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# Physical Self-Perceptions and Physical Activity Participation of Adult Males with Acquired Spinal Cord Injuries

By

Linda Mary Godin 

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts

Faculty of Physical Education and Recreation

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Abstract

The purpose of this study was to examine the relationship between physical self-perceptions and physical activity participation of adult males with acquired spinal cord injuries. Following participants' ($N$ = 26) completion of two instruments measuring perceived physical competencies (PSPP) and perceived importance of possessing physical competencies (PIP), participants ($n$ = 22) were asked to theorize about specific physical self-perceptions.

Results provided initial validation of the PSPP and PIP instruments for use with this population. Quantitative and qualitative results demonstrated that the positive association between physical self-perceptions and physical activity participation previously reported in the able-bodied population (Fox, 1990) was also found in this population. Participants' speculations regarding "self-esteem" and task self-efficacy provided further explanation for a link between perceived competence, perceived importance, and behaviour in the physical domain. "Self-esteem" appeared to generally encourage and/or be enhanced by physical activity participation. Task self-efficacy seemed to affect initial physical activity engagement post-injury.

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# CHAPTER ONE
## Introduction

The concept of self-perception, which incorporates referential statements about the self, has been well studied. Our self-statements and the importance we place on these various statements have been linked to the way we behave and our resulting behaviour relates to our future self-perceptions. Specifically, the link between behaviours and self-perceptions has been identified in the physical domain (Fox, 1990). Behaviours in the physical domain are assumed to be influenced by how we perceive our physical self. In other words, perceived possession of adequate physical competencies, and values attached to possessing these physical competencies, motivates us to engage in physical activity (Fox, 1990). Furthermore, our behaviours in the physical domain are thought to affect how we perceive our physical self in the future. Our physical activity participation is assumed to have a positive or negative effect, depending on our experiences during the activity, on our future physical self-perceptions. The relationship between physical self-perceptions and physical activity participation has been explored for the most part in the able-bodied adult populations. Its applicability to special populations, where self-perceptions may differ significantly from individuals that are able-bodied, has not yet been established. This was the focus of the study.

The physical consequences of a spinal cord injury (SCI) may include impaired motor function, sensory function, bowel and bladder function, and sexual function (Buckelew, Frank, Elliott, Chancey, & Hewett, 1991) requiring individuals to make adjustments in all aspects of their lives (Trieschmann, 1988; Lee, Brock, Dattilo, & Kleiben, 1993). Consequently, experiencing a SCI will likely bring about changes in adult males' physical activity participation as well as in their physical self-perceptions.

For this reason, it is important to gain insight into the link between these variables and other potential factors as well as to begin identifying directions for future research leading to practical applications.

## Purpose of the Study

The purpose of this study was to examine the relationship between physical self-perceptions and physical activity participation of adult males with acquired SCI. Specifically, this study explored the perceptions that young men with SCI hold about the physical self, and the relationship they see between these perceptions and physical activity levels. As a result of studying this phenomenon quantitatively as well as qualitatively, a greater understanding of the relationship between physical self-perceptions and physical activity behaviour in this group may potentially be achieved.

## Significance of the Study

Although much is known about the self-esteem of individuals with disabilities, relatively little is known about the physical self-perceptions of individuals with physical disabilities (Sherrill, 1997). Self-esteem itself has been considered as a global assessment of the self that arises from the perceptions of self in many domains based on the weighted importance attached to the domain (Harter, 1985; Rosenberg, 1982; Fox, 1997a). The physical domain is seen to be an important contributor to self-esteem (Sonstroem, Harlow, & Joseph, 1994; Sonstroem, Harlow, & Salisbury, 1993; Marsh, Richards, Johnson, & Tremayne, 1994). Bracken (1996) and Sonstroem (1984) suggested that researchers should focus on the linkages between the domains of self-esteem and the other variables in question rather than studying global 'self-esteem'. For example, they have suggested exploring physical experiences and perceptions of self in the physical

domain. By examining the relationship between physical self-perceptions and physical activity participation of males with SCI, researchers may enhance their understanding of the physical self. Adapted physical activity (APA) professionals are interested in gaining greater understanding about physical self-perceptions because of the direct impact a SCI has on the physical body, the strong association between the physical domain and self-esteem, and society's pronounced emphasis on the physical domain. Participation in physical activity may affect perceptions of the physical self because the body is the mechanism through which sport and physical activity are manifested (Goodling & Asken, 1987; Greenwood, Dzwaltowski, & French, 1990; Hendrick, 1985; Taub, Blinde, & Greer, 1999). Many professionals view sport or exercise participation as one way to enhance physical self-perceptions (Taub et al., 1999; Valliant, Bezzubuyk, Daley, & Asu, 1985; Greenwood et al., 1990). Currently, APA professionals are unclear about the link between physical self-perceptions and physical activity participation and the psychological or behavioural interventions that may aid individuals who are experiencing low physical self-perceptions or who have difficulties initiating physical activity participation.

APA professionals are currently becoming clearer about the specific physiological benefits that individuals with SCI experience if they engage in regular physical activity as well as the detrimental effects of inactivity. Studies have shown that individuals with SCI who regularly participate in exercise and sports programs can increase their muscular strength, cardiovascular fitness, and physical performance (Glaser & Davis, 1989; Hoffman, 1986; Erikson, Lostrom, & Ekblom, 1988; Davis & Shephard, 1988; Zwirne & Oded, 1975). Additionally, physical activity participation may act as a preventive

strategy to secondary disorders such as cardiovascular disease, obesity, diabetes, and osteoporosis (Noreau & Shephard, 1995; Comptom, Eisenman, & Henderson, 1989; Strotts, 1986; Curtis, McClanahan, Hall, Dillon, & Brown, 1986). Alternatively, many losses that may be experienced as a result of SCI such as a decrease in oxygen transport capacity, a reduction in muscular strength and endurance, a reduced blood volume, and a relatively small heart volume (Meyer, 1996), may be further aggravated by physical inactivity. A sedentary lifestyle can further decrease muscular strength and cardiopulmonary fitness leading to a debilitating cycle that can be difficult to cease or reverse (Glaser & Davis, 1989; Glaser, 1985; Hoffman, 1986). Physical inactivity levels of 61% reported for males with disability (Health Canada 1996/97) further reinforces the possible extent of health risks as well as the need for practical applications to increase the adoption of a physically active lifestyle by this population.

Spinal cord research has predominately focused on specific physiological benefits of physical activity and exercise as described above. Research into general psychological health benefits of activity is limited (Wheeler, 1993) but gaining momentum (Benson & Jones, 1990). To date, researchers have examined global aspects of self, the self-esteem of individuals with physical impairments, and specifically, individuals with SCI, with and without considering physical activity participation. Studies have shown strong support for the idea that positive self-esteem was related to wheelchair (w/c) sport participation (Campbell & Jones, 1994). Individuals with disabilities who participate in sports have reported significantly higher levels of self-esteem than inactive individuals with disabilities (Hutzler & Bar-Eli, 1993; Valliant et al., 1985; Sherrill, 1998). Significant increases in self-esteem were identified after individuals with disabilities commenced a

physical activity program (Hutlzer & Bar-Eli, 1993; Patrick, 1986). Although the research supported a strong link between self-esteem and physical activity participation, self-esteem incorporates many aspects in addition to the physical domain (e.g., social, emotional, and academic). Consequently, how physical activity participation relates to physical self-perceptions of individuals with SCI remains unknown.

## Delimitations of the Study

Participants in this study were males between 18 and 40 years old who have lived with a spinal cord injury (i.e., paraplegia and quadriplegia) for at least two years with varying levels and types of physical activity participation. Only males were studied since eighty-two percent of individuals who have sustained a SCI are males (Hammell, 1992) and gender differences in self-perceptions (Fox, 1990) would require the involvement of a large number of female participants. Due to the pronounced difference in experiences noted in the literature (Sherrill, 1997; Hopper, 1986) between individuals with congenital disorders such as spina bifida and individuals sustaining SCI at twenty years old, only males with acquired SCI were study participants. Although the framework of the adjustment process after a SCI is controversial, several researchers have indicated that at least two years are required before individuals achieve some sense of stability in their lives (Kerr & Thompson, 1972; Gordon, 1982). Additionally, decreases in depression and increases in adjustment in personal, family, social, and vocational areas have been reported by individuals with SCI one year after discharge (Richards, 1986). Because of the adjustment issues after an acquired SCI, participants were two or more years post-injury.

The ***predictor variable*** was males with acquired spinal cord injuries with varying levels of physical activity participation. The lesion level was based on medical diagnoses as identified on the Personal Information Sheet. The Physical Activity Report developed by Fox (1987) was modified for this study to capture participants' physical activity participation. The ***criterion variables*** were scores on the PSPP (Fox & Corbin, 1989) and the PIP (Fox, 1990) instruments and text from the qualitative interview.

## Limitations of the Study

APA researchers face several obstacles in assessing and studying participants with impairments. The *participants'* variation in age, years post-injury, level and complexity of impairments, and years of involvement in sport and physical activity experience were not controlled in this study. *Convenience sampling* reduced the ability to generalize across the population of adult males with acquired SCI. Although the *Physical Self-Perception Profile* (PSPP, Fox & Corbin, 1989) instrument was pilot tested on four males with spinal cord injuries, the PSPP instrument and accompanying *Perceived Importance Profile* (PIP, Fox, 1990) instrument had not been administered specifically to adult males with SCI in any published study. All collected data were based on *self-reports* (written or verbal).

## Definition of Terms

***Disability*** referred to any loss or reduction of functional ability and/or activity (WHO, 1980). The term 'disability' no longer exists related to functional ability as a result of the new International Classification of Functioning and Disability (ICIDH-2, WHO, 2001). The old term 'disability' is now replaced by the term 'impairment'.

***Impairments*** are any losses or abnormalities of bodily function and structure (WHO, 2001).

***Physical disabilities (impairments)*** as defined in the sports and disabled athlete movements include amputations, blindness, cerebral palsy, dwarfism, spinal injury, and les autres conditions (Paciorek & Jones, 1994).

***Spinal cord injury*** is defined as any trauma affecting the spinal cord resulting in complete or incomplete sensory or motor dysfunction. Lesions affecting the spinal column at or below the second thoracic nerve level results in paralysis of the lower extremities only and is known as **paraplegia**. Trauma to the spinal column at or above the first thoracic nerve level the point at which the ulnar nerve effects more or less all 4 limbs, the shoulder girdle, and thoracic muscle and is known as **quadriplegia** or **tetraplegia** (Wheeler, 1993).

***Self-perception*** is defined as an "umbrella term that denotes all types of self-referential statements about the self, from those that are global to those that are specific in content" (Fox, 1997b, p. xii).

***Self-concept*** is defined as the "individual as known to the individual. This is a self-description profile based on the multiple roles and attributes that we believe make up our self" (Fox, 1997b, p. xii).

***Self-esteem (self-worth)*** is defined as a "global construct that provides an overall statement of the degree to which an individual perceives himself or herself to be an 'OK' person, dependent on whatever criteria that individual uses to determine 'OK'" (Fox, 1997b, xii). Although the terms 'self-esteem' and 'self-concept' are defined differently,

the common practice is for researchers to use these two terms interchangeably (Byrne, 1996).

***Perceived physical self-worth*** is defined as the "general feelings of happiness, satisfaction, pride, respect, and confidence in the physical self" (Fox, 1990, p. 6).

***Perceived sports competence*** is defined as "perceptions of sport and athletic ability, ability to learn sport skills, and confidence in the sports environment" (Fox, 1990, p. 5).

***Perceived physical condition*** is defined as "perceptions of level of physical condition, stamina and fitness, ability to maintain exercise, and confidence in the exercise and fitness setting" (Fox, 1990, p. 5).

***Perceived body attractiveness*** is defined as "perceived attractiveness of figure or physique, ability to maintain an attractive body, and confidence in appearance" (Fox, 1990, p. 5).

***Perceived physical strength*** is defined as "perceived strength, muscle development, and confidence in situations requiring strength" (Fox, 1990, p. 6).

***Perceived importance*** is defined as the amount of value an individual attaches to different aspects of self (Harter, 1986).

***Physical activity*** is defined as "all individual sports, dual sports, team sports, and all individual movement sessions that are voluntarily engaged in for at least the partial purpose of being physically active" (Nielsen, 1985, p. 9). Physical activity is commonly described as having three dimensions: duration (minutes), frequency (times per week), (Montaye, Kemper, Wim, & Richard, 1996) and intensity (RPE, Borg, 1982).

# CHAPTER TWO
## Review of Literature

To date, researchers have examined the self-esteem of athletes and non-athletes with SCI but relatively little is known about their physical self-perceptions (Sherrill, 1997). Research on body image (e.g., body appearance, body esteem, and body satisfaction) and its relation to global self-esteem has dominated this physical domain work (Fox, 1997a). A unidimensional model of self-esteem, favoured by researchers until 1980, and the accompanying instruments (e.g., Rosenberg Self-Esteem Scale, [RSES], Rosenberg, 1979), led to a focus on global self-esteem scores. After 1980, a multidimensional and hierarchical model of self-esteem became popular and was endorsed by researchers. Researchers then developed new multidimensional self-esteem instruments. As a result of viewing self-esteem as possessing varying levels and facets, researchers had the opportunity to examine the physical self as an independent domain (Fox, 1997a).

### The Multidimensional Hierarchical Model of Self-Concept

Many researchers (e.g., Bryne, 1996; Harter, 1985) now support the Multidimensional Hierarchical Model of Self-Concept (Shavelson, Hubner, & Stanton, 1976) [Figure 1]) although the generalizability of this model is still under debate. For example, Hattie (1992) indicated that the sweeping conclusions made by several researchers that defend Shavelson's et al., (1976) model are not justified based on the evidence. This model views self-concept, a term used interchangeably with self-esteem, as the individuals' self-perceptions that are developed through experiences with and interpretation of their environment (Shavelson et al., 1976). Shavelson's et al. (1976)

model defines self-concept as multifaceted, hierarchically organized, differentiated more with age, descriptive as well as evaluative, less stable as behaviours become more situation specific, and differentiated from other constructs. This model proposes a general self-concept at the apex of the hierarchy that is divided into academic (e.g., English and mathematic abilities), and non-academic self-concept. The non-academic self-concepts are divided into social, emotional, and physical self-concepts (the latter of which is further subdivided into physical ability and physical appearance) (Marsh, 1989).

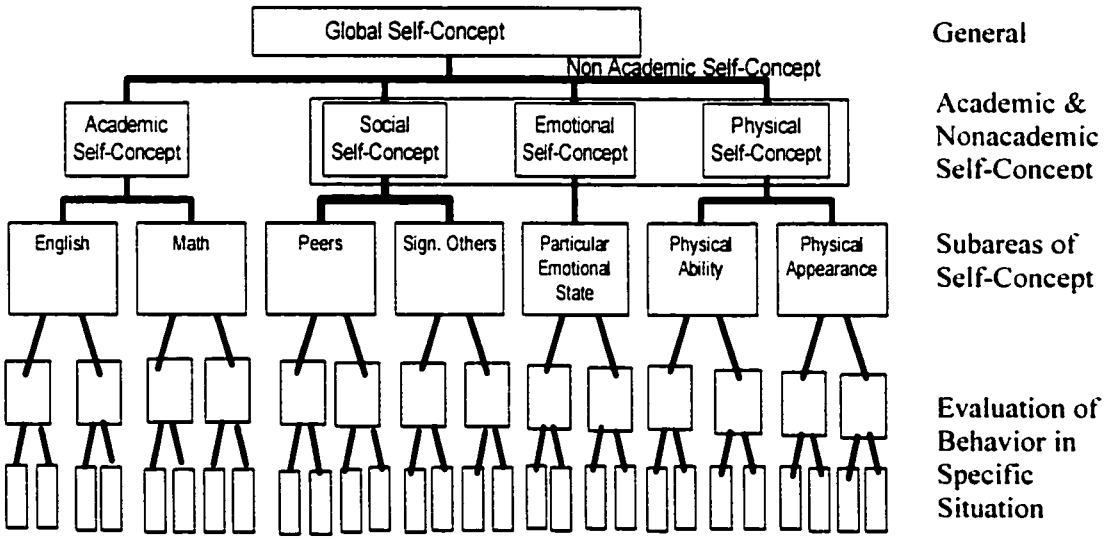


Figure 1 – The hierarchical structure of self-concept (Shavelson et al., 1976)

Because of the model's features as described above, researchers began to explore the potential contribution exercise made to the domains of self-esteem. Exercise was thought to be influenced more by the importance attached to the physical domain than to global self-esteem (Fox & Corbin, 1986; Sonstroem, 1984). Fox and Corbin (1989) recognized the need to modify Shavelson's et al. (1976) Self-Concept Model in order to

enhance the exploration of the physical domain. Although Shavelson's et al. (1976) model was supported, the content and number of subdomains within the physical domain had demonstrated greater complexity in Fox and Corbin's (1989) open-ended questionnaire and interview study. As a result, they identified more than two physical domains (sport ability and physical appearance). For this reason Fox & Corbin (1989) developed the Self-Perception model (Figure 2) which focused on perceived physical competencies.

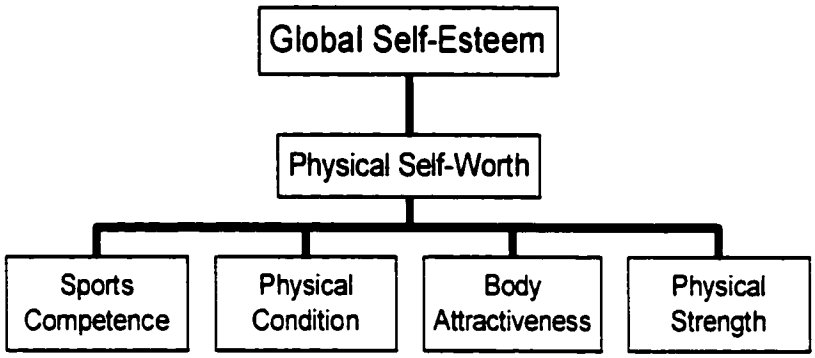


Figure 2 – Three-tier hierarchical organization of self-perceptions proposed by Fox and Corbin (1989)

## The Self-Perception Model

The Self-Perception Model hypothesizes a three-tier hierarchical organization that incorporated global self-esteem at the apex, physical self-worth at the domain level; and sport competence, physical condition, body attractiveness, and physical strength at the subdomain level. The Self-Perception Model and the accompanying PSPP instrument are based on a hierarchical model that views perceived competencies as varying from one level to another: the superordinate (global self-esteem), domain (physical self-worth), and subdomain (e.g., sports competence). This model theorizes that as one descends the

hierarchy, one's perceived competencies become less stable and more susceptible to change as the situation becomes more specific. In other words, perceptions of success or failure occurring at the lower more specific behaviour level are capable of filtering upwards to change more enduring aspects of self-esteem (Fox, 1988).

Fox and Corbin's (1989) theoretical assumptions about competence and behaviour in the physical domain are based on aspects of Harter's (1985, 1986) competence-motivation theory and Sonstroem's (1978) self-enhancement and skills development approach. Fox and Corbin (1989) would theorize that increases in perceived physical competencies lead people to increase their physical activity participation and vice versa. In other words, people who perceive their physical competencies to be high would likely be attracted to physical activity leading to higher levels of physical activity involvement. Repeated successful participation in physical activity would likely lead to improvements in physical competencies, which in turn, would likely encourage perceptions of improved physical competencies and enhanced self-esteem. In contrast, people who perceive their physical competencies to be low would avoid engaging in physical activity that involved displaying their low physical competencies because of the threat to self-esteem. This avoidance of physical activity involvement would likely lead to decreases in physical competencies, which in turn, would likely reduce perceptions of physical competencies.

