

MEASURING LEISURE AMONG INDIVIDUALS WITH SPINAL CORD INJURIES

by

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ABSTRACT

Experiencing a spinal cord injury (SCI) results in many changes that may challenge an individual's ability to participate in leisure. Despite the benefits, leisure has been largely overlooked in rehabilitation research because it is difficult to measure. Scales exist that measure leisure behaviour; however, few have been tested for reliability and validity and even fewer have been developed for use among individuals with SCI. The purpose of this thesis was to: (1) evaluate the usability of the four scales in the Idyll Arbor Leisure Battery (IALB) using qualitative methodology; (2) provide estimates of the reliability of the IALB; and (3) provide support for the validity of the IALB in a sample of individuals with SCI.

The IALB consists of four previously-developed scales that measure leisure attitude, leisure motivation, leisure satisfaction, and leisure interests. Qualitative evaluation raised some concerns with the IALB scales such as burden and the wording of the instructions and items. Several modifications were suggested. In the measurement study, forty-one individuals with SCI who had been discharged from inpatient rehabilitation at least one year prior to recruitment completed the leisure scales on two separate occasions. Test-retest reliability for the total scales and for most of the subscales was within an acceptable range for using the scales in descriptive research settings (ICCs > 0.75) and some evidence for their clinical use was discussed. When validated using standard measures of life satisfaction, depression, community integration, and leisure participation, most correlations were of the hypothesized magnitude and direction. Interrelationships among the IALB variables were also as expected providing support for the validity of the scales. Finally, although some problems were identified, factor analyses provided support for the previously defined factor structures of the IALB scales.

The results provided evidence that the IALB has the potential to be a useful in measuring leisure attributes among individuals with SCI in both research and clinical settings. With some minor modifications, the psychometric properties of the scales may improve and the burden to individuals with SCI, clinicians, and researchers may diminish. Measurement standards, suggestions for modifications, and appropriate administration of the scales are discussed.

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Contribution of the Author

This thesis contains two studies that have been conducted by the candidate Erica M. Botner, under the supervision of William C. Miller (Assistant Professor, School of Rehabilitation Sciences). The collection, analysis, and documentation of all studies were primarily the work of the candidate. Manuscripts one, two, and three are in preparation for submission.

The above statement was written by Erica M. Botner and agreed upon by the undersigned.

William C. Miller

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CHAPTER 1 – Introduction and Purpose

1.1 Overview of Thesis

This thesis consists of five chapters. The first chapter commences with an overall purpose followed by background information regarding spinal cord injury (SCI), measurement theory, and leisure. Next, three sections are presented which focus on three problems identified in the literature: (1) leisure participation by individuals with spinal cord injuries; (2) theoretical frameworks; and (3) measurement in leisure. The literature review is followed by a description of the research questions and their respective hypotheses. This chapter concludes with the significance of the studies. Chapters two through four are manuscript chapters and methodology is addressed with respect to each particular study. Chapter five integrates the findings from each study and concludes with implications for both rehabilitation and research.

1.2 Purpose

The purpose of this thesis was to: (1) evaluate the usability of the four scales in the Idyll Arbor Leisure Battery (IALB) as measurement tools among individuals with SCI using qualitative methodology; (2) provide estimates of the reliability of the IALB; and (3) provide support for the validity of the IALB.

1.3 Introduction

1.3.1 Spinal Cord Injury

There are more than 36,000 Canadians currently living with a SCI (Canadian Paraplegic Association, 2000). Incidence rates suggest that more than one thousand Canadians survive a traumatic spinal cord injury each year (Canadian Paraplegic Association, 2000). With the majority of injuries occurring in individuals under the age of 30, and life expectancies reduced by less than 10% due to advances in medicine, it is evident that the number of individuals living with SCI is steadily increasing (Canadian Paraplegic Association, 2000).

A SCI is caused by a lesion to the spinal cord that can cause loss of muscle function, loss of sensation, or both, at and below the level of injury (American Spinal Injury Association, 2002). Spinal cord injuries can be classified in three different ways: by neurological level; sensory level; or motor level (American Spinal Injury Association, 2002). Neurological level refers to the lowest segment of the spinal cord with normal sensory and motor function on both sides of the body, sensory level refers to the lowest segment of the spinal cord with normal sensory function, and motor level is defined similarly with respect to motor function.

Although researchers are continually trying to discover effective treatments to restore loss of function, individuals with SCI have to deal with many associated medical conditions, depending on the specific location and severity of the injury. These conditions can include pressure sores, chest and urinary tract infections, blood clots, spasticity, pain, and autonomic dysreflexia (Elmasri(y) & Short, 1997; Hart, 1995; Martin et al., 2002; Miller, 1995). In addition to these physical changes, dealing with such an abrupt change of course in their life requires adjustment and coping, which is aided by rediscovery of self and establishing a new identity (Carpenter, 1994; Kleiber et al., 2002; Lee et al., 1993; Levins et al., 2004; Yoshida, 1993).

A 1996 random sample survey of almost one thousand Canadians living with SCI, conducted by the Canadian Paraplegic Association (2000), showed that 78% of individuals with SCI were injured between the ages of 15 and 34; however, new data shows that the age of onset is increasing. These data also revealed that more than 80% of SCI's were experienced by males. In addition, the numbers of higher-level and incomplete injuries are increasing with rates rising from about 25% of injuries resulting in quadriplegia in the 1970's to 47% in the 1990's. Both of these trends are likely due to advances in medicine.

The two major causes of SCI in Canada are vehicular accidents (car and motorcycle) at 54.7% and falls (including industrial accidents) at 17.7% (Canadian Paraplegic Association, 2000). Other causes include medical conditions such as a tumor, diving, and other sports-related injuries. This information is based on data collected by the CPA from 1983 to 1989 on more than three thousand new injuries.

1.3.2. Measurement Theory

Measurement is the quantification of data in order to achieve a degree of precision in understanding, evaluating, and differentiating between the physical and behavioural

characteristics of people (Portney & Watkins, 2000). Measurement is essential for conducting research and it is important in rehabilitation because it can be used to assess clients at a single point in time, to assess change in clients over time, or to predict a subsequent event (Stumbo, 2003). It is also used as a basis for choosing appropriate interventions (Portney & Watkins, 2000). Classical measurement theory is based on the assumption that an observed score on a measure is made up of a true score and an error score (Streiner & Norman, 1995).

Measures need to be developed and tested rigorously to ensure that they are psychometrically sound and in order for data to be as accurate as possible. There are two fundamental parts to measurement; reliability and validity. For a measure to be reliable, it must be able to differentiate among individuals and yield consistent results with repeated measurement (Portney & Watkins, 2000; Streiner & Norman, 1995). Validity ensures that a test is measuring what it is intended to measure and is necessary for drawing inferences from data and determining how results can be used (Portney & Watkins, 2000; Streiner & Norman, 1995; Stumbo, 2003). Reliability is a necessary condition for achieving validity; however it is not sufficient as validity also relates to the meaning of the scores (Messick, 1995).

A measurement is never completely reliable or valid and there will always be some form of error in every score. The difference between the true score and the error score is known as measurement error (Portney & Watkins, 2000). There are two types of measurement error; systematic and random. Systematic errors are predictable and consistently occur in one direction (overestimating or underestimating the true score). Usually they are caused by a problem with the measurement tool. They are not a concern for reliability because they are constant; however, they are not a true representation of what is being measured, and thus, may affect validity (Portney & Watkins, 2000). Random errors are unpredictable and it is difficult to determine their cause. They can be attributed to issues related to the participant, the tester, the measurement tool, or the environment.

A testing protocol is essential to ensure careful planning, training, clear operational definitions and selection of measurement tools, which will help to minimize measurement error (Portney & Watkins, 2000). This will ensure that test scores are as close to their true value as possible which is important for both research and for clinical practice.

1.3.3 Leisure

Leisure terminology has posed major challenges for many researchers, as there has been a lack of agreement in the definition. The terms recreation and leisure are often used interchangeably. Typically, recreation refers to an activity and the expectation of deriving benefits from that activity (Datillo, 1999). Although leisure may include elements of recreation, inherent to the experience is also enjoyment, perceived freedom, intrinsic motivation and self-determination (Austin & Crawford, 1996). Generally, the proposed definitions of leisure have focused on four major categories: leisure as time, leisure as context, leisure as activity and leisure as experience (Datillo, 1999; Hutchison & McGill, 1998; Primeau, 2003).

Definitions of leisure using these categories have been provided by Primeau (2003) to help facilitate our understanding. Those who define leisure as time, view it as free time after obligatory activities, such as work or self-grooming. Using this definition, leisure is quantified by amount of time and thus, is easily measured. However, this definition fails to consider leisure as a context, as an activity or as an experience. When leisure is defined as a context, the conditions under which it occurs are examined including the environment (i.e. physical, social, institutional), whether it was freely chosen, and cultural beliefs that influence it's meaning. Leisure can also be defined as participation in activities. This view is also easily quantified and measurable using interest checklists. Finally, when leisure is viewed as an experience, the overall experience of an individual's engagement in leisure including one's disposition, attitude and state of mind are examined. These four definitions enable us to conceptualize the construct which is critical when we are attempting to measure leisure.

Everyone has a leisure lifestyle; however, the quality and nature of it may vary (Stumbo & Peterson, 2004). An individual's skills, knowledge, attitude, and ability to participate successfully in and be satisfied with leisure and recreation experiences affect their leisure lifestyle (Stumbo & Peterson, 2004). Research has shown that there are many benefits resulting from participation in leisure. The most documented benefits are physiological, psychological/emotional, and social. Physiological benefits include a reduction of numerous health problems such as high blood pressure, improved general health, and a reduction of negative lifestyle choices such as smoking and obesity (Stumbo & Peterson, 2004). Psychological/emotional benefits can include improved self-identity, improved opportunities

for planning, making choices and taking responsibility, improved ability to deal with stress and adjust/cope with negative life events, decreased symptoms of anxiety and depression, improved quality of life, life satisfaction and well-being (Stumbo & Peterson, 2004). Social benefits include improved social interaction skills, development and use of social support networks, and development of nurturing relationships with others (Stumbo & Peterson, 2004).

1.4 Literature Review

1.4.1 Leisure Participation among Individuals with Spinal Cord Injuries

Participating in leisure can play a very important role in the lives of individuals with SCI. The importance of identity reconstruction and personal transformation following a traumatic life event such as a SCI has been well established (Kleiber et al., 2002, Yoshida, 1993). Literature suggests that often times a negative event such as a SCI can lead to positive changes, known as post traumatic growth (Klieber et al., 2002) including an improved perception of self, improved relationships and a greater appreciation of the smaller things in life (Kleiber et al., 2002). Post traumatic growth researchers emphasize the importance of pleasant events in the coping and adjustment process. Given the benefits of leisure, and the positive feelings often associated with participation, leisure may play a very important role in helping people to experience the pleasant events necessary for post traumatic growth.

Very little research has been done specifically on leisure participation and SCI; however, a study by Krause and Crewe (1987) pointed towards a need for more intensive psychosocial rehabilitation including social skills training and leisure. In the 1990's a collaboration of authors identified the lack of research and conducted three qualitative studies to examine the relevance of leisure in SCI. They found that leisure plays an important role in adjusting to SCI (Kleiber et al., 2002; Lee et al., 1996), in coping with an illness experience (Kleiber et al., 1995), and reintegration into the community (Datillo et al., 1998).

Although individuals with SCI often experience more free time and boredom than individuals who are able-bodied, they participate less in leisure activities (Brown, 1982; Brown et al., 2002; Kennedy & Smith, 1990; Lee et al., 1993; Pentland et al., 1999). This can occur for reasons that are both external and internal to the individual. External barriers

can include lack of companionship, transportation, programs/facilities, disability awareness, and environmental accessibility (Austin, 1987; Kleiber et al., 1995; Martin et al., 2002).

Internal barriers include both physical and psychological conditions. In addition to the physical changes that occur following a SCI such as pressure sores, chest and urinary tract infections, blood clots, spasticity, pain, and autonomic dysreflexia (Elmasri(y), 1997; Hart, 1995; Martin et al., 2002; Miller, 1995), psychological ramifications are often present including depression and altered self image (Carpenter, 1994; Hanson et al., 2000; Martin, 2002), which can dramatically affect leisure participation. Furthermore, an individual's leisure attitude, motivation, satisfaction and interests can also influence one's desire or ability to pursue a meaningful and active leisure lifestyle (Ragheb & Tate, 1993).

Research addressing the role of activity and leisure participation in the lives of individuals with SCI has identified that involvement in leisure post-injury is positively related to life satisfaction, high-quality social relationships and low levels of depression (Coyle et al., 1993; Loy et al. 2002). Leisure can lead to better adjustment to disability, improved perceived quality of life, greater levels of community integration, and more constructive use of free time (Brown et al., 2002; Coyle et al., 1993; Noreau & Shephard, 1995). In fact, leisure satisfaction was found to be the most significant predictor of life satisfaction among individuals with SCI, accounting for 43% of the total variance and higher than both self-esteem and health satisfaction (Coyle et al., 1994). Furthermore, physically active leisure such as sports and exercise can lead to improved health and fitness, increased muscle strength, physical mobility, and reduced medical complications in this population (Foreman et al., 1997; Noreau et al., 1993; Noreau & Shephard, 1995).

Participating in leisure can help individuals maintain an active lifestyle. This is extremely important for individuals with SCI because it can decrease the possibility of developing health problems associated with inactivity and can improve their ability to function more independently (Miller, 1995; Martin, 2002). Living a sedentary lifestyle has negative effects on the health of individuals living with a SCI such as cardiovascular disease, obesity and hypertension (Washburn & Fighoni, 1998) and is often attributed to a lack of physically active leisure (Lee et al., 1999).

1.4.2 Theoretical framework

Ragheb and Tate (1993) believe that a person's leisure lifestyle, specifically, their leisure attitude, leisure motivation, leisure satisfaction and leisure interests can be enhanced and can greatly influence one's ability and/or desire to engage in leisure activities. A model (Figure 1.1) was created using healthy adults to assess the causal chain of attitude-motivation-participation-satisfaction (Ragheb & Tate, 1993). This model (developed using a causal modeling approach and path analysis) suggested that attitude (affective) was a more important determinant of motivation than attitude (cognitive) with direct effects/contributions of 0.332 and 0.209, respectively. The dominant causes of participation were attitude (affective) with a direct effect of 0.332, and motivation with a direct effect of 0.347. The most important determinant of satisfaction in this model was attitude (affective) with a direct effect of 0.525 (Ragheb & Tate, 1993). Determining the causes of leisure participation for individuals with SCI could potentially be very important because such a significant life event might influence the relationship between these variables. A model such as this cannot be examined among individuals with SCI unless measures of the variables exist that are reliable and valid for such use.

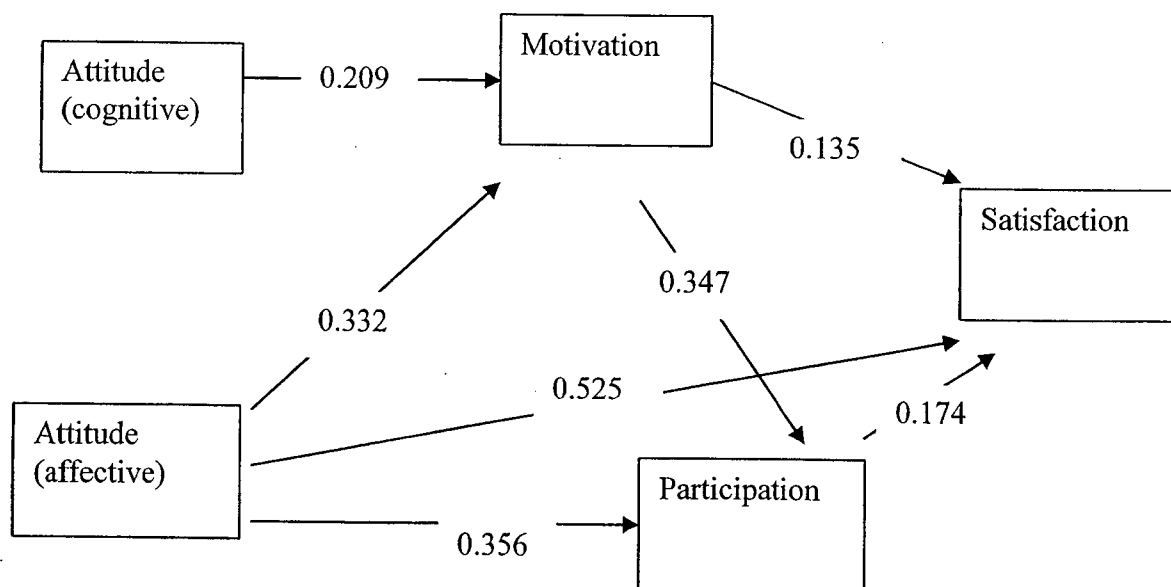


Figure 1.1: Behavioural Model of Leisure Participation
Adapted from Ragheb and Tate (1993)

This model is the foundation of the Idyll Arbor Leisure Battery (Bowtell, 1993). Further information about the scales is in the Measurement in Leisure section that follows and copies of the scales can be found in Appendices I-IV. Since the development of the scales, there have been some attempts to investigate the interrelationships among leisure attitude, motivation, satisfaction and interests in healthy adult samples (Hsieh, 1999; Guinn, 1995; Ragheb, 1980; Ragheb & Tate, 1993). Furthermore, examination of the measurement properties of the Leisure Satisfaction Scale has begun (Lysyk et al., 2002; Trottier et al., 2002; Won, 2000) and the scales have been used in both descriptive (Berg et al., 2001; DiBona, 2000; Guinn, 1995; Ragheb & Griffith, 1982; Reddon et al., 1996; Siegenthaler et al., 2000) and outcome studies (Nichols & Fines, 1995; Thomas, 1998; Wickham et al., 2000). Although there has been continued development and use over the years, research using the IALB is still in its infancy and what has been done has potentially been limited by the quality of the measurement tools used.

In a recent quasi-experimental study, Wickham et al. (2000), examined leisure attitude and leisure motivation (using the IALB) before and after a two-day camp designed to give participants an opportunity to explore adapted sports. Participants included 24 individuals with SCI; 12 who attended the camp and 12 who did not. No significant change in attitude or motivation occurred and there was no difference between the two groups (Wickham et al. 2000). While these authors should be commended for attempting such a study, further development of the tools is necessary to ensure they are sensitive enough to identify change over time or after intervention. However, examination of the degree of measurement error (reliability) is mandatory prior to assessing the responsiveness of a tool. Given the relative absence of research leading to the development and refinement of leisure scales to date, considerable attention is required in this area.

1.4.3 Measurement in Leisure and the Idyll Arbor Leisure Battery

One of the major criticisms of rehabilitation research is that there are few available measures which have undergone the rigorous testing necessary to ensure confidence in the results captured in the measurement tool (Kloseck et al., 2001). In leisure research, test development and measurement are even more challenging due to the subjective nature of the terminology. Many scales that measure different aspects of leisure do exist; however, few have been rigorously developed and tested for reliability and validity. This has lead to an

overall lack of leisure research and a lack of confidence in the results of current research. One of the major goals of leisure research is to focus on outcome studies in order to guide evidence and theory-based practice (Brasile et al., 1992); however, until reliable and valid measures are in place, interpreting and generalizing outcome data will be difficult.

The Idyll Arbor Leisure Battery (IALB) (Bowtell, 1993) consists of four scales that were each developed in the 1980's. The IALB scales were chosen for this study as they are the most recently developed scales that measure leisure attitude, leisure motivation, leisure satisfaction and leisure interests. Furthermore, each scale was subjected to testing and revision in healthy adult populations until they were found to be internally consistent and valid in their support of leisure theory (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). Item responses are formatted into a five-point Likert scale with 1 meaning "never true for you" and 5 meaning "always true for you". Total scores are calculated by adding up scores from each item in the scale and dividing by the number of items. Subscores are calculated by adding up the scores from each item in the subscale and dividing by the number of items in that subscale. Each scale takes approximately ten minutes to fill out and five minutes to score (Bowtell, 1993). All of the scales have been standardized in terms of verbal instructions, environment, and scoring. Interpretation of scores will be discussed with respect to each individual scale.

1.4.3.1 Leisure Attitude Measure

The Leisure Attitude Measure (LAM) (Ragheb & Beard, 1982) is a 36-item scale that measures cognitive, affective and behavioural attitude toward leisure. A copy of the LAM can be found in Appendix I. Each subscale contains 12 items. It was designed to help detect attitudinal barriers and facilitators to participation. The *Cognitive* subscale gathers information about one's general knowledge and beliefs about leisure and the benefits of participating. The *Affective* subscale accounts for one's evaluation of his/her past leisure experiences and activities and associated feelings towards these experiences. The *Behavioural* subscale is based on one's intentions towards leisure choices and activities, and on self-reports of current and past participation (Ragheb & Beard, 1982). Some examples of questions from this scale are: "Engaging in leisure is a wise use of time" (cognitive); "My leisure activities give me pleasure" (affective); and "Given a choice, I would increase the amount of time I spend in leisure activities" (behavioural).

Interpretation of scores reveals that a score of 2.5 or less on the total score or on any subscale indicates a need for education about the benefits of leisure or for the provision of positive experiences (Bowtell, 1993). In healthy adults, the alpha coefficient is 0.94 for the LAM and ranges from 0.89-0.93 for the subscales (Ragheb & Beard, 1982).

1.4.3.2 Leisure Motivation Scale

The Leisure Motivation Scale (LMS) (Beard & Ragheb, 1983) is a 48-item scale that measures an individual's motivation for participation in leisure. A copy of the LMS can be found in Appendix II. The four primary motivators identified are intellectual, social, competence-mastery and stimulus avoidance. Each subscale has twelve items. The LMS is useful in establishing which activity components need to be present for an individual to be motivated to participate. The *Intellectual* subscale of the LMS assesses the extent to which individuals are motivated to engage in leisure activities that involve mental activities such as learning, discovering, or imagining. The *Social* subscale assesses the extent to which individuals engage in leisure activities for social reasons including the need for friendships and the need to be valued by others. The *Competency-Mastery* subscale assesses the extent to which individuals engage in leisure to achieve, master, challenge and compete. The majority of the items in this subscale are physical in nature. The *Stimulus-Avoidance* subscale assesses the need to escape (Beard & Ragheb, 1983).

All of the questions in the LMS begin with "One of my reasons for engaging in leisure activities is...". Some examples are: "to discover new things" (intellectual); "to meet new and different people" (social); "to challenge my abilities" (competence-mastery); and "to relieve stress and tension" (stimulus-avoidance). A total score has not been shown to have any clear meaning (Beard & Ragheb, 1983); therefore, it is recommended not to add the subscale scores together. The subscale with the highest total score indicates the primary motivating force and opportunity to participate in activities with this motivation should be provided. A very low score may indicate that those kinds of motivators actually cause a person to avoid the leisure activity and choice in activity selection should be provided (Bowtell, 1993). In healthy adults the alpha coefficient for the subscales ranges from 0.89-0.91 (Beard & Ragheb, 1983).

1.4.3.3 *Leisure Satisfaction Scale*

The Leisure Satisfaction Scale (LSS) (Beard & Ragheb, 1980) short version is a 24-item scale that evaluates the extent to which individuals feel that their needs are being satisfied through their leisure activities. See Appendix III for a copy of the LMS. The *Psychological* subscale assesses whether activities provide psychological benefits such as a sense of freedom, enjoyment, involvement, and intellectual challenge. The *Educational* subscale reflects activities that provide intellectual stimulation and helps individuals learn about themselves and surroundings. The *Social* subscale assesses whether activities provide rewarding relationships with other people. The *Relaxation* subscale reflects activities that provide relief from the stress and strain of life. The *Physiological* subscale assesses whether leisure provides a means to develop physical fitness, stay healthy, control weight and otherwise promote well-being. The *Aesthetic* subscale determines whether areas engaged in are viewed as being pleasing, interesting, beautiful and generally well designed (Beard & Ragheb, 1980).

Each subscale has four items. Examples of the items are: "My leisure activities give me self-confidence" (psychological); "My leisure activities provide opportunities to try new things (educational); "My leisure activities have helped me to develop close relationships with others" (social); "My leisure activities help me to relax" (relaxation); "My leisure activities help me to stay healthy" (physiological); and "The areas or places where I engage in my leisure activities are interesting" (aesthetics). The subscales with the highest total score will indicate the areas that the client finds the most satisfying about his/her leisure. The lowest scores will indicate the areas that the client is the least satisfied with. Scores greater than four indicate a high amount of satisfaction from a particular area and scores less than two show low satisfaction. A total score can be calculated to determine a general degree of satisfaction (Bowtell, 1993). The alpha coefficient is 0.93 for the LSS and range from 0.80-0.93 for the subscales (Beard & Ragheb, 1980).

1.4.3.4 *Leisure Interest Measure*

The Leisure Interest Measure (LIM) (Ragheb & Beard, 1992) is a 29-item scale that measures how much interest an individual has in eight domains of leisure: physical, outdoor,

mechanical, artistic, service, social, cultural and reading. See Appendix IV for a copy of the LIM. Each subscale has four items, except for reading, which contains only a single item. The LIM can be used to ensure that individuals have activities available which are interesting to him/her and to point out areas where education is needed to increase interest in other types of activities (Ragheb & Beard, 1992). Some example questions from this scale are: "I prefer competitive physical activities" (physical); "I like the fresh air of outdoor settings" (outdoor); "I often use tools in my leisure activities" (mechanical); "I prefer leisure activities which require creativity" (artistic); "I prefer to be of service to others in my leisure time" (service); "I have a strong attraction to the cultural arts" (cultural); and "I like to read in my free time" (reading).

Scores range from one to five with scores of four or more indicating a high degree of interest in a domain of leisure and scores of two or less indicating low interest. Opportunity to participate in activities that are interesting to the individual should be provided (Bowtell, 1993). A low total score suggests a need for education to develop interest in one or more areas of leisure. In healthy adults, the alpha coefficient is 0.87 for the total scale and ranges from 0.75-0.93 for the subscales (Ragheb & Beard, 1992)

Based on the importance of using appropriately developed and tested measures, the proposed study is vital because there is no literature examining the reliability and validity of the IALB among individuals with SCI. In fact, there are few published studies of the psychometric properties of the IALB. No decisions or clinical actions should be made independent of measurement; therefore, testing the reliability and validity of the IALB among individuals with SCI hopefully will stimulate future research and promote evidence-based practice. In addition, this research (provided acceptable estimates of reliability and validity are obtained), will enable outcome research in order to determine the effects of interventions and ensure strategies for increasing participation in leisure activities by individuals with SCI.

1.5 Research Questions

Several research questions were posed and three studies were conducted in order to address the purpose of this thesis:

1.5.1 Research Question #1 (Chapter 2)

What are the impressions or perceptions of the usability of the IALB among individuals with spinal cord injuries and Therapeutic Recreation Specialists?

This question was answered using qualitative research methods. The intention was to explore a particular area, collect data using semi-structured interviews and then generate ideas and hypotheses from these data (Creswell, 1998). Based on clinical experience, it was expected that the participants would find the scales useful in terms of content, but problematic in terms of participant and clinician burden.

1.5.2 Research Question #2 (Chapter 3)

What are the estimates of reliability for the IALB?

Hypothesis 1: The internal consistency using Cronbach's alpha coefficient will range from 0.75 to 0.90 for all of the scales and their subscales. These results are anticipated based on similar findings reported in previous research (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). For this study, acceptable magnitudes of internal consistency were defined as ranging between 0.70 and 0.90 to ensure homogeneity and to avoid item redundancy (Streiner & Norman, 1995).

Hypothesis 2: The test-retest reliability for all of the subscales and their components will demonstrate intraclass correlation coefficients (ICCs) greater ranging from 0.6-0.8 based on the results of a study by Trottier et al. (2002) that evaluated the ICCs of the Leisure Satisfaction Scale among adolescents. Magnitudes of acceptable reliability were based on work by Anderson (2000) and Wiener and Steward (1984) who suggest an ICC of 0.75 is acceptable for research, but that an ICC of 0.85 is needed for making decisions about individuals and treatments.

