THE FUNCTIONAL ABILITIES CONFIDENCE SCALE (FACS) AND THE RESUMPTION OF ACTIVITIES OF DAILY LIVING (RADL) SCALE FOR INJURED WORKERS WITH LOW BACK PAIN

by

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A thesis

presented to the University of Waterloo

in fulfilment of the

thesis requirement for the degree of

Doctor of Philosophy

in

Health Studies

Waterloo, Ontario, Canada, 1997

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The Community Clinic Program (CCP) of the Ontario Workers' Compensation Board emphasizes early intervention consisting of physical conditioning and back education for injured workers with low back pain (LBP). The main goal of the CCP is to return injured workers to their preaccident state of health. While CCPs assess clients' physical conditioning, there is little consistency across clinics in measurement techniques. Return to work is used as a proxy measure that clients have made a complete recovery. The ability to evaluate the effectiveness of the CCP has been hampered by a lack of valid, reliable, and clinically meaningful outcome measures. This study developed and psychometrically tested two instruments--the FACS and the RADL-- with the input of both CCP clinicians and clients. This study used the International Classification of Impairments, Disabilities, and Handicaps to distinguish and relate impairments, disabilities, and handicaps influenced by LBP. The FACS was based on the disability component, as well as Bandura's theory, while the RADL was based on the handicap component. The Dictionary of Occupational Titles was used to identify movements and postures potentially affected by LBP. The three phases involved pilot testing, test-retest reliability, and validation using 104 clients from seven different CCPs. The FACS and the RADL both showed high internal consistency, test-retest reliability, responsiveness to change, and convergent and discriminant validity with the Roland SIP disability measure. The 15-item FACS and the 12-item RADL can each be completed in less than 10 minutes, the instructions are understandable, and the content is meaningful to clients and clinicians. Both scales can be used for clinical and research purposes.

ACKNOWLEDGEMENTS

This thesis would not have been possible without the help of many people to whom I am sincerely grateful. I am thankful to the clinicians at the Community Clinics who helped me recruit the subjects for this project. I am also indebted to the clients who gave of their time and support in participating in this project.

I gratefully acknowledge the *Institute for Work & Health* for their funding. This funding enabled me to not only complete the project but also to retain my sanity at the same time. I would like to thank Catharine Lee for her energy and efforts in obtaining the subjects for this project. Her enthusiasm and thoroughness in recruiting the subjects and ensuring that the questionnaires were completed are appreciated.

I have learned a lot from my committee members. I would like to thank the members of my committee--Dr. Anita Myers, Dr. Lawrence Brawley, Dr. Roy Cameron, and Dr. Richard Cook. I thank Dr. Ken Prkachin for providing me with his expertise and support on a "long distance" basis and Dr. Mark Havitz for being on my committee "at the last minute" and for his thoughtful questions. A special thank you goes to Dr. John Frank who provided valuable questions and insight into the thesis. I especially would like to thank Dr. Anita Myers for her continual commitment and for "being there" when I needed her.

It has been a long hard journey--one that I could not have made without the support and understanding of many. I would like to thank my friends and colleagues at McMaster University for their continual support and encouragement.

A special thanks goes to my mother, who at 98 years of age, continuously encouraged me by repeating the words, "you will reach your goal." A very special thank you goes to my children--Alisa, David, and Simon (my future son-in-law)--for their support, encouragement, and understanding throughout this project. Most of all, I would like to thank my husband, Norm, for his encouragement, emotional support, patience, and for listening throughout this journey.

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CHAPTER 1

INTRODUCTION AND OVERVIEW

Low back pain (LBP) is a common, costly, and disabling disorder (Frymoyer & Cats-Baril, 1991; Lawrence, Tugwell, Gafni, Kosuwon, & Spitzer, 1992). It is the major cause of morbidity and disability in people between the ages of 18 and 44 years (Hanson & Gerber, 1990; Spitzer, LeBlanc, & Depuis, 1987). Low back injuries are the most frequent and intensive of the musculoskeletal disorders seen in the workplace (Andersson, Fine, & Silverstein, 1995; Deyo, Cherkins, Conrad, & Violinn, 1990). An estimated 10 to 15 percent of adults have some work disability due to back pain in any given year (Osterweis, Kleinman, & Mechanic, 1987). The high costs incurred in the management of LBP pertain mainly to simple backache or non-specific LBP; that is, back complaints occurring without identifiable specific anatomical or neurophysiological causative factors (Fordyce, 1995).

Early and active rehabilitation of work injured individuals with LBP is popularly viewed as superior to traditional passive treatments (i.e., bed rest, medication, and passive physiotherapy) in reducing the economic and personal consequences of chronic disability (Feuerstein, 1991; Mitchell & Carmen, 1990). In 1988, the Medical Rehabilitation Strategy of the Ontario Workers' Compensation Board (WCB) adopted the approach of early, active, intensive, and individualized rehabilitation for injured workers. Over the past year, the Institute for Work & Health (1995) has questioned the early intervention approach based on findings from a cohort study, and, as a result, new criteria for admission to WCB rehabilitation programs have been established. These recent findings and policy implications will be discussed further in the *Discussion and Recommendations* section (Chapter Seven) of this thesis. It should be noted that the present study was undertaken with the original WCB admission criteria for rehabilitation of injured workers in place. These criteria will be addressed later in this chapter.

The Community Clinic Program (CCP) was launched by the Ontario WCB in 1989 to address the problems of soft tissue injuries (sprain, strains, back injuries). Presently there

are over 100 WCB approved CCPs in Ontario. It should be noted that while the CCPs assess and treat all work-related sprains, strains, and minor musculoskeletal injuries, this thesis focuses on clients with work-related LBP. The CCPs emphasize physical conditioning (e.g., muscle strength, range of motion, endurance, etc.), as well as back education (e.g., proper lifting techniques, etc.) for workers with occupational back injuries. The formally stated goal of the Medical Rehabilitation Strategy is "to return the injured worker to his/her pre-accident state of health" (Ontario WCB, 1989, p. 2). "Recovery" is viewed first and foremost as the individual's ability to return to work, while the ability to resume other customary activities such as household chores and recreational activities are considered to be important secondary objectives.

The ability to evaluate the effectiveness of active rehabilitation interventions for individuals with LBP, including but not limited to the CCPs, has been hampered by the lack of valid, reliable, and clinically meaningful measures of client outcomes. Mitchell and Carmen (1990) advocated that "return to full-time work be regarded as proof that the patient had made a full and complete recovery" (p. 515). Similarly, other studies of back rehabilitation programs (Mayer et al., 1987; Mitchell & Carmen, 1994; Teasell & Harth, 1996) have used return to work as a proxy outcome measure. Return to work is the primary performance or outcome indicator presently used by the CCPs. Based on clinical judgement, the CCPs rate each client at discharge as to whether the client is: 1) able to return to work on an unrestricted basis; 2) able to return to work on a restricted basis; or 3) unable to return to work at present and should be referred to the Regional Evaluation Centre for further assessment.

There is ample evidence that return to work is a problematic outcome indicator. Return to work may be influenced by several factors including: inherent job demands (Ekberg, 1995; Riihimaki, 1991); job satisfaction and social support from employers and coworkers (Bigos et al., 1991; Bongers, de Winter, Kompier, & Hildebrandt, 1993); employer's cooperation (i.e., ability and willingness to make the necessary job modifications); and worker characteristics such as age and gender (McIntosh, 1993). Fear of losing one's job,

particularly in an era of down sizing, is likely to be a powerful motivator to return to work as soon as possible.

A major issue in evaluating interventions with such individuals has to do with "spontaneous recovery" or the natural course of LBP. Mayer and Gatchel (1988) suggest that within two weeks after an acute episode, nearly 50% of clients will have recovered. The number of responding clients increases to approximately 70% at one month, and to 90% by three months following the episode (Mayer & Gatchel, 1988). Since back pain tends to improve over time, the difference in improvement between a treated and a non-treated group may be relatively small. Time of intervention from the injury appears to be critical to consider as does the assessment of amount of "recovery" from the time of injury to the baseline intervention.

Other factors also are important to consider in addressing the recovery of injured workers with LBP. For instance, workers who have had a previous back injury are more likely to perceive their injury as being permanent and feel that they are more vulnerable to further injury (Tarasuk & Eakin, 1994). Clients' preinjury physical conditioning state, their attitudes towards exercises in general, as well as their past experiences with treatment may influence clients' degree of participation in such programs. Pain tolerance, coping styles, and previous exercise participation are further considerations. Compensation payments may be the most important motivator for participation in rehabilitation programs such as the CCPs.

While the CCPs routinely assess markers of improvement in physical conditioning such as muscle strength, endurance, and flexibility, there appears to be little consistency across clinics in measurement techniques, the recording, or the use of such information. Furthermore, there is no theory or framework guiding the selection of these measures. Given the most recent WCB accreditation guidelines for CCPs developed in August 1994 based on quality improvement, the measurement of performance indicators or client outcomes has become paramount. This is in keeping with a more general trend in the rehabilitation field to encourage the use of reliable, valid, and clinically meaningful outcome measures (Cole, Finch, Gowland, & Mayo, 1994; Kane, 1994).

In addition to assessing physical capabilities, the CCPs recognize that clients' perceptions of the impact of their injury and LBP on their daily activities (i.e., extent of "disablement") is important to address. Accordingly, some CCPs administer disability scales such as the Roland Sickness Impact Profile (SIP) (Roland & Morris, 1983) or the Oswestry (OSW) Low Back Disability Scale (Fairbanks, Couper, Davies, & O'Brien, 1980). Furthermore, most rehabilitation programs encourage client involvement in goal setting, however, the process tends to be informal, unstandardized, and such data are rarely used for evaluative purposes.

In other areas of rehabilitation, evidence is accumulating from various client populations--rheumatoid arthritis (Lorig, Chastan, Ung, Shoor, & Holman, 1989; O'Leary, Shoor, Lorig, & Holman, 1988), postmyocardial infarction (Ewart et al., 1986; Ewart, Taylor, Reese, & DeBusk, 1983), chronic obstructive lung disease (Kaplan, Atkins, & Reinsch, 1984; Toshima, Kaplan, & Ries, 1990), chronic pain (Dolce, Crocker, Moletterie, & Doleys, 1986; Dolce, Crocker, & Doleys, 1986; Kores, Murphy, Rosenthal, Elias, & North, 1990), and persons with multiple chronic conditions (Gage, Noh, Polatajko, & Kaspar, 1994)--that client efficacy expectations are one of the most important factors influencing treatment outcome.

In brief, Bandura's (1986) self-efficacy theory suggests that efficacy expectations (or beliefs) (i.e., clients' confidence in their ability to engage in activities) will be more predictive of behaviour than actual physical abilities. Bandura (1977) asserted that belief in one's ability to use a specific skill partially explains why people of equivalent skill achieve at different levels. People tend to avoid activities for which they distrust their capabilities. For example, when individuals with musculoskeletal work-related injuries engage in physical activities, they may experience adverse reactions such as pain, muscle spasm, or fatigue that may discourage further efforts. Efficacy beliefs influence motivation, that is, the effort people will exert and how long they will persevere in the face of obstacles (Bandura, 1986; Kaplan, Atkins, & Reinsch, 1984). While verbal persuasion (such as positive feedback from therapists) and vicarious experience (observing similar others) can influence efficacy

expectations, mastery or actual performance accomplishments exert the strongest influence (Bandura, 1986). Efficacy beliefs and mastery are seen to influence one another in a reciprocal fashion.

While Bandura's (1986) self-efficacy theory seems equally applicable to the rehabilitation of injured workers with LBP as to cardiac rehabilitation and other areas of rehabilitation, Bandura (1986) cautions that efficacy expectations must be examined for the domain in question. That is, while there may be some generalizability of efficacy expectations to similar areas of functioning, self-efficacy is situation specific. Successful performance of some tasks results in a strengthening of efficacy expectations for that task alone, or similar tasks (Bandura, 1977). Accordingly, self-efficacy scales have been developed for specific client populations and/or domains of functioning. Such examples include Lorig et al's (1989) Arthritis Self-Efficacy Scale, Ewart et al's (1986) measure for cardiac rehabilitation, and Powell and Myers' (1995) Activities-specific Balance Confidence Scale. To date, the only self-efficacy measure tailored specifically to individuals with LBP is Nicholas' (1989) Pain Self-Efficacy Questionnaire (PSEQ). As will be discussed further in this chapter, the PSEQ was designed for individuals with chronic LBP and may not be applicable to clients attending the CCPs who tend to have acute or subacute LBP.

The broad impetus for this project was to explore factors that may be important in the recovery process of injured workers with LBP undergoing active rehabilitation (as in the CCPs). Given that self-efficacy has been found to be an important factor with other rehabilitation populations (Dolce et al., 1986; Kores et al., 1990; Lorig et al., 1989), we set out to operationalize the concepts of self-efficacy and recovery, and tailored them to injured workers with LBP attending the CCPs. The involvement of both clinicians who were experts in the area of work-related musculoskeletal injuries, and injured workers with LBP themselves were instrumental to this process. We looked to the International Classification of Impairments, Disabilities, and Handicaps (ICIDH) (World Health Organization (WHO), 1980), and the Dictionary of Occupational Titles (DOT) (Fishbain, Abdel-Maty, Cutler, Khalil, Sadek, Rosomoff, & Rosomoff, 1994) to gain a better theoretical understanding of

the disablement and the recovery process. Existing measures relating to recovery that were appropriate for this population were scrutinized. Ultimately, the goal of this project was to investigate the development of potentially psychometrically sound and clinically meaningful measures of recovery for rehabilitation programs working with this client population. The ease with which these measures could be used and the suitability of the instruments for injured workers with LBP, while still adequately measuring the constructs of self-efficacy and recovery, were important considerations in this process. The intent was to develop measures for planning treatments and for monitoring clients' progress that could be used for clinical and research purposes.

Frameworks and Application

Two new scales--the Functional Abilities Confidence Scale (FACS) and the Resumption of Activities of Daily Living (RADL)--were developed in the course of this project. Two frameworks--the ICIDH (WHO, 1980) and the DOT (Fishbain et al., 1994), and one theory--self-efficacy theory (Bandura, 1986)--guided the present study. Each framework will be briefly introduced and then presented in detail.

The first framework--the ICIDH (WHO, 1980)--has frequently been used as a guiding framework in rehabilitation (Badley, 1987; Badley, 1993; Jette, 1989). The terms comprising the ICIDH taxonomy--*impairment*, *disability*, and *handicap*--enable one to integrate the direct consequences of disease/disorder with the social, physical, cultural, psychological environment of the individual. This classification scheme is fundamental in the assessment and management of clients undergoing rehabilitation. With this framework in mind, both the FACS and the RADL were constructed based on the *disability* and *handicap* components, respectively, of the ICIDH (WHO, 1980).

An essential aspect in the rehabilitation of injured workers with LBP is the determination of their ability to perform the activities and movements necessary to fulfil the demands of their job. Accordingly, the second framework used for the selection of items for the development of the FACS was taken from the DOT (Fishbain, et al., 1994). The DOT

is a list of job factors relating to a specific job (Fishbain et al., 1994). These job factors express both the physical requirements of the job, as well as the physical capabilities that workers must have to meet these demands (Fishbain et al., 1994). The item content for the FACS was based on basic movements and postures outlined in the DOT, while the item content for the RADL was based on clients' resumption of their daily activities such as occupational, social, sports, and recreational activities, as well as activities of daily living (ADL) which involve these basic movements and postures.

Self-efficacy theory (Bandura, 1986) was used to guide the development of the FACS. As previously mentioned, self-efficacy has been found to be one of the most important factors influencing treatment outcomes in other areas of rehabilitation (Dolce et al., 1986; Ewart et al., 1986; Lorig et al., 1989). We felt that the use of Bandura's (1986) self-efficacy theory was equally applicable for the development of measures for injured workers with acute or subacute LBP undergoing rehabilitation. These three frameworks are presented in detail below.

International Classification of Impairments, Disabilities and Handicaps (ICIDH)

The ICIDH is a classification system relating to the consequences of diseases and disorders. It offers a framework for interrelating impairments, disabilities, and handicaps (WHO, 1980). In the ICIDH framework, *impairment* is considered to be any loss or abnormality of psychological, physiological, or anatomical structure or function. Impairments can occur at the organ, body part, or system level. In persons with LBP, examples of impairments include restricted range of motion, decreased muscle strength, stiffness, and pain.

Disability refers to the restriction or lack of ability, resulting from an impairment, to carry out everyday activities in the manner or within the range considered normal for a person of the same age, sex, culture, or education (WHO, 1980). Whereas impairments are concerned with the function of organs, body parts, or body systems, disabilities represent integrated (holistic) functioning of the entire person that is brought to bear on the completion

of tasks, skills, or other human behaviours (Frey, 1988). Some examples of activities which may be affected by low back injuries include: self-care (hygiene, dressing), walking, stair climbing, standing, sitting, reaching, carrying, lifting, and bending.

The ADL (activities of daily living) concept has been extended to consider higher order activities involved in community living such as shopping, cooking, and managing money (McDowell & Newell, 1987). These activities are known as instrumental activities of daily living (IADL). Rehabilitation has increasingly stressed the need to restore clients to full functioning, and consequently assessing IADL is important in the rehabilitation process. To assess a client's ability to live in the community requires information on several factors such as the level of disability, the nature of the working or living environment, and the amount of social support that may be available. These factors often determine whether or not a disability becomes a "handicap".

Handicap is considered to represent the consequences or particular disadvantage for a given individual (resulting from an impairment or a disability) that limits or prevents the fulfilment of a role as defined by norms based on age, gender, social, and cultural expectations (WHO, 1980). Some examples of handicaps include not being able to perform customary roles such as going to school, working, or taking care of a household (IADL).

Several authors (Heerkens, Brandsma, Lakerveld-Heyl, & van Ravenburg, 1994; Jette, 1994; Wagstaff, 1982) argue that the definitions of impairment, disability, and handicap are unclear and there are problems in the application of the ICIDH. For instance, the categories included in the disability component may overlap with those in the handicap component. One example is that family and occupational roles may be included under both the disability and the handicap classifications (Jette, 1994). It also is unclear as to how to classify an individual when restrictions are multidimensional (Jette, 1994). For example, if an occupational restriction is due to muscle weakness, as well as architectural barriers, does one classify the restriction as a disability or as a handicap? Jette (1994) argues that the ICIDH fails to differentiate between limitations in social performance and causes of these limitations (Jette, 1994). Wagstaff (1982) similarly suggests that the handicap component of the ICIDH is the

most problematic area of the classification because it involves a comparison of the individual with his or her peers in order to determine a disadvantage status. Heerkens et al., (1994) further argue that the classification of disability is "negative", and it is more important to focus on an individual's capabilities.

Authors in rehabilitation journals have vigorously debated the definitions of impairments, disabilities, and handicaps and the ICIDH framework (WHO, 1980) itself (Badley, 1987; Badley, 1993; Harper et al., 1992; Jette, 1989). Other frameworks have been suggested such as Nagi's Disablement Scheme (Delitto, 1994; Guccione, 1991). This framework consists of the following terms--*active pathology*, *impairment*, *functional limitations*, and *disability*. Nagi proposed a process of "disablement" that begins with *active pathology* and leads to *impairment* which is equivalent to the ICIDH. In Nagi's scheme, *impairment* was defined as a loss or abnormality of an anatomical, physiological, mental, or emotional nature (Delitto, 1994). Some examples include range of motion, flexibility, and muscle performance. Nagi recognized the need for a concept that served as a bridge between the presence of impairment and an individual's disability (Guccione, 1994). He proposed the concept of *functional limitations* which are restrictions in performance at the level of the individual. These include inabilities to perform basic ADL (e.g., sitting, standing, self-care). Nagi reserved the term *disability* as restrictions in the person's ability to perform socially defined roles and tasks within a sociocultural and physical environment. Nagi's scheme has merit in that it recognizes that functional limitations is a bridge between impairments and disabilities. However, the ICIDH (WHO, 1980) with its classification of *impairments*, *disabilities*, and *handicaps* was adopted for this thesis because it is commonly used in the field of rehabilitation (Cole et al., 1994; Harper et al., 1992; Jette, 1989; Townsend, Ryan, & Law, 1990), and is a more well known and universally adopted framework (WHO, 1980).

While "being able to work or not work" can be considered a "handicap" or consequence of a disability injury, the job demands of different occupations vary considerably. For example, pipe fitters often must assume awkward positions, such as a backward crouch with knees bent while manipulating heavy tools above their heads, and work

in confined spaces (e.g., rafters of buildings). In contrast, receptionists usually sit much of the working day frequently at a computer or typewriter. In other words, different movements or postures underlie the performance of various occupations (Fishbain et al., 1994). Therefore, we chose to consider movements and postures as "disabilities". Because of the multitude of factors that bear on return to work (job demands being just one of these), we chose to conceptualize return to work as a more distal outcome or "handicap".

Dictionary of Occupational Titles (DOT)

Activities and postures involved in various occupations may be referred to as "job factors" or the physical demands of a given job. The DOT (Fishbain et al., 1994) has classified most occupations as involving one or more of the following "factors" or activities: standing, walking, sitting, lifting, carrying, pushing, pulling, climbing, balancing, stooping, kneeling, crouching, crawling, reaching, handling (seizing, holding, grasping, turning), fingering (picking, pinching), feeling (size, shape, temperature, texture), talking, hearing, and seeing (acuity, depth, perception, field of vision, accommodation, colour vision). These job factors express both the physical requirements of the job and the physical capacities that workers must have to meet the demands (Fishbain et al., 1994). The item content for the FACS was primarily based on items from the DOT with two additions--sleeping and transfers. The rationale for the selection of these items was that such movements and postures are affected by back pain, and underlie the performance of a range of functional ADL related to work, social, and recreational activities. It should be noted that not all of the DOT activities were incorporated into the FACS (e.g., balancing, handling, feeling, talking, hearing, and seeing) as it was felt that these would be less affected by back injuries.

Self-Efficacy Theory

Self-efficacy is defined as people's judgements (beliefs) of their capabilities (self-confidence) to perform certain behaviours, activities or tasks (Bandura, 1986). A related construct is outcome expectations which refer to the outcome that is expected when the

behaviour (activity or task) is executed. Efficacy expectations consist of beliefs about how capable one is of performing specific behaviours, whereas outcome expectations consist of beliefs about whether a given behaviour or regimen will lead to certain outcomes. For example, individuals with LBP may believe that if they undergo rehabilitation, they will become stronger, and ultimately, will be able to resume their usual activities (outcome expectations). However, if pain, fatigue, or stiffness, etc. are associated with the exercise regimen, confidence to continue with the exercises may be affected, and individuals may not participate to their maximum. Similarly, individuals with a previous back injury may feel that they are more vulnerable to further injury (Tarasuk & Eakin, 1994), and as a result may be hesitant to participate in the activities. Bandura (1977) advocates that the most effective means of enhancing self-efficacy is through performance-based procedures: the physical activities in the CCPs consists of performance-based activities.