Fox (1990) identified a need for another instrument to measure the relative importance an individual attributes to these physical competencies. The Self-Perception model was expanded to incorporate the PIP (Perceived Importance Profile) instrument. Although the PIP instrument scores and physical activity participation were analyzed

separately from the PSPP scores, the theoretical perspective related to importance and behaviour in the physical domain has not been clearly outlined. Fox's (1990) Self-Perception model would likely theorize that the perceived importance of possessing physical competencies would be positively associated with behaviour in the physical domain. That is, people who perceive importance of possessing physical competencies as high would likely be attracted to physical activity. This attraction to physical activity may lead to high levels of physical activity participation. Repeated successful involvement in physical activity would likely encourage increases in perceived physical competencies as well as reinforce high perceived importance of possessing these physical competencies. In contrast, people who place no value on possessing physical competencies would likely not be attracted to physical activity participation. This lack of attraction towards physical activity would likely lead to decreased physical activity involvement. Absence of physical activity participation, or infrequent participation, would likely lead to decreases in perceived physical competencies which would subsequently reinforce the lack of perceived importance of possessing physical competencies.

Fox (1990) indicated that a greater understanding of overall self-esteem and motivation to participate in physical activity might be gained by examining self-perceptions of competence and importance in the physical domain together. Specifically, (Fox, 1990) would suggest that the importance attached to each of the subdomains acts as a filter by attaching values to competence in that subdomain and domain (Figure 3).

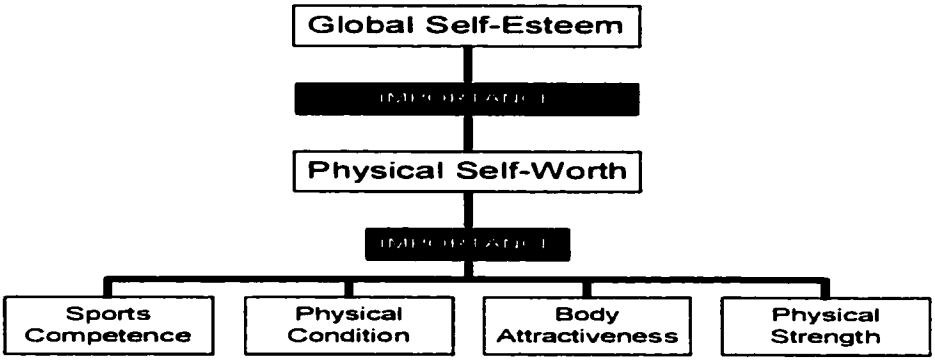


Figure 3 – Perceived importance filters in a hierarchical self-esteem structure (Fox ,1990).

Fox's (1990) expanded model incorporated the importance component into the competence and behaviour relationship. This expanded theoretical framework was based on aspects of Harter's (1985, 1986) discrepancy work that offered a self-enhancement approach. Harter's (1986) discrepancy work was operationalized from James' (1890/1950) successes and pretensions ratio related to self-esteem. Harter (1986) translated the 'success' construct into domain-specific competence and the 'pretension' construct into importance of competence in each of these domains. Generally, Harter (1986) proposed that the more ratings of perceived importance that exceed ratings of perceived competence the lower one's sense of self-worth. Self-worth was assumed to be increased by either increasing one's perceived competence or by discounting the perceived importance of areas in which one has perceived weakness (Harter, 1999). If individuals were not able to discount the perceived importance of areas in which they had low perceived physical competencies, the resulting low competence-high importance discrepancy would strongly predict lower self-worth.

Fox's (1990) theoretical perspective related to competence, importance, and behaviour in the physical domain would likely assume that commencement or increases in physical activity participation would likely lead to improved physical competencies. These improved physical competencies would likely promote perceptions of improved physical competencies. If these physical competencies are valued, then overall perceived physical competence would likely be enhanced. If perceived competence in the physical domain is valued, self-esteem would likely be enhanced. If no value is placed on perceived physical competencies (subdomains) or the physical domain, these enhanced perceived competencies would not affect self-esteem. Discontinuing or lacking successful engagement in physical activity would likely lead to decreases in physical competencies. These decreases would likely lead to lowered perceptions of physical competencies. If perceived physical competencies are valued, then the overall perceived competence in the physical domain would decrease. If competence in the physical domain is valued, self-esteem would be negatively affected. If no value is placed on possessing perceived physical competencies (subdomains) or on the physical domain itself, these lowered perceived physical competencies would not affect self-esteem.

## The Self-Perception Model accompanying Instruments

Two instruments, the PSPP (Fox & Corbin, 1989) and the PIP (Fox, 1990), were developed in conjunction with the Self-Perception Model. The PSPP instrument specifically evolved in tandem with Fox and Corbin's (1989) model to assess perceived competencies in the physical domain. The PIP instrument was developed in conjunction with the PSPP instrument and the expanded Self-Perception model (Fox, 1990) to assess

the importance an individual attaches to possessing competence in each subdomain of the physical self.

Physical Self-Perception Profile (PSPP) Instrument

The PSPP is one of three instruments specifically developed to measure the physical domain. It is a 30-item inventory consisting of five 6-item subscales. This instrument includes four subdomains which are perceived sports competence, physical condition, body attractiveness, physical strength, and one global domain that assesses overall physical self-worth (Fox & Corbin, 1989). The two other physical domain instruments are the Physical Self Descriptive Questionnaire (Marsh et al., 1994) and the Physical Self Scale (as described in Marsh et al., 1994). On one hand, Marsh et al. (1994) compared the three physical domain instruments and recommended the PSDQ for between-construct issues such as known group differences, interventions designed to enhance specific aspects of physical self-concept and related constructs, and future characteristics and behaviours that are mediated by physical self (e.g., exercise adherence). On the other hand, the PSPP is the best known of the three instruments and was empirically and theoretically tested by several researchers: Harter (1985), Marsh (1987), Marsh & Shavelson (1985), and Shavelson et al. (1976). Byrne (1996) indicated that the PSPP was a theoretically well-developed measure that tests the multidimensionality and hierarchical organization of physical self-perceptions.

Perceived Importance Profile (PIP) Instrument

The second instrument associated with the Self-Perception Model is the Perceived Importance Profile (Figure 3, PIP, Fox, 1990). The PIP instrument measures the importance attached to possessing competence in each subdomain of the physical self

with a link to more global feelings of worth (Marsh, 1997). This 8-item instrument consists of four 2-item subdomains (sports importance, condition importance, body attractiveness importance, and strength importance). Importance scores act as a filter between subdomains by attaching values to competence in that subdomain and domain (Fox, 1990). In accordance with Fox (1990), only if individuals attached value to possessing competence in a particular subdomain does that subdomain have impact on their physical self-worth or global self-worth.

## Physical Self-Perception Studies

### Studies with Able-Bodied Individuals using the PSPP Instrument

Validation of the PSPP began in 1989 with young adults (1,191 college students) in the United States. Currently, the PSPP has been validated for use with able-bodied young and middle-aged adults in the United States (Sonstroem, Speloitis, & Fava, 1992; Sonstroem et al., 1994) and with British and Turkish university students (Page, Ashford, Biddle, & Fox, 1993; Asci, Asci, & Zorba, 1999). A modified PSPP instrument for children in grade 7 and 8 (C-PSPP and C-PIP, Whitehead, 1995) was developed from studies with children. Later, studies with early-to-late adolescent created a modified version of the PSPP instrument (CY-PSPP, Whitehead, 1995; Welk, Corbin, & Lewis, 1995). Studies conducted with adolescents in the United States and Australia (Marsh et al., 1994; Whitehead, 1995) showed similar patterns to Fox and Corbin's (1989) test norms on college students. Several studies involving children, adolescents, and adults have shown that the PSPP instrument could predict physical activity behaviours and sport involvement (Fox & Corbin, 1989; Welk et al., 1995; Page et al., 1993; Sonstroem et al., 1992).

Studies across culture, age, and gender groups have shown some similar results. The mean value patterns across cultures for university students were similar for both males and females compared to test norms developed on college students in the United States (Asci et al., 1999; Page et al., 1993; Sonstroem et al., 1992). Studies with both male and female children, adolescents, and young adults reported that males scored themselves between .5 and 1.0 points above females, out of a possible twenty-four points, on almost all the physical subscales (Fox & Corbin, 1989; Whitehead, 1995; Welk et al., 1995). Sonstroem's et al. (1992) study involving middle-aged adults (mean age 44.1 years) reported that middle-aged males showed significantly higher scores for perceiving their bodies to be attractive, lower scores for perceiving themselves competent in sports, and the same scores for the other three subdomains compared to male college students.

Physical Self-Worth. Physical self-worth acts as a global outcome of perceptions specific to the physical domain and represents all feelings of physical self-worth (Fox & Corbin, 1989). Two studies found that self-esteem was largely mediated by physical self-worth (Sonstroem et. al., 1994; Sonstroem et al., 1993). Physical self-worth was found to serve as a mediator between self-worth and the subdomains, with the exception of the body attractiveness subdomain (Sonstroem et al., 1994). The body attractiveness subdomain and the physical self-worth showed twice as strong a correlation when compared to the other three subdomains (Fox & Corbin, 1989). The high correlation between the physical self-worth domain and the body attractiveness subdomain has been viewed with concern (Fox & Corbin, 1989; Sonstroem et al., 1992; Sonstroem et al., 1994) since it indicates that participants equate physical self-worth with body attractiveness.

Sports, Condition, and Strength Subdomains. The predictive ability of the PSPP instrument across age categories and cultures goes beyond general physical behaviours. The PSPP instrument was not only able to differentiate exercisers from non-exercisers but also determine the extent of exercise participation (Fox & Corbin, 1989; Sonstroem et al., 1992). Researchers have reported that the sports, condition, and strength subscales can successfully discriminate between active and non-active as well as between high active and low active individuals (Fox & Corbin, 1989; Roberts, Kleiber, & Duda, 1981; Feltz & Petlickoff, 1983). These three subdomains have also been shown to be closely linked to their related physical activity type and involvement (Fox & Corbin, 1989). Studies have shown that perception of physical competencies and to some extent body image are generally associated with various levels of involvement in and types of physical activity across most age groups (Fox, 1997a). For example, individuals with high perceived strength would likely participate in weight training type activities.

Body Attractiveness Subdomain. The body attractiveness subscale has been shown to be less effective in predicting degree and type of involvement in physical activity; although for males, body attractiveness is closely related to condition and strength subdomains, weight training, calisthenics, and to a lesser degree endurance activities (Fox & Corbin, 1989). Harter (1999) has found that physical appearance is a prevailing component of self-esteem over the lifespan. Some researchers have suggested that body attractiveness is more appropriately a measure of self-acceptance (Sonstroem et al., 1994; Epstein, 1973).

Studies with Able-Bodied Individuals using the PIP Instrument

Validation of the PIP began in 1989 with young adults (1,191 college students) in the United States. Since the initial work on test norms, few researchers have incorporated the PIP instrument in studies that administered the PSPP instrument. As a result of this, the PIP instrument has had limited testing and further validation in the last ten years. The early studies indicated that PIP instrument scores have predicted physical activity participation (Fox, 1990; Fox 1988).

Physical Self-Perception Studies with Individuals with Impairments

Specifically, only two studies have administered the PSPP instrument to individuals with physical impairments. Flintoff (as described in Sherrill, 1998) incorporated the PSPP instrument in a study involving young athletes with cerebral palsy (CP). The limited data available indicated that paralympic and recreational athletes with CP obtained high PSPP scores and had positive attitudes towards their disability. The interview data indicated that all athletes perceived themselves as competent and successful regardless of their recreational or elite status. In another study, Hudson (1994) examined the association between perceived physical fitness (in this study perceived fitness was equated with one's physical ability and physical self-worth), self-esteem, and physical activity patterns in 58 adults (47 females and 11 males with a mean age of 46) with multiple sclerosis (MS). Eighty–four percent of the sample adopted an inactive lifestyle. The results from the PSPP subscale mean scores indicated that, with the exception of the body attractiveness subscale, scores were significantly lower for the MS sample when compared to those obtained from the test norms (Fox and Corbin, 1989). The body attractiveness subscale scores (14.1) did not differ significantly from the

published norms on able-bodied college students (13.83-14.91). The MS sample scores were significantly lower on sports (10.7), condition (12.2), strength (11.1) and physical self-worth (12.8) than the test norms reported by Fox and Corbin (1989) (sports [14.62-17.2], condition [14.85-16.43] strength [15.18-15.62], and physical self-worth [14.79-16.66]).

Physical Self-Perception Studies using Other Physical Domain Instruments

Most studies using physical self-perception instruments with individuals with impairments have involved adolescents. The majority of these studies reported that adolescents with physical disabilities scored lower than their able-bodied peers (King, Shultz, Steel, & Gilpin, 1993; Magill & Hurley, 1986). On the other hand, some studies reported that adolescent athletes with physical disabilities scored as high on perceived physical competencies as a sample of able-bodied students (Sherrill, Hinson, Glench, Kennedy, & Low, 1990). In particular, 36 children/adolescents with physical disabilities (10-18 years old) who participated in an instructional wheelchair tennis program reported significant improvements in their perceptions of physical competencies (Hendrick, 1985). Another study reported that the perceived physical fitness scores of adolescents with impairments were similar to their able-bodied peers but significantly lower than their able-bodied athletic peers (Lintunen, Heikinard-Jonasson, & Sherrill, 1995).

Studies on Body Image. There have been few body image studies conducted specifically involving individuals with SCI. The studies have revealed some inconsistencies among the findings and some researchers' assumptions. Trieschmann (1988) indicated that the literature related to body image on individuals with SCI is limited, and the articles were either written by physicians focussing on distortions or by

psychologists attempting to relate body image to disability adjustment. Mayer and Eisenberg (1982) reported that physical self-concept appears to be compromised in individuals with disabilities. In a later study, Mayer and Eisenberg (1988) reported that individuals with SCI evaluated their fingers, hands, legs, sex organs, thighs and waists negatively, but rated unaffected body parts more favourably. Stensman (1989) reported little difference between individuals who are quadriplegic and able-bodied hospital staff on attitudes about their bodies. Although Nelson and Gruver (1978) hypothesized that individuals with paraplegia would have a disturbed body concept, their findings revealed no significant differences in body image scores between veterans with paraplegia and non-hospitalized able-bodied individuals.

Studies on the Physical Body and Physical Activity. Researchers have identified the role pre-injury physical activity interests has on post-injury physical activity participation as well as the role post-injury physical activity participation has on assisting individuals with SCI to adjust to their physical bodies. Roche and Athelstan (1985) reported that pre-morbid interests in physical activity have shown to be maintained at a high level in males with SCI eight years post-trauma. Additionally, engagement in physical activity has been suggested to be extremely important in the adjustment to altered body functioning and body image (Stensman, 1989).

Physical Self Subdomain Measures within Self-Esteem Instruments

Few studies have administered self-esteem instruments with multidimensional measures. Two studies involving individuals with SCI (total n=106), not considering level of activity, reported significantly lower physical self scores on Fitt's Tennessee Self Concept Scale compared to test norms (Green, Pratt, & Grigsby, 1984; Mayer &

Eisenberg, 1982). Although lower scores were found on perceptions of the physical self, Green et al. (1984) found significantly higher scores on personal self, moral-ethical self, and social self compared to test norms, whereas Mayer and Eisenberg (1982) reported that other measures of self-esteem were within the test norms. Sherrill et al. (1990) conducted a study using the Self-Perception Profile for Adolescents (developed by Harter) with physical disabilities (SCI, n=12) and found that the youth athletes' scores fell within the normal range for able-bodied youth on all nine domains (including athletic, appearance, and global self-worth).

Qualitative Studies of Physical Self-Perceptions

Blinde and McClung (1997) conducted a study involving eleven adult women (with a mean age of 31.5) and twelve men (with a mean age of 26.2) with various physical disabilities (with 9 individual with SCI [4 paraplegic and 5 quadriplegic]) who agreed to participate in an individualized recreation activity program. Individual interviews involved open-ended questions based on an interview guide. Four changes in perceptions of the physical self emerged from participating in physical activity: (1) participants experienced their bodies in new ways, (2) the perceptions of their physical attributes were enhanced, (3) they redefined their physical capacities, and (4) they increased their perceived confidence to pursue new physical activities. This study's results were consistent with Fox's (1990) theoretical framework. This qualitative study design offers a more descriptive examination of the physical self than the PSPP and PIP standardized instruments that report numerical scores.

Qualitative methods allow researchers to study selected issues in-depth (Patton, 1990). Fox (1990) recommended that more detailed qualitative work be completed.

particularly with individuals with impairments, in order to gain a greater understanding of physical self-perceptions. Sherrill (1997), in agreement with Fox (1990), suggested that by combining approaches, researchers will gain a better understanding of the development and maintenance of aspects of the self. Triangulation is viewed as one way to strengthen a study's design (Denzin & Lincoln, 1998). The strength of triangulation is based on the assumption that the weaknesses in each method will be compensated by the strength in the other (Denzin & Lincoln, 1998). Qualitative methods may be used to support or explain the quantitatively derived findings (Denzin, 1970). Through incorporating a qualitative method using an interview guide, physical self-perceptions will be examined from another perspective.

Summary

As a result of a unidimensional view of the self prior to the last two decades, there has been a lack of research conducted on physical self-perceptions with the able-bodied population before 1980. To date, very limited research related to physical self-perceptions has been conducted with individuals with physical impairments and even less on specific impairments such as SCI. Since difficulties conducting research on groups with impairments have often led to poor research designs with mediator variables not being adequately controlled (e.g., large age ranges, across impairment groups, and small sample sizes) (Sherrill, 1997), inconsistent and contradictory findings in the studies cited are not surprising.

Since SCI require individuals to adjust in all aspects of their lives, particularly to severe physical changes (e.g., body appearance and body functioning), and since there are health risks associated with physical inactivity, APA professionals are interested in

gaining insight into the link between physical self-perceptions and physical activity participation. Conducting a study with a theoretically well-developed model and accompanying instruments along with a qualitative inquiry may provide greater understanding of the relationship between physical self-perceptions and physical activity participation of adult males with SCI. By gaining a better understanding about the link between physical self-perceptions and physical activity participation of males with SCI, future research directions and potential interventions may be identified.

# CHAPTER THREE
## Method

This study incorporated an across-method design to examine the relationship between physical self-perceptions and physical activity participation of adult males with SCI. This across-method design contained elements of both quantitative and qualitative approaches (e.g., Patton, 1990; Denzin, 1978). The data were collected using a quantitative-qualitative sequential design. This two-phase design involved participants completing paper and pencil self-report instruments and information sheets, and then answering open-ended questions based on an interview guide. The quantitative data were analyzed using descriptive and inferential statistics while the qualitative data underwent analyses to identify categories and speculations.

### Participants

Twenty-six participants were recruited for this investigation. All participants were males between 22 and 43 years old who have lived with an acquired spinal cord injury for at least two years. Participants were recruited for three distinct groups that were defined according to physical activity participation (see the Physical Activity Report Appendix E for specific group distinctions). Seven participants in the "**non-active**" group did not engage in physical activity beyond activities of daily living (ADL). Ten participants in the "**recreation**" group did engage in weight training, fitness classes, swimming type, or sports activities to increase or maintain their physical fitness level. Nine participants in the "**athlete**" group did participate in sports events to compete and to improve their physical skills (they may also have engaged in physical fitness activities as part of their sports training).

## Procedure

After ethics approval was granted from the Faculty of Physical Education and Recreation at the University of Alberta, participants were recruited through the Canadian Paraplegic Association (Alberta) and the Steadward Centre at the University of Alberta. Participants indicated their interest to the researcher or to agency staff who then forwarded potential participant names. Volunteer participants were then contacted in person or by telephone. During the initial contact, participants' suitability for the study was determined. If participants met the study's criteria, the study's purpose and procedures were explained. If participants agreed to volunteer for the study, then a face-to-face interview was arranged.

### The Interview

Quantitative Data Collection. The interview commenced with the researcher outlining the entire interview process. Following this introduction, the participant was asked to first read the study's Information Sheet (Appendix A) and sign the Consent Form (Appendix B). The participant then completed four forms: (a) PSPP instrument, (b) PIP instrument, (c) the Physical Activity Report, and (d) the Personal Information Sheet. The quantitative data collection format was developed from the pilot study (see Appendix G for more details). The first phase of the interview lasted between twenty to thirty-five minutes. The participant's PSPP and PIP scores were tabulated and graphed while the participant completed the latter two forms (see graph 4 in Appendix I).