Hypothesis 3: The Bland Altman method (Bland & Altman, 1986) and Standard Error of Measurement (SEM) will demonstrate very little actual change in scores between measurement sessions. The Bland Altman plots will demonstrate that the data points are evenly distributed above and below the zero line.

Reliability coefficients such as the ICC relate to how well individuals maintain their position within the sample in repeated measurement (Streiner & Norman, 1995). The Bland Altman method and the SEM, on the other hand, measure how much each individual score varies on repeated measures (Streiner & Norman, 1995) and values are presented in the same units as the original measurement (Stratford, 2004).

1.5.3 Research Question #3 (Chapter 4)

Is there support for validity for the IALB scales?

Hypotheses 1: Participants who score high on the components of the Leisure Attitude Measure and the Leisure Satisfaction Scale are likely to be more satisfied with life, more integrated into the community, participate in leisure activities to a greater extent (both within the home and in the community) and be less depressed than individuals who score low on the scales ($\rho > 0.30$). The hypothesized magnitude is based on results reported in previous work that has shown moderate correlations between leisure scales and other psychosocial variables (Cassidy, 1996; Clayton et al., 1994; Coyle et al., 1993; Coyle et al., 1994; Roach, 2002).

Hypotheses 2: There will be strong statistically significant positive relationships among the IALB scales and subscales as demonstrated by correlations of $\rho > 0.50$ that are statistically significant at the 0.05 level. More specifically, participants who score higher on the components of the Leisure Attitude Measure will demonstrate higher total scores on the Leisure Satisfaction Scale. In addition, participants who score high on the social, competence-mastery and stimulus avoidance components of the Leisure Motivation Scale will also score high on the social, physical and relaxation components of the Leisure Interest Measure and Leisure Satisfaction Scale. These anticipated correlations are based on work by Ragheb (1980) and Ragheb and Tate (1993) who examined the interrelationships among leisure attitude, leisure motivation, leisure satisfaction, and leisure participation.

The criteria selected for acceptable magnitudes of correlations are based on Cohen (1998) who suggests that a correlation below 0.3 is weak, between 0.3 and 0.5 is moderate and above 0.5 is strong. It is expected that Hypothesis 2 will demonstrate stronger

correlations because it is looking at interrelationships within the IALB scales. More information about the measures of depression, life satisfaction, leisure participation, and community integration can be found in Chapter 3.

1.5.4 Research Question #4 (Chapter 4)

Will the items from each of the scales load on similar structures for our sample of individuals with SCI as it did in the original development of the scale?

Hypothesis 1: Factor analysis using principal components analysis (PCA) of each individual scale will demonstrate that the items will load into similar structures as in the original scales. For example, the items in the LAM will load into three factors representing the three LAM subscales. This will hold true for all of the IALB subscales.

Hypothesis 2: Factor analysis using PCA will reveal that some items do not load (coefficients < 0.5) or load on more than one factor for our sample of individuals with SCI.

If the items do not load into similar structures as reported in earlier studies or if problematic items are revealed, then modifications may be necessary.

1.6 Significance

Experiencing a spinal cord injury can impact every aspect of an individual's life. Although, expected to live a normal lifespan, the physical changes that occur following a SCI are permanent and perceived quality of life becomes very important. Individuals with SCI participate less in leisure activities than those who are able-bodied even though research has shown that when they participate, they derive important physical and psychological benefits. Not only does leisure have an effect on improving the perceived quality of life of individuals with SCI, but it can help to prevent the onset of secondary problems associated with a SCI (such as depression or a decline in physical function), perhaps reducing the long term impact on health services. For this reason, one of the major goals in rehabilitation should be to help individuals with SCI develop and maintain a healthy leisure lifestyle. It is imperative to understand why individuals with SCI participate less and to determine strategies that encourage them get more involved in leisure activities.

Leisure attitude, motivation, satisfaction, and interests may play an important role in understanding the leisure lifestyle of individuals with SCI and in providing opportunities for enhancing their participation. Ensuring that psychometrically sound scales exist for such inquiry is essential in order to conduct and stimulate further research in this area and to provide clinicians with outcomes for determining which interventions are effective.

1.7 References

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CHAPTER 2 – Qualitative Study

Evaluating the Idyll Arbor Leisure Battery among Individuals with Spinal Cord Injuries

2.1 Introduction

Therapeutic Recreation Specialists (TRS') have the challenging task of determining strategies to facilitate the development of healthy leisure lifestyles for individuals with SCI. For the one thousand or more individuals who experience a spinal cord injury (SCI) in Canada each year (Canadian Paraplegic Association, 2000), their injury typically results in unanticipated, irreversible and complex physical changes that challenge their ability to perform everyday activities (Steins et al., 1997) and demands adjustment in all aspects of their life (Lee et al., 1993). Research investigating leisure participation among individuals with SCI has identified many benefits including high levels of life satisfaction, high-quality social relationships and a decrease in depressive symptoms (Brown et al., 2002; Coyle et al., 1994; Coyle et al., 1993; Loy et al., 2002). It can also lead to better adjustment to disability, improved perceived quality of life, greater levels of community integration, and more constructive use of free time (Brown et al., 2002; Coyle et al., 1993). Moreover, physically active leisure such as sports and exercise has the potential to increase muscle strength and improve health and fitness as well as physical mobility among individuals with SCI (Foreman et al., 1997; Noreau & Shephard, 1995; Noreau et al., 1993).

Despite the benefits, individuals with SCI participate less in leisure than healthy individuals (Brown, 1982; Brown et al., 2002; Kennedy & Smith, 1990; Lee et al., 1993; Tasiemski et al., 2000). This reduction in leisure participation among individuals with SCI may lead to a sedentary lifestyle, which may contribute to increased hospital readmission and secondary medical complications (Foreman et al., 1997; Noreau & Shephard, 1995; Noreau et al., 1997; Washburn & Figoni, 1998). For this reason, one of the major goals in rehabilitation should be to help individuals with SCI develop and maintain a healthy leisure lifestyle. Therefore, information gathered in the assessment stage is crucial in facilitating the rehabilitation of individuals with SCI.

Ragheb and Tate (1993) believe that a person's leisure lifestyle (including their leisure attitude, leisure motivation, leisure satisfaction and leisure interests) can be enhanced and

can greatly affect their ability and/or desire to engage in leisure activities. Thus, they created four assessment tools that measure these aspects of leisure (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). The four subscales of the Idyll Arbor Leisure Battery (IALB) were designed based on a review of leisure theories and initial testing and revision in healthy populations. Each of the four subscales takes approximately 10 minutes to fill out and 5 minutes to score and items are formatted on a five-point scale (1 meaning “never true” and 5 meaning “always true”) (Bowtell, 1993). The assessments, however, were not developed for use among individuals with SCI and due to the major physical and psychological changes that often accompany a SCI, it is possible that the assessments are not appropriate for this population. Clinical experience suggests that the scales are too long and that some of the wording may be difficult to understand.

2.2 Purpose and Specific Objectives

The purpose of this study was to evaluate the usability of the four assessments in the IALB in terms of their ability to measure the leisure aptitudes of individuals with SCI based on criteria developed by Stumbo and Rickards (1986). These criteria examine program/staff concerns (i.e. does it yield the right kind of information, does it match program/staff resources?), population concerns (i.e. does it match the clients’ needs, characteristics?), and administrative concerns (i.e. is there sufficient information on measurement properties?).

2.3 Methods

2.3.1 Study Design

Utilization-focused Evaluation Study (UFE) approach was employed to establish an in-depth understanding of the usability of the IALB among individuals with SCI. A UFE is a type of program evaluation that focuses on the intended use of a program or assessment by the intended users (Patton, 1997). In any evaluation, there are many stakeholders. A UFE usually starts by narrowing the list of potential stakeholders to a short, specific group of primary users who focus the evaluation. A UFE does not advocate any particular study method; rather it allows users to select the most appropriate method for each particular

situation. A qualitative research approach was chosen as the most appropriate to analyze the data. This type of approach relies largely on inductive reasoning and by using multiple and dynamic data collection methods should get to the core of what is going on rather than just skimming the surface (Creswell, 1994, 1998; Greenhalgh & Taylor, 1997). Use of a semi-structured interview format allowed the actual words of participants to describe their thoughts about the usability of the assessments. Traditionally, qualitative data are presented in terms of themes that emerge from data analysis; however here, it is be presented using evaluation framework based on the criteria developed by Stumbo and Rickards (1986).

2.3.2 Study Participants

The principle users of the assessments were identified as individuals with SCI and Therapeutic Recreation Specialists (TRS') working at a rehabilitation centre. Recruitment of eligible participants began with the Therapeutic Recreation Practice Leader at the rehabilitation centre, who is known to the investigators and to the participants. She identified individuals who were eligible and sent them a letter of initial contact (Appendix V). Those who were interested were asked to contact the primary investigator and an interview was booked.

Five individuals with SCI and three experienced TRS' were interviewed. This number of participants was deemed appropriate as saturation of the data was quickly achieved (Creswell, 1994, 1998). Inclusion criteria for individuals with SCI required participants to be: (1) 18 years of age or over; (2) at least one year post discharge from a rehabilitation facility inpatient Spine Program; (3) living in the community; and (4) a wheelchair user. To be included, TRS' were required to have worked in the Rehab Centre Spine Program for at least two years. Individuals were excluded if they could not provide informed consent, if they could not read or understand the various assessments or if they had a documented traumatic brain injury. Ethical approval was granted by both university and hospital review boards and all individuals provided informed consent prior to participating in the study (Appendix VI).

2.3.3 Data Collection, Analysis and Interpretation

The semi-structured interviews were conducted by the primary investigator. Initial questions were based on the criteria developed by Stumbo and Rickards (1986); however, there was some refinement and additional questions evolved throughout the data collection process. Demographic information was also collected. See Table 2.1 for examples of questions asked of the participants. The interviews, which took from 1-2 hours in length, were audio recorded and field notes which consisted of interview time, location, description of the environment, non-verbal behaviour, interviewer impressions and problems encountered were taken.

Individuals with SCI were asked to fill out the scales and review the battery manual prior to commencing the interviews in order to ensure that they were familiar with the scales. TRS' did not fill out the scales but were asked to review them as well as the battery manual prior to the start of the interview. All participants were first asked to discuss the strengths and weakness of each of the subscales individually and then they were asked questions based on population concerns and administrative concerns in order to evaluate the usability of the IALB as a whole among individuals with SCI. The TRS' were also asked questions regarding program/staff concerns.

All interview data were transcribed and the transcripts were reviewed by the investigator who listened to all of the audiotapes to ensure authenticity following each interview. The data were coded and organized based on the Stumbo and Rickards criteria (1986) and a constant comparison approach was used. Member checking of data and interpretation of data were performed with six of the participants after coding was completed to ensure credibility of the interpretation. Review of the field notes and the personal journal served as reflective tools to explore how the investigator input influenced the research process. This ensured that the data were reliable, trustworthy and that the findings are credible.

The Idyll Arbor consists of four assessments called the Leisure Attitude Measure (LAM), Leisure Motivation Scale (LMS), Leisure Satisfaction Scale (LSS), and the Leisure Interest Measure (LIM) with items formatted into a five-point Likert Scale. Copies of the scales are in Appendices I – IV. See Appendix VII for the IALB executive summary. The Leisure Attitude Measure (LAM) is a 36-item assessment that was designed to measure one's cognitive, affective and behavioural attitude towards leisure in order to help detect areas that are preventing individuals from participating actively in leisure (Ragheb & Beard,

1982). Some examples of questions from this scale are: "Engaging in leisure is a wise use of time" (cognitive), "My leisure activities give me pleasure" (affective), "Given a choice, I would increase the amount of time I spend in leisure activities" (behavioural).

The Leisure Motivation Scale (LMS) is a 48-item assessment that measures an individual's motivation for participating in leisure (intellectual, social, competence-mastery and stimulus-avoidance) (Beard & Ragheb, 1983). It was designed to establish the components of activities that need to be present for an individual to be motivated to participate. All of the questions in this scale begin with "One of my reasons for engaging in leisure activities is...". Some examples are: "to discover new things" (intellectual), "to meet new and different people" (social), "to challenge my abilities" (competence-mastery), and "to relieve stress and tension" (stimulus-avoidance).

The Leisure Satisfaction Scale is a 24-item assessment that measures the extent to which individuals feel their needs (psychological, educational, social, relaxation, physiological and aesthetic) are being met through their leisure activities. It was designed to help clients develop awareness of, and interest in how spare time is spent and to develop priorities for these activities (Beard & Ragheb, 1980). Examples from this scale are: "My leisure activities give me self-confidence" (psychological), "My leisure activities provide opportunities to try new things (educational), "My leisure activities have helped me to develop close relationships with others" (social), "My leisure activities help me to relax" (relaxation), "My leisure activities help me to stay healthy" (physiological) and "The areas or places where I engage in my leisure activities are interesting" (aesthetics).

The Leisure Interest Measure (LIM) is the final assessment in the IALB. It has 29 items and measures how much interest an individual has in eight domains of leisure (physical, outdoor, mechanical, artistic, service, social, cultural and reading) (Ragheb & Beard, 1992). It was designed to make sure clients have activities available, which are interesting to them and to point out areas where the therapist can provide education to help clients learn about activities they may not have thought about before. Some example questions from this scale are: "I prefer competitive physical activities" (physical), "I like the fresh air of outdoor settings" (outdoor), "I often use tools in my leisure activities" (mechanical), "I prefer leisure activities which require creativity" (artistic), "I prefer to be of service to others in my leisure time" (service), "I have a strong attraction to the cultural arts" (cultural), and "I like to read in my free time" (reading).

Table 2.1: Semi-Structured Interview Guide**Questions to ask everybody:**

- What information from the (LAM, LMS, LSS, LIM) would be useful for a TRS to know when assessing a client?
- Was there any information missing that you think should be in the assessment?
- In general, what do you think about the amount of time it would take to complete the assessments?
- When do you think these assessments should be administered in terms of rehab vs. community?
- What other issues related to SCI might affect the use of these scales?
- How important is it for you to have information about the reliability and validity of the assessments?
- Name 3 things you like/dislike about the assessments in general

Questions to ask only TRS':

- Do the scales match the resources available within the department (cost, staff expertise, time for administration/scoring)?
- Tell me about your current assessment process?
- How meaningful are the items for individuals with SCI?

Questions to ask only individuals with SCI:

- In terms of what you do in your daily life and the leisure choices you make, how meaningful were the questions in the (LAM, LMS, LSS, LIM) for you?

2.4 Results

Five individuals with SCI and three TRS' were recruited to participate in the study. As can be seen in Table 2.2 the majority of the SCI participants were males. Their ages ranged from 30 to 52 years and the majority had their injuries at least 16 years earlier. The TRS' all had relevant education and had been working with individuals with SCI for many years.

Note that pseudonyms have been used to ensure confidentiality.

Table 2.2: Participant Characteristics*Individuals with Spinal Cord Injuries*

<u>Pseudonym</u>	<u>Sex</u>	<u>Age</u>	<u>Level of Injury</u>	<u>Time since Injury</u>
Doug*	M	31	T12/L1 complete	1 year
Randy*	M	30	T10 incomplete	26 years
Gwen*	F	52	T6 complete	24 years
Scott*	M	35	C6/7 complete	16 years
Mark*	M	40	C5/6 incomplete	23 years

Therapeutic Recreation Specialists

<u>Pseudonym</u>	<u>Sex</u>	<u>Education</u>	<u>Years of Practice with SCI</u>
Derrick*	M	Undergraduate Degrees in Recreation Administration (special populations) and Psychology	11
Marilyn*	F	Undergraduate Degree in Recreation and Leisure studies and a Diploma in Recreation Administration	12
Margaret*	F	Undergraduate Degree in Physical Education and Recreation	20

Note: *Pseudonyms were used

2.4.1 Strengths and Weaknesses of the Scales and Subscales

All of the participants indicated that they felt that the information gathered in the IALB is important and relevant; however, several limitations were identified. According to all of the individuals with SCI, the questions in the Leisure Attitude Measure (LAM) accurately reflected a complete range of possible attitudes towards leisure. Derrick (TRS) and Marilyn (TRS) (respectively) described how they thought the information gathered from the LAM is important in understanding a client's attitude towards leisure. Derrick (TRS) touched on the fact that not everybody has a positive attitude towards leisure.

"Looking at a client's attitudes is very important. I mean (pause) it doesn't do any good if you're going to provide them with leisure options if they're not going to want to use them, so you have to look at why and try to change that if necessary"

Marilyn (TRS) discussed aspects of the validity of the LAM, in that the responses she has seen among individuals with SCI have been very predictable.

"This one is very predictable in terms of spinal cord injury because I'll tell you that for sure most people score pretty high in the cognitive and affective and very low on the behavioural. I don't know if it is injury related or if they're going (pause) 'well (pause) there's nothing I can do now, even though I still want to'."

In this study, the LMS seemed to be one of the favourite scales among three of the participants.

"A couple of years ago, I tried to do this on everybody I saw because I didn't mind it. What I found is that if I do it with people I've already got a feel for, the fact that the LMS tells me exactly what I got out of my assessment tells me that this one is at least on track (pause) or I'm on track." (Marilyn, TRS)

"It's a good way to figure out where to go with somebody who is really stuck with the 'I used to do physical things, now I don't know what to do syndrome' (pause) and so sometimes to find what motivates them might help us find something else that they enjoy." (Margaret, TRS)

"I think this is really beneficial because you can look at where you want to help channel that person into leisure activities. If you're looking at somebody who wants to be competitive vs. somebody who wants to relax then you might be looking at different types of leisure activities." (Gwen, SCI)

However, a major problem was identified with this scale and with the LSS and LIM. Many participants indicated that for them, different activities have different motivators and meet different needs, which made the scales difficult to fill out.

"For some of our clients, they have never actually thought of leisure as a concept and the definition of leisure activities can be so varied that some of the feedback I've gotten is (pause) well some of my leisure activities do but some of them don't." (Marilyn, TRS)

"I have different motivations and needs from different activities, so whether or not they are being satisfied, that's a very activity-specific question I think." (Mark, SCI).

The LSS was the favorite scale among SCI participants Doug, Scott and Mark because it seems to get at the underlying needs that individuals would like to meet through leisure.

"It really makes me think about why I like to do certain things or why I would like to do things I'm not doing yet (pause) my underlying reasons for doing things. For example, my leisure activities help me to relax, they help me to relieve stress so you could start planning activities around these (pause) so it gives you a huge base from which to start building programs off of." (Doug, SCI)

The participants in this study identified several strengths and weaknesses of the LIM. The scale is not activity-specific, but more general in nature and Derrick (TRS) saw this as a weakness.

"It looks kind of short (pause) too brief and general (pause) it doesn't have specific activities for people to choose from."

While Marilyn (TRS), Margaret (TRS), as well as all of the individuals with SCI saw this as strength.

"I like this because it's more of why you do something. I prefer it because it's not activity-specific, it gives me something to work with because realistically you may never be able to do a certain activity again depending on your level of injury, but if you tell me why you liked the activity, I can go and find something else for you to do." (Marilyn, TRS)

"It's good that it's not activity specific because there are some activities people can't do." (Margaret, TRS)

2.4.2 Program Concerns

Program and staff concerns related to selecting a TR assessment include determining whether it yields enough information to appropriately plan programs for clients; whether it matches the resources available within the department (including cost, staff expertise, time for administration, and scoring) and whether it repeats information that can be gathered from other readily available sources (Stumbo & Rickards, 1986). According to Derrick, Marilyn, and Margaret (the three TRS') collecting information about clients' leisure attitude, motivation, satisfaction and interests is very important and thus the IALB yields appropriate information for program planning.

"Improving attitudes and satisfaction, expanding interests and understanding motivation are some of the major goals of recreation therapy." (Marilyn, TRS)

The individuals with SCI agreed that the information gathered is very valuable; however, they identified some information that they thought was missing. Gwen (SCI) was concerned that "there are no questions about why people don't engage in leisure activities (pause) limitations and barriers to leisure are not accurately reflected". Randy (SCI) noted that "none of the scales look at the amount of time people spend in leisure". Finally Mark (SCI) would like to have seen questions about "access to recreation in terms of do you find it available, or knowledge about resources in the community".

Only TRS' were asked questions about whether or not the IALB matched the resources within the department. Although, all of them agreed that *"right now, nothing matches the resources"* (Derrick, TRS), their answers reflected a desire to have more time to use assessments like the IALB.

"I think in a perfect world it would be great to have time to do this. I just know what I end up having is probably an hour and the likelihood of getting them to fill out all these things is not good." (Margaret, TRS)

According to the TRS', the current assessment tools most often used at the rehabilitation centre include an interest checklist and five questions developed by Pedlar et al. (2001)

which include past/present leisure interests, leisure needs, current leisure status, barriers to leisure and future leisure dreams. Doug, Randy, Gwen and Scott indicated that when they were in inpatient rehab, no formal assessments were used. Mark however, remembered filling out some forms about his leisure interests. All three TRS' and four out of five of the individuals with SCI agreed that the information derived from the scales can be gathered from other sources, namely, just getting to know people. As Marilyn (TRS) points out:

"I think I can use my therapist skills interpretively to get the same answers just by asking the right questions and being open and listening to what they have to say. I can come to the same conclusions about how they valued leisure and their attitudes towards it without having to use these scales."

2.4.3 Population Concerns

An assessment should match both the client's ability (reading, understanding, and scoring) as well as match their needs and characteristics (Stumbo & Rickards, 1986). When the individuals with SCI were asked about the readability of the scales, four out of five of them indicated it was fine. Gwen (SCI) as well as the TRS' on the other hand, identified some concerns. Gwen (SCI) was concerned about the reading level required to fill out the scales, *"What if you have someone who doesn't read English or who has a really low reading level?"* Margaret (TRS) and Marilyn (TRS) shared similar opinions on this by stating (respectively) that *"the wording needs to be downgraded and less ambiguous"* and *"the scales are a bit repetitive and wordy. There has to be a level of cognition present to do this"*. The problem items identified by multiple participants in the study due to ambiguity were: LAM 20 "My leisure activities are refreshing"; LMS 47 "One of my reasons for engaging in leisure activities is to unstructured my time"; LSS 21-24 "The areas or places in which I engage in my leisure activities are fresh and clean, interesting, beautiful, well designed; and LIM 10 "I often use tools in my leisure activities.

When the participants were asked about whether or not the scales matched the needs and characteristics of individuals with SCI there were varying opinions. The TRS' thought that because having a SCI is such a life-altering event the context of the questions might not always be clear. Some may answer in a pre-injury context and some may answer in a post-injury context. This is a concern for all of the items in all of the scales. For example, an item

such as “I like to work with mechanical devices in my leisure time” (LIM 24) is unclear for individuals with SCI who may have previously engaged in mechanical activities yet, are now unable to due to impairments.

“You have to put it in context for this group. Do you mean now or before their injury? I think it depends on the number of years post injury.” (Marilyn, TRS)

Some of the language in the items may not be appropriate for individuals with SCI. For example, the LAM, LMS, and LIM all have physical subscales that have items related to physical activity such as, “I prefer activities which require a high degree of physical activity” (LIM 14). This item may be difficult to respond to for some individuals with SCI depending on their ability to participate in physical activities. Although most participants in this study could participate in some form of physical activity, the activity may take on a different meaning than it did in the pre-injury. Margaret (TRS) spoke of this limitation, *“There may be some language that is inappropriate in terms of some of the physical items.”* In addition, the item LSS 24 was identified by almost all of the participants as having a different meaning for individuals with physical disabilities than for the general population. This item asks whether the areas or places you engage in leisure are “well-designed”. For the participants in this study, this became a question of accessibility.

The TRS’ also identified that many individuals with SCI are risk takers and that a component for this should be incorporated into the motivation or interest scale.

“The scales are missing a high risk component. With SCI you run into it a lot, because most spinal cord injuries occur during high risk activities, and the interest measure I think needs that.” (Derrick, TRS)

“It’s missing questions about pushing oneself to the limit or speed which are both a sense of loss after an injury.” (Marilyn, TRS)

Despite the fact that the TRS’ were immensely concerned about the participant burden of the assessments, the individuals with SCI in this study found the assessments quick and easy to fill out. For example, Marilyn and Derrick (TRS’) mentioned that some of their clients would get frustrated with filling out the scales *“Some people get frustrated. Okay, really,*

how many questions do you want me to answer about leisure?" and "The problem is that people with SCI are just not big form filler- outers." In contrast, the individuals with SCI were not concerned with the burden of the scales.

"I think that if these are going to tell you something about an individual on which way to steer him or her, I don't think the time's a big deal. But if you can shorten it and still get the same results, why not?" (Scott, SCI)

One individual even suggested some ideas for making the assessments easier to fill out.

"I didn't mind filling them out but I was thinking what would motivate people to do all four forms? Could you somehow develop a game or make it fun to fill out (pause) just to get the ball rolling?" (Mark, SCI)

When to administer the scale was another concern discussed by both TRS' and individuals with SCI. Readiness was the big issue here for the TRS' because *"some people with SCI just aren't interested in leisure during rehab."* (Marilyn, TRS). They may be more focused on improving functional abilities.

"I would look at either late in the rehab phase, or outpatient after discharge because one of the things about SCI people especially is that they're so focused on their physical disability when they're here that they don't actually want to think about rec. Maybe you'd get a better response in people who have been around a while because they're not so focused on something as passionately as they are walking or recovery."
(Derrick, TRS)

The need to reach the population in the rehabilitation phase when you have the best access to them was the big issue for the individuals with SCI. Mark (SCI) and Doug (SCI) felt that during the rehabilitation phase it is important to give people the opportunity to try out some of the activities that are available to them in the community and to help them realize that they can have just as much fun as before.

"You need to plant the seed in rehab whether you like it or not. There's still things you can do that are valuable and are still as fun as or more fun than previous activities you enjoy...realizing you can do things you thought you couldn't do...you can still go out to eat, have a coffee, go to an air show or rock concert all within six months of your injury." (Mark, SCI)

"The rehab phase is the only way you have to catch the masses of the population. I think that so many paraplegics go home and they're left with no help, no education, just their own motivation to get on the net and surf for recreation opportunities. I think communities do a great job of programming for special needs...but I think when you have people in rehab here you have the opportunity to have all the toys here and put people in everything at least for one afternoon." (Doug, SCI)

Randy (SCI) was concerned about both readiness and reaching individuals before they go home. He seemed to come up with a good compromise.

"I would like to say that you want to do it early, but only if that patient is ready. Maybe in between their time here, so that you can have a few opportunities to show them the activities. I don't think it's good at the end or later because there's not time except to give them a pamphlet" (Randy, SCI)

2.4.4 Administrative Concerns

An assessment should have sufficient accompanying material on administration and interpretation methods; have sufficient information on estimates of validity and reliability for similar populations and programs; allow for public use, and provide enough useful information to warrant its use (Stumbo & Rickards, 1986). Since all of the participants were given the IALB manual to review, they were able to comment on how detailed the manual is with sufficient information about administering the assessment, amount of time needed to fill out and score, ways to determine which parts of the battery to administer, level of cognition needed, and information about the reliability and validity of the scales. Although information is given about the measurement properties of the scale, it is apparent that only

initial psychometric testing has been performed. Many of the participants were concerned about the validity of the LAM, LMS and LSS because the items are not randomized. For example, in the LAM all of the items in the each of the subscales are grouped together.

In addition, the TRS' found the interpretations of the scores provided in the manual were "very basic" (Derrick), and "lacking information" (Marilyn). For example, the manual suggests that if an individual scores less than 2.5 in any of the LAM subscales, that education is required about the need and importance of leisure (Bowtell, 1993). A complete list of interpretations of scores can be found in Appendix VII.

Finally, all participants were concerned about the definition of leisure provided on the top of the assessment. The definition reads, "leisure activities are those things that you do that are not part of your work and are not part of your basic grooming needs". The participants felt that this definition was missing other aspects of leisure such as fun, intrinsic motivation and freedom of choice.

2.5 Discussion

A Therapeutic Recreation assessment is the process of gathering information about an individual in order to plan the most appropriate intervention for that individual. Based on the responses of the participants in this study, it is obvious that information about an individual's leisure attitude, motivations, satisfaction and interests are important. It is also apparent that as a whole the IALB does a good job of gathering that information. Many strengths of the assessments were discussed. Most notably, all participants felt that the information gathered from the scales in the IALB is very useful for helping to direct clients to appropriate interventions. Some problems with using the IALB as an assessment tool for individuals with SCI were also identified. Most notably, (1) the amount of time required to administer the assessment; (2) when to administer the assessment (rehab vs. community); and (3) the wording of the scales. All of the weaknesses that were brought up can be rectified with some minor modifications

2.5.1 Length of Assessment

In terms of the amount of time required to administer the assessment, the TRS' were concerned both about their lack of time and about participant burden. They were confident

that they could gather similar information as the IALB by simply getting to know their clients. However, the individuals with SCI were not concerned about the burden and found the assessments relatively quick and easy to fill out. This tension may be explained by a sampling bias. The TRS' see individuals with SCI within the first few months of their injury while most of the individuals with SCI in this study were many years post-injury. In addition, our sample may have been more motivated and more willing to take the time to fill out the scales as they were more interested in leisure. Alternatively, the sample bias could have come from the TRS' who all have been working in the field for many years. In its current form, the IALB can either be completed with the client and the therapist or can be a total self-report. As a self-report scale, clinical experience as well as information gathered from the RT participants in this study suggests that the scale is too long. Perhaps a shorter, total self-report method that is rigorous and easy for clients to do on their own would decrease the amount of time necessary to fill out the scale, which will benefit both the client and the therapist.

2.5.2 When to Administer Assessment

When to administer this IALB was also of great concern. According to Coyle et al. (1994), rehabilitation is the most appropriate setting to address leisure because it provides the opportunity to test physical abilities and skills, reestablish social networks, and enhance personal self-image through a variety of leisure experiences in a safe environment. The participants in this study with SCI agreed with this; however, readiness was of great concern to the TRS'. From their experience, many individuals with SCI that they work with in rehabilitation are so focused on regaining function, that developing leisure skills is not important. It becomes important once they return to the community at which point Therapeutic Recreation services are not readily available. Again, it is important to note that the majority of the SCI participants were many years post-injury and thus might not have a good recollection of their time in rehabilitation and how focused they were on regaining function.

Identifying when a client is ready is a challenging task that many clinicians need to learn. Many theories, such as the Transtheoretical Model of Behaviour Change (TMBC), exist and propose effective ways of ensuring patient readiness and compliance with interventions (Elder et al., 1999, Proschaska & Velicer, 1997). The TMBC discusses six

stages of change that individuals must go through before they are ready to change; precontemplation, contemplation, preparation, action, maintenance, and termination (Proschaska & Velicer, 1997). The TMBC emphasizes that change cannot be made until readiness is achieved. It is essential for RT's and other rehabilitation professionals to become aware of the components of behaviour-change theories such as the TMBC in order to assist in optimizing the effectiveness and efficiency of their interactions with clients with SCI (Elder et al., 1999). In addition, the timing of RT services may need to be expanded and there should be more opportunity for follow-up visits after a client has returned to the community to ensure that they are receiving the appropriate services at the appropriate time. It may be necessary to develop and use a 'readiness to change' questionnaire' based on the stages of change described in the TMBC that is specific to leisure participation to determine when to administer the scales. These are crucial considerations and areas of further study given the potential benefits of recreation in one's life.

2.5.3 Wording of Scales

The third concern identified was the wording of the scales. Questions identified as being ambiguous or requiring too high of a reading level need to be removed or modified. In addition, items which are not appropriate for individuals with SCI due to the unique nature of their injury need to be scrutinized and modified.

The definition of leisure provided on the top of each scale caused some problems as individuals are asked to think of leisure simply as any activity that is not work and is not grooming. This simplistic definition disregards important aspects of leisure such as the context and the experience. Many individuals participate in activities that could be considered leisure for fun and out of their own free will. Other individuals may participate in the same activity, but because they have to. Is the same activity considered leisure for both individuals? Perhaps words such as fun and freedom of choice, both inherent to the definition of leisure used today, should be included in the definition provided.

The wording in the instructions was also deemed to be unclear. Since it is unclear whether leisure attitude, motivation, satisfaction, and interests are considered states, which can change throughout life depending on one's current situation or traits, which are more stable (Chaplin et al., 1988), the context of the questions, in terms of whether to answer based on pre- or post-injury needs to be clear. Most participants felt that duration since

injury may play a role in how to conceptualize the questions (i.e. for individuals who are less than one year post injury, it might be better to ask the questions in a pre-injury context). Unclear instructions such as these can greatly affect the reliability and validity of a measure.

In addition, the participants were concerned that different activities meet different needs and have different motivators. This made the scales difficult to fill out because depending on which of their leisure activities they were thinking of, their response would differ. Perhaps the instructions need to include something to the effect of "think of your three favorite leisure activities when responding to the items".

2.5.4 Final Thoughts

The assessments in the IALB were developed in order to help therapists identify problems and develop care plans for their clients. The length of the assessments, the issue of readiness, and the fact that TRS' feel that they can obtain information about their clients' leisure attitude, motivation, satisfaction, and interests are issues that need to be further examined. Ragheb and Tate (1993) tested a model of participation based on these variables using the IALB in healthy individuals. Testing such a model in individuals with SCI would be useful in determining how such a significant life event impacts these variables. In addition, since some of the goals of Therapeutic Recreation include improving leisure attitude and leisure satisfaction as well as expanding interests and understanding motivation, then perhaps it would be useful to measure these attributes before and after an intervention to determine effectiveness either in the clinic or in a research setting. Finally, the IALB scales may be useful in leisure education programs based on self-awareness for individuals who are interested. In this study, all of the individuals with SCI felt that they could learn a lot about themselves by filling out the IALB. However, it is important to remember to accommodate individuals with higher-level injuries who do not have the hand function necessary to self-administer the assessment either by having someone present to fill out the answers or to make it available on a computer.

In order to use the IALB for these purposes the concerns from this study need to be addressed. It is vital to further examine the measurement properties of the scales. According to Wade (2004) measures need to be developed and tested for specific purposes and in specific populations.

As with any study, it is important to note the limitations. Data analysis focused on the participant's evaluation of the IALB; however, the evaluation is specific to the study participants, all of whom volunteered to partake in the study and can not be generalized to all individuals with SCI and TRS'. All participants were associated with same rehabilitation centre either as a patient at one time or as a TRS. The TRS' involved in the study had all worked in the field for at least eleven years; however, participants with SCI had a diverse range of levels of injury. Although they seemed to represent the overall SCI population, it is possible that our group may have been better educated, more interested in leisure, and more compliant to participate in research. In addition, most of them were many years post injury and thus, not necessarily reflective of the clients that TRS' work with in a rehab centre. However, the purpose of qualitative research is to get an in-depth understanding of the experiences of the participants in the study and thus, generalizability is not relevant to this type of method. Since no qualitative research can be bias-free, one of the benefits of using a novel UFE to evaluate the IALB was that it involved the primary intended users throughout the whole process.

2.6 Bridging Summary

The results of this study suggest the need to further examine the psychometric properties of the scales in the IALB among individuals with SCI to determine how confidently they can be used for research and in clinical practice. In addition, there is strong support for doing a factor analysis to determine whether some of the items can be removed or replaced in order to improve the scales and minimize burden.

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CHAPTER 3 – Measurement Study

Reliability of the Idyll Arbor Leisure Battery Among Individuals with Spinal Cord Injuries

3.1 Introduction

Many benefits of leisure participation have been reported for individuals with spinal cord injuries (SCI); however, research suggests that they spend less time participating in leisure than individuals who are able-bodied (Brown, 1982; Brown et al., 2002; Kennedy & Smith, 1990; Lee et al., 1993; Pentland et al., 1999). One of the challenges for rehabilitation professionals working with individuals with SCI is to identify strategies to encourage their clients to develop and maintain a healthy and appropriate leisure lifestyle.

The Idyll Arbor Leisure Battery (IALB) was designed to help therapists identify problems and develop care plans for clients to improve or maintain their leisure lifestyle. It consists of four scales that measure leisure attitude, leisure motivation, leisure satisfaction, and leisure interests (Bowtell, 1993). Ragheb and Tate (1993) used the IALB to develop a model of leisure participation based on the premise that leisure attitude, leisure motivation, and leisure satisfaction can be enhanced and can greatly affect an individual's ability or desire to participate in leisure. This model was tested in a healthy adult sample; however, for individuals with SCI who have undergone a significant life change, the relationship between these variables is unclear. In order to examine the relationship between these variables among individuals with SCI or to use the scales confidently in clinical settings, the reliability must be examined. Strong reliability estimates ensure that scores are as accurate as possible (Johnston 1992). For a measure to be reliable it must: (1) be able to differentiate among individuals; and (2) yield consistent results on repeated measurement sessions (Stumbo, 2003).

To date, there has been little attempt to examine reliability of the scales in the IALB. When the scales were developed, the internal consistency was evaluated in healthy adult samples and Cronbach's Alpha scores ranged from 0.75-0.96 (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). The reliability of the Leisure Satisfaction Scale (LSS) has been examined, and researchers found estimates ranging from 0.55-0.85 for test-retest reliability among adolescents (Trottier et al., 2002). Other studies using scales in the IALB

have been conducted, indicating a strong interest in the scales (Berg et al., 2001; DiBona, 2000; Guinn, 1995; Hsieh, 1999; Lysyk et al., 2002; Nichols & Fines, 1995; Ragheb & Griffith, 1982; Ragheb, 1980, Ragheb & Tate, 1993; Reddon et al., 1996; Siegenthaler et al., 2000; Thomas, 1998; Wickham et al., 2000; Won, 2000); however, their results must be taken with caution as there is not enough evidence to support the reliability and validity of the scales. It is essential for the IALB to undergo rigorous testing to determine if it is acceptable for use among individuals with SCI.

The purpose of the present study was to examine the internal consistency and test-retest reliability of the IALB among individuals with SCI in order to provide information on how confidently the measures can be used for research and clinical purposes.

3.2 Methods

3.2.1 Design/Participants

A convenience sample of 41 participants was recruited to collect information on reliability. Participants in this measurement study provided information at two time periods, two weeks apart. To be included, participants had to: (1) be at least one year post discharge from inpatient rehabilitation, (2) use a wheelchair at least 4 hours per day, (3) be over the age of 18 at the time of their injury, (4) have a spinal cord injury level of C5 or below, and (5) be medically stable. Individuals were excluded if they could not provide informed consent, if they could not read or understand the various assessments or if they had a documented traumatic brain injury. Ethical approval was granted by both university and hospital review boards and informed consent was obtained by all participants (See Appendix VIII for consent form). All participants received \$30.00 per session to compensate their time and travel/parking costs.

Three strategies were used to recruit participants as can be seen in the protocol in Figure 3.1. Please see Appendices IX - XII for samples of the letter of initial contact, reminder letter, and recruitment advertisements.

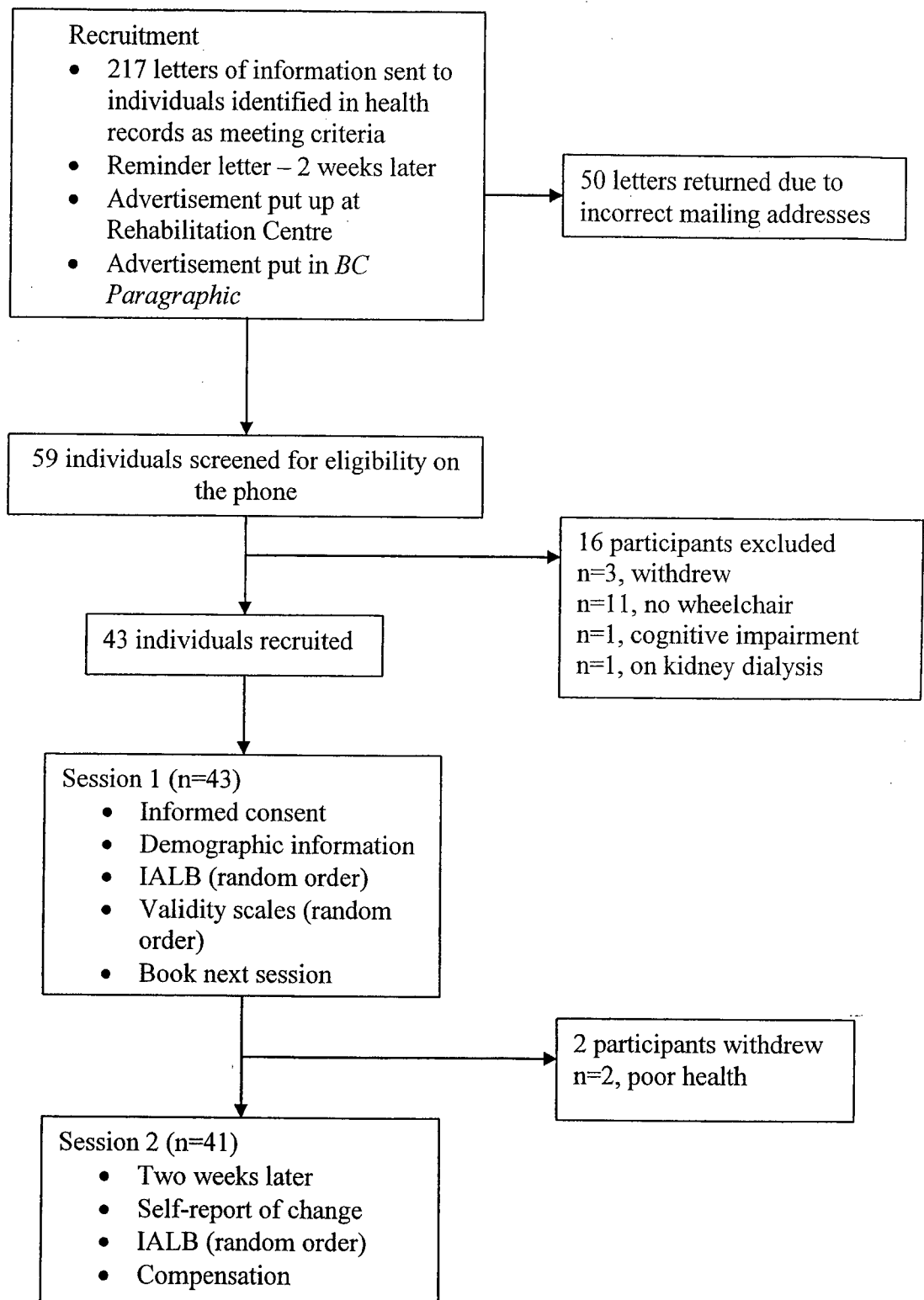


Figure 3.1: Protocol

During both sessions the measures were presented in random order to eliminate bias associated with order effects and potential fatigue. The order was determined by assigning each scale a number and using a random number generator in Microsoft Excel. A standardized protocol was followed based on suggestions given by the IALB manual (Bowtell, 1993). The tester read the directions from the score sheet and then asked the participant if he/she understood the instructions. The tester also informed each participant that there are no “right” or “wrong” answers. All participants were able to read the statements on the scales independently. Some participants were unable to write their answers due to their level of injury (32% of the sample). In these cases, they simply read their answers aloud and the tester filled them into the score sheet. If a participant did not understand the definition of “leisure”, the tester encouraged them to read the definition provided at the top of the score sheet and to answer the statements using that definition. No further discussion on the topic of leisure was provided to avoid influencing the participant’s answers. If a participant did not understand one of the words used in the statements, the tester would simply provide a definition of the word. To ensure data quality, the tester ensured that all measures were filled out completely prior to the participant leaving the sessions. Sessions were conducted in a quiet, comfortable, bright room with no distractions.

3.2.2 Measures

The Idyll Arbor Leisure Battery (Bowtell 1993) consists of four scales that measure leisure attitude, leisure motivation, leisure satisfaction, and leisure interests. Each scale consists of items formatted into a five-point Likert scale with 1 meaning “never true for you” and 5 meaning “always true for you”. Average scores are calculated; therefore each scale and subscale can have a total score ranging from 1-5. Each scale was designed after an extensive investigation and literature review of leisure theories and was subjected to initial testing and revision in healthy adult samples until they were found to be valid in their support of leisure theory. The scales each (Appendices I, II, III, and IV) take approximately ten minutes to fill out and five minutes to score (Bowtell 1993). Further description of the subscales can be found in Table 3.1 and in Appendix VII.

3.2.2.1 IALB Scales and Subscales

The Leisure Attitude Measure (LAM) is a 36-item assessment consisting of three subscales that was designed to measure one's cognitive, affective, and behavioural attitude towards leisure in order to help detect areas that are preventing individuals from participating actively in leisure (Ragheb & Beard, 1982). Each subscale has 12 items and a total score can be calculated. Higher scores reflect a more positive leisure attitude.

The Leisure Motivation Scale (LMS) is a 48-item assessment with four subscales that measures an individual's motivation for participating in leisure. The subscales are called intellectual, social, competence-mastery, and stimulus-avoidance (Beard & Ragheb, 1983). It was designed to establish the components of activities that need to be present for an individual to be motivated to participate. Each subscale has 12 items and a total score cannot be calculated for this scale (Bowtell, 1993). Higher scores reflect higher motivational forces.

The Leisure Satisfaction Scale (LSS) is a 24-item assessment consisting of six subscales that measures the extent to which individuals feel their needs (psychological, educational, social, relaxation, physiological, and aesthetic) are being met through their leisure activities. It was designed to help clients develop awareness of and interest in how spare time can be spent and to develop priorities for these activities (Beard & Ragheb, 1980). Each subscale has four items and a total score can be calculated. Higher scores reflect more satisfaction with leisure.

The Leisure Interest Measure (LIM) is the final assessment in the IALB. It has 29 items and eight subscales. The LIM measures how much interest an individual has in eight domains of leisure (physical, outdoor, mechanical, artistic, service, social, cultural, and reading) (Ragheb & Beard, 1992). It was designed to make sure clients have activities available which are interesting to him/her and to point out areas where the therapist can provide education to make more domains of leisure interesting. Each subscale has four items, except for reading, which is a single item, and a total score can be calculated by summing all of the subscale scores. Higher scores reflect more interest in the domains of leisure.

Table 3.1: Description of the IALB subscales

Leisure Attitude Measure (LAM) <i>Cognitive:</i> general knowledge and beliefs about leisure <i>Affective:</i> feelings towards own leisure experiences <i>Behavioural:</i> past, current and intended participation <i>Total LAM Score</i>	Leisure Motivation Scale (LMS) <i>Intellectual:</i> learning, imagining <i>Social:</i> making friends, feeling valued <i>Competence/Mastery:</i> achieving, mastering, challenging – often physical in nature <i>Stimulus/Avoidance:</i> relaxing, escaping <i>No Total LMS Score can be calculated</i>
Leisure Satisfaction Scale (LSS) <i>Psychological:</i> freedom, enjoyment <i>Educational:</i> intellectual stimulation, learning <i>Social:</i> rewarding relationships <i>Relaxation:</i> relief from stress and strain of life <i>Physiological:</i> developing physical fitness, health <i>Aesthetic:</i> engage in beautiful, interesting areas <i>Total LSS Score</i>	Leisure Interest Measure (LIM) <i>Physical</i> <i>Outdoor</i> <i>Mechanical</i> <i>Artistic</i> <i>Service</i> <i>Social</i> <i>Cultural</i> <i>Reading</i> <i>Total LIM Score</i>

Demographic information and other important covariates were also collected from the participants in a brief questionnaire. These variables included age, marital status, level of education, level of injury, completeness of injury, date of injury, circumstances of injury, and medication. In addition, during the second measurement session, participants were asked to fill out a questionnaire indicating whether any significant changes had occurred between measurement sessions that may have affected their leisure lifestyle and how they responded to the items in the scales. They were asked whether they had incurred any medical changes that required a visit to a physician (i.e. bladder infection, medication change), any changes in living situation (i.e. a move, loss of spouse), or any other changes in their life that may have affected their leisure lifestyle. Please see Appendix XIII and XIV for a copy of the demographic and change questionnaires.

3.2.3 Data Analysis

Descriptive statistics were collected during the first measurement session. Internal consistency and individual item consistency were examined by calculating Cronbach's

Alpha (α) and by observing any changes in the absence of each item (Streiner & Norman, 1995). This was performed for the total scales and for the subscales using data collected during the first measurement session. We hypothesized that Chronbach's Alphas would range from 0.75 to 0.90 for all of the scales and their subscales. These results are anticipated based on similar findings reported in previous research (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). For this study, acceptable magnitudes of internal consistency were defined as ranging between 0.70 and 0.90 to ensure homogeneity and to avoid item redundancy (Streiner & Norman, 1995).

Test-retest reliability was assessed using three statistical methods for all of the IALB scales and subscales: Intraclass Correlation Coefficients (ICCs), level of agreement (Bland Altman method), and standard error of measurement (SEM). Intra-Class Correlation Coefficients ($ICC_{1,1}$), and 95% confidence intervals were derived to identify how well individuals maintain their position within the sample in repeated measurement and the precision of the estimates. The test-retest reliability for all of the subscales and their components will demonstrate intraclass correlation coefficients (ICCs) greater ranging from 0.6-0.8 based on the results of a study by Trottier et al. (2002) that evaluated the ICCs of the Leisure Satisfaction Scale among adolescents. Magnitudes of acceptable reliability were based on work by Anderson (2000) and Wiener and Steward (1984) who suggest an ICC of 0.75 is acceptable for research, but that an ICC of 0.85 is needed for making decisions about individuals and treatments in clinical practice.

Agreement was measured by examining the actual difference in individual scores on repeated measurement using the Bland Altman method (Bland & Altman, 1986). The Standard Error of Measurement (SEM) was also calculated using the mean standard deviation from both measurement sessions. These methods measure how much each individual score varies on repeated measurement and are presented in the same units as the original measurement (Streiner & Norman, 1995; Stratford, 2004). It was expected that there would be very little actual change in scores between time one and time two. In addition, it was expected that the scores would be equally distributed above and below the zero line in the Bland Altman Plots indicating minimal bias (Bland & Altman, 1986).

All data analyses were performed using SPSS for Windows, version 11 and alpha was set at $p < 0.05$. F values were not expected to be significant at this level. The sample size calculation for examining test-retest reliability was based on work by Donner and Eliasziw

(1987). A sample size of 39 participants for a power of 0.80 was determined to be large enough to test hypotheses that the ICCs would be between 0.6 and 0.8 with a type I error (α) < 0.05. Please see Appendix XV for the sample size calculation.

3.3 Results

Participants in the study were 41 individuals with SCI (28 male, 13 female) with a mean age of 42 ± 11.3 years old. All were at least one-year post discharge from rehabilitation and time since injury ranged from 1-32 years. Table 3.2 and Figure 3.2 present a summary of the participant characteristics and cause of injuries. Their injuries were categorized as paraplegia complete (n=13), paraplegia incomplete (n=8), tetraplegia complete (n=10), and tetraplegia incomplete (n=10). Eleven participants reported a health change that required them to seek medical attention between the measurement sessions such as a bladder infection (n=6), a pressure sore (n=2), or flu-like symptoms (n=3). However, their scores for each session did not differ significantly. Each application of the IALB was very similar as can be seen in Table 3.3. Review of individual responses revealed that one participants recorded a substantial change in multiple IALB subscales (change of greater than 2.5) without indication that a significant actual change had occurred between measurement sessions. Mean scores for the IALB scales are displayed in Table 3.3.

Table 3.2 Participant Characteristics

<u>Characteristics</u>	<u>Sample (n = 41)</u>
Mean age	42.2 (11.3)
Mean age at injury	30.8 (10.4)
Mean time since injury	10.9 (8.9)
% Male	68
% Thoracic injury (vs. cervical)	49
% Complete injury	56
% Unemployed	68
% Less than high-school education	5

Note. Values in parentheses are standard deviations (SD)

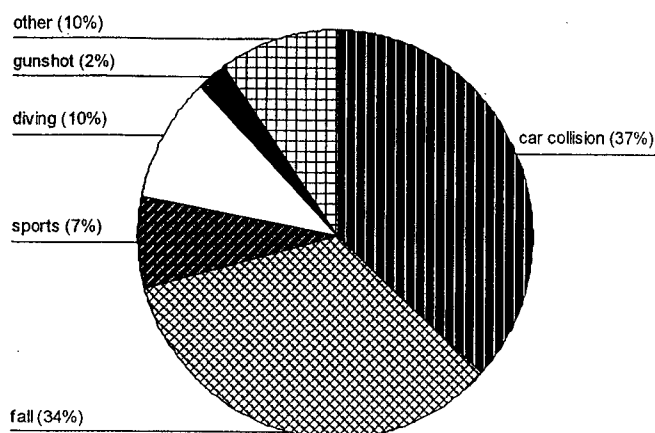


Figure 3.2: Cause of Injuries

3.3.1 Internal Consistency

Internal consistency scores were calculated using Cronbach's alpha for the scales and subscales in the IALB. Alpha's ranged from 0.59-0.92 and are displayed in Table 3.3. Scaling using stepwise deletion of each item was performed for all of the items in each scale and for each subscale. No improvement in any alpha value was revealed in this process when total scales were examined. However, subscale analyses revealed that in several of the subscales, alphas changed by > 0.15 with the deletion of certain items in the LAM (Behavioural), LSS (Relaxation and Aesthetic), and LIM (Artistic). See Appendix XVI for the complete results of the scaling using stepwise deletion.

3.3.2 Test-Retest Reliability

ICCs ranged from 0.58-0.82 for the LAM, 0.54-0.75 for the LMS, 0.48-0.80 for the LSS, and 0.69-0.89 for the LIM. ICCs for the total scales were all above 0.75. ICC values and their 95% confidence intervals are presented in Table 3.3. None of the F values for the retest ICCs were statistically significant (all were $p > 0.05$). The SEM's ranged from 0.19 - 0.57 and are also displayed in Table 3.3.

In the Bland Altman plots, the differences were plotted against the mean scores from time one and time two for each individual (Figure 3.3 a, b, c, and d). These plots as well as Table 3.3 demonstrate that there is minimal difference in the mean scores between measurement sessions for the IALB scales and subscales (mean differences were all less than 0.2). The data are also equally distributed above and below the zero line and the plots demonstrate a positive skew with the scores mostly towards the right end, especially for the LAM, LMS, and LSS.

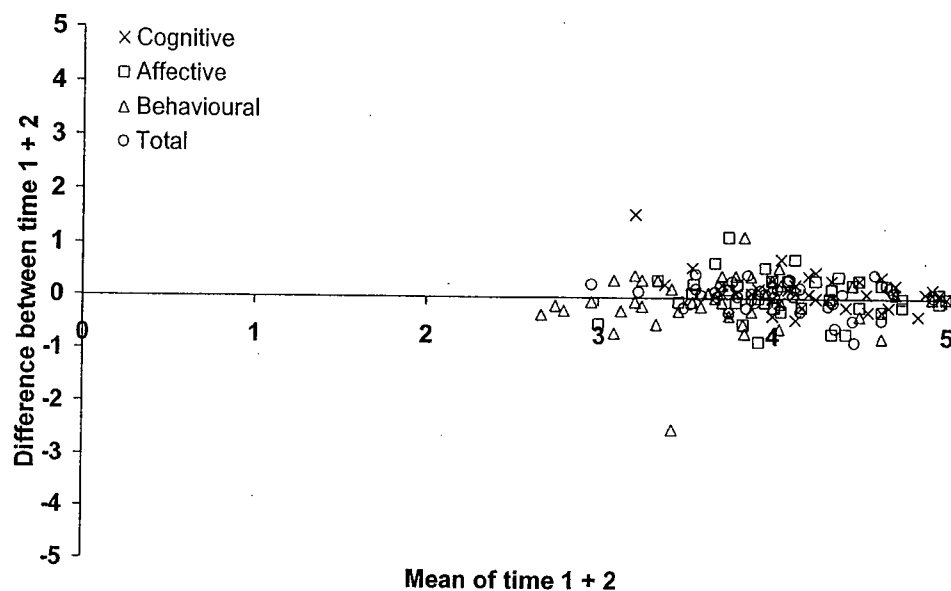
Table 3.3: Mean Scores and Reliability of the IALB

Measure	Mean (SD) Time 1	Mean (SD) Time 2	Alpha	ICC (95% CI)	SEM	Difference Between Time 1+2	Mean Of Time 1+2 (SD)
LAM							
Cognitive	4.32 (.41)	4.13 (.53)	.85	.72 (.53-.84)	.25	.11	4.27 (.45)
Affective	4.18 (.50)	4.21 (.55)	.88	.72 (.53-.84)	.28	.05	4.16 (.48)
Behavioural	3.61 (.62)	3.69 (.57)	.77	.58 (.33-.75)	.39	-.07	3.65 (.53)
Total	4.04 (.42)	4.01 (.48)	.91	.82 (.69-.90)	.19	.03	4.02 (.43)
LMS							
Intellectual	3.74 (.72)	3.61 (.49)	.92	.54 (.28-.72)	.41	.12	3.68 (.54)
Social	3.22 (.67)	3.25 (.58)	.89	.65 (.42-.79)	.37	-.03	3.24 (.57)
Competence/ Mastery	3.80 (.58)	3.60 (.57)	.84	.52 (.26-.71)	.40	.20	3.70 (.51)
Stimulus/ Avoidance	3.01 (.72)	3.17 (.68)	.82	.75 (.59-.86)	.35	-.16	3.09 (.66)
LSS							
Psychological	3.87 (.82)	3.96 (.64)	.86	.73 (.55-.85)	.38	-.09	3.91 (.68)
Educational	3.68 (.75)	3.60 (.62)	.80	.60 (.36-.76)	.43	.07	3.64 (.62)
Social	3.76 (.81)	3.63 (.77)	.78	.48 (.20-.68)	.57	.13	3.70 (.68)
Relaxation	4.02 (.70)	4.05 (.72)	.66	.55 (.29-.73)	.48	-.03	4.04 (.63)
Physiological	3.37(1.04)	3.37(1.05)	.82	.76 (.59-.86)	.51	-.10	3.32 (.98)
Aesthetic	3.65 (.71)	3.36 (.69)	.75	.73 (.56-.85)	.36	.18	3.55 (.70)
Total	3.72 (.52)	3.70 (.50)	.88	.80 (.65-.88)	.23	.03	3.71 (.48)
LIM							
Physical	2.98(1.19)	3.17(1.06)	.91	.86 (.75-.92)	.42	-.20	3.07(1.09)
Outdoor	4.10 (.71)	4.10 (.70)	.86	.81 (.67-.89)	.31	.01	4.10 (.67)
Mechanical	3.00(1.21)	2.98(1.21)	.92	.89 (.81-.94)	.40	.02	2.99(1.18)
Artistic	3.39 (.68)	3.38 (.85)	.59	.83 (.70-.90)	.32	.01	3.39 (.74)
Service	2.96(1.07)	2.85 (.93)	.88	.83 (.70-.90)	.41	.10	2.91 (.96)
Social	3.39 (.72)	3.38 (.74)	.80	.69 (.49-.82)	.41	.02	3.38 (.67)
Cultural	3.15 (.82)	3.07 (.89)	.81	.87 (.78-.93)	.31	.08	3.11 (.83)
Reading	3.10(1.24)	3.15(1.28)	N/A*	.80 (.66-.89)	.56	-.05	3.12(1.19)
Total	3.27 (.44)	3.27 (.46)	.82	.78 (.63-.88)	.21	-.001	3.27 (.43)

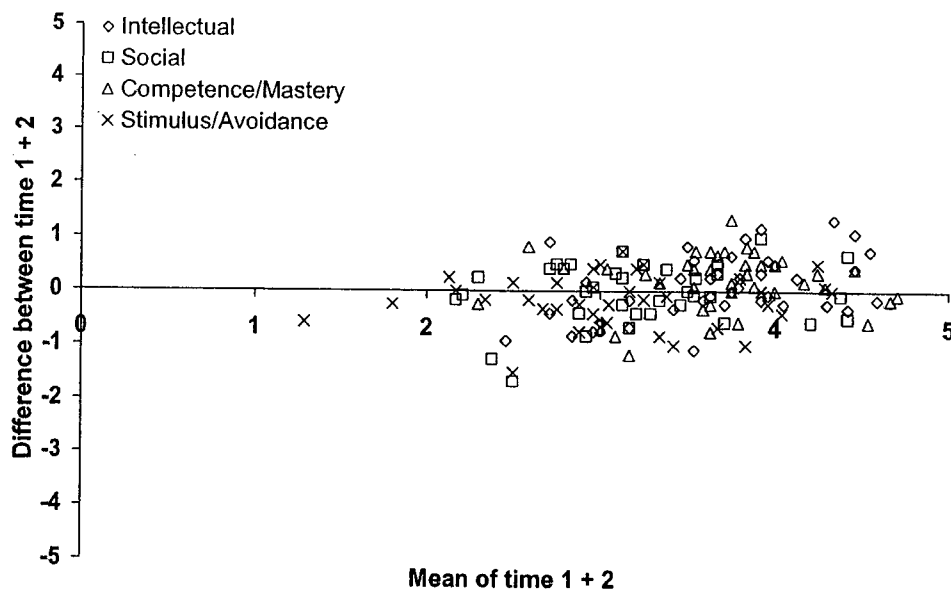
Note. CI = Confidence Interval; SEM = Standard Error of Measurement; SD = Standard Deviation; LAM = Leisure Attitude Measure; LMS = Leisure Motivation Scale; LSS = Leisure Satisfaction Scale; LIM = Leisure Interest Measure.

*The Reading subscale consists of a single item; therefore it is not possible to calculate an Alpha

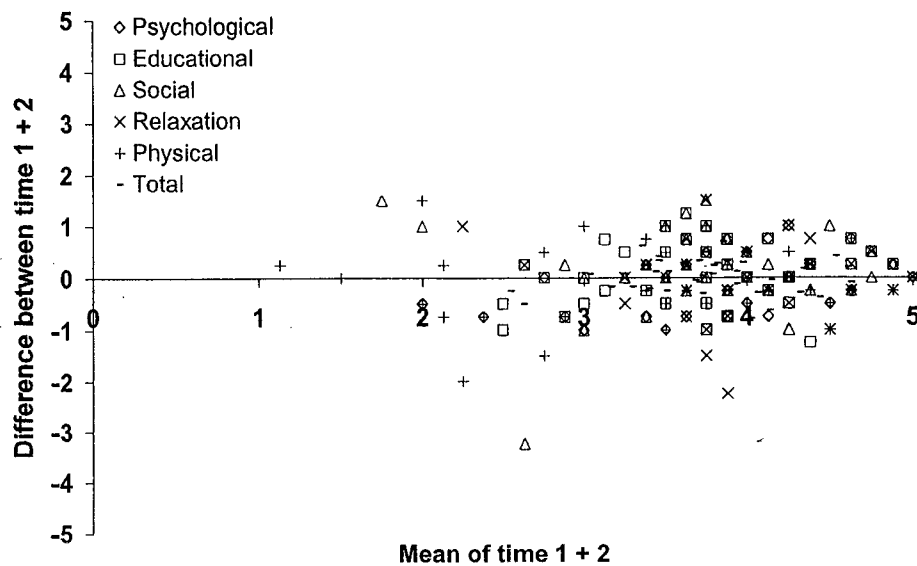
Figure 3.3: Bland Altman Plots: (A) Leisure Attitude Measure; (B) Leisure Motivation Scale; (C) Leisure Satisfaction Scale; and (D) Leisure Interest Measure.



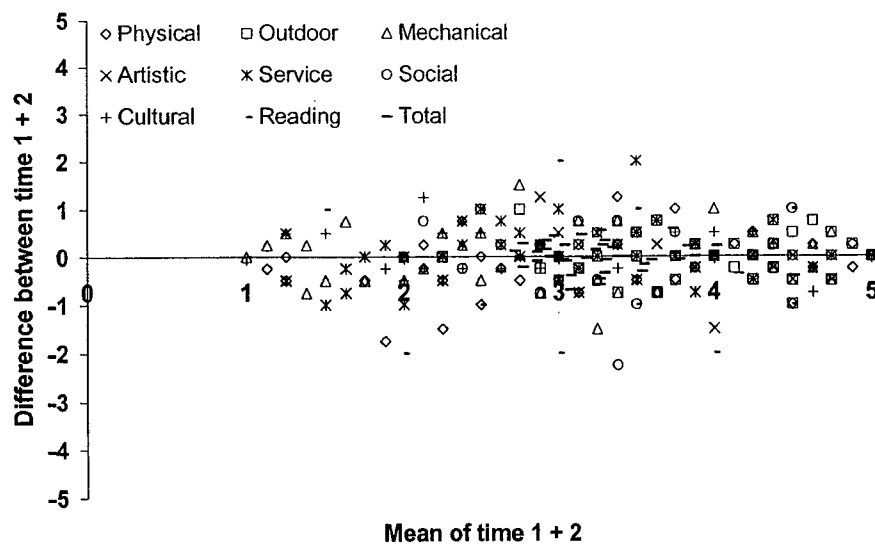
(A): Leisure Attitude Measure



(B): Leisure Motivation Scale



(C): Leisure Satisfaction Scale



(D): Leisure Interest Measure

3.4 Discussion

The IALB must have acceptable reliability estimates before they can be used confidently in rehabilitation research or in clinical settings. Furthermore, population-specific reliability ensures that results can be attributed to populations with similar characteristics as the tested sample (Portney & Watkins, 2000). The objective of this study was to estimate the internal consistency and test-retest reliability of the IALB among individuals with SCI.

3.4.1 Internal Consistency

Internal consistency provides an indication of how the items in a scale relate to: (1) each other, and (2) the scale as a whole. The alpha coefficients resulting in this study provided evidence for the internal consistency and homogeneity of the total scales, which is consistent with previously published research in healthy adult samples (Bowtell, 1993). The fact that Cronbach's alpha did not improve with the deletion of items when the total scales were examined, indicates strong item consistency and that none of the items decrease the stability of the total scales. Establishing homogeneity for the subscales is equally important as for the total scales in the IALB. The scale developers (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992) suggest that for clinical use, the information gathered from the subscales is more important in determining appropriate interventions. However, when subscale analyses were performed using stepwise deletion, the LAM (Behavioural), LSS (Relaxation and Aesthetic), and LIM (Artistic) subscales demonstrated some problems, suggesting that they may not be measuring a single construct. Portney and Watkins (2000) suggest that scales should be grounded in theory that clearly defines the construct being measured. Perhaps these three subscales are not well defined, as the items may not all be tapping into the same construct for our sample of individuals with SCI. It is interesting that problems with these subscales were identified in Chapter 2 as well. For example, the participants felt that the whole aesthetic subscale was unclear (see Table 2.3). A factor analysis on each scale would allow us to examine the items individually to determine if they fit into their appropriate subscales. This technique would reveal any items that do not load properly into the factor structure or that are superfluous.

3.4.2 Test-Retest Reliability

Test-retest reliability refers to the stability of a measure (Portney & Watkins, 2000). If an individual fills out the same scale on two separate occasions and both the testing conditions and the individual remain stable, one would expect that there would be minimal change in the two scores. There are different ways to express the magnitude of reliability of a scale depending on the intended use of the measure. In this study, we used three methods in order to give a comprehensive and thorough evaluation of the reliability of the IALB and to determine how confidently it can be used for both research and clinical purposes.

ICCs express how well a measure can discriminate among individuals and provide an estimate of how individuals maintain their position within the group on repeated measurement. There are different types of ICCs (Eng & Miller, unpublished work; Rankin & Stokes, 1998; Shrout & Fleiss, 1979) and model (1,1) was chosen for this study because it provides the most conservative estimate of the reliability coefficient and it considers that with a self-report scale each participant is their own rater and there is no learning effect between measurement sessions (Eng & Miller, unpublished work; Shrout & Fleiss 1979).

The ICC results suggest that the LAM, LSS and LIM total scales and that some of the subscales can be confidently used in descriptive research settings because they demonstrated coefficients greater than 0.75 (Anderson, 2000). However, when subscales were examined, the LIM was the only scale that consistently demonstrated acceptable subscale ICCs. Correlation coefficients such as the ICC are based on the variability of the scores; thus ICCs will be stronger when there is a greater range in scores (Streiner & Norman, 1995; Rankin & Stokes, 1998). Examination of the individual scores revealed that the range of scores was smaller for the LAM, LMS, and LSS than for the LIM. This made it difficult for some of the scales to demonstrate rank or discriminate among the participants.

Based on the criteria reported by Weiner and Steward (1984) that requires an ICC of 0.85 for making decisions about individuals and treatments in clinical practice, the IALB falls short. It is important to note, however, that: (1) it is difficult to interpret the ICC clinically because it does not give an indication of how much change is needed to reflect true change versus measurement error in repeated measurement (Rankin & Stokes, 1998); (2) ICCs (1,1) provides the most conservative estimate of reliability; and (3) acceptable magnitudes of reliability are arbitrary (Streiner & Norman, 1995). Acceptable magnitudes should be based on both the intended use of the scale and the stability of the constructs being

measured. It is unclear whether attitude, motivation, satisfaction, and interests are stable constructs. Further investigation into whether these constructs should be considered states (which can change based on one's situation) or personality traits, (which are more stable) is needed (Chaplin et al., 1988). This would enable us to more accurately indicate what magnitude of reliability would be acceptable for clinical purposes. If the constructs examined in the IALB are ever-changing states, then perhaps the 0.85 standard is not attainable. According to Streiner and Norman (1995), reliability coefficients can demonstrate a difference of more than 0.1 depending on the stability of the construct being measured.

In addition to examining ICC, it is essential to obtain estimates of test-retest reliability that are in the same units as the original scale (Rankin & Stokes, 1998; Stratford, 2004). The SEM and Bland Altman methods both demonstrate the extent to which scores change on repeated measurement and can provide clinicians with a meaningful standard for assessing change (Stratford, 2004). The interpretation of the SEM suggests that there is a 68% chance that an individual's true score falls within one SEM of the measured score and a 90% chance that the score is within two SEM's (Steiner & Norman, 1995). Using the SEM, it is possible to determine the minimal detectable change (MDC) which provides an estimate of how much change on the scale is required to demonstrate true change (Stratford, 2004). For a 90% confidence level, the MDC equation is: $MDC_{90} = SEM \times \sqrt{2} \times 1.65$, (where 1.65 is the Z score associated with the 90% confidence level) (Stratford 2004). For example, for the LAM total score the MDC equation would be:

$$\begin{aligned} MDC_{90} &= SEM \times \sqrt{2} \times 1.65, \\ &= 0.44 \end{aligned}$$

Clinically, the interpretation of this is that "90% of truly stable (individuals) will display random fluctuations equal to or less than this value...accordingly, a change greater than the MDC_{90} is interpreted as evidence of true change" (Stratford, 2004, p. 10). For our example, a change in scores would have to exceed 0.44 to be evident of true change for this scale. MDC_{90} has been calculated for every IALB scale and subscale and can be found in Appendix XVII. All of the differences in scores were within their acceptable range of measurement error.

Although we could not determine the 95% limits of agreements due to our sample size, the Bland Altman plots provided excellent visual representations of the agreement in scores

and of any bias or outliers that existed. Bland and Altman (1986) and Rankin and Stokes (1998) suggest that a sample size of 50 is needed to ensure that the 95% limits are not excessively large. The mean differences between time one and time two were very low (less than 0.2) for all of the scales and subscales indicating strong agreement. The fact that they were equally distributed above and below the zero line indicates minimum bias in that an equal number of participants' scores increased and decreased between time one and time two on all of the scales and subscales. The positive skew shows that for the LAM, LMS, and LSS, most participants scored in the higher end of the scale indicating a lack of variability in the scores. This is consistent with the ICC results where the LIM demonstrated the strongest correlation coefficient due to a wider range of scores.

3.4.3 Limitations and Conclusions

Several factors can affect the reliability of a measured value such as the measure (i.e. the wording of the instructions or the response scale used), issues related to the participant (i.e. motivation, mood, or anxiety), issues related to the environment (i.e. noise or other distractions), and issues related to the tester (i.e. inadequate training or simply having the tester present). The protocol ensured minimal error due to environment and tester. However, several other factors may have caused the reliability estimates to be understated. As identified in Chapter 2, there are some concerns with the wording and instructions of the scales. Most importantly, the context of the questions in terms of pre- or post-injury may have affected the consistency of the participants' answers. For example, a participant may have answered "always true" to the item "I prefer competitive physical activities" (LIM 7) during the first measurement session, thinking of their pre-injured self. Two weeks later, they may have changed their answer to "seldom true", thinking that they can no longer participate in that kind of activity. In addition, the construct of leisure is very difficult to operationalize, and the definition provided at the top of each score sheet may be missing some important components of leisure such as intrinsic motivation and freedom of choice (Austin & Crawford, 1996) as discussed in Chapter 2. The subjective nature of leisure may make these scales more susceptible to measurement error.

The reliability estimates derived from this study can only be generalized to individuals with SCI. Despite using a convenience sample, our participant characteristics were reflective of the demographics of the SCI population in Canada reported by the Canadian

Paraplegic Association (2000) based on mean age at time of injury, level of injury, completeness, and cause of injury. Based on the fact that 11 individuals identified a change in their medical condition yet there was no significant change in scores on the IALB indicates that the scales may not be sensitive enough to capture any change in health conditions. However, this is not surprising as the IALB was not designed for such a purpose.

Based on the results of this study, researchers and clinicians can feel confident using all of the total scales in descriptive research settings. Although the ICCs are slightly lower than the 0.85 criterion set by Weiner and Steward (1984), acceptable magnitudes are arbitrary and the agreement based on the SEM and Bland Altman was excellent; therefore we feel that the total scales can be used for making decisions about individuals and treatments as well. Many of the subscales also demonstrated a good level of reliability, and each of them can be used individually with confidence in research settings; however, some caution is required when using the subscales with very low ICCs. Addressing the issues identified in Chapter 2 such as poor operationalization of leisure will only serve to make the reliability estimates even stronger and provide users with more confidence in the scores.

3.5 Bridging Summary

This study is the first step in examining the psychometric properties of the IALB scales among individuals with SCI in an attempt to encourage future research and evidence-based practice in Therapeutic Recreation and rehabilitation in general. The next steps are to examine the validity of the scales and to perform a factor analysis to ensure that the scales are measuring what they are intended to measure and to provide further evidence for the use of the scales.

3.6 References

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CHAPTER 4 – Measurement Study

Measuring Leisure among Individuals with Spinal Cord Injuries: Validation of a the Idyll Arbor Leisure Battery

4.1 Introduction

Facilitating the development of appropriate leisure lifestyles is an important part of the rehabilitation of individuals with spinal cord injuries (SCI). To accomplish this, there is a need for psychometrically sound scales suitable for use in both research and clinical settings. Ragheb and Tate (1993) believe that leisure attitude, leisure motivation, leisure satisfaction, and leisure interests can affect one's ability or desire to participate in leisure activities. The Idyll Arbor Leisure Battery (IALB) consists of four scales developed in the early 1980's to measure these variables. They were developed in healthy adult samples and have been found to have good internal consistency and content validity (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). However, it is unknown how confidently the scales can be used among individuals with SCI. Two earlier studies have been conducted that have examined: (1) the usability of the IALB in clinical settings among individuals with SCI using qualitative methodology (see Chapter 2), and (2) the reliability of the IALB among individuals with SCI (see Chapter 3).

While these previous studies (Chapters 2 and 3) provide evidence for the usability and the reliability of the IALB scales among individuals with SCI, further support for the validity of the scales is necessary in order to ensure confidence in using the scales in both research and clinical settings. Validity is an ongoing process of hypothesis testing that is necessary for drawing inferences from data and determining how results can be used (Messick, 1995; Streiner & Norman, 1995). It ensures that the scales are measuring what they are intended to measure (Portney & Watkins, 2000; Streiner & Norman, 1995).

Previous research suggests that leisure attitude and leisure satisfaction are positively correlated with general well being, satisfaction with life, and community integration (Cassidy, 1996; Coyle et al., 1993; Coyle et al., 1994; Schmidt Hanson et al., 2000). In addition, negative correlations have been found between both leisure attitude and leisure satisfaction with depression (Cassidy, 1996; Loy et al., 2002; MacDonald et al., 1987). These findings have been shown using a variety of different leisure scales not including the

IALB. We hypothesized that similar relationships will be found using the Leisure Attitude Measure and the Leisure Satisfaction Scale from the IALB.

Leisure satisfaction was also the strongest predictor of leisure attitude in two studies with healthy adult samples (Ragheb, 1980; Ragheb & Tate, 1993). Although causal analyses were not within the scope of this study, we hypothesized that a similar relationship among individuals with SCI would be established. Since the Leisure Motivation Scale, Leisure Interest Measure and Leisure Satisfaction Scale all share similar subscales, we expected to see several interrelationships. Specifically, we expected that participants who are highly motivated by the social, intellectual, competency mastery (physical), or stimulus/avoidance (relaxation) aspects of leisure would also score high on similar subscales from the Leisure Interest Measure and Leisure Satisfaction Scale.

Factorial validity is a method of assessing the structure of a construct. In this study, principal components analysis (PCA) was performed on each of the IALB scales to determine whether the items in the scales will load into similar structures for our sample of individuals with SCI as it did in the original development of the scale. If similar relationships and item structures using the IALB can be found among individuals with SCI it would provide further support for the validity of the scales and would help researchers and clinicians to determine whether population specific scales are necessary.

The purpose of the current study was to provide evidence concerning the validity of the IALB scales among individuals with SCI. Specifically, the objectives were to: (1) determine the degree to which the IALB scales relate to other psychosocial measures; (2) examine the interrelationships among the scales and subscales; and (3) examine the factorial validity of the scales.

4.2 Methods

4.2.1 Participants/Protocol

A convenience sample of 41 individuals with SCI was recruited to collect information on the validity of the IALB. To be included, participants had to: (1) be at least one year post discharge from inpatient rehabilitation, (2) use a wheelchair at least 4 hours per day, (3) be over the age of 18 at the time of their injury, (4) have a spinal cord injury level of C5 or below, and (5) be medically stable. Individuals were excluded if they could not read or

understand the various assessments or if they had a documented traumatic brain injury. Ethical approval was granted by both university and hospital review boards and informed consent was obtained by all participants (See Appendix VIII). The recruitment strategies and protocol are described in detail in Chapter 3.

4.2.2 Primary Measure: Idyll Arbor Leisure Battery (IALB)

The primary measure used in this study was the IALB (Bowtell, 1993). It consists of four scales that assess leisure attitude, leisure motivation, leisure satisfaction, and leisure interests. Each scale consists of item responses formatted into a five-point Likert scale ranging from 1 ("never true for you") to 5 ("always true for you"). Each scale was subjected to testing and revision in healthy adult populations until they were found to be valid in their support of leisure theory (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). Each scale takes approximately ten minutes to fill out and five minutes to score (Bowtell, 1993).

The Leisure Attitude Measure (LAM) is a 36-item scale that was designed to assess an individual's attitude towards leisure in order to detect areas that may be preventing them from participating actively in leisure. The LAM consists of three subscales (cognitive attitude, affective attitude, and behavioural attitude) and a total score can be calculated to reflect overall leisure attitude (Ragheb & Beard, 1982).

The Leisure Motivation Scale (LMS) is a 48-item scale that assesses an individual's motivation for participating in leisure. The LMS consists of four subscales: intellectual, social, competence-mastery, and stimulus-avoidance designed to determine which components of activities need to be present for an individual to be motivated to participate. (Beard & Ragheb, 1983).

The Leisure Satisfaction Scale (LSS) is a 24-item scale that examines the extent to which individuals feel their needs are being met through their leisure activities. The LSS consists of six subscales (psychological, educational, social, relaxation, physiological, and aesthetic) and a total score can be calculated for overall leisure satisfaction. The LSS was designed to help clients develop awareness of and interest in how spare time can be spent and to develop priorities for these activities (Beard & Ragheb, 1980).

The Leisure Interest Measure (LIM) is the final scale in the IALB. It has 29 items and assesses how much interest an individual has in eight domains of leisure. The eight subscales are physical, outdoor, mechanical, artistic, service, social, cultural, and reading.

The LIM was designed to make sure individuals have activities available which are interesting to them and to point out areas where the therapist can provide education to make more domains of leisure interesting (Ragheb & Beard, 1992). Further information about the IALB is provided in earlier chapters and a copy of each scale can be found in Appendices I, II, III, and IV.

4.2.3 Validity Measures

Several scales were used to assess validity in this study. These scales included standard measures of depression, satisfaction with life, community integration, and leisure participation. These scales were chosen as previous studies have shown relationships between them and leisure variables (Cassidy, 1996; Coyle et al., 1993; Coyle et al., 1994; Loy et al., 2002; MacDonald et al., 1987; Schmidt & Hanson, 2000). In addition, they are the most widely used scales in the literature and they have solid estimates of reliability and validity as discussed below.

4.2.3.1 The Center for Epidemiological Studies Depression Scale (CES-D)

The CES-D scale is a 20-item self-report scale that was used to measure symptoms of depression (Radloff, 1977). See Appendix XVIII for a copy of the scale. Each item is rated on a scale ranging from 0 to 3 according to how often the individual experienced certain feelings (e.g., depression and hopefulness) during the previous week (0 = less than 1 day; 1 = 1 to 2 days; 2 = 3 to 4 days; and 3 = 5 to 7 days). Scores for positive feelings are reversed and the scores are added to obtain a total score. A score of 16 or higher serves to classify individuals as having symptoms suggestive of depression, which was validated with DSM-14 criteria for clinical depression (Radloff, 1977). A high level of internal consistency (alpha coefficient = 0.84 - 0.90) and moderately good concurrent validity ($r = 0.50 - 0.70$) have been reported (Radloff, 1977). This scale has been used in studies with individuals with SCI and was found to be the most appropriate screening tool for depression in this population based on estimates of sensitivity, specificity, and predictive value (Hart & Rintala, 1995; Kuptniratsaikul et al., 2002).

4.2.3.2 *The Satisfaction with Life Scale (SWLS)*

The SWLS is a well-validated measure of subjective satisfaction with life (Diener et al., 1985; Pavot et al., 1993). It consists of five statements measured on a seven-point Likert scale (with scores of 7 that mean completely agree to scores of 1 that mean completely disagree). These items are listed in Appendix XIX. Cronbach's alpha (0.80 to 0.89) and test-retest reliability (0.54 to 0.83) have been reported (Diener et al., 1985; Pavot et al., 1993). The scale positively correlates with demographic, leisure, social, functional, and clinical characteristics of individuals with SCI (Diener et al., 1985, Pavot et al., 1993). A total life satisfaction score is obtained by summing the five items (range: 5-35), where a total score ranging from 5-9 indicates extreme dissatisfaction, a total score of 20 is neutral, and a total score of 31-35 indicates extreme satisfaction with life (Diener et al., 1985).

4.2.3.3 *The Craig Handicap Assessment and Reporting Technique (CHART)*

The CHART (Hall et al., 1998; Whitneck et al., 1992) is a widely used measure of community integration for individuals with SCI. See Appendix XX for a copy of the scale. It consists of five subsections that correspond with the World Health Organization's definition of participation restriction (problems in the manner or extent of involvement in life situations) (World Health Organization, 2002). The categories are physical independence, cognitive independence, mobility, occupation, social integration, and economic self-sufficiency. The CHART consists of 27 items based on objective behavioural criteria. A weighted mathematical formula is used to calculate a score for each subsection of the instrument and a total score is obtained by adding the subsections together. Each subsection is worth 100 points for a maximum total CHART score of 600 points (best score). Previously, the subsections have been demonstrated to have sound estimates of validity and reliability in the SCI population (Hall et al., 1998, Whitneck et al., 1992). Specifically, Whitneck et al. (1992) reported strong test-retest reliability of the CHART among individuals with SCI (ICC = 0.93, with coefficients ranging from 0.80 –0.95 for each subscore). Normative data for over 1000 individuals with SCI have been presented by neurological level (high tetraplegia: C1-C4; low tetraplegia: C5-C8; and paraplegia: T1 and below) where means of 294, 369, and 404 were found for these three groups, respectively. In

this study, the cognitive component of the CHART was not included and thus the total score was only 500 (Hall et al., 1998).

4.2.3.4 The Participation and Activity Limitation Survey (PALS)

The PALS (Statistics Canada, 2001) is an 86-page survey, which collects information about persons whose everyday activities are limited because of a health-related condition or problem. The PALS collects information on difficulties with certain daily activities, type and severity of activity limitation, impact on employment, and impact on leisure. Items concerning leisure participation (Section F4-F8, p.66) were chosen for this study. See Appendix XXI for a copy of this component of the scale. Participants are required to answer questions related to (1) the amount of time spent in eight leisure activities within the home and eight leisure activities within the community and (2) the barriers that may prevent them from participating in leisure. The amount of time spent in leisure is scored on an ordinal scale including every-day, at least once a week, at least once a month, less than once a month, and never. A summary score is calculated to describe the amount of time spent in leisure activities both within the home and in the community (range 0-24). A low score indicates more time spent participating in leisure activities. Seven barriers to leisure participation were also listed and participants indicated those that affected them. The number of barriers was added for each individual.

4.2.4 Data Analysis

Descriptive statistics (means, standard deviations, and ranges) were calculated for the total sample, for participants with paraplegia, and for participants with tetraplegia. Independent t-tests were performed in order to compare means for both samples. Spearman's correlation coefficient (ρ) was used to test the following hypotheses regarding the IALB because the data were not normally distributed. An alpha level of 0.05 was used to ensure that the hypothesized relationships were statistically significant. The criteria selected for acceptable magnitudes of correlations are based on results of previous research. To interpret the correlation values Cohen (1998) suggests that a correlation below 0.3 is weak, between 0.3 and 0.5 is moderate, and above 0.5 is strong. The following are the hypotheses for our correlations:

Hypothesis 1: Participants who score high on the components of the Leisure Attitude Measure and the Leisure Satisfaction Scale are likely to be more satisfied with life, more integrated into the community, spend more time participating in leisure activities (both within the home and in the community), and be less depressed than individuals who score low on the scales ($\rho > 0.30$). The hypothesized magnitude is based on results reported in previous work that has shown moderate correlations between leisure scales and other psychosocial variables (Cassidy, 1996, Clayton et al., 1994; Coyle et al., 1993; Coyle et al., 1994; Roach, 2002).

Hypothesis 2: There will be strong statistically significant positive relationships among the IALB scales and subscales as demonstrated by $\rho > 0.50$ that are statistically significant at the 0.05 level. More specifically, participants who score higher on the components of the Leisure Attitude Measure will demonstrate higher total scores on the Leisure Satisfaction Scale. In addition, participants who score high on the social, competence-mastery, and stimulus avoidance components of the Leisure Motivation Scale will also score high on the social, physical, and relaxation components of the Leisure Interest Measure and Leisure Satisfaction Scale. These anticipated correlations are based on work by Ragheb (1980) and Ragheb and Tate (1993) who examined the interrelationships among leisure attitude, leisure motivation, leisure satisfaction, and leisure participation.

A PCA was conducted in order to confirm the factor structures of the original scales found in previous studies of healthy adults and to look for items that are redundant or are not performing as expected. The number of factors retained was based on the scree test, where factors before the break in the distribution (ignoring the break after the first factor) were retained (Streiner, 1994). Orthogonal rotation was conducted using Varimax rotation with Kaiser Normalization in order to minimize the number of items that have high loadings on more than one factor. This type of approach is the most common procedure used because it yields results that simplify the process of assigning each variable to a single factor (George & Mallery, 2003). Component loadings were deemed significant if the magnitude of the variable loading on the factor was ≥ 0.5 . The following are the hypotheses for the factor analyses:

Hypothesis 1: Factor analysis (PCA) of each individual scale will demonstrate that the items will load into similar structures as in the original scales. For example, the items in the LAM will load onto three factors representing the three subscales. This will hold true for all of the IALB scales.

Hypothesis 2: Factor analysis using PCA will reveal that some items do not load (coefficients < 0.5) or load on more than one factor for our sample of individuals with SCI.

4.3 Results

The 41 individuals with SCI (28 male, 13 female) who participated in the study had a mean age of 42 ± 11.3 years old. All were at least 1-year post discharge from rehabilitation and time since injury ranged from 1-32 years. Their injuries were categorized as paraplegia complete ($n=13$), paraplegia incomplete ($n=8$), tetraplegia complete ($n=10$), and tetraplegia incomplete ($n=10$). Further information about participant characteristics is displayed in Chapter 3 (Table 3.2 and Figure 3.2).

The participants varied widely in their levels of depressive symptoms and satisfaction with life and were relatively well integrated into the community based on CHART scores. See Table 4.1 for mean scores, standard deviations, and range of scores for the validity scales calculated by level of spinal cord injury. More than 83% of the participants disclosed that they wanted to spend more time in leisure activities and over 75% of participants reported that they experienced more than one barrier to leisure due to their condition. There was no significant difference in scores between participants with paraplegia and individuals with tetraplegia based on independent t-tests ($p>0.05$) for any of the validity scales except for the physical and economic components of the CHART. Mean IALB scores are displayed in Table 3.2 (Chapter 3).

Table 4.1: Means, Standard Deviations, and Range of Scores on the Validity Scales by Level of Spinal Cord Injury

	Total Sample n=41		Individuals with paraplegia n = 21		Individuals with tetraplegia n=20	
<i>Validity scales</i>	<i>Mean ± SD</i>	<i>Range</i>	<i>Mean ± SD</i>	<i>Range</i>	<i>Mean ± SD</i>	<i>Range</i>
CES-D	11.37 ± 11.91	0-45	11.05 ± 11.08	0-36	11.70 ± 13.01	0-45
SWLS	22.44 ± 6.86	9-33	21.52 ± 6.55	9-31	23.4 ± 7.21	10-33
CHART	481.59 ± 77.71	245-581	475.77 ± 84.80	245-561	488 ± 70.52	374-581
<i>Physical</i>	89.32 ± 15.00	28-100	95.08 ± 7.62	77-100	83.27 ± 18.37	28-99
<i>Cognitive</i>	92.20 ± 11.51	48-100	91.14 ± 13.94	48-100	93.30 ± 8.49	72-100
<i>Mobility</i>	87.10 ± 18.32	4-100	88.33 ± 18.72	30-100	85.80 ± 18.29	48-100
<i>Occupational</i>	63.52 ± 29.79	4-100	64.98 ± 30.06	4-100	62.00 ± 30.21	12-100
<i>Social</i>	91.76 ± 15.29	30-100	90.10 ± 18.53	30-100	93.50 ± 11.16	65-100
<i>Economic</i>	41.28 ± 41.28	0-100	44.67 ± 41.38	0-100	60.00 ± 40.97	0-100
PALS Home Activities	10.10 ± 5.00	1-23	10.54 ± 5.90	1-23	9.60 ± 3.95	1-19
PALS Community Activities	16.46 ± 5.10	8-28	16.71 ± 5.01	8-28	16.20 ± 5.09	10-27

Note: **CES-D** = The Center for Epidemiological Studies Depression Scale; **SWLS** = The Satisfaction with Life Scale; **CHART** = Craig Handicap Assessment and Reporting Technique; **PALS** = Participation and Activity Limitation Survey. Values in bold represent significantly different group means ($p < 0.05$). Only 33 individuals filled out the economic subscale of the CHART, and thus $n = 33$ for the CHART total score

4.3.1 Validity – Relationships Between the IALB and the Validity Scales

In the first hypothesis, we expected both leisure attitude and leisure satisfaction scores to correlate with scores from the other psychosocial variables used in this study. Results showed that both positive leisure attitude and leisure satisfaction were correlated

with less depression ($\rho = -0.31$ and -0.30 , $p < 0.05$, respectively). In addition, leisure satisfaction was correlated with life satisfaction ($\rho = 0.42$, $p < 0.01$) in the anticipated direction. Leisure attitude was not correlated with leisure participation; however, being satisfied with leisure was correlated with more time spent participating in community leisure activities ($\rho = -0.34$, $p < 0.05$). No significant relationships were demonstrated between leisure attitude or leisure satisfaction with community integration. Subscale analyses were also performed and some of the LAM and LSS subscales showed significant correlations with the psychosocial variables as well. See Table 4.2 for the correlation matrix. Appendix XXII has the complete correlation matrix with the subscales.

Table 4.2: Correlation Matrix for Hypothesis One

	<u>CES-D</u>	<u>SWLS</u>	<u>CHART</u>	<u>PALS- home</u>	<u>PALS- community</u>
Leisure Attitude Measure	-0.313*	0.208	-0.123	0.102	-0.105
Leisure Satisfaction Scale	-0.303*	0.421**	0.008	0.057	-0.336*

Note: * = significant at $p < .05$; ** = significant at $p < .01$. **CES-D** = The Center for Epidemiological Studies Depression Scale; **SWLS** = The Satisfaction with Life Scale; **CHART** = Craig Handicap Assessment and Reporting Technique; **PALS** = Participation and Activity Limitation Survey. (n=41)

4.3.2 Validity – Interrelationships Among the IALB Scales

For the second hypothesis, intercorrelations among variables within the IALB were examined (Table 4.3). Having a positive leisure attitude was correlated with being more satisfied with leisure ($\rho = 0.69$, $p < 0.01$). All three of the leisure attitude subscales also correlated with leisure satisfaction in the hypothesized direction with ρ ranging from 0.41 for cognitive attitude to 0.61 for affective attitude ($p < 0.01$).

The social subscales from the LMS, LIM, and LSS were tested for relationships with each other. Social motivation to participate in leisure was correlated with an interest in social activities ($\rho = 0.55$, $p < 0.01$). In addition, an interest in social activities was correlated with being satisfied with the social aspects of leisure ($\rho = 0.42$, $p < 0.01$); however, social motivation did not correlate significantly with social satisfaction.

The physical subscales of the LMS, LIM, and LSS were also examined and all demonstrated strong positive relationships with each other with rho greater than 0.50 ($p < 0.01$). Intellectual motivation was correlated with satisfaction with the psychological, educational, and total aspects of leisure as demonstrated by rho's ranging from 0.38-0.48 ($p < 0.05$). When the relaxation components of the LMS and LSS were examined, there were no significant correlations.

Table 4.3: IALB Inter-Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
LAM																								
1. Cognitive Attitude	1.00																							
2. Affective Attitude	.700**	1.00																						
3. Behavioural Attitude	.455**	.424**	1.00																					
4. Total	.838**	.813**	.785*	1.00																				
LMS																								
5. Intellectual	.296	.262	.232	.300	1.00																			
6. Social	.185	.187	.330*	.301	.496**	1.00																		
7. Competence/Mastery	.276	.473**	.251	.400**	.261	.276	1.00																	
8. Stimulus/Avoidance	.157	.203	.210	.252	.490**	.176	.039	1.00																
LSS																								
9. Psychological	.364*	.507**	.326*	.484**	.376*	.444**	.387*	.310	1.00															
10. Educational	.142	.336*	.204	.279	.480**	.400**	.561**	.238	.595**	1.00														
11. Social	.117	.212	.449**	.317*	-.133	.236	.231	-.086	.404**	.340*	1.00													
12. Relaxation	.717**	.790**	.346*	.723**	.184	.067	.372*	.157	.433**	.219	.204	1.00												
13. Physiological	.167	.212	.341*	.314*	-.154	.046	.558*	-.057	.114	.464*	.457*	.127	1.00											
14. Aesthetic	.592**	.590**	.383*	.637**	.294	.336*	.383*	.274*	.347*	.323*	.055	.466**	.148	1.00										
15. Total	.493**	.611**	.543**	.689**	.180	.383*	.623**	.197	.635**	.705**	.613**	.561**	.653**	.615**	1.00									
LIM																								
16. Physical	.144	.215	.319*	.280	-.122	.008	.525**	-.204	.006	.209	.364*	.120	.633*	.001	.388*	1.00								
17. Outdoors	.463**	.370*	.373*	.474**	.223	.257	.322*	.037	.150	.229	.066	.283	.181	.430**	.396*	.249	1.00							
18. Mechanical	-.168	-.283	.073	-.115	.193	.158	-.137	.100	-.003	-.074	-.219	-.420**	-.136	-.017	-.179	-.137	.225	1.00						
19. Artistic	-.073	-.123	.123	-.020	.291	.170	.085	.295	.077	.118	-.215	-.248	-.065	.031	-.046	-.144	.218	.571**	1.00					
20. Service	-.031	-.166	.282	.037	.215	.485**	-.063	.035	.131	.163	.248	-.338*	.073	-.035	.088	.198	.194	.146	.142	1.00				
21. Social	.379*	.286	.557**	.508*	.103	.545**	.212	.094	.168	.260	.422**	.235	.384*	.337*	.528**	.366**	.442**	-.179	-.071	.463*	1.00			
22. Cultural	.325*	.099	.224	.278	.214	-.156	-.141	.297	.071	.121	-.218	.095	-.009	.215	.073	-.001	.055	.000	.277	.265	.069	1.00		
23. Reading	.060	-.034	.022	-.016	.283	-.109	-.307	.225	-.001	.072	-.102	-.009	-.293	-.095	-.174	-.172	-.227	-.111	.188	.070	-.121	.490**	1.00	
24. Total	.276	.064	.523**	.358*	.407**	.298	.092	.187	.140	.245	.104	-.093	.147	.130	.202	.351*	.512**	.434**	.521**	.635*	.390*	.529*	.343*	1.00

Note: n=41. * = $p < 0.05$; ** = $p < 0.01$.

4.3.3 Factor Analyses

Four factor analyses (PCA) were performed: one for each of the four IALB scales. As described in the data analysis section, the number of factors retained was based on scree plot analyses. The results of the first four PCAs are displayed in Tables 4.4-4.8. When a PCA was performed on all of the items from all of the scales combined, the program failed after 25 iterations due to too many variables and not enough participants. Therefore, only individual scale factor analyses were performed.

Table 4.4 reports the results of the PCA of the Leisure Attitude Measure. In the initial factor extraction, three factors with eigenvalues greater than 3 emerged and were retained for rotation. Fifteen items loaded on factor 1 (ten affective, three cognitive, two behavioural), ten on factor 2 (eight cognitive, two affective), and eight on factor 3 (eight behavioural). Six variables did not load highly (<0.5) on any of the factors. Together, factors 1, 2, and 3 accounted for close to 50% of the variance in the set of variables.

Table 4.5 displays the results of the PCA of the Leisure Motivation Scale. In the initial factor extraction, five factors with eigenvalues greater than 3 emerged and were retained for rotation. Twelve items loaded on factor 1 (ten intellectual, two competence/mastery), twelve on factor 2 (eleven stimulus/avoidance, one intellectual), seven on factor 3 (six social, one intellectual), six on factor 4 (six social), and seven on Factor 5 (seven competence/mastery). Four items did not load highly on any of the factors. One item ("to be original") loaded on factor 1 and factor 3. Together, factors 1-5 accounted for more than 60% of the variance in the set of variables.

Table 4.6 presents the results of the PCA of the Leisure Satisfaction Scale. In the initial factor extraction, seven factors with eigenvalues greater than 1 emerged and were retained for rotation. Four items loaded on factor 1 (four physiological), five on factor 2 (three educational, two psychological), three on factor 3 (three aesthetic), two on factor 4 (two social), two on factor 5 (two relaxation), two on factor 6 (two relaxation), and three on factor 7 (two psychological, one educational). One item ("I have social interaction with others through leisure activities") loaded on both factor 1 and factor 4. Together, factors 1-7 accounted for 79% of the variance in the set of variables.

Table 4.7 presents the results of the PCA of the Leisure Interest Measure. In the initial factor extraction, eight factors with eigenvalues greater than 1 emerged and were retained for rotation. Six items loaded on factor 1 (four mechanical, two artistic), and five items loaded on

factor 5 (four cultural, one reading). Four items loaded on factor 2 (four physical), factor 3 (four outdoor), and factor 4 (four service), and three items loaded on factor 6 (three social). Factors seven and eight each had fewer than two items loading on them. Together, factors one 1-8 accounted for almost 80% of the variance in the set of variables. Factors 1-6 accounted for more than 71% of the variance.

Table 4.4 Principal Components Analysis of the Leisure Attitude Measure

Variables	Factor 1	Factor 2	Factor 3
I value my leisure activities (affective)	.828	.038	.040
I feel that leisure is good for me (affective)	.825	.175	-.101
I consider it appropriate to engage in leisure activities frequently (affective)	.807	.019	.077
I do leisure activities frequently (behavioural)	.749	.102	.095
People need leisure activities (cognitive)	.745	-.031	.088
I feel that the time I spend in leisure activities is not wasted (affective)	.744	.288	.184
My leisure activities give me pleasure (affective)	.713	.446	-.146
Engaging in leisure is a wise use of time (cognitive)	.711	.326	.090
I like my leisure activities (affective)	.666	.233	-.038
I give leisure high priority among other activities (behavioural)	.639	.236	.268
My leisure activities are refreshing (affective)	.627	.302	.201
Leisure activities are important (cognitive)	.604	.199	.226
I can be myself during my leisure (affective)	.584	-.049	-.095
My leisure activities absorb or get my full attention (affective)	.559	.255	.242
Leisure activities increase one's work productivity (cognitive)	.457	.271	.228
Leisure increases one's happiness (cognitive)	.111	.756	.176
Leisure activities help to renew one's energy (cognitive)	.174	.750	-.127
Leisure activities contribute to one's health (cognitive)	.164	.740	.191
Leisure activities can be a means to self-improvement (cognitive)	-.060	.732	.114
When I am engaged in leisure activities the time flies (affective)	.192	.626	-.009
My leisure activities provide me with delightful experiences (affective)	.402	.593	-.039
Leisure activities help individuals to relax (cognitive)	.101	.527	.157
Leisure activities are good opportunities for social contacts (cognitive)	.102	.515	-.176
People often develop friendships in their leisure (cognitive)	.227	.459	.095
Leisure activities are beneficial to individuals and society (cognitive)	.271	.458	.232
Given a choice, I would increase the amount of time I spend in leisure activities (behavioural)	.159	.294	.284
I buy goods and equipment to use in my leisure activities as my income allows (behavioural)	-.011	.187	.096
I would spend time in education and preparation for leisure activities (behavioural)	.185	-.043	.736
I support the idea of increasing my free time to engage in leisure activities (behavioural)	.082	.068	.702
I would attend a seminar or a class to be able to do leisure activities better (behavioural)	.228	-.079	.670
I would do more new leisure activities if I could afford the time and money (behavioural)	-.248	.077	.634
I do some leisure activities even when they have not been planned (behavioural)	-.187	.150	.620
Given a choice I would live in an environment or city which provides for leisure (behavioural)	.236	.128	.611
I engage in leisure activities even when I am busy (behavioural)	.350	.095	.577
I spend considerable time and effort to be more competent in my leisure activities (behavioural)	.326	.083	.563
I like to take my time when I am engaged in leisure activities (affective)	.096	-.080	-.168

Table 4.5 Principal Component Analysis of the Leisure Motivation Scale.

Variables One of my reasons for engaging in leisure activities is...	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
To expand my knowledge (intellectual)	.839	.255	.018	.029	.010
To explore new ideas (intellectual)	.794	.306	.024	-.094	-.120
To discover new things (intellectual)	.780	-.024	-.069	.095	.098
To expand my interests (intellectual)	.743	.237	.064	.247	.031
To satisfy my curiosity (intellectual)	.725	.313	.069	.118	-.132
To learn about things around me (intellectual)	.699	.237	-.044	.145	.092
To use my imagination (intellectual)	.624	.284	.490	.103	-.109
To make things more meaningful to me (intellectual)	.606	.222	.161	-.001	.003
To improve my skill and ability in doing them (competence/mastery)	.573	-.204	.272	-.217	.500
To be creative (intellectual)	.532	.124	.471	.262	-.002
To seek stimulation (intellectual)	.516	.182	.214	.145	-.091
To get a feeling of achievement (competence/mastery)	.450	-.004	.134	.133	.229
To rest (stimulus/avoidance)	.105	.743	-.091	.126	-.125
Because I sometimes like to be alone (stimulus/avoidance)	.148	.735	.088	-.119	-.163
To unstructure my time (stimulus/avoidance)	-.058	.718	.332	-.202	.102
To relax mentally (stimulus/avoidance)	.193	.696	-.144	-.280	-.082
To relax physically (stimulus/avoidance)	.252	.694	-.046	.042	-.169
To slow down (stimulus/avoidance)	-.017	.687	.115	-.140	-.170
To avoid the hustle and bustle of daily activities (stimulus/avoidance)	.420	.628	.011	-.229	-.056
To be in a calm atmosphere (stimulus/avoidance)	.326	.569	.116	.327	-.074
To relieve stress and tension (stimulus/avoidance)	.092	.555	.059	.009	.199
To learn about myself (intellectual)	.464	.526	.293	.253	.046
To do something simple and easy (stimulus/avoidance)	.273	.524	-.008	.266	.054
To avoid crowded areas (stimulus/avoidance)	.182	.519	.263	.012	.108
To influence others (social)	.090	.097	.882	.012	.045
To reveal my thoughts, feelings, or physical skills to others (social)	.263	.054	.837	-.030	-.084
To be socially competent and skillful (social)	.195	.150	.677	.430	-.066
To gain other's respect (social)	.072	.092	.672	.444	-.073
To gain a feeling of belonging (social)	-.012	.008	.631	.166	.177
To be original (Intellectual)	.537	.067	.542	.233	-.026
To learn about things around me (Intellectual)	.145	.404	.536	-.257	.190
So others will think well of me for doing it (social)	-.028	.039	.524	.313	-.279
To be good in doing them (competence/mastery)	.381	-.144	.389	-.245	.265
To compete against others (competence/mastery)	-.156	.148	.259	.069	.202
To interact with others (social)	.087	-.127	.066	.826	.146
To build friendships with others (social)	.236	-.053	.133	.818	.196
To develop close friendships (social)	.169	.043	.211	.780	.140
To be with others (social)	-.029	-.047	.077	.770	.390
To meet new and different people (social)	.282	.027	.189	.622	.300
Because I enjoy mastering things (competence/mastery)	.124	.069	.368	-.562	.316
To help others (social)	.195	-.112	.343	.520	-.063
To keep in shape physically (competence/mastery)	-.100	.042	-.192	.121	.876
To develop physical fitness (competence/mastery)	-.201	.018	-.239	.180	.862
To use my physical abilities (competency/mastery)	-.142	.012	-.066	.246	.825
To develop my physical skills and abilities (competency/mastery)	.196	-.127	.075	.108	.699
To challenge my abilities (competence/mastery)	.198	-.186	.396	-.213	.633
To be active (competence/mastery)	.085	-.049	.131	.305	.581
To see what my abilities are (competence/mastery)	.406	-.083	.359	-.215	.496

Table 4.6 Principal Component Analysis of the Leisure Satisfaction Scale

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
I do leisure activities which develop my physical fitness (physiological)	.920	.037	-.070	.072	.098	.004	.018
I do leisure activities which restore me physically (physiological)	.895	.048	.046	.150	.116	.173	-.104
My leisure activities are physically challenging (physiological)	.863	.193	.014	.136	-.195	-.056	.089
My leisure activities help me to stay healthy (physiological)	.669	.202	.360	-.092	.199	.111	.165
My leisure activities have helped me to develop close relationships with others (social)	.613	-.052	-.080	.567	-.057	-.235	.319
My leisure activities provide opportunities to try new things (educational)	.236	.902	-.051	-.098	.005	-.010	.037
My leisure activities give me a sense of accomplishment (psychological)	.072	.800	.105	.215	.134	.297	.124
My leisure activities increase my knowledge about things around me (educational)	.009	.798	.248	.074	-.044	-.147	.032
My leisure activities give me self-confidence (psychological)	-.144	.708	.081	.309	.090	.345	.331
My leisure activities help me to learn about myself (educational)	.443	.626	.174	-.042	.043	.015	.359
The areas or places where I engage in my leisure activities are interesting (aesthetic)	.090	-.009	.899	-.060	.180	-.014	.202
The areas or places where I engage in my leisure activities are beautiful (aesthetic)	-.093	.165	.874	.052	.041	.260	.112
The areas or places where I engage in my leisure activities are fresh and clean (aesthetic)	.055	.315	.564	.139	.292	.076	-.114
The people I meet in my leisure activities are friendly (social)	.171	.081	.053	.869	.024	.048	-.140
I associate with people in my free time who enjoy doing leisure activities a great deal (social)	.111	.165	.048	.858	.120	.107	.157
I have social interaction with others through leisure activities (social)	.428	-.028	-.302	.551	-.076	.026	.312
My leisure activities help me to relieve stress (relaxation)	.133	-.021	.178	.159	.897	.033	.028
My leisure activities help me to relax (relaxation)	-.119	.090	.172	-.008	.788	.327	.239
The areas or places where I engage in my leisure activities are well-designed (aesthetic)	.072	.215	.425	-.199	.437	-.116	-.400
I engage in leisure activities simply because I like doing them (relaxation)	-.008	.204	.036	.094	.012	.896	.041
My leisure activities contribute to my emotional well-being (relaxation)	.139	-.102	.246	.030	.345	.714	.220
My leisure activities help me to learn about other people (educational)	.376	.219	.137	-.073	.340	-.013	.665
I use many different skills and abilities in my leisure activities (psychological)	.084	.418	.204	.036	-.022	.233	.617
My leisure activities are very interesting to me (psychological)	.035	.451	.071	.233	.179	.358	.571

Table 4.7 Principal Component Analysis of the Leisure Interest Measure

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
I often use tools in my leisure activities (mechanical)	.882	-.006	-.049	.032	-.147	.122	-.078	.129
I like to work with mechanical devices in my leisure time (mechanical)	.880	-.104	.072	.177	-.127	-.172	.033	.002
I like to work with materials such as metal or wood in my leisure time (mechanical)	.864	.053	.102	-.040	.071	.034	.096	.085
I like repairing or building things in my leisure time (mechanical)	.833	-.129	.176	.098	-.134	-.040	-.134	.002
I like to create artistic designs in my leisure time (artistic)	.702	-.187	.047	.153	.175	-.088	.167	-.212
I prefer leisure activities which require creativity (artistic)	.593	-.175	.076	.084	.224	-.235	-.069	.331
I like leisure activities which require physical challenge (physical)	-.059	.900	.144	-.010	.055	.220	-.034	-.019
I prefer physically oriented activities such as sports (physical)	-.170	.894	.147	.049	-.104	.155	.002	.037
I prefer activities which require a high degree of physical activity (physical)	-.143	.838	.189	.055	.119	.206	.156	-.003
I prefer competitive physical activities (physical)	-.013	.817	-.057	.232	-.126	-.119	-.024	.036
I prefer leisure activities which take place in outdoor environments (outdoor)	.026	.148	.917	.038	-.017	.026	.067	.141
I prefer being outdoors (outdoor)	.064	.048	.857	.028	.062	.133	-.056	.166
I prefer to engage in leisure activities which take place in outdoor environments (outdoor)	.253	.186	.730	.099	-.140	.313	-.012	-.050
I like the fresh air of outdoor settings (outdoor)	.126	.075	.701	-.005	.015	-.043	.445	-.227
I regularly contribute time to service organizations or activities (service)	.026	.193	.127	.872	.062	.164	-.004	-.134
I am committed to serve as a volunteer worker in one or more service organizations or activities (service)	.122	.198	.041	.871	.120	.031	.058	-.171
I often participate in service activities in my leisure time (service)	.214	.046	-.102	.754	.055	.202	.027	.196
I prefer to be of service to others in my leisure time (service)	.091	-.134	.113	.744	.081	.288	.281	.039
I have a strong attraction to the cultural arts (cultural)	-.087	.011	.098	.114	.904	.079	-.118	.106

I prefer to engage in cultural activities such as going to plays, lectures or visiting museums (cultural)	.018	.064	-.062	.226	.838	-.041	.019	.103
I appreciate the cultural arts (cultural)	.021	-.109	-.003	-.201	.828	-.146	.166	-.296
I like to read in my free time (reading)	-.112	-.125	-.271	.104	.582	-.162	.122	.417
I like to observe local and national cultural events (cultural)	.417	.007	.125	.225	.473	.152	.234	-.443
I use my leisure to develop close relationships with others (social)	-.113	.202	.098	.240	-.085	.788	-.028	-.076
I use my leisure as a chance to meet new and different people (social)	-.057	.280	.059	.255	-.010	.739	.194	-.132
I prefer leisure activities which help to develop friendships (social)	-.040	-.024	.459	.205	-.048	.683	.152	.203
I prefer to engage in leisure activities which require social interaction (social)	-.301	.151	.176	.240	.032	.334	.762	-.049
I like leisure activities which help me to explore new ideas (artistic)	.291	-.050	.049	.135	.102	.027	.702	.446
I like to be original in my leisure activities (artistic)	.198	.100	.267	-.117	.068	-.017	.140	.710

4.4 Discussion

This is the first study to test hypotheses about the relationships between the IALB and other self-report psychosocial scales among individuals with SCI. In addition, it is the only study to perform a confirmatory factor analysis using a principal component analysis of the four IALB scales among individuals with SCI.