Rodgers and Brawley (1991) have shown that belief in the effectiveness of a recommended regimen (outcome expectation) may be an important factor in initiating an exercise program. Self-efficacy research to date has been conducted with individuals whose participation in exercise or rehabilitation programs have been voluntary. Since compensation payments may be contingent upon attendance in the CCP, participation may be on a non-voluntary basis. An issue that has not been addressed in the literature is how self-efficacy affects initial and continued participation in programs when such participation may not be voluntary.

Perhaps the most meaningful finding from the rehabilitation literature is that self-efficacy is not static, but amenable to therapeutic change (Bandura, 1991). Efficacy expectations are shaped and reinforced by four sources of information--mastery, vicarious experience, verbal persuasion, and physiological arousal. The most significant of these sources is *mastery* or *actual performance accomplishments*. Mastery and efficacy are reciprocal. That is, knowing one can do something enhances one's confidence, and self-efficacy in turn is necessary to take the next steps (Bandura, 1986). For example, the gradual increase in the number of repetitions of exercises and an increases in the amount of weights

used by the CCPs should enhance clients' sense of mastery. As participants perceive that their muscle strength or pain free range of motion is increasing, their self-confidence regarding such exercises should also increase.

The second source of information that impacts upon efficacy expectations is *vicarious experience* or *modelling*. For instance, if clients observe that other injured workers with back injuries who are similar to themselves are able to perform the exercises, this may give them a "boost" to continue with their exercises.

Verbal persuasion, the third source, is provided by therapists, other participants, families, and friends who encourage clients to persist with the exercises (both at the program and at home). Positive feedback, commonly used as a motivation technique by therapists, may be the most influential source of verbal persuasion for these clients.

Physiological cues (e.g. anxiety, pain, muscle spasm, stiffness, fatigue, etc.) are the fourth source of information that influences self-efficacy cognitions. People tend to avoid activities for which they distrust their capabilities, and experience autonomic arousal when engaging in such activities (Bandura, 1991; Kaplan, Atkins, & Reinsch, 1984). However, as clients continue to perform the exercises, apprehension, muscle soreness, and pain should diminish.

By considering these four sources of information (i.e., mastery accomplishments, vicarious experience, verbal persuasion, and physiological cues) in the rehabilitation process, self-efficacy may increase as a function of participating in exercise activity (Caruso, & Gill, 1992; Dolce et al., 1986), and as a result of this participation, physical capacity may increase. A strong relationship has been found between exercise and self-efficacy for both long-term training as well as single bouts of exercise, in both normal and clinical samples, as well as for adults of both genders (Rejeski, Brawley, & Schumaker, 1996).

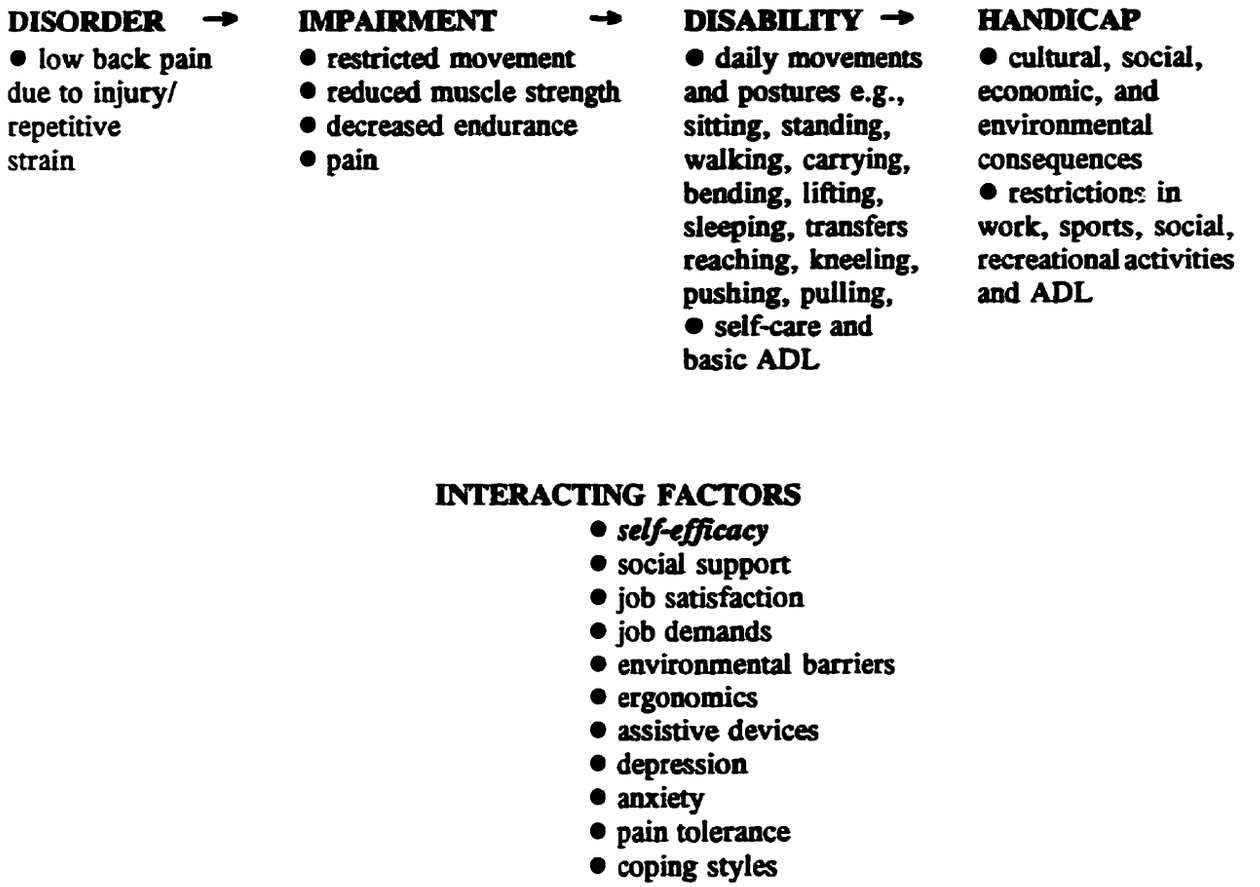
Applying the Frameworks to the Community Clinic Programs

Figure 1.1 illustrates a possible application of the ICIDH (WHO, 1980), the DOT framework (Fishbain et al., 1994), and self-efficacy theory (Bandura, 1986) to the context

of rehabilitation programs such as the CCPs. The *disorder* in question is back pain. Associated *impairments* include: restricted movement, reduced muscle strength, decreased endurance, and pain. The *disability* component encompasses basic movements and postures such as standing, walking, sitting, lifting, carrying, kneeling, crouching, stooping, reaching, and climbing stairs--common job factors taken from the DOT (Fishbain et al., 1994). These movements and postures are seen as proximal indicators underlying a range of occupational, sports, social, recreational, and daily activities. The *handicap* dimension of the framework was viewed as encompassing the more distal outcomes or individualized consequences of disability.

While the main objective of the CCP is to return injured workers to their "optimal" or preinjury state of functioning, this notion is highly individualized and undoubtedly affected by a host of moderating variables. In actuality, the CCPs focus on improving physical conditioning (proximal goal) that will hopefully lead to reduced handicaps (distal goal). As shown in Figure 1.1, the CCPs focus on the primary impairment components through the exercise intervention. Most commonly, physical abilities such as muscle strength, flexibility, and endurance are measured. However, from the clients' perspective, maximal VO_2 scores or lumbar range of motion measurements (measured by a tape measure or inclinometers) are probably not meaningful indicators of improvement. Some CCPs obtain clients' ratings of functional improvement through the use of disability measures, such as the Roland SIP (Sickness Impact Profile) (Roland & Morris, 1983), and the OSW (Oswestry Low Back Pain Disability Questionnaire) (Fairbanks et al., 1980). Unfortunately, these instruments do not address self-efficacy explicitly, nor, in our opinion, do they specifically address specific components of the ICIDH (WHO, 1980). As will be discussed further in Chapter Four, the item content of the Roland SIP cuts across all dimensions of the impairment, disability, and handicap of the ICIDH. In addition to the exercise component, the CCPs offer back education to enhance resumption of daily activities and to prevent further reinjury. Unfortunately, no standardized measures are presently available to address either client knowledge or the resumption of various activities.

Figure 1.1 Applying the Frameworks to the Community Clinic Programs



Rationale For Developing the New Instruments

While self-efficacy has been demonstrated to be important in other areas of rehabilitation, Bandura (1986) has convincingly argued that the measurement of self-efficacy must be situation specific. Available measures have been tailored to other client groups, such as cardiac clients (Ewart et al., 1986), arthritic clients (Lorig et al., 1989) or geriatric clients (Powell & Myers, 1995).

The one self-efficacy measure that has been developed for persons with LBP--the Pain Self-Efficacy Questionnaire (PSEQ) (Nicholas, 1989)--was designed for persons with chronic LBP. Nicholas (1989) administered the 10-item measure to a sample of 70 LBP patients and reported high internal consistency, test-retest reliability, and moderate correlations with measures of pain, depression, anxiety, coping, and the Sickness Impact Profile (Bergner, Bobbit, Carter, & Gilson, 1981).

Unfortunately, only preliminary psychometric testing has been conducted on the PSEQ and the instrument has not been published. Regardless, the items themselves are very global (e.g., *"I can enjoy things, despite the pain"*) and imply permanence or chronicity (e.g. *"I can still accomplish most of my goals in life"*). Thus, the measure may not be suitable for CCP clients who tend to have subacute or acute LBP. Nevertheless, impressions of the PSEQ were sought from both CCP clinicians and clients through focus groups (discussed later). Similar to other measures such as the OSW (Fairbanks et al., 1980) or the Roland SIP (Roland & Morris, 1983), the PSEQ taps several dimensions in the ICIDH (WHO, 1980), and includes the qualifier "despite the pain" in each item of the scale, which may overemphasize the pain. In view of these limitations, the investigator felt justified both in developing a new index and in not conducting a head-to-head comparison with the PSEQ. The Roland SIP (Roland & Morris, 1983), a more widely used general disability measure, was used for comparison purposes. The Roland SIP will be discussed further in Chapter Two.

Both new measures (i.e., the FACS and the RADL) fit within the ICIDH framework (WHO, 1980). Both were specifically tailored for injured workers with acute and subacute LBP, and developed with input from both clinicians and clients of the CCPs. Based on the

ICIDH framework, as well as Bandura's theory (1986), the FACS was developed to address the "disability" component, or self-confidence in carrying out basic movements and postures underlying a range of activities. The RADL, meanwhile operationalized as resumption of ADL, was developed to address the "handicap" component. The DOT (Fishbain et al., 1994) was used to generate the initial item content for the FACS. In an attempt to distinguish preinjury functioning from current functioning, two versions of the FACS (i.e., the current FACS and the preinjury FACS) were initially created. Ease of administration and perceived suitability for clients with LBP were primary considerations in the development of both scales. The various study objectives are discussed next, followed by an overview of methods and the timeline.

Study Objectives

Phase I: Scale Development and Pilot Testing

1a. to explore clinicians' and clients' expectations of rehabilitation programs such as the CCPs, and the meaning of "recovery";

b. to examine measures currently used by clinicians in CCPs and the perceived need for new measures to assess self-efficacy and resumption of activities;

2a. to generate the item content for the FACS, based on the ICIDH classification (WHO, 1980) of disability, the DOT listing (Fishbain et al., 1994) of basic movements and postures underlying the physical demands for a range of occupations for injured workers with LBP, and self-efficacy theory (Bandura, 1986);

b. to generate the item content for the RADL, based on the handicap component of the ICIDH (WHO, 1980); and

3. to pilot test the scales with respect to clarity of instructions and rating format, time to complete, and relevance of the content ("process validity") with clinicians and clients of the CCPs. Other instruments to be used in the study also were examined for clarity of instructions, relevance of content, and completion time.

Phase II: Reliability Testing

1. to assess the test-retest reliability of the FACS and the RADL.

Phase III: Validity Testing

1. to examine the internal consistency of both scales;
2. to examine the inter-item correlations, item-total correlations, and factor analysis of the FACS and the RADL; and
3. to determine the convergent validity, discriminant validity, concurrent validity, and predictive validity of the two scales.

Responsiveness Testing

1. to examine the responsiveness to change of the FACS and the RADL with low back injured workers undergoing rehabilitation.

Predictive Testing

This component of the study was exploratory aimed at a better understanding of the recovery process of injured workers with LBP. Specifically, the objectives were:

1. to explore factors related to baseline FACS scores, baseline RADL scores, baseline Roland SIP, and clinicians' ratings of functional ability;
2. to explore factors related to improvement in FACS scores, improvement in RADL scores, improvement in Roland SIP scores, and improvement in clinicians' baseline ratings of functional ability;
3. to explore factors associated with clinicians' judgements of readiness for return to work; and
4. to explore factors associated with clients' completion of the CCP.

Overview of Methods and Sampling Pools

Subjects and clinicians who participated in this study were from eight different CCPs in south western Ontario. While the various phases of this study will be discussed in detail in Chapters Two to Six, the following is a brief overview of the events and the time frame for this project.

1. The study commenced in August, 1994 with a focus group session of clinicians from *Link with Work* Clinic, a Community Clinic in Kitchener, Ontario. At this session, clinicians were asked their opinions about: clients' expectations of treatment, factors that facilitate and inhibit successful rehabilitation, the goal setting process used with clients, and their opinions on the PSEQ (Nicholas, 1989) and a draft version of the FACS. Following the focus group session, the initial FACS was revised.
2. A focus group session with injured workers with LBP who attended *Link With Work* Clinic was held October, 1994. Participants were asked their views about the recovery process for work-related back injuries, as well as their opinions about the second draft version of the FACS, and the PSEQ (Nicholas, 1989). The FACS was then further revised and the RADL was constructed based on participants' input.
3. The pilot testing of both scales was conducted in two sessions in January, 1995 and March, 1995. Both groups consisted of clients attending the *Link With Work* Clinic. The main purpose of these sessions were to pilot test both the FACS and the RADL for clarity of instructions and rating format, as well as relevance of content. Other instruments for potential use in the main part (validity testing) of the study also were pilot tested. Based on the feedback, both the FACS and the RADL were further revised and decisions made concerning instruments to be used for validation purposes.
4. Reliability testing of both the FACS and the RADL was conducted on 20 clients with LBP attending one of four CCPs in Hamilton, Ontario. This phase took place between March and May, 1995.
5. One hundred and four injured workers with LBP who attended seven different CCPs

in the Hamilton, Ontario vicinity between mid May and September, 1995 took part in the validity testing phase. A battery of instruments, including the newly developed FACS and RADL, as well as other existing scales (such as the Roland SIP), were completed by these 104 clients at clinic entry and at discharge, or three weeks--whichever came first. The number of new clients admitted to the seven clinics necessitated a staggered, four month time frame for this phase.

Subject Eligibility Criteria

The eligibility criteria for the present study were identical to the referral criteria specified by the WCB for inclusion into the CCPs (Ontario WCB, 1992), as outlined below. An additional requirement was that the subject be able to read and write in English.

1. The worker has sustained a soft tissue injury (e.g., strains, sprains) of the back.
2. No more than 70 calendar days have elapsed since the day of injury or recurrence. Referrals are encouraged as soon as clinically appropriate despite the fact that a decision on entitlement to compensation may still be pending.
3. The worker is eligible for lost time or no lost time (reduced hours/modified duties) claim status. A worker may be at work, at his or her regular job with reduced hours, on modified duties (e.g., reduced hours, change in job function), or on a work trial and still receive treatment from a Community Clinic.
4. Concurrent medical rehabilitation and employment are encouraged to increase work tolerance and optimize return to preaccident activities.

CHAPTER 2

PHASE I: SCALE DEVELOPMENT AND PILOT TESTING OF THE FACS AND THE RADL

Feinstein and colleagues (1986) argue that since there is a proliferation of functional ability measures in the rehabilitation literature, more head-to-head comparisons between existing measures and new measures need to be conducted. Often scale developers fail to consider the "user-friendliness" of measures from the perspective of ease of administration and scoring. Most important, the "process validity" of a measure or the perceived meaningfulness to both clinicians and intended target audiences is often not considered (Myers, 1992). Since the perceptions of clients experiencing lumbar dysfunction and the perceptions of clinicians working with these clients are crucial in the development of such measures, the FACS was designed with input from a focus group session with clinicians working in the area of work-related musculoskeletal injuries, and a focus group session with injured workers with LBP attending a CCP.

The purpose of this chapter is to present a summary of the two focus group sessions and the pilot testing phase in the development of the FACS and the RADL. It should be noted that the RADL had not yet been developed for the focus group sessions but was constructed for the pilot testing phase of the study. The RADL was further developed with input from participants in the pilot testing phase. Data obtained from both focus group sessions and the pilot testing served as a guide for further refinement of the FACS and the RADL, as well as the selection of other instruments to be used (for validation purposes) in the study.

Focus groups are a data collection technique that capitalizes on group interaction (Asbury, 1995; Patton, 1990). Focus group sessions give participants the opportunity to discuss their needs and enable focus group leaders to ask questions and obtain detailed data about the attitude and beliefs of the participants (Love, 1991).

Focus Group Session With Clinicians

A focus group session with clinicians was conducted to obtain their impressions of factors impacting upon the rehabilitation of injured workers with LBP. In particular, clinicians' opinions were sought on the following: 1) clients' expectations of treatment, 2) identification of factors that facilitate and inhibit successful treatment, 3) goal setting process used with clients, and 4) reactions to both the PSEQ (Nicholas, 1989) and a draft version of the FACS. The instruments (i.e., the PSEQ, a draft version of the FACS, and the demographic questionnaire for clinicians) that were used for the clinicians focus group are found in Appendix A.

Clinicians for the focus group session were recruited by the coordinator of the *Link With Work* Centre, which is a program of the Grand River Hospital, Kitchener, Ontario. This facility is an approved WCB Community Clinic as well as a Regional Evaluation Centre. Of the eight clinicians employed at the *Link With Work* Clinic, six female clinicians participated in the focus group session: three physiotherapists (including the coordinator), two occupational therapists, and one kinesiologist. On average, the clinicians had been employed at the clinic for three years (range 6 to 48 months).

Procedures for analyzing the focus group results were based on both tape-based analysis (abridged transcript) and field note-based analysis (Krueger, 1994). Discussion questions were formulated prior to the session to focus the discussion. General questions and reactions to the scales (i.e., the PSEQ and a draft version of the FACS found in Appendix A) were noted. A summary of the findings are presented below.

Client Expectations

Clinicians were first asked about clients' expectations of those clients who have sustained a back injury for the first time. In response, clinicians felt that many clients expected the program to cure them and to make them pain free. One therapist said, "They want passive modalities rather than being actively involved in therapy." Another said, "They need to take control of their injury and believe in an active approach to treatment." Another

issue that emerged was that the employer may not be supportive of employees taking time off work to attend the program. Another clinician added, "In some cases, compensation payments may not have been established and clients are concerned about money while they are off work." The general feeling seemed to be that until these issues were resolved, clients would not achieve their maximum potential.

The focus group participants agreed that clients with previous back injuries were different from those with first time injuries. They stated that the length of time since injury, previous experiences with health professionals, the type of treatments that clients had before (i.e., active versus passive therapy), and clients' attitude about treatment were all influential factors. For instance, one clinician said, "Clients who have had a previous back injury will get better, but it may take them longer to achieve this, and they may not get back to their preaccident activity level." Another therapist added, "Clients who have had passive modalities in the past tend to expect the same treatment they had before." Several clinicians felt that the longer clients have back problems, the less optimistic they seemed to be about recovering. One clinician stated, "Clients who have a positive outlook are more willing to actively participate in the program." Overall, most participants felt that clients' expectations were realistic, however, they expressed concern that many clients think that they must be pain free before they can be functional again.

Factors Influencing Participation

Clinicians stated that receiving compensation benefits seemed to be a motivator for many clients to attend the program. Some examples of facilitating factors included support from physicians, family, peers, and coworkers as well as clients' perceptions that they are valued employees. The clients' understanding of what the program offers, their ability to exhibit independence in carrying out the activities, and their ability to be effective communicators also were seen as positively influencing the rehabilitation process.

Concerning inhibiting factors, the prevalent view of clinicians was that many employers are not supportive of their employees attending a rehabilitation program. One

therapist stated, "Clients may come to this understanding by how other workers have been treated by employers in the past." Several participants strongly felt that the physician may not support the goals of the program. In addition, worker personality characteristics (such as low self-esteem, depression, and feelings of victimization), lack of understanding about their injuries, and what the program offers, as well as previous experiences with passive treatment protocols were all thought to influence program adherence.

There was a general agreement that adherence to exercising at home was influenced by the following: competing time demands, responsibilities at home, beliefs that exercising will impact on pain level, and the positive effect of the program. Conversely, fear of reinjury may inhibit some clients from exercising at home.

Goal Setting

Clinicians agreed that it was important to set goals with clients, and these goals should be reviewed every few days, weekly, and at discharge. One therapist stated, "We set goals with clients by asking them what they would like to achieve, either with a particular exercise, or with the overall program." Another clinician explained, "When setting goals, it is important to keep an open mind because for many clients, reemployment may not be a motivating factor. For instance, clients may state that they hate their job but they love to 10-pin bowl."

Impression of the Instruments

At this juncture in the session, participants were given (at the same time) copies of the PSEQ (NIcholas, 1989) and a draft of the FACS (Appendix A). This version of the FACS contained 21 items. It should be noted that in order not to bias the clinicians, the facilitator did not discuss the rationale for the FACS development or the ICIDH framework (WHO, 1980), and did not label the two questionnaires. Respondents were first asked a general question concerning what they thought these two instruments were measuring. The perceived importance of client confidence in rehabilitation was then explored, followed by a discussion

of instruments currently used in their clinic.

Participants agreed that both questionnaires assessed confidence. They noted that the term "*despite the pain*" was mentioned in each item in the one questionnaire (i.e., the PSEQ) but not in the other (i.e., the FACS). The therapists felt that the phrase "*despite the pain*" may overemphasize clients' attention on pain and is in total opposition to the goal of the program which is to prevent pain-related disability. Respondents also noted that many of the items in the PSEQ seemed to emphasize chronicity or permanence and may not be appropriate for their clients.