Semi-Structured Interview based on an Interview Guide. The second part of the interview involved asking participants open-ended questions based on an interview guide developed from the pilot study. The interview guide used 'created' profiles to further

explore the issues of self-perception with inactive, active and recreational participants with SCI. This had the advantage of participants being able to 'theorize' without having to reveal potentially awkward feelings about themselves (see Appendix G for more details).

The Interview Guide. The interview guide approach involves outlining a set of issues prior to the interview that are addressed with each participant (Patton, 1990). The interview guide (see Appendix H) was comprised of four sections. Section one incorporated a standardized introduction explaining the format of the interview. In section two, the many aspects of the graphed profile (e.g., scoring, scaling, and definition of terms) were explained to the participants using graph 1 (Appendix I) as an example. Then the first of three 'created' graphs (1, 2, and 3) was shown to the participants. Each graph was presented separately. In order to encourage participants to 'theorize' about the first three 'created' profiles, the participants were informed that these profiles were based on a prior study with males with SCI. These three profiles were created based on Fox's (1990) theoretical framework and the pilot study (see Appendix G). This method of asking participants to 'theorize' was one avenue to test the validity of Fox's (1990) theoretical perspective on the relationships of (1) competence and behaviour, (2) importance and behaviour, and (3) competence, importance, and behaviour in the physical domain.

Participants were shown a profile and then asked what would account for a person scoring his perceived physical competencies and perceived importance of possessing physical competencies this way, or 'who' would score this way. When unclear about the participant's response, the researcher asked clarifying questions. In addition to assisting

the researcher to clarify the participant's point of view, probing questions allowed for further exploration of a particular topic.

In section three, the participant was shown his own graphed profile and asked to comment on it if he wished. The final section included optional questions to be asked at the discretion of the researcher. The qualitative component of the interview was audio taped and lasted between twenty-five to forty-five minutes depending on the extent of the discussion.

Follow-Up

Upon completion of the interview, the researcher asked permission to contact the participant for a follow-up interview if further exploration or a member check was required. Brief follow-up contact was made with the participants in the "**recreation**" and "**athlete**" groups to further clarify their physical activity participation (see Appendix K). Since participants from the "**non-active**" group did not complete the second page of the Physical Activity Report, no follow-up related to physical activity participation was required. Several months later, member checks were completed with six participants, two from each of the three activity groups. The member check-in process involved participants reading a composite profile (see Appendix L for a sample) and highlighting which ideas/statements were true or relevant for them (see page 31 for the results of the member checks).

## Measures

### Physical Self-Perception Measures

Physical Self-Perception Profile. The Physical Self-Perception Profile (PSPP, Fox & Corbin, 1989) (Appendix C) is an instrument based on a multidimensional (Harter,

1985) and hierarchical (Shavelson et al., 1976) model of self-esteem. This instrument measures perceived competencies in four specific subdomains of the physical self: (a) sports competence, (b) physical condition, (c) body attractiveness, and (d) physical strength. In addition, a global physical self-competence domain (physical self-worth) acts as a global outcome of perceived competencies in the four subdomains.

This 30-item self-report inventory consists of five 6-item subscales that instruct a respondent to identify which one of the two descriptions is most like him. After he has selected one of the two descriptions, he is asked if this one description is "sort of true" or "really true" for him (Fox & Corbin, 1989). Item scoring ranges from 1 to 4 with subscale scores ranging from 6 to 24 because each subscale is composed of 6 items (Fox & Corbin, 1989). Higher scores obtained indicate higher perceived physical competence in that particular domain or subdomain. The PSPP instrument has shown empirical strength by demonstrating *internal consistency* (Cronbach's alpha coefficient for subscales .92 for males, Fox, 1990), *test-retest reliability* (.68 to .92 on two groups over a 36-day period, Fox, 1990), *concurrent validity* (sports, condition, and strength subscales were able to discriminate between active and non-active, as well as between high-active and low-active adults, Fox & Corbin, 1989), *construct validity* (exploratory and confirmatory factor analysis showed strong support for the five-factor structure of the PSPP, Byrne, 1996), and *avoidance of social desirability* (the structure-alternate format of the PSPP items adopted from Harter appears to avoid the problem of social desirability, Fox, 1997).

Pilot Study: Applicability of the PSPP. As a result of very limited use of the PSPP instrument with groups of individuals with physical impairments and the difficulty

locating Flintoff's (1994) unpublished thesis, the applicability of the PSPP instrument for use with this specific population warranted a pilot study. The pilot study's results, involving four physically active participants with SCI, indicated that the PSPP was deemed applicable for use with this population. The PSPP was deemed applicable because of the consistency of scoring within the subscales, the variability in rating items as "not applicabl" and/or identifying missing items from the PSPP instrument, and the accuracy of the participants' graphed profiles (see Appendix G for more details).

Perceived Importance Profile. The Perceived Importance Profile (PIP, Fox 1990) (Appendix D) accompanies the PSPP instrument. The 8-item PIP instrument consists of four 2-item subscales that measures the perceived importance an individual attaches to possessing physical competence in each of the four PSPP subdomains (sports competence, body attractiveness, physical strength, and physical condition) (Fox, 1990). Items from each subscale are presented in sequence and in the same format as the PSPP instrument (Fox, 1990). Subscale scores range from 2 to 8 with higher scores indicating that more importance was attached to possessing competence in that subdomain. Fox (1990) reports *test-retest reliability coefficients* ranging from .68 to .83. Correlation between same subscale items range from .56 to .84. *Social desirability* does not appear to provide a threat to validity (Fox, 1990).

Physical Activity Participation

The Physical Activity Report (Appendix E) was modified for this study from Fox's (1987) work. The modifications included incorporating Nielsen's (1985) physical activity definition and Borg's Rating of Perceived Exertion descriptors (RPE, Borg, 1982). The report asked the participants to indicate which one of the three descriptions

best represent their actual physical activity participation ("**non-active**", "**recreation**", "**athlete**") in the last three months. Participants who had identified the description related to either the "**recreation**" or "**athlete**" group were asked to complete the second page of the report. The second page of the Physical Activity Report asked these physically active participants to identify what type of activities they engaged in. Along with type of activities, the report asked participants to identify the frequency, intensity, and time spent in each activity.

After reviewing the results from the Physical Activity Report, the accuracy of ascertaining the participant's frequency (times per week) and duration (hours per week) of physical activity involvement was in question. The Physical Activity Report appeared to capture the type of activities the participants engaged in over the last 3 months but not on a weekly basis. As a result of the rating scale not differentiating beyond forty-five minutes of time spent engaged in physical activity, any differences in involvement above forty-five minutes was not captured. Although the frequency was identified for each activity, the information failed to determine if the participants engaged in both activities in one work out period. As a result of this, participants from both active groups ("**recreation**" and "**athlete**") were contacted and asked two questions related to their frequency and amount of time engaged in planned physical activity on a weekly basis (Appendix K). These two questions were similar to those questions asked in the Physical Activity Questionnaire (Sonstroem's et al., 1992).

Personal Information Sheet. Demographic information was collected from The Personal Information Sheet (Appendix F) in order to compare group composition as well as ensure that participants met the study's criteria. Demographic information gathered

about the participants from the Personal Information Sheet, the Physical Activity Report, and the two follow-up activity questions are presented in Table 1. Table 1 illustrates the group mean scores for age, years post-injury, level of injury (ASIA, 2000), frequency and amount of physical activity engaged in.

Table 1 - Group Means for Age, Years Post Injury, Frequency and Duration of Activity

| Activity Group | N M | Age M | Yrs. Post-Injury M | Level Of Injury ASIA (n) | X/Wk Active M | Hrs/Wk Active M |
|---|---|---|---|---|---|---|
| Non-Active | 7 | 30.1 | 13.8 | A (6) & C (1) | 0 | 0 |
| Recreation | 10 | 33.6 | 9.35 | A (8) & C (2) | 3.5 | 6 |
| Athlete | 9 | 27 | 8.3 | A (6) & C (3) | 5 | 15 |

## Data Analyses

### Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS Inc., 1999).

Descriptive Analysis. The mean and standard deviation scores from all participants were calculated for each of the five PSPP subscales and the four PIP subscales.

Inferential Analysis. Inferential analyses were employed to (1) determine subscale reliability, relatedness and partial validity for both instruments by conducting Cronbach's Coefficient Alpha and Spearman's Rank Order Correlation; (2) calculate the Effect Size; and (3) complete analyses of variance between the activity groups by conducting Levene's Tests of Homogeneity of Variance, One-Way ANOVA, and Bonferroni's Post Hoc Tests.

Qualitative Data Analyses

Qualitative data analyses, according to Bogdan and Bilken (1992), involves working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others. Qualitative data analyses encompass analyzing the text of interviews. The process began with transcribing verbatim each of the twenty-two interviews. The Bogdan and Biklen (1992) procedure for data analyses was followed. The analyses were guided by the competence and the importance subscales incorporated in Fox's (1990) Self-Perception Model.

The analyses of the text involved five phases (for detail see Appendix J). The first phase involved colour and number coding text related to competence and importance subscale (Fox & Corbin, 1989; Fox, 1990) categories. The second phase involved reading the non-coded text for meaning and identifying categories. The four categories that emerged were coded by colour and number. The third phase involved reading all coded text within the major categories for common and unique speculations. Text that offered similar speculations was transferred onto the appropriate summary sheet. The fourth phase involved developing a composite profile based on the identified speculations that arose from each activity group. The final phase involved reviewing summary sheets for common and unique speculations across activity groups. Common and unique speculations expressed across groups regarding (1) competence and behaviour, (2) importance and behaviour, and (3) competence, importance, and behaviour in the physical domain were reported in chapter 5 results section.

Trustworthiness of Qualitative Research Findings

Trustworthiness according to Guba & Lincoln (1981) includes four elements: (a) credibility for truth value, (b) applicability, (c) consistency, and (d) neutrality. Each element focusses on different aspects to enhance the trustworthiness of the qualitative results.

Truth Value. Truth value relates to how a researcher can establish confidence in the "truth" of the findings (Guba & Lincoln, 1981). Employing various sources to ascertain the findings and interpretations of data enhances credibility for truth. Triangulation of data collection and analyses enhanced the findings by incorporating different biases and strength of the multiple sources in order to complement one another (Denzin & Lincoln, 1998).

Member checks were conducted with six participants, two from each activity group. The participants were asked to read a composite profile (see Appendix L for a sample) for their specific activity group and to highlight with a marker any comments that were relevant or true for them. The number of items marked was calculated to determine the percentage of relevant comments. With the exception of the "**non-active**" group, the other two groups agreed with 77% to 93% of the information presented in their respective composite profile. In the case of the "**non-active**" group, two profiles were developed based on the speculations offered. The difficulty distinguishing between these two profiles was most likely the reason that the two participants only agreed with 55 % and 65% of the comments made in one of the profiles and agreed with some comments in the other profile. As a result of the fairly low agreement rate, this researcher inquired further with both participants to better understand the commonality and uniqueness

between these two profiles. Necessary changes were made to the two "**non-active**" group profiles to demonstrate the overlap that appears to exist.

Applicability. Applicability focusses on how a researcher can determine the degree to which the findings may be generalized to other contexts or with other participants (Guba & Lincoln, 1981). Since the participants range in age, years post-injury, education and employment status, these findings or part of these findings may be applicable to other participants who are at least two years post-injury living within a fairly large city.

Consistency. Consistency focusses on the ability of the study to be replicated with similar participants in a similar context (Guba & Lincoln, 1981). One step that can be taken to demonstrate consistency is through peer or audit checks. An audit trail that outlined the process and decisions made during the investigation was kept by the researcher. Audio tapes were transcribed within hours of the interview, and post-interview comments were written. A peer conducted an audit check. The audit check involved the peer reviewing the transcripts, the coding, and the process involved in identifying speculations followed by providing feedback related to the procedure and clarity of the results.

Neutrality. Neutrality focusses on ways the researcher identifies and reduces bias, motives, interests, perspectives in order to enhance the trustworthiness of the findings (Guba & Lincoln, 1981). The neutrality of the findings was enhanced in the study by the researcher acknowledging the influence of preconceived thought, judgements, and biases on trustworthiness in the thesis journal. To reduce the influence of the investigator's prejudgments, this researcher interviewed four male graduate students to practice the

protocol and seek feedback on biases revealed in the questions. After recording comments, receiving feedback from the participants, and reviewing the videotapes, this investigator met with another researcher to discuss concerns related to biases, judgements, and leading questions. In addition, ongoing consultation with the peer/audit reviewer was maintained.

# CHAPTER 4
## Quantitative Data Results and Discussion

The relationship between physical self-perceptions and physical activity participation was examined using self-reporting instruments. In particular, the PSPP instrument (Fox & Corbin, 1989) was used to measure participants' perceived competence in five subscales (sports, condition, body attractiveness, strength, and physical self-worth). In addition, the PIP instrument (Fox, 1990) was used to measure the perceived importance that participants place on possessing physical competence in four subscales (sports importance, condition importance, body attractiveness importance, and strength importance). The scores from these two instruments (PSPP and PIP) were analyzed using descriptive as well as inferential statistics. The quantitative data will be presented first followed by the discussion of the results.

### Quantitative Data Results

The PSPP and PIP results are presented focussing on two areas. First, the applicability of these instruments was examined using pooled data from all participants. Second, the subscale mean scores from the two instruments (PSPP and PIP) were examined for meaningful and significant differences across activity groups.

#### Reliability of the PSPP and PIP Instruments

The pilot study (see Appendix G for more details) determined that the PSPP was applicable for use with this population. Pooled data from the twenty-six participants were evaluated for internal consistency at the item level and for correlation at the subscale level to further examine the applicability of the PSPP instrument and its accompanying PIP instrument for use with this population.

Internal Consistency of the Items within the PSPP and PIP Subscales. Internal consistency determines how well all items within a subscale measure the same construct. Internal consistency is considered to be an important aspect of reliability (Nunnally, 1994). Cronbach's Coefficient Alpha (1951) test was used to measure how well each item within the five PSPP subscales and each item within the four PIP subscales hold together. Values for alpha range from 0 to 1 with scores around .8 considered ideal. Results from the Cronbach Alpha Coefficient tests conducted on the PSPP subscales presented in Table 2 demonstrated high positive correlation, which indicates that the 6-items within each subscale on the PSPP instrument are measuring the same construct. Results from the Cronbach Alpha Coefficient analyses presented in Table 3 revealed a moderate to high correlation between the PIP subscales, which indicates that the 2-items within each subscale of the PIP measured the same construct. Since alpha scores increase with the number of subscale items, the PIP subscale scores are considered very good for 2-items within each subscale.

Table 2 - Cronbach's Alpha Coefficient for PSPP Subscales

| PSPP Subscales | Cronbach's Coefficient Alpha |
|---|---|
| Physical Self-Worth | .88 |
| Sports | .88 |
| Condition | .89 |
| Body Attractiveness | .88 |
| Strength | .91 |

Table 3 - Cronbach's Alpha Coefficient for PIP Subscales

| PIP Subscales | Cronbach's Coefficient Alpha |
|---|---|
| Sports Importance | .76 |
| Condition Importance | .83 |
| Body Attractiveness Importance | .88 |
| Strength Importance | .72 |

In addition to examining how well items hold together within a subscale, the effectiveness of an item within a subscale can be determined by eliminating the item and then calculating the subscale item-totals correlation. If the item is effective in a subscale, then removing the item should show a reduction in the alpha score for that subscale. A lower alpha value range from .56 to .88 and .56 to .80 for the PSPP and PIP subscales respectively was found when each item was removed separately from that corresponding subscale.

Spearman's Rank Order Correlation. In order to further examine the applicability of both these instruments for use with this population, the relatedness of the four subscales (sports, condition, body attractiveness and strength) within the PSPP instrument and within the four corresponding PIP subscales (sports importance, condition importance, body attractiveness importance and strength importance) was examined using inferential statistics. The Spearman Rank Order Correlation test measures the strength of the relationship between two variables (e.g., sport and body attractiveness subscales). This test was used to measure the relatedness between the subscales within each instrument (PSPP and PIP). Results from the Spearman Rank Order Correlation

analyses shown in Table 4 revealed that three of the four PSPP subscales showed a significant positive correlation with all the other PSPP subscales; the only exception was the lack of correlation found between the body attractiveness and the strength subscales. Results from the Spearman Rank Order Correlation analyses presented in Table 5 revealed that all four PIP subscales showed a significant positive correlation with the other PIP subscales.

Table 4 - Spearman's Rank Order Correlation for PSPP Subscales (subdomains)

| PSPP Subscales | Sports | Condition | Body Attractiveness | Strength |
|---|---|---|---|---|
| Sports | | .533 ** | .477* | .536** |
| Condition | | | .604** | .691** |
| Body Attractiveness | | | | .280 |
| Strength | | | | |

Note. ** $p < 0.01$. * $p < 0.05$. $n = 26$

Table 5 - Spearman's Rank Order Correlation for PIP Subscales

| PIP Subscales | Sports Importance | Condition Importance | Body Attractiveness Importance | Strength Importance |
|---|---|---|---|---|
| Sports Importance | | .676** | .590** | .638** |
| Condition Importance | | | .740** | .690** |
| Body Attractiveness Importance | | | | .861** |
| Strength Importance | | | | |

Note. ** $p < 0.01$. * $p < 0.05$. $n = 26$

The PSPP and PIP Subscale Mean Scores across Activity Groups

Descriptive and inferential statistics were used to examine the subscale mean scores on the PSPP and PIP instruments across activity groups. Initially, descriptive statistics were completed. Following this, inferential statistics were conducted focusing on *effect size* and *analysis of variance* to determine if there were any meaningful and/or significant differences across activity groups.

Descriptive Statistics. The mean and standard deviation scores for the PSPP and the PIP subscales were calculated for each group. The results presented in Table 6 and Table 7 as well as Figure 4 and Figure 5 illustrated that there were differences between the mean scores on all PSPP and PIP subscales across groups. All subscale mean scores on the PSPP instrument (Table 6 and Figure 4) were the highest for the "**athlete**" group, the second highest for the "**recreation**" group, and the lowest for the "**non-active**" group. In addition, all mean subscale scores on the PIP (Table 7 and Figure 5) were the highest for the "**athlete**" group while the other two groups showed similar and lower mean scores. Although there were different patterns found between the PSPP and the PIP subscale mean scores across activity groups, the meaningfulness and significance of these differences needed to be determined.