Since this is one of the first studies to examine the IALB among individuals with SCI, it is unclear how the scores on the scales are affected by having a disability. Normative data has been provided for the LAM, LSS, and LIM among healthy adults (Bowtell, 1993) and for the LAM and LM among a sample of individuals with SCI (Wickham et al., 2000). Direct comparison of our sample's scores to normative data was not possible as previous studies used scales with 7-point response categories and a number additional items for each subscale. Despite this situation we compared which of the subscales the different samples scored the highest and the lowest.

In the LAM, all three samples scored highest on the affective subscale. However, both our sample and the SCI normative sample scored lowest on the behavioural subscale (actual and intended participation) while healthy adults did not (Ragheb & Beard, 1982) which makes sense, as it is consistent with reports of lower participation rates in recreation among individuals with SCI. Scores for the LMS were very similar for our sample and the SCI normative sample showing highest scores in the competence/mastery and intellectual subscales, and lowest scores in the social and stimulus/avoidance subscales. No normative data has been reported for the LSS and LIM for individuals with SCI; therefore, only comparisons to healthy adults could be made. In the LSS, on average, our sample scored higher than the healthy adults in all of the subscales and the total score (assuming that the four items used in our analysis accurately reflected the 12 items used in the healthy adult sample). This finding suggests that our sample felt leisure was meeting their needs to a greater extent than adults without SCI. Interestingly, our sample and the healthy adult sample both demonstrated highest scores in the relaxation subscale and lowest scores in the physiological subscale (Beard & Ragheb, 1980). In the LIM, both our sample and the healthy adult sample scored highest in the outdoor and social subscales respectively and lowest in the service subscale. Our sample scored significantly lower on the physical subscale than the healthy adults (Ragheb & Beard, 1992).

These comparisons demonstrate that although there are a few discrepancies between scores for our sample of individuals with SCI and scores provided for healthy adults, they are consistent with previous reports of individuals with SCI.

4.4.1 Validity – Relationships Between the IALB and the Validity Scales

Validity is based on testing hypotheses about variables. Correlations between both leisure attitude and leisure satisfaction were in the hypothesized direction, of moderate magnitude ($\rho > 0.3$), and statistically significant with measures of satisfaction with life and depression. We also expected leisure attitude and leisure satisfaction to demonstrate moderate correlations with leisure participation. Results suggest that individuals who are more satisfied with their leisure participate more in leisure activities within the community; however a similar relationship was not found between leisure attitude and leisure participation. This is not surprising considering the results of a study by Ragheb (1980) who found that leisure satisfaction was a better predictor than leisure attitude of actual leisure participation. Surprisingly, there were no significant correlations between the IALB and community integration. The mean CHART score

for our sample (both individuals with paraplegia and tetraplegia) was significantly higher than the normative data provided by Hall (1998) and our sample's mean time since injury was 10.9 ± 8.9 years compared to the study by Hall (1998) where 66% of the sample was within only five years post-injury. It is possible that the small range in scores in the CHART made it difficult to show any significant correlations. In addition, not all of the participants filled out the economic subscale of the CHART, thus a total score could only be calculated for 33 participants and the smaller sample size may have contributed to a lack of significant correlation. Alternatively, the constructs of leisure satisfaction and community integration are different.

Despite low correlations between leisure attitude and leisure satisfaction with community integration, the results were as anticipated and are consistent with previous research that indicates positive relationships between leisure participation and other psychosocial variables. In a study by Cassidy (1996), individuals who had more positive attitudes towards leisure and who participated more in leisure activities experienced less depression and higher levels of general well-being. Other researchers have shown that individuals with SCI who are more satisfied with their leisure are also more satisfied with life (Coyle et al. 1993) and they tend to experience fewer depressive symptoms (Coyle et al. 1993, Loy et al. 2002, MacDonald et al. 1987). These results support the idea that the LAM and LSS are measuring what they are intend to measure.

4.4.2 Validity – Interrelationships Among the IALB Scales

When interrelationships within the IALB scales and subscales were examined, correlations were in the hypothesized direction, of adequate magnitude (0.38-0.69), and statistically significant providing support for the validity of the IALB. Leisure attitude was correlated with leisure satisfaction as anticipated, based on the causal chain of attitude-motivation-participation-satisfaction described by Ragheb and Tate (1993). In addition, it was not surprising that the affective subscale of the LAM had the highest correlation with leisure satisfaction since affective attitude is based on an evaluation of one's own leisure experiences and activities (Ragheb & Beard, 1982), which is very similar to the definition of leisure satisfaction: "positive perceptions or feelings which an individual forms, elicits, or gains as a result of engaging in leisure activities" (Beard & Ragheb, 1980, p. 22).

Generally, similar subscales from each of the scales (i.e. physical, social, relaxation) correlated highly with each other as expected. However, in some cases, there were discrepancies. For example, participants who scored high in social motivation and social interests were not necessarily satisfied with the social aspects of their leisure. In addition, there was no relationship found between being motivated to relax and being satisfied with the relaxation aspect of their leisure. These discrepancies may be explained by the results of a recent study that examined boredom of 110 individuals with SCI. de Ross et al (2004) discovered that the meaningfulness of activities was far more important than the amount of activities or types of activities in which they participated. It is possible that the participants may be motivated by social or relaxation activities but were not actually participating in them. Conversely, may have been engaging in various social and relaxation activities in order to keep busy, yet they were not necessarily satisfied with those areas of their leisure. Perhaps this is because they failed to find purpose or meaning in their activities or because individuals participate in activities for reasons other than experiencing satisfaction.

4.4.3 Factor Analyses

A confirmatory factor analysis seeks to determine if the number of factors and the variable loadings conform to what is expected on the basis of pre-established theory (Streiner, 1994). In this study, the item structure was expected to be similar for individuals with SCI to that of the original IALB scales developed for healthy adults. The variables used in the study were exactly the same as those used in the original development of the IALB scales. The results provided evidence for the factorial validity of the IALB in that a similar structure was found for many of the subscales. Problems were identified and are discussed with respect to each scale. These problems could have occurred due to sample size or to limitations of the scales discussed in Chapter 2 such as the wording (i.e. of the definition of leisure) or the context (i.e. pre vs. post-injury) of the questions. Alternatively, the theory behind the development of the scales and subscales may not work for individuals with SCI. Some of the items may have different meanings for individuals with SCI due to the physical and emotional changes that occur following such a traumatic injury. For example, some of the questions related to physical activities or to how well-designed the areas are in which they participate in leisure may no longer be appropriate. In this study, problems were defined as items that loaded less than 0.5 on any factor, items that loaded on more than one factor, and factors that had less than two items

loading on them. Streiner (1994) suggests that problem items such as these should be removed. However, due to the large number of variables and small sample size in this study, these results need to be viewed as preliminary. Further research is required with larger samples before making any changes to the scales.

4.4.3.1 Leisure Attitude Measure

Attitudes are multidimensional, consisting of three parts: cognitive, affective, and behavioural (Triandis, 1967). The scale developers (Ragheb & Beard, 1980) believe that assessing all three components is appropriate for leisure attitude since an individual's: (1) knowledge and beliefs about leisure activities (cognitive); (2) feelings towards their leisure activities (affective); and (3) past, current, and intended patterns of participation (behavioural) all affect their predisposition to participate in leisure.

In this study, when the LAM was examined, three factors were revealed, which is similar to the findings of the initial development of the scale (Ragheb & Beard, 1980). The item structure was very similar to that of the original scale (i.e. items from the affective, cognitive, and behavioural subscales loaded appropriately into three separate factors). However, three items from the cognitive subscale and two items from the behavioural subscale loaded on Factor 1, which consisted mostly of the affective subscale items. In addition, two of the items from the affective subscale loaded on Factor 2, which was comprised mostly of items from the cognitive subscale. Upon examination of the items in these two subscales, those that loaded on the wrong factor were ambiguous in terms of whether they were getting at general knowledge or beliefs about the benefits of leisure to society (cognitive) or feelings towards one's own leisure participation (affective). The third factor consisted exclusively of items from the behavioural subscale, which include verbalized behavioural intentions toward leisure choices and reports of current and past participation. Six items from the LAM did not load properly onto any one of the factors.

If future research with larger sample sizes supports the results of this factor analysis, removal or modification of problematic items should be considered. In addition, since there is some concern about the burden of the scales (Chapter 2) and the reliability estimates are relatively strong (Chapter 3), it would be worth examining the measurement properties of the scales with only the eight items that have the strongest factor loadings in each subscale.

4.4.3.2 Leisure Motivation Scale

The LMS consists of four subscales, which were determined by a factor analysis when the scale was initially developed (Beard & Ragheb, 1983). The four primary motivators for participating in leisure were identified as: (1) intellectual (the need for mental activities such as learning and imagining); (2) social (need for friendship and for the esteem of others); (3) competence/mastery (need to achieve and compete, usually physical in nature); and (4) stimulus/avoidance (need to escape and get away).

In this study, the PCA identified five factors for the LMS, which is one more than the original scale has (Beard & Ragheb, 1983). Factor 1 included ten out of the original twelve items in the intellectual component. Factor 2 consisted of ten of the original twelve items in the stimulus-avoidance subscale. Factor 5 consisted of seven items from the competence-mastery subscale. Factor 3 consisted of the items from the social subscale related to the need for the esteem of others. Factor 4 consisted of the items from the social subscale related to the need for friendships.

When the LMS was developed, the factor analysis demonstrated a strong correlation between a physical component and the competence-mastery component and thus, the two factors were combined (Beard & Ragheb, 1983). Interestingly, in our sample the items that are physical in nature loaded onto one factor while those related to achieving and mastering, which have little to do with physical activities, were not represented by any one factor. Several of the competence/mastery items loaded quite highly on the intellectual factor suggesting that for our sample, achieving and mastering is linked with learning. For individuals with SCI, physical activity is very important; however, their participation is influenced by both individual and societal factors (Bourne, 2003, Levins et al., 2004), which may give it a different meaning than for individuals who are able-bodied. It may be more related to maintaining health, or feeling good than to competence/mastery and perhaps should be renamed as the physiological subscale.

The items from the social component were split among factors three and four. In the original scale the social component included the need for friendship/interpersonal relations as well as the need for the esteem of others (Beard & Ragheb, 1983). In our sample, the PCA clearly separated social motivation into two distinct factors. Based on these results, it appears that for the individuals with SCI in this study, the need for friendship and the need for the esteem of others are two separate motivators for leisure participation. The changes to the

competence/mastery and social components suggested above would result in five subscales in the LMS (intellectual, stimulus-avoidance, friendship, esteem of others, and physical).

4.4.3.3 Leisure Satisfaction Scale

The LSS measures the extent to which individuals perceive their needs are being satisfied through leisure (Beard & Ragheb, 1983). The needs identified in the initial development of the scale are: (1) psychological (sense of freedom, enjoyment, intellectual challenge); (2) educational (intellectual stimulation); (3) social (rewarding relationships); (4) relaxation (relief from the stress of life); (5) physiological (staying healthy, developing physical fitness); and (6) aesthetic (engaging in leisure in aesthetically pleasing locations).

In this study, the PCA of the LSS demonstrated the most complex factor structure of the IALB scales. It revealed seven emergent factors, which is one more than in the original scale. Factor 1 consisted of the original four physiological items. The psychological and educational subscales each had two items load on factor two in this study. Based on the definition provided by the scale developers of these two subscales, there is some obvious overlap and it appears that for our sample, activities that offer opportunities for intellectual stimulation may also provide psychological satisfaction and these two factors could possibly be combined and called the intellectual subscale. The validity correlations also provided evidence for this finding as both the psychological and educational subscales of leisure satisfaction were moderately correlated with the intellectual subscale of the LMS.

Factor 3 consisted of three of the four original aesthetic items that relate to satisfaction with the areas in which they engage in leisure (Beard & Ragheb, 1983). The three items that loaded on the factor describe areas that are pleasing, interesting, and beautiful. The fourth item, which did not load on that factor, was related to how well-designed the areas are where leisure participation occurs. As discussed in Chapters 2 and 3, for individuals with SCI the meaning of well-designed may be linked more to accessibility than to aesthetics. The participants in the qualitative study (Chapter 2) all noted that these four items in the aesthetic subscale were ambiguous and thought that they should be eliminated. The LIM was originally developed to obtain information on leisure interests for park and recreation service managers to help in program planning (Ragheb & Beard, 1992), and although it is important to examine aesthetic

satisfaction in some instances, for the purpose of SCI rehabilitation and research, further examination into whether this subscale should be included is warranted.

Factors 5 and 6 each contain two of the relaxation items. Perhaps there are different types of relaxation; however, it is unclear why they have been separated for our sample. It is clear that this aspect of leisure satisfaction is important and needs to be further developed. Since factors three and seven each contain only two items, we suggest they be eliminated (Streiner, 1994).

If future studies show a similar factor structure, we would recommend that the LSS only consist of four subscales; physiological, intellectual, relaxation, and social. These subscales are very similar to the subscales in the LMS, which makes sense as one would expect components of leisure motivation and leisure satisfaction to be virtually the same. However, further research is needed to develop additional items so that each of the subscales has sufficient items for reliability.

4.4.3.4 Leisure Interest Measure

Leisure interests are generally measured using interest checklists. The developers of the LIM chose to cluster the activities based on common characteristics (Ragheb & Beard, 1992). Interests were defined as preferences for leisure activities and a list of 27 areas of leisure interest was compiled from a literature review and reduced to eight using cluster analysis. The resulting subscales were: physical, outdoor, social, mechanical, artistic, cultural, service, and reading.

The item structure identified by the PCA for the LIM was similar to the original scale; however, there were two major differences. First, seven factors (instead of the original eight) emerged. First, "I like to read in my free time" (LAM 1), which is an item that does not belong to any subscale, loaded on the factor that reflected an interest in cultural items. The exact reason for this finding is difficult to explain. One potential explanation may be that the culturally oriented items are more appealing to individuals who have an interest in reading. Second, several of the items from the artistic subscale loaded on the same factor as the items from the mechanical subscale in our sample. A plausible explanation for this is that many individuals who enjoy artistic activities scored high on the mechanical subscale simply because they use tools in their leisure, which was reflected in the mechanical items.

The items in the cultural, outdoor, physical, service, and social subscales all reflected the structure of the original scale, and we recommend that they remain the same. Based on the results of the PCA, we also recommend that the items in the mechanical and artistic subscales be re-evaluated and modified to reflect two separate constructs. In addition, a new subscale could be developed consisting of passive leisure interests such as reading, listening to music, using the computer, or watching television.

4.4.4 Limitations and Conclusions

Comparison of our participant characteristics to statistics from the Canadian Paraplegic Association (2000) of over one thousand individuals living with an SCI in Canada, indicated that our sample was representative of the general SCI population in terms of age at time of injury, level of injury, completeness of injury, and cause of injury.

A limitation of this study is that it was powered for reliability. Portney and Watkins (2000) suggest that a sample size of 68 would have been needed to demonstrate statistically significant correlations ($p < 0.05$) of a 0.30 magnitude with a power of 0.80 providing all statistical assumptions are met and no outliers are present. Although we did not have this number of participants, we were still able to show important correlations and trends that were in the hypothesized magnitude and in the hypothesized direction. The standard sample size requirement for performing a factor analysis is five participants for every variable (Streiner, 1994). Since the IALB has well over 100 items, a sample size of over 500 individuals would have been necessary. This was not feasible considering the scope of this study and the availability of an accessible target sample. The major concern with not having a large enough sample size when performing a factor analysis is that the structure of the scales may not make any sense. A factor analysis is a descriptive technique (Streiner, 1994) and since it was able to explain our data in a meaningful way, it served its purpose.

It was interesting to see that the item structure of the IALB scales in our sample of individuals with spinal cord injury was similar to that of healthy adults. While some deviations were found it is not clear whether the differences are specific to our sample, to individuals with SCI, or to individuals with disabilities in general. There is much debate as to whether measurement scales should be generic, so that they can be used in a broad range of patient populations, or whether they should be disability-specific. Although there would be many benefits of making a set of IALB SCI-specific scales (i.e. better responsiveness), it might not be

practical, as new versions may then be needed for other disabilities as well. One consideration might be to attach a disability-specific supplement to a more generic measure. Additional research on the scales might shed light regarding this suggestion.

A single study cannot provide enough evidence to fully support the use of a scale in research or in clinical practice. What this study did do, however, was provide further evidence for the validity of the IALB. The scales and subscales correlated with other variables in the hypothesized direction, within expected magnitudes, and were statistically significant. Although the scales are usable in their current form, the results of the factor analysis suggest that some modifications may enhance the scales and make them more population-specific. Eliminating problematic items and shortening the scales would also eliminate some of the burden. Although recommendations were made based on the results of this study, given the number of variables and limited sample size, the results must be interpreted with caution and further studies with larger sample sizes are needed to confirm the results of the factor analysis before changes should be made on the scales. A larger sample size would enable a factor analysis (PCA) to be performed on all of the IALB items to see if they load on the four main attitude, motivation, satisfaction, and interest scales.

4.5 References

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CHAPTER 5 – Conclusions and Implications

5.1 General Findings

The purpose of this thesis was to: (1) evaluate the usability of the four scales in the Idyll Arbor Leisure Battery (IALB) as measurement tools among individuals with spinal cord injuries (SCI) using qualitative methodology; (2) provide estimates of the reliability of the IALB; and (3) provide support for the validity of the IALB. The results of the three studies all provide evidence that the IALB has the potential to be a useful scale in measuring leisure attributes among individuals with SCI. With some minor modifications, the psychometric properties of the scales may improve and the burden to individuals with SCI, clinicians, and researchers may diminish. This chapter will discuss whether the scales meet measurement standards, provide suggestions for modifying the IALB based on the results of the studies, and describe appropriate administration of the scales. Limitations and final thoughts follow.

5.2 Measurement standards

Guidelines for the development and use of measurement tools for rehabilitation are essential to ensure that appropriate measures are being used in research and in clinical practice. Standards for estimating and reporting both reliability and validity have been developed as well as for the development of measures and manuals (Johnston et al., 1992). This section will discuss, based on the results of the studies in this thesis and on the results of previous studies, how well the IALB adheres to the standards provided by Johnston et al. (1992). The measurement standards discussed relate only to the use of the scales among individuals with SCI and in research settings. Widespread use of the scales in other settings and populations requires additional investigation.

5.2.1 Reliability and Validity

Measurement standards require that: (1) support for the reliability and validity of scales (and subscales) be provided with respect to the intended population and settings; (2) a minimal standard of magnitude is achieved based on the intended purpose of the scale; and (3) the statistics used should be reported and justified (Johnston et al., 1992). In the initial

development of the IALB scales, the authors reported only estimates of content validity and internal consistency in healthy adult samples (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). Many authors have discussed the importance of reporting multiple types of reliability (Johnston et al., 1992; Ottenbacher & Tomcheck, 1993; Portney & Watkins, 2000; Rankin & Stokes, 1998; Streiner & Norman, 1995).

Chapter 3 examined the reliability of the IALB among individuals with SCI living in the community and a detailed description and rationale of the statistics used and magnitudes of acceptable reliability were discussed based on the intended uses of the scales. Internal consistency (Cronbach's Alpha) for the scales and subscales ranged from 0.59-0.92, which was considered acceptable based on the standards set by Streiner & Norman (1995) to ensure homogeneity and avoid item redundancy. Stepwise deletion of the items in the subscales identified problems with four of the subscales; LAM (Behavioural), LSS (Relaxation and Aesthetic), and LIM (Artistic).

Test-retest reliability was estimated using Intraclass Correlation Coefficients (ICCs), Standard Error of Measurement (SEM), and the Bland Altman Method. Use of all these methods allowed for a comprehensive evaluation of the test-retest reliability of the IALB. ICCs were within the acceptable range for using the IALB as a descriptive research tool, as all scales demonstrated ICCs over 0.75 (Anderson, 2000). Support for the use of the IALB in clinical settings was also provided by calculating the SEM's and the minimal detectable change (MDC) scores. MDC's ranged from 0.44 to 1.21 and all of the mean differences in scores were within their acceptable range of measurement error (See Appendix XVII). The Bland Altman plots provided an excellent visual representation of the agreement in scores and of any bias or outliers that existed.

Previously, only support for the content validity of the four IALB scales and subscales in healthy adult samples was provided (Beard & Ragheb, 1980, 1983; Ragheb & Beard, 1982, 1992). Chapter 4 tested various hypotheses about relationships between the IALB and other psychosocial variables and interrelationships among the variables in the IALB in order to provide evidence that the scales are measuring what they were intended to measure in a sample of individuals with SCI living in the community. Validity is an ongoing process of hypothesis testing that is necessary for drawing inferences from data and determining how results can be used (Streiner & Norman, 1995). Correlations between the IALB and measures of depression, satisfaction with life, and leisure participation were in the anticipated direction and of the expected magnitude ($\rho > 0.30$). Most interrelationships among the variables in the scales

were also as expected; however there was some discrepancy between motivation and satisfaction.

Factorial validity was also performed to assess the item structure of the IALB scales. Factor analyses using principal components analysis (PCA) were performed on each of the IALB scales and results demonstrated that the items loaded, for the most part, into their appropriate subscales for our sample of individuals with SCI. Minor modifications to the scales were also suggested based on these results.

5.2.2 Scale Development and Manual

Standards are also required in the development of measures and of manuals. Johnston et al. (1992) require that: (1) measure developers must provide sufficient description so that users can determine its appropriateness; (2) they must clearly identify whether a measure is intended for widespread use or whether it should be used only for research purposes; and (3) a manual should be available for users that includes the intended use of the measure, reliability and validity estimates, qualification of users, and major limitations of use. Results from the qualitative study in Chapter 2 illustrated that there was a lack of information provided on how the scales were developed (including item generation) and on the intended use of the scales. A detailed manual was developed by Bowtell (1993) outlining the initial reliability and validity estimates; however, it is unclear whether they are intended for research or clinical purposes or both. Nonetheless, the manuals do provide information on instructions for administering the scales and suggest that data on medications being used, participant appearance, attention span, attitude, body posture, eye contact, frustration, response time, and apparent comprehension should be recorded (See Appendix XXIII for the second page of the IALB scales where this information is collected). In addition, scoring instructions and interventions based on scores are provided (Bowtell, 1993).

5.3 Suggested Modifications

Although each of the studies in this thesis provided some evidence for the reliability and validity of the IALB, they also identified some areas in which the scales could be improved.

5.3.1 Improving the Wording of the Instructions

The definition of leisure provided on the top of each scale is not clear. Individuals are asked to think of leisure simply as any activity that is not part of work or self-grooming. This simplistic definition disregards important aspects of leisure such as the context (i.e. condition under which it occurs, whether it was freely chosen, and cultural beliefs that influence its meaning) and the experience (i.e. state of mind) (Primeau, 2003). An activity that is considered leisure to one individual may not be considered leisure to another. Perhaps words such as fun and freedom of choice, both inherent to the definition of leisure, should be included.

The IALB manual requires testers to simply read the definition and instructions at the top of each scale for every participant. Interestingly, in their leisure motivation paper, Beard and Ragheb (1983, p. 222) defined leisure activities as "non work activities that are freely chosen with no obligation to participate. They can be active or inactive and may include such things as sports, outdoor activities, social activities, watching television, or reading". In addition, they instructed their participants to think of their favorite leisure activities when responding to the items, which is not included in the instructions on the published scale or in the manual. Providing this information may help the issue brought up by the participants in Chapter 2 that different activities meet different needs. If individuals are asked to think of their favorite leisure activities instead of leisure in general, it may make it easier for individuals to fill out the scales and may also result in fewer errors (potentially improving both reliability and validity) by removing any ambiguity in the wording of the instructions.

In the instructions, the context of the questions, in terms of whether to answer based on pre- or post-injury, is not clear. For individuals in rehabilitation, it may be better for the doing versus what they think they can no longer do. For individuals who have already developed a new leisure lifestyle following SCI, the questions should be asked in a post-injury context. It is difficult to determine when an individual has developed a new leisure lifestyle; however, a consideration could be at least one year post discharge from an inpatient rehabilitation program. This time frame allows the individual to experience living in the community during all seasons.

5.3.2 Eliminating the Burden of Scales

Streiner and Norman (1995) have suggested that a scale with 30 items takes approximately 10-15 minutes to complete, which can easily be used with other measures in a reasonable amount

of time. It provides a balance between reflecting enough information to ensure adequate psychometric properties, with the consideration of participant burden. On average, it took about 40-50 minutes for the participants in this study to fill out all of the IALB scales. As a research tool, this is reasonable. However, in clinical practice time is more of a burden. Generally, the TRS' interviewed in Chapter 2 felt they could gather similar information in an informal interview and felt that they would not have the time to administer the scales, nor would their clients be interested in filling them out. Since measurement is essential, a shorter self-report method that is rigorous and easy for clients to do on their own would decrease the amount of time necessary to fill out the scales, which would benefit both the client and the clinicians.

Another consideration includes using the scales in self-awareness based leisure education programs for individuals with SCI who are interested. In Chapter 2, all of the individuals with SCI felt that they could learn a lot about themselves by filling out the IALB. In addition, it is important to remember to accommodate individuals with higher-level injuries who do not have the hand function necessary to self-administer the assessment either by having someone present to fill out the answers or to make it available on a computer. Participants in chapter 2 also suggested mixing up the questions in a random order in order to reduce the chance of boredom in filling out the same questions over and over.

5.4 Appropriate Administration of the Idyll Arbor Leisure Battery

Readiness and timing of services is a major issue in rehabilitation post spinal cord injury (Donnelly, 2004; Levins, 2003). As determined in the qualitative study in Chapter 2, it is important to address the issue of leisure participation during in-patient rehabilitation, otherwise individuals with SCI may return to the community unprepared for the obstacles that lie ahead. Unfortunately, some individuals may not be ready to address leisure issues while they are in rehabilitation as their focus is on self-care and regaining physical function (Coyle et al., 1994; Donnelly, 2004). Instead of suggesting an appropriate time for administering the IALB, we prefer to suggest strategies for determining when a client is ready. Although this is a challenging task for clinicians, many health behaviour theories and models have been developed to propose more effective ways of ensuring patient readiness and compliance with interventions (Elder et al., 1999). Awareness of the components of these behaviour-change theories may assist TRS' in determining the best time to address leisure issues and when to use

the scales. This is not only important for clinicians, but researchers need to know at what stage post-injury it is appropriate to use the IALB in research.

The most popular behaviour model today is the Transtheoretical Model of Behaviour Change (TMBC) (Prochaska & Velicer, 1997). Similar to previous behaviour-change models, the TMBC requires clinicians to take into account intentions to behave, environmental constraints, skills, outcome expectancies, norms for the behaviour, self-standards, affect, and self-confidence (Elder et al., 1999). What makes this model different from others is that it does not assume all individuals are ready for change. According to Prochaska and Velicer (1997), individuals must go through stages of pre-contemplation, contemplation, preparation, action, maintenance, and termination. According to Elder et al. (1999), individuals in the contemplation stages would benefit from cognitive approaches to increase their motivation for changing their behaviour. Individuals in the preparation and action stages would benefit from behavioural-skills training and individuals in the maintenance stage need assistance in continuing their newly changed behaviour.

Although behaviour-change theories were developed to help individuals stop negative behaviours, the strategies utilized would also be beneficial in helping clinicians to encourage leisure participation among individuals with SCI. It is essential for TRS' and other rehabilitation professionals to become aware of the components of behaviour-change theories such as the TMBC in order to assist in optimizing the effectiveness and efficiency of their interactions with clients with SCI. TRS' need to ensure that the clients they are working with: (1) know the benefits of leisure participation; (2) face a minimum of barriers to participate; (3) perceive themselves as having the skills for participating; (4) feel that participating is consistent with their self-image; (5) have a positive affect about participating; and (6) have the resources and training they need to participate independently (Elder et al., 1999). In addition, the timing of TR services may need to be expanded and there should be more opportunities for follow-up visits after a client has returned to the community to ensure that they are receiving the appropriate services at the appropriate time. It may be necessary to develop and use a 'readiness to change' questionnaire based on the stages of change described in the TMBC that is specific to leisure participation to determine when to administer the scales. These are crucial considerations and areas of further study given the potential benefits of recreation in one's life.

5.5 Limitations

As discussed in Chapter 3, there are several factors that can affect the reliability and validity of a measured value. These factors include the measure, the participant, the tester, and the environment. Although a protocol was used to ensure minimal error, it is impossible to eliminate it completely, and several factors may have influenced the results of this study. Table 5.1 explores potential sources of error specific to measuring leisure and strategies that were used to reduce error.

Table 5.1: Potential Sources of Error and Strategies Used to Reduce Error

Potential Sources of Error	Strategy Used to Reduce Error
Measures <ul style="list-style-type: none"> • inadequate operationalization of definition of leisure 	<ul style="list-style-type: none"> • protocol required tester to read only the definition provided on the scale and refer participant to that definition if they ask questions
Participant <ul style="list-style-type: none"> • Actual change effect: there may have been an actual change in the client between measurement sessions • level of understanding of questions and of construct of leisure • Demoralization • Memory effect 	<ul style="list-style-type: none"> • change in medical status, living arrangement or anything else that may have affected leisure lifestyle between measurement sessions was captured in a questionnaire • all participants were given the same set of instructions and definition of leisure prior to filling out the scales • inclusion/exclusion criteria required participants to be able to read and understand the scales • maintained client interest in study and in filling out the scales by providing snacks, a stipend, and a friendly tester • scales were randomized in the first session and re-randomized for the second session
Tester <ul style="list-style-type: none"> • presence of the tester may have affected participant responses (especially if tester filled in the responses for the participant) 	<ul style="list-style-type: none"> • participants did not know the educational background of the tester • tester ensured each client knew there is no right or wrong answer • protocol ensured that the tester was consistent with each client

<ul style="list-style-type: none"> • data entry errors 	<ul style="list-style-type: none"> • random data checks were performed by both tester and research assistant
Environment <ul style="list-style-type: none"> • disruptive environment 	<ul style="list-style-type: none"> • ensured room with proper lighting, no distractions, and comfortable setting for measurement sessions

As with all research, several limitations need to be addressed. First, the sample was self-selected and may not have been entirely representative of the general SCI population. Although they seemed to represent the overall SCI population, it is possible that our group may have been better educated, more interested in leisure, and more compliant to participate in research. In addition, the mean time since injury was over 10 years and they were very well integrated into the community reflected by high scores on the Craig Handicap Assessment and Reporting Technique (CHART) in Chapter 4. However, a comparison of our sample to a 1996 random sample of more than one thousand individuals living with SCI in Canada (Canadian Paraplegic Association, 2000) revealed similar characteristics. For example, the Canadian Paraplegic Association (2000) reported that 80% of SCI's occur in males and that 78% occur in individuals between the ages of 15 and 34. In the present study, 68% of injuries occurred in males and the mean age at time of injury was 30.8 (range 18-64). The Canadian Paraplegic Association (2000) also reported that 47% of injuries result in tetraplegia. In the present study the statistic was slightly higher with 51% of the sample having tetraplegia. This is representative of the fact that the number of higher-level injuries is increasing due to medical advances (Canadian Paraplegic Association, 2000). Furthermore, the most common cause of SCI reported in the Canadian Paraplegic Association study (2000) and in the present study is vehicular accidents, followed by falls. Our sample is also representative of the SCI population in the GF Strong Spinal Cord Program from April 2001- March 2002.

Second, the sample size was powered for reliability and not validity or factor analysis. It was determined a sample size of 40 would be sufficient for examining the test-retest reliability of the scales (Donner & Eliasziw 1987). Due to the difficulty in recruiting individuals with SCI, this number seemed reasonable.

Third, sensitivity to multiculturalism in therapeutic recreation services is becoming increasingly important (Dieser, 1993; Sheldon & Datillo, 1997). The definition provided for leisure on the scales is based on a Western construct. Although the same definition was given

for each participant, their cultural view of leisure may have affected their answers on the scales. The scales should be examined for cultural biases and language to ensure they are appropriate for people from all around the world.

5.6 Final Thoughts

There is limited information available on interventions to increase leisure participation among individuals with SCI. The development and psychometric testing of leisure scales is essential in order to further our understanding in this area. It is also important to develop and test these scales specifically for the group in which they are intended to be used (Washburn & Figoni, 1998). This is particularly important for individuals with SCI since their level of participation is likely to be significantly lower than in able-bodied individuals and the types of activities they participate in may be different than what is presented in currently available scales (Wahsburn & Figoni, 1998).

Based on the results of the reliability study, it is apparent that the IALB can be used confidently in SCI research that does not attempt to show change. The reliability coefficients for the total scales met the $ICC = 0.75$ standard provided by Anderson (2000). A few of the subscale reliability coefficients were slightly lower, as expected, due to having fewer items, and some caution is required when interpreting their scores. Based on the $ICC = 0.85$ standard provided by Weiner and Steward (1984) for making decisions about individuals, some modifications may be required in order to improve the reliability coefficient so that the IALB can better differentiate among participants. However high agreement in scores and minimal error was found from time one to time two supporting the stability of the scales. Correlations between the IALB and other psychosocial scales as well as interrelationships among the IALB were as hypothesized, providing support that the scales are measuring what they are intended to measure and providing more information to users for interpreting the scores.

IALB may be useful in research to test relationships and develop models of leisure participation, as assessment tools to identify problems and create care plans, as outcome measures to test the effectiveness of interventions, and in leisure education programs to provide clients with the opportunity to learn about themselves and their leisure behaviour. With further testing and revision, the confidence in using the scales will only improve.

5.7 References

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LEISURE ATTITUDE MEASUREMENT (LAM)

Purpose: The purpose of this scale is to measure your attitude toward leisure.

Directions: Listed below are 36 statements. To the left of each statement is a line to indicate how true that statement is. A "1" means that the statement is never true, "2" means that it is seldom true, "3" means that it is sometimes true, "4" means that it is often true, and "5" means that it is always true. Write down the number that best fits into your situation.

Definition: "Leisure Activities" are the things that you do that are not part of your work and are not part of your basic grooming needs.

1	2	3	4	5
NEVER TRUE	SELDOM TRUE	SOMEWHAT TRUE	OFTEN TRUE	ALWAYS TRUE

- | | |
|--|--|
| <p>___ 1. Engaging in leisure activities is a wise use of time.</p> <p>___ 2. Leisure activities are beneficial to individuals and society.</p> <p>___ 3. People often develop friendships in their leisure.</p> <p>___ 4. Leisure activities contribute to one's health.</p> <p>___ 5. Leisure activities increase one's happiness.</p> <p>___ 6. Leisure increases one's work productivity.</p> <p>___ 7. Leisure activities help to renew one's energy.</p> <p>___ 8. Leisure activities can be a means for self-improvement.</p> <p>___ 9. Leisure activities help individuals to relax.</p> <p>___ 10. People need leisure activities.</p> <p>___ 11. Leisure activities are good opportunities for social contacts.</p> <p>___ 12. Leisure activities are important.</p> <p>___ 13. When I am engaged in leisure activities, the time flies.</p> <p>___ 14. My leisure activities give me pleasure.</p> <p>___ 15. I value my leisure activities.</p> <p>___ 16. I can be myself during my leisure.</p> <p>___ 17. My leisure activities provide me with delightful experiences.</p> <p>___ 18. I feel that leisure is good for me.</p> <p>___ 19. I like to take my time while I am engaged in leisure activities.</p> <p>___ 20. My leisure activities are refreshing.</p> | <p>___ 21. I consider it appropriate to engage in leisure activities frequently.</p> <p>___ 22. I feel that the time I spend on leisure activities is not wasted.</p> <p>___ 23. I like my leisure activities.</p> <p>___ 24. My leisure activities absorb or get my full attention.</p> <p>___ 25. I do leisure activities frequently.</p> <p>___ 26. Given a choice I would increase the amount of time I spend in leisure activities.</p> <p>___ 27. I buy goods and equipment to use in my leisure activities as my income allows.</p> <p>___ 28. I would do more new leisure activities if I could afford the time and money.</p> <p>___ 29. I spend considerable time and effort to be more competent in my leisure activities.</p> <p>___ 30. Given a choice I would live in an environment or city which provides for leisure.</p> <p>___ 31. I do some leisure activities even when they have not been planned.</p> <p>___ 32. I would attend a seminar or a class to be able to do leisure activities better.</p> <p>___ 33. I support the idea of increasing my free time to engage in leisure activities.</p> <p>___ 34. I engage in leisure activities even when I am busy.</p> <p>___ 35. I would spend time in education and preparation for leisure activities.</p> <p>___ 36. I give my leisure high priority among other activities.</p> |
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Patient's Name	Physician	Admit #	Room/Bed
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LEISURE MOTIVATION SCALE (LMS)

PURPOSE: The purpose of this scale is to help the patient and the therapist work together to find out, in part, why the patient chooses to engage in leisure activities.

DIRECTIONS: Listed below are 48 statements. Each one begins with the phrase: 'One of my reasons for engaging in leisure activities is...'. To the left of each statement is a line to indicate how true that statement is. A '1' means that the statement is **never** true, '2' means that it is **seldom** true, '3' means that it is **sometimes** true, '4' means that it is **often** true, and '5' means that it is **always** true. Write down the number that best fits your situation.

DEFINITION: 'Leisure Activities' are those things that you do that are not part of your work and are not part of your basic grooming needs.

1	2	3	4	5
NEVER TRUE	SELDOM TRUE	SOMEWHAT TRUE	OFTEN TRUE	ALWAYS TRUE

One of my reasons for engaging in leisure activities is ...

1. to expand my interests

2. to seek stimulation

3. to make things more meaningful for me

4. to learn about things around me

5. to satisfy my curiosity

6. to explore my knowledge

7. to learn about myself

8. to expand my knowledge

9. to discover new things

10. to be creative

11. to be original

12. to use my imagination

13. to be with others

14. to build friendships with others

15. to interact with others

16. to develop close friendships

17. to meet new and different people

18. to help others

19. so others will think well of me for doing it

20. to reveal my thoughts, feeling, or physical skills to others

21. to influence others

22. to be socially competent and skillful

23. to gain a feeling of belonging

24. to gain other's respect

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25. to get a feeling of achievement

26. to see what my abilities are

27. to challenge my abilities

28. because I enjoy mastering things

29. to be good in doing them

30. to improve skill and ability in doing them

31. to compete against others

32. to be active

33. to develop physical skills and abilities

34. to keep in shape physically

35. to use my physical abilities

36. to develop my physical fitness

37. to be in a calm atmosphere

38. to avoid crowded areas

39. to slow down

40. because I sometimes like to be alone

41. to relax physically

42. to relax mentally

43. to avoid the hustle and bustle of daily activities

44. to rest

45. to relieve stress and tension

46. to do something simple and easy

47. to unstructure my time

48. to get away from the responsibilities of my everyday life

Patient's Name	Physician	Admit #	Room/Bed
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LEISURE SATISFACTION MEASURE (LSM)

Purpose: The purpose of the Leisure Satisfaction Measure is to determine the degree to which you are currently content with your leisure.

Directions: Listed below are 24 statements. To the left of each statement is a line to indicate how true that statement is. A "1" means that the statement is almost never true, "2" means that it is seldom true, "3" means that it is sometimes true, "4" means that it is often true, and "5" means that it is almost always true. Write down the number that best fits your situation.

Definition: "Leisure Activities" are those things that you do that are not part of your work and are not part of your basic grooming needs.

1	2	3	4	5
ALMOST NEVER TRUE	SELDOM TRUE	SOMEWHAT TRUE	OFTEN TRUE	ALMOST ALWAYS TRUE

- ___ 1. My leisure activities are very interesting to me.
- ___ 2. My leisure activities give me self-confidence.
- ___ 3. My leisure activities give me a sense of accomplishment.
- ___ 4. I use many different skills and abilities in my leisure activities.
- ___ 5. My leisure activities increase my knowledge about things around me.
- ___ 6. My leisure activities provide opportunities to try new things.
- ___ 7. My leisure activities help me to learn about myself.
- ___ 8. My leisure activities help me to learn about other people.
- ___ 9. I have social interaction with others through leisure activities.
- ___ 10. My leisure activities have helped me to develop close relationships with others.
- ___ 11. The people I meet in my leisure activities are friendly.
- ___ 12. I associate with people in my free time who enjoy doing leisure activities a great deal.
- ___ 13. My leisure activities help me to relax.
- ___ 14. My leisure activities help relieve stress.
- ___ 15. My leisure activities contribute to my emotional well being.
- ___ 16. I engage in leisure activities simply because I like doing them.
- ___ 17. My leisure activities are physically challenging.
- ___ 18. I do leisure activities which develop my physical fitness.
- ___ 19. I do leisure activities which restore me physically.
- ___ 20. My leisure activities help me to stay healthy.
- ___ 21. The area or places where I engage in my leisure activities are fresh and clean.
- ___ 22. The areas or places where I engage in my leisure activities are interesting.
- ___ 23. The areas or places where I engage in my leisure activities are beautiful.
- ___ 24. The areas or places where I engage in my leisure activities are well designed.

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Patient's Name	Physician	Admit #	Room/Bed
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Appendix IV: Leisure Interest Measure

LEISURE INTEREST MEASUREMENT (LIM)

Purpose: The purpose of this assessment is to find out what kind of leisure activities you want or prefer to do.

Directions: Listed below are 29 statements. To the left of each statement is a line to indicate how true that statement is for you. A "1" means that the statement is never true, "2" means that it is seldom true, "3" means that it is sometimes true, "4" means that it is often true, and "5" means that it is always true. Write down the number that best fits your situation.

Definition: "Leisure Activities" are those things that you do that are not part of your work and are not part of your basic grooming needs.

1	2	3	4	5
NEVER TRUE	SELDOM TRUE	SOMEWHAT TRUE	OFTEN TRUE	ALWAYS TRUE

- | | |
|--|--|
| ___ 1. I like to read in my free time. | ___ 17. I like repairing or building things in my leisure time. |
| ___ 2. I prefer being outdoors. | ___ 18. I prefer leisure activities which require creativity. |
| ___ 3. I like to work with materials such as metal or wood in my leisure time. | ___ 19. I like to observe local and national cultural events. |
| ___ 4. I like to be original in my leisure activities. | ___ 20. I regularly contribute time to service organizations or activities. |
| ___ 5. I appreciate the cultural arts. | ___ 21. I prefer physically oriented activities such as sports. |
| ___ 6. I am committed to serve as a volunteer worker in one or more service organizations or activities. | ___ 22. I prefer to engage in leisure activities which require social interaction. |
| ___ 7. I prefer competitive physical activities. | ___ 23. I prefer to engage in leisure activities which take place in outdoor environments. |
| ___ 8. I use my leisure as a chance to meet new and different people. | ___ 24. I like to work with mechanical devices in my leisure time. |
| ___ 9. I like the fresh air of outdoor settings. | ___ 25. I like leisure activities which help me to explore new ideas. |
| ___ 10. I often use tools in my leisure activities. | ___ 26. I have a strong attraction to the cultural arts. |
| ___ 11. I like to create artistic designs in my leisure time. | ___ 27. I prefer to be of service to others in my leisure time. |
| ___ 12. I prefer to engage in cultural activities such as going to plays, lectures, or visiting museums. | ___ 28. I like leisure activities which require physical challenge. |
| ___ 13. I often participate in service activities in my leisure time. | ___ 29. I prefer leisure activities which help to develop friendships. |
| ___ 14. I prefer activities which require a high degree of physical activity. | |
| ___ 15. I use my leisure to develop close relationships with others. | |
| ___ 16. I prefer leisure activities which take place in outdoor environments. | |

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Patient's Name	Physician	Admit #	Room/Bed
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Appendix VI: Consent Forms for Individuals with SCI and TRS' – Qualitative Study

Informed Consent for Individuals with Spinal Cord Injuries

Measuring the Leisure Lifestyle of Individuals with Spinal Cord Injuries

Principal Investigator:

Dr. Bill Miller, PhD, OT, School of Rehabilitation Sciences

Co-investigator:

Erica Botner, BA, Recreation Therapist, Graduate Program in School of Rehabilitation

Purpose:

You are being invited to participate in this study because at sometime in the past you were a client at GF Strong Rehab Centre in the Spinal Cord Injury Program. We are conducting a study to collect information that will assist us in identifying what aspects of leisure lifestyle are important for therapists to know in order to adapt existing tools that can be used for initial assessments and as outcome measures. This will help clinicians develop appropriate and client-centred programs for their clients in order to facilitate the development of meaningful and active leisure lifestyles. This study is being conducted as research for a graduate thesis.

Study Procedures:

Participating in this research will involve filling out four scales that measure your leisure attitudes, leisure motivation, leisure satisfaction and leisure interests. This will be followed by a short interview, where you will answer questions about the scales. In order to collect the information, you will be interviewed at a time and location that is convenient and comfortable for you and that the whole session interview will last approximately 60-90 minutes. The person who interviews you will contact you a second time, several weeks after the interview to make sure that the information that was collected is correct. The interview information collected will be audio taped and the interviewer will also take some notes during the sessions. You have the right to terminate a session at any time or to decline to respond to any question.

Confidentiality:

Any information resulting from this research study will be kept strictly confidential. All documents will be identified only by a code number and kept in a locked filing cabinet. Data collected in this study may be used for future research other than that described above; however, you will not be identified by name in any reports of the completed study.

Remuneration/Compensation:

You will be reimbursed for any travel or parking expenses related to participating in the study.

Risks:

There are no risks or side effects related to participating in this study.

Appendix VI: Continued**Informed Consent for Clinicians****Measuring the Leisure Lifestyle of Individuals with Spinal Cord Injuries****Principal Investigator:**

Dr. Bill Miller, PhD, OT, School of Rehabilitation Sciences

Co-investigator:

Erica Botner, BA, Recreation Therapy, Graduate Program in School of Rehabilitation

Background:

You are being invited to participate in this study because you are a Recreation Therapist at GF Strong Rehab Centre and work with individuals with spinal cord injuries. A team of rehabilitation professionals at GF Strong are currently undertaking a study to examine the use of four surveys that measure aspects of a person's leisure lifestyle.

Purpose:

You are being invited to participate in this study because you are a Recreation Therapist at GF Strong Rehab Centre in the Spinal Cord Injury Program. We are conducting a study to collect information that will assist us in identifying what aspects of leisure lifestyle are important for therapists to know in order to adapt existing tools that can be used for initial assessments and as outcome measures. This will help clinicians develop appropriate and client-centred programs for their clients in order to facilitate the development of meaningful and active leisure lifestyles. This study is being conducted as research for a graduate thesis.

Study Procedures:

Participating in this research will involve a 30-45 minute interview session following a brief overview of four scales that are used to measure leisure attitudes, leisure motivation, leisure satisfaction and leisure interests. In order to collect the information, you will be interviewed at a time and location that is convenient and comfortable for you and that the whole session interview will last approximately 60 minutes. The person who interviews you will contact you a second time, several weeks after the interview to make sure that the information that was collected is correct. The interview information collected will be audio taped and the interviewer will also take notes during the sessions.

Confidentiality:

Any information resulting from this research study will be kept strictly confidential. All documents will be identified only by a code number and kept in a locked filing cabinet. Data collected in this study may be used for future research other than that described above; however, you will not be identified by name in any reports of the completed study.

Remuneration/Compensation:

You will be reimbursed for any travel or parking expenses related to participating in the study.

Appendix VII: Idyll Arbor Leisure Battery Executive Summary

Description of Instrument	Interpretation of Scores								
<p>Leisure Satisfaction Scale</p> <p>Measures which areas of leisure provide the most satisfaction for the individual.</p> <ol style="list-style-type: none"> Psychological: Psychological benefits such as: a sense of freedom, enjoyment, involvement, and intellectual challenge. Educational: Intellectual stimulation and learning about self and his/her surroundings. Social: Rewarding relationships with other people. Relaxation: Relief from the stress and strain of life. Physiological: A means to develop physical fitness, stay healthy, control weight, and otherwise promote well being. Aesthetic: Aesthetic rewards. Individuals scoring high on this part derive satisfaction from the places where they engage in their leisure activities because they find them pleasing, interesting, beautiful, and generally well-designed. 	<p>Leisure Satisfaction Scale</p> <table> <tr> <th><u>Score</u></th><th><u>Intervention</u></th></tr> <tr> <td>4 or more</td><td>High Satisfaction. Ensure opportunities to participate in activities.</td></tr> <tr> <td>2 or less</td><td>Low Satisfaction</td></tr> <tr> <td>"2"</td><td>Education/opportunities to increase satisfaction level. Review results of LAM, LIM, LMS. Determine if low score is having negative impact on client's ability to make progress on treatment objectives.</td></tr> </table>	<u>Score</u>	<u>Intervention</u>	4 or more	High Satisfaction. Ensure opportunities to participate in activities.	2 or less	Low Satisfaction	"2"	Education/opportunities to increase satisfaction level. Review results of LAM, LIM, LMS. Determine if low score is having negative impact on client's ability to make progress on treatment objectives.
<u>Score</u>	<u>Intervention</u>								
4 or more	High Satisfaction. Ensure opportunities to participate in activities.								
2 or less	Low Satisfaction								
"2"	Education/opportunities to increase satisfaction level. Review results of LAM, LIM, LMS. Determine if low score is having negative impact on client's ability to make progress on treatment objectives.								
<p>Leisure Motivation Scale</p> <p>The Intellectual component of leisure motivation assesses the extent to which individuals are motivated to engage in leisure activities that involve mental activities such as learning, exploring, discovering, creating or imagining.</p> <p>The Social component assesses the extent to which individuals engage in leisure activities for social reasons. This component measures two basic needs. The first is the need for friendship and interpersonal relationships, while the second is the need to be valued by others.</p> <p>The Competence-Mastery component assesses the extent to which individuals engage in leisure activities in order to achieve, master, challenge, and compete. These activities are usually physical in nature.</p> <p>The Stimulus-Avoidance component of leisure motivation assesses the need to escape and get away from overstimulating life situations. Some individuals need to avoid social contacts, to seek solitude and calm conditions, while others seek to rest and unwind.</p>	<p>Leisure Motivation Scale</p> <table> <tr> <th><u>Score</u></th><th><u>Intervention</u></th></tr> <tr> <td>highest</td><td>Primary motivating force. <ul style="list-style-type: none"> • Ensure opportunity to participate in activities with motivating dimensions. • Activity analysis modify/adapt. </td></tr> <tr> <td>lowest</td><td>Least motivating force. <ul style="list-style-type: none"> • Provide choice. • Avoidance behavior. • Modify, adapt, adopt new activities </td></tr> </table>	<u>Score</u>	<u>Intervention</u>	highest	Primary motivating force. <ul style="list-style-type: none"> • Ensure opportunity to participate in activities with motivating dimensions. • Activity analysis modify/adapt. 	lowest	Least motivating force. <ul style="list-style-type: none"> • Provide choice. • Avoidance behavior. • Modify, adapt, adopt new activities 		
<u>Score</u>	<u>Intervention</u>								
highest	Primary motivating force. <ul style="list-style-type: none"> • Ensure opportunity to participate in activities with motivating dimensions. • Activity analysis modify/adapt. 								
lowest	Least motivating force. <ul style="list-style-type: none"> • Provide choice. • Avoidance behavior. • Modify, adapt, adopt new activities 								

Appendix VII: Continued

Description of Instrument	Interpretation of Scores																
<p><i>Leisure Attitude Measure</i></p> <p>The Cognitive component of leisure attitude gathers information in the following areas:</p> <ol style="list-style-type: none"> general knowledge and beliefs about leisure, beliefs about leisure's relation to other concepts such as health, happiness, and work and beliefs about the qualities, virtues, characteristics, and benefits of leisure to individuals such as: developing friendship, renewing energy, helping one to relax, meeting needs, and self-improvement. <p>The Affective component of leisure attitude is designed to take into account the individual's:</p> <ol style="list-style-type: none"> evaluation of his/her leisure experiences and activities, liking of those experiences and activities, and immediate and direct feelings toward leisure experiences and activities. This component generally reflects the respondent's like or dislike of leisure activities. <p>The Behavioral component of leisure attitude is based on the individual's:</p> <ol style="list-style-type: none"> verbalized behavioral intentions toward leisure choices and activities, and on self-reports of current and past participation. 	<p><i>Leisure Attitude Measure</i></p> <table border="1"> <thead> <tr> <th data-bbox="900 310 1034 348"><u>Score</u></th><th data-bbox="1050 310 1428 348"><u>Intervention</u></th></tr> </thead> <tbody> <tr> <td data-bbox="900 369 1034 470"></td><td data-bbox="1050 369 1428 470">Cognitive – education about the need for leisure in society and one's life.</td></tr> <tr> <td data-bbox="900 491 1034 592">Less than 2.5</td><td data-bbox="1050 491 1428 592">Affective – provision of positive experiences related to interests, values, needs.</td></tr> <tr> <td data-bbox="900 613 1034 714"></td><td data-bbox="1050 613 1428 714">Behavioral – education about the importance of leisure activities for improving quality of life</td></tr> </tbody> </table>	<u>Score</u>	<u>Intervention</u>		Cognitive – education about the need for leisure in society and one's life.	Less than 2.5	Affective – provision of positive experiences related to interests, values, needs.		Behavioral – education about the importance of leisure activities for improving quality of life								
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Less than 2.5	Affective – provision of positive experiences related to interests, values, needs.																
	Behavioral – education about the importance of leisure activities for improving quality of life																
<p><i>Leisure Interest Measure</i></p> <p>Measures how much interest the client has in each of the eight domains of leisure interest.</p> <p><u>Areas Measured:</u></p> <table border="0"> <tbody> <tr> <td>1. Physical</td><td>5. Service</td></tr> <tr> <td>2. Outdoor</td><td>6. Social</td></tr> <tr> <td>3. Mechanical</td><td>7. Cultural</td></tr> <tr> <td>4. Artistic</td><td>8. Reading</td></tr> </tbody> </table>	1. Physical	5. Service	2. Outdoor	6. Social	3. Mechanical	7. Cultural	4. Artistic	8. Reading	<p><i>Leisure Interest Measure</i></p> <table border="1"> <thead> <tr> <th data-bbox="900 1218 1034 1255"><u>Score</u></th><th data-bbox="1050 1218 1428 1255"><u>Intervention</u></th></tr> </thead> <tbody> <tr> <td data-bbox="900 1276 1034 1377">4 or more</td><td data-bbox="1050 1276 1428 1377">High degree of interest Ensure opportunity to participate in activities of interest.</td></tr> <tr> <td data-bbox="900 1398 1034 1478">2 or less</td><td data-bbox="1050 1398 1428 1478">Low interest. May need education, instruction.</td></tr> <tr> <td data-bbox="900 1499 1034 1600">"2"</td><td data-bbox="1050 1499 1428 1600">Needs education and instruction in areas of interest and development of skill competence.</td></tr> </tbody> </table>	<u>Score</u>	<u>Intervention</u>	4 or more	High degree of interest Ensure opportunity to participate in activities of interest.	2 or less	Low interest. May need education, instruction.	"2"	Needs education and instruction in areas of interest and development of skill competence.
1. Physical	5. Service																
2. Outdoor	6. Social																
3. Mechanical	7. Cultural																
4. Artistic	8. Reading																
<u>Score</u>	<u>Intervention</u>																
4 or more	High degree of interest Ensure opportunity to participate in activities of interest.																
2 or less	Low interest. May need education, instruction.																
"2"	Needs education and instruction in areas of interest and development of skill competence.																

Appendix VIII: Informed Consent – Measurement Study

Informed Consent

Measuring Leisure Aptitudes Among Individuals With Spinal Cord Injury

Principal Investigator:

Dr. Bill Miller, PhD, OT, School of Rehabilitation Sciences

Co-investigator:

Erica Botner, BA, Recreation Therapist, Graduate Program in School of Rehabilitation

Jan Vetter, Practice Leader, Recreation Therapy, G.F. Strong Rehab Centre

Andrea Townson, MD, Medical Manager, SCI Program, VCHA

Janice Eng, PhD, OT/PT, School of Rehabilitation Science, G.F. Strong Rehab Research Lab

Purpose:

You are being invited to participate in this study because at sometime in the past you were a client at GF Strong Rehab Centre in the Spinal Cord Injury Program. We are conducting a study to collect information that will assist us adapting four scales that measure aspects of leisure lifestyle for use among individuals with Spinal Cord Injuries. This will help clinicians develop appropriate and client-centred programs for their clients in order to facilitate the development of meaningful and active leisure lifestyles. This study is being conducted as research for a graduate thesis.

Study Procedures:

Participating in this research will involve two sessions at GF Strong that will last 1 – 1 ½ hours each. You will be asked to fill out a variety of scales that measure your leisure lifestyle. On the first day, you will fill out 6 scales and on the second day you will fill out 4 scales. You have the right to terminate a session at any time or to decline to respond to any question. Investigators will have access to patient charts at GF Strong to collect demographic information.

Confidentiality:

Any information resulting from this research study will be kept strictly confidential. All documents will be identified only by a code number and kept in a locked filing cabinet. Data collected in this study may be used for future papers and presentations related to the research question; however, you will not be identified by name in any reports of the completed study.

Remuneration/Compensation:

You will be reimbursed \$30 per session for travel, parking and time expenses related to participating in the study.

Risks:

There are no risks or side effects related to participating in this study.

Appendix XIII: Demographic Questionnaire

Participant # _____

Address

Telephone # _____

Date of Birth _____

Date of Injury _____

Date discharged from GF Strong Rehab Centre _____

Height _____

Weight _____

Level of Injury _____

ASIA Level _____

Complete/Incomplete _____

How injury happened: (please check one)

Car Collision _____*Fall* _____*Medical* _____*Sports* _____*Other Motor Vehicle Collision* _____*Diving* _____*Industrial* _____*Gun Shot* _____*Other* _____

Medications _____

Marital Status: (please check one)

Single _____*Married* _____*Common-law* _____*Divorced* _____*Widow* _____

Highest Level of Education: (please check one)

Did not complete high school _____*High school diploma* _____*College diploma* _____*Undergraduate Degree* _____*Graduate degree (Master's Level)* _____*Graduate degree (PhD Level)* _____

Appendix XIV: Change Questionnaire

Have any major changes occurred in your life since the last time we met?

- ☐ Medical change (have you seen a doctor for a serious change in your health such as a bladder infection, a pressure sore or a change in medications?)

- ☐ Change in living arrangements (have you moved had any changes in who you live with?)

- ☐ Other change (has anything else changed in your life that may have affected your leisure lifestyle since the last time we met?)

Appendix XV: Sample Size Calculation

Based on work by Donner and Eliasziw (1987), a sample size of 39 participants for a power of 0.80 has been calculated. Effect size was set to 0.2 and an alpha to 0.05. θ_0 (minimal standard) and θ (reliability coefficient anticipated in this study) were set to 0.60 and 0.80, respectively. This sample would therefore have the power to detect a significant difference between our minimal standard (0.60) and the expected level of (0.80). In order to account for dropouts and incomplete questionnaires 50 participants will be recruited to participate in the study.

$$k = \frac{3}{2} + \frac{2(U_a + U_\beta)^2 n}{(\ln C_0)^2 (n-1)} \quad C_0 = \frac{(1 + n\theta_0)}{(1 + n\theta)} \quad \theta_0 = \frac{p_0}{1-p_0} \quad \theta = \frac{p_1}{1-p_1}$$

$$k = 1.5 + \frac{(1.6449 + 0.8416)^2 2}{(\ln 0.444)^2 (2-1)} = 1 + 1.5 (2) = 0.6 = 0.8$$

$$\frac{1 + 4 (2)}{1 - 0.6} \quad \frac{1 - 0.8}{1 - 0.8}$$

$$k = 1.5 + \frac{24.73072}{0.6592} = 4/9 = 1.5 = 4$$

$$= 0.444$$

$$k = 39$$

Appendix XVI: Scaling Using Stepwise Deletion for each IALB Scale an Subscale

Leisure Attitude Measure	Item to total correlation (whole scale)	Alpha if item removed (whole scale)	Item to total correlation (subscale)	Alpha if item removed (subscale)
Cognitive	.67	.90	.61	.84
LAM 1	.48	.90	.63	.83
LAM 2	.42	.90	.55	.84
LAM 3	.52	.90	.67	.83
LAM 4	.50	.90	.64	.84
LAM 5	.54	.90	.53	.84
LAM 6	.37	.90	.42	.85
LAM 7	.33	.90	.48	.85
LAM 8	.39	.90	.53	.84
LAM 9	.54	.90	.38	.85
LAM 10	.22	.90	.39	.85
LAM 11	.62	.90	.55	.84
LAM 12				
Affective	.39	.90	.39	.88
LAM 13	.62	.90	.77	.86
LAM 14	.60	.90	.76	.86
LAM 15	.32	.90	.39	.89
LAM 16	.53	.90	.58	.87
LAM 17	.57	.90	.75	.86
LAM 18	.05	.91	-.01	.91
LAM 19	.67	.90	.63	.87
LAM 20	.59	.90	.69	.86
LAM 21	.73	.90	.79	.86
LAM 22	.52	.90	.70	.87
LAM 23	.61	.90	.63	.87
LAM 24				
Behavioural	.59	.90	.01	.78
LAM 25	.33	.90	.88	.67
LAM 26	.09	.91	.03	.78
LAM 27	.13	.91	.90	.66
LAM 28	.49	.90	.23	.77
LAM 29	.45	.90	.92	.66
LAM 30	.20	.91	.06	.77
LAM 31	.40	.90	.75	.74
LAM 32	.39	.90	.19	.77
LAM 33	.52	.90	.18	.77
LAM 34	.42	.90	.42	.76
LAM 35	.67	.90	.06	.77
LAM 36				

Appendix XVI: Continued

Leisure Motivation Scale	Item to total correlation (whole scale)	Alpha if item removed (whole scale)	Item to total correlation (component)	Alpha if item removed (component)
Intellectual				
LMS 1	.62	.91	.74	.91
LMS 2	.46	.91	.57	.92
LMS 3	.51	.91	.58	.92
LMS 4	.55	.91	.64	.91
LMS 5	.57	.91	.75	.91
LMS 6	.53	.91	.74	.91
LMS 7	.73	.91	.67	.91
LMS 8	.61	.91	.79	.91
LMS 9	.45	.91	.63	.92
LMS 10	.65	.91	.61	.92
LMS 11	.64	.91	.61	.92
LMS 12	.72	.91	.75	.91
Social				
LMS 13	.31	.92	.47	.89
LMS 14	.44	.91	.65	.88
LMS 15	.27	.92	.55	.88
LMS 16	.47	.91	.69	.87
LMS 17	.53	.91	.62	.88
LMS 18	.34	.92	.60	.88
LMS 19	.23	.92	.45	.89
LMS 20	.51	.91	.49	.89
LMS 21	.52	.91	.57	.88
LMS 22	.60	.91	.78	.87
LMS 23	.36	.92	.50	.88
LMS 24	.49	.91	.73	.87
Competence/Mastery				
LMS 25	.40	.92	.15	.85
LMS 26	.42	.92	.55	.82
LMS 27	.30	.92	.64	.81
LMS 28	.19	.92	.35	.84
LMS 29	.33	.92	.42	.83
LMS 30	.42	.92	.58	.82
LMS 31	.16	.92	.07	.86
LMS 32	.32	.92	.55	.82
LMS 33	.30	.92	.69	.81
LMS 34	.13	.92	.70	.81
LMS 35	.17	.92	.66	.81
LMS 36	.05	.92	.68	.81
Stimulus/Avoidance				
LMS 37	.55	.91	.03	.83
LMS 38	.47	.91	.94	.74
LMS 39	.25	.92	.30	.82
LMS 40	.37	.92	.95	.75
LMS 41	.38	.92	.27	.82
LMS 42	.23	.92	.93	.76
LMS 43	.44	.92	.35	.82
LMS 44	.34	.92	.95	.76
LMS 45	.37	.92	-.03	.83
LMS 46	.46	.91	.16	.83
LMS 47	.40	.92	.26	.82
LMS 48	.48	.91	.27	.82

Appendix XVI: Continued

Leisure Satisfaction Scale	Item to total correlation (whole scale)	Alpha if item removed (whole scale)	Item to total correlation (component)	Alpha if item removed (component)
Psychological				
LSS 1	.61	.87	.75	.80
LSS 2	.55	.87	.83	.78
LSS 3	.64	.87	.69	.83
LSS 4	.53	.87	.61	.88
Educational				
LSS 5	.40	.88	.58	.76
LSS 6	.48	.87	.73	.69
LSS 7	.67	.87	.69	.70
LSS 8	.60	.87	.47	.82
Social				
LSS 9	.36	.88	.66	.70
LSS 10	.36	.88	.62	.77
LSS 11	.33	.88	.69	.74
LSS 12	.46	.88	.61	.72
Relaxation				
LSS 13	.37	.88	.22	.70
LSS 14	.38	.88	.67	.38
LSS 15	.42	.88	.30	.67
LSS 16	.32	.88	.66	.40
Physiological				
LSS 17	.49	.88	.58	.81
LSS 18	.48	.88	.85	.68
LSS 19	.56	.88	.60	.81
LSS 20	.64	.87	.69	.76
Aesthetic				
LSS 21	.42	.88	.53	.72
LSS 22	.37	.88	.66	.63
LSS 23	.40	.88	.70	.62
LSS 24	.14	.88	.39	.80

Appendix XVI: Continued

Leisure Interest Measure	Item to total correlation (whole scale)	Alpha if item removed (whole scale)	Item to total correlation (component)	Alpha if item removed (component)
Physical				
LIM 7	.25	.82	.67	.93
LIM 14	.39	.82	.80	.88
LIM 21	.26	.82	.87	.85
LIM 28	.35	.82	.86	.86
Outdoor				
LIM 2	.38	.82	.76	.80
LIM 9	.37	.82	.58	.87
LIM 16	.40	.82	.85	.77
LIM 23	.49	.81	.68	.84
Mechanical				
LIM 3	.43	.82	.78	.90
LIM 10	.34	.82	.80	.90
LIM 17	.32	.82	.81	.89
LIM 24	.35	.82	.86	.87
Artistic				
LIM 4	.22	.82	.29	.59
LIM 11	.34	.82	.36	.58
LIM 18	.26	.82	.60	.37
LIM 25	.39	.82	.35	.55
Service				
LIM 6	.55	.81	.80	.82
LIM 13	.48	.81	.66	.87
LIM 20	.51	.81	.82	.81
LIM 27	.51	.81	.69	.86
Social				
LIM 8	.39	.82	.71	.70
LIM 15	.30	.82	.65	.74
LIM 22	.30	.82	.52	.80
LIM 29	.39	.82	.60	.76
Cultural				
LIM 5	.02	.83	.70	.73
LIM 12	.31	.82	.66	.75
LIM 19	.51	.81	.42	.85
LIM 26	.26	.82	.76	.70
Reading				
LIM 1	-.02	.83	n/a	n/a

Appendix XVII: Minimum Detectable Change Values

Idyll Arbor Leisure Battery	Standard Error of Measurement	Minimum Detectable Change
LAM - Cognitive	0.25	0.58
LAM - Affective	0.28	0.65
LAM - Behavioural	0.39	0.91
LAM - Total Scale	0.19	0.44
LMS - Intellectual	0.41	0.95
LMS - Social	0.37	0.86
LMS - Competence/Mastery	0.40	0.93
LMS - Stimulus Avoidance	0.35	0.81
LSS - Psychological	0.38	0.88
LSS - Educational	0.43	1.00
LSS - Social	0.57	1.33
LSS - Relaxation	0.48	1.12
LSS - Physiological	0.51	1.19
LSS - Aesthetic	0.36	0.84
LSS - Total Scale	0.23	0.53
LIM - Physical	0.42	0.98
LIM - Outdoor	0.31	0.72
LIM - Mechanical	0.40	0.93
LIM - Artistic	0.32	0.74
LIM - Service	0.41	0.95
LIM - Social	0.41	0.95
LIM - Cultural	0.31	0.72
LIM - Reading	0.52	1.21
LIM - Total Scale	0.21	0.49

Note: LAM = Leisure Attitude Measure; LMS = Leisure Motivation Scale; LSS = Leisure Satisfaction Scale; and LIM = Leisure Interest Measure.

Appendix XVIII: The Centre for Epidemiological Studies Depression Scale

Below is a list of the ways people sometimes feel. Please **check the box** ☒ under the category that best describes how often you have felt this way in the **7 days** for each item.

During the past 7 days have you felt this way:	Less than 1 day	1-2 days	3-4 days	5-7 days
a) I was bothered by things that usually don't bother me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I did not feel like eating; my appetite was poor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I felt that I could not shake off the blues even with help from my family or friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I felt that I was just as good as other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I had trouble keeping my mind on what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) I felt that everything I did was an effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) I felt hopeless about the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) I thought my life had been a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) I felt fearful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) I was happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) I talked less than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) I felt lonely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) People were unfriendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) I enjoyed life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q) I had crying spells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r) I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
s) I felt that people disliked me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t) I could not "get going".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix XIX: The Satisfaction with Life Scale

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding. The 7-point scale is as follows:

1 = strongly disagree

2 = disagree

3 = slightly disagree

4 = neither agree nor disagree

5 = slightly agree

6 = agree

7 = strongly agree

_____ 1. In most ways my life is close to my ideal.

_____ 2. The conditions of my life are excellent.

_____ 3. I am satisfied with my life.

_____ 4. So far I have gotten the important things I want in life.

_____ 5. If I could live my life over, I would change almost nothing.

Appendix XX: The Craig Handicap Assessment and Reporting Technique

What assistance do you need?

People with disabilities often need assistance. We would like to differentiate between personal care for physical disabilities and supervision for cognitive problems. First, focus on physical "hands on" assistance: This includes help with eating, grooming, bathing, dressing, management of a ventilator or other equipment, transfers etc. Keep in mind these daily activities...

1. How many hours in a typical 24-hour day do you have someone with you to provide physical assistance for personal care activities such as eating, bathing, dressing, toileting and mobility?
 _____ hours paid assistance _____ hours unpaid (family, others)
2. Not including any regular care as reported above, how many hours in a typical month do you occasionally have assistance with such things as grocery shopping, laundry, housekeeping, or infrequent medical needs because of the disability?
 _____ hours per month
3. Who takes responsibility for instructing and directing your attendants and/or caregivers?
 _____ Self
 _____ Someone Else
 _____ Not applicable, does not use attendant care

Now, focus on supervision for cognitive problems instead of physical assistance. This includes remembering, decision making, judgement, etc...

4. How much time is someone with you in your home to assist you with activities that require remembering, decision making, or judgement?
 _____ Someone else is always with me to observe or supervise.
 _____ Someone else is always around, but they only check on me now and then.
 _____ Sometimes I am left alone for an hour or two.
 _____ Sometimes I am left alone for most of the day.
 _____ I have been left alone all day and all night, but someone checks in on me.
 _____ I am left alone with out anyone checking on me.
5. How much of the time is someone with you to help you with remembering, decision making, or judgement when you go away from your home?
 _____ I am restricted from leaving, even with someone else.
 _____ Someone is always with me to help with remembering, decision making or judgement when I go anywhere.
 _____ I go places on my own as long as they are familiar.
 _____ I do not need help going anywhere.
6. How often do you have difficulty communicating with other people?
 _____ I almost always have difficulty.
 _____ I sometimes have difficulty.
 _____ I almost never have difficulty.

7. How often do you have difficulty remembering important things that you must do?
 _____ I almost always have difficulty.
 _____ I sometimes have difficulty.
 _____ I almost never have difficulty.
8. How much of your money do you control?
 _____ None, someone makes all money decisions for me.
 _____ A small amount of spending money is given to me periodically.
 _____ Most of my money, but someone does help me make major decisions.
 _____ I make all my own money decisions (or if married, in joint participation with my partner)

Now, I have a series of questions about your typical activities.
ARE YOU UP AND ABOUT REGULARLY?

9. On a typical day, how many hours are you out of bed? _____ hours
10. In a typical week, how many days do you get out of your house and go somewhere?
 _____ days
11. In the last year, how many nights have you spent away from your home (excluding hospitalizations?) _____ none _____ 1-2 _____ 3-4 _____ 5 or more
12. Can you enter and exit your home with out any assistance from someone?
 _____ yes _____ no
13. In your home, do you have independent access to your sleeping area, kitchen, bathroom, telephone, and TV (or radio)? _____ yes _____ no

IS YOUR TRANSPORTATION ADEQUATE?

14. Can you use your transportation independently?
 _____ yes _____ no
15. Does your transportation allow you to get to all the places you would like to go?
 _____ yes _____ no
16. Does your transportation let you get out whenever you want?
 _____ yes _____ no
17. Can you use your transportation with little or no advance notice?
 _____ yes _____ no

HOW DO YOU SPEND YOUR TIME?

18. How many hours per week do you spend working in a job for which you get paid?
 _____ hours (occupation: _____)
19. How many hours per week do you spend in school working toward a degree in an accredited technical training program (including hours in class and studying)? _____ hours

20. How many hours per week do you spend in active homemaking including parenting, housekeeping, and food preparation? _____ hours
21. How many hours per week do you spend in home maintenance activities such as gardening, house repairs or home improvement? _____ hours
22. How many hours per week do you spend in ongoing volunteer work for an organization? _____ hours
23. How many hours per week do you spend in recreational activities such as sports, exercise, playing cards, or going to movies? Please do not include time spent watching TV or listening to the radio. _____ hours
24. How many hours per week do you spend in other self-improvement activities such as hobbies or leisure reading? Please do not include time spent watching TV or listening to the radio. _____ hours

WITH WHOM DO YOU SPEND TIME?

25. Do you live alone? _____ Yes _____ No (If yes, skip to question 26)
- 25a. (If you don't live alone) do you live with a spouse or significant other?
_____ Yes _____ No
- 25b. How many children do you live with? _____
- 25c. How many other relatives do you live with? _____
- 25d. How many roommates do you live with? _____
- 25e. How many attendants do you live with? _____
26. (If you don't live with a spouse or significant other) are you involved in a romantic relationship?
_____ Yes _____ No
27. How many relatives (not in your household) do you visit, phone, or write to at least once a month?
_____ relatives
28. How many business or organizational associates do you visit, phone, or write to at least once a month? _____ associates
29. How many friends (non-relatives contacted outside business or organizational settings) do you visit, phone, or write to at least once a month? _____ friends
30. With how many strangers have you initiated a conversation in the last month (for example, to ask information or place an order)?
_____ none _____ 1-2 _____ 3-5 _____ 6 or more

WHAT FINANCIAL RESOURCES DO YOU HAVE?

31. Approximately what was the combined annual income, in the last year, of ALL FAMILY MEMBERS IN YOUR HOUSEHOLD? (consider all sources including wages and earnings, disability benefits, pensions and retirement income, income from court settlements, investments and trust funds, child support and alimony, contributions from relatives, and any other source.)
\$ _____
32. Approximately how much did you pay last year for medical care expenses? (consider any amounts paid by yourself or the family members in your household and NOT REIMBURSED by insurance or benefits.)
\$ _____

Appendix XXI: The Participation and Activity Limitation Scale

The following questions are about activities that you do in your spare time:

In the past 12 months did you do any of the following activities **WITHIN YOUR HOME**?

every- day	at least once a week	at least once a month	less than once a month	never
---------------	----------------------------	-----------------------------	------------------------------	-------

(a) exercise.....



How many hours a day? _____

(b) stay in touch by email with
family or friends.....



How many hours a day? _____

(c) participate in electronic news
groups or chat groups.....



How many hours a day? _____

(d) surf the internet for information
or e-commerce.....



How many hours a day? _____

(e) do arts, crafts or hobbies within
the home.....



How many hours a day? _____

(f) watch TV or videos, listen to
the radio or CD's.....

↓
How many hours a day? _____

every- day	at least once a week	at least once a month	less than once a month	never
---------------	----------------------------	-----------------------------	------------------------------	-------

(g) read?

↓
How many hours a day? _____

(h) talk on the telephone with family
or friends.....

↓
How many hours a day? _____

**In the past 12 months, how often did you participate in any of the following activities
OUTSIDE YOUR HOME?**

every- day	at least once a week	at least once a month	less than once a month	never
---------------	----------------------------	-----------------------------	------------------------------	-------

(a) visit family or friends.....

(b) do physical activities such as
exercise, walk or play sports...

(c) do hobbies outside the home such as
playing cards, bridge or bingo...

(d) shop

(e) attend sporting or cultural events, such
as plays or movies.....

every- day	at least once a week	at least once a month	less than once a month	never
---------------	----------------------------	-----------------------------	------------------------------	-------

(f) take personal interest courses.....

(g) visit museums, libraries or national
or provincial parks.....

(h) travel for business or personal reasons

Would you like to do more leisure activities in your spare time?

(1) Yes.....

(2) No.....

What prevents you from doing more leisure activities?

Yes

No

(a) Your condition prevents you from doing more.....

(b) You need specialized aids or equipment that you
don't have.....

(c) You need someone's assistance.....

(d) Your transportation services are inadequate or not
accessible.....

Yes

No

(e) Your community has no facilities or programs

available.....

(f) The facilities, equipment or programs are not

accessible.....

(g) It is too expensive.....

(h) Other , specify

Appendix XXII: Correlation Matrix

	Depression	SWLS	Physical	Cognitive	Mobility	Occupational	Social	Economic	CHART TOTAL	Home Activities	Community Activities	More Activities	Number of Barriers
LAM													
1. Cognitive Attitude	-.295	.048	-.065	.204	-.409*	-.270	-.138	-.149	-.185	.084	-.038	-.154	-.069
2. Affective Attitude	-.345*	.183	-.111	.319*	-.256	-.143	-.122	-.013	-.106	.290	-.037	-.157	-.244
3. Behavioural Attitude	-.177	.166	-.066	.109	-.117	-.064	-.020	.124	-.051	-.112	-.180	.115	.238
4. Total	-.313*	.208	-.088	.233	-.284	-.198	-.160	.044	-.123	.102	-.105	-.071	-.019
LMS													
5. Intellectual	-.019	.171	-.258	.019	-.171	.088	-.071	.279	.115	.337*	.220	.066	-.010
6. Social	.072	.217	.002	-.069	-.060	-.043	-.004	.006	-.130	.160	-.047	-.118	.067
7. Competence/Mastery	-.029	.265	.063	.186	.040	.035	-.065	.089	.151	.280	-.069	.167	-.001
8. Stimulus/Avoidance	-.271	.513**	.019	.054	.000	-.046	-.145	.031	-.148	.167	.066	-.277	-.072
LSS													
9. Psychological	-.332*	.376*	.272	.206	.019	.117	-.227	.078	.027	.141	-.216	-.149	-.077
10. Educational	-.084	.339*	-.071	.065	.081	.162	-.069	.136	.068	.258	-.222	.014	.092
11. Social	-.083	.212	.240	.229	.215	.215	.229	-.039	.171	-.334*	-.469**	-.030	.075
12. Relaxation	-.265	.082	-.209	.218	-.358*	-.070	-.035	.024	-.065	.215	.030	-.182	-.168
13. Physical	-.137	.224	.054	.104	.120	-.032	-.081	-.205	-.098	-.040	-.349*	.203	.276
14. Aesthetic	-.298	.196	.016	.157	-.143	-.044	-.161	.020	.045	.207	.019	-.309*	-.039
15. Total	-.303	.421**	.049	.189	-.024	.040	-.108	.022	.008	.057	-.336*	-.104	.120
LIM													
16. Physical	-.076	.039	-.111	.103	.228	-.008	.173	.178	.091	.090	-.275	.374*	.197
17. Outdoors	-.191	.070	-.127	-.140	-.197	.010	.052	.344	.118	-.043	-.210	-.058	.225
18. Mechanical	.226	-.114	.000	-.157	-.062	.186	-.146	.199	.214	-.208	-.067	.195	.425**
19. Artistic	.297	-.060	-.069	-.221	-.297	-.129	-.027	-.061	-.208	-.098	.074	.191	.259
20. Service	-.006	.123	-.067	-.000	.277	.116	.184	.084	.021	-.112	-.273	.003	.149
21. Social	-.006	.119	-.133	-.093	-.115	-.197	.122	-.054	-.328	-.117	-.201	.025	.248
22. Cultural	-.111	-.050	-.325*	-.023	-.132	-.139	-.128	.026	-.232	.028	-.001	-.061	.130
23. Reading	.038	-.042	-.235	-.052	-.139	.134	-.009	-.188	-.152	.185	.350*	-.028	-.090
24. Total	.057	.005	.235	-.063	-.017	.077	.083	.195	-.020	-.048	-.119	.206	.348

Note: * = significant at $p < .05$; ** = significant at $p < .01$

Appendix XXIII: Second Page of the IALB Scales

**LEISURE ATTITUDE MEASUREMENT
SUMMARY PAGE
CLIENT BEHAVIOR**

A. APPEARANCE

- ☐ appropriate, good hygiene
☐ clothing and/or hygiene slightly dirty or smelly
☐ clothing noticeably spotted and/or lack of good hygiene draws attention
☐ very wrinkled and soiled clothing, poor hygiene

B. ATTENTION SPAN

- ☐ attended to staff during entire assessment
☐ occasionally needed to be cued to pay attention
☐ frequently needed to be cued to pay attention
☐ could not get attention and keep attention
☐ patient self-administered assessment

C. ATTITUDE DURING ASSESSMENT

- ☐ enthusiastic and interested
☐ indifferent
☐ hostile but cooperative
☐ hostile, uncooperative

D. BODY POSTURE

- ☐ erect
☐ rounded shoulders
☐ slouched, head down
☐ limp, unable/unwilling to participate

E. EYE CONTACT

- ☐ good, appropriate
☐ looked away occasionally
☐ looked away frequently
☐ little to no eye contact

F. FRUSTRATION/AGITATION LEVEL

- ☐ participated without frustration/agitation
☐ occasionally frustrated/agitated
☐ often frustrated/agitated
☐ frustrated/agitated; unable to participate

G. APPARENT COMPREHENSION

- ☐ good comprehension
☐ basic comprehension
☐ poor comprehension

H. RESPONSE TIME

- ☐ answered most questions immediately
☐ needed some thought to come up with answers
☐ needed a lot of time to respond
☐ did not respond

SCORING

Check One: ☐ Patient Self-Administered Assessment
☐ Therapist Administered Assessment

Date Assessment Given: _____

Medications That Could Impact Results: _____

Length of Time to Administer: _____

Length of Time to Score: _____

NOTE: The higher the score in any subscale, the more the patient has a positive attitude toward this aspect of recreation.

Subscale 1: Cognitive _____

Subscale 3: Behavioral _____

Subscale 2: Affective _____

Total Score _____

SUMMARY/RECOMMENDATIONS:

Therapist: _____

Patient's Name	Physician	Admit #	Room/Bed