.8	1.77	26.3	4.6	25.5	4.1	0.62

*p<.05

**p<.001

Even though there was no overall gender effect determined from the MANOVA, it was of interest to specifically determine whether gender differences in physical activity occurred within each participant group. Thus, the differences in levels of physical activity at work, outside of work and in total between females and males within each participation group were examined using t-tests. There were no statistically significant differences between female and male participants in terms of physical activity at work (t-value=-0.647, p=0.520), physical activity outside of work (t-value=-1.429, p=0.157) and total physical activity (t-value =-1.470, p=0.146). However a significant difference existed between female and male non-participants in terms of physical activity outside of work and total physical activity (t-value=-2.415, p=0.018) (both physical activity variables measure that same type of physical activity).

Relationships between Physical Activity and Study Variables

Correlations

Correlation coefficients were computed to measure the strength of the relationship between total physical activity levels and the determinant variables. The correlation analysis was performed on the total subject group initially, then by gender and then on each participation group split by gender.

The results of the correlational analyses of the total sample (column one) presented in Table 7 show that five of the 12 correlations were statistically significant. The greatest correlation was found between total physical activity and self-efficacy ($r=0.382$, $p<.01$). Other statistically significant correlations with total physical activity were enjoyment ($r=0.274$, $p<.01$), social support family/friends ($r=0.183$, $p<.05$), facility assessment ($r=0.169$, $p<.05$) and perceived health ($r=0.162$, $p<.05$).

Table 7

Correlations Between Total Physical Activity and Study Variables

	Total			Participants		Non-Participants	
	Total (n=163)	Female (n=109)	Male (n=54)	Female (n=63)	Male (n=17)	Female (n=44)	Male (n=37)
<u>Demographic Variables</u>							
Age	-0.129	-0.167	-0.100	-0.093	-0.569*	-0.284	0.033
<u>Psychological Variables</u>							
Perceived health	0.162*	0.260**	-0.052	0.196	-0.524*	0.201	0.058
Enjoyment of PA	0.274**	0.298**	0.213	0.232	-0.105	0.097	0.214
Self-efficacy	0.382**	0.361**	0.395**	0.289*	0.695**	0.269	0.270
<u>Environmental Variable</u>							
Facility assessment	0.169*	0.223*	0.122	0.109	-0.420	0.198	0.143
<u>Social Support Variables</u>							
Family/friends	0.183*	0.217*	0.136	0.204	-0.144	0.256	0.224
Co-workers	0.142	0.105	0.317*	-0.073	0.027	0.065	0.468**
<u>Life Satisfaction</u>							
Satisfaction with life scale	0.121	0.159	0.019	0.173	-0.032	0.035	0.001
<u>Work-Related Factors</u>							
Job in general	-0.078	-0.079	-0.109	-0.301*	-0.111	0.331*	-0.123
PA contributing to job satisfaction	0.152	0.276**	0.017	0.101	-0.093	0.127	-0.109
Work environment for PA	0.120	0.182	-0.006	0.242	0.116	0.028	-0.082

*p<.05

**p<.01

Analyzing the correlations by gender (column two and three), both males and females had a statistically significant relationship between total physical activity and self-efficacy. Males only had one additional significant correlation - social support from co-workers, while female respondents had four additional statistically significant correlations: perceived health, enjoyment of physical activity, facility assessment, social support family/friends and physical activity contributing to job satisfaction. These variables all had a positive correlation with the level of total physical activity.

Lastly, the correlations of the two participation groups split by gender (column four to seven) were examined. There were very few significant correlations. Female participants and non-participants had statistically significant relationships between total physical activity and job in general. Female participants had an additional statistically significant relationship between total physical activity levels and self-efficacy.

Male participants had a statistically significant negative relationship of total physical activity with age and perceived health, plus a large positive relationship with self-efficacy, whereas, male non-participants had a statistically significant relationship between total physical activity and social support from co-workers.

Generational Differences

Generational differences were of interest in this study, therefore age was categorized into generational groups in order to compare the study variables among the generations. The Veterans and the Baby Boomers were pulled together into one category as there were only three Veteran respondents. The generations are categorized as: Veterans (62+)/Baby Boomers (43-61), Generation X (29-42) and Generation Y (18-28). Figure 2 presents a graphical representation of the percentage of the sample categorized

into the three generations. The combined Veterans and Baby Boomers generational group was the largest group, followed by Generation X and Generation Y.

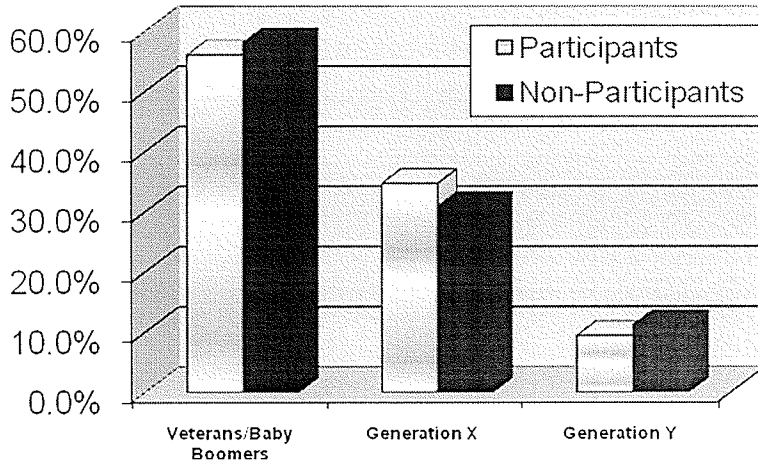


Figure 2. Percentage of Sample in each Generation, by Participant Group

To determine if differences between the generations existed, analyses of variance (ANOVA) were conducted, first on the total sample and then individually by participation group. Means and standard deviations of the variables for the three groups are reported in Table 8. There were only three significant differences ($p < .05$) between the generations: physical activity at home, total physical activity and social support from family and friends.

Tukey's multiple comparison post hoc tests were employed to determine which generations were significantly different from one another. There was a statistically significant difference ($p < .05$) between Generation Y (F-value = 5.293) and the two other generations when comparing the level of physical activity at home. Further, Generation Y (F-value = 3.637) had a significantly ($p < .05$) higher total level of physical activity than

Veterans/Baby Boomers. In terms of social support from family and friends, there was a statistically significant difference between Generation Y (F-value=3.862) and Veterans/Baby Boomers.

Table 8

Generational Differences in Study Variables

	Veterans & Baby Boomers (n=89)		Generation X (n=51)		Generation Y (n=16)		F-Value
	Mean	SD	Mean	SD	Mean	SD	
<u>Level of Physical Activity</u>							
Physical activity at work	59.1	106.4	57.0	86.6	50.6	79.8	0.052
Physical activity at home	180.1	185.5	210.8	165.8	347.8	274.3	5.293*
Total physical activity	239.2	217.1	267.8	199.1	398.4	273.7	3.637*
<u>Determinants of Physical Activity</u>							
<u>Psychological Variables</u>							
Perceived health	3.6	0.8	3.4	0.7	3.6	0.5	0.720
Enjoyment of PA	3.8	0.8	4.0	1.0	4.3	0.6	2.358
Self-efficacy	13.0	3.7	13.6	4.0	14.5	3.3	1.304
<u>Environmental Variable</u>							
Facility assessment	17.3	2.6	18.1	2.7	18.0	2.5	1.669
<u>Social Support Variables</u>							
Family/friends	11.3	3.8	12.4	3.9	14.0	4.6	3.862*
Co-workers	9.9	4.5	9.0	4.7	8.1	4.2	1.284
<u>Life Satisfaction</u>							
Satisfaction with life scale	24.4	5.9	24.0	5.7	24.4	4.2	0.103
<u>Work-Related Factors</u>							
Job in general	41.8	10.8	39.9	10.8	40.1	12.2	0.540
PA contributing to job satisfaction	5.2	1.5	5.4	1.5	5.1	1.2	0.495
Work environment for PA	26.2	4.1	25.1	6.3	26.3	4.9	0.875

*p<.05

In the ANOVA for the participant group, there were only two significant differences ($p < .05$) between the generations: physical activity at home (F-value=5.50) and job satisfaction (F-value=4.53). In the non-participant group, there were no significant differences between the generations.

Figures 3 and 4 illustrate the post hoc physical activity differences among the three generations, for the participant and non-participant groups respectively. In the participant group (Fig. 3), the data points for physical activity at work were quite similar for all three generations, while the data points for physical activity at home showed a significant increase from Veterans to Generation Y. In the non-participant group (Fig. 4), Generation Y appeared to be more active at home than the other two generations, however these differences were not statistically significant.

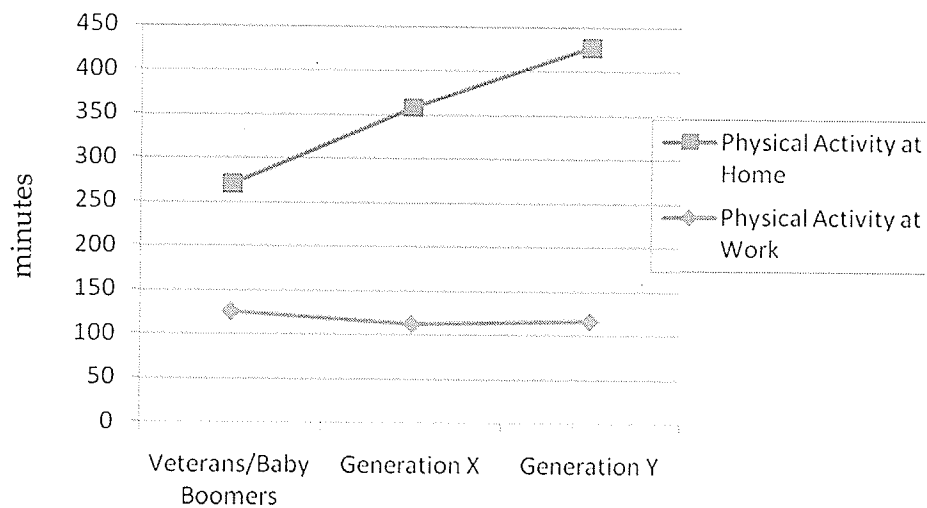


Figure 3. Physical Activity by Generation - Participant Group

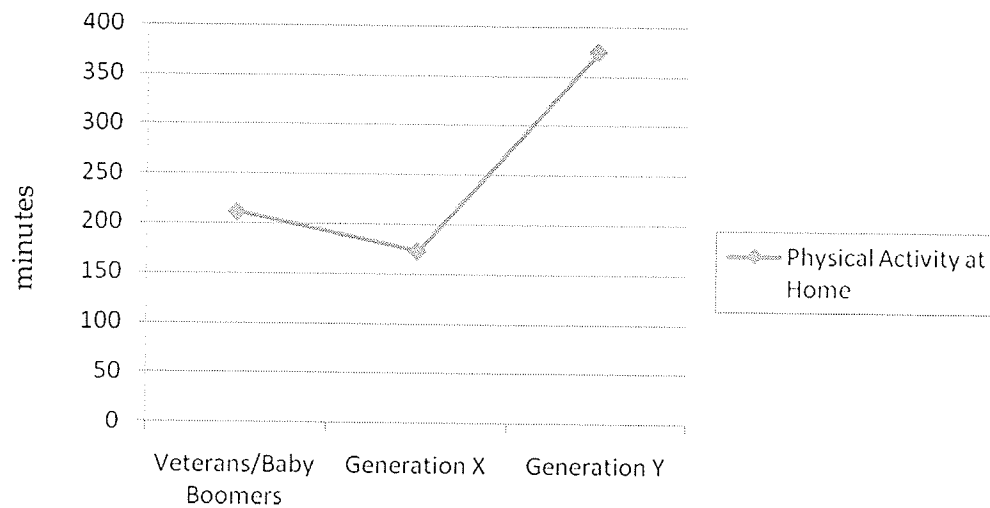


Figure 4. Physical Activity by Generation - Non-Participant Group

Differences between Participants and Non-Participants - Discriminant Analysis

To further examine the differences between participants and non-participants, a more powerful statistic was used to examine all the variables simultaneously. Three separate stepwise discriminant analyses were performed in order to determine the variables which were the best predictors of group membership (participant or non-participant in the workplace physical activity program). The following variables were included in the analysis: age, perceived health, enjoyment of physical activity, self-efficacy, facility assessment (3-item instrument), social support from family/friends (4-item instrument), social support from co-workers (4-item instrument), life satisfaction, job in general and perception of the work environment for physical activity. Physical activity contributing to job satisfaction was not included in the analysis as it was only applicable for participants. Also, the physical activity variables were not included in this analysis.

Firstly, a discriminant analysis on the entire sample was completed and then two discriminant analyses were performed for each gender separately. In order to carry out the discriminant analysis, complete sets of data were needed for all subjects. Therefore, if subjects were missing one piece of data, their complete data set was excluded from the discriminant analysis (listwise deletion). This approach was done by default by SPSS. As a result the total sample size equaled 148, female sample equaled 101 and male sample equaled 47.

Table 9 highlights the standardized canonical discriminant function coefficients that represent the weights of each variable and indicates which variables distinguish individuals from the two groups.

For the total sample, social support by co-workers, facility assessment, enjoyment and self-efficacy were the four variables that discriminated between participants and non-participants. Wilk's lambda was significant, $\lambda=.60$, $X^2=74.0$, $p<.001$, which indicates that the discriminant analysis including these four variables was able to significantly discriminate the two groups. Using this equation, 80% of the entire sample was correctly classified, 80% of the participants and 81% of the non-participants were correctly classified.

For females, the same four variables: social support co-workers, facility assessment, enjoyment and self-efficacy were heavily weighted and discriminated between female participants and non-participants. Wilk's lambda was significant, $\lambda=.63$, $X^2=44.4$, $p<.001$, which indicates that the discriminant analysis including these four variables was able to significantly discriminate the two groups. However for males, only social support from co-workers, enjoyment and facility assessment were weighted

heavily to maximize the discrimination between male participants and non-participants. Wilk's lambda was significant, $\lambda=.53$, $X^2=27.4$, $p<.001$, which indicates that the discriminant analysis including these three variables was able to significantly discriminate the two groups.

Table 9

Discriminant Analysis Results

	Standardized Function Coefficients		
	Total (n=148)	Female (n=101)	Male (n=47)
Social Support co-workers	.63	.61	.53
Facility assessment	.44	.44	.49
Enjoyment	.38	.42	.51
Self-efficacy	.32	.36	-

CHAPTER 5

DISCUSSION AND CONCLUSIONS

This chapter will first discuss the results of the study including the sample, participation in physical activity, physical activity determinants and the implications for the CWB. Then the limitations of this study, suggestions for future research and conclusions will be presented.

The Sample

It is important to understand the study's sample in comparison to the CWB's greater workforce. The mean age of the sample paralleled the mean age of the CWB's workforce (43 years). There were a total of 67 % female and 33 % male subjects in the sample compared to 63% and 37%, respectively, in the CWB's workforce. Similar to the CWB's workforce, the sample was primarily female. Based on these results, one can conclude that the sample did not differ significantly from the CWB's workforce on the basis of age and sex. Therefore, there is some evidence to suggest that the study can be generalized to the entire CWB organization.

Physical Activity Participation

This section will discuss the results of the study that are directly related to physical activity including: physical activity participation at the CWB facility, a comparison of physical activity at work and outside of work, the percentage of subjects meeting Canada's Physical Activity Guide and physical activity differences between participants and non-participants split by gender and age/generations.

Participation at the CWB Physical Activity Facility

A total of 44% of the CWB workforce participate (are members) at the workplace physical activity facility (K. Chase, personal communication). According to Shephard and Cox (1980), the majority of workplaces recruit an estimated 15 to 20% of their employees to participate in wellness programs. McKenzie et al. (1992) also found that 20 to 40% of employees participate at workplace physical activity facilities. Thus, the CWB has a high employee participation rate and can be considered a successful program. The CWB physical activity facility attracts a slightly larger percentage of females than males, as 63% of the CWB's workforce is female, yet 67% of the facility's participants are female.

Physical Activity Outside of Work and Total Physical Activity

There were no significant differences in physical activity levels outside of work between participants and non-participants of the total sample. For female participants, there were no significant differences in level of physical activity outside of work but due to the significant difference in physical activity at work, there was a significant difference in total physical activity. Almost 40% of female participants' total physical activity took place at work. This may suggest that females are more inclined to squeeze in their physical activity throughout their work day, possibly due to home and family commitments.

Male participants were obviously significantly more active than non-participants at work, however, there was no significant difference in activity level outside of work between the groups. A total of 35% of male participants' total physical activity took place at work. The total physical activity reported by male participants was higher than the total

physical activity reported by male non-participants, but the difference between the two groups was not significant. These results are difficult to interpret because of the small male participant sample size (n=17) and low response rate (28%).

Comparison to Canada's Physical Activity Guide

Increasing participation in regular daily physical activity is a health priority for Canadians. Health Canada's Physical Activity Guide (1998) suggests that 30 to 60 minutes of physical activity daily is necessary to achieve the health benefits of physical activity. As a whole, 50% of the CWB sample met the lower recommended levels of 30 minutes of physical activity. Comparing the participation groups, 61% of the study participants but only 39% of non-participants met the guideline. This latter finding resembles Health Canada's statistic that only 37% of the Canadian population meets the recommended levels of daily physical activity (Canada's Physical Activity Guide, 1998).

Given the high level of inactivity in Canada, these are positive findings. This may suggest that the presence of a workplace physical activity facility can influence employees, who may otherwise be inactive, to exercise at work. Nonetheless, there still remains 50% of employees who are not active enough to achieve the health benefits of physical activity. These are the employees who need to be targeted and motivated to start participating in physical activity.

Age/Generational Physical Activity Differences

In this study, age did not significantly differ between participants and non-participants, and age and physical activity were not significantly correlated (except for male non-participants). The differences in age were also examined through a slightly different lens, by way of generations. All subjects were grouped into one of three

generations based on their age. Therefore, in this study generational differences are comparable to age differences.

All three generations reported equal amounts of time spent being active at the workplace physical activity facility. Thus, the facility does not appear to be targeting any specific age group and has a broad appeal to all generations. However, the youngest Generation, Generation Y, reported significantly more time spent being active outside of work. This may be due to the fact that this generation is still involved in team sports and is less likely to be married and have children.

These findings do not parallel previous studies concerning total physical activity and age/generational differences. For example, Sallis and Owen (1999) specify age as the most consistent demographic determinant of physical activity. Age and physical activity are typically negatively correlated. In other words, the older generations typically would report a lower level of physical activity. As females and males grow older, their amount of physical activity decreases. Rudman and Steinhardt (1988) state that age is the most important factor in predicting physical activity participation in a workplace setting. They concluded that participants were typically significantly younger than non-participants. Lastly, Lewis et al.'s (1996) study found that participation levels in a workplace wellness program were highest amongst employees aged 21 to 30. This study's physical activity at work findings do not support Rudman and Steinhardt (1988) and Lewis et al.'s (1996) as participants were not significantly younger than non-participants.

These findings suggest that the workplace physical activity facility could be used as a recruitment and retention tool for all ages/generations of potential employees and not be limited to a specific age group. It is to the CWB's advantage to recruit and retain the

best and brightest employees and thus, the CWB should leverage their physical activity facility as one of their recruitment and retention strategies.

The CWB could even go as far as to implement a formal policy that would require human resource professionals to promote physical activity opportunities during the recruitment of new employees. According to Cameron and Craig (2003), 10% of Canadian workplaces have implemented formal recruitment policies that require human resource professionals to promote the physical activity facility/programs while 17% of Canadian workplaces promote the facilities informally throughout the recruitment process (Cameron & Craig, 2003). To promote physical activity, the CWB could post pictures and information regarding their facility and programs on their organization's web-site and promotional material. This may attract some individuals to consider the CWB in their job search. Pictures could also be shown at employee recruitment fairs on the organization's display booth to make it obvious to new recruits that the CWB is committed to employee wellness. By promoting the physical activity facility to possible new recruits, the CWB may attract individuals who would be interested in participating (perhaps more health conscious individuals).

In terms of retention of employees, the CWB does not need to spend any money or dedicate any effort towards promoting to their current employees the benefit of the physical activity facility and the wellness programs as part of being a CWB employee. For the participants of the facility, it is an obvious benefit, whereas non-participants do not value the facility and programs and therefore do not see it as a benefit. Employees who feel that the physical activity facility and the wellness programs are added benefits to working at the CWB, may think twice before searching for career opportunities

elsewhere. Others who may start to search for other opportunities will likely realize that not all employers offer on-site physical activity opportunities and wellness programs.

Differences between Participants and Non-Participants – Individual Determinants

It is essential to find a way to target those employees who are lacking physical activity in their lives and encourage them to start moving. In order to increase physical activity participation, it is important to understand what influences physical activity.

Determinants of physical activity need to be examined when designing and implementing physical activity programs. The overall challenge is to better understand the determinants of physical activity and translate that knowledge into practical action. However, one issue in attempting to develop successful ways to encourage physical activity at work is a lack of knowledge of the determinants of physical activity in such an environmental setting. Increasing participation in physical activity is always a challenge, and the workplace, even though it is a different environmental setting, is not an exception.

Results from the current study demonstrate that differences in physical activity determinants between participants and non-participants of a workplace physical activity facility exist. Additionally, the results generally indicate that differences exist between participants and non-participants separately by gender. This study examined the differences for individual variables using two statistical methods, t-test and correlation analysis, thus results derived from both methods will be discussed. The following section will review the differences between participants and non-participants in terms of psychological, environmental, social support, life satisfaction and work-related variables.

Psychological Determinants

Three psychological determinants, perceived health, enjoyment of physical activity and self-efficacy were examined in this study. These three determinants will be discussed further below.

Perceived health. Perceived health is the level of health an individual believes themselves to have. Participants as a whole significantly perceived their health as more positive than non-participants. Female participants had a significantly higher positive health perception than non-participants but male participants' health perceptions did not differ from non-participants.

The correlational analysis of the total sample determined that a significant relationship existed between an individual's perceived health and level of physical activity. Broken down by gender, females' health perception was significantly positively related to their level of physical activity, whereas males' perception of their health was not. Thus the same trend occurred for both the t-tests and correlations.

Correlations were also calculated separately for genders by participation group. Interestingly, male participants' perceived health was negatively correlated with physical activity. Although a small sample (n=17), this suggests that these males may be physically active for health reasons, possibly to reduce blood pressure, prevent heart disease, etc.

Female results support the literature but not the male results. For example, Shephard (1987) indicated that respondents who perceive their health as poor are less likely to adhere to physical activity. As well, Hooper and Veneziano (1995) determined

that physical activity program participants reported being in better perceived physical health than non-participants.

The male results may have been different if the sample size had been bigger. The female participant sample was almost four times as big as the male participant sample. As well, compared to the female response rate (52%) the male response rate (28%) was lower. It is impossible to determine whether or not significant differences would have surfaced if both female and male participant samples sizes were equal but it is important to be aware of the male's small sample size and low response rate.

Enjoyment of physical activity. In this study, not surprisingly, participants as a whole significantly differed from non-participants in terms of level of enjoyment of physical activity. Both female and male participants also differed significantly from their respective non-participant counterparts.

The correlational analysis of the total sample showed that a significant positive relationship existed between the level of enjoyment of physical activity and the actual level of physical activity. Specifically, this significant correlation occurred for females only and not males. Thus the level of enjoyment of physical activity for females was related to the level of physical activity, whereas this was not the case for males.

Enjoyment and physical activity were found to be related for females. According to Sallis and Owen (1999) enjoyment is a variable that may influence activity behavior. Thus strategies to make physical activity enjoyable should be developed such as developing employees' confidence in physical activities, encouraging enjoyable activities with co-workers, creating an environment for physical activity that is enjoyable. On the

other hand, males may not be driven to participate based on enjoyment but for perhaps other reasons such as to relieve stress, to stay fit or for additional health reasons.

Self-efficacy. Self-efficacy is an individual's level of confidence in being able to successfully perform physical activity. Participants as a whole had a significantly higher level of self-efficacy than non-participants and both female and male participants differed significantly from their respective non-participant counterparts.

As would be expected, self-efficacy and physical activity were strongly correlated across all groups, except for male and female non-participants. These findings are consistent with previous findings. Booth et al. (2000) discovered that self-efficacy was strongly related to physical activity participation. Also, Lechner and DeVries (1995) and Alexy (1991) concluded that participants had higher self-efficacy rating than non-participants. The study suggested that an individual's perception of activity self-efficacy was the best predictor of exercise adherence. Additionally, Sternfeld et al.'s (1999) research concluded that women with high levels of physical activity self-efficacy were two to four times more likely to be active than women with low physical activity self-efficacy. As a result, strategies to increase self-efficacy in non-participants may help to increase participation.

However, the reverse may also be true. Correlations between variables represent two-way relationships and not a cause and effect relationship. Stein, Fisher, Berkey and Colditz (2007) study attempted to determine whether an increase in physical activity levels influenced adolescents' self-efficacy. They determined that for both females and males, increasing their levels of physical activity had a positive effect on their self-efficacy. It is also important to consider that an increase in physical activity may

positively affect an employee's self-efficacy even in a workplace environment. Also, Lechner and DeVries (1995) found that the self-efficacy of employees who dropped out of workplace fitness programs decreased significantly from the beginning of the program when they were actively participating.

Environmental Determinant - Facility Assessment

Researchers have identified several environmental factors associated with physical activity. According to Owen et al. (2000), the environment can influence physical activity by providing opportunities that are accessible, convenient, safe and aesthetically appealing. Environmental factors such as the characteristics of the facility can increase or hinder participation in physical activity. Thus, in this study, the workplace physical activity facility was assessed.

There were significant differences between participants and non-participants as a whole in terms of their assessment of the workplace physical activity facility. As would be expected, participants, both male and female, reported a significantly more positive assessment of the facility than non-participants. Even though certain groups reported higher scores, all employees had a relatively high positive assessment of the workplace physical activity facility.

According to Fitness Canada (1983), active individuals are twice as likely as inactive individuals to feel that greater availability of a facility would increase their participation. Thus, active individuals would be influenced by the convenience of the facility and consequently become participants of the facility. Additionally, according to Andrew (1981) perceived convenience of the physical activity facility is a predictor of participation. Therefore, employees who feel the facility is convenient are more likely to

be participants. It would have been useful to determine what characteristics of the facility were not appealing to employees. That type of information could have been used to make modifications to the facility and hopefully as a result increase participation levels.

The facility assessment was significantly correlated with the level of physical activity for females only and specifically female participants. Females may be more concerned than males with the characteristics of the facility such as safety, convenience and cleanliness than males. This supports Sallis et al. (1998) who identified that environmental variables such as proximity of the facilities and perceived safety, are correlated with physical activity.

Social Support Determinants

Social support can come from a variety of sources: friends, family, co-workers, etc. According to Shephard and Cox (1980), social support is known to be associated with participation in physical activity programs. Even though social support is known to influence physical activity, social support in the workplace has not been evaluated to a great extent. Therefore, this study examined social support from family/friends as well as social support from co-workers.

Surprisingly, social support from family/friends did not differ significantly between participants and non-participants as a whole or separately by gender. However, social support from co-workers did differ significantly between the two groups as a whole and separately by gender. Female and male participants did report more support from co-workers than female and male non-participants.

This finding parallels Gottlieb and Green's (1984) research which found that participants usually demonstrate stronger social support networks than non-participants.

Yet, these findings contradict Trost et al.'s (2002) review which concluded that social support has a correlation with physical activity. Trost et al.'s (2002) review of literature concluded that all research studies that evaluated the influence of social support of physical activity behavior discovered a positive relationship between social support and activity levels. This study has demonstrated the importance of examining social support from different sources.

Unfortunately, no data were gathered to determine whether or not participants participated with another employee or individually. It is likely that a percentage of participants do participate with others or perhaps receive encouragement and support from other participants. This data would have been useful as research has shown that individuals who participate with a partner seem to participate on a more regular basis (McCready & Long, 1985), and have a lower drop-out rate (Dishman, 1982).

To increase participation at the workplace physical activity facility, workplaces should structure their programs to encourage supervisors and co-workers to support physical activity initiatives in the workplace. Internal social support strategies should be developed and implemented within the workplace. Social support strategies will be discussed later on.

Life Satisfaction

In the literature examining the differences between participants and non-participants of workplace physical activity initiatives, life satisfaction has been minimally researched and consequently was examined in this study. The results indicated that participants reported a significantly higher life satisfaction score than non-participants but

only for females and not males. There were no significant correlations between life satisfaction and the level of physical activity for any group.

These findings do not support Shephard and Cox's (1980) study that examined life satisfaction. Shephard and Cox compared several satisfaction ratings between participants and non-participants and life satisfaction was one of the variables. In their study no differences were found between participants and non-participants in a workplace physical activity program.

Work-Related Factors

Three work-related variables, job satisfaction, physical activity contributing to job satisfaction and perception of the work environment for physical activity, were examined in this study.

Job Satisfaction. The Job in General Inventory did not reveal any significant differences between: participants and non-participants as a whole, female participants and non-participants or male participants and non-participants. These findings parallel Peterson and Dunnagan's (1998) study of a northern state university where they concluded that no statistically significant differences in job satisfaction existed between participants and non-participants. The results reported in this study from participants and non-participants, female participants and non-participants and male participants and non-participants were all very similar. This suggests that perhaps either the CWB is a good place to work or that the Job in General Inventory was too general in nature and therefore not the appropriate instrument for this study. Originally, the Job in General Inventory was created to complement the Job Descriptive Index and was likely not intended to be used as an instrument on its own. Since the JDI and the JIG together would have created a

much too long questionnaire, a different job satisfaction instrument would have likely been more appropriate.

There was an interesting contrast in the direction of correlations between female participants and non-participants. The Job in General Inventory was significantly negatively correlated with physical activity for female participants but significantly positively correlated for female non-participants. A possible explanation for this discrepancy is that female participants are less satisfied with their jobs and use physical activity to cope with their dissatisfaction. On the other hand, female non-participants may be more satisfied with their jobs and do not need to cope with their dissatisfaction by participating at the workplace physical activity facility.

Another possible explanation is that these results are reflective of different types of jobs. In consultation with the CWB wellness consultant the following explanation was speculated. According to K. Chase (personal communication), a larger percentage of female participants are employed in non-managerial positions at the CWB. These positions might be less demanding (and satisfying) and consequently they have more time to participate in physical activity at work. Conversely, K. Chase (personal communication) strongly believes that several female managers do not feel comfortable changing with their subordinates, especially managers who are not fit. They also feel that being active with people they supervise may diminish their status. Therefore, female non-participants might have more demanding, higher status (and satisfying) jobs and consequently they have less time and/or are not comfortable participating in physical activity at work.

Considering a theoretical explanation, Karasek and Theorell's (1990) job demand-control model predicts that work stress, where a high level of psychological demands combined with a low level of decision authority and a low level of skill utilization, increases the risk of overall stress. Thus, females in non-managerial positions may have high mental stress but low decision authority and consequently participate at the facility to deal with their work situation.

If the subjects' job classifications had been obtained, it would have been possible to determine whether or not these statements were factual. However, since the subjects' job positions were not obtained, these reasons are only speculations.

Physical activity contributing to job satisfaction. An author-constructed variable, physical activity contributing to job satisfaction, was used to examine whether or not CWB employees perceived that participating at the workplace physical activity facility increased their level of job satisfaction. This variable had significant differences between participants and non-participants as a whole. As well, both female and male participants differed from their respective non-participant counterparts. This variable directly relates to participants as it asks specifically if participating at their workplace physical activity facility improves their job satisfaction. Thus, it is not surprising that there were differences between participants and non-participants. Nevertheless, it is evident based on these results that participants of the workplace physical activity facility believed that their participation did improve their level of job satisfaction. It is impossible to determine from these results if participating does in fact improve participant job satisfaction, however, if participants perceive the facility to improve their job satisfaction, this is a bonus for the employer.

Females as a whole, but not males, had a positive significant correlation between their level of physical activity and physical activity contributing to job satisfaction. This may indicate why a larger percentage of females participated compared to males.

Perception of the work environment for physical activity. Sloan and Grunman (1988) consider the influence of the work environment on physical activity as a possible determinant of physical activity at a workplace facility. This study did not examine the organizational culture in-depth but the author-constructed variable did examine whether subjects perceived their workplace to be fostering a work environment that encourages and promotes physical activity. Participants and non-participants as a whole did not differ significantly in terms of their perception of the work environment for physical activity. Similarly, female participants did not differ significantly from female non-participants and male participants did not differ from male non-participants. In other words, everyone views the organizational environment for physical activity in approximately the same way. This probably indicates that the CWB is taking the necessary steps towards creating an activity-friendly work environment and encouraging employees to be physically active.

These findings do not support the literature. Crump et al. (2001) concluded that worksite organizational factors were influential in determining employees' participation in wellness programs at work. Additionally, Sloan and Grunman (1988) determined that organizational environment was a predictor of participation in a workplace program.

Differences between Participants and Non-Participants - Discriminant Analysis

Because of the many benefits of physical activity, it is important to identify factors that could serve to understand participation in physical activity. The purpose of

the discriminant analysis was to combine all the determinants of workplace physical activity into one analysis. This analysis permitted all the variables to be examined simultaneously and determined the main differences between participants and non-participants in the workplace physical activity facility.

Three separate discriminant analyses were completed - on the total sample, female sample and male sample.

Summary of Results

For the total sample, four variables - social support by co-workers, facility assessment, enjoyment of physical activity and self-efficacy best distinguished participants from non-participants. Social support from co-workers surfaced as the top differentiator between participants and non-participants. Social support from co-workers goes beyond support for physical activity that takes place at work. Support from co-workers for physical activity can also relate to outside-of-work activities, by being active together after hours, or encouraging co-workers' physical activity in conversations taking place throughout the work day.

The discriminant analysis results are supported by the results of the t-tests which indicated that all four variables differed between participants and non-participants. Participants reported significantly higher social support from co-workers, facility assessment, enjoyment of physical activity and self-efficacy. However, the correlation analysis provided mixed comparisons. Participants' self-efficacy was significantly correlated with the level of physical activity, however, social support by co-workers, facility assessment and enjoyment of physical activity were not.

For the discriminant analysis of the female sample only, the same four variables, social support by co-workers, facility assessment, enjoyment of physical activity and self-efficacy best distinguished between participants and non-participants. For the male discriminant analysis, only social support by co-workers, facility assessment and enjoyment of physical activity predicted group association.

The results of the gender specific t-tests, which examined the differences between female participants and non-participants and male participants and non-participants, also supported the results of the discriminant analysis for both males and females. Both female and male participants differed from their respective non-participants in social support by co-workers, facility assessment, enjoyment of physical activity and self-efficacy. Participants, both male and female, reported higher social support from co-workers, higher facility assessment and greater enjoyment and self-efficacy of physical activity. Also, self-efficacy was significantly correlated with physical activity for both female and male participants, however the other three variables were not.

To determine how accurately the discriminant analysis discriminated participants from non-participants, a classification table was created. The classification table derived from the discriminant analysis assessed how well the discriminant function worked and if it worked equally well for both groups (Leech et al., 2005). Using the discriminant function from the discriminant analysis, the subjects were classified into the participant or non-participant group. A total of 80% of the entire sample was correctly classified, with 80% of participants and 81% of non-participants correctly classified. A total of 100% of the sample correctly classified would have been the ideal, however this is still considered a satisfactory level of discrimination (Leech et al., 2005).

Previous Discriminant Analysis Literature

Of the four variables that emerged from the discriminant analysis, self-efficacy was the only variable that emerged in a previous study, as a differentiator between participants and non-participants.

Alexy (1991) determined that self-efficacy was the best predictor of participation between participants and non-participants in a workplace wellness centre. He evaluated the commonly studied determinants (perceived benefit, perceived physical barriers, perceived self-efficacy, perceived psychological barriers, convenience factors and social support) but did not include any additional life or work-related variables that were used in this study. Thus, the use of discriminant analysis in this study is a contribution to the literature.

Implications For Workplace Physical Activity Programming

Since an important goal is to increase participation of non-participants, their characteristics are particularly note-worthy. The results suggest that nonparticipation in a workplace physical activity program could be predicted from individuals who (1) do not feel the support from co-workers to participate, (2) do not perceive the facility as attractive and comfortable, (3) do not enjoy physical activity and (4) experience lower self-efficacy.

There are two-way relationships between variables and not simply a cause and effect relationship. Therefore, it is impossible to determine causality from a cross-sectional study, however because these variables have been demonstrated to be related to physical activity, it is logical to assume that they may impact physical activity behavior. Thus, strategies to increase social support at work, enjoyment of physical activity and

self-efficacy should be developed as they might have an impact on physical activity behavior. As well, the actual facility environment should be evaluated. Some suggestions follow.

Strategies to Increase Discriminating Variables

Social Support. Social support strategies at work need to be developed to increase the participation rate of non-participants. Two types of social support at work could positively impact participation including co-workers' support and organizational support.

A social support strategy to increase co-worker support would be to encourage employees to participate with another employee or a group of employees. If pre-existing relationships are not present between people, buddy systems could be created by the wellness consultant by grouping employees together who may have similar goals in mind. The CWB could also provide employees with relationship building skills that would help them obtain the social support they need to be physically active.

To increase organizational social support, the CWB could formalize a workplace physical activity policy. This type of policy would formalize the organization's commitment to workplace physical activity. This type of commitment helps employees understand their employer's serious commitment to physical activity. It is essential that all managers understand the importance of these programs. Their buy-in could help create a more supportive environment. If all the managers understand the importance of these initiatives, that mentality will slowly filter throughout the organization. Furthermore, if managers, who are in an influential position and act as role models in the organization, participated and encouraged their employees to participate, the programs might be more successful. The CWB should encourage managers and senior leaders to

verbally encourage and praise employees who participate in physical activity. The CWB should also establish organizational physical activity objectives and monitor their progress throughout the year.

The CWB could also support flexibility of time periods when employees could participate at the facility. Many employees may not want to participate in the peak periods (before work, lunch hours, after work) and would prefer to participate when the facility is less crowded. The CWB could encourage employees to participate at other times during the work day.

The CWB could also provide incentives to managers to increase physical activity participation. Incentives could be offered to managers and employees whose departments post the highest percentage of physically active employees.

Facility. The facility itself including, the location, cleanliness and safety, should be continuously evaluated to ensure it meets everyone's needs. Humpel, Owen and Leslie (2002) state that the physical environment influences physical activity participation. The physical environment, in this case the facility, creates opportunities and removes barriers for employees to be more active in their daily work lives. The CWB should ensure the facilities are clean, safe and adequate for the number of employees. The workplace should continue to provide their employees high quality equipment and classes. The CWB could establish a policy to ensure that appropriate equipment and supplies for physical activity are available at all times.

Enjoyment of Physical Activity. Not everyone likes aspects of physical activity (e.g. sweating, exertion, etc.) and it is only natural that if one enjoys an activity they are more than likely to repeat the activity in the future. Thus, it is important to attempt to increase the level of enjoyment of non-participants in the hopes of increasing their participation rate. However, the reverse may also be true. If one increases their physical activity, they may also naturally increase their level of enjoyment.

For some, physical activity may be more enjoyable if they were accompanied by a friend or a co-worker. Similar to increasing social support at work, a strategy to increase enjoyment would be to encourage employees to participate with another employee or a group of employees.

The physical activity options at the workplace facility are mainly limited to exercise activities and do not include recreational and leisure activities. The workplace could provide different types of physical activity opportunities that may be more enjoyable for some employees. The workplace needs to provide enough options to motivate even the most sedentary employees to be active. Employees should be encouraged to try different types of activities until they discover one they enjoy. Some employees may prefer recreational or sporting events more than participating at the physical activity facility. The CWB could hold curling tournaments or ski trips or offer team sports such as soccer, hockey or baseball for those who prefer these types of activities.

Self-efficacy. In order to increase participation among non-participants, self-efficacy needs to increase. It is essential to make the facility attractive to varying levels of physical activity comfort. In order to do so, the CWB could provide

introduction/beginner classes to employees who have never been to a physical activity facility or are uncomfortable going to the facility. According to Rodgers and Gauvin, (1998) in order to increase physical activity self-efficacy, individuals must maintain a more established and consistent physical activity program. The workplace could offer classes that would educate employees on the different types of equipment at the facility, how to use the equipment and also provide education on how to start and maintain an individual physical activity program.

To increase self-efficacy, it is vital that the individual feels successful. According to Dishman et al. (2004), physical activity self-efficacy can be enhanced through successful physical activity experiences. Programs could be designed specifically for beginners which would reward varying levels of progression. Perhaps, employees would receive a prize after achieving personal milestones in their physical activity program.

Another way of perhaps increasing self-efficacy of non-participants is to allow them to be active in their regular clothes. Non-participants might feel more comfortable and less exposed in their everyday clothes as opposed to gym clothes. It may not be hygienic to encourage non-participants to sweat intensely in their regular clothes but physical activity programs at a low intensity level could be implemented. For example, walking programs, stretching programs or low intensity aerobic classes, would need to be designed so that they could be completed in regular clothes.

CONCLUSIONS

To conclude, the main findings, contributions to research, limitations and suggestions for future research will be presented.

Main Findings

Differences between participants and non-participants

The main purpose of the study was to determine whether or not differences existed between participants and non-participants of a workplace physical activity facility. In order to examine this purpose, discriminant analysis was the most appropriate statistic since it determines which variables best discriminate between groups.

The discriminant analysis determined that four variables significantly differentiated between participants and non-participants – social support by co-workers, facility assessment, enjoyment of physical activity and self-efficacy. The last two variables are commonly studied physical activity determinants while the other two variables are work-specific. The results of the discriminant analysis were supported by the t-tests.

Physical Activity Participation

The study examined the differences between participants and non-participants in physical activity levels at work, outside of work and in total. Total physical activity differed significantly between participants and non-participants. Participants reported more total physical activity than non-participants. Even though participants, compared to non-participants, participated significantly more in physical activity at work, there were significant differences in physical activity outside of work. In other words, participants participated in physical activity at work and outside of work.

Age/Gender Differences

The findings of this study did not follow two usual demographic trends in physical activity. Neither age, denoted by generation, or gender were factors in physical activity participation at work.

Prior to the study, the researcher felt that there would be differences between generations in physical activity. However, all three generations reported equal amounts of physical activity at the workplace physical activity facility. This does not support the literature that indicates that age and overall physical activity are negatively correlated (Sallis & Owen, 1999). The facility appears to have a broad appeal to all generations and to meet the needs of all employees regardless of their generation. However, the levels of physical activity outside of work and total levels of physical activity were different between the generations. These differences support physical activity literature that states that younger individuals are typically more active overall.

In this study, there were no gender differences between female and male participants in physical activity at work, outside of work or in total. However male non-participants were significantly more active than female non-participants outside of work. The lack of gender differences between female and male participants does not support the literature where many studies have found women to be less active than men (Sallis et al, 1985). The lack of differences between the genders in the participation group may have been affected by the small male participant sample size and low response rate.

In conclusion participants at the workplace physical activity facility were from all age groups, were mainly women, and were individuals who were both active at work and outside of work.

Contribution of Research

The following are the unique contributions of this research to the literature.

- It examined not only the usually studied determinants (e.g. self-efficacy, social support, etc.) but also examined workplace-specific variables. Two of the workplace-specific variables, facility assessment and social support from co-workers, were variables that best discriminated participants from non-participants, supporting the inclusion of such variables in participation research.
- Previous workplace research has mainly concentrated on the differences between participants and non-participants in terms of employees' individual lifestyle behavior, health habits, and fitness levels whereas this study examined other personal and work-related variables (e.g. job satisfaction, life satisfaction, etc.)
- It conducted psychometric analyses (reliability and validity) of established instruments, not previously reported.
- Unlike many studies, this study included all the variables simultaneously and determined which variables best distinguished between participants and non-participants of a workplace physical activity facility.
 - Social support by co-workers, facility assessment, enjoyment of physical activity and self-efficacy were the best predictors of participation.
- The research provided a description of employees who participate in a structured workplace physical activity facility.

Limitations

It must be recognized, as with any study, that there are some limitations that may have affected the results of the study.

1. One of the issues is self-selection bias attributed to the fact that respondents volunteered to participate in the study. A random sample was not used.
2. There may have been inaccuracies in measurement of physical activity due to the instrument used. The frequency and time (minutes) of physical activity was assessed and respondents may have either underestimated or overestimated (e.g. physical activity levels). Intensity levels were not measured.
3. All the data were gathered at one worksite and therefore the findings cannot be generalized to other worksites.
4. Only 17 out of a potential pool of 61 male participants (response rate of 28%) took part in the study. Consequently these findings may be affected by the lack of male participants. Even though there are fewer male participants at the workplace physical activity facility (K. Chase, personal communication), this does not explain the low response rate. It is possible that the male participants do not typically eat lunch at the cafeteria and thus were not present to participate in the study. Or, perhaps the male participants are in senior management roles where they may be very busy and not have time during their day to dedicate to completing a questionnaire. Also, based on her 15 years of experience in trying to get employees to participate in organizational initiatives, K. Chase (personal communication) believes that females are more persuaded to participate if an incentive like the pedometer is provided than males.
5. Having the wellness consultant present during the data collection may have impacted the results. Employees may have given socially desirable responses for several reasons:

- they may have thought the wellness consultant would read the questionnaires
 - they may have wanted the wellness program to positively reflect the wellness consultant's efforts
 - they did not want to disappoint the wellness consultant
 - they may have thought that if the wellness program was viewed positively, the CWB would provide more funding to the program
6. Causality cannot be determined. What comes first, physical activity or life satisfaction, perceived health, etc.? Direction of causation is an important question that cannot be answered in this study.
 7. The University of Manitoba's Education and Nursing Research Ethics Board did not allow demographic data to be collected that would jeopardize the identity of the subjects, such as type of job (managerial or clerical) and tenure at the workplace. Consequently, this restricted demographic data limited the conclusions that could be made in this study.
 8. No data were collected that examined other aspects of the CWB workplace. Is the CWB similar to other worksites? Is it a good place to work? Do they have a motivating leader?

Future Research

It is recommended for future research in this field that a larger random sample and multiple worksites be examined to help further determine the differences between participants and non-participants in a workplace physical activity program. The convenience sample used in this study did not obtain a large enough male sample.

If achievable, it would be valuable to gather more in-depth demographic data for both participants and non-participants to truly understand the characteristics of each group. Also, a longitudinal study examining whether or not physical activity influences the variables in this study (or vice-versa) would provide important information. It is essential to research and understand what would motivate non-participants to become participants and discover ways to increase participation. Future research should not only focus on physical activity participation at the workplace but attempt to determine how workplaces can increase physical activity outside the workplace as well.

Concluding Thoughts

The results of this study provide evidence that participants and non-participants of a workplace physical activity facility differ from one another. The differences between participants and non-participants highlighted by this study have significant implications for organizers. In order to reach the employees who would benefit most from such programs (typically non-participants), it is imperative to understand both participants and non-participants. Physical activity programs tend to target individuals who are self-motivated to remain fit and healthy. It is important to reward these healthy individuals with convenient physical activity options but it is even more important to find a way to motivate employees who are currently not participating. Organizers need to understand that there is no “one size fits all” solution to increasing physical activity participation levels. There is no magic solution that would encourage everyone to participate in physical activity. Consequently, it is essential to understand employees’ needs and limitations and implement organizational strategies and initiatives accordingly.

Successful physical activity initiatives should be closely monitored, change continuously depending on employees, and include a variety of options for varying comfort levels. It is not enough to simply have a facility or offer classes over the lunch hour. Organizers need to understand their employees and consciously design strategies and initiatives to meet the needs of diverse groups of employees. If the challenge of workplace physical activity programs is to increase the percentage of non-participants participating, it is imperative to understand the factors that influence non-participants.

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APPENDIX A

1-Week Physical Activity Recall

Think about your participation in physical activity. The following questions will ask you about your participation in physical activities both at work and outside of work.

A) Do you use physical activity (e.g. walking/cycling/running) to get to or from work?

Yes _____ No _____ (skip to section B)

If Yes, please explain: _____

Do you use the CWB gym facilities (e.g. changing rooms/showers) after/before walking/cycling/running to/from work?

Yes _____ No _____

B) Do you use the CWB gym?

Yes _____ No _____ (If no, please skip to part D)

C) Physical Activity at the CWB gym

Think of the past week (Monday to Sunday). Please indicate how much physical activity you did at the CWB during that week. These activities may include cardio machines, aerobic classes, muscle strengthening equipment, free weights, abdominal exercises etc.

First, please indicate which activities you did and for each activity, answer the following:

- How many times did you participate in this activity during the one-week period?
- On average, how much time did you usually participate?

Physical Activities	# of times	# of minutes
e.g. <u>Walking on the treadmill</u>	<u>5</u>	<u>20 minutes</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

D) Physical Activity Outside of Work

Think of the past week (Monday to Sunday). Please indicate how much physical activity you did outside of work during that week. This means any physical activity (walking, weights, hockey, skating etc) that you did outside of work.

First, please indicate which activities you did and for each activity, answer the following:

- How many times did you participate in this activity during the one-week period?
- On average, how much time did you usually participate?

Physical Activities	# of times	# of minutes
e.g. <u>Swimming</u>	<u>2</u>	<u>45 minutes</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Do you feel this list of activities is representative of your typical winter physical activity behavior? YES _____ NO _____

If No, please explain:

APPENDIX B

Psychological Physical Activity Determinants

Perceived Health

In general, how would you rate your health?

1. Excellent
2. Very Good
3. Good
4. Fair
5. Poor

Self-Efficacy

For each of the following items about physical activity, circle whether you know that you can do it, might be able to do it, or know that you cannot do it:

How sure are you that you can do the following things?

	Know I cannot		Maybe I can		Know I can
Get up early, even on weekends, to do physical activity	1	2	3	4	5
Participate even though you are feeling sad or highly stressed	1	2	3	4	5
Stick to your physical activity program even when your family or friends demand more time from you	1	2	3	4	5
Stick to your physical activity program even when you have a lot of work to do	1	2	3	4	5

Enjoyment of Physical Activity

Think of physical activity. For the following question, circle whether you enjoy physical activity on a scale from 1 to 5, where 1 means you do not enjoy physical activity at all and 5 means you enjoy physical activity a great deal.

	Not at All				A great Deal
How much do you enjoy physical activity?	1	2	3	4	5

APPENDIX C

Facility Assessment

Think of the CWB gym. Below are four statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by circling a number from 1=strongly disagree to 7=strongly agree. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
Is the gym location convenient?	1	2	3	4	5	6	7
Is the gym facility clean?	1	2	3	4	5	6	7
Is the gym too crowded/too busy?	1	2	3	4	5	6	7
Is the gym safe?	1	2	3	4	5	6	7

APPENDIX D

Social Support

We are interested in how family members/friends and co-workers respond to your physical activity participation.

For each item:

- a) circle **how often** your family members or friends have responded that way (one number)

Think of who influences you the most to be physically active in your life right now. Is it your family or your friends? If you've answered friends, please answer question a) by thinking of your friends. If you've answered family, please answer by thinking of your family.

- b) circle **how often** your co-workers have responded that way (one number)

	Never	Rarely	A Few Times	Often	Very Often
Participated in physical activity with me:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Offered to participate with me:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Reminded me to exercise (e.g. Aren't you going to exercise today?)					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Gave me encouragement to participate:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Complained about the time I spend participating:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Made fun of or criticized me for participating:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Rewarded me for participating (e.g. bought or gave me something)					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5

APPENDIX E

Life Satisfaction

Think of your life in general. Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by circling a number from 1=strongly disagree to 7=strongly agree. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
In most ways my life is close to my ideal.	1	2	3	4	5	6	7
The conditions of my life are excellent	1	2	3	4	5	6	7
I am satisfied with my life.	1	2	3	4	5	6	7
So far I have gotten the important things I want in life.	1	2	3	4	5	6	7
If I could live my life over, I would change almost nothing.	1	2	3	4	5	6	7

APPENDIX F

Job Satisfaction

Job in General

A) Think of your job in general. All in all, what is it like most of the time? Please indicate your agreement by circling the appropriate comment

Pleasant	Undecided	No	Yes
Bad	Undecided	No	Yes
Ideal	Undecided	No	Yes
Waste of time	Undecided	No	Yes
Good	Undecided	No	Yes
Undesirable	Undecided	No	Yes
Worthwhile	Undecided	No	Yes
Worse than most	Undecided	No	Yes
Acceptable	Undecided	No	Yes
Superior	Undecided	No	Yes
Better than most	Undecided	No	Yes
Disagreeable	Undecided	No	Yes
Makes me content	Undecided	No	Yes
Inadequate	Undecided	No	Yes
Excellent	Undecided	No	Yes
Rotten	Undecided	No	Yes
Enjoyable	Undecided	No	Yes
Poor	Undecided	No	Yes

PA Contributing to Job Satisfaction

Please indicate your level of agreement with the following statement from the scale below.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
Exercising/participating at the workplace physical activity facility improves my job satisfaction.	1	2	3	4	5	6	7

APPENDIX G

Work Environment for Physical Activity

Think of your workplace. Below are statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by circling a number from 1=strongly disagree to 7=strongly agree. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
Health/Fitness information is disseminated to employees.	1	2	3	4	5	6	7
My workplace encourages employees to participate/exercise at the workplace physical activity facility.	1	2	3	4	5	6	7
My job affords me the necessary flexibility to allow me to exercise at work.	1	2	3	4	5	6	7
My supervisors and peers are active during the work day	1	2	3	4	5	6	7
Staff is encouraged to be active during the work day or lunch hour.	1	2	3	4	5	6	7

APPENDIX H

Demographic Information

We would like to know a little about yourself. All this information is completely anonymous and confidential.

Are you male or female?

1. Female _____
2. Male _____

How old are you? _____

What is your job category?

1. ___ Desk Job (Includes the following: Manager, Administrative/Clerical Supervisor, Technological Support, Professional, Director, Vice President)
2. ___ Non-Desk Job (Includes the following: Messenger, Maintenance etc.)

APPENDIX I

Descriptive Information of Programs

Part A

What day (s) of the week do you participate? (please circle all that apply)

1. Monday 2. Tuesday 3. Wednesday 4. Thursday 5. Friday 6. Weekends

When do you exercise at the CWB gym? (please circle all that apply)

1. Before work 2. Lunch time 3. After work 4. Evenings 5. Weekends

How frequently do you use the following types of equipment/facilities/services?

	NEVER	OCCASIONALLY	REGULARLY	NA
Cardiovascular exercise equipment	1	2	3	4
Free weights	1	2	3	4
Weight machines	1	2	3	4
Stretching/abdominal mats	1	2	3	4
Aerobic classes	1	2	3	4
Yoga classes	1	2	3	4
Pilates classes	1	2	3	4
Changing Rooms/Showers	1	2	3	4

Why do you participate?

Part B

What other wellness programs are offered that you know of? (eg. Lunch n' Learn Sessions, Stress Management)

1. _____
2. _____
3. _____
4. _____

Which wellness programs do you attend?

1. _____
2. _____
3. _____
4. _____

What additional programs would you like to see offered that are currently not available?

1. _____
2. _____
3. _____
4. _____

Part C

If you don't participate....Why don't you participate?

If you don't participate....What would make you participate (if anything)?

Any other Comments

APPENDIX J

Complete Questionnaire

CWB EMPLOYEE SURVEY

SECTION 1

In general, how would you rate your health?

- 6. Excellent
- 7. Very Good
- 8. Good
- 9. Fair
- 10. Poor

SECTION 2

A) Think of your job in general. All in all, what is it like most of the time? Please indicate your agreement by circling the appropriate comment

Pleasant	Undecided	No	Yes
Bad	Undecided	No	Yes
Ideal	Undecided	No	Yes
Waste of time	Undecided	No	Yes
Good	Undecided	No	Yes
Undesirable	Undecided	No	Yes
Worthwhile	Undecided	No	Yes
Worse than most	Undecided	No	Yes
Acceptable	Undecided	No	Yes
Superior	Undecided	No	Yes
Better than most	Undecided	No	Yes
Disagreeable	Undecided	No	Yes
Makes me content	Undecided	No	Yes
Inadequate	Undecided	No	Yes
Excellent	Undecided	No	Yes
Rotten	Undecided	No	Yes
Enjoyable	Undecided	No	Yes
Poor	Undecided	No	Yes

B) Please indicate your level of agreement with the following statement from the scale below.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
Exercising/participating at the workplace physical activity facility improves my job satisfaction.	1	2	3	4	5	6	7

SECTION 3

Think of your life in general. Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by circling a number from 1=strongly disagree to 7=strongly agree. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
In most ways my life is close to my ideal.	1	2	3	4	5	6	7
The conditions of my life are excellent	1	2	3	4	5	6	7
I am satisfied with my life.	1	2	3	4	5	6	7
So far I have gotten the important things I want in life.	1	2	3	4	5	6	7
If I could live my life over, I would change almost nothing.	1	2	3	4	5	6	7

SECTION 4

Think about your participation in physical activity. The following questions will ask you about your participation in physical activities both at work and outside of work.

A) Do you use physical activity (e.g. walking/cycling/running) to get to or from work?

Yes _____ No _____ (skip to section B)

If Yes, please explain: _____

Do you use the CWB gym facilities (e.g. changing rooms/showers) after/before walking/cycling/running to/from work?

Yes _____ No _____

B) Do you use the CWB gym?

Yes _____ No _____ (If no, please skip to part D)

C) Physical Activity at the CWB gym

Think of the past week (Monday to Sunday). Please indicate how much physical activity you did at the CWB during that week. These activities may include cardio machines, aerobic classes, muscle strengthening equipment, free weights, abdominal exercises etc.

First, please indicate which activities you did and for each activity, answer the following:

- How many times did you participate in this activity during the one-week period?
- On average, how much time did you usually participate?

Physical Activities	# of times	# of minutes
e.g. <u>Walking on the treadmill</u>	<u>5</u>	<u>20 minutes</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

D) Physical Activity Outside of Work

Think of the past week (Monday to Sunday). Please indicate how much physical activity you did outside of work during that week. This means any physical activity (walking, weights, hockey, skating etc) that you did outside of work.

First, please indicate which activities you did and for each activity, answer the following:

- How many times did you participate in this activity during the one-week period?
- On average, how much time did you usually participate?

Physical Activities	# of times	# of minutes
e.g. <u>Swimming</u>	<u>2</u>	<u>45 minutes</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Do you feel this list of activities is representative of your typical winter physical activity behavior? YES _____ NO _____

If No, please explain:

SECTION 5

Think of physical activity. For the following question, circle whether you enjoy physical activity on a scale from 1 to 5, where 1 means you do not enjoy physical activity at all and 5 means you enjoy physical activity a great deal.

	Not at All				A great Deal
How much do you enjoy physical activity?	1	2	3	4	5

For each of the following items about physical activity, circle whether you know that you can do it, might be able to do it, or know that you cannot do it:

How sure are you that you can do the following things?

	Know I cannot		Maybe I can		Know I can
Get up early, even on weekends, to do physical activity	1	2	3	4	5
Participate even though you are feelings sad or highly stressed	1	2	3	4	5
Stick to your physical activity program even when your family or friends demand more time from you	1	2	3	4	5
Stick to your physical activity program even when you have a lot of work to do	1	2	3	4	5

SECTION 6

We are interested in how family members/friends and co-workers respond to your physical activity participation.

For each item:

- c) circle **how often** your family members or friends have responded that way (one number)

Think of who influences you the most to be physically active in your life right now. Is it your family or your friends? If you've answered friends, please answer

question a) by thinking of your friends. If you've answered family, please answer by thinking of your family.

d) circle **how often** your co-workers have responded that way (one number)

	Never	Rarely	A Few Times	Often	Very Often
Participated in physical activity with me:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Offered to participate with me:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Reminded me to exercise (e.g. Aren't you going to exercise today?)					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Gave me encouragement to participate:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Complained about the time I spend participating:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Made fun of or criticized me for participating:					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5
Rewarded me for participating (e.g. bought or gave me something)					
a) Family/Friends	1	2	3	4	5
b) Co-workers	1	2	3	4	5

SECTION 7

Think of your workplace. Below are statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by circling a number from 1=strongly disagree to 7=strongly agree. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
Health/Fitness information is disseminated to employees.	1	2	3	4	5	6	7

My workplace encourages employees to participate/exercise at the workplace physical activity facility.	1	2	3	4	5	6	7
My job affords me the necessary flexibility to allow me to exercise at work.	1	2	3	4	5	6	7
My supervisors and peers are active during the work day	1	2	3	4	5	6	7
Staff is encouraged to be active during the work day or lunch hour.	1	2	3	4	5	6	7

SECTION 8

Think of the CWB gym. Below are four statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by circling a number from 1=strongly disagree to 7=strongly agree. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither agree nor disagree	Slightly Agree	Agree	Strongly Agree
Is the gym location convenient?	1	2	3	4	5	6	7
Is the gym facility clean?	1	2	3	4	5	6	7
Is the gym too crowded/too busy?	1	2	3	4	5	6	7
Is the gym safe?	1	2	3	4	5	6	7

Additional comments:

SECTION 9

We would like to know a little about yourself. All this information is completely anonymous and confidential.

Are you male or female?

1. Female _____
2. Male _____

How old are you? _____

What is your job category?

1. ___ Desk Job (Includes the following: Manager, Administrative/Clerical Supervisor, Technological Support, Professional, Director, Vice President)
2. ___ Non-Desk Job (Includes the following: Messenger, Maintenance etc.)

LAST SECTION

We would like your input to help with the specific CWB wellness programs. Please tell us what you think.

Do you exercise at the CWB facility? (please circle appropriate response)

1. Yes (If yes, please complete part A and B)
2. No (If no, please skip to part B and C)

Part A

What day (s) of the week do you participate? (please circle all that apply)

1. Monday 2. Tuesday 3. Wednesday 4. Thursday 5. Friday 6. Weekends

When do you exercise at the CWB gym? (please circle all that apply)

1. Before work 2. Lunch time 3. After work 4. Evenings 5. Weekends

How frequently do you use the following types of equipment/facilities/services?

	NEVER	OCCASIONALLY	REGULARLY	NA
Cardiovascular exercise equipment	1	2	3	4
Free weights	1	2	3	4
Weight machines	1	2	3	4
Stretching/abdominal mats	1	2	3	4
Aerobic classes	1	2	3	4
Yoga classes	1	2	3	4
Pilates classes	1	2	3	4
Changing Rooms/Showers	1	2	3	4

Why do you participate?

Part B

What other wellness programs are offered that you know of? (eg. Lunch n'Learn Sessions, Stress Management)

1. _____
2. _____
3. _____
4. _____

Which wellness programs do you attend?

1. _____
2. _____
3. _____
4. _____

What additional programs would you like to see offered that are currently not available?

1. _____
2. _____
3. _____
4. _____

Part C

If you don't participate....Why don't you participate?

If you don't participate....What would make you participate (if anything)?

Any other comments

Thank you for your participation in this survey.

APPENDIX K

Pilot Study Cover Letter

Dear employee,

You are invited to participate in a pilot research study. This pilot study is conducted as part of the requirement for completion of a Master of Science thesis in the Faculty of Physical Education and Recreation Studies at the University of Manitoba. The purpose of this study is to pre-test a questionnaire that will be used to evaluate your current workplace wellness program and to collect information about employee characteristics including physical activity, health, life and work. The survey will take approximately 10-15 minutes to complete. You will be asked to complete the questionnaire twice, once today and again in one weeks time.

Your decision to take part in this study and complete the survey is voluntary. You are free to withdraw from the study at any time (even once you have started completing the questionnaire), and/or refrain from answering any questions you prefer to omit. There are no risks to you in completing this survey.

The information collected here will remain completely **anonymous and confidential**. Do not indicate your name on any part of the questionnaire. The questionnaires, data files and subsequent analysis documents will be locked in a filing cabinet in the researcher's home office. The questionnaires and data will be destroyed after the Defense and approval of the researcher's Master's thesis.

Your completion of this survey indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. Thank you for taking the time to be part of this research study. Your help is greatly appreciated.

Should you have any questions, please contact Athalie Orr at _____ or e-mail at _____

Yours sincerely,

Athalie Orr (Principal Researcher)
University of Manitoba
Faculty of Physical Education and Recreation Studies

Dr. Janice Butcher (Advisor)
474-8640
jbutchr@cc.umanitoba.ca

This research has been approved by the Education/Nursing Research Ethics Board]. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122, or e-mail Margaret_bowman@umanitoba.ca.

APPENDIX L

Ethics Approval

APPROVAL CERTIFICATE

02 April 2007

TO: Athalie Orr (Advisor J. Butcher)
Principal Investigator

FROM: Stan Straw, Chair
Education/Nursing Research Ethics Board (ENREB)

Re: Protocol #E2007:021
"Differences between Participants and Non-Participants of a Workplace Physical Activity Program"

Please be advised that your above-referenced protocol has received human ethics approval by the **Education/Nursing Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Kathryn Bartmanovich, Research Grants & Contract Services (fax 261-0325), including the Sponsor name, before your account can be opened.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html) in order to be in compliance with Tri-Council Guidelines.

APPENDIX M

Cover Letter-CWB

Dear employee,

You are invited to participate in a research study. This study is conducted as part of the requirement for completion of a Master of Science thesis in the Faculty of Physical Education and Recreation Studies at the University of Manitoba. The purpose of this study is to evaluate your current workplace wellness program and to collect information about employee characteristics including physical activity, health, life and work. The survey will take approximately 10-15 minutes to complete. As a thank you for your participation, you will receive a pedometer.

Your decision to take part in this study and complete the survey is voluntary. You are free to withdraw from the study at any time (even once you have started completing the questionnaire), and/or refrain from answering any questions you prefer to omit. There are no risks to you in completing this survey. A summary of results will be published in the CWB on-line newsletter.

The information collected here will remain completely **anonymous and confidential**. Do not indicate your name on any part of the questionnaire. The questionnaires, data files and subsequent analysis documents will be locked in a filing cabinet in the researcher's home office. The questionnaires and data will be destroyed after the Defense and approval of the researcher's Master's thesis.

Your completion of this survey indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. Thank you for taking the time to be part of this research study. Your help is greatly appreciated.

Should you have any questions, please contact Athalie Orr at _____ or e-mail at _____

Yours sincerely,

Athalie Orr (Principal Researcher)
University of Manitoba
Faculty of Physical Education and Recreation Studies

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474-8640
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This research has been approved by the Education/Nursing Research Ethics Board]. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122, or e-mail Margaret_bowman@umanitoba.ca.

APPENDIX N

Factor Analysis

Self-Efficacy

Factor 1 (61.8% of variance) “Capable of being active”

	Component Value
Self-efficacy3	.823
Self-efficacy4	.875
Self-efficacy2	.804
Self-efficacy1	.617

Social Support Family/Friends

a) Original Factor Analysis

Factor 1 (42.3% of variance)
“Positive Actions”

Factor 2 (24.1% variance)
“Negative Actions”

	Component Value		Component Value
SS2	.881	SS5	.897
SS4	.848	SS6	.886
SS1	.827		
SS3	.750		
SS7	.457		

b) Rerun Factor Analysis

Factor 1 (70.2% of variance)
“Positive Actions”

	Component Value
SS2	.904
SS1	.863
SS4	.863
SS3	.733

Social Support Co-Workers

a) Original Factor Analysis

Factor 1 (46.5% of variance)
“Positive Actions”

Factor 2 (22.2% variance)
“Negative Actions”

	Component Value		Component Value
SS2	.919	SS5	.881
SS1	.886	SS6	.884
SS4	.862		
SS3	.833		
SS7	.396		

b) Rerun Factor Analysis

Factor 1 (77.8% of variance) "Positive Actions"

	Component Value
SS2	.932
SS1	.895
SS4	.864
SS3	.834

Satisfaction with Life Scale

Factor 1 (67.2% of variance)
"Positive Feelings"

	Component Value
SWLS1	.884
SWLS2	.858
SWLS3	.855
SWLS4	.794
SWLS5	.693

Job In General

Factor 1 (42.8% of variance)
"Negative Terms"

	Component Value
Worse	.875
Poor	.856
Rotten	.807
Waste of time	.788
Bad	.782
Undesirable	.734
Disagreeable	.709
Inadequate	.684
Good	.645
Acceptable	.589
Worthwhile	.559

Factor 2 (13.3% variance)
"Positive Terms"

	Component Value
Excellent	.734
Ideal	.706
Superior	.704
Enjoyable	.638
Makes me content	.587
Better	.578
Pleasure	.509

Facility Assessment

a) Original Factor Analysis

Factor 1 (49.1% of variance)
"Positive Statements"

	Component Value
Convenient	.840
Safe	.819
Clean	.754

Factor 2 (25.3% of variance)
"Negative Statements"

	Component Value
Too Crowded/Busy	.983

b) Rerun Factor Analysis

Factor 1 (65.2% of variance)

	Component Value
Convenient	.837
Safe	.829
Clean	.829

Work Environment for PA

Factor 1 (46.2% of variance)
"Related to employee's job"

	Component Value
Culture4	.881
Culture5	.758
Culture3	.646

Factor 2 (24.6% of variance)
"Related to the workplace"

	Component Value
Culture2	.824
Culture1	.879

APPENDIX O

CWB Program Evaluation

Information on the CWB Physical Activity Program

The second purpose of the study was to gather data that would be useful for the wellness consultant at the CWB, including the most popular time of day to be physically active, the preferred days to be physically active, the activities of choice as well as reasons employees chose to participate or not participate.

Participant Responses

The lunch hour was the most popular time of day to be physically active at the physical activity facility, as 84.2% of participants reported participating over the lunch hour. Weekends were the least popular time to be physically active, as only 3.9% of participants reported exercising at the facility weekends. A total of 18.4% of participants reported participating after work and 11.8% reported participating before work.

Figure 5 illustrates the percentage of participants who reported participating on each day of the week. Monday is the most popular day to be physically active at the facility, as 85.5% of participants reported exercising on Mondays at the facility. A large percentage of employees participated at the facility almost every day.

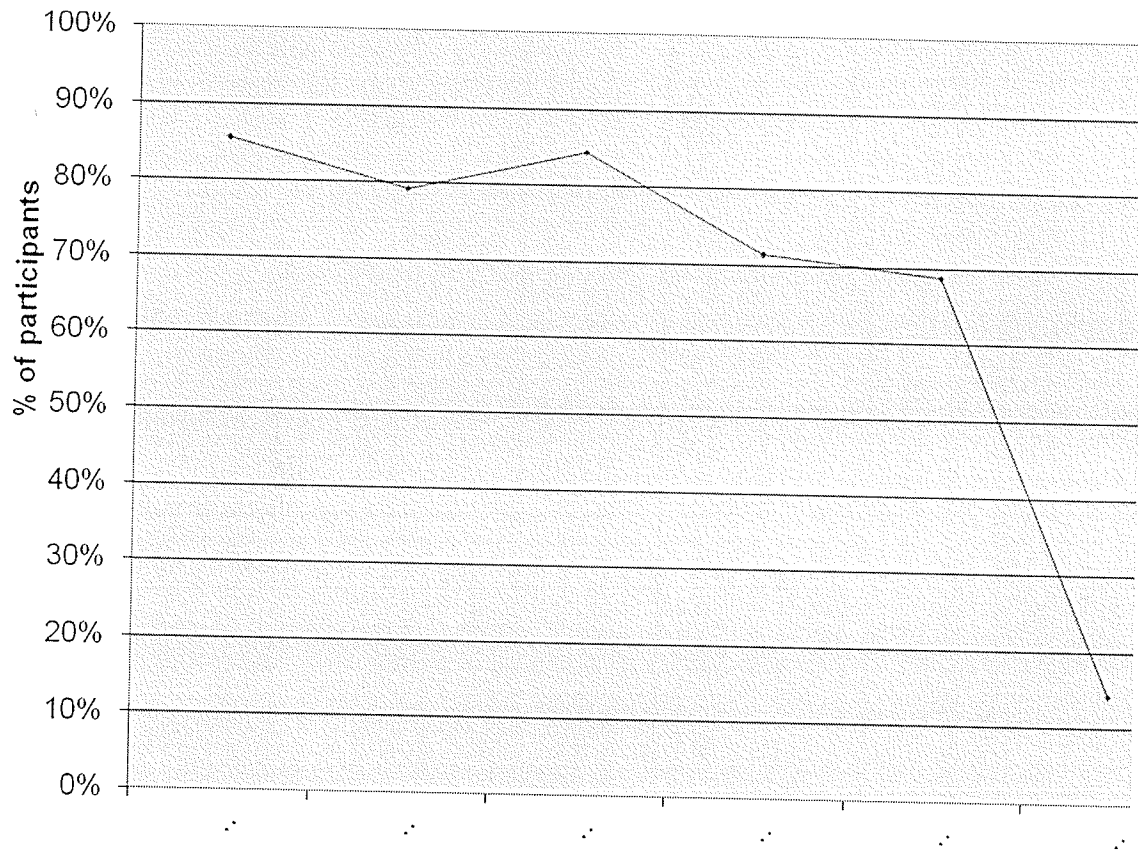


Figure 5. Percentage Participating on Different Days of the Week

Table 10 outlines the percentage of participants reporting regular use of the various types of equipment and classes at the CWB physical activity facility. These data were collected by eight fixed response questions in the last section of the questionnaire.

Table 10

Activities Participated in Regularly by Participants at the CWB facility

	Female (n=65)	Male (n=18)
Cardiovascular Equipment	49.2%	50.0%
Free Weights	41.5%	38.9%
Weight Machines	26.2%	38.9%
Abdominal/Stretching Mats	67.7%	55.6%
Aerobics Classes	33.8%	0.0%
Yoga Classes	11.1%	5.6%
Pilates Classes	12.9%	0.0%
Changing Rooms/Showers	80.0%	94.4%

The one-week physical activity recall instrument where respondents indicated which specific activities they performed provided more in-depth information. This list of activities was tabulated to create a list of the most commonly mentioned physical activities both at work and outside of work. Participants listed the following activities as the most popular at the workplace physical activity facility. (The percentage was calculated by dividing the number of times the activity was listed by the total number of activities listed for the total sample.)

- running (22.7%)
 - on treadmill (13.5%)
 - outdoors (2.5%)
 - unspecified (6.7%)
- weights (20.2%)
- aerobics (18.5%)
- core work: abdominal exercises (10.9%)
- elliptical cardiovascular machines (8.4%)
- stationary bike (4.2%)

Participants stated the following reasons for participating at the physical activity facility:

- health reasons (27.6%)
- to stay fit (21.4%)
- to increase energy/it feels good (18.4%)
- release stress (10.2%)
- to get a break from work (9.2%)
- convenient/inexpensive (7.1%)
- great programs/facility (4.1%)

Non-Participant Responses

Non-participants listed the following activities as the most popular activities participated in outside of work:

- walking (43.1%)
- running (12.2%)
- cycling (12.2%)

- individual sports: swimming, martial arts, wall climbing, rowing, tennis, golf, badminton, dance, scuba diving, rollerblading (10.3%)
- team sports: baseball, hockey, soccer, ultimate, volleyball, football (9.1%)
- cardio activities such as: aerobics, elliptical, stair climbing (6.4%)
- weights (6.3%)

When non-participants were asked why they did not participate at the physical activity facility they indicated the following reasons:

- lack of time/workload issues (42.0%)
- exercise elsewhere (21.0%)
- lack of motivation (8.6%)
- facility/program comments (8.6%)
- physical incapacities (3.7%)
- intimidated/comfort level (2.5%)
- prefer not to exercise with co-workers (2.5%)
- frowned upon by co-workers/managers (1.2%)

Both participants and non-participants indicated they would be interested in the following programs, some of which are already offered:

- pilates/yoga/stretching (13.9%)
- running/walking groups (11.1%)
- nutrition/dietician (8.3%)
- circuit training/muscle training (5.6%)
- health/fitness education(5.6%)
- on-site weight watchers/weight loss clubs (5.6%)

- self-defense/martial arts (5.6%)
- sports (5.6%)
- stress management (2.8%)
- variety of fitness beginner classes (2.8%)

Discussion of Physical Activity Programs at the Canadian Wheat Board

For the past 25 years, the CWB has offered their employees an extensive wellness program which includes the promotion of physical activity. The CWB also has an impressive physical activity facility and wellness programs unlike most organizations in Manitoba. The CWB is a progressive company that understands the importance of a healthy workforce.

The following section will provide a brief snapshot of the CWB. In addition, the employee responsible for the physical activity program and a description of the actual facility will be discussed and lastly, important implications for the CWB will be summarized.

CWB's Wellness Consultant

The CWB offers employees not only a physical activity facility but an extensive workplace wellness program. The wide-range of programs at the CWB are successful because of one key employee, the CWB's wellness consultant. The CWB has an employee dedicated to the development, organization and implementation of physical activities and additional wellness initiatives. Employing someone full time to manage organizational wellness is not an organizational norm. According to Cameron and Craig (2003), only ten percent of organizations hire employees dedicated to the coordination of

physical activity programs. It is evident that the CWB understands the importance of physical activity and therefore has an employee dedicated to the cause.

It is obvious that the CWB's wellness consultant has developed great programs over the last 15 years. She is the driving force behind these initiatives and always maintains good programs. She has developed the programs from the ground up tailored to her workplace's needs. She seems to understand her workplace, and she adapts to the ever changing needs and wants of the employees. She has made the programs attractive to the employees and participation rates are reflective of her efforts.

The wellness consultant is well respected at the CWB. Over the course of her 15 years of employment, she has developed relationships with many CWB employees. She is a motivating individual and, consequently, employees respond well to her and participate in her programs and activities.

According to Baun and Bernacki (1998), a program's success is highly depended on management support. Fortunately, the wellness consultant is supported by the CWB's senior managers as they truly believe in workplace wellness initiatives. The senior management team appears to understand the value of such programs and as a result have made wellness a company priority. The wellness consultant is supported by her leadership team and her role in the company is validated by adequate funding and organizational support.

Description of Participation at the CWB Physical Activity Facility

It is evident that the CWB physical activity facility attracts a larger percentage of females than males. There may be several reasons for this situation and the researcher hypothesizes below on why more females participate than males.

First, up until four years ago, the physical activity program at the CWB primarily consisted of aerobic classes which were attended mostly by females (K. Chase, personal communication). Over the past four years, the CWB has begun to add cardiovascular and resistance equipment in the facility and as a result the percentage of males participating has increased. K. Chase (personal communication) also mentioned that the free weights, which are more frequently used by young males, are not as complete as they could be. The lack of heavy free weights has been brought to her attention several times by males and could very well be deterring several males from participating at the facility.

Secondly, it appears that the wellness consultant is successfully meeting the needs of the majority of the female employees. This may be partly related to the fact that she is a female. She likely has a greater understanding of female's physical activity needs and might even be more inclined to meet their needs before the needs of the male employees. The wellness consultant is a very enthusiastic, engaging and personable individual and females may be more motivated by that type of personality than males. Females may also be more comfortable with a female leader.

According to the K. Chase (personal communication), a larger percentage of female participants are in non-management positions at the CWB and as a result more non-management employees in total participate. This finding is consistent with Zavela et al.'s (1988) study that determined that physical activity intenders were primarily females in non-management positions. Managers might not feel as comfortable being physically active with their subordinates or perhaps they do not have free time to participate during their workday (K. Chase, personal communication). It is known that a larger percentage

of male employees at the CWB are in management positions and this may also explain why more females participate.

Lastly, if being a manager equates to greater job satisfaction (which was not determined in this study), this may also indicate why more females participate at the physical activity facility. More females than males are in non-management positions (K .Chase, personal communication) and if the statement above is true this would explain why female participants' level of job satisfaction was negatively correlated to level of physical activity. In other words, working in a non-management position (mostly females) may lead to being unsatisfied with one's job and therefore believing that participating at the workplace physical activity facility will increase one's job satisfaction or reduce job related stress.

Implications of Findings for the CWB

Even though the CWB has a very developed and impressive wellness program, there always remain opportunities for enhancement. The wellness consultant is always searching for opportunities to maintain a successful wellness program and the following section will outline specific ideas, based on the study's findings that may help the CWB remain a leading wellness organization.

Suggestions for Improving Participation Rates

There are obvious benefits for the employee and the employer in promoting physical activity at work. However partial participation limits the impact of these programs. What follows are ways that could help increase participation.

Promote health benefits of physical activity. As previously mentioned, 50% of the CWB respondents met the recommended level of daily physical activity (Canada's

Physical Activity Guide, 1998). Even though these findings are impressive, 50% of the sample was not active enough to achieve the benefits of physical activity. The results of the open-ended questions at the end of the questionnaire indicated that one of the main reasons to be physically active among participants was health. Thus, it might be beneficial for the CWB to increase awareness and promote the health benefits of physical activity to non-participants. As well, communicating to managers the benefits of having an active workforce may also be beneficial in encouraging participation. For example, promote the national physical activity guidelines, promote physical activity as a means of coping with job stress and create targeted messages to non-participants and inactive employees.

New employees. It may also be beneficial to provide introductory tours to all new employees. These tours should be part of every new employee's orientation. The CWB could also extend a new member discount to all new members, for example, waiving the program fee for the first two months. This may also increase the rate at which new employees sign up to become members of the physical activity facility.

Current employees. To increase the participation of longstanding CWB employees, the CWB could organize an open house which would invite all employees to participate at the facility free of charge for two weeks. The concept of an open house might encourage employees to try the facility who may be too intimidated to pay the monthly fee without knowing if they would be comfortable being active at the facility. Lastly, it is not enough to strictly offer a physical activity facility. The CWB should continue to offer a variety of programs to encourage participation for employees of all fitness and confidence levels.

The key to successful initiatives is to implement programs that meet employee needs. Since needs change continuously, it is important to survey (formally or informally) employees to find out their interests, preferred activities, preferred times and days, as was done as part of this study. A great program which took months to organize can be realized but if it does not meet the needs of employees, they will not participate. Participation is central to the long term success of any program, including workplace physical activity programs.

Removing Barriers

For many, being active at work and specifically at lunch hour is a logistical problem which involves changing, showering, exercising and getting back to work in a short period of time. In order to overcome this barrier for employees, the CWB could implement a policy allowing extended lunch hours for employees who participate in physical activity during work either at the facility, outside or at another facility.

The benefit of a workplace physical activity facility is that it is conveniently located on-site. However, even though the facility is convenient, if an employee is overworked or lacks the time, they will not take advantage of the on-site facility. Non-participants stated overworked/lack of time as the number one reason for not participating which according to the Canadian Health Network (2005) is the number one barrier to participation. It is important for managers to help employees create an appropriate workload balance. Managers need to take an active role in understanding their employees' daily struggles in order to help create viable solutions to workload issues.

Participating at the workplace physical activity facility is not the only option to incorporate physical activity into employees' daily lives. The CWB could also motivate

employees to incorporate physical activity into their daily workday without participating at the physical activity facility. For example, signs could be posted near elevators to encourage employees to use the stairs. Also, walking (43%) was the most frequently reported physical activity, therefore why not create walking clubs. Eleven percent of employees stated they would like walking clubs to be organized. Such clubs also provide social support which would encourage employees to participate and attend their walking club.

Work Environment

Cameron and Craig (2003) reported that both the employees and employers should take responsibility for an employee's physical activity behavior. In other words, employees' physical activity behavior is a shared concern. Consequently, it is important to encourage employees to participate in the decision making process. The CWB should encourage shared leadership of the physical activity program. Employees should be encouraged to voice their concerns and suggestions. The CWB should consider creating a steering committee, made up of participants and non-participants from all levels of the company, to obtain input. All levels of employees should be actively engaged in the process. According to Cameron, Craig, Stephens and Ready (2002) involving employees in the planning, development, organization and administration of the programs would increase participation. The feedback and suggestions from non-participants may be a great tool to help recruit non-participants.

The CWB should be aware of its organizational culture and how it may impact employees' willingness to be active. Evidently, the aim is to have an organizational culture that facilitates and supports healthy behavior. Generally, the workplace has been

seen as an appropriate setting for health promotion activities: providing the opportunity to influence lifestyles such as smoking, diet and physical activity, and to conduct screening for disease risk (Breucker and Schroer 1996).

The CWB should continuously attempt to foster an activity-friendly environment. For example, always ensure the following: the facility is affordable, the facility is safe, clean and equipped with up-to-date equipment, the showers and changing rooms are clean, bike racks are conveniently located and stairs wells are well lit. This will help maintain current participants and create a work environment conducive to physical activity. Eventually, according to Burgess (2007), physical activity during the workday should become a norm.

Generational Implications

Currently, the CWB wellness consultant appears to be offering physical activity programs that appeal to all generations. The workplace physical activity needs and wants of each generation seem to be met. As the workplace dynamics change the CWB should continue to implement programs or make changes to their current programs to meet the changing wants and needs of the new generations in the workforce.