Table 6 – Mean and Standard Deviation Scores on PSPP Subscales across Activity Groups

| Active Group | | Sports | Condition | Body Attractiveness | Strength | Physical Self Worth |
|---|---|---|---|---|---|---|
| **Non-Active** | | | | | | |
| | Mean | 13.86 | 11.86 | 10.71 | 11.71 | 13.29 |
| | SD | 4.38 | 2.41 | 3.25 | 3.77 | 1.80 |
| **Recreation** | | | | | | |
| | Mean | 15.10 | 17.50 | 13.30 | 14.80 | 15.50 |
| | SD | 4.36 | 1.65 | 3.59 | 3.49 | 3.78 |
| **Athlete** | | | | | | |
| | Mean | 19.22 | 21.33 | 15.89 | 20.33 | 20.11 |
| | SD | 3.07 | 2.40 | 3.95 | 1.80 | 2.76 |

Table 7 – Mean and Standard Deviation Scores on PIP Subscales across Activity Groups

| Active Group | | Sports Importance | Condition Importance | Body Attractiveness Importance | Strength Importance |
|---|---|---|---|---|---|
| **Non-Active** | | | | | |
| | Mean | 4.71 | 5.00 | 4.71 | 5.29 |
| | SD | 1.89 | 1.63 | .76 | 1.25 |
| **Recreation** | | | | | |
| | Mean | 4.90 | 6.00 | 5.20 | 5.40 |
| | SD | 2.08 | .82 | 1.48 | 1.17 |
| **Athlete** | | | | | |
| | Mean | 7.44 | 7.67 | 7.22 | 7.33 |
| | SD | .53 | .71 | 1.09 | .71 |

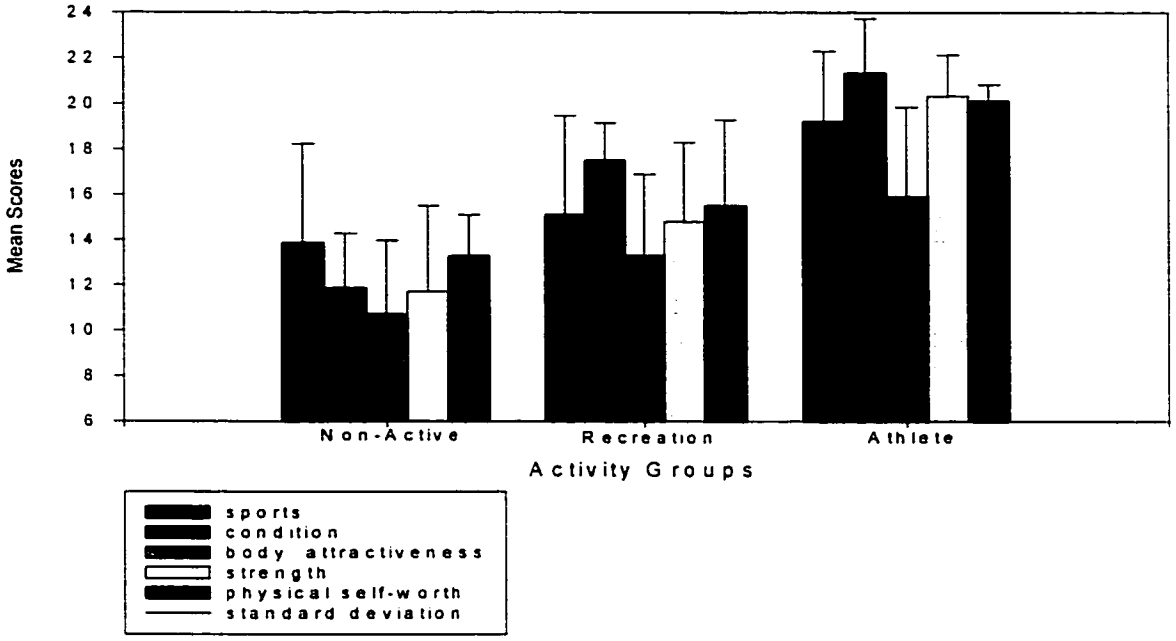


Figure 4 – Mean Scores on PSPP Subscales across Activity Groups

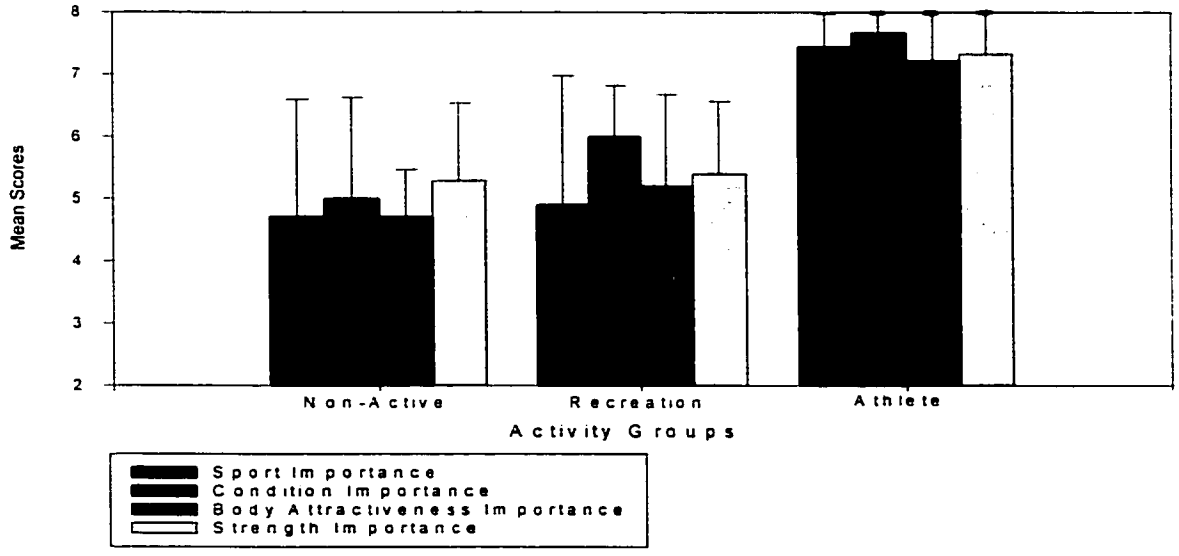


Figure 5 - Mean Scores on PIP Subscales across Activity Groups

Effect Size. In order to determine if the differences between PSPP and PIP subscale mean scores were meaningful, *effect sizes* were calculated. *Effect sizes* determine the percentage of the dependent variable (e.g., sports competence) variance that is associated with the independent variable (e.g., "**non-active**" group) (Cohen, 1988). Table 8 revealed that large effect sizes were demonstrated between the "**athlete**" and "**non-active**" groups on all PSPP and PIP subscales. Similar findings were noted between the "**athlete**" and "**recreation**" groups with the exception of the body attractiveness subscale that showed only a medium effect size. Medium to large effect sizes were found between the "**recreation**" and "**non-active**" groups on five of the nine subscales.

Table 8 - Effect Size Results on the PSPP & PIP Subscale Mean Scores across Groups

| Subscales | Athlete Vs Non-Active M | Athlete Vs Recreation M | Recreation Vs Non-Active M |
|---|---|---|---|
| Sports (PSPP) | 1.44*** | 1.11*** | 0.28* |
| Condition (PSPP) | 3.75*** | 1.89*** | 2.59*** |
| Body Attractiveness (PSPP) | 1.53*** | 0.65** | 0.84** |
| Strength (PSPP) | 3.09*** | 2.17*** | 0.8** |
| PSW (PSPP) | 3.08*** | 1.40*** | 0.96*** |
| Sport Importance (PIP) | 2.27*** | 1.94*** | 0.10 |
| Condition Importance (PIP) | 2.28*** | 2.16*** | 0.81** |
| Body Attractiveness Importance (PIP) | 0.93*** | 1.57*** | 0.18 |
| Strength Importance (PIP) | 1.9*** | 2.07*** | 0.09 |

Note. * small effect size = 0.2 - 0.5. ** medium effect size = 0.5 to 0.8.

*** large effect size > 0.8. (See Cohen, 1988).

Analysis of Variance. In order to determine if the meaningful differences between these PSPP and PIP mean subscale scores were significant across activity group, *analyses of variance* were conducted. *Analysis of variance* examines the distribution of central tendency around a mean score.

Since there was an unequal number of participants per group, *Levene's tests of homogeneity of variance* were conducted to determine if the PSPP and PIP subscale mean scores within each activity group were distributed around the mean in a homogeneous way. Results from the *homogeneity of variance* analyses presented in Table 9 revealed that the three groups had similar variance around the mean scores on eight of the nine subscales.

Table 9 – Levene's Tests of Homogeneity of Variance

| Instrument | Subscales | Levene's Statistics | Significance *p < 0.05 |
|---|---|---|---|
| PSPP | Sports | 1.190 | .322 |
| | Condition | .786 | .467 |
| | Body Attractiveness | .036 | .965 |
| | Strength | .974 | .393 |
| | Physical Self Worth | 1.76 | .194 |
| PIP | Sport Importance | 5.640 | .010* |
| | Condition Importance | 2.221 | .131 |
| | Body Attractiveness Importance | 1.918 | .170 |
| | Strength Importance | .947 | .403 |

Note. Degrees of freedom (2, 23). n = 2.

Since homogeneity of variance was found on all the PSPP and three of the four PIP subscale mean scores across groups, determining if these differences between groups on the eight subscales were significant was the next step. *One-Way ANOVA (group) tests* were conducted to determine if these differences found between the activity groups were significant. Results from the *One-Way ANOVA* tests presented in Table 10 revealed that there were significant differences between the activity groups on all eight subscales.

Table 10 - One-Way ANOVA Tests on the PSPP & PIP Subscale Scores

| Instrument | Subscales | F | Sign. |
|---|---|---|---|
| PSPP | Sports | 4.224 | .027* |
| | Condition | 38.660 | .000** |
| | Body Attractiveness | 4.007 | .032* |
| | Strength | 16.214 | .000** |
| | PSW | 10.997 | .000** |
| PIP | Condition Importance | 13.065 | .000** |
| | Body Attractiveness Importance | 10.599 | .001* |
| | Strength Importance | 10.300 | .001* |

Note. ** $p < 0.01$. * $p < 0.05$. df (2, 23). n = 26.

Since significant differences in subscale mean scores were found between the activity groups, the *Bonferroni post hoc* test was used to determine where these differences existed between groups. The *Bonferroni test* was selected from other post hoc tests in order to correct for the multiple comparisons made across the three groups. As a result of employing this test, the level of significance per comparison was corrected

from $p < 0.05$ to $p < 0.017$. The results presented in Table 11 indicated that significant differences were found between the "**athlete**" group and the other two groups ("**recreation**" and "**non-active**") on seven of the eight subscales but not on the body attractiveness subscale. On the body attractiveness subscale, significant difference was only found between the "**non-active**" and "**athlete**" groups. Perceived condition was the only subscale to demonstrate significant differences between all groups.

Table 11 – Bonferroni's Post Hoc Tests for PSPP & PIP Subscale Mean Scores across Groups

| Subscales | Athlete VS Non-Active M | Athlete VS Recreation M | Recreation VS Non-Active M |
|---|---|---|---|
| Sports (PSPP) | 5.37* | 4.12 | 1.24 |
| Condition (PSPP) | 9.48* | 3.83* | 5.64* |
| Body Attractiveness (PSPP) | 5.17* | 2.59 | 2.59 |
| Strength (PSPP) | 8.62* | 5.53* | 3.09 |
| PSW (PSPP) | 6.83* | 4.61* | 2.21 |
| Condition Importance (PIP) | 2.67* | 1.67* | 1.00 |
| Body Attractiveness Importance (PIP) | 2.51* | 2.02* | .49 |
| Strength Importance (PIP) | 2.05* | 1.93* | .11 |

Note. * $p < 0.017$ per comparison. $n = 26$.

Quantitative Data Results Summary. The analyses of the reliability of instruments (PSPP and PIP) revealed high positive correlations between all items within

each subscale, moderate item-totals correlation for each subscale, and significant positive Spearman Order Correlation between three of the four PSPP subdomains and all PIP subscales. The descriptive analyses revealed differences on the PSPP and PIP mean subscale scores across activity groups. All subscale mean scores on the PSPP instrument were the highest for the "**athlete**" group, the second highest for the "**recreation**" group, and the lowest for the "**non-active**" group. In addition, all mean subscale scores on the PIP were the highest for the "**athlete**" group while the other two groups showed similar and lower mean scores. Inferential analyses determined that large effect sizes and significant positive differences were found between the "**athlete**" group and the other two groups ("**recreation**" and "**non-active**") on seven of the eight subscales. Body attractiveness subscale showed significant differences only between the "**athlete**" and "**non-active**" group whereas the perceived condition subscale showed significant differences between all groups.

## Quantitative Results Discussion

The discussion of results will be presented focusing on two areas. First, the results related to the applicability of these instruments (PSPP and PIP) for use with this population will be discussed. Second, the results of the PSPP and PIP subscale mean scores across the activity groups will be discussed related to Fox's (1990) Self-Perception model.

### Applicability of the PSPP and PIP Instruments for Use with this Population

The PSPP instrument and the accompanying PIP instrument were developed alongside the Self-Perception Model (Fox, 1990) to examine the link between self-perceptions and behaviour in the physical domain. The PSPP was empirically and

theoretically tested by several researchers (Harter, 1985; Marsh, 1987; Marsh & Shavelson, 1985; Shavelson et al., 1976). This instrument has demonstrated *internal consistency, test-retest reliability, concurrent validity, and construct validity* (Fox & Corbin, 1989). The results from Cronbach's Coefficient Alpha analyses on the PSPP subscales ($\alpha$ = .88 to .91, $p < 0.05$) for this study concurred with Fox's (1990) test norm findings ($\alpha$ =. 80 to .92, $p < 0.05$) to demonstrate *internal consistency.* Additionally, item-totals correlation was used to test the item effectiveness in the subscale. The results from the item-totals correlations on the PSPP ($\alpha$ = .56 to .89, $p < 0.05$) for this study generally concurred with Fox (1990) who reported positive item-totals correlations ($\alpha$ = .6 to .7, $p < 0.05$) to demonstrate that the subscales are functioning effectively.

The PIP was developed to accompany the PSPP but has not been incorporated into most studies that administered the PSPP. Fox (1990) reported that this instrument demonstrated *internal consistency* and *test re-test reliability.* The results from Cronbach's Coefficient Alpha analyses on the PIP subscales ($\alpha$ = .72 to .88, $p < 0.05$) for this study concurred with Fox's (1990) test norm findings ($\alpha$ = .52 to .84, $p < 0.05$) to demonstrate *internal consistency.* Additionally, item-totals correlation was used to test the item effectiveness in the subscale. The results from the item-totals correlations on the PIP ($\alpha$ = .56 - .80, $p < 0.05$) for this study generally agreed with the mean item-totals correlation ($\alpha$ = .63) reported by Fox (1987) to demonstrate that the subscales are functioning effectively.

In addition to examining internal consistency, correlations between subscales within each instrument were assessed. The results from the Spearman Rank Order Correlation analyses indicated that all the subscales within the PIP and three of the four

subdomains in the PSPP are related to each other in a significant positive way. Three of the four PSPP subscales demonstrated moderate correlations with a similar pattern of response excluding the lack of correlation found between the body attractiveness and strength subscales. All the PIP subscales demonstrated moderate to moderately high correlations with a similar pattern of response. In summary, the internal consistency found between items within each subscale and the significant positive correlations found between subscales within the instruments in this study provided initial indications of validity of these instruments for use with this population.

PSPP and PIP Subscale Mean Score Results and the Self-Perception Model

The results of the PSPP and PIP subscale mean scores across groups will be discussed related to Fox's (1990) Self-Perception theoretical model. First, the PSPP subscale mean score results will be examined related to competence and behaviour in the physical domain. After examining the PSPP results, the PIP subscales mean score results will be examined related to importance and behaviour in the physical domain.

PSPP Subscale Mean Scores. Fox (1990) theoretical framework proposes a positive association between perceived physical competencies (PSPP) and physical activity participation. All "**athlete**" and "**non-active**" groups' results supported Fox's (1990) theoretical perspective. The inferential analysis results determined that large effect sizes and significant differences were found between the "**athlete**" group and the other two groups ("**recreation**" and "**non-active**") on three of the four PSPP subscales. Body attractiveness subscale showed significant difference only between the "**athlete**" and "**non-active**" groups whereas the perceived condition subscale revealed significant differences between all groups. Therefore, the significant differences found between the

"**athlete**" and "**non-active**" groups on all subscales along with the significant differences found between all groups on the condition subscale scores offered strong support for Fox's (1990) theoretical perspective. The lack of significant differences found between the "**recreation**" and "**non-active**" groups does not support this positive association although large to medium meaningful differences were found between these groups on four of the five subscales (condition, physical self-worth, strength, and body attractiveness).

PIP Subscale Mean Scores. Fox 's (1990) Self-Perception model theoretical framework proposes a positive association between perceived importance of possessing physical competencies (PIP) and physical activity participation. All the "**athlete**" and "**non-active**" groups' results offered support for Fox's (1990) theoretical perspective. The "**athlete**" group's PIP subscale mean scores were all significantly higher than the other two groups. Since the "**athlete**" group displayed high scores on importance of possessing physical competencies and engaged in physical activity at a competitive level, this result supported the positive association between the importance and physical activity participation. The "**non-active**" groups' subscale mean scores offered mixed results. On one hand, the "**non-active**" group's significantly lower PIP subscale mean scores as compared to the "**athlete**" group scores offered support for Fox's (1990) perspective. On the other hand, the "**non-active**" group's lack of significant difference in PIP subscale mean scores as compared to the "**recreation**" group scores did not support Fox's (1990) perspective.

In Summary. The internal consistency of items within the subscale and significant positive correlation results found between the subscales within the instruments

(PSPP and PIP) provided an initial indication of validity of these instruments for use with this population. However, further investigation has to be carried out in order to verify external validation of these instruments for use with this population. In addition, with the exception of the lack of significant differences found between the "**recreation**" and "**non-active**" group on all the PIP and three of the four PSPP subscales (with the exception of condition), strong support for Fox's (1990) theoretical perspective was found. In particular, the large effect sizes and significant differences found between the "**athlete**" and the "**non-active**" groups on all PSPP and PIP subscales strongly supported Fox's (1990) perspective. The significant differences found between the "**athlete**" and the "**non-active**" groups on all PSPP and PIP subscale scores offered support for the positive relationship between (1) competence and behaviour and (2) importance and behaviour. The lack of difference between the less active groups ("**recreation**" and "**non-active**") may mean that there are fewer psychological differences between these groups than expected. Perhaps inactive males are inactive due to other factors (e.g., opportunity and/or social support) rather than self-perceptions. Conversely the self-perceptions of these two groups may be only minimally affected by moderate levels of activity. Specifically, the positive association found between physical self-perceptions and physical activity participation in the able-bodied population (Fox, 1990) was also found with adult males with SCI.

# CHAPTER 5
## Qualitative Data Results and Discussion

The relationship between physical self-perceptions and physical activity participation was further examined through a semi-structured interview approach. Twenty-two of the twenty-six participants were asked to 'theorize' about three 'created' profiles that illustrated various degrees of perceived physical competence and perceived importance of possessing physical competence scores. The discussions held with inactive, recreational, and athletic participants with SCI were audio taped, transcribed, and analyzed. Commonality and unique speculations expressed by participants across groups will be presented related to 3 propositions based on Fox's (1990) Self-Perception model. The results and discussion of results will be presented related to each proposition followed by a general discussion of the results.

### Self-Perception Model Theoretical Framework

Fox's (1990) Self-Perception model addresses competence, importance, and behaviour in the physical domain from a self-enhancement and skills development approach. This perspective adopts aspects of Harter's (1985, 1986) competence-motivation theory and discrepancy work as well as Sonstroem's (1978) model that outlines the self-enhancement/skills development approach to competence and behaviour in the physical domain. Three different possible scenarios were outlined from Fox's (1990) theoretical perspective. In the first scenario, Fox (1990) assumes that people who perceived their physical competencies to be high, and felt that possessing physical competencies was important, would be attracted to physical activity. This attraction to physical activity would likely lead to higher levels of physical activity involvement.

Repeated successful physical activity involvement would likely lead to improvements in physical competencies, which in turn, would likely promote improvements in perceived physical competencies. These increases in perceived physical competencies and perceived importance of possessing physical competencies would likely enhance self-esteem.

The second scenario is contrary to the first. Fox (1990) assumes that people who perceived their physical competencies to be low, and felt that it was not important to possess physical competencies, would likely avoid physical activity situations that involve displaying physical inadequacies because of a threat to self-esteem. This avoidance of physical activity participation would likely lead to decreases, or a lack of involvement, in physical activity. This would likely lead to decreases in, or low, physical competencies. These decreases in physical competencies would likely lead to decreases, or low, perceived physical competencies and low perceived importance of possessing physical competencies. This devaluing of physical competencies would likely protect self-esteem.

In the third scenario, Fox (1990) outlined the consequence to self-esteem as a result of incongruence between competence and importance related to behaviour in the physical domain. Fox (1990) assumes that people who perceived their physical competencies to be low yet perceived the importance of possessing physical competencies to be high would likely be attracted to physical activity. This attraction may lead to physical activity engagement that would involve displaying a lack of physical competencies. Unsuccessful involvement in physical activity would likely lead to decreases in, or low, perceived physical competencies. If people were then able to

discount (lower) the perceived importance of possessing physical competencies, they would likely avoid future physical activity participation and the threat to self-esteem. If people were not able to discount the importance of possessing physical competencies, they would continue to experience unsuccessful physical activity involvement that may lead to a negative impact on self-esteem. Another possible approach does not involve self-enhancement but employs the skill development approach. If people would receive assistance to facilitate a more successful experience in physical activity participation, this may enhance physical competencies and perceived physical competencies, which would decrease the discrepancy between competence and importance. These enhanced perceived physical competencies may reduce the negative effect on self-esteem as well as increase the likelihood of future physical activity participation.

Fox's (1990) Theoretical Framework and Data Analyses Results and Discussion

Three propositions related to Fox's (1990) comprehensive theoretical perspective will be introduced along with the results from the data analyses. Quotations will be provided to support or dispute Fox's (1990) theoretical perspective. The results and discussion of each proposition will be followed by a general discussion of the results.

Results related to Proposition One: Competence and Behaviour in the Physical Domain

Proposition one was based on Fox's (1990) theoretical relationship between competence and behaviour in the physical domain. Fox would likely propose that high perceived physical competencies would be associated with high physical activity involvement while low perceived physical competencies would be associated with a lack of physical activity involvement. In order to test out proposition one, participants were shown three 'created' profiles of individuals who perceived their physical competencies

to be low, moderately low, or high. After the participants were shown each profile, they were asked to speculate on what would account for an individual perceiving his physical competencies in this way.

High Competence and Physical Activity Involvement. Participants were asked to speculate on the reasons for an individual perceiving his physical competencies as high. Regardless of their activity level, participants speculated that an individual's high perceived physical competencies would be associated with high levels of physical activity. For example, George, an athlete, stated that an individual with high competencies would be, "into sports and physical activity pretty heavy." James, a recreation participant, echoed similar comments when he described an individual with high competencies as, "obviously [he] participate[s] quite a bit in sports." And Fred, a non-active person, held a similar perspective when he described an individual with high competencies as, "somebody that trains a lot and stuff for a national team." It appears that high perceived physical competencies are associated with a high level of physical activity involvement in the minds of participants regardless of activity group.

Low Competencies and Physical Inactivity. Participants were asked to speculate on the reasons for an individual perceiving his physical competencies as low to moderately low. Participants, regardless of their activity level, speculated that low perceived physical competencies were associated with very limited, if not any, physical activity involvement. For instance, Ken, who has been active in the past but currently is not, stated that a person who viewed his physical competencies to be low, ". . . looks to [him] like somebody that obviously isn't doing a whole lot [activity]." A recreation participant, Carl, offered a similar perspective when he commented, " obviously, it is

somebody who doesn't do anything but wheel to get things or go to the grocery store." And Albert, a young committed athlete, appeared very confident when he described an individual with moderately low perceived competencies as someone who, ". . . doesn't participant in any sport or any type of physical activity." From these comments and others offered across activity groups, it appears that low perceived physical competencies were conceptually associated with very limited or a lack of physical activity involvement.

Three physically active participants further speculated that low perceived physical competencies and physical inactivity were also associated with low "self-esteem." After indicating that individuals with low competence scores would be physically inactive, Harry, an athlete commented, "people with a lack of self-esteem would have their abilities low- moderately low." Steve, another athlete who was quite involved in physical pursuits, linked perceived competencies, physical activity involvement, and self-worth when he commented on an individual with low perceived competencies as, " . . . somebody that doesn't have a whole lot of self-worth [is incapable of] maintaining a healthy lifestyle [physical fitness]." Jerry, a dedicated recreation participant, further endorsed this need for "self-esteem" when he stated that an individual with low perceived physical competencies would be:

> Somebody with very low self-esteem . . . well you need a little bit of self-esteem to get out in public period and get out and do things . . . you never know until you get out there . . . someone [who] really sits around a lot and doesn't do anything.

According to these participants, then, a lack of "self-esteem" may be associated with low to moderately low perceived physical competencies and physical inactivity.

In addition, some physically active participants moved from discussing an individual's possible low "self-esteem" to reflecting on their own experiences. Other active participants just reflected on their own experiences. The primary factor discussed by these active participants was the enhancement of their "self-esteem" as a result of participating in physical activity or possessing perceived physical competencies. George, who works hard at staying physically active at an athletic level, reflected on his gains from engaging in sports when he stated, " . . . being involved in sports activities gives you self-esteem." James, a recreation participant who was getting back into shape after a period of being inactive, commented that working out means, "I'm starting to get into shape again, even start feeling good about yourself, and start feeling strong." Paul, currently a recreation participant who was an elite athlete prior to retiring, reflected back on his competitive days and stated, " . . . I really feel good about myself when I'm in top excellent shape." These three active individuals each acknowledge that perceived physical competencies and physical activity participation may be associated with enhanced "self-esteem," at least in their own cases.

Discussion of the Results related to Proposition One

Regardless of their activity level, participants' speculations that high perceived physical competencies were associated with high physical activity involvement and low perceived physical competencies were associated with physical inactivity supported proposition one. Fox's (1990) theoretical framework would explain these findings based on the assumption that high perceived physical competencies would likely attract people to physical activity. This attraction to physical activity would likely increase physical activity involvement. Whereas, low perceived physical competencies would likely

encourage people to avoid physical activity. This avoidance of physical activity participation would likely translate into limited or no physical activity participation. While these relationships have been demonstrated in previous testing, it is of particular interest that the participants themselves understand this relationship between perception and behaviour.

Another factor, "self-esteem," emerged beyond the competence and behaviour relationship. Three physically active participants speculated that low "self-esteem" was associated with low perceived physical competencies and physical inactivity. Also, three physically active participants' self-reflections indicated that perceived physical competencies and/or regular physical activity participation were associated with enhanced "self-esteem." Put differently, participants appear to believe in the existence of a general feeling of self-worth or self-esteem that can be influenced by specific self-perceptions in the physical domain. Furthermore they assume, as many motivational theorists do, that behaviour and perceptions are linked, and that together they moderate overall impressions of the self. It might be interesting in the future to investigate whether the strength of these beliefs is related to physical activity engagement.

Results related to Proposition Two: Importance and Behaviour in the Physical Domain

Proposition two was based on Fox's (1990) Self-Perception model focusing on the relationship between importance and behaviour in the physical domain. This theoretical framework suggests that high perceived importance of possessing physical competencies would be associated with high levels of physical activity involvement. In addition, low perceived importance of possessing physical competencies would be associated with physical inactivity. In order to test out proposition two, participants were shown three

'created' profiles of individuals who perceived the importance of possessing physical competencies to be either low to moderately low, or high. After the participants were shown each profile, they were asked to speculate on what would account for an individual perceiving his importance of possessing physical competencies in this way.

High Importance and Physical Activity Involvement. Participants were asked to speculate on the reasons for an individual perceiving the importance of possessing physical competencies as high or very high. Participants, regardless of their activity level, speculated that high perceived importance of possessing physical competencies was associated with high levels of physical activity involvement. For instance, Sam, a non-active person, described an individual with high perceived importance of possessing physical competencies as, ". . . probably someone who is very active. Someone that definitely [is] into working out and . . . they're very active and it's very important to them." In addition, Jerry, a recreational participant, offered a similar perspective when he described an individual with high perceived importance of possessing physical competencies as, ". . . pretty active in sports . . . he places much importance on sports, condition, and strength." Wayne, an athlete, reinforced the other two participants' perspectives when he commented that an individual with high perceived importance of possessing physical competencies would, " . . . probably be very involved [in physical activity] . . . it [participation] doesn't even have to be sports, it could be wheeling . . . or muscle training." These and other similar speculations made across activity groups indicate that high perceived importance of possessing physical competencies was associated with quite high physical activity involvement in the belief systems of the participants.

Some "**athlete**" and "**recreation**" group participants offered additional insight into the importance-behaviour relationship when they discussed others and/or their own profiles. The "**athlete**" group participants speculated that an individual with high perceived importance of possessing physical competencies was likely to be very physically active as well as possess personal traits such as "driven," "competitive," and "striving to be the best". Albert, an athlete, identified several personal traits when he described a person with high perceived importance scores as, " probably a die-hard athlete who is involved in sports, whether one or multiple numbers of sports, and is very competitive . . . athletes obviously need that drive, very competitive person, die-hard athlete for sure." Another athlete, Steve, identified similar personal traits when he suggested that an individual with high perceived importance scores would be "an athlete" then proceeded to discuss his own high perceived importance scores:

> Just speaking for myself, I'd say [I'm] never good enough. You know there is a certain type of people . . . and that's just one of them that you fall into that's most athletes . . . I was always a very, I'm a competitive person . . . I've always set out to be the best.

It appears that the athletes' need to be the best, to improve their abilities and to be competitive were, in their own minds, associated with high perceived importance of possessing physical competencies and high physical activity involvement.

When the "**recreation**" group participants reflected on their own profiles, they did not discuss the traits articulated by the "**athlete**" group participants. In fact, the "**recreation**" group participants identified health and functional benefits as being associated with their moderate to high importance scores and regular physical activity

participation. For instance, Paul, a recreation participant who perceived the importance of possessing physical competencies at a high level, stated:

> Well being in this situation [having a SCI] the one priority for me is being in condition and condition means having more stamina, being able to stay up longer without being fatigued and with [the] exercise program that I'm on, it helps me with that. So that's [conditioning is] a big priority.

In another instance, Ted, a recreation participant who perceived the importance of possessing physical competencies at a moderate to moderately high level, stated:

> Coming to the Steadward Centre three days per week and doing my weight training . . . I feel it's very important because if you don't do it and you just let it [conditioning] go . . . it's harder to maneuver [the wheelchair] later on, so I try and keep my conditioning high so you can move around.

The one exception to the "**recreation**" participants' focus on health and functional benefits was Jerry's focus on fun. For example, Jerry, who was the only recreation participant to perceive the importance of possessing physical competencies at a low level, stated:

> I don't care if I'm good at it [sports] or not. I pretty much do not care, never have. I've always been athletic. Always been the first one to join the team or round up the guys to go play . . . So just go and have fun.

With the exception of Jerry's perspective, it appears that the "**recreation**" participants' believed enhanced health and functional benefits were associated with moderate to high

perceived importance of possessing physical competencies (particularly the importance of being in condition) and regular physical activity participation.

Low Importance and Physical Inactivity. Participants were asked to speculate on the reasons for an individual perceiving the importance of possessing physical competencies as low to moderately low. Although participants, regardless of their activity level, speculated that low perceived importance of possessing physical competencies was associated with physical inactivity, there was disagreement between two active and three inactive participants about additional factors that moderated the relationship.

Two physically active participants speculated that low importance was associated with physical inactivity and emotional issues. Harry, an athlete, speculated that a person's "depression" and lack of mental strength was associated with low perceived importance of possessing physical competencies and physical inactivity when he stated:

> They're depressed about their disability and their situation [living with a SCI], and they just don't have what it takes to mentally bring themselves to a point where they can actually get out [of the house] and do more [be physically active] . . . they're just lacking the drive to do it [be physically active].

In another instance, James, a recreation participant, offered a similar perspective when he commented that low perceived importance of possessing physical competencies was related to the fact that:

> There is a lot of apathy in some people that are handicapped or if they have a disability. It is a pretty tough road to take . . . [physical] conditioning is what you want to do to make yourself feel better.

It appears that some physically active participants, whose perceptions of importance of possessing physical competencies were moderate to high, associated low importance-behaviour in the physical domain with being "depressed" or "apathetic" in the belief system of the participants.

Three "**non-active**" participants did not endorse the association of low importance of possessing physical competencies and physical inactivity with emotional issues. These three "**non-active**" participants speculated that low importance and physical inactivity were associated with a lack of importance and/or a current lack of interest in physical activity. Fred, a non-active participant who had been active in the past, viewed a lack of perceived importance of possessing physical competencies as being connected with physical inactivity when he commented:

> Their lack of participation is due to importance . . . they just don't have the importance. It's [possessing physical competencies are] not an important part of their lives, and they don't view the importance of it [physical competencies]. Yeah that [importance] would affect . . . participation.

Another non-active participant, Sam, discussed his own moderately low importance scores related to focussing on health without being physically active when he stated:

> Making a commitment to [physical] conditioning? I was hoping by eating right and doing all those other things [drinking enough water, not smoking, not abusing drugs and alcohol] it will take care of things [health].

Ken, another non-active person, discussed his own low importance scores related to neither seeing the need to possess physical competencies nor being interest in physical activity participation when he commented:

> Well I really don't see the need for it [be physically active is], why it's not something that really interests me to do. Why do it [be physically active] if you don't have to [lack of need to possess physical competencies]. So it's [lack of physical activity] a bit of laziness in there too.

It seems that low importance and physical inactivity were associated with a lack of perceived importance of possessing physical competencies and/or a lack of interest in physical activity, at least in the minds of some inactive participants.

Discussion of Results related to Proposition Two

Participants, regardless of their activity level, speculated that high perceived importance of possessing physical competencies was associated with high physical activity involvement and low importance was associated with physical inactivity supported proposition two. Fox's (1990) model proposes that people who perceive the importance of possessing physical competencies to be high would likely be attracted to physical activity. This attraction to physical activity may lead to high levels of physical activity participation. Whereas, people who have low perceived importance of possessing physical competencies would likely not be attracted to physical activity. This lack of attraction towards physical activity would likely lead to low, or no, physical activity involvement.

In addition, other factors beyond the importance-behaviour relationship in the physical domain were identified by physically active participants. Specifically, the

athletes' need to be the best and to be competitive along with the recreation participants' enhanced health and functional benefits tended to be associated with enhanced perceived importance and physical activity participation. Two physically active participants also identified "depression" or "apathy" as playing a role in the low importance and physical inactivity relationship. Three "**non-active**" group participants did not endorse this perspective taken by these two physically active participants. Expectancy-value theorists (e.g., Eccles et al., 1983; Wigfield & Eccles, 2000) have demonstrated that the value or importance of an activity can have four achievement values: (a) attainment value or importance, (b) intrinsic value, (c) utility value or usefulness of the task, and (d) cost. It appears that the participants in this study have identified all four components. "Being competitive" or striving to achieve would reflect the importance of doing well at an activity or behaviour while having 'fun' addresses the intrinsic value of enjoyment gained from participating. The utility or usefulness of a task may be reflected in their statements that physical activity can contribute to better health and physical functioning. Furthermore, negative valuing of activity was linked conceptually with a lack of intrinsic interest, and the 'cost' of being active.

Results related to Proposition Three: Competence, Importance and Behaviour in the Physical Domain

Proposition three was based on Fox's (1990) theoretical framework focusing on the relationship between competence, importance, and behaviour in the physical domain. This theoretical framework would likely propose that high perceived physical competencies and high perceived importance of possessing physical competencies would be associated with high physical activity involvement. Also, low perceived physical

competencies and low importance of possessing physical competencies would be associated with physical inactivity. Furthermore, low perceived physical competencies and high perceived importance of possessing physical competencies would be associated with unsuccessful physical activity involvement which may lead to low self-esteem. In order to test out proposition three, participants were shown three 'created' profiles of individuals who perceived their physical competencies and perceived importance of possessing physical competencies to be both high, low and high, and both low. After the participants were shown each profile, they were asked to speculate on what would account for an individual perceiving his physical competencies and perceived importance of possessing physical competencies in this way.

High Competence, High Importance and Physical Activity Involvement.

Participants were asked to speculate on the reasons for an individual perceiving his physical competencies and perceiving the importance of possessing physical competencies as high or very high. Participants, regardless of their activity level, speculated that high perceived physical competencies and high perceived importance of possessing physical competencies were associated with quite high physical activity involvement. For instance, Sam, a non-active person, described an individual with high competence-importance scores as a person who, ". . . believes they're pretty good at sports. Yeah, they're really in good shape . . . So this is a fairly sports minded someone that puts out the effort and spends the time [engaged in physical activity]." In another instance, Jerry, a recreation participant, described an individual with high competence-importance scores as:

> Someone who is always into sports. He was very good at them, was [a] very aggressive person when involved in sports and physical activity. Took pride in the fact that he could do those [sports and physical activity] and could do them well . . . Well I think a person that is at those levels [high importance-competence] to be good at any sports or physical activity [is a] person [that] has to be aggressive [work hard] at it [physical activity/sport]. You can't just be good at something and just coast through it, it doesn't work that way in sports.

It appears that high perceived competence and high perceived importance were associated with quite high physical activity involvement in the minds of participants regardless of activity group.

Low Competence, High Importance and Physical Inactivity. Participants were asked to speculate on the reasons for an individual perceiving his physical competencies to be low yet perceiving the importance of possessing physical competencies to be high. Participants regardless of their activity level speculated that a person would likely be currently inactive post-injury and an athlete pre-injury. For instance, one recreation participant, James, described an individual with incongruent scores as somebody who just, ". . . got out of the hospital so he's still struggling with motivation and they see the sports that they've done and maybe they haven't been able to have success in any area [of physical activity/sport] yet ." Harry, an athlete, also focused on the acuteness of the injury when he speculated that incongruent scores and physical inactivity were association with a guy who:

> Would have been just injured and he just came out of the hospital, and he use to be a very strong athlete before, and he's got some big goals [high importance scores] for himself . . . he was an athlete before . . . he was someone who was very [physically] active.

It appears that participants, regardless of their activity level, associated involvement in physical activity prior to injury and the acuteness of the injury with low competence, high importance scores, and physical inactivity.

Participants offered additional but contradictive speculations beyond the relationship between low competence, high importance, and physical inactivity. Additional speculations such as "physically unable," "a lack of skill or exposure," or "a lack of trying" were offered in response to the competence-importance incongruent scores and physical inactivity.

Some participants discussed the possibility that an individual may perceive himself as not being able to successfully engage in physical activity. "Physical limitations" or "a lack of skills and experiences" were speculated to be associated with the low competence and high importance scores and physical inactivity. For instance, Wayne, an athlete, described how physical limitations would prevent successful physical activity participation when he stated, "obviously some of these people just can't, they can't just play sports cause their disability is too severe." In another instance, Jerry, a recreation participant, speculated that a lack of physical activity and incongruence between competence-importance scores would be associated with a:

> Person possibly before his injury was very athletic . . . and liked the sports and everything about it, but because of the injury, possible a very high injury, physically can't do any of those things [sports and/or physical activity].

In addition, Ken, a non-active person, identified a lack of experiences and skills as being associated with low perceived competence and high importance scores and physical inactivity when he stated that:

> A lack of experience possibly for someone who doesn't know . . . what they can do . . . Well for some sports there may be people who just don't get the chance to get out to do it, so you don't really know how well you can do things [be physical activity].

These speculations made by the participants across activity are components of task self-efficacy. Task self-efficacy is a person's perceived confidence in being able to perform specific tasks (Maddux, 1995) such as engaging in some type of physical activity. Low task self-efficacy due to physical limitations, especially for individuals with high lesion levels, and a lack of experience and skills, was associated with incongruence between perceived competence and importance scores and physical inactivity.

A developing athlete, Steve, provided additional insight into the role task self-efficacy played in his own initiation of physical activity after injury. Steve reflected on what inspired him to become an athlete while at a rehabilitation centre:

> When I first got injured and was at rehab. they took me to the [stadium]. The first time I met [anonymous participant] and I saw him on the track and I was like that's what I want to do. I want to do what these guys are doing and saw these guys and thought it was really inspirational for me . . . Oh active after their injury. You know it's all that you can still be active and still be involved in sports with [a SCI] injury.

This athlete's self-reflection indicates that newly injured individuals seem to first need to know that it is possible to be active post-injury, at least in this participant's own case. After a SCI, people may need to know that being physically active is possible through viewing and meeting people who are active at either the recreational or competitive level with similar injuries.

Two athletic participants offered an alternative speculation. These athletes speculated that low competence and high importance scores, and physical inactivity were associated with a person being "just plain lazy" or "they're just not getting out there doing it [being physical active]." Low task self-efficacy, which would be expected to lead to a lack of activity, could be easily understood or mistaken for 'laziness'.

Low Competence, Low Importance, and Physical Inactivity. Participants were asked to speculate on the reasons for an individual perceiving his physical competencies and the importance of possessing physical competencies as low. Although participants, across activity groups, speculated that a person with low competence, importance, and activity involvement would be "content," "happy," or "satisfied," further speculations varied across groups.

Two "**non-active**" group participants, who had no intention of engaging in physical activity, offered a fairly positive perspective related to low competence-importance scores and physical inactivity. Fred, a non-active participant who has never engaged in physical activity post-injury, speculated that:

> Usually over time with a spinal cord injury hopefully the person can place less importance on physical abilities and place more on personality. Who you are as a good person and get your self-worth, not physical self-worth, but self-worth from other areas besides the physical component of a person's life.

Sam, another non-active participant with no interest in participating in physical activity, commented, ". . . this must be an older guy" with low competence-importance scores and physical inactivity because, ". . . either they would strive to move up [enhanced competence through physical activity participation] or they're going to come to a sense of reality and bring their expectations and their importance level will come down after awhile." Sam then reflected on his own low competence-importance scores and physical inactivity when he stated, "with myself it took me a good five years to really come to an acceptance of it [SCI], settle in and let's live with it and make the best of it [SCI]." These participants suggested that in order to cope with a SCI, people who are inactive and/or perceive their physical competencies to be low should discount or place less importance on the physical self.

Participants from the "**recreation**" group speculated that low competence-importance scores and physical inactivity were associated with a person being "happy"

and "content" because the goals were set within his limits. For instance, Carl, a recreation participant, speculated that an individual who was physically inactive and perceived his competencies and importance in the physical domain to be low was:

> Somebody that doesn't do anything . . . [but he's] in good balance. Emotional balance . . . and I think they are happy at the level that they are at because the importance, they are meeting the importance of the things they do.

Another recreation participant, Paul, echoed a similar message related to this need to set achievable goals regardless of how low the expectations may be. Paul speculated that an individual with low importance, competencies, and activity involvement was:

> Someone who's probably been in a situation for a very long time who knows himself and his abilities and what he is capable of doing. [Knows] what they can accomplish and don't set too high expectations or demands on themselves . . . his ability and physical [activity] level is pretty low.

These speculations focused on the positive consequences of setting realistic and obtainable goals. "**Recreation**" participants associate small gaps between importance and competencies with "emotional balance" and "contentment" regardless of the adoption of a physically inactive lifestyle.

Participants from the "**athlete**" group speculated that an individual with low competence and importance scores and physically inactive would be "satisfied," but they had difficulties understanding the person's "satisfaction." George, an athlete, appeared to have trouble making sense of how a person could be satisfied with such low importance

scores when he stated, "people usually have low self-esteem if their abilities [ratings are] fairly low and their importance [ratings are] also fairly low, [and] they are satisfied with low abilities." George went on to discuss how increasing importance would bring up the competencies and increase physical activity levels when he stated:

> By putting up importance higher is a motivation, you are motivating yourself [to be physically active] by putting your importance higher than your abilities . . . [then] they would strive to improve themselves in that particular sport . . . most people would like to be more physically active.

Another athlete, Albert, also appeared perplexed by the low competence and importance scores when he stated that a person showed a, "lack of self-worth because they are obviously just content with being in a wheelchair and just being able to go about their regular day to day activities." These athletes acknowledge that this individual would be "content" because his low competencies and importance scores match but assume low importance and physical inactivity would be associated with a lack of self-worth. It is interesting that this does not make theoretical sense but could be attributed to the athletes' own views about sport as important to the people they were discussing.

Discussion of the Results related to Proposition Three

Regardless of their activity level, participants' speculations that high perceived physical competencies and importance of possessing physical competencies were associated with quite high physical activity participation supported proposition three. Participants' speculations that low competence and high importance scores were associated with an athlete pre-injury who was currently physically inactive offered partial support for proposition three. Finally, regardless of activity level, participants'

speculations that low competence-importance scores were associated with physical inactivity supported proposition three. Fox's (1990) theoretical framework would explain these findings based on the assumption that high perceived physical competencies and high perceived importance of possessing physical competencies would likely attract people to physical activity. This attraction to physical activity would likely increase physical activity involvement. Whereas, low perceived physical competencies and high perceived importance of possessing physical competencies would likely attract people to physical activity. This attraction to physical activity may lead to displaying a lack of physical competencies and possibly unsuccessful engagement in physical activity. Finally, low perceived physical competencies and low importance of possessing physical competencies would likely lead to an avoidance of physical activity. This avoidance of physical activity would likely lead to no, or reduced, physical activity participation.

Incongruent scores and physical inactivity were primarily attributed to low task self-efficacy (lack of skills/exposure or "physical limitations"). However, there were other speculations made related to low congruent scores and physical inactivity. Two "**non-active**" participants speculated that being "content" with living with a SCI was associated with discounting the importance of the physical self. The "**recreation**" participants speculated that being "content" was associated with setting realistic and obtainable goals regardless of adopting a physically inactive lifestyle. The implication of this theoretically is that the inactive person can protect his perceptions of self-worth, or his self-esteem by maintaining congruence between his beliefs and his behaviour. The "**athlete**" group participants offered an opposing perspective by speculating that "satisfaction" with low competence and importance scores was associated with a lack of

"self-esteem." These athletes did not seem to appreciate that de-valuing physical activity can protect your self-esteem according to motivational theorists.

## General Discussion of Results

The speculations made by the participants, regardless of their activity level, supported the three propositions based on Fox's (1990) theoretical framework. Specifically, the positive association between physical self-perceptions and physical activity participation found in able-boded adults (Fox, 1990) was also found in this population.

In addition, as an outcome of the qualitative design of the interview, factors beyond the competence-importance-activity relationships were able to emerge. Variability across groups, between non-active and active participants, or unique perspectives appeared. Several factors emerged in the discussions across groups; two factors of particular interest were "self-esteem" and task self-efficacy.

"Self-esteem" was a term discussed primarily by the active participants. Low "self-esteem" appeared to be associated with low perceived physical competencies, low perceived importance of physical competencies, both low competence and importance, and physical inactivity. Active participants speculated that low "self-esteem" was associated with inhibiting physical activity participation. Enhanced "self-esteem" was associated with physical activity participation and perceived physical competencies. Since the active participants equated their physical activity participation and perceived physical competencies with enhanced "self-esteem," it appears to make sense that they would associate a lack of activity involvement and physical competencies with low "self-esteem." What is conflicting here, however, is the attribution, by athletes, of "low self-

esteem" to people who do not engage in physical activity, regardless of the extent to which those people value physical activity. Theoretically, if a domain is not valued it cannot contribute to your overall feelings of self-worth. Perhaps athletes were assuming that low 'importance' scores were not sincere but rather a strategy used by inactive people to protect their feelings about themselves.

Task self-efficacy components emerged from the participants' speculations related to competence, importance, and behaviour in the physical domain. Low task self-efficacy due to physical limitations and a lack of skills/exposure were associated with incongruent competence-importance scores and physical inactivity. Task self-efficacy, in the case of an athlete, was enhanced post-injury as a result of being exposed to an athlete with a SCI. Seeing other men with SCI demonstrating competence in physical skills was actually reported as 'motivating' to others. This was seen to be particularly important in the early stages following injury. If people viewed themselves as being capable of successfully engaging in physical activity post-injury, their confidence in being able to performance specific physical activity tasks would likely be enhanced. Low task self-efficacy appears to inhibit physical activity participation initiation post-injury while exposure to active role models with SCI and possibly successful experiences in physical activities may enhance task self-efficacy. Enhanced task self-efficacy may lead to both successful involvement in physical activity as well as enhanced perceived physical competencies.

Therefore, the speculations made by participants across groups were congruent with the positive theoretical relationship between physical self-perceptions and physical activity participation. In addition, "self-esteem" and task self-efficacy emerged to offer

further explanation for the link between physical self-perceptions and physical activity participation. In particular, "self-esteem" was presumed to encourage and/or be enhanced by physical activity participation. Task self-efficacy was assumed to affect initiation of physical activity engagement post-injury.

# CHAPTER 6
# Summary and Conclusions

## General Summary

Due to the adjustment to a SCI in all aspects of life and the health risks associated with physical inactivity, it is important to gain insight into the link between physical self-perceptions and physical activity participation of individuals with SCI. By better understanding this link, researchers may develop ways to promote the adoption of a physically active lifestyle with individuals with SCI. The purpose of this study was to examine the relationship between physical self-perceptions and physical activity participation.

A quantitative-qualitative sequential design was adopted in order to gain a greater understanding of the relationship between self-perceptions and activity behaviour in the physical domain. This two-phase design involved 26 participants completing paper and pencil self-report instruments and information sheets followed by 22 of these participants answering open-ended questions based on an interview guide. The quantitative data were analyzed using descriptive and inferential statistics while the qualitative data underwent analyses to identify categories and speculations.

The quantitative data revealed initial indications of validity of the PSPP and PIP instruments for use with this population. In addition, the PSPP and PIP subscale mean scores generally supported a positive association between physical self-perceptions and physical activity participation in this population. Specifically, the "**athlete**" and "**non-active**" group results supported the positive relationships between (1) competence and behaviour and (2) importance and behaviour in the physical domain. The qualitative

analyses also examined the relationship between (1) competence and behaviour, and (2) importance and behaviour in the physical domain. Speculations provided by the participants regardless of their activity level supported the positive association between physical self-perceptions and physical activity participation. These quantitative and qualitative results offered support for Fox's (1990) theoretical framework related to (1) competence and behaviour and (2) importance and behaviour in the physical domain. Therefore, it appears that the positive association found between physical self-perceptions and physical activity participation in the able-bodied population (Fox, 1990) was also generally supported with adult males with SCI, and the theoretical relationship of these constructs appears to be generally understood by the men themselves.

The qualitative study design also examined the perceived relationship between (3) competence, importance, and physical activity participation as understood by the participants. On one hand, the participants appreciated the positive relationship between physical self-perceptions and physical activity participation. On the other hand, the speculations offered related to the incongruent competence-importance scores and behaviour in the physical domain focused beyond this relationship toward task self-efficacy.

As a result of the qualitative design, other factors emerged beyond these relationships that were explained in the three propositions. Two of these factors, "self-esteem" and task self-efficacy, emerged to offer greater understanding of the positive association between physical self-perceptions and physical activity participation. "Self-esteem" is understood to generally encourage and/or be enhanced by physical activity participation. Task self-efficacy is believed to play a more specific role in the initiation

of physical activity participation post-injury. A lack of task self-efficacy appears to inhibit the successful initiation of physical activity participation post-injury.

In conclusion, these quantitative and qualitative results based on Fox's (1990) theoretical framework appear to be reflected in a modified version of the Self-Perception model (Fox, 1990) and the Exercise and Self-Esteem model (EXSEM, Sonstroem, Harlow, & Joseph, 1994). Sonstroem's et al. (1994) model proposes that through successful engagement in physical activity, individuals will increase their self-efficacy which will result in an increase in perceived physical competencies that may lead to increased global self-esteem. This unidimensional and self-enhancing model (Figure 6) encompasses the self-esteem and competence component of physical self-perceptions (Fox, 1990) excluding the importance component and adds self-efficacy at the specific-situation level.

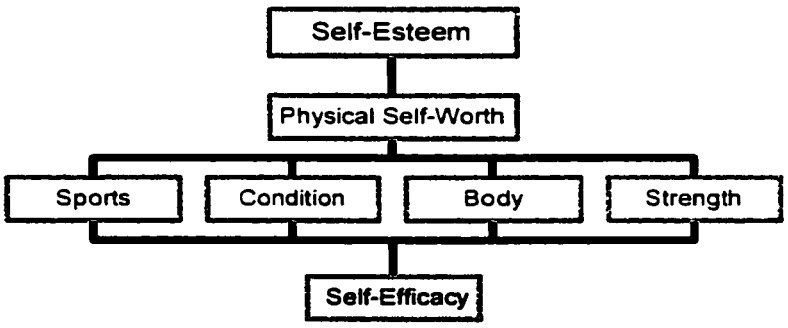


Figure 6 – Exercise and Self-Esteem Model (EXSEM, Sonstroem, Harlsow, & Joseph, 1994)

Generally, the Self-Perception model and EXSEM combined (Figure 7) with adding the physical activity component and a bi-directional approach appears to reflect the majority of the quantitative and qualitative findings. Specifically, the modified model

addresses the "self-esteem" and task self-efficacy factors that emerged from the qualitative interviews. These two factors offered further explanations for the link between competence, importance, and behaviour in the physical domain. Since the EXSEM (Sonstroem et al., 1994) defines self-efficacy as one's belief in one's abilities to perform specific exercise or sports training activities, this self-efficacy definition reflects the term task-self-efficacy described by Maddux (1995). Maddux (1995) identified two sub-types of self-efficacy: task and coping self-efficacy. As a result of the distinction between the types of self-efficacy, the modified model will replace self-efficacy with task self-efficacy.

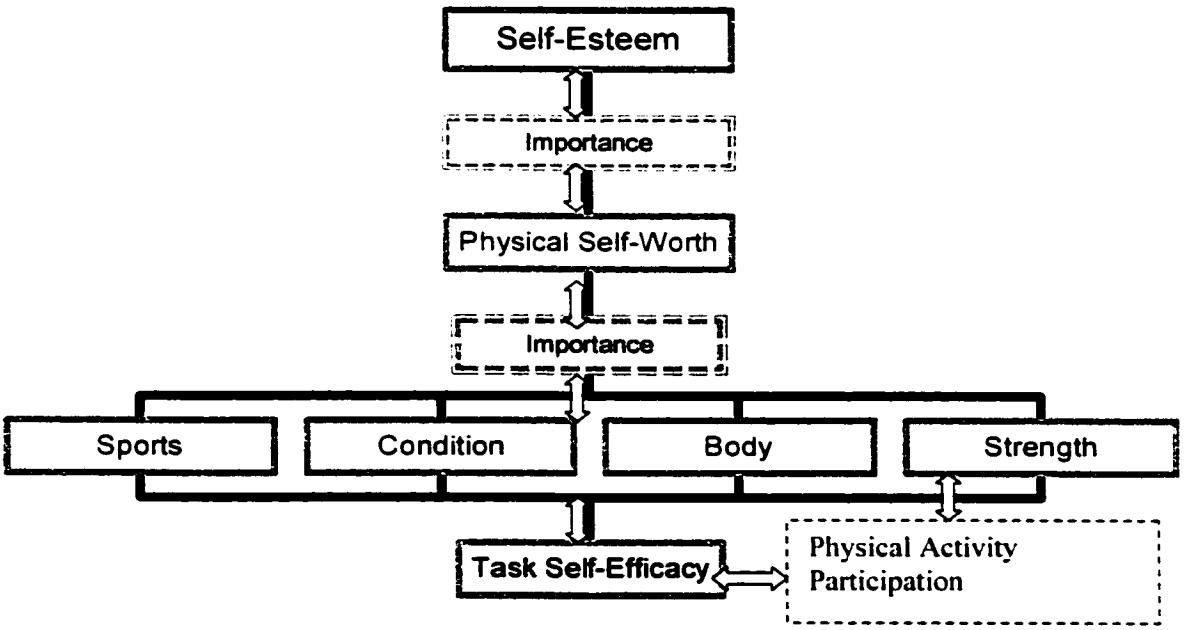


Figure 7 – Modified Self-Perception, Importance, and Exercise and Self-Esteem Model

## Recommendations for Future Research

This study's exploratory design has identified several important avenues for future research.

1. This study has provided initial validation of the PSPP and PIP instruments for use with this population. Future research that involves administering these instruments to other special populations as well as people with SCI may further validate the instruments and enhance our understanding of physical behaviours related to physical self-perceptions.
2. Two factors, self-esteem and task self-efficacy, emerged from the qualitative findings to offer a broader understanding of the relationship between physical self-perceptions and physical activity participation with this population. Studies specifically examining self-esteem or task self-efficacy may likely enhance our understanding of these constructs. This further understanding may eventually lead to practical interventions for individuals lacking in either or both of these areas.

## Potential Implications of Present Research

Although this was an exploratory study in the area of physical self-perceptions and physical activity participation of adult males with SCI, some preliminary practical implications can be suggested.

1. The positive association found between physical self-perceptions and physical activity participation may lead APA professionals to consider interventions that address one or both of these variables in their individual and/or group activity programs. APA professionals may also consider exploring the usefulness of incorporating the PSPP and PIP instruments into aspects of the pre-post assessment of participants in their exercise and/or physical activity programs.

2. Self-Esteem and Physical Activity. Since "self-esteem" was presumed to generally encourage and/or be enhanced by physical activity participation, APA professionals may consider interventions that focus on promoting both self-esteem and physical activity participation.

3. Task Self-Efficacy and Physical Activity. Task self-efficacy was assumed to play a more situation specific role in physical activity behaviour making it a very suitable target for direct interventions. In particular, APA professionals may provide opportunities for recently injured individuals to be exposed to physically active role models as well as to successful engagement in various sports and physical activities at a developmental level.

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# Appendix A

## Information Sheet

**Dear Participants,**

This letter is to let you know about a study being done by Linda Godin, Graduate Student. This study is being done under the supervision of Dr. Jane Watkinson and Dr. Garry Wheeler. This study is called **"The Investigation of the Relationship between Physical Self-Perceptions and Physical Activity Participation of Adult Males with Acquired Spinal Cord Injuries (SCI)"**. Physical self-perception is how you view your body and your physical abilities.

This study is being done to see if physical self-perceptions and physical activity participation are related in males with SCI. The results of this study may be used for further research, scholarly publications or academic presentations. At no time will individual results be released.

While this study may not benefit you directly, it is hoped that future practical applications may be made available if we better understand the link between physical self-perceptions and physical activity participation.

You will be asked to fill out four forms. The first form will be a questionnaire about physical self-perception. The second form will be a questionnaire that looks at the importance you place on each area of the physical self. The third form will ask you about your physical activity participation. The fourth form will ask you basic information such as your name, address, and age.

The results of the two questionnaires will be graphed. You will first be shown three sample graphs and then asked to give your opinion about each. Then, you will be shown your own graphed scores. You will be asked to comment on them. Your participation in the study should not take more than one hour. The interview will be audio taped. A written copy of the interview will be sent to you. You may be asked to come to a follow-up meeting and answer a few questions that come out of the study. You may ask the investigator(s) questions at any time during the study.

To maintain confidentiality, the results will be coded by ID number, not name. The results will be stored in a locked filing cabinet to which only the investigators will have access. Normally, information is kept for a period of five years after publication, and then it is destroyed.

Since verbal and written questions will be used to collect the data in this study, the risks with participation are the disclosure of personal or sensitive information. If this interview is upsetting to you, a referral to a counsellor will be provided at your request. You are free to withdraw from the study at any time, or decline to answer any questions, without explanation or consequence. If you withdraw, your information will be withdrawn at your request. To withdraw, simply tell one of the investigators.

If you have any concerns or wish to speak with someone who is not part of this study, please call Dr. Wendy Rodgers, Chair, Faculty Ethics Committee, Faculty of Physical Education and Recreation, University of Alberta, at (780) 492-5910.

Please read and sign the following consent form to show your involvement.

Thank you for your time and interest.


| | | |
|---|---|---|
| Linda Godin | Dr. Jane Watkinson | Dr. Garry Wheeler |
| Graduate Student | Professor | Adjunct Professor |
| Faculty of Physical Education & Recreation | Faculty of Physical Education & Recreation | Faculty of Physical Education & Recreation |
| University of Alberta | University of Alberta | University of Alberta |
| Phone: (780) 431-7114 | Phone: (780) 427-2163 | Phone: (780) 492-7158 |

# Appendix B

## Consent Form

Title of Project: **The Investigation of the Relationship between Perception Self-Perceptions and Physical Activity Participation of Males with Spinal Cord Injuries.**

**Principal Investigator(s):** Linda Godin, Graduate Student
Faculty of Physical Education and Recreation, University of Alberta
Phone: (780) 431-7114

**Co-Investigator (s):**
Dr. Jane Watkinson, Professor
Faculty of Physical Education and Recreation
Phone: (780) 492-2163

Dr. Garry Wheeler, Adjunct Professor
Faculty of Physical Education and Recreation
Phone: (780) 492-7158

**Please Complete:**

| | | |
|---|---|---|
| Do you understand that you have been asked to be in a research study? | Yes | No |
| Have you read and received a copy of the attached Information Sheet? | Yes | No |
| Do you understand the benefits and risks involved in taking part in this research study? | Yes | No |
| Have you had an opportunity to ask questions and discuss this study? | Yes | No |
| Do you understand that you are free to refuse to participate, or to withdraw from the study at any time, without consequence, and that your information will be withdrawn at your request? | Yes | No |
| Has the issue of confidentiality been explained to you?<br>Do you understand who will have access to your information? | Yes | No |
| Do you give permission for the investigator(s) to contact you for the purpose of follow-up clarification of written responses if the investigator(s) so desire(s)? | Yes | No |

This study was explained to me by: _____

I agree to take part in this study.

_____ _____ _____
Signature of Research Participant Date Printed Name

I believe that the person signing this form understands what is involved in the study and voluntary agrees to participate.

_____ _____
Signature of Investigator or Designee Date

A signed copy of this form will be given to participants.

# Appendix C

## THE PHYSICAL SELF PERCEPTION PROFILE (PSPP)
(Fox & Corbin, 1989)

**What Am I Like?**

**These are statements which allow people to describe themselves.**
**There are no right or wrong answers since people differ a lot.**

**First, decide which one of the two statements best describes you.**

**Then, go to that side of statement and check if it is just "sort of true" or "really true" FOR YOU.**

**Example**

| Really True for Me | Sort of True for Me | | | | Sort of True for Me | Really True for Me |
|---|---|---|---|---|---|---|
| ☐ | ☐ | Some people are very competitive | BUT | Others are not quite so competitive | ☐ | ☐ |

**Remember to check only 1 of the 4 boxes**

| | Really True for Me | Sort of True for Me | | | | Sort of True for Me | Really True for Me |
|---|---|---|---|---|---|---|---|
| 1 | ☐ | ☐ | Some people feel that they are not very good when it comes to playing sports | BUT | Others feel that they are really good at just about every sport | ☐ | ☐ |
| 2 | ☐ | ☐ | Some people are not very confident about their level of physical conditioning and fitness | BUT | Others always feel confident that they maintain excellent conditioning and fitness | ☐ | ☐ |
| 3 | ☐ | ☐ | Some people feel that compared to most, they have an attractive body | BUT | Others feel that compared to most their body is not quite so attractive | ☐ | ☐ |
| 4 | ☐ | ☐ | Some people feel that they are physically stronger than most people of their sex | BUT | Others feel that they lack physical strength compared to most others of their sex | ☐ | ☐ |
| 5 | ☐ | ☐ | Some people feel extremely proud of who they are and what they can do physically | BUT | Others are sometimes not quite so proud of who they are physically | ☐ | ☐ |

| | Really True for Me | Sort of True for Me | | | Sort of True for Me | Really True for Me |
|---|---|---|---|---|---|---|
| 6 | ☐ | ☐ | Some people feel that they are among the best when it comes to athletic ability | BUT | Others feel that they are not among the most able when it comes to athletics | ☐ ☐ |
| 7 | ☐ | ☐ | Some people make certain they take part in some form of regular vigorous physical exercise | BUT | Others don't often manage to keep up regular vigorous physical exercise | ☐ ☐ |
| 8 | ☐ | ☐ | Some people feel that they have difficulty maintaining an attractive body | BUT | Others feel that they are easily able to keep their bodies looking attractive | ☐ ☐ |
| 9 | ☐ | ☐ | Some people feel that their muscles are much stronger than most others of their sex | BUT | Others feel that on the whole their muscles are not quite so strong as most others of their sex | ☐ ☐ |
| 10 | ☐ | ☐ | Some people are sometimes not so happy with the way they are or what they can do physically | BUT | Others always feel happy about the kind of person they are physically | ☐ ☐ |
| 11 | ☐ | ☐ | Some people are not quite so confident when it comes to taking part in sport activities | BUT | Others are among the most confident when it comes to taking part in sports activities | ☐ ☐ |
| 12 | ☐ | ☐ | Some people do not usually have a high level of stamina and fitness | BUT | Others always maintain a high level of stamina and fitness | ☐ ☐ |
| 13 | ☐ | ☐ | Some people feel embarrassed by their bodies when it comes to wearing few clothes | BUT | Others do not feel embarrassed by their bodies when it comes to wearing few clothes | ☐ ☐ |
| 14 | ☐ | ☐ | When it comes to situations requiring strength some people are one of the first to step forward | BUT | When it comes to situations requiring strength some people are one of the last to step forward | ☐ ☐ |

| | Really True for Me | Sort of True for Me | | | Sort of True for Me | Really True for Me |
|---|---|---|---|---|---|---|
| 15 | ☐ | ☐ | When it comes to the physical side of themselves some people do not feel very confident | BUT | Others seem to have a real sense of confidence in the physical side of themselves | ☐ ☐ |
| 16 | ☐ | ☐ | Some people feel that they are always one of the best when it comes to joining in sports activities | BUT | Others feel that they are not one of the best when it comes to joining in sports activities | ☐ ☐ |
| 17 | ☐ | ☐ | Some people tend to feel a little uneasy in fitness and exercise settings | BUT | Others feel confident and at ease at all times in fitness and exercise settings | ☐ ☐ |
| 18 | ☐ | ☐ | Some people feel that they are often admired because their physique or figure is considered attractive | BUT | Others rarely feel that they receive admiration for the way their body looks | ☐ ☐ |
| 19 | ☐ | ☐ | Some people tend to lack confidence when it comes to their physical strength | BUT | Others are extremely confident when it comes to their physical strength | ☐ ☐ |
| 20 | ☐ | ☐ | Some people always have a really positive feeling about the physical side of themselves | BUT | Others sometimes do not feel positive about the physical side of themselves | ☐ ☐ |
| 21 | ☐ | ☐ | Some people are sometimes a little slower than most when it comes to learning new skills in a sports situation | BUT | Others have always seemed to be among the quickest when it comes to learning new sports skills | ☐ ☐ |
| 22 | ☐ | ☐ | Some people feel extremely confident about their ability to maintain regular exercise and physical condition | BUT | Others don't feel quite so confident about their ability to maintain regular exercise and physical condition | ☐ ☐ |

| | Really True for Me | Sort of True for Me | | | Sort of True for Me | Really True for Me |
|---|---|---|---|---|---|---|
| 23 | ☐ | ☐ | Some people feel that compared to most, their bodies do not look in the best of shape | BUT | Others feel that compared to most their bodies always look in excellent physical shape | ☐ ☐ |
| 24 | ☐ | ☐ | Some people feel that they are very strong and have well developed muscles compared to most people | BUT | Others feel that they are not so strong and their muscles are not very well developed | ☐ ☐ |
| 25 | ☐ | ☐ | Some people wish that they could have more respect for their physical selves | BUT | Others always have great respect for their physical selves | ☐ ☐ |
| 26 | ☐ | ☐ | Given the chance, some people are always one of the first to join in sports activities | BUT | Other people sometimes hold back and are usually among the last to join in sports | ☐ ☐ |
| 27 | ☐ | ☐ | Some people feel that compared to most they always maintain a high level of physical conditioning | BUT | Others feel that compared to most their level of physical conditioning is not usually so high | ☐ ☐ |
| 28 | ☐ | ☐ | Some people are extremely confident about the appearance of their body | BUT | Others are a little self-conscious about the appearance of their bodies | ☐ ☐ |
| 29 | ☐ | ☐ | Some people feel that they are not as good as most at dealing with situations requiring physical strength | BUT | Others feel that they are among the best at dealing with situations which require physical strength | ☐ ☐ |
| 30 | ☐ | ☐ | Some people feel extremely satisfied with the kind of person they are physically | BUT | Others sometimes feel a little dissatisfied with their physical selves | ☐ ☐ |

Appendix D

## HOW IMPORTANT ARE THINGS TO YOU?

(Fox, 1990)

| | Really True For Me | Sort of True for Me | | | Sort of True for Me | Really True for Me |
|---|---|---|---|---|---|---|
| 1. | ☐ | ☐ | Some people feel that being good at sports is vitally important to them | BUT | Others feel that being good at sports is not so important to them | ☐ ☐ |
| 2. | ☐ | ☐ | Some people do not feel that maintaining a high level of physical conditioning is very important to them | BUT | Others feel that maintaining a high level of physical conditioning is extremely important to them | ☐ ☐ |
| 3. | ☐ | ☐ | Some people believe that having an attractive physique or figure is vitally important to them | BUT | Others believe that having an attractive physique or figure is not all that important in their lives | ☐ ☐ |
| 4. | ☐ | ☐ | Some people believe that being physically strong is not so important to them | BUT | Others feel that it is extremely important to them to be physically strong | ☐ ☐ |
| 5. | ☐ | ☐ | Some people feel that having very good sports ability and skill is not so important to them | BUT | Others feel that having a high level of sports ability is really important to them | ☐ ☐ |
| 6. | ☐ | ☐ | Some people feel that maintaining regular vigorous exercise is vitally important to them | BUT | Others feel that keeping up regular vigorous exercise is not of prime importance to them | ☐ ☐ |
| 7. | ☐ | ☐ | Some people do not feel it so important to them to spend a lot of time and effort maintaining an attractive body | BUT | Others think that it is vitally important to spend time and effort maintaining an attractive body | ☐ ☐ |
| 8. | ☐ | ☐ | Some people feel that being strong and having well developed/toned muscles is vitally important to them | BUT | Others feel that being strong and having well developed/toned muscles is not so important to them | ☐ ☐ |

Appendix E

## Physical Activity Report ID#_____

**For the purpose of answering the following questions, physical activity is defined as all individual sports, dual sports, team sports and all individual movement sessions that are voluntarily engaged in for at least the partial purpose of being physically active.**

**What has your physical activity participation been like in the last 3 months?**

☐ 1. You did not engage in physical activity beyond your activities of daily living. Your activities were limited to activities of daily living such as sitting at rest, manoeuvring your w/c, propelling outdoors, ascending ramp, descending curb, personal care, showering, dressing, eating, making transfers, entering/leaving car, driving car, light household tasks, and heavy household tasks (Janssen, Van Oers, Van Der Woude, & Hollanter, 1994).

☐ 2. You have participated in physical activities such as weight training, swimming, wheeling, fitness classes, etc. for the main purpose of improving or maintaining your physical fitness level. Your physical activity participation was planned and engaged in at least 2 /wk up to 7/wk for 15 minutes or more during a workout.

☐ **3.** You have participated in sport activities as well as fitness activities for the main purpose of competing and improving your sport skills. You have participated in physical activity at least 3/wk. You have competed at the provincial level and above in your chosen sport (s) such as w/c basketball, w/c rugby, w/c track and field, etc.

**If you selected category # 2 or # 3 please complete the next section. NEXT** ⇨

**It is important that you try to be accurate and realistic in your assessment**

| | | FREQUENCY (how often per week?) | | INTENSITY (how hard are you working?) | | TIME (each session) |
|---|---|---|---|---|---|---|
| **For QUANTITY of activity select the appropriate numbers from this chart and insert them in the columns below** | **6** | **6 or more** | **6** | **very very hard** | **6** | **> 45 minutes** |
| | **5** | **5 times a week** | **5** | **very hard** | **5** | **35-45 minutes** |
| | **4** | **4 times a week** | **4** | **hard** | **4** | **25-35 minutes** |
| | **3** | **3 times a week** | **3** | **somewhat hard** | **3** | **15-25 minutes** |
| | **2** | **2 times a week** | **2** | **fairly light** | **2** | **10-15 minutes** |
| | **1** | **1 time a week** | **1** | **very light** | **1** | **< 10 minutes** |

| PHYSICAL ACTIVITY RECORD | FREQUENCY | INTENSITY | TIME |
|---|---|---|---|
| **SPORT ACTIVITIES** | | | |
| **W/C basketball** | | | |
| **W/C tennis** | | | |
| **W/C Rugby** | | | |
| **Track and Field** | | | |
| **Sledge Hockey** | | | |
| **Any other?** | | | |
| | | | |
| **FITNESS ACTIVITIES** | | | |
| **(endurance activities)** | | | |
| **Swimming** | | | |
| **Aerobic dance/classes** | | | |
| **Wheeling (rollers or road)** | | | |
| **Arm Ergometer/cycling** | | | |
| **Any other?** | | | |
| | | | |
| **(strength/muscular activities)** | | | |
| **Weight-training** | | | |
| **Weight/powerlifting** | | | |
| **Exercises only (sit-ups etc.)** | | | |
| **Any other?** | | | |
| | | | |
| **OTHER ACTIVITIES** | | | |
| | | | |
| | | | |

Appendix F

# PERSONAL INFORMATION SHEET

Name:_____

Address:_____

_____

Telephone Number (s): (h)_____

(w)_____

Age:_____

Level of Spinal Cord Lesion (diagnosis): _____

_____Complete or Incomplete

How many years have you lived with a spinal cord injury?

_____

Education Level:_____

Are you currently employed ? YES NO

If yes, please describe your occupation:_____

_____

Appendix G

PILOT STUDY

**Exploring Methods of Examining Physical Self-Perceptions in Adult Males with Spinal Cord Injuries (SCI)**

**Purpose**: To determine effective ways to examine physical self-perceptions of males with SCI by:
(1) determining whether the PSPP instrument (Fox & Corbin, 1989) was applicable for use with this population and
(2) developing the protocol for a supporting interview.

**Method**

1) Participants: Participants were all paraplegics (T4-T5 to T10, ASIA-A), ranging in age from 20 to 27 years old, with post-secondary education. One participant was working while the other three were students. All participants were moderately to very physically active.

2) Procedures
(1) Applicability of the PSPP Instrument Procedure: Participants completed four forms: demographic sheet, PSPP instrument, PIP instrument, and the Physical Activity Report. After completing all the forms, participants were asked to rate the applicability of each item on the PSPP instrument for an individual living with a SCI on a 1 to 4 Likert type scale [1 (not all applicable), 2 (somewhat applicable), 3 (applicable), 4 (very applicable)]. Upon completion of the written component of the interview, participants were asked to clarify why specific items were rated as not applicable. Finally, participants were asked to identify any items missing from the instrument. The interview was audio taped.

Data Analyses related to the Applicability of the PSPP Instrument: First, the participants' scores on the PSPP instrument were analyzed within subscales for consistency of rating. Second, the PSPP and PIP graphed scores were shown to the participants to check for accuracy of perception. Third, the items identified as not applicable and/or missing from the PSPP instrument were analyzed for frequency, and the transcribed explanations for the ratings were reviewed for commonality.

(2) Developing the Protocol for the Qualitative Interview: Once the data were analyzed for the applicability of the PSPP instrument, developing the protocol for the qualitative component of the principal study was the next objective. A follow-up meeting was scheduled with three of the participants who had an acquired SCI, within thirty days. These participants were asked open-ended questions about their PSPP and PIP graphed profiles and their physical activity participation.

**Results and Discussion**

(1) The Applicability of the Instrument for Use with this Population: The PSPP was deemed applicable for use with this population for several reasons.

1) The participants scored consistently within each subscale of the PSPP.
2) Participants agreed with and were able to explain their graphed profiles (PSPP and PIP scores).
3) Of the 30 items within the PSPP, only 10 items were identified as non-applicable by three of the four participants. Only one item was identified as not applicable by two participants.
4) Only one item related to how we think others perceive us was identified as missing by one participant. Since individuals' perceptions are rooted in the interaction with the environment (Shavelson et. al. 1976), their self-perceptions are likely to include how they think others perceive them.

The PSPP was deemed applicable for use with this population based on the consistency of scoring within the subscales, the variability in rating items as not applicable and/or identifying missing items, and the accuracy of the participants' graphed profiles.

(2) Developing the Protocol for the Qualitative Interview: During the follow-up interview, open-ended questions were posed to three participants about their PSPP and PIP graphed profiles and their physical activity participation.

1) The first interview was formally structured with predetermined questions. This structured format seemed to limit this researcher's opportunity to probe further and resulted in a narrow exploration of the topic.
2) The subsequent interviews with the other two participants were based on a semi-structured format with opportunities to probe further. Since this interview format provided more in-depth and broader exploration of the topic, the semi-structured interview was adopted for the principal study.
3) All three interviews involved participants' discussing their own graphed profiles (PSPP and PIP scores). This researcher observed that two of the three participants appeared to become uncomfortable during discussion related to their body attractiveness and physical self-worth. For this reason, three profiles were 'created' based on Fox's (1990) Self-Perception Model theoretical framework and this study's profiles were adopted for the principal study. The participant will be shown his graphed profile at end of the interview for him to comment on if he wishes.

A semi-structured interview based on an interview guide using 'created' profiles will be adopted for the principle study because of the depth and breath of exploration, the opportunity to probe further, and the advantages of participants being able to 'theorize' without having to reveal potentially awkward feelings about themselves.

Appendix H

INTERVIEW GUIDE
(shortened version)

Section 1: Introduction

1. Let's recap: You've just completed filling out 2 questionnaires (showing them their completed PSPP and PIP instruments). One (instrument) that asks you about how you see your abilities in five areas (PSPP), and the other one that asks you how important it is to be good at or have abilities in four of these physical areas (PIP).

2. The purpose of this part is to get your ideas about physical self-perceptions by discussing four graphs with you.
   (1) I'll show you 3 different graphs that are based on PSPP and PIP scores from earlier studies on males with SCI and ask you your opinion on each of them.
   (2) I'll then show you your graphed results from the added scores on the PSPP and PIP questionnaires and ask you to make any comments if you wish.
   (3) I might ask you questions that arise from our discussion or from other participants' interviews.
   (4) I will state this again. Remember you have the right to decline to answer any questions or decide to discontinue participating in this study at any time during this interview.

I'll ask you other questions sometimes as we progress. I'm asking you these questions because I want to make sure that I understand what you are saying. Other times I'll ask you questions because I want to know more about what you are talking about.

3. Sample Graph (Graph # 1): Let's spend some time going over this graph because there is a lot of information contained in the graph. Please ask questions if you are unsure about what I am saying.

(1) Start by showing the PSPP and PIP questionnaires. Point to the PSPP and say that the 30 questions are put into 5 areas, and then the 5 area scores are added up. Point to the PIP and say that the 8 questions are put into 4 areas, and then the 4 area scores are added up.

(2) Show the **scale** from 6 to 24 – saying that the highest possible score in one area is 24 and the lowest possible score in one area is 6.
   - If a person's total score in the sport abilities is 24, he views his sports abilities as excellent or very good. If his score for the importance in sports is 24, he views being good at sports as very important.
   - On the other hand, if his total score in the sports abilities area is 6, he views his sports abilities as being quite poor; if his total score in the sports importance area is 6, he views being good at sports as not being important at all.

(3) Graphed **lines**:
   - The dark line is related to how able/capable a person thinks he is in each of the 5 physical areas.

- The dotted line is related to the importance of being good in four of these physical areas.

(4) **Areas** (subscales): Each of these areas focuses on a different aspect of the physical self. Each subscale was shown and reviewed with the participant. An example was also provided for the areas within the subscale.

- **SPORT** (PSPP) – looks at how you view your
  (1) sport and athletic ability (e.g., w/c basketball – can you dribble or shoot?)
  (2) ability to learn sports skills (e.g., how easily are you able to acquire the skills you are taught with practice?)
  (3) confidence in the sports environment (e.g., how comfortable are you at going to an organizes sport activity?)
- **How Important you think it is to**
  (1) be good at sports or
  (2) have good sports skills

Each of the five PSPP and four PIP subscale terms were reviewed with the participants.

Section 2: Created Profiles (Graph 1, 2, &, 3)

Now let's look at graph #1 – I want to make sure we are clear on what you see here. Please let me know what you notice about this first graph.
If participant gets all aspect of the profile move onto (2)

(1) a) Scoring levels: moderately low scores on abilities and importance
b) Consistency of the Scoring across Profile: the PSPP and PIP scores are fairly consistent (straight)
c) Discrepancy: every little discrepancy between how one views one's abilities and the importance placed on being good at or having these physical abilities.
d) PSW: moderately low level

(2) Can you tell me what might be the reason (s) someone would score himself this way?
(3) Is there anything else you want to say about graph # 1?

The same format was used for graph # 2 and # 3.

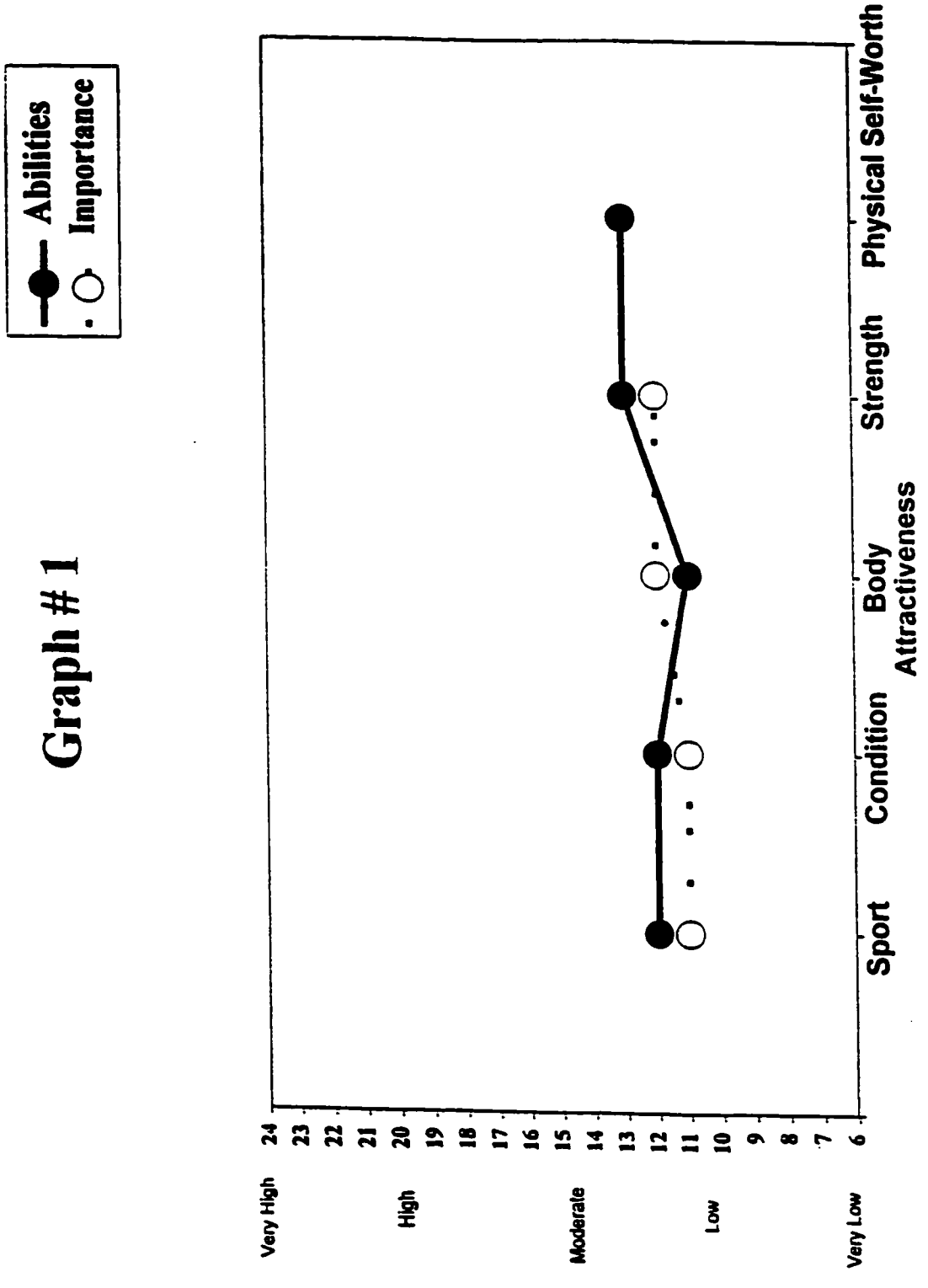
Section 3: Participant's Profile (Graph # 4)

1. The participant will be shown his own profile (PSPP and PIP) – with the other 3 graphs still in front of him. He will be given a few minutes to examine his profile. After he has examined the profile, ask him if he has any questions about his profile.
2. Ask him if he wants to make any comments about his profile. And then ask him if he wants to make any comments about his profile in comparison to the other profiles.

Section 4: Optional Questions

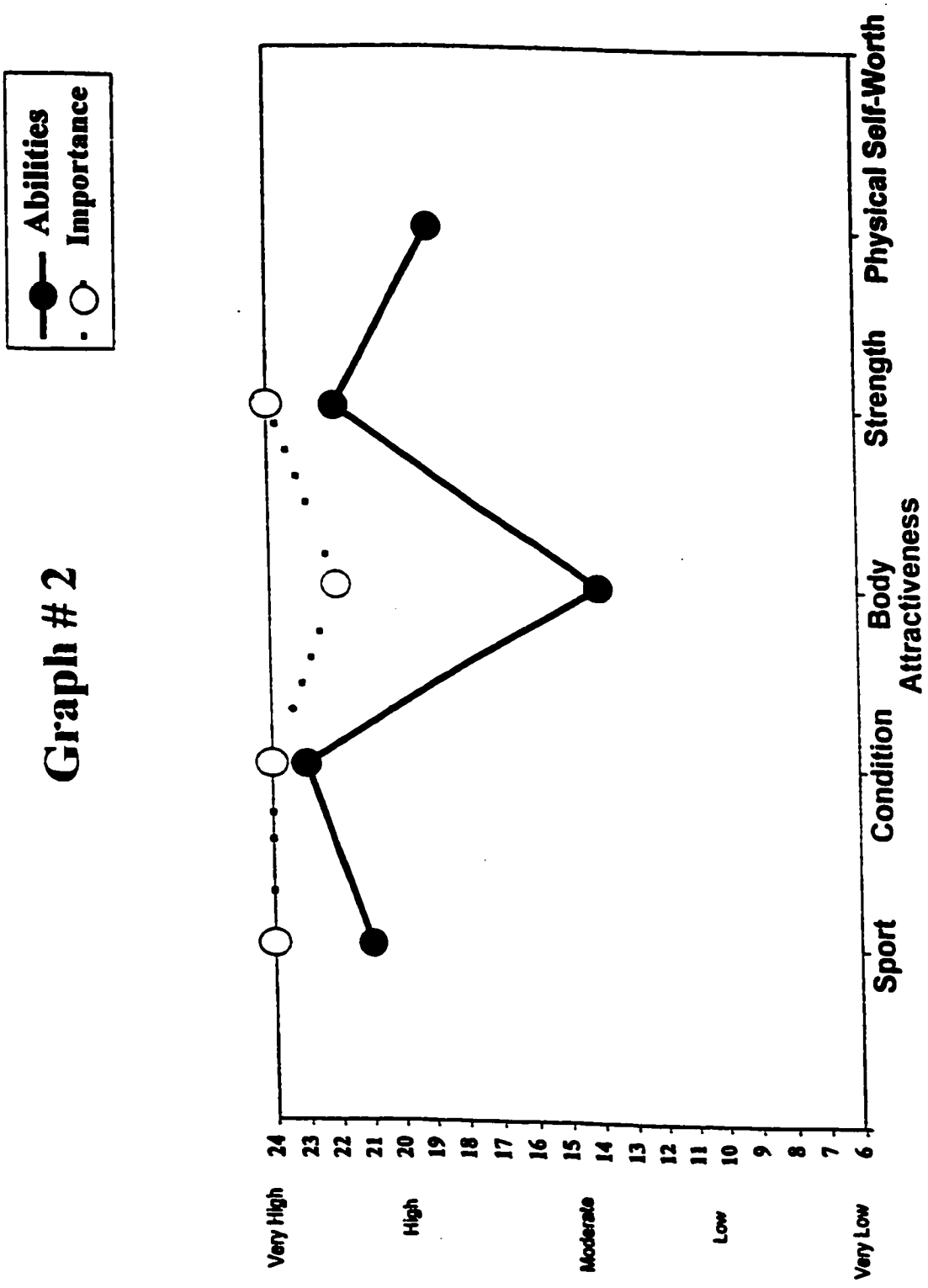
Optional questions to be asked at the discretion of the researcher.

Appendix I

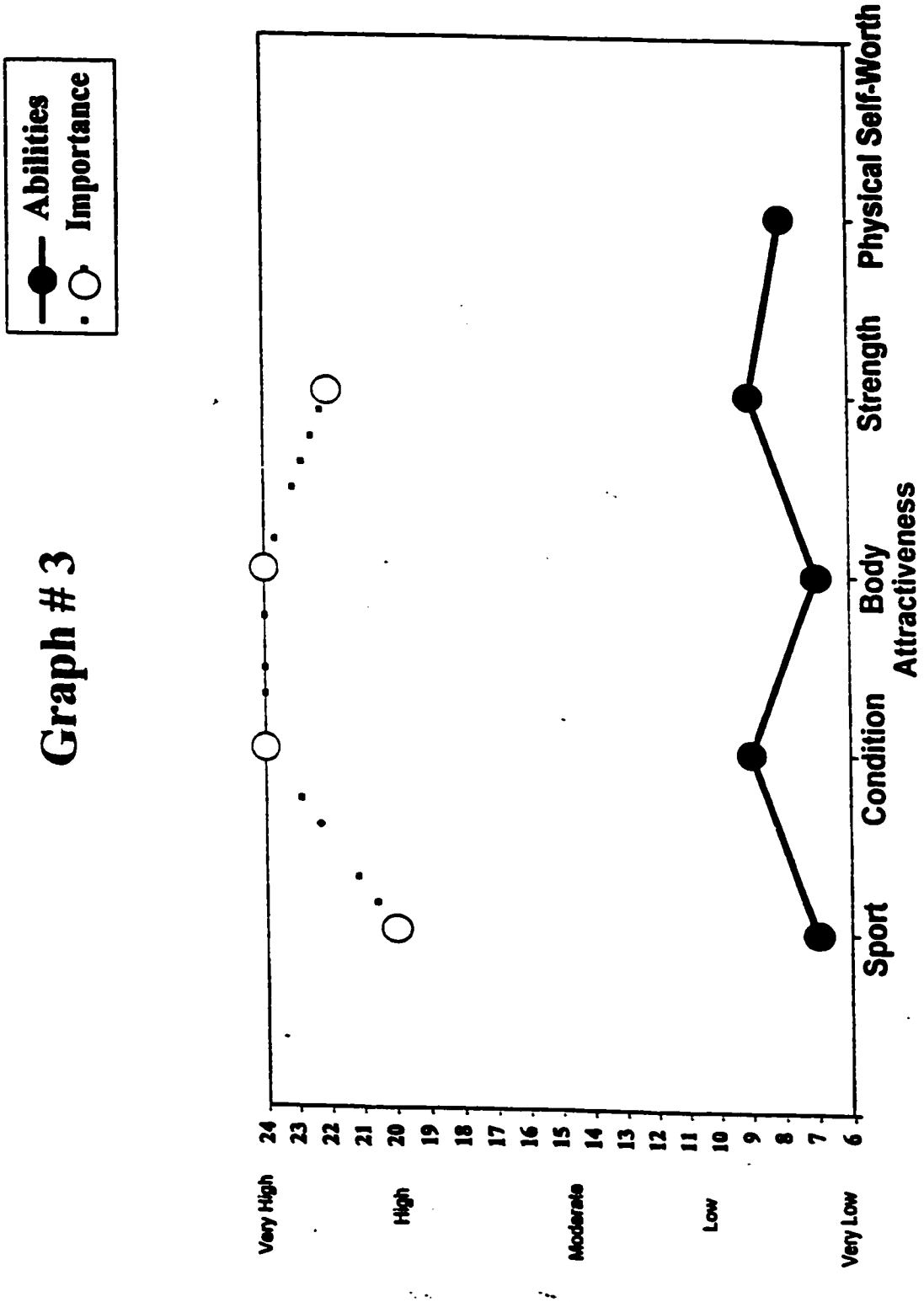

Graph # 1
Abilities
Importance
Very High
High
Moderate
Low
Very Low
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
Sport
Condition
Body Attractiveness
Strength
Physical Self-Worth

Appendix I

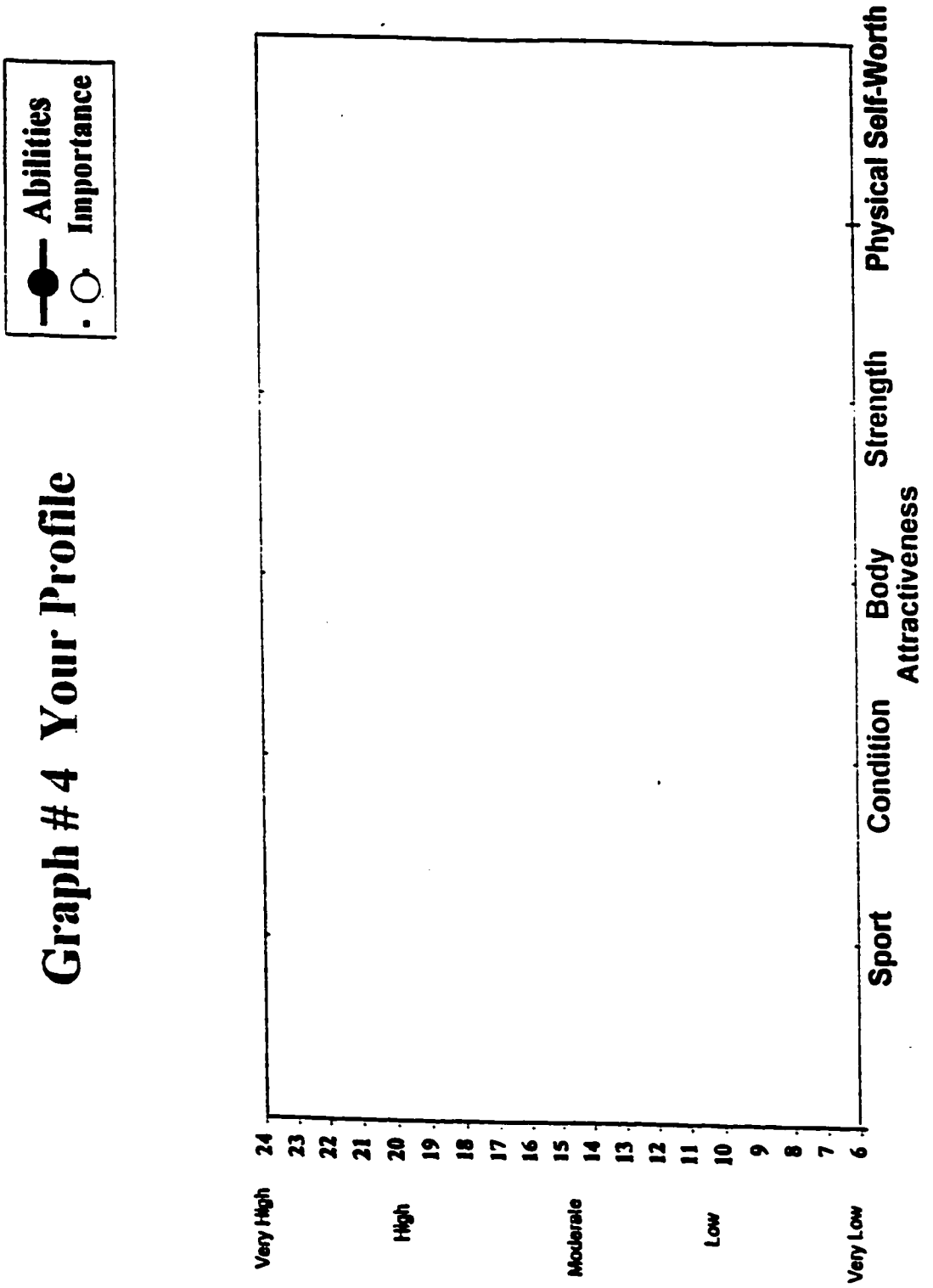
# Graph # 2



Appendix I


Graph # 3
Abilities
Importance
Very High
High
Moderate
Low
Very Low
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
Sport
Condition
Body Attractiveness
Strength
Physical Self-Worth

Appendix I


Graph # 4 Your Profile
Abilities
Importance
Very High
High
Moderate
Low
Very Low
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
Sport
Condition
Body Attractiveness
Strength
Physical Self-Worth

Appendix J
Qualitative Data Analyses Phases and Steps

| Phases & Steps | Analyses Conducted by Activity Group |
|---|---|
| **Phase 1** | **Pre-determined categories based on the Self-Perception Model (Fox, 1990)** |
| Step 1 | Text was coloured and number coded. Text that was related to any of the five perceived physical competencies or four perceived importance of physical competencies were colour coded. Although the sport competence and importance were the same colour code, the number code related to competence or importance as well as low to high ratings of the subscales was different (e.g., the perceived condition subscale was colour coded green than assigned a number code related to low, moderate, or high perceived competence in the condition subscale). |
| Step 2 | The coded text was then cut and pasted into minor categories related to the subscale and rating system (e.g., perceived condition major category was divided into three minor category: low, moderate, and high perceived condition) |
| **Phase 2** | **Reading non-coded text for meaning** |
| Step 1 | After reading the non-coded text for meaning, four categories emerged: 'increased competencies', 'increased importance', 'self', and 'other ideas'. |
| Step 2 | Self', 'other ideas', 'increased competencies', and 'increased importance' categories were colour and number coded in the same way as the pre-determined categories. |
| **Phase 3** | **Identified speculations were cut and pasted onto summary sheets** |
| Step 1 | Text was read to identify common and unique speculations related to behaviour and physical self-perceptions |
| Step 2 | Text was then cut and pasted onto summary sheets under the appropriate speculation. As new speculations emerged, a new summary sheet was developed. |
| Step 3 | Each summary sheet was reviewed for commonalities. Some common speculation were merged into one speculation /summary sheet |
| **Phase 4** | **Development of a composite profile by activity group** |
| Step 1 | A composite profile was developed for each activity group that incorporated the various speculations offered. The composite profile (Appendix J) was modified from Wheeler & Steadward's (1998) work involving developing a story line and having participants highlight comments that were relevant or true for them. |
| Step 2 | A peer check was conducted. All data analyses processes and procedures were examined by a peer, and the results were discussed with the researcher. |
| Step 3 | The composite profiles were shown to six participants (two per group) for member check. |
| **Phase 5** | **Summary sheets were compared across activity groups for common and unique speculations** |
| Step 1 | Common and unique speculations expressed across groups were identified related to (1) competence and behaviour, (2) importance and behaviour, and (3) competence, importance, and behaviour in the physical domain. These findings were reported in the results section of chapter 5. |

Appendix K

# Your Physical Activity Participation

I would like your help in clarifying for me your physical activity participation. Can you answer 2 questions for me?

Physical activity participation is defined as "all individual sports, dual sports, team sports, and all individual movement sessions that are voluntarily engaged in for at least the partial purpose of being physically active" (Nielsen, 1985, p. 9).

2 Questions

(1) ON AVERAGE, over the last 3 months prior to the interview, how many times per week did you participate in any planned physical activity?

_____ total number of **days** per week

(2) ON AVERGAGE, over the last 3 months prior to the interview, how many hours per week did you participate in any planned physical activity?

_____ total number of **hours** per week

Thanks

Appendix L

Sample Portion of the "**Recreation**" Group Composite Profile

"George"

For the purpose of this story, let us name this person George. George is an adult male living with a spinal cord injury for at least a few years. He regularly participates in physical activity that includes exercising/fitness activities and sometimes sports activities.

George is physically active because:

- Working out/being physically active makes him feel good about himself
- He has more energy – he is less fatigued
- He wants to exercise or play sports – he enjoys participating
- He wants to get stronger
- He has always seen physical activity as an important part of his life
- He wants to live longer
- Working out motivates him to do more things
- He wants to avoid getting health problems such as diabetes
- He enjoys the social side of going to the fitness centre or being on a team—there are a lot of people he can talk to

George thinks that some people with spinal cord injuries are currently NOT physically active because:

- Their injury is very debilitating (severe) resulting in them not being able to physically do any of the things (physical activities)
- It's harder to stay in shape with a disability because they have fewer options to exercise and be physically active beside going to the Steadward Centre or joining sports teams.
- Home adaptive equipment is expensive.
- Transportation has limitations if using the DATS.
- They are not sure they are up to it, or they are not sure they can do it.