The prevalent feeling was that the items in the FACS were more appropriate and useful for clients with lumbar dysfunction. One clinician stated, "The rating scale that is from 0% to 100% in the one questionnaire (i.e., the FACS) seems to be easier to relate to than the rating scale in the other questionnaire (i.e., the PSEQ) which is from 0 to 6." They felt that client confidence on such a measure as the FACS should increase over the course of the program. Specific comments on individual FACS items were later used to modify this instrument.

The general feeling was that confidence was important for clients' recovery, however, some clinicians cautioned against becoming overconfident. For instance: "Overconfident individuals may increase their weights too quickly, or do too many repetitions of the exercises at one time which may be detrimental to their progress." Another therapist said, "Those who are overconfident need to be watched very closely so that they do not do too much."

Clinicians reported that in their clinic, they used weights (to assess strength and endurance), increased the number of repetition of exercises, used fitness indicators such as submaximal tests (e.g., treadmill, blood pressure, heart rate), and equipment such as the Baltimore Therapeutic Equipment (which is a machine that simulates functional activities) as common assessment instruments. One respondent stated, "Although there are many assessment instruments that we use to evaluate physical function, many of the instruments do not necessarily tie in with treatment planning." Another therapist noted, "Although these instruments are useful in many circumstances, the information may not be meaningful to

clients. For instance, clients are more impressed with knowing that at entry into the program, they can sweep the floor for one minute and after one week of treatment, they can sweep for more than five minutes." Another clinician added, "Instruments that have number values, such as being able to lift 10 pounds versus two pounds when they first entered the program are useful as clients can relate to their progress."

Participants agreed that instruments that help clients to monitor their own progress are important. One clinician stated, "Instruments that assist with developing clients' insight into their disability would be beneficial." Another therapist explained, "Evaluating the behavioral or subjective aspects of physical function would be helpful." The clinicians agreed that an instrument that measures clients' confidence in their ability to perform functional activities would be useful.

Direction For Instrument Modifications

Clinicians felt that while there were several objective assessment instruments available to evaluate the biological component of physical function, there was a need to use measures that assessed the subjective component. They noted that the assessment of clients' confidence to perform physical activities (at both entry and discharge) would be useful in the rehabilitation process.

Clinician feedback on individual items of the FACS was used to modify the scale. For instance, several items contained qualifiers (for example), item #1--*How confident are you that you can walk "for more than one block"?* Since there are numerous possible qualifiers such as length of time, distance, pain, stiffness, and fatigue that may impact upon the ability to perform functional activities, it would be impractical to include all qualifiers in the items. In light of this concern, these qualifiers were removed. Furthermore, some items (such as #17--*How confident are you that you are able to prevent reinjury?*, and item #18--*How confident are you that if you complete the rehabilitation program you will feel better?*), were more related to outcome expectations. To ensure that the FACS was a true self-efficacy measure (i.e., it contained items that measured only clients' efficacy expectations), these

items were dropped from the FACS. In an attempt to determine residual confidence in functional ability, two ratings--*before your back injury* status and *current* status were incorporated into the FACS. Thus, the FACS was modified to more clearly focus on the disability component of the ICIDH in terms of self-efficacy (versus outcome) expectations. The resulting 18-item version of the FACS, which contained two parts to each question (*before your back injury* and *now*), shown in Appendix B, was used for the worker focus group session.

Focus Group Session With Workers

A focus group session with eight injured workers with LBP who attended the *Link With Work* Clinic was conducted to obtain clients' impressions of their injuries as well as their opinions of the PSEQ (Nicholas, 1989) and the revised version of the FACS. Participants for the client focus group session were recruited by clinicians at the *Link With Work* Clinic. Instruments for this session are found in Appendix B.

Participants consisted of three females and five males (mean age: 39.2 years; standard deviation: 9.1; range: 26-51). Length of time in the program ranged from one to six weeks (mean 3.4; standard deviation: 2.1). Three participants had injured their back for the first time; the other five had previous back injuries. Time since injury (i.e., most recent injury for the latter group) ranged from one to 12 weeks.

Five participants stated that they injured their backs while lifting, pulling, and pushing heavy weights (e.g., dumping meat bones, lifting shipping skids, lifting heavy weights out of a truck). One worker explained that his injury was the result of a series of cumulative injuries which he felt had developed into chronic pain. Another client explained, "I was injured because I had to bend over repeatedly into boxes to pack dashboard insulators", while another subject stated, "My injury was a result of twisting and pushing as I installed an engine in a car."

One worker stated that he was currently working six hours per day while attending the clinic. The other seven had been off work since injuring their backs. Of the eight

participants, six reportedly had been physically active in various sports prior to their injury. Five of these workers stated that they were unable to do these leisure activities now. One women said, "I am a reader and I cannot sit, stand, or lie down for more than one half hour at a time which limits my ability to read."

When asked what other activities had been affected by their injury, clients reported difficulty with the following: putting their shoes and socks on, playing with their children, working, doing housework and other jobs around the house, playing sports, sitting for more than 15 to 20 minutes at a time, walking for longer than a half hour, getting dressed, and sleeping.

It is noteworthy that during the 75 minute session, two participants stood up against the wall and walked about the room for the entire time. At frequent intervals, two others stood up and performed stretching exercises off and on, while a third periodically walked about the room. Those who remained seated for the full 75 minutes continuously shifted about in their chairs. These observations confirmed prior expectations that questionnaire-based assessments for this population needed to be kept as short as possible.

Following a general discussion, the PSEQ (Nicholas, 1989) was distributed and each participant was asked to complete it. The investigator timed how long it took to complete the questionnaire. This varied from approximately 3 to 8 minutes. One man did not finish the questionnaire. He appeared to be uncomfortable when he reported that he did not complete it. Since he spoke with an accent, English may have been his second language. Following completion of the PSEQ, participants were asked whether the questionnaire was easy to complete, and what they thought about during completion.

Except for the one individual, all clients thought the instructions and the questions were clear and easy to complete. The one man who did not complete the questionnaire said, "I was not sure if I did it right." The facilitator explained that there were no right or wrong answers. The man went on to say, "I did not understand it as I did not know what was right and wrong for me."

Several respondents said that while filling out the questionnaire, they tried to think of

specific examples. For example, one respondent said, "Item #2--*"I can do most of the household chores (e.g., tidying-up, washing the dishes, etc.) despite the pain"* was easy since examples are given in the question itself. On the other hand, for many of the items, it was hard to think of examples, for instance, item #9--*I can live a normal lifestyle, despite the pain.*" Another participant said, "I could not think of any activities as I tried to answer item #10--*I can gradually become more active, despite the pain.*"

Participants did not like items #8, #9, and #10 on the PSEQ as these questions seemed to infer that they would have to live with pain for the rest of their lives. One respondent stated, "These questions make me think - how can I last my whole life in pain?" Another participant stated, "These questions make it sound like having back pain is a permanent situation." One participant stated, "The word *goals* in item #8 (*I can still accomplish most of my goals in life, despite the pain*) was confusing as some goals can be accomplished despite the back injury or the pain." Another said, "Some goals have nothing to do with pain or your back."

Next, the 18-item version of the FACS was presented to the participants and they were asked to complete it. As mentioned earlier, this version of the FACS contained two parts for each question: a *before your back injury* item and a *now* (current) item. Time for completion varied from about 5 to 10 minutes.

Respondents felt that the rating scale in the FACS was easier than with the PSEQ. The participants (including the one man who was unable to complete the PSEQ) stated that they understood the instructions and the rating scale. Participants stated that they liked the idea of comparing their confidence to performing various activities before their injury with the ability to perform them now. As one respondent explained, "It allows you to gauge your after response with your before response."

When filling out the scale, one respondent replied (re. item #2--*How confident are you that you can stand as long as you want or need to?*), "I thought about standing activities at work and home." Another subjects stated (for item #3--*How confident are you that you can walk as long as you want or need to?*), "I cannot walk distances due to a previous knee injury

as well as my back injury, but I rated it according to my capability." Another participant said, "When I filled out the question on bending (item #12), I thought it is really difficult to bend over to put my shoes and socks on."

When answering item *#7--How confident are you that you can get on and off a bus?*, four participants said that they never take a bus. The facilitator suggested that when answering this question, they should respond as it they had to take a bus. For item #8--*How confident are you that you can get in and out of a bathtub?*, many respondents said that it was difficult to get in and out of a bathtub so they took showers instead. Regarding items #9 and #10, the prevalent view was that sleeping was a problem. One subject said, "Sleeping is the worst, you roll all night and you are awake because of the pain."

Directions For Instrument Modifications

Based on input from the client focus group session, the instruction--*if you do not do an activity, e.g., take a bath, go on a bus, please rate how confident you would be physically if you had to do these things*--was added to the FACS. Item #9--*How confident are you that you can lie on your back to sleep?* and item #10--*How confident are you that you can lie on your side to sleep?* were merged into one question: *How confident are you that you can sleep comfortably?* This modification resulted in a 17-item instrument that was used in the subsequent pilot testing phase of the project.

Limitations of the Focus Groups

There were several limitations to both focus group sessions. First, since the investigator conducted both sessions on her own (i.e., a recorder was not present to take notes of the discussion as well as non-verbal behaviours and other dynamics that cannot be recorded on audiotape), the aspect of debriefing between the facilitator and recorder was lost. This may have introduced a bias on the part of the investigator. Second, ideally focus groups should consist of individuals who do not know each other (Kreuger, 1994). It may be that some clinicians may have felt uncomfortable sharing their opinions with coworkers. Third,

since the participants for both focus groups were from the same clinic, the generalizability of the findings may be limited. Since *Link With Work* Clinic offers both a Community Clinic and a Regional Evaluation Centre, it may be a more specialized facility, and thus may not be representative of other CCPs. Fourth, it would have been beneficial to have conducted several focus group sessions with clinicians as well as clients to identify common themes that may emerge. The notion of "saturation," that is, the number of focus groups expressing similar ideas with no added new information should have been achieved. This usually takes three to four groups, although more may be required if the topic is complex (Asbury, 1995). Since only one focus group session with clinicians and one focus group with clients were conducted, the generalizability of the results may be limited. Fifth, the time constraint of 75 minutes for the client focus group may have limited the discussion. However, given that individuals with LBP find it difficult to sit comfortably for longer than 15 to 20 minutes, a longer time period was inappropriate. Finally, another limitation may have occurred during data analysis. While the tapes were transcribed into written form and were summarized accordingly, the use of a qualitative data analysis software package may have reduced any biases that may have occurred.

Pilot Testing Phase

The first purpose of this phase was to solicit clients' impression of the two instruments: the revised FACS and the newly developed RADL with respect to content, rating instructions, and format. The second purpose was to pilot test several published scales that could be used for the main (i.e., validity) phase as comparison measures with both the FACS and the RADL. Published instruments that measured disability, anxiety, social desirability, pain level, affect, and general self-efficacy were considered as these constructs may influence efficacy expectations (Kaplan et al., 1984; Lorig et al., 1989). The ease of administration and suitability for low back clients were primary considerations.

Since individuals with LBP can sit for up to 20 to 30 minutes at a time, the pilot testing was split into two sessions. The pilot testing sessions were conducted with participants

with LBP attending the *Link With Work* Clinic. Four males and one female (mean age: 41.2 years; standard deviation: 12.1; range: 29-58) participated in session one, while two males and four females (mean age: 36.8 years; standard deviation: 9.5; range: 23-51) participated in the second session.

Pilot Testing: Session One

As discussed above, the FACS and the RADL (which was embedded in the demographic questionnaire), as well as the other potential study instruments for the main study were pilot tested. The Roland SIP (Sickness Impact Profile) (Roland & Morris, 1983), and the OSW (Oswestry Low Back Disability Questionnaire) (Fairbanks et al., 1980) which are commonly used disability measures for LBP clients, as well as the anxiety subscale of the General Well-Being (GWB) Schedule (Fazio, 1977, as cited in McDowell & Newell, 1987) were considered as potential tools to examine the convergent validity of both the FACS and the RADL. These measures are discussed below and are outlined in Appendix C-1. Convergent validity and discriminant validity are further discussed in Chapter Four.

Roland Sickness Impact Profile (SIP). The Roland SIP (Roland & Morris, 1983) is a self-report 24-item disability measure that has been adapted from the Sickness Impact Profile (Bergner, Bobbitt, Carter, & Gilson, 1981) for use with clients with LBP. In order to improve the specificity of the response, the phrase "because of my back" was added to each item. A score of one point is given for each of the 24 items that are ticked. Total scores can vary from 0 (no disability) to 24 (severe disability). It takes about five minutes to complete. The Roland SIP has demonstrated high test-retest reliability over a three week period (Pearson's $r=.83$; $p<.005$) (Deyo, 1986), as well as administered twice in the same day (Pearson's $r=.91$) (Roland & Morris, 1983). Internal consistency was found to be .83 (Roland & Morris, 1983). Moderate correlations of pain have been found with patients' self-rated pain (Deyo, 1986), functional ratings (Millard, 1989), and a pain disability index (Tait, Pollard, Margolis, Duckro, & Krause, 1988). Significant associations between the Roland SIP

and the FACS as well as the RADL would indicate that disability would support the convergent validity of both scales.

Oswestry (OSW) Low Back Disability Questionnaire. The OSW is a disability measure that is commonly used for clients with back pain (Fairbanks et al., 1980). The OSW is divided into 10 sections, each with six response statements. Each section is scored on a six-point scale (0-5), and the overall score is expressed as a percentage from 0% (no disability) to 100% (a great deal of disability). This self-administered questionnaire takes about 5 minutes to complete. The OSW has shown high test-retest reliability (r=.99) when assessed on consecutive days, and displayed significant positive change over a 3-week period in a group of patients with a high likelihood of spontaneous recovery (Fairbanks et al., 1980). Significant associations between the OSW and the FACS as well as the RADL would indicate that disability would support the convergent validity of both scales.

Anxiety subscale of the General Well-Being (GWB) Schedule. The GWB (Fazio, 1977, as cited in McDowell & Newell, 1987) is a self-administered questionnaire that offers a brief but broad-ranging indicator of subjective feelings of psychological well-being and distress for use in community surveys. Good test-retest reliability and internal consistency have been demonstrated, as well as good correlations with other anxiety scales. A low score (0) represents more severe distress, while a high score represents low distress (4). Because the anxiety subscale of the GWB is a short (consists of only four-items), it could serve as a potential measure of anxiety. Significant associations between the GWB and the FACS as well as the RADL would indicate that anxiety would support the convergent validity of both scales.

The instruments described above (and in Appendix C-1) were administered to the subjects in random order which was determined a priori. The investigator timed how long it took participants to complete each measure. The average time for completion was as follows:

8.8 minutes (range: 7-10 minutes) for the FACS, 3.6 minutes (range: 1-10 minutes) for the Roland SIP, 5.2 minutes (range: 2-10 minutes) for the OSW, 1.6 minutes (range: 1-2 minutes) for the anxiety subscale of the GWB, and 9.2 minutes (range: 6-15 minutes) for the RADL and the demographic questionnaire. The average time to complete the entire battery was about 30 minutes.

When the battery of questionnaires was completed, the group was asked to look at each instrument in turn, and the investigator solicited impressions about the instructions, rating format, and perceived relevance of the content. With regard to the FACS, the prevalent feeling was that the questions were clear, relevant, and easy to complete. One subject stated, "I am confident that I can climb up and down stairs but I have a lot of pain if I do this. I am not sure about the number that I should circle." The investigator explained that when he rates his confidence, he should be taking pain into consideration. In light of this concern, the instructions in the FACS were subsequently modified to include the following statement: *If you do not feel totally confident, circle the number on the scale that best describes your level of confidence, regardless of the pain and discomfort you may have.*

Participants stated that the items in the RADL and the demographic questionnaire were clear, understandable, and relevant for individuals with LBP. There were no suggestions with regard to dropping or adding any items. One participant said, "The rating scale in this questionnaire is the same as the rating scale in the other questionnaire (i.e., the FACS) which also went from 0% to 100%. This is easy to understand and follow. It makes sense to me."

Respondents reported that the instructions in the Roland SIP were also clear, the items were understandable, and the content was relevant. Participants stated that they did not have any difficulty with the items in the scale.

In contrast, participants experienced difficulty completing the OSW, particularly the sections on pain intensity, sleeping, and sex life. In the pain section, three participants stated that they had trouble discriminating between the following two items: *I can tolerate the pain I have without having to use pain killers* versus *The pain is bad but I manage without taking pain killers*. For the sleeping section, one respondent said, "I can not rate any of these items.

I sleep poorly without taking sleeping pills but this section does not have any items that reflect this." Another participant said, "I did not check off any items in this section because I do not use any medications, but I wake up because I am uncomfortable. There are no statements in this section that indicate this." For the sex life section, two subjects stated that since their back injuries, their sex lives had not changed, but their positions had changed, and there were no statements in this section that would capture this.

The general feeling was that the few items in the anxiety subscale of the GWB were not appropriate for clients who have sustained a back injury. One subject stated, "When I completed item #1--*Have you been bothered by nervousness or your "nerves" during the past month?*, I had to answer that I am nervous because I am always nervous and I was injured two weeks ago." Another respondent stated, "When I answered the question--*Have you been anxious, worried, or upset during the past month?* (item #3), I responded that I was anxious, worried and upset because of the things that are happening to me including my back injury". Another subject stated, "I am nervous when I drive my car anyway, it has nothing to do with being injured."

Pilot Testing Session Two

Other potential scales that were considered for the main study were pilot tested in the second session. Since affect, pain, and social desirability may influence self-efficacy, the Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegren, 1988), the visual analogue scale (VAS) (Scott & Huskisson, 1976), and the Marlowe-Crowne Scale (MCS) (Fischer & Fick, 1993), respectively, were pilot tested. Since there is no published self-efficacy instrument that could be used as a head-to-head comparison measure for this population, the Physical Self-Efficacy Scale (PSES) (Ryckman et al., 1982), a general self-efficacy measure, also was pilot tested. These questionnaires are discussed below and are found in Appendix C-2.

Positive and Negative Affect Scale (PANAS). The PANAS is a 20-item affect or mood scale (Watson et al., 1988) assessing both positive and negative affect. Positive affectivity is associated with enthusiasm and alertness, while negative affectivity is related to feelings such as anger, disgust, and fear. Participants are asked to rate on a 5-point scale the extent to which they experienced each mood state. The PANAS has demonstrated high internal consistency, and good eight week test-retest reliability (Watson et al., 1988). PANAS scores have correlated with measures of related constructs using the Hopkins Symptom Checklist, the Beck Depression Inventory, and the Speilberger State-Trait Anxiety Inventory. Significant associations with the PANAS and the FACS as well as the RADL would indicate that affectivity would support the convergent validity of both scales, while an absence of significant associations would support the discriminant validity.

Visual Analogue Scale (VAS). The VAS (Scott & Huskisson, 1976) measures clients' perceptions of severity or the quantitative aspects of pain. It consists of a straight line of 100 mm, the anchors at which are defined as "No pain" and "Pain as bad as it can be", respectively. The client, after a standard explanation, places a mark corresponding to his or her present pain on the line between the extreme limits. Good test-retest reliability has been reported (Reville, Robinson, Rosen, & Hogg, 1976; Scott & Huskisson, 1976). The VAS has been found to correlate with other pain rating scales (Downie, Leatham, Rhind, Wright, Branco, & Anderson, 1978), verbal descriptions of pain (Wilkie, Lovejoy, Dodd, & Tester, 1990), and medication intake (Reading, 1980). The VAS requires less than five minutes to administer and less than one minute to score. In scoring, the number of millimetres from the no pain line is measured. Significant associations between the VAS and the FACS as well as the RADL would indicate that pain level would support the convergent validity of both scales.

Marlowe-Crowne Scale (MCS). The original Marlowe-Crowne Scale (Crowne & Marlowe, 1960) is a 33-item social desirability scale used to detect individuals who tend to describe themselves in favourable, socially desirable terms in order to achieve the approval

of others. The items in the scale were modelled to achieve a balance of two types of statements: half culturally acceptable but probably untrue, the other half probably true but undesirable (Robinson & Shaver, 1973). Since the original publication, a number of short forms of the MCS have emerged. The short form of the MCS (seven items), know as the revised Form XI (Fischer & Fick, 1993), was considered for this study. Confirmatory factor analysis showed that this form has high internal consistency, and correlates well with the standard long form. A common potential source of bias is known as social desirability bias. In social desirability bias, when questioned directly concerning behaviour about which there is a strong expectation of social approval or disapproval, respondents tend to err in the direction of idealizing their behaviour (Woodward, Chambers, & Smith, 1982). If answers are affected by social desirability, the results obtained may not reflect the true state of affairs (Norman & Streiner, 1989). Since individuals may respond in a socially desirable manner when completing questionnaires, the MCS was used to pick up individuals who were responding favourably from those who were truly efficacious. The MCS was used to assess the discriminant validity of both the FACS and the RADL.

Physical Self-Efficacy Scale (PSES). The PSES (Ryckman et al., 1982) is a 22-item, general self-efficacy measure, developed using college students. The PSES consists of two factors: Perceived Physical Ability (PPA) and Physical Self-Presentation Confidence (PSPC). The PPA has been shown to correlate with physical ability and has demonstrated good convergent validity. Higher scores on the PPA indicate higher perceived physical ability (e.g., I have excellent reflexes), while higher scores on the PSPC demonstrate greater confidence in the presentation of physical skills (e.g., I am not concerned with the impression my physique makes on others). Good test-retest reliability was found over a six week period (Ryckman et al., 1982). While the PSES assesses more global physical self-efficacy, it appeared suitable as a comparison measure to examine the convergent and discriminant validity of the specific self-efficacy FACS measure. For instance, Powell and Myers (1994) used the PSES in this regard when validating the Activities-specific Balance Confidence

(ABC) Scale with senior clients. These researchers found a moderate correlation (r=.49) between the overall PSES scores and the ABC score, a good correlation (r=.63) between the PPA subscale score and the ABC score, and a weak and non-significant correlation (r=.03) between the PSPC subscale score and the ABC score. In the present study, the PPA subscale was used to assess convergent validity and the PSPC was used to evaluate discriminant validity of the FACS.

The following questionnaires were given to the subjects for the second pilot testing session: 1) the RADL, 2) a 17-item revised version of the FACS with the order of the *current* items and the *before your back injury* items randomly allocated to the subjects, 3) the PANAS (Watson et al., 1988), 4) the VAS (Scott & Huskisson, 1976), 5) the MCS (Fischer & Fick, 1993), and 6) the PSES (Ryckman et al., 1982). The instruments were administered to the subjects in random order which was determined a priori.

The average time for completion of each instrument was: 3 minutes (range: 2.5-3.5 minutes) for the RADL, 4.8 minutes (range: 4-5.5 minutes) for the FACS, 1.6 minutes (range: 1-2 minutes) for the PANAS, 1 minute (range: .5-1 minute) for the VAS, 1.5 minutes (range: 1-2 minutes) for the MCS, and 2.9 minutes (range: 2-4 minutes) for the PSES. The total time for the battery averaged 15 minutes.

Once the battery of questionnaires was completed, the group went back to each instrument in turn and while looking at the instruments, the investigator solicited impressions about the instructions, rating format, and relevance of content. Concerning the RADL, subjects found that the instructions were clear, the items were understandable, and the content was relevant to individuals with back pain. They said that they would not add or remove any items.

Regarding the FACS, subjects stated that it did not make any difference to them if they completed the *current* items before the *before your injury* items, or visa versa. One subject asked, "What is the purpose of including the before your injury items? Everyone feels great before their injury as they are able to function to their maximum so why both asking

about how they were before their injury?" The investigator replied that this may be more relevant for individuals who have had a previous back injury. One participant commented that he did not answer item *#7--How confident are you that you can get on and off a bus?*--as he never takes a bus. When the investigator asked him to rate the item as if he did use a bus, he said "I never go on a bus as it is too rough a ride". When questioned about item *#8--How confident are you that you can get in and out of a bathtub?*, the respondents said that they took showers.

Regarding the PANAS, respondents reported that the instructions were clear and the items were understandable. One participant said, "I do not understand why this questionnaire is included in the battery. It seems to me that the things that are being asking about in here such as *interested* (item #1), *distressed* (item #2), *excited* (item #3), etc. do not have anything to with my back problem". Another client added, "I was thinking the same thing."

Subjects reported that the VAS was clear, understandable, and easy to complete. The prevalent feeling was that the idea of asking about pain seemed strange as the program emphasized physical activity rather than pain. One respondent stated, "Asking about pain does not fit with the other instruments."

Respondents noted that the instructions on the MCS were understandable and the questionnaire was easy to complete. They reported that they did not have any difficulty with any of the items.

Two subjects noted that when completing the PSES, they were unclear whether they were suppose to answer the questions according to how they were now versus before their back injury. The instructions were subsequently revised to read--*Please circle the number on the scale which best describes the extent to which you agree or disagree with each statement as it applies to you today*.

Directions For Instrument Modifications

With regard to the FACS, in light of the comments expressed by the participants about question #6--*How confident are you that you can get in and out of a car?*--was combined with question #7--*How confident are you that you can get on and off a bus?* to read: *How confident are you that you can get in and out of a car and/or bus?*; and question #8--*How confident are you that you can get in and out of the bathtub?* was removed. This further modification of the FACS resulted in a 15-item instrument that was used in the main phase of the study.

Summary

Both the focus group and the pilot testing sessions demonstrated that questionnaire-based assessments for clients with LBP would need to be kept as short as possible. Participants felt that the anxiety subscale of the GWB was not appropriate for individuals with back pain, and there seemed to be a fair amount of confusion when completing the OSW. This finding is similar to another study that used the OSW for individuals with LBP (Stratford et al., 1995). These investigators found blank and multiple responses per item were present on approximately 20% of the questionnaires. Because of these criticisms, both the GWB anxiety subscale and the OSW were eliminated from the battery of instruments. Since the respondents felt that the PANAS (Watson et al., 1988) was not appropriate for individuals with lumbar dysfunction, and the VAS (Scott & Huskisson, 1976) overemphasized pain, these scales also were eliminated from the battery of instruments. While the Roland SIP is considered to be a general disability measure, it also may be a pain-related disability measure as many of the items seem to encompass various aspects of pain (i.e., *my back is painful almost all of the time* and *I change positions frequently to try to get my back comfortable*). In view of this, the investigator felt that the pain and disability constructs were adequately covered in the Roland SIP.

Based on input from both pilot testing sessions, the demographic questionnaire (which included the RADL), the FACS, the PSES (Ryckman et al., 1982), the MCS (Fischer & Fick, 1993), and the Roland SIP (Roland & Morris, 1983) were submitted to the subjects for

the main part of the study. The 15-item FACS consisted of two sections: respondents' ratings of their *current* status and ratings of *before their injury* status. These two sections were known as the current FACS and the preinjury FACS.

The pilot testing sessions demonstrated that the total time to complete the five questionnaires was approximately 29 minutes (i.e., about 12 minutes for the demographic questionnaire (including the RADL)), about 9 minutes for the FACS, about 4 minutes for the Roland SIP, about 3 minutes for the PSES, and about 1 minute for the MCS). Because clients with LBP are unable to sit for long periods of time, the time frame of 29 minutes seemed to be fairly reasonable.

CHAPTER 3

PHASE II: RELIABILITY TESTING

Objectives

The main objective of this phase was to examine the test-retest reliability of the two newly developed measures--the FACS and the RADL (Appendix D). Test-retest reliability analysis is used to determine whether the construct itself is stable over time (DeVellis, 1991). If the time between two instruments is too short, reliability may be overestimated as respondents may remember their first responses. On the other hand, if the time period is too long, the subjects' condition may have changed. Streiner and Norman (1989) suggest using a test-retest interval of somewhere between two and 14 days. In this study, subjects were given the FACS and the demographic questionnaire (which contains the RADL) at program entry immediately after their initial assessment (time 1) and one to five days later prior to treatment (time 2). This time frame was chosen in an effort to eliminate the effects of intervention, and to ensure that the subjects' condition would be as stable as possible.

Sample Recruitment and Procedure

As discussed in Chapter One, the eligibility criteria were the same as the referral criteria for inclusion into the CCPs (Ontario WCB, 1992). An additional requirement was that the subject be able to read and write in English.

Twenty subjects with LBP who attended one of four Community Clinics in the Hamilton area between March and May, 1995 participated in the reliability phase. To obtain the sample of 20 subjects, 23 consecutive clients were approached. Reported reasons for refusal were: "in too much pain" (n=1), and not understanding English (n=1). There was one drop-out. This person completed the FACS and the RADL at time 1, but did not return to the clinic at time 2. This subject was not included in the analysis.

Upon entry into the CCPs, clients routinely receive a physical intake assessment performed by clinic therapists. At the end of the assessment, clinicians asked clients if they

would be willing to participate in the study. The investigator immediately met with potential subjects to explain the purpose and procedures of the study. Potential subjects were individually asked to complete two questionnaires (the FACS and the RADL), and were forewarned that they would be asked to complete the same questionnaires again. The investigator explained that since the quality of the questionnaires was being evaluated, they would have to complete the same questionnaires before their first treatment. Consequently, subjects were requested to arrive 15 to 20 minutes prior to treatment time to complete the instruments again. The investigator obtained informed consent (Appendix D).

Subjects were given the FACS and the RADL at two points: program entry immediately after their initial assessment (time 1) and one to five days later prior to treatment (time 2). At time 2, subjects were asked: *"Is your back pain/condition the same as it was when you completed these questionnaires the other day?"* This was done to ensure that subjects' condition was as stable as possible. Since all subjects in this pool reported that their back pain was unchanged, none had to be eliminated.

On both occasions, the order of administrating the two instruments, determined a priori, was randomized. Subjects completed the instruments on their own (in approximately 15 to 20 minutes) in the clinic with the investigator available in the room to respond to any questions. Although the investigator checked for completeness when the questionnaires were returned, they were already complete.

Statistical Analysis

The current FACS and the preinjury FACS were examined separately. Descriptive statistics were used to determine the distribution of the FACS and RADL scores for the sample. The Shapiro-Wilk statistic, which is a test to determine normality (Cody & Smith, 1991), was performed to determine whether the FACS and the RADL scores were normally distributed. This was done to ensure that parametric statistics could be used. Analysis of variance-derived (ANOVA) intraclass correlation coefficients (ICC) (2,1) (Shrout & Fleiss, 1979) were used to calculate the test-retest reliability of subjects' ratings on the FACS and

the RADL. ANOVA procedures are appropriate for determining reliability whenever one variable is measured on two occasions, and ANOVA examines the sources of variability between and within subjects (Currier, 1990). An ICC correlation coefficient or "reliability coefficient" (the ratio of between-subject variance to total variance, which includes both between- and within-subject variance) is the statistic most frequently used to measure reliability (Guyatt, Kirshner, & Jaeschke, 1992).

Results

A brief description of the sample is presented first. This is followed by descriptive statistics for the participants' ratings of the FACS and RADL. The test-retest reliability analysis is then discussed.

All subjects completed the two questionnaires immediately after assessment and prior to their treatment. The time interval varied as follows: 1 day (n=13), 2 days (n=1), 3 days (n=4), 4 days (n=1), and 5 days (n=1). The longer intervals (i.e., 4 and 5 days) occurred due to the Easter holiday long weekend. The mean interval for the test-retest reliability was 1.8 days (standard deviation: 1.2; range: 1-5).

Sample Description

Of the 23 subjects who were approached, 20 subjects (9% refusal rate) participated. The total number of subjects approached, the number of refusals, and the number of subjects at time 1 and time 2 are presented in Appendix E-1. The sociodemographic characteristics of the 20 subjects are shown in Appendix E-2.

Participants did not report any problems understanding the questionnaires. Four subjects were working while attending the program. Subjects were asked to describe how their back injury/problem occurred. They reported that they acquired their injury as follows: seven subjects were bending, four respondents were lifting, four subjects were in an accident (e.g., one respondent fell over a chair, another fell off a scaffold, weights fell on one subject, and another subject was in a car accident), three participants were injured while transferring

clients from bed to chair, one subject was twisting, and another individual was reaching above head level.

Participants were involved in the following types of work: teacher (n=1), health care aide (n=2), nurse (n=1), machinist (n=1), labourer (n=4), mail sorter (n=1), printer (n=2), millwright (n=2), dry wall worker (n=1), parking control officer (n=1), truck driver (n=1), vocational support worker (n=1), welder (n=1), and riveter (n=1).

Mean Scale Ratings

Current FACS. The breakdown of item ratings for the current FACS at time 1 and time 2 are displayed in Appendix F-1. One participant was responsible for the five missing values in the current FACS. For missing values, items were dropped from the analysis.

Preinjury FACS. The breakdown of item ratings for the preinjury FACS scores for both occasions are displayed in Appendix F-2. There were no missing values.

RADL. The breakdown of item ratings for the RADL scores for both occasions are displayed in Appendix F-3. There were 12 missing values. For missing values, the item was dropped from the analysis.

Test of Normality

The results of the Shapiro-Wilk tests showed that both the current FACS and the RADL were normally distributed, while the preinjury FACS scores were not normally distributed ($p < .0001$) with the 20 subjects in this phase.

Test-Retest Reliability

In an effort to ensure that the test-retest reliability results would be as precise as possible, items with missing values for either time 1 or time 2 were dropped from the analysis. That is, if the time 1 value was missing, the time 2 value was dropped and visa

versa. Landis and Koch (1977) have characterized values of reliability coefficients as follows: poor (<.00), slight (.00 to .20), fair (.21 to .40), moderate (.41 to .60), substantial (.61 to .80), and almost perfect (.81 to 1.00). Using these categories, the ANOVA ICCs were almost perfect at .94 for the current FACS, substantial at .74 for the preinjury FACS, and almost perfect at .83 for the RADL.

Discussion

Since the preinjury FACS scores were quite high (mean scores above 90) at both testing periods, there may be a ceiling effect in these scores. A ceiling effect occurs when scores "top out" and an instrument cannot register greater gains (Dumholdt, 1993). Ceiling effects have implications for the interpretation of both the reliability and the responsiveness of the instrument. For instance, the use of change scores to estimate treatment main effects is only appropriate when the variance between subjects exceeds the variance within subjects (Streiner & Norman, 1989). Since reliability is a necessary precondition for the appropriate application of change scores, if there are little or no differences between subjects, the reliability results will be compromised. In developing the current FACS and the preinjury FACS, the rationale was to compare confidence in residual functioning by examining the difference between "preinjury functioning" and "current functioning" since individuals should vary in their functional ability. However, if everyone perceives themselves as highly functioning prior to injury (perhaps an inflated perception), preinjury ratings will not be very useful.

Another issue to consider when subjects are rating the preinjury FACS is that they may not remember how they were prior to their back injury, or they may inflate their preinjury capabilities. Ross (1989) has shown that the response to a direct question about change proceeds in two steps. First, people note their present status on the attribute in question, for example, "How do I feel today?" They then invoke an 'implicit theory' about how they are likely to have changed from the previous occasion to the present. On the basis of these two pieces of information, they then reconstruct an estimate of their previous state.

For these reasons--high ratings with little between subject variability and difficulty of interpretation--the preinjury FACS may not be a useful rating scale. Before deciding whether to eliminate this scale from further analysis, the variability of the preinjury FACS ratings was examined with the larger sample in Chapter Four.

One possible explanation for the 12 missing values in the RADL may be that these subjects did not respond to the activities because they do not normally do these activities, regardless of their back injury. As a result, in the validity phase, we included the following statement in the RADL instructions: *If you do not do an activity, put N/A (not-applicable) beside the scale.*

In summary, the test-retest reliability results were almost perfect for the current FACS (.94), substantial for the preinjury FACS (.74), and almost perfect for the RADL (.83). These findings showed that the current FACS, the preinjury FACS, and the RADL appeared to be stable when administered twice over a short time period to 20 subjects with LBP who did not receive any intervention over this time frame.

CHAPTER 4

PHASE III: VALIDITY TESTING

Objectives

The objectives for this primary study phase were: 1) to examine the internal consistency, item-total correlations, and inter-item correlations of the FACS and the RADL; 2) to explore their factor analytic structure; and 3) to determine the convergent validity, discriminant validity, concurrent validity, and predictive validity of the two scales.

As discussed in Chapter Two, a major concern for this phase was to ensure that the battery of instruments that was administered to the subjects would take approximately 30 minutes to complete. The following measures were chosen: the Roland SIP (Roland & Morris, 1983), the MCS (Fischer & Fick, 1993), and the PSES (Ryckman et al., 1982). Recall that these instruments, along with the FACS, the demographic questionnaire, and the RADL, took approximately 30 minutes to complete.

The types of validity and the measures chosen to address the validity for both scales are discussed below. Tables 4.1 and 4.2 display the measures used to address the validity of the FACS and the RADL, respectively. For the purposes of this project, the following were established: correlations less than .3 were considered low, correlations of .3 were considered fair, correlations of greater than .3 and less than .5 were moderate, and correlations greater than .5 were good.[1]

Types of Validity

Convergent and Discriminant Validity

Construct validity is the degree to which an instrument measures the theoretical construct it was designed to measure (Johnston, Keith, & Hinderer, 1992). Construct validity is evaluated by correlating other indicators of the construct with the measurement tool under

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[1] Streiner, D.L. Professor, Clinical Epidemiology and Biostatistics, and Department of Psychiatry, McMaster University, Hamilton, ON: Personal communication. November, 1996.

Table 4.1 Measures Used To Address the Validity of the FACS

Types of Validity	Measures	A Priori Expectations
Convergent	• Roland SIP	• moderate negative correlations with FACS
	• disability subscale of Roland SIP	• moderate negative correlations with FACS
	• PSES	• fair to moderate correlations with FACS
	• PPA subscale of PSES	• fair to moderate correlations with FACS
Discriminant	• PSPC subscale of PSES	• low or non-significant correlations with FACS
	• MCS	• low negative or non-significant correlations with FACS
Criterion	• clinicians' ratings of functional ability	• fair to moderate correlations with FACS
	• RADL	• fair to moderate correlations with FACS
	• clinicians' recommendation of RTW	

RTW=return to work

Table 4.2 Measures Used to Address Validity of the RADL

Types of Validity	Measures	A Priori Expectations
Convergent	• Roland SIP	• moderate negative correlations with RADL
	• handicap subscale of Roland SIP	• moderate negative correlations with RADL
	• PPA subscale of PSES	• low correlations with RADL
Discriminant	• PSES	• low or non-significant correlations with RADL
	• PSPC subscale of PSES	• low or non-significant correlations with RADL
	• MCS	• low negative or non-significant correlations with RADL
Criterion	• clinicians' ratings of functional ability	• fair to moderate correlations with RADL
	• FACS	• fair to moderate correlations with RADL
	• clinicians' recommendations of RTW	

RTW=return to work

examination (DeVellis, 1991). Construct validity can be broken down further into convergent and discriminant validity. Convergent validity determines the extent to which scores on the instrument are correlated with scores from other instruments measuring the same or similar constructs (DeVellis, 1991). Discriminant validity or divergent validity evaluates whether different constructs are being measured by different instruments. Discriminant validity is indicated by low correlations between supposedly unrelated constructs (DeVellis, 1991).

Criterion Validity

Criterion validity is the relationship between a measure against a criterion--preferably a "gold standard"--which has been used and accepted in the field (Streiner & Norman, 1989). Criterion validity is usually divided into two types: concurrent validity and predictive validity. In concurrent validity, the new scale is correlated with the criterion measure, both of which are given at the same time (Streiner & Norman, 1989). In predictive validity, the criterion is assessed some time in the future (Streiner & Norman, 1989). Since there is no gold standard for measuring the "recovery" of injured workers with LBP, clinicians' ratings of functional ability and clinicians' judgements of readiness to return to work were chosen to examine the concurrent validity and the predictive validity of the FACS and the RADL.

Measures Chosen For the Validity Phase

Convergent and Discriminant Validity

Roland Sickness Impact Profile (SIP). As discussed previously in Chapter Two, the Roland SIP (Roland & Morris, 1983) is a commonly used disability measure for clients with LBP (Deyo, 1986; Deyo & Centor, 1986; Roland & Morris, 1983). In our opinion, the items seem to address all three components of the ICIDH (WHO, 1980). The author of this thesis and her supervisor independently categorized these items according to whether the items best reflected the impairment, disability, or handicap component of the ICIDH. Using the Kappa statistic (Norman & Streiner, 1994), the interrater agreement was 1. As shown in Appendix G, of the 24 items of the Roland SIP, three were seen to reflect impairment, 13 disability,

and eight handicap. The overall Roland SIP as well as the disability subscale and the handicap subscale were used to examine the convergent validity of both the FACS and the RADL.

Physical Self-Efficacy Scale (PSES). As discussed previously in Chapter Two, the PSES (Ryckman et al., 1982) is a general self-efficacy measure. It was hypothesized that while the PSES may show some relationship with the FACS scores, the correlation between a general self-efficacy measures (i.e., the PSES) and a specific self-efficacy measure (i.e., the FACS) was expected to be fair to moderate at best. Since the PSES can be broken down into two subscales, one might expect the FACS to be more strongly associated with the PPA (perceived physical ability) subscale versus the PSPC (confidence in self-presentation) subscale. Since the RADL measures clients' resumption of daily activities and not self-efficacy per se, low or non-significant correlations were expected between the RADL and the overall PSES, as well as between the RADL and the PPA subscale as well as the PSPC subscale. The overall PSES and the PPA subscale were used to examine convergent validity of the FACS, while the PSPC subscale was used to examine the discriminant validity of both the FACS and the RADL.

Marlowe-Crowne Scale (MCS). As discussed previously in Chapter Two, the MCS (Fischer & Fick, 1993) is a social desirability scale. The MCS was used to detect subjects who responded favourably from those who were truly efficacious. The MCS was used to examine the discriminant validity of both scales.

Criterion Validity

Clinicians' ratings of physical conditioning/functional ability. On entry into the program, clients undergo a detailed physical intake assessment, which is used to assess clients' progress. Since there seems to be little consistency across clinics in the measurements used, clinicians' judgements of physical conditioning/functional ability in the areas of endurance, muscle strength, range of motion, locomotion, and overall ability were used as

a proxy measure in this study. Clinicians' ratings of functional ability were used to determine the concurrent validity and predictive validity of the FACS and the RADL.

Clinicians' judgements of return to work. At follow-up, clinicians routinely rate clients' readiness to return to work. Clients were classified according to the following criteria: 1) able to return to unrestricted work, 2) able to return to restricted work, 3) refer to the Regional Evaluation Centre, or 4) other. Clinicians' judgements of able to return to work at follow-up were used to examine the concurrent validity and predictive validity of both the FACS and the RADL.

FACS and RADL. While the FACS and the RADL were developed to assess different dimensions, confidence to perform general movements and postures should relate to resumption of daily activities. Since efficacy expectations are not static but amenable to change (Bandura, 1986), resumption of daily activities should relate to greater confidence. Clinicians' ratings of functional ability, clinicians' judgements of return to work, and the RADL were used to examine concurrent and predictive validity.

Subject Recruitment

One hundred and four injured workers with LBP who attended one of seven Community Clinics in the Hamilton, Ontario vicinity between May and September, 1995 participated in the validity phase. Two other Community Clinics in the area were approached and declined to participate. They stated that they were involved in their own research projects and would not have time to participate in this study.

To obtain the desired sample size of 104 subjects, 115 consecutive clients were approached. Reported reasons for refusal were: not interested (n=6), too busy (n=4), and poor English (n=1). The breakdown of the study participants by site and the sample characteristics are discussed below in the *Results* section.

Selection and Procedure

Upon entry into the CCPs, clients routinely obtained an intake physical assessment carried out by a clinic therapist. After completing the initial assessment, the clinician asked each client if he or she would be willing to participate in the study. Interested clients were seen by the research assistant (RA) in the same session. The RA explained the purpose and procedures of the study, and obtained informed consent (Appendix H-1). For consistency, the same RA collected all data on the subjects. The investigator monitored the RA's activities and was available by phone to answer any questions or concerns. The investigator also communicated frequently with clinicians to respond to any questions or issues. In order to facilitate the process of obtaining follow-up data, clinicians informed the RA, or the investigator, ahead of time as to when the client was likely to be discharged. The RA also checked frequently with clinicians as to each subject's potential discharge status.

The instruments used in this phase are found in Appendix H-1. Subjects completed the instruments on entry into the study and three weeks later or at discharge (whichever came first). Three weeks for follow-up was chosen since 19 days is the mean length of stay in the CCPs.[2] On both occasions, the order of administering the instruments, which was determined a priori, was randomized, except for the MCS (Fischer & Fick, 1993), which was positioned in the middle. Since the MCS is a short scale, its position in the middle would serve to give respondents a break as they were completing the questionnaires. The RA checked each questionnaire for completeness when they were handed back.

Upon entry into the study (on the same day as the clinicians performed the physical intake assessment), subjects completed the FACS, the Roland SIP (Roland & Morris, 1983), the PSES (Ryckman et al., 1982), the MCS (Fischer & Fick, 1993), and the demographic questionnaire which contained the RADL. The demographic questionnaire also included questions that asked the subjects to rate--on a 0% (not at all) to 100% (completely) scale--

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[2] Murdock, P. Program Specialist. Ontario Workers' Compensation Board. Toronto, ON: Personal Communication. August, 1994.

worry about exercising, job satisfaction, confidence in their ability to return to preinjury level, confidence that the program will help them, and their return to work expectation. Expectation to return to work is an outcome expectation, and has been shown to be an important predictor of return to work for injured workers (Carosella, Lackner, & Feuerstein, 1994; Papciak & Feuerstein, 1991; Sandstrom & Esbjornsson, 1986).

At the same time, the clinician who conducted the client's physical intake assessment was asked to complete our study questionnaire--Clinician Questionnaire At Baseline - Validity Phase--(see Appendix H-2). The clinician was requested to rate--on a 0% (completely unable) to 100% (completely able) scale--the client's level of functional ability in the areas of endurance, muscle strength, range of motion, locomotion, and overall functional ability. The clinician rated--on a 0% (not at all) to 100% (completely) scale--perceptions about the client's ability to improve to preinjury level, the client's level of motivation, and return to work expectations for that client. This questionnaire required approximately five minutes to complete.

At follow-up, clients were given the same battery of questionnaires as they completed at baseline (other than the demographic questionnaire) (see Appendix I-1). Along with the RADL, a few additional questions were asked regarding clients' confidence that they had improved to preinjury level, confidence to return to work, as well as current medications. The final question asked clients whether they felt their condition had become better, worse, or stayed the same during the course of the study. Clients also completed a contact permission form regarding the possibility of additional follow-up at a later date.

At follow-up (the same time that clients completed the follow-up questionnaires), the clinician completed a questionnaire--Clinician Questionnaire At Follow-Up - Validity Phase--(see Appendix I-2) which asked him or her to again rate each client's functional ability, the client's extent of participation in the program, if the client completed the program, and the number of sessions that the client attended. Finally, the clinician reported his or her recommendations for return to work, and rated whether the client's condition had become better, worse, or stayed the same during the course of the study.

Statistical Analysis

Descriptive statistics on sample characteristics and scores on the primary measures were initially examined for the total sample. The sample was then broken down into the following subgroups: subjects with a previous back injury versus those without, and participants who attended this type of program before versus new attenders. These subgroups were examined based on the opinions expressed by clinicians in the focus group session (discussed in Chapter Two) that these individuals may respond differently to treatment. Furthermore, the literature has shown that individuals with a previous back injury versus those without respond differently to treatment (Linton, Hellsing, & Andersson, 1993; Tarasuk & Eakin, 1994). T-tests or chi-square analyses (or Fisher's exact test when the Ns were small) were used for continuous and dichotomous variables, respectively, to assess differences between the subgroups, as well as differences between subjects who completed both the entry and follow-up questionnaires, versus those who completed baseline questionnaires only (drop-outs). While change scores for the FACS and the RADL will be addressed in Chapter Five, paired t-tests between entry and follow-up scores were computed as a preliminary measure to determine if there were changes in the scores during the course of the study.

The Shapiro-Wilk statistic was performed on the current FACS, the preinjury FACS, and the RADL to determine whether the scores were normally distributed, and to ascertain whether parametric statistics could be used. Internal consistency of the scales was examined using Cronbach's alpha. Inter-item correlation, item-total correlation, and factor analysis were calculated to examine the dimensionality and explore possible item reduction of the FACS and the RADL. Correspondence between various subjects' and clinicians' ratings at baseline and follow-up were analyzed using Kappa or Pearson correlation coefficients for categorical or continuous data, respectively. Pearson correlation coefficients also were used to examine convergent and discriminant validity.

Predictive validity was tested by calculating Pearson correlation coefficients for the following values: 1) between the baseline FACS scores and clinicians' ratings of improvement in clients' functional ability, 2) between the baseline RADL scores and clinicians' ratings of

improvement in clients' functional ability, 3) between the baseline FACS scores and improvement in RADL scores, and 4) between the baseline RADL scores and improvement in FACS scores. Logistic regression analyses were used to examine clinicians' judgements of able to return to work with the FACS and the RADL scores.

Results

This chapter begins with a description of the total sample including the drop-outs and the subgroups. The results are then organized into three sections. The first section (*Primary Baseline Measures* and *Secondary Baseline Measures*) presents the descriptive statistics of the FACS and the RADL scores for the total sample and the subgroups, as well as the results of the internal consistency analysis, item-total correlations, inter-item correlations, and factor analysis. Descriptive statistics for ratings of the Roland SIP (Roland & Morris, 1983), the PSES (Ryckman et al., 1982), the MCS (Fischer & Fick, 1993), and the clinicians' ratings of clients' functional ability are then reported in the *Secondary Baseline Measures* section. Because the Roland SIP was our head-to-head comparison measure, the results of the internal consistency analysis, item-total correlations, inter-item correlations, and factor analysis of this scale are presented. This section concludes with a comparison of subjects' ratings versus clinicians' ratings.

The second section (*Primary Follow-Up Measures* and *Secondary Follow-Up Measures*) includes the descriptive statistics of the follow-up scores of the FACS and the RADL. This is followed by the *Secondary Follow-Up Measures* section which reports the ratings on the Roland SIP, the PSES, the MCS, clinicians' ratings of clients' functional ability, and clinicians' recommendations for return to work. Correspondence between subjects' and clinicians' ratings are then presented. The third section presents the analysis for convergent validity, discriminant validity, concurrent validity, and predictive validity as well as some exploratory regression analysis.

Sample Characteristics

Of the 115 subjects who were approached, 104 subjects (9.6% refusal rate) participated in the study. The total number of potential subjects that were approached, the number of refusals, and the number of subjects at entry and follow-up for each of the participating clinics are shown in Table 4.3.

Table 4.3 Subject Participation

Clinic	Total Number Approached	Number of Refusals	Number of Subjects At Entry	Number of Subjects At Follow-Up
Burlington Rehab Services	5	0	5	5
Canadian Back Institute	28	5	23	18
Early Treatment Centre	44	5	39	37
Fit For The Future	5	0	5	4
Industrial Injuries	18	1	17	16
West-End Physiotherapy	5	0	5	4
Work Injuries Rehabilitation	10	0	10	10
Total	115	11	104	94

All subjects spoke English, were able to understand the questionnaires, and completed the questionnaires on their own. The sociodemographic characteristics of the 94 subjects who completed both entry and follow-up instruments (study completers) versus the 10 study drop-outs (baseline data only) are shown in Appendix J. In comparison to the study drop-outs, the study completers were older (t=4.89, df=19, p<.0001) and a smaller proportion were working while attending the program (Fischer's exact test, p<.05). In addition, study completers were less confident that they would be able to improve to their preinjury level (t=-4.48, df=39, p<.0001) (Appendix Q).

The time from onset of back injury to the start of the program was examined (Table 4.4). Sixty one subjects (59%) out of the total sample were referred to the program within two weeks of the onset of their back injury, while 18 subjects (17%) were referred between

four to 10 weeks. This breakdown is almost identical to that found in the study conducted by the Institute For Work & Health (1995), which also was 60% and 17%, respectively, for these two time periods. Thus, a large proportion of both the sample, as well as the larger Institute For Work & Health's sample were referred for treatment within two weeks after their injury.

Table 4.4 Time From Onset of Injury To Start of Program

Time Since Injury	Study Completers (n=94)	Study Drop-Outs (n=10)
< 2 weeks	57 (61%)	4 (40%)
2 - 4 weeks	12 (13%)	2 (20%)
4 - 10 weeks	17 (18%)	1 (10%)
> 10 weeks	8 (8%)	3 (30%)

Study Drop-Outs

Reported reasons for dropping-out of the program were: early discharge (n=4), clinic was too far away (n=2), no money for transportation to attend (n=1), involved in a motor vehicle accident (n=1), absenteeism (n=1), and returned to work (n=1). Of the 10 study drop-outs, four subjects dropped-out immediately after the initial assessment, three participants attended the initial assessment and one session, while the other three subjects attended the program for one week, two weeks, and two and a half weeks, respectively.

Four of the study drop-outs were working while attending the program. The study drop-outs stated that they injured their backs in the following ways: lifting (n=5), involved in an accident (n=3) (such as slipping and falling, and boxes fell on one subject), stretching (n=1), and reaching and twisting (n=1). The study drop-outs were working in the following areas: labourer (n=2), housekeeping (n=2), welding (n=1), grocery stock shelver (n=1), physical tester in a metallurgic department (n=1), crane operator (n=1), cabinet maker (n=1), and shipper/receiver (n=1).

Study Completers

The average time participants were in the study was 21.7 days (standard deviation: 3.0; range: 8-30). Based on 90 subjects (i.e., there were four missing values), the average number of program sessions attended was 13.7 (standard deviation: 3.2; range: 4 to 21). Based on 93 subjects, at follow-up 32 participants (34%) completed the program, while 61 subjects (66%) continued in the program.

Sixteen subjects (17%) reported that they had other health problems such as: hypertension (n=6), hypothyroidism (n=2), gout (n=2), arthritis (n=1), a wringer injury to the arm (n=1), mitral valve prolapse (n=1), diverticulitis (n=1), obesity (n=1), and carpal tunnel syndrome (n=1). Of the six subjects (6%) who had previous back surgery, the mean time since surgery was 19.3 months.

Study completers reported sustaining their back injuries in the following ways: 32 subjects (34%) while lifting, 17 respondents (18%) via an "accident" (such as slipping and falling on the floor, falling down the stairs, a chair fell out from under one subject, a motor vehicle accident), nine participants (10%) while bending, seven subjects (7%) while carrying, seven participants (7%) while pushing/pulling, and five respondents (5%) while transferring patients. Four respondents (4%) stated that they incurred their injury due to the repetitive nature of their jobs (e.g., painting). Four subjects (4%) attributed their back pain to the vibrations that occurred while operating motorized vehicles, three subjects (3%) to twisting activities, two subjects (2%) to restraining patients, one respondent to stretching activities, one participant to coughing, one to shovelling, and the last to swinging a sledge hammer.

Twelve subjects (13%) stated that they were working while attending the program. Study completers reported that they were involved in the following type of work: labourer (n=9), driver (n=9), welder (n=7), steel worker (n=7), machine operator (6), mechanic (n=6), kitchen work (n=5), cleaner (n=4), sales (n=4), manufacturing (n=4), health care aide (n=4), nurse (n=3), computer operator (n=3), shipper/receiver (n=3), pipefitter (n=3), porter/courier (n=3), grocery clerk (n=2), foreman (n=2), electrician (n=2), fire fighter (n=2), painter (n=2), correctional officer (n=1), security (n=1), marine engineer (n=1),

waiter (n=1), furnace attendant (n=1), and plumber (n=1).

Subjects with and without a previous back injury. The sociodemographic characteristics of the subjects with a previous back injury (n=54) and those without (n=40) are shown in Appendix K-1. Significant differences between these groups emerged for age (t=2.78, df=92, $p<.01$) and previous attendance at a similar program (Fischer's exact test, $p<.0001$). Thus, subjects with a previous back injury were older, and more likely to have attended a similar program before.

Previous versus new attenders. The sociodemographic characteristics of previous attenders (n=27) versus new attenders (n=67) are shown in Appendix K-2. There were significant group differences for previous back injury (Fischer's exact test, $p<.0001$) and participation in exercise/sports (Fischer's exact test, $p<.05$). Not surprisingly, previous attenders were more likely to have had a prior back injury, and their greater involvement in physical exercise may be due, in part, to having been exposed to the exercises offered by these programs.

Primary Baseline Measures

Current FACS

Descriptive statistics on participants' responses to each item and the overall current FACS scores at entry and follow-up are illustrated in Table 4.5. There were no missing values. At entry the median and mode were 50 and 100, respectively. The Shapiro-Wilk test showed that the current FACS scores were not normally distributed ($p<.001$). Paired t-tests calculated on the overall current FACS scores for the 94 subjects showed that there was a significant increase between baseline and follow-up scores (t=4.99, df=93, $p<.0001$).

Table 4.5 Mean Item Ratings On the Current FACS

	Baseline (n=94)		Drop-Outs (n=10)		Follow-Up (n=94)	
	Mean (SD)	**Range**	**Mean (SD)**	**Range**	**Mean (SD)**	**Range**
Q1	44.36(33.43)	0-100	48.50(29.06)	0-100	55.11(28.39)	0-100
Q2	44.15(30.98)	0-100	44.00(31.70)	0-100	56.22(28.24)	0-100
Q3	46.60(30.88)	0-100	62.00(19.32)	30-100	61.28(29.23)	0-100
Q4	48.62(32.84)	0-100	62.00(26.58)	20-100	65.32(29.93)	0-100
Q5	56.17(32.86)	0-100	61.00(33.15)	10-100	70.26(27.98)	0-100
Q6	58.72(31.80)	0-100	76.00(23.66)	30-100	73.40(25.67)	0-100
Q7	48.83(30.12)	0-100	55.00(34.07)	10-100	60.69(28.99)	0-100
Q8	72.55(28.77)	0-100	70.00(33.67)	30-100	77.02(24.40)	0-100
Q9	46.70(34.96)	0-100	40.00(35.90)	0-100	60.85(28.38)	0-100
Q10	49.47(32.41)	0-100	56.00(27.16)	20-100	65.42(29.13)	0-100
Q11	65.00(31.85)	0-100	64.00(30.26)	10-100	73.03(26.24)	0-100
Q12	35.00(32.68)	0-100	30.00(25.38)	0-80	49.84(30.36)	0-100
Q13	53.94(32.67)	0-100	41.00(25.58)	0-80	64.47(28.91)	0-100
Q14	32.66(31.89)	0-100	23.00(23.59)	0-60	49.57(31.99)	0-100
Q15	44.31(31.96)	0-100	42.00(23.47)	20-80	55.64(31.20)	0-100
Total****	49.80(25.87)	0.67-100	51.63(18.59)	17.67-86	62.54(24.16)	0-100

**** $p<.0001$

Current FACS scores for subjects with a previous back injury versus those without, and previous attenders versus new attenders are displayed in Table 4.6. Unpaired t-tests at entry showed that there were no significant baseline differences between the subgroups. Paired t-tests demonstrated that there were significant changes from entry to follow-up for both subjects with a previous back injury ($t=3.27$, $df=53$, $p<.01$) and those without a previous back injury ($t=3.87$, $df=39$, $p<.001$), as well as for previous attenders ($t=2.56$, $df=26$, $p<.05$), and new attenders ($t=4.27$, $df=66$, $p<.0001$). It is interesting to note that while the t-test values for subjects with a previous back injury were similar to those without

a previous back injury, the t-test value for new attenders was larger than for previous attenders which may indicate that greater improvement for the former group.

Table 4.6 Mean Current FACS Scores For the Subgroups

Subgroups	Baseline	Follow-Up
	Mean (SD)	Mean (SD)
Subjects With Previous Back Injury**	(n=54)	(n=54)
	48.86 (27.71)	60.25 (24.40)
Range	0.67-100	0-100
Subjects Without Previous Back Injury***	(n=40)	(n=40)
	51.08 (23.45)	65.63 (23.79)
Range	11.33-100	14-100
Previous Attenders*	(n=27)	(n=27)
	44.83 (23.84)	55.52 (20.94)
Range	7.33-100	12.66-88
New Attenders****	(n=67)	(n=67)
	51.81 (26.56)	65.37 (24.93)
Range	0.66-100	0-100

* $p<.05$ ** $p<.01$ *** $p<.001$ **** $p<.0001$

Preinjury FACS

Descriptive statistics for each item and the overall preinjury FACS scores are displayed in Table 4.7. There were no missing values. At entry, the median and mode for the overall preinjury FACS score were both 100. The Shapiro-Wilk test showed that the scores were not normally distributed ($p<.0001$). Table 4.7 shows that the preinjury FACS scores were highly negatively skewed. Baseline mean item ratings ranged from a low of 89 to a high of 95 (out of a possible 100%). The overall mean was 92, while the median and the mode were 100. The paired t-test showed that there was a significant change from entry to follow-up in the overall recall ratings of preinjury FACS scores (t=-2.55, df=93, $p<.01$). It is interesting to note in the preinjury FACS the systematic downward shift in confidence scores for each item from entry to follow-up. One would not have expected this change to have occurred as participants' level of preinjury functioning should not have been affected

during the course of the study. A possible explanation may simply be faulty recall (i.e., subjects gave different responses to the preinjury FACS at entry and follow-up). As discussed in Chapter Three, Ross (1989) has discussed the problem of accurate recall when people are asked about "states" in the past. Another reason may be that as respondents participated in the program, they experienced some difficulty performing the exercises which lead them to question whether they were really functioning as well as they had perceived before the injury. Also, clinicians may have alluded to their being out of shape or pointed out other functional limitations during rehabilitation.

Table 4.7 Mean Item Ratings On the Preinjury FACS

	Baseline (n=94)		Drop-Outs (n=10)		Follow-Up (n=94)	
	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
Q1	92.34(16.36)	0-100	98.00(4.21)	90-100	87.34(23.47)	0-100
Q2	90.32(18.04)	0-100	97.00(6.75)	80-100	87.02(23.09)	0-100
Q3	92.23(16.47)	10-100	98.00(6.32)	80-100	88.40(22.68)	0-100
Q4	92.45(16.63)	0-100	100.00(0)	100-100	88.40(22.35)	0-100
Q5	93.62(15.37)	10-100	100.00(0)	100-100	88.72(22.35)	0-100
Q6	94.68(13.25)	10-100	100.00(0)	100-100	89.15(22.75)	0-100
Q7	91.06(17.38)	0-100	94.00(15.78)	50-100	84.78(23.99)	10-100
Q8	95.21(14.27)	0-100	100.00(0)	100-100	90.53(19.14)	10-100
Q9	91.70(18.18)	0-100	99.00(3.16)	90-100	86.49(24.35)	0-100
Q10	91.70(18.52)	0-100	100(0)	100-100	86.06(24.15)	10-100
Q11	94.89(14.64)	10-100	100(0)	100-100	89.68(21.97)	0-100
Q12	90.42(19.61)	0-100	97.00(6.75)	80-100	84.20(26.95)	0-100
Q13	93.40(16.69)	10-100	98.00(4.22)	90-100	88.19(23.23)	0-100
Q14	89.04(20.64)	0-100	97.00(6.75)	80-100	83.62(27.31)	0-100
Q15	91.91(19.02)	0-100	98.00(6.32)	80-100	87.23(23.53)	0-100
Total**	92.33(15.48)	7.33-100	98.40(2.61)	91.33-100	87.32(22.23)	8-100

** $p<.01$

Table 4.8 presents the means, standard deviations, and ranges of the preinjury FACS scores for the subgroups. The unpaired t-test showed that there was a significant difference in entry preinjury FACS scores for respondents with a previous back injury (t=-1.99, df=84, $p<.05$) in comparison to those without a previous back injury. Paired t-tests demonstrated that there were significant changes from entry to follow-up for subjects without a previous back injury (t=-2.12, df=39, $p<.05$), and for new attenders (t=-2.09, df=66, $p<.05$). It is interesting to note that subjects without a previous back injury as well as new attenders had higher ratings and more of a downward shift at follow-up in their preinjury FACS scores than their counterparts (i.e., those without previous back injury and previous attenders).

Table 4.8 Mean Preinjury FACS Scores For the Subgroups

Subgroups	Baseline	Follow-Up
	Mean (SD)	Mean (SD)
Subjects With Previous Back Injury	(n=54)	(n=54)
	89.85 (18.31)	86.93 (21.81)
Range	7.33-100	10-100
Subjects Without Previous Back Injury*	(n=40)	(n=40)
	95.68 (9.79)	87.85 (23.06)
Range	54-100	8-100
Previous Attenders	(n=27)	(n=27)
	89.28 (18.89)	84.95 (20.99)
Range	18-100	21.33-100
New Attenders*	(n=67)	(n=67)
	93.56 (13.85)	88.28 (22.80)
Range	7.33-100	8-100

* $p<.05$

RADL

Item ratings and overall scores on the RADL are displayed in Table 4.9. For missing values (Ns shown in Table 4.9), the case was dropped from the analysis. For the overall entry RADL scores, the median was 40 and the mode was 0. The Shapiro-Wilk test showed that the RADL scores were not normally distributed ($p<.0001$). The paired t-test on the overall

RADL scores demonstrated that there was a significant change between entry and follow-up scores (t=6.60, df=79, p<.0001).

Table 4.9 Mean Item Ratings On the RADL

	Baseline (n=94)			Drop-Outs (n=10)			Follow-Up (n=94)		
	N	Mean (SD)	Range	N	Mean (SD)	Range	N	Mean (SD)	Range
Qa	86	55.46(26.46)	0-100	9	6.11(26.19)	30-100	84	62.02(27.58)	0-100
Qb	76	46.45(29.70)	0-100	9	55.55(30.05)	0-100	78	58.72(33.27)	0-100
Qc	87	75.98(27.72)	0-100	9	90.00(17.32)	50-100	84	85.95(20.89)	10-100
Qd	83	55.67(32.58)	0-100	8	60.00(32.07)	10-100	83	70.00(28.33)	0-100
Qe	78	23.46(27.20)	0-100	8	40.00(36.64)	0-90	84	46.84(30.87)	0-100
Qf	80	41.62(34.87)	0-100	6	38.33(27.14)	0-80	84	60.48(32.22)	0-100
Qg	84	65.12(31.94)	0-100	9	87.78(26.35)	20-100	84	76.67(25.24)	10-100
Qh	85	50.00(33.88)	0-100	9	86.67(19.36)	40-100	84	70.00(29.29)	0-100
Qi	87	55.29(31.39)	0-100	9	80.00(29.58)	20-100	84	75.77(26.39)	10-100
Qj	85	31.06(31.77)	0-100	9	51.11(35.51)	0-100	83	54.70(33.14)	0-100
Qk	85	23.06(26.77)	0-100	9	24.44(21.86)	0-70	84	43.09(33.00)	0-100
Ql	87	11.95(28.64)	0-100	9	35.55(43.04)	0-100	84	24.88(35.75)	0-100
Total ****	87	44.60(21.12)	3.33-88.18	9	60.27(17.18)	32.5-80	84	60.77(23.32)	7.5-100

**** p<.0001

Table 4.10 presents the descriptive statistics for the RADL scores for the subgroups. Unpaired t-tests demonstrated that there were no significant differences between the subgroups at entry. Paired t-tests between entry and follow-up scores showed significant changes for respondents with a previous back injury (t=3.83, df=44, p<.001), and those without a previous back injury (t=5.72, df=34, p<.0001), previous attenders (t=2.49, df=22, p<.05), and new attenders (t=6.27, df=56, p<.0001). It is interesting to note that the t-test value was larger for respondents without a previous back injury compared to persons with a

previous back injury, and for new attenders than for previous attenders. These findings may indicate greater improvement for people with first time injuries and new attenders.

Table 4.10 Mean RADL Scores For the Subgroups

Subgroups	Baseline	Follow-Up
	Mean (SD)	Mean (SD)
Subjects With Previous Back Injury***	(n=48)	(n=48)
	46.41 (22.35)	58.89 (22.97)
Range	3.33-88.18	7.5-100
Subjects Without Previous Back Injury****	(n=39)	(n=36)
	42.36 (19.56)	63.29 (23.88)
Range	8.88-86.36	16.67-95.83
Previous Attenders*	(n=25)	(n=24)
	43.59 (19.01)	55.44 (16.22)
Range	3.33-80	22.5-79.17
New Attenders****	(n=62)	(n=60)
	45.00 (22.05)	62.90 (25.43)
Range	8.88-88.18	7.5-100

* $p<.05$ *** $p<.001$ **** $p<.0001$

Subjects Who Were Working Versus Not Working

At entry 12 subjects (13%) were working while attending the CCP, while 80 subjects (87%) were not working. The FACS scores and the RADL scores for subjects who were working versus those who were not working were examined. Unpaired t-tests showed that there were significant differences for the entry current FACS scores ($t=2.02$, $df=90$, $p<.05$), and the entry RADL scores ($t=2.45$, $df=56$, $p<.05$), but not for the entry preinjury FACS scores. These findings indicated that both the current FACS and the RADL were able to discriminate between individuals who were working (and supposedly had a higher functional level) versus those who were not working (who may have had a lower functional level).

Internal Consistency

If a scale is internally consistent, each item score should correlate with scores on all other items (Streiner & Norman, 1989). Internal consistency is usually calculated using a statistic such as Cronbach's alpha, which is "the average of the correlations among all the items in the measure" (Streiner & Norman, 1989, p. 7). Alpha is an indication of the proportion of variance in the scale scores that is attributable to the true scores (DeVellis, 1991, p. 83). The internal consistency analyses using Cronbach's alpha were .96, .98, and .89, for the baseline current FACS, the baseline preinjury FACS, and the baseline RADL, respectively. According to Streiner (1993), coefficients over .70 indicate acceptable internal consistency. As seen in Appendices L-1, L-2, and L-3, minimal changes in alpha occurred as the items in each of the three scales were sequentially dropped from the analysis.

Item-Total Correlations

Item-total correlations involve correlating the individual item with the scale total, omitting that item (Streiner & Norman, 1989). Item-total correlations are used for checking the homogeneity of a scale. An item should correlate with the total score above .20; items with lower scores should be discarded (Streiner & Norman, 1989). Item-total correlations for the current FACS, the preinjury FACS, and the RADL (baseline scores) are shown in Appendices L-1, L-2, and L-3, respectively. There were no item-total correlations below .20 suggesting that none of the items should be discarded. Item-total correlations for the current FACS and the preinjury FACS were generally high (ranging from .64 to .84, and .75 to .94, respectively). Item-total correlations for the RADL were somewhat lower (ranging from .43 to .82).

Inter-Item Correlations

Correlation matrices for the current FACS, the preinjury FACS, and the RADL (baseline scores) are displayed in Appendices M-1, M-2, and M-3, respectively. Generally, fair to high correlations were noted for the current FACS, while the preinjury FACS yielded

quite high correlations. There were no correlations below .3 in either the current FACS or the preinjury FACS. Low to moderate correlations were found for the RADL, with several correlations below .3.

Factor Analysis

"A relatively high alpha is no guarantee that all items reflect a single latent variable" (DeVellis, 1992, p. 92). Factor analysis is used to examine the structure of the relationship among the variables (Norman & Streiner, 1994). Principal components factor analysis using varimax rotation was computed for the three primary measures. Varimax rotation (the most common orthogonal method) was used because it maximizes the variance of squared loadings (i.e., correlation of items with factors) (DeVellis, 1991).

Factor loadings for the current FACS are displayed in Appendix N-1. Two factors emerged accounting for 71% of the total variance. Factor 1 contributed 43%, while Factor 2 contributed 28%. Two of the items--*climbing up and down stairs*, and *sleep*--were factorially complex (i.e., showed very similar loadings on both factors). Factor 1 demonstrated an averaging (loadings of .6 to .8) across the majority of the scale items (11 of the 15). These loadings seem reasonable. While all items appeared to tap confidence in functional ability, it is noteworthy that the three items that loaded more heavily onto Factor 2 contained the phrase--*"for as long as you want or need to"*--in these items. This qualifier was not in the other items. Another interpretation may be that these items (sit, stand, walk) require broad or more general movements and postures to accomplish these activities, while the items that loaded more heavily onto Factor 1 involve fairly specific or more isolated movements and postures (such as reach, bend, carry, etc.).

The factor analysis for the preinjury FACS (Appendix N-2) yielded two factors accounting for 87% of the total variance. Factor 1 contributed 43.8%, while Factor 2 contributed 42.9%. Factor 2 demonstrated an averaging (loadings of .6 to .8) across eight of the 15 scale items. Items that loaded onto Factor 2 seemed to involve movements and postures of a more general nature, while the items that loaded onto Factor 1 seemed to

include specific movements.

As Appendix N-3 illustrates, two factor matrices emerged for the RADL. In Matrix 1, three factors accounted for 68% of the variance. The item--*travelling less than 30 minutes*--was factorially complex loading onto Factors 1 and 3. Factor 1 demonstrated an averaging (loadings of .5 to .7) across five of the 12 items. The percentage of variance for the first factor was 28%, while Factors 2 and 3 contributed 23%, and 17%, respectively. In Matrix 1, the items that loaded onto Factor 1 (sleep, sex, self-care, and socializing inside and outside your home) may reflect activities of a personal nature. Light and heavy chores, shopping, and recreational activities loaded onto Factor 2. These activities seem to encompass more strenuous activities (including doing light chores). Travelling for more than one hour and engaging in usual paid employment loaded onto the third factor, perhaps reflecting higher order activities. It is interesting to note that the item--*travelling for less than 30 minutes*--loaded similarly onto Factors 1 and 3.

In Matrix 2, four factors emerged accounting for 75% of the variance. Factor 1 demonstrated an averaging (loadings of .6 to .8) across four of the 12 items. The percentage of variance for the first factor was 22%, while Factors 2, 3, and 4 contributed 19%, 18%, and 16%, respectively. In Matrix 2, the items that loaded onto Factor 1 (doing light and heavy chores, shopping, and recreational activities) may reflect strenuous activities. Self-care, socializing inside home, and travelling less than 30 minutes loaded onto Factor 2, while sleeping, sexual activities, and socializing outside the home loaded onto Factor 3. Items that loaded onto Factors 2 and 3 involved activities of a personal nature. Two items--*travelling for more than one hour* and *engaging in usual paid employment*--loaded onto Factor 4, which may reflect higher order activities.

The factor structure in both factor loading matrices seem similar. For instance, the item loadings onto Factor 2 in Matrix 1 seem comparable to the item loadings onto Factors 1 in Matrix 2, while the item loadings onto Factor 3 in Matrix 1 seem similar to the item loadings onto Factor 4 in Matrix 2. Item loadings onto Factor 1 in Matrix 1 seem comparable to the item loadings onto Factors 2 and 3 in Matrix 2. As can be seen in Appendix N-3, only

two items in Matrix 2 loaded onto Factor 4. Norman and Streiner (1994) suggest that a minimum of three items should load onto a factor. In view of this, the preferred loading for the RADL items may be Matrix 1. However, since the factor structure in both factor loading matrixes seem similar, it may be difficult to choose one over the other.

Factor analyses of both the current FACS and the preinjury FACS yielded two factors--which could be labelled confidence to perform general and specific activities--while the RADL yielded three or four factors--which could be considered activities of a personal nature, strenuous activities, and high order activities. According to Norman and Streiner (1994) the minimally acceptable loading value is arbitrarily determined and can be set at .3 or .4. The factor analyses of the three scales confirmed that all items loaded at least .5 on one of the factors.

DeVellis (1991) notes that alpha is influenced by the number of items in the scale--adding more items will increase alpha and removing items will lower it. In light of this, alpha coefficients were computed for the grouping of items that emerged in the factor analysis for each of the three scales to determine if the alpha coefficients would change. Alpha coefficients for the two factors in the current FACS were .96, and .90, respectively. Item-total correlations for the current FACS for the grouping of items that loaded highest onto the factors are displayed in Appendix O-1. As can be seen in this appendix, slight changes in alpha occurred as the items were dropped. Alpha coefficients for the two factors in the preinjury FACS were .98, and .97, respectively. Item-total correlations for the preinjury FACS for the grouping of items that loaded highest onto the factors are presented in Appendix O-2. Minimal changes in alpha occurred as the items in the preinjury FACS were deleted. Alpha coefficients for the three factors in Matrix 1 in the RADL were .86, .85, and .68, respectively, while the alpha coefficients for the four factors in Matrix 2 were .85, .81, .79, and .64, respectively. Item-total correlations for Matrices 1 and 2 are presented in Appendix O-3. When the RADL items that loaded onto the three factors in Matrix 1 were deleted, small changes in alpha occurred except for the item--*travelling for more than one hour*--which yielded an alpha of .34. However, the item-total correlation for this item was

.68 which is quite acceptable. Small changes in alpha also occurred for the RADL items in Matrix 2 when the items were dropped. Since only two items--*travelling for more than one hour* and *engaging in paid employment*--loaded onto Factor 4 in Matrix 2, alpha coefficients could not be computed for these items.

There were no item-total correlations below .20 in the three scales, indicating that none of the items should be dropped (Norman & Streiner, 1989). These findings suggested that the items in both the current FACS and the preinjury FACS were homogeneous, thus providing evidence that the overall scale was contributing more information on confidence in functional ability than any one item. For the RADL, the results showed that the preferred loading structure is Matrix 1. Since the alpha coefficient for Factor 3 in Matrix 1 was .68, (according to Streiner (1993), coefficients over .70 are acceptable), this factor may be only marginally acceptable.

Secondary Baseline Measures

Marlowe-Crowne Scale (MCS), Roland Sickness Impact Profile (SIP), and Physical Self-Efficacy Scale (PSES)

Table 4.11 presents the descriptive statistics for the MCS, the Roland SIP, and the PSES. For the baseline overall MCS scores, the median and the mode were 4 and 3, respectively, while the median and the mode for the entry overall Roland SIP scores were 15 and 16, respectively. For the entry overall PSES, the median and the mode were 72.5, and 68, respectively. Shapiro-Wilk tests demonstrated that the MCS, the Roland SIP, and the PSES were not normally distributed ($p<.001$, $p<.0001$, and $p<.01$, respectively).

Paired t-tests showed that there were significant differences from entry to follow-up for the overall Roland SIP scores (t=-7.99, df=93, $p<.0001$), the impairment items (t=-4.90, df=93, $p<.0001$), the disability items (t=-7.28, df=93, $p<.0001$), and the handicap items (t=-6.19, df=93, $p<.0001$). No significant differences from entry to follow-up emerged for the MCS, the overall PSES, or the PSES subscales.

Table 4.11 Mean Marlowe-Crowne Scale, Roland Sickness Impact Profile and Physical Self-Efficacy Scale Scores

Instruments	Baseline (n=94)	Drop-Outs (n=10)	Follow-Up (n=94)
	Mean (SD)	Mean (SD)	Mean (SD)
MCS Range	3.68 (1.59) 0-7	2.80 (2.25) 0-7	3.80 (1.74) 0-7
Total Roland SIP**** Range	14.15 (4.78) 3-22	12.80 (4.10) 7-19	10.11 (5.86) 0-22
"I" Items of Roland SIP**** Range	1.95 (1.07) 0-4	1.90 (1.20) 0-4	1.27 (1.21) 0-4
"D" Items of Roland SIP**** Range	8.13 (2.97) 0-12	7.4 (2.32) 4-11	5.91 (3.44) 0-12
"H" Items of Roland SIP**** Range	4.11 (1.69) 0-7	3.5 (1.51) 2-6	2.92 (1.97) 0-7
Total PSES Range	74.41 (12.35) 50-101	77.2 (10.80) 56-88	74.03 (11.26) 43-101
PPA Subscale of PSES Range	31.85 (7.13) 18-48	34.40 (7.79) 17-42	31.89 (6.71) 14-46
PSPC Subscale of PSES Range	42.56 (7.32) 29-58	42.80 (5.35) 35-42	42.14 (6.71) 24-58

**** $p<.0001$

"I"=impairment subscale 3 items "D"=disability subscale 13 items "H"=handicap subscale 8 items

Roland Sickness Impact Profile (SIP)

Internal consistency and item-total correlations. Internal consistency for the Roland SIP (Roland & Morris, 1983) using Cronbach's alpha was .83. As seen in Appendix P-1, minimal changes in alpha occurred as the items were dropped sequentially from the analysis.

Item-total correlations showed that items #19, #20, #22, and #24--*dressed with help*, *sit down most of the day*, *irritable and bad tempered*, and *stay in bed most of time*, respectively, were below .20. It is interesting to note that item-total correlations for items #15 and #21--*appetite not good*, and *avoid heavy jobs around the house*, respectively, were somewhat borderline at .21. Correlations below .20 suggest that these items may be tapping

different constructs and should be discarded (Streiner & Norman, 1989).

The frequency of the Roland SIP items that were ticked by subjects at entry and follow-up was explored (Appendix P-2). The items--*dressed with help*, *sit down most of the day*, *irritable and bad tempered*, and *stay in bed most of time*--showed low frequencies. These items were the same items that had low item-total correlations below .20 (Appendix P-1).

Inter-item correlations and factor analysis. Watters, Thomas, and Streiner (1990) caution against factor analyzing dichotomous items with regular factor analysis software programs. The main problem with binary items is their tendency for inter-item correlations to be artificially inflated, or artificially deflated (Watters, Thomas, & Streiner, 1990). Streiner[3] suggests the use of a tetrachoric correlation for dichotomous data. A tetrachoric correlation is used to estimate the Pearson correlation coefficient for dichotomous variables (Nunnally, 1978). The calculation of the tetrachoric correlation involves corrections that approximate what the Pearson correlation coefficient would have been if the data had been continuous and the Pearson correlation coefficient could have been used (Allen & Yen, 1979). MicroFACT 1.0--a microcomputer factor analysis program for dichotomous data--was used for the inter-item correlations and factor analysis of the Roland SIP. This program computes the smoothed tetrachoric correlation matrix (Waller, 1995). A smoothed tetrachoric matrix is a positive semidefinite least-squares approximation of the original tetrachoric correlation matrix (Waller, 1995). Smoothing the tetrachoric matrix prior to performing a factor analysis has been found to reduce the number of communalities that are greater than 1.00 in the factor solution (Waller, 1995).

The smoothed tetrachoric matrix for the Roland SIP is shown in Appendix P-3. Several correlations were low to fair (below .3), with the highest correlation at .74. These findings suggest that the items in the Roland SIP were less homogeneous and may be measuring different aspects of the same construct or different constructs.

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[3] Streiner, DL. Professor, Department of Clinical Epidemiology and Biostatistics, and Department of Psychiatry, McMaster, University, Hamilton, ON: Personal communication. September, 1996.

The minimally acceptable loading value was set at .3 (Norman & Streiner, 1994). Factor analysis for the Roland SIP is displayed in Appendix P-4. This appendix also shows our categorizations of impairments, disabilities, and handicaps (according to the ICIDH (WHO, 1980) classification) for each item in the Roland SIP. Recall that these categorizations were presented in Appendix G.

The factor analysis for the Roland SIP yielded four factors accounting for 55% of the total variance. Factors 1, 2, 3, and 4 accounted for 27%, 9%, 10%, and 9%, respectively. Factor 1 demonstrated an averaging (loadings of .4 to .8) across 13 of the 24 items. Items that loaded onto Factor 1 seem to consist of a mixture of general activities (i.e., *change position*, *walk more slowly*, *use handrail to get upstairs*, *hold on to get out of chair*, etc.). According to Streiner,[4] although the items that loaded onto Factor 1 were negative, they can be regarded as positive. Items that loaded onto Factor 2 seem to involve inactivity/immobility as well as the emotional aspects of activity/mobility (i.e., *get others to do things*, *appetite not good*, and *irritable and bad tempered*). Factor 3 seemed to consist of items that denote avoidance or curtailment of activity/mobility (i.e., *lie down to rest*, *dressed with help*, and *avoid heavy jobs around house*). Items that loaded onto Factor 3 were bipolar (Norman & Streiner, 1986). That is, there were two positive items--*lie down to rest* (0.73) and *avoid heavy jobs around house* (0.64), and one negative item--*dressed with help* (-0.57). This means that the item--*dressed with help*--is inversely related to Factor 3 and should be interpreted as *not even getting dressed with help*. Thus, items that loaded onto Factor 3 (*lie down to rest*, *not even getting dressed with help*, and *avoid heavy jobs around house)* appear to reflect avoidance or curtailment of activity/mobility. Items that loaded onto Factor 4 seem to reflect limited activity/mobility (*not doing jobs around house*, *stand up for short periods*, and *sit down most of day*).

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[4] Streiner, DL. Professor, Clinical Epidemiology and Biostatistics, and Department of Psychiatry, McMaster University, Hamilton, ON: Personal communication. September, 1996.

Clients' Expectations

As discussed previously in the *Selection and Procedures* section, respondents were asked several questions at entry concerning their worry that exercises will worsen their back, job satisfaction, confidence to improve to preinjury level, confidence the program will be beneficial, and their return to work expectations. Respondents' ratings of these questions are presented in Appendix Q. A significant difference between study completers and study drop-outs emerged for the confidence rating regarding improvement to preinjury level (t=-4.48, df=39, $p<.0001$).

Clinicians' Ratings of Clients' Functional Ability

As previously discussed in the *Selection and Procedure* section, clinicians were asked to rate--on a 0% (unable) to 100% (completely able) scale--clients' level of functional ability in the following areas: endurance, muscle strength, range of motion, locomotion, and overall ability.

Descriptive statistics for clinicians' ratings of functional ability scores at entry and follow-up are displayed in Table 4.12. A few missing values were found at baseline (the case was dropped from the analysis); none at follow-up. The median and the mode for the total functional ability ratings at baseline were 50, and 60, respectively, while at follow-up, the median and the mode were 70, and 80, respectively. Shapiro-Wilk tests on the entry and follow-up scores showed that the scores were not normally distributed ($p<.0001$).

It is interesting to note that the baseline ratings for all aspects of functional ability were generally higher in the drop-outs versus the study completers (not significant). Paired t-tests showed that there were significant changes from entry to follow-up for clinicians' ratings of total functional ability (t=13.38, df=91, $p<.0001$), as well as ratings of endurance (t=12.25, df=91, $p<.0001$), muscle strength (t=8.80, df=91, $p<.0001$), range of motion (t=10.32, df=91, $p<.0001$), locomotion (t=10.32, df=91, $p<.0001$), and overall ability (t=10.67, df=91, $p<.0001$). Thus, without having access to their baseline ratings, clinicians rated every aspect of clients' functional ability as having improved over the three week

period.

Table 4.12 Clinicians' Ratings of Clients' Functional Ability

	Baseline (n=94)			Drop-Outs (n=10)			Follow-Up (n=94)		
	N	Mean(SD)	Range	N	Mean(SD)	Range	N	Mean(SD)	Range
Endurance ****	93	44.94(22.52)	0-90	9	60.00(20.00)	30-80	94	68.08(16.93)	30-100
Muscle Strength ****	92	56.30(25.75)	0-100	8	62.50(21.21)	30-90	94	72.76(19.86)	30-100
Range of Motion ****	94	48.72(23.84)	0-90	9	63.33(27.38)	10-100	94	74.15(17.50)	30-100
Loco-motion ****	93	54.73(26.07)	10-100	9	67.78(21.08)	30-90	94	78.62(17.39)	30-100
Overall Ability ****	94	49.63(22.17)	0-100	9	63.33(18.71)	30-90	94	69.57(16.78)	30-100
Total****	94	50.83(21.69)	4-90	9	63.94(20.64)	26-87.5	94	72.64(18.03)	30-100

**** $p < .0001$

Clinicians' Expectations of Clients

As noted in the *Selection and Procedure* section, at entry clinicians were asked to rate--on a 0% (not at all) to 100% (completely) scale--clients' ability to improve to their preinjury level, clients' motivation to participate fully in the program, and their return to work expectations. These ratings are outlined in Appendix R.

Comparison of Clients' and Clinicians' Baseline Ratings

Given the ordinal nature of return to work expectations, the weighted Kappa statistic was used to compare respondents' and clinicians' baseline ratings of return to work expectations (Norman & Streiner, 1994). This resulted in moderate agreement (0.44).

Table 4.13 displays the clients' and clinicians' ratings at baseline. Fair to moderate positive correlations (.34 to .51) between clinicians' ratings of clients' individual aspects of functional ability and the RADL were found, while weaker positive correlations (.23 to .29) emerged between the clinicians' ratings of these items and the FACS. As expected, fair to moderate negative correlations (-.31 to -.54) between clinicians' ratings of clients' individual aspects of functional ability and the total Roland SIP scores were found. There were fair to moderate negative correlations between clinicians' ratings of clients' individual aspects of functional ability and the disability and handicap subscales of the Roland SIP (-.30 to -.51, and -.31 to -.44, respectively). Clinicians' ratings of clients' motivation were not significantly related to either the FACS, the RADL, the total Roland SIP (or its subscales), or worry. A fair but significant correlation (r=.29) emerged between clinicians' ratings of clients' motivational level and clients' ratings of predicted improvement.

Table 4.13 Correlation Coefficients Between Clients' Ratings and Clinicians' Ratings At Baseline

	Clients' Ratings							
Clinicians' Ratings	**FACS**	**RADL**	**Total Roland**	**Roland "D"**	**Roland "H"**	**Roland "I"**	**Worry**	**Predicted Improvement**
Endurance	0.29 **	0.50 ****	-0.54 ****	-0.51 ****	-0.44 ****	-0.32 **	-0.14	-0.04
Muscle Strength	0.08	0.34 ***	-0.31 **	-0.31 **	-0.18	-0.24 *	-0.03	-0.10
Range of Motion	0.19	0.43 ****	-0.34 ***	-0.30 **	-0.31 **	-0.18	-0.04	-0.19
Locomotion	0.23 *	0.51 ****	-0.41 ****	-0.40 ****	-0.32 **	-0.24 *	-0.01	-0.15
Overall Ability	0.27 **	0.46 ****	-0.49 ****	-0.47 ****	-0.40 ****	-0.26 **	-0.16	-0.07
Predicted Improvement	0.15	0.36 ***	-0.17	-0.16	-0.18	-0.04	-0.21 *	0.20
Motivation Level	0.04	0.08	-0.18	-0.18	-0.12	-0.13	-0.16	0.29 **

* $p<.05$ ** $p<.01$ *** $p<.001$ **** $p<.0001$

"D"=disability subscale "H"=handicap subscale "I"=impairment subscale

13 items 8 items 3 items

Primary Follow-Up Measures

Current FACS

The mean item and total score ratings for the current FACS at baseline and follow-up were shown previously in Table 4.5 in the *Primary Baseline Measures* section. At follow-up, the median and mode for the overall total current FACS were 70 and 100, respectively (compared to 50 and 100, respectively at baseline). The Shapiro-Wilk test showed that the follow-up scores for the current FACS were not normally distributed ($p < .0001$) (similar to the baseline ratings). Unpaired t-tests for the follow-up current FACS scores demonstrated that there were no significant differences between the subgroups (see Table 4.6 in the *Primary Baseline Measures* section).

Preinjury FACS

The mean item and total score ratings for the preinjury FACS at baseline and follow-up were shown in Table 4.7 in the *Primary Baseline Measures* section. At follow-up, the median and the mode for the overall total preinjury FACS were both 100 (similar to the baseline ratings). The Shapiro-Wilk test showed that the follow-up preinjury FACS scores were not normally distributed ($p < .0001$), which was similar to the findings at entry. Unpaired t-tests for the follow-up scores for the subgroups demonstrated that there were no significant differences between the subgroups (see Table 4.8 in the *Primary Baseline Measures* section).

RADL

The mean item and total ratings for the RADL at entry and follow-up were displayed previously in Table 4.9. At follow-up, the median and mode for the RADL were 70, and 100, respectively, (compared to 40 and 0, respectively, at baseline). The Shapiro-Wilk test showed that the follow-up RADL scores were not normally distributed ($p < .0001$) (similar to the findings at entry). Unpaired t-tests of the follow-up RADL scores for the subgroups demonstrated that there were no significant subgroup differences (see Table 4.10 in the

Primary Baseline Measures section).

Secondary Follow-Up Measures

Clients' Ratings

As discussed previously in the *Selection and Procedure* section, at follow-up respondents also rated--on a 0% (not at all) to 100% (completely) scale--their confidence that they had improved to preinjury level, and confidence they were now able to return to full time work. They also were asked to rate their medication intake, and if their back condition had improved, worsened, or stayed the same over the course of the study. The mean ratings at follow-up for the sample (n=94) are shown in Appendix S. It is interesting to note that respondents' mean confidence that they had improved to their preinjury level at follow-up (mean: 55) (Appendix S) was lower than their expectations for improvement at entry (mean: 74.25) (Appendix Q), which was significant (t=-4.76, df=89, $p<.0001$). This finding may be due to the fact that, at the time of follow-up, only 32 subjects (34%) were judged by clinicians as able to return to unrestricted work. Another explanation may be that as the respondents went through the program, their expectations lowered. At follow-up, 38 subjects (40%) were taking medication in comparison to 66 respondents (70%) at entry, which was statistically significant (X^2=14.62, df=1, $p<.001$).

Clinicians' Ratings

Clinicians' ratings at follow-up of clients' functional ability (see Table 4.12), extent of participation in the program, whether the client completed the program, clinicians' recommendations with regard to return to work, and ratings of whether the client's condition had become better, worse, or stayed the same during the study are shown in Appendix T.

Return to work recommendations. At follow-up, clinicians were asked to make recommendations about clients' ability to return to work (see Table 4.14). Of the 22 subjects who were categorized into the *other* category, the clinicians qualified their ratings as follows:

16 subjects (73%) were still in the program and were continuing with treatment, two respondents needed to be reviewed by the doctor, one subject was not ready to return to work, and one participant required retraining. One subject did not have a comment beside the *other* category, and one respondent was rated 'not applicable'.

Table 4.14 Frequency Ratings For Clinicians' Recommendations of Return To Work At Follow-Up (n=93)

Return To Work Recommendations	Clinicians' Ratings
What would you recommend for this client?	
• *Return to unrestricted work*	32 (34%)
• *Return to restricted work*	36 (39%)
• *Refer to Regional Evaluation Centre*	3 (3%)
• *Other*	22 (24%)

Clinicians' recommendations of able to return to work were categorized into the binary response of return to work--*yes* or *no*. Subjects who were recommended as able to *return to unrestricted work* were categorized as *yes* (able to return to work), while those who were categorized as *return to restricted work*, *refer to Regional Evaluation Centre*, or *other* were categorized as *no* (unable to return to work).

The characteristics of respondents who were judged by clinicians as able to return to unrestricted work (n=32) versus those who were judged as unable to return to work (n=61) are illustrated in Appendix U. Not surprisingly, there was a significant difference between those respondents who completed the program versus those who did not (X^2=6.10, df=1, p<.05).

Program completers versus non-completers. Characteristics of the program completers versus non-completers are shown in Appendix V. Not surprisingly, a significant difference emerged for subjects who were judged by clinicians as able versus unable to return to work (X^2=5.58, df=1, p<.05).

Mean Overall Ratings On the FACS and the RADL For Subjects Who Returned To Work Versus Unable To Return To Work and Program Completers Versus Non-Completers

Appendices W-1 and W-2 illustrate the mean overall baseline and follow-up ratings on the FACS and the RADL for subjects who were judged as able to return to work versus unable, and program completers versus non-completers, respectively. Unpaired t-tests showed that there was a statistically significant difference between follow-up FACS scores for those who were judged as able to return to work versus follow-up scores for subjects who were unable to return to work (t=3.05, df=90, $p<.01$). Similar findings emerged for follow-up RADL scores (t=3.32, df=80, $p<.001$).

From Appendix W-2, it can be seen that the mean follow-up FACS scores for program completers was higher than the mean follow-up FACS scores for the non-completers (64.20 versus 61.26, respectively), and the mean follow-up RADL scores for the program completers was higher than non-completers (62.21 versus 59.81, respectively), although these differences were not statistically significant. There were no significant differences between the groups in the baseline FACS scores and the baseline RADL scores.

Paired t-tests showed that there were significant changes for the baseline and follow-up FACS for subjects who were recommended as able to return to work (t=2.75, df=31, $p<.05$), for those who were unable to return to work (t=4.21, df=59, $p<.001$), for program completers (t=2.44, df=31, $p<.05$), and for non-completers (t=4.29, df=60, $p<.001$). Paired t-tests demonstrated that there were significant changes for baseline and follow-up RADL for subjects who were judged as able to return to work (t=6.49, df=31, $p<.001$) for those who were judged as unable to return to work (t=3.14, df=59, $p<.01$), for program completers (t=4.71, df=31, $p<.001$), and for non-completers (t=4.07, df=60, $p<.001$).

Comparison of Clients' and Clinicians' Follow-Up Ratings

Subjects' global ratings of improvement (Appendix S) were compared to clinicians' global ratings of improvement (Appendix T). Ratings of "better" constituted "improvement", while ratings of "no improvement" included "worse" and "no change" ratings. Thus, 70 subjects rated themselves as "improved", while 24 subjects rated themselves as "unimproved". In contrast, clinicians rated 87 subjects as "improved", while seven were rated as "unimproved". The Kappa statistic was used to compare participants' global ratings of improvement with clinicians' global ratings of improvement which resulted in low agreement (.23).

Pearson correlation coefficients were computed to separately compare the current FACS and the RADL improvement scores with clinicians' ratings of clients' total functional ability improvement. A fair correlation emerged (r=.31, p<.01) for the current FACS and clinicians' ratings of clients' functional ability improvement, and a negative low correlation (r=-.25, p<.05) for the RADL and clinicians' ratings of clients' functional ability improvement.

Table 4.15 shows the correlation coefficients at follow-up between the clients' and clinicians' ratings. There were moderate correlations (.40 to .44) between clinicians' ratings of clients' individual aspects of functional ability and the FACS, and fair to moderate correlations (.34 to .45) between clinicians' ratings of clients' individual aspects of functional ability and the RADL. Not surprisingly, correlations between the total Roland SIP as well as the disability subscale and clinicians' ratings of the individual aspects of clients' functional ability were moderately and negatively correlated (-.42 to -.53, and -.43 to -.53, respectively). Clients' ratings of improvement to preinjury level were fair to moderately and negatively correlated (-.36 to -.42) with clinicians' ratings of individual aspects of clients' functional ability, which may be due to the fact that only 32 subjects (34%) had completed the program at the time of follow-up. Clients' ratings of confidence to return to full time work were moderately correlated (.30 to .46) with clinicians' ratings of clients' individual items of functional ability.

Table 4.15 Correlation Coefficients Between Clients' Ratings and Clinicians' Ratings At Follow-Up

	Clients' Ratings							
Clinicians' Ratings	**FACS**	**RADL**	**Total Roland**	**Roland "D"**	**Roland "H"**	**Roland "I"**	**Rated Improvement**	**Confidence To RTW**
Endurance	0.44 ****	0.44 ****	-0.53 ****	-0.53 ****	-0.47 ****	-0.31 **	-0.42 ****	0.44 ****
Muscle Strength	0.40 ****	0.34 ***	-0.42 ****	-0.43 ****	-0.34 ***	-0.28 **	-0.37 ***	0.30 **
Range of Motion	0.43 ****	0.39 ***	-0.48 ****	-0.46 ****	-0.45 ****	-0.29 **	-0.36 ***	0.42 ****
Locomotion	0.43 ****	0.45 ****	-0.51 ****	-0.53 ****	-0.41 ****	-0.28 **	-0.36 ***	0.44 ****
Overall Ability	0.44 ****	0.37 ***	-0.47 ****	-0.46 ****	-0.39 ****	-0.33 ***	-0.36 ***	0.46 ****
Extent of Participation	0.14	0.08	-0.11	-0.14	-0.12	0.07	-0.09	0.07

* $p<.05$ ** $p<.01$ *** $p<.001$ **** $p<.0001$

"D"=disability subscale 13 items "H"=handicap subscale 8 items "I"=impairment subscale 3 items RTW=return to work

Clients' and clinicians' ratings at baseline were previously presented in Table 4.13. Correlations between clinicians' individual ratings of functional ability were much stronger at follow-up than at baseline with the FACS, while the RADL and the Roland SIP scores were about the same. It is noteworthy that clients' rated improvement was much stronger at follow-up than their predicted improvement ratings at baseline. These findings are consistent with Bandura's (1986) suggestion that there is an association between mastery and efficacy expectations.

Convergent and Discriminant Validity

Because the distribution of the preinjury FACS scores were highly negatively skewed (discussed previously in the *Primary Baseline Measures* section of this chapter), further statistical analyses were not performed on the preinjury FACS. In the following sections, it should be noted that the word "current" was dropped from the "current FACS" (i.e., the FACS refers to the current FACS).

FACS

Table 4.16 shows the Pearson correlation coefficients between the primary measures and the other scales at entry and follow-up. As expected, the FACS correlated at entry and follow-up more highly with the overall Roland SIP as well as the disability subscale of the Roland SIP items than with either the impairment or the handicap subscales. Correlations between the FACS and the overall Roland SIP as well as the disability items were stronger at follow-up than at entry. Correlations with the overall PSES score as well as the PPA (perceived physical abilities) and PSPC (physical self-presentation confidence) subscales also were stronger at follow-up than at entry. The correlation between baseline PPA subscale and the baseline FACS was low and non-significant, however, at follow-up this relationship was stronger and significant (r=0.25, p<.05). While the correlation between entry FACS and entry PSPC was low and significant, at follow-up this correlation remained low but was non-significant. These findings may show that while the PSES is a general self-efficacy measure, it is not highly related to the FACS which is a specific efficacy measure. Not surprisingly, correlations between the FACS and the MCS were low, negative, and non-significant at both entry and follow-up, demonstrating that the FACS scores may not be related to social desirability. These findings support the discriminant validity of the FACS. Our a priori expectations that a fair to moderate relationship should exist between the FACS and the PPA subscale of the PSES and no association between the FACS and the PSPC subscale as well as the MCS scores were supported.

Table 4.16 Correlation Coefficients Between the Primary and Secondary Measures

	Baseline		Follow-Up	
Other Scales	**FACS**	**RADL**	**FACS**	**RADL**
Roland SIP Total	-.43****	-.62****	-.68****	-.82****
Roland SIP - Disability Subscale	-.42****	-.56****	-.65****	-.76****
Roland SIP - Handicap Subscale	-.33***	-.61****	-.58**	-.72****
Roland SIP - Impairment Subscale	-.23*	-.30**	-.50****	-.64****
PSES Total	.22*	.08	.26**	.21
PSES - PPA Subscale	.16	.06	.25*	.24*
PSES - PSPC Subscale	.22*	.08	.18	.11
MCS	-.03	-.21*	-.14	-.13
FACS	--	.44****	--	.76****
RADL	.44****	--	.76****	--

* $p<.05$ ** $p<.01$ *** $p<.001$ **** $p<.0001$

RADL

Table 4.16 shows the correlation coefficients between the RADL versus the other measures at baseline and follow-up. As expected, at entry and follow-up, the RADL correlated more highly with the overall Roland SIP and the handicap as well as the disability items than with the impairment items. The associations between the RADL and the Roland SIP were stronger than the associations between the FACS and the Roland SIP. Correlations between the RADL scores and the overall Roland SIP as well as the disability, handicap, and impairment subscales were stronger at follow-up than at baseline. At entry, the overall PSES as well as the PPA and the PSPC subscales showed low and non-significant correlations with the RADL, demonstrating that the RADL scores may not be related to general self-efficacy. At follow-up, a significant correlation between the PPA subscale and the RADL was noted. This finding may show that the RADL may be related to perceived physical ability (such as muscle strength, reflexes, and agility). At baseline, the correlation between the RADL and the MCS score was significant, while at follow-up, it was not significant.

Concurrent Validity

Clinicians' Ratings of Clients' Functional Abîlity

At baseline, ratings of clients' total functional ability and the FACS scores were positively correlated (r=.24, p<.05); this relationship was stronger at follow-up (r=.48, p<.0001). Correlations between clinicians' ratings of clients' functional ability and the RADL scores at both entry and follow-up were moderately correlated (r=.48, p<.0001, and r=.45, p<.0001, respectively).

FACS and RADL

Correlations between the FACS and the RADL at entry showed a moderate and positive correlation (r=.44, p<.0001), while at follow-up the correlation was stronger (r=.76, p<.0001). These findings may show that as participants' efficacy expectations were enhanced, their ability to resume daily activities also increased.

Clinicians' Recommendations For Return To Work

Exploratory logistic regression analyses were conducted on the FACS and RADL scores and clinicians' recommendations for return to work. For these analyses, clinicians' recommendations of return to work were categorized into the binary response variable of predicted return to work (yes/no). A 95% confidence interval (CI) was used for each model to give a range that contains the true odds ratio (OR) 95% of the time (Dumholdt, 1993).

The logistic regression analysis using the follow-up FACS scores to predict return to work is shown in Table 4.17. For an increase of 10 points in the FACS, the OR of a prediction of able to return to work was 1.03 ($e^{10x0.00288}$) (95% CI=1.01, 1.05), while for an increase of 100 points, the OR was 1.33 ($e^{100x0.00288}$) (95% CI=1.14, 1.57). The odds of predicting able to return to work for a participant who scored 100 was 1.33 times the odds of a respondent who scored zero on the FACS at follow-up.

Another approach that is commonly used is to estimate the odds ratio for a change of

scale for the 75th and the 25th percentiles. Using this method, odds ratios were calculated for both scales. The follow-up FACS scores for respondents in the 25th and 75th percentile were 41.33 and 83.67, respectively. The odds of clinicians' recommendations for return to work for a respondent who scored in the 75th percentile on the follow-up FACS was 1.13 ($e^{42.33x.00288}$) (95% CI=1.06, 1.21) the odds of a respondent who scored in the 25th percentile.

Table 4.17 Follow-Up FACS Scores For Prediction of Return To Work

Covariates	*B*	Standard Error	*p* Value
Constant	1.4008	0.7022	.0461
Follow-Up FACS	0.00288	0.00082	<.001

The logistic regression analysis using the follow-up RADL scores to predict return to work is shown in Table 4.18. For an increase of 10 points in the RADL, the OR of a prediction of able to return to work was 1.03 ($e^{10x0.00288}$) (95% CI=1.01, 1.05), while for an increase of 100 points, the OR was 1.33 ($e^{100x0.00288}$) (95% CI=1.07, 1.66). The odds of a predicting able to return to work for a respondent who scored 100 was 1.33 times the odds of a participant who scored zero on the RADL at follow-up.

The follow-up RADL scores for respondents in the 25th and 75th percentiles were 43.33 and 81.67, respectively. The odds of a clinicians' recommendations for return to work for a respondent who scored in the 75th percentile on the follow-up RADL was 1.12 ($e^{38.33x.00288}$) (95% CI=1.03, 1.22) the odds of a respondent who scored in the 25th percentile.

Table 4.18 Follow-Up RADL Scores For Prediction of Return To Work

Covariates	*B*	Standard Error	*p* Value
Constant	0.6835	0.7480	.3609
Follow-Up RADL	0.00288	0.00112	<.01

Predictive Validity

The correlation coefficient between the baseline FACS scores and clinicians' rating of improvement in clients' functional ability was negative, low, and non-significant (r=-.13), indicating that the baseline FACS scores may not be related to clinicians' ratings of improvement in clients' functional ability. Baseline RADL scores and clinicians' ratings of improvement in functional ability showed a negative, fair, and significant correlation (r=-.25, p<.05). There was a very low, positive, and non-significant correlation between the entry FACS with the RADL improvement scores (r=.07). Baseline RADL scores demonstrated a very low, negative, and non-significant correlation with the FACS improvement scores (r=-.04). These findings may have occurred because at follow-up only 32 subjects had completed the program and had not achieved their maximum potential.

The logistic regression analysis using the entry FACS scores to predict return to work is displayed in Table 4.19. For an increase in 10 points the OR of a prediction of able to return to work was 1.02 ($e^{10x0.0018}$) (95% CI=1.00, 1.03), while for an increase of 100 points, the OR was 1.20 ($e^{100x0.0018}$) (95% CI=1.03, 1.39). The odds of predicting able to return to work for a respondent who scored 100 was 1.20 times the odds of a respondent who scored zero on the FACS at entry.

The baseline FACS scores for respondents in the 25th and 75th percentiles were 28.33 and 69.00, respectively. The odds of a clinicians' recommendations for return to work for a respondent who scored in the 75th percentile on the baseline FACS was 1.08 ($e^{40.67x.00180}$) (95% CI=1.01, 1.14) the odds of a respondent who scored in the 25th percentile.

Table 4.19 Baseline FACS Scores For Prediction of Return To Work

Covariates	*B*	Standard Error	*p* Value
Constant	0.1586	0.5357	.767
Baseline FACS	0.00180	0.000752	<.05

The logistic regression analysis for the baseline RADL and the prediction of return to work is illustrated in Table 4.20. For an increase of 10 points in the RADL, the OR of able to return to work was 1.03 ($e^{10x0.00285}$) (95% CI=1.01, 1.05), while for an increase of 100 points, the OR was 1.33 ($e^{100x0.00285}$) (95% CI=1.05, 1.69). The odds of predicting able to return to work for a respondent who scored 100 was 1.33 times the odds of a participant who scored zero on the RADL at entry.

The baseline RADL scores for respondents in the 25th and 75th percentiles were 28.33 and 60.91, respectively. The odds of a clinicians' recommendations for return to work for a respondent who scored in the 75th percentile on the baseline RADL was 1.10 ($e^{32.58x.00285}$) (95% CI=1.02, 1.19) the odds of a respondent who scored in the 25th percentile.

Table 4.20 Baseline RADL Scores For Prediction of Return To Work

Covariates	*B*	Standard Error	*p* Value
Constant	0.2791	0.5978	.641
Baseline RADL	0.00285	0.00121	<.05

Discussion

The FACS was originally developed to consist of two parts--the current FACS which asks respondents to rate confidence in their ability to perform certain activities, and the preinjury FACS which asks them to rate confidence in their preinjury functioning. The rationale for developing the preinjury FACS was to determine confidence in residual functioning by examining the difference between confidence in preinjury and current level of functioning. Because the preinjury FACS ratings were highly negatively skewed, the preinjury FACS was not subjected to further analysis.

DeVellis (1991) suggests that a mean close to the centre of the range of scores is desirable. While the mean of the current FACS was 49.8 (which is close to the centre of the range), the mode was 100, indicating that the scores may not be normally distributed. The

mean (44.6) of the RADL was fairly close to the centre of the range, and the mode was zero, signifying that the scores may not be normally distributed. Since only 12 subjects (13%) were working while attending the CCP, the item--*resumption of paid employment*--was rated at 0% by 80 subjects (87%), which may have been particularly responsible for this. While this item may have contributed to these findings, it should not be discarded as it is a critical item in examining clients' recovery.

The Shapiro-Wilk test computed on the primary and the secondary scales showed that these instruments were not normally distributed. Examination of the normal probability plots as well as the stem and leaf plots demonstrated that the scales (except for the preinjury FACS) were not severely skewed. For example, the normal probability line for the current FACS and the RADL appeared to be straight with some observations in the tails. In contrast, the normal probability plot for the preinjury FACS showed evidence of skewness as the majority of the observations were at one end of the plot with a few observations at the other end. For the Roland SIP, the normal probability line appeared to be fairly straight with some observations in the tails. Furthermore, since the central limit theorem demonstrates that even for skewed distributions, the sampling distribution of means will approach the normal curve as n increases (Portney & Watkins, 1993). In light of these findings, and the fact that the means of the scales were close to the centre of the possible ranges, both the primary and the secondary measures were analyzed with parametric statistics.

The fact that subjects with a previous back injury versus those without, and previous attenders versus new attenders responded differently to the primary scales is not surprising. In this study, respondents without a previous back injury were younger. Studies have shown that older individuals are at greater risk for work disability and have an increased length of stay in rehabilitation programs (Crook, 1994; McIntosh, 1993). Previous attenders also were more likely to have had a prior back injury (89% did) which also may account for these findings. Another explanation may be that respondents without a previous back injury as well as new attenders were, in fact, functioning better.

Internal consistency analyses using Cronbach's alpha were .96, and .89 for the current

FACS and the RADL, respectively. These findings indicated that the scales were highly consistent. According to Streiner & Norman (1989), an item should correlate with the total score above .20. There were no item-total correlations below .20 in the scales indicating that none of the items should be dropped.

DeVellis (1991) suggests that there are various ways to examine the "goodness" of various items. For example, some item problems may include the following: negative correlations among items, low item-total correlations, and weak inter-item correlations which will reduce the alpha. There were no negative correlations among the items (except for one correlation in the RADL). The inter-item correlations in the current FACS were fair to high, demonstrating that the items may be measuring the same dimension. The inter-item correlations in the RADL were low to moderate, signifying that the items may be measuring different aspects of the same dimension.

While Cronbach's alpha for the Roland SIP (Roland & Morris, 1983) was .83, indicating good internal consistency, there may be some item problems. For instance, there were low item-total correlations (below .2) for four items (*dressed with help*, *sit down most of day*, *irritable and bad tempered*, and *stay in bed most of time*). Because the item-total correlations were below .2, these items should be discarded (Norman & Streiner, 1989). There also were several low inter-item correlations, as well as several negative correlations suggesting that the items may be measuring different aspects of the same construct or different constructs. DeVellis (1991) notes that alpha is influenced by the number of items in the scale--adding more items will increase alpha and removing items will lower it. Since the Roland SIP has 24 items, this may be why the alpha coefficient was fairly high at .83 (in comparison to the FACS and the RADL which have 15 and 12 items, respectively).

The factor analysis for the current FACS yielded two factors--confidence to perform specific activities and general activities. It seems reasonable that because the factor analysis yielded two factors, the inter-item correlations were moderate to high. The factor analysis for the RADL yielded three or four factors--ability to resume personal, strenuous, and high order activities. The inter-item correlations were low to moderate which supports the notion that

there were three or four underlying dimensions in the RADL.

The factor analysis for the Roland SIP yielded four factors--ability to perform a mixture of general activities, inactivity/immobility, avoidance or curtailment of activity/mobility, and limited activity/mobility. These findings seemed to confirm that the items that loaded onto these factors cut across all components of the ICIDH (WHO, 1980).

In this study, factor analysis using varimax rotation, a common orthogonal method, was used on the primary scales as it maximizes the variance of squared loadings. Another type of rotation is oblique rotation. With oblique rotation, factors can be rotated so that the axis corresponding to each successive factor is fitted optimally without the constraint of keeping them perpendicular (DeVellis (1991). While DeVellis states that orthogonal factors, because of their statistical independence, possess a simplicity and elegance that oblique factors do not, oblique rotation could have been used to determine if the same items that loaded onto the factors using varimax rotation would have occurred with oblique rotation.

DeVellis (1991) suggests that with alpha correlations above .90, one should consider shortening the scale. Streiner and Norman (1989) advise that if the correlations are too high there may be redundancy and possible loss of content validity. There may be some item redundancy in the FACS because the alpha correlation was very high. However, DeVellis (1991) states that "some redundancy is desirable in the final scale" (p. 56). Furthermore, it may be useful for clinicians to see self-confidence ratings on a range of movements and postures as illustrated by the FACS.

Clinicians were asked at follow-up to make recommendations about clients' ability to return to work. When clinicians were making these recommendations, it is uncertain if the clinicians based these judgements on clients' status at the time of follow-up, or whether the clinicians were making their judgements on how the clients would be after they had completed the program. It would have been clearer if the question would have been *"What would you recommend for this client <u>now</u>?"* instead of *"What would you recommend for this client?"* In view of this, clinicians' recommendations for return to work should be interpreted with caution.

Clients' global ratings of improvement were compared to clinicians' global ratings of improvement, which resulted in low agreement (Kappa=.23). This finding is consistent with other studies in the rehabilitation literature (Boyce et al., 1995; Crossman, Zuliani, Preston, & Gluck, 1996). For instance, the Crossman et al. (1996) study found that clients with work-related injuries and their treating physiotherapists disagreed on whether the client could work (86% of the clients felt they could not, while clinicians thought that only 49% could not). The authors suggested that this discrepancy may be attributed to the fact that physiotherapists who treat common work-related injuries daily are more informed and may be desensitized to the impact the injury has on the client.

Not surprisingly, correlations between the primary and secondary measures were generally stronger at follow-up than at entry. These findings are consistent with Bandura's (1986) assertion that there is an association between efficacy expectations and mastery. For instance, efficacy is enhanced through a series of performance accomplishments, which in turn motivates participants to take on more difficult activities, thus increasing their self-efficacy expectations, as well as their resumption of daily activities. McAuley, Lox, and Duncan (1993) have shown that even acute bouts of exercise testing and feedback can dramatically enhance self-efficacy.

As expected, the FACS correlated more highly with the overall Roland SIP and the disability subscale, while the RADL scores were more highly correlated with the overall Roland SIP, as well as the handicap items. These findings support the convergent validity of both scales. There were low correlations between the FACS and overall PSES (Ryckman et al., 1982) as well as PPA (perceived physical ability) subscale. A low and significant correlation between the RADL and the PPA subscale was found at follow-up, which may indicate that resumption of activities may be related to physical function (such as muscle strength, reflexes, agility, etc.). These findings further contribute to the convergent validity of the RADL.

Not surprisingly, correlations between the follow-up FACS and PSPC (physical self-presentation confidence) subscale, as well as between the FACS and the MCS (Fischer &

Fick, 1993) were low and not significant. A low and non-significant correlation occurred between the RADL and the overall PSES. This finding supports the discriminant validity of the RADL. The correlation between the follow-up RADL and the MCS scores also was not significant. These findings support the discriminant validity of both scales.

As expected, correlations between the FACS and clinicians' ratings of clients' overall functional ability were low at entry and stronger at follow-up, while correlations between the RADL and ratings of overall functional ability were moderate on both occasions. Correlations between the FACS and the RADL were moderate at entry but were strengthened at follow-up. These findings are consistent with Bandura's self-efficacy theory (1986) that there is an association between efficacy expectations and mastery. For instance, as clients progressed through the program, their self-efficacy increased and they were better able to resume their daily activities. These findings support the concurrent validity of both scales.

The logistic regression analysis for the follow-up FACS, as well as the follow-up RADL, and clinicians' predictions of return to work showed similar results. The odds of a prediction of able to return to work for a participant who scored 100 points on the follow-up FACS, or the follow-up RADL, was 1.33 times the odds of a respondent who scored zero on these scales. For the baseline FACS, the odds of a prediction of able to return to work for a respondent who scored 100 was 1.20 times the odds of a participant who scored zero. For the baseline RADL, the odds of a prediction of able to return to work for a respondent who scored 100 was 1.33 times the odds of a respondent who scored zero. These findings demonstrate that neither the baseline RADL were especially strong at predicting return to work (based on clinicians' recommendations).

In summary, both the FACS and the RADL demonstrated good convergent and discriminant validity, as well as good concurrent and predictive validity when administered at program entry and three weeks, or at discharge to 94 subjects with LBP.

CHAPTER 5

RESPONSIVENESS TESTING

Objectives

The main objective for this phase was to determine the responsiveness of both the FACS and the RADL. Since the Roland SIP (Roland & Morris, 1989) was our head-to-head comparison measure for these two scales, the responsiveness of the Roland SIP also was calculated. Responsiveness refers to the ability of an instrument to detect a clinically important change over time, even if such change is small (Guyatt, Walter, & Norman, 1987; Kirshner & Guyatt, 1985).

Procedure

Data on the 94 subjects who completed the FACS and the RADL at entry and follow-up were used to provide information for the responsiveness testing. As previously discussed in Chapter Four, the criterion measure used was a global rating obtained from both the respondent and a clinician. Recall that at follow-up, respondents were asked to rate whether they thought that their back condition had changed since they started the program. They were asked to check "*YES*" if they thought that it was *better*, and "*NO*" if they thought that it was *worse* or the *same*. Using exactly the same question, clinicians also were asked to rate subjects' change.

Chapter Four also presented the overall mean FACS scores (Table 4.5), the overall mean RADL scores (Table 4.9), and the overall mean Roland SIP scores (Table 4.11), as well as the t-tests for these measures. Also discussed in Chapter Four, the paired t-tests for the overall mean scores for the FACS, the RADL, and the Roland SIP showed that there were significant changes between baseline and follow-up scores (t=4.99, df=93, $p<.0001$, t=6.60, df=79, $p<.0001$, and t=-7.99, df=93, $p<.0001$, respectively).

Statistical Analysis

"There is no consensus regarding the appropriate measure of the overall responsiveness of a measure to the effect of treatment" (Norman, 1989, p. 1103). While there are many approaches that can be used to examine the responsiveness to clinical change of an instrument, effect size (Kazis, Anderson, & Meenan, 1989) and relative efficiency (Liang, Larson, Cullen, & Schwartz, 1985) were used in the present study. These methods are described below.

Effect Size. Effect size relates changes in mean scores (from baseline to follow-up) to the standard deviation of baseline scores (Kazis et al., 1989). Guyatt, Walter, and Norman (1987) suggested a variant of this statistic with a different denominator: the standard deviation of score changes among stable subjects (i.e, those who have not had an intervention of known efficacy). Thus, Guyatt et al's approach requires the assessment of individuals at two time points who are not undergoing any intervention, and therefore is inappropriate for the responsiveness analysis in this study.

Effect size, advocated by Kazis et al., (1989) and Anderson, Firschein, and Meenan (1989), was used in this study. This approach provides a practical method that allows one to determine a clinically important change in an instrument. The calculation of effect size takes the difference in means at follow-up and entry and divides it by the standard deviation of baseline scores. Effect size can be used to translate changes in treatment effects into a standard unit of measurement that provides a clear interpretation of the results. Cohen (1988) defined an effect size of .20 as small, one of .50 as medium, and one of .80 or greater as large. The large effect size represents a change of at least four fifths of a standard deviation of the baseline measure. The actual change scores on a measure can then be calculated by multiplying the effect size by the standard deviation of baseline scores.

Effect size for the three scales were calculated for the entire sample, as well as by subgroups based on both subjects' and clinicians' global ratings of improvement. For the subgroups, responsiveness was analyzed by using subjects' ratings of change. Subjects were

subcategorized as "improved" if they reported they were better over the course of the study, while those who indicated that their condition was worse, or had not changed, were classified as "not improved". Responsiveness also was analyzed by using the clinicians' ratings of change. In this case, subjects were subcategorized as "improved" if clinicians rated their condition as better over the course of the study, while those participants whose condition was rated as worse, or not changed, were classified as "not improved". Effect size for each subgroup (i.e., those who improved versus those who did not improve) according to subject's own and a clinician's ratings were determined using the ratio of the difference between mean follow-up and mean entry scores by the pooled standard deviation, as defined by Cohen (1988).

Unpaired t-tests comparing subgroups' ratings on the three scales at baseline and follow-up were used to determine if there were significant differences between the subgroups. Paired t-tests between entry and follow-up scores on the scales for the two subgroups (rated improved versus unimproved) were calculated to determine changes over the course of the study. Since sample sizes for the two subgroups (improved and unimproved) were disproportionate, the standard error of the mean (SEM), which is the standard deviation of the sampling distribution (Domholt, 1993), also was calculated for the scales.

Relative Efficiency. A second approach for the assessment of responsiveness is the relative efficiency statistic suggested by Liang et al., (1985) which compares t-test statistics for various measures against a standard. This statistic makes use of paired t-test statistics as follows: Relative efficiency (RE) = $(t/t_{standard})^2$. According to Liang et al., an RE >1 (or RE <1) means that the instrument was a more (or less) efficient tool for measuring change than the standard.

Results

Descriptive statistics for subjects' and clinicians' global ratings of change will be presented first. This will be followed by the responsiveness analysis using effect size for the

FACS, the RADL, and the Roland SIP for the entire sample, as well as for the subgroups (i.e., subjects' and subjects' ratings of improved and unimproved). The RE approach for the three scales will then be presented.

Subjects' Global Ratings of Improvement

Subjects' global ratings of improvement were as follows: 70 subjects stated they improved, four respondents rated themselves as worse, and 20 subjects stated that their back condition had not changed. For the responsiveness analysis, 70 subjects were categorized as "improved", while 24 respondents were categorized as "not improved".

Table 5.1 presents the mean overall ratings and the SEM of the three scales for clients' self-ratings of improvement and unimprovement. Recall that for the Roland SIP, higher scores indicated greater disability. For the unimproved subgroup, there was a downward shift in the FACS scores at follow-up (45.75) in comparison to the scores at entry (50.64) (which was not significant). At baseline, unpaired t-tests comparing the two groups on the FACS, the RADL, and the Roland SIP demonstrated no significant differences. At follow-up, on the other hand, significant differences emerged between improvers and non-improvers on the FACS, the RADL, and the Roland SIP (t=4.30, df=92, $p<.001$, t=4.44, df=92, $p<.001$, and t=-4.03, df=92, $p<.0001$, respectively).

While paired t-tests for subjects who rated themselves as improved showed a significant change between entry and follow-up FACS scores (t=7.13, df=69, $p<.0001$), there was no change for subjects who rated themselves as unimproved. On the RADL, paired t-tests for subjects who rated themselves as improved demonstrated that there was a significant difference between entry and follow-up (t=6.95, df=62, $p<.0001$): no change was found for subjects who did not see any improvement. On the Roland SIP, paired t-test for subjects' self-ratings of improvement showed a significant change from entry to follow-up (t=-8.81, df=69, $p<.0001$), while no change was found for subjects who felt that they did not improve.

Table 5.1 Mean Ratings On the FACS, the RADL, and the Roland SIP By Subjects' Ratings of Self-Improvement Versus Non-Improvement

	Baseline FACS	Follow-Up FACS	Baseline RADL	Follow-Up RADL	Baseline Roland SIP	Follow-Up Roland SIP
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Improved (n=70)	49.52 (25.34)	68.30 (20.95)	(n=66) 44.78 (20.95)	(n=65) 65.61 (21.42)	14.01 (4.99)	8.78 (5.73)
SEM	3.03	2.50	2.58	2.66	.6	.68
Range	3.33-100	12.67-100	3.33-88.18	22.5-100	3-22	0-22
	****		****		****	
Unimproved (n=24)	50.64 (27.90)	45.75 (25.46)	(n=21) 37.74 (20.67)	(n=19) 44.23 (22.45)	14.54 (4.17)	13.96 (4.44)
SEM	5.69	5.20	4.51	5.15	.85	.91
Range	0.67-100	0-100	8.88-86.67	7.5-95	6-21	4-21

**** $p<.0001$ SEM = standard error of the mean

Clinicians' Global Ratings of Improvement

Clinicians rated 87 subjects as improved, one subject as worse, and six participants as no change (these seven subjects were categorized as "not improved"). Due to the small number of non-improvers (n=7), the power for this test was limited.

The mean ratings and the SEM of the three scales for clients whom clinicians rated as either "improved" or "not improved" are shown in Table 5.2. For the unimproved group, a downward trend (not significant) in the FACS scores at follow-up (47.05) in comparison to the scores at baseline (52.10) was noted. At entry, the unpaired t-test comparing clinicians' rating of improvers versus non-improvers on the FACS showed no difference between the subgroups. At follow-up, no significant difference on the FACS was found between the groups as rated by clinicians. At entry there was a significant difference between the improvers and the non-improvers on the RADL (t=2.31, df=92, $p<.05$). However, at

follow-up a significant difference between the subgroups was noted for the RADL (t=2.30, df=92, $p<.05$). For the Roland SIP, at both baseline and at follow-up, no significant differences were found between the groups. Paired t-tests on the FACS scores showed a significant change between entry and follow-up for the "improved" subgroup (t=5.54, df=86, $p<.0001$), but no change for the "unimproved" group. Paired t-tests on the RADL scores and the Roland SIP scores showed similar results: a significant pre-post change for the "improved" group only (t=5.99, df=74, $p<.0001$ and (t=-7.85, df=86, $p<.0001$, respectively).

Table 5.2 Mean Ratings On the FACS, the RADL, and the Roland SIP By Clinicians' Ratings of Improvement Versus Non-Improvement

	Baseline FACS	Follow-Up FACS	Baseline RADL	Follow-Up RADL	Baseline Roland SIP	Follow-Up Roland SIP
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Improved (n=87)	49.62 (25.65)	63.79 (23.65)	(n=80) 46.15 (21.05)	(n=79) 62.20 (22.91)	14.03 (4.82)	9.91 (5.88)
SEM	2.75	2.54	2.34	2.58	.52	.63
Range	0.67-100	0-100	8.89-88.18	7.5-100	3-22	0-22
	****		****		****	
Unimproved (n=7)	52.10 (30.59)	47.05 (26.98)	26.83 (12.72)	(n=5) 38.16 (19.40)	15.57 (4.16)	12.57 (5.35)
SEM	11.54	10.18	4.8	8.66	1.57	2.02
Range	7.33-100	12.67-80.67	3.33-42	16.67-64.17	7-20	4-19

**** $p<.0001$ SEM = standard error of the mean

It is interesting to note that of the 32 subjects who completed the program, 26 respondents rated themselves as improved at follow-up, while six respondents felt that they did not improve. In contrast, clinicians rated 30 participants as improved and two subjects

as not improved. The Kappa statistic showed low agreement (.17) between these two ratings. While it would have been useful to examine the effect size for this subgroup, because of the small sample size, this could not be done.

Responsiveness Analysis

Using Effect Size. Effect size for the FACS, the RADL, and the Roland SIP for the entire sample are presented in Table 5.3. Based on Cohen's (1988) guidelines, effect sizes for the entire sample were medium in magnitude and positive in direction for both the FACS (.49) and the RADL (.77), while for the Roland SIP the effect size was large in magnitude and positive in direction (.85).

Change scores on a measure for the entire sample can be calculated by multiplying the effect size by the standard deviation of baseline scores. Thus, these findings showed that for the FACS a change of 13 units (.49x25.87=12.67) on the 100-point scale represented a clinically important difference, while for the RADL, a change of 16 units (.77x21.12=16.26) on the 100-point scale illustrated a clinically important difference. For the Roland SIP, a change of 4 units (.85x4.78=4.06) on the 24-point scale illustrated a clinically important difference.

Table 5.3 Effect Size and Direction of Change For the FACS, the RADL and the Roland SIP For All Subjects

	Effect Size = $\frac{D}{SD_B}$
FACS	.49 (n=94)
RADL	.77 (n=87)
Roland SIP	.85 (n=94)

D=difference between follow-up and entry scores
SD_B=standard deviation at baseline

Effect sizes for group comparisons were calculated by using the ratio of the difference between mean follow-up and mean entry scores by the pooled standard deviation (Cohen,

1989). Effect size for the subgroups are presented in Table 5.4. For subjects who indicated an improvement in their condition, effect sizes were large and positive for all measures (FACS: .81; RADL: .98; and Roland SIP: .97). A large effect size would be equivalent to the following changes: 19 units (.81x23.25=18.83) on the 100-point scale on the FACS, 21 units (.98x21.18=20.75) on the RADL, and 5 units (.97x 5.37=5.21) on the Roland SIP. For subjects who rated themselves as unimproved, the effect sizes were small and negative (-.18) for the FACS, small to moderate and positive (.29) for the RADL, and small and positive (.14) for the Roland SIP. A small effect size would be equivalent to the following changes: five units (-.18x26.71=4.80) on the 100-point scale of the FACS, six units (.29x22.12=6.41) on the 100-point scale of the RADL, and .61 units (.14x4.31=.61) on the Roland SIP.

Clinicians' ratings of improvement illustrated medium effect sizes for the FACS (.57), the RADL (.72), and the Roland SIP (.77). This would be equivalent to the following changes: 14 units (.57x24.67=14.06) on the 100-point scale of the FACS, 16 units (.72x21.99=15.83) on the 100-point scale of the RADL, and 4 units (.77x5.38=4.14) on the Roland SIP. For subjects who were rated by clinicians as not improved, effect sizes were small and negative (-.18) for the FACS, and medium and positive for both the RADL (.72), and the Roland SIP (.63). This is comparable to five units (-.18x28.84=5.19) on the 100-point scale of the FACS, 11 units (.72x15.74=11.33) on the 100-point scale of the RADL, and three units (.63x4.8=3.02) on the Roland SIP.

Table 5.4 Effect Sizes and Direction of Change For the FACS, the RADL, and the Roland SIP For the Subgroups Of Improved Versus Unimproved

Instruments	Subjects Rated As Improved	Subjects Rated As Unimproved	Clinicians Rated As Improved	Clinicians Rated As Unimproved
	ES = $\frac{D}{PSD}$	ES = $\frac{D}{PSD}$	ES = $\frac{D}{PSD}$	ES = $\frac{D}{PSD}$
FACS	.81 (n=70)	-.18* (n=24)	.57 (n=87)	-.18* (n=7)
RADL	.98 (n=65)	.29 (n=19)	.72 (n=79)	.72 (n=5)
Roland SIP	.97 (n=70)	.14 (n=24)	.77 (n=87)	.63 (n=7)

ES = effect size
D = difference between follow-up and entry scores
PSD = pooled standard deviation
* Negative sign indicates decreased score

Using Relative Efficiency. RE calculations for the FACS, the RADL, and the total Roland SIP as well as the disability and handicap subscales of the Roland SIP are shown in Table 5.5. The comparative measure used for both the FACS and the RADL was the Roland SIP.

Table 5.5 Relative Efficiency For the FACS, the RADL, and the Roland SIP

Instruments	Total Roland SIP RE = $(t/t_{\text{Roland SIP}})^2$	Roland SIP Disability Subscale RE = $(t/t_{\text{"D" Roland SIP}})^2$	Roland SIP Handicap Subscale RE = $(t/t_{\text{"H" Roland SIP}})^2$
FACS	.39	.47	.65
RADL	.68	.82	1.14
Roland SIP	1	1	1

RE=relative efficiency "D"=disability "H"=handicap

Discussion

When using evaluative instruments, it is essential to establish reasonable guidelines for determining what a clinically important change would be. Effect sizes (Kazis et al., 1989) for both the FACS and the RADL, and the Roland SIP for the entire sample as well as the four subgroups (i.e., subjects' as well as clinicians' ratings of improved and unimproved) were analyzed using baseline and the three week follow-up scores.

Effect sizes for the entire sample were medium for both the FACS and the RADL, and large for the Roland SIP. Effect sizes for subjects who indicated improvement in their condition were large for the three scales, while for subjects who rated themselves as not improved, effect sizes were small. Although small fluctuations may occur in individuals' confidence in their ability to perform functional activities and to resume their basic activities due to back pain symptoms which may fluctuate from day to day, small effect sizes would not be useful to detect clinical change for the instruments.

Clinicians' ratings of improvement illustrated medium effect sizes for the scales. For subjects who were rated by clinicians as unimproved, effect sizes were small and negative for the FACS and medium for both the RADL and the Roland SIP. Because of the small sample size of subjects who were rated as unimproved (n=7), these findings should be interpreted with caution.

With regard to subjects who rated themselves as unimproved, as well as clinicians who rated subjects as unimproved, the FACS appeared to detect decreases in the non-improvers with small effect sizes. This would represent a clinically non-important deterioration. These findings may be explained by the fact that participants who described their condition as the same and subjects who felt their condition was worse were combined in this group. A larger sample of subjects as well as clinicians who indicated that their back condition was worse may have been helpful in determining whether the FACS could detect clinical deterioration.

RE calculations showed that both the FACS and the RADL were less efficient instruments for measuring change than the total Roland SIP. These findings may have occurred because the Roland SIP consists of impairment, disability, and handicap items,

whereas the FACS and the RADL contain disability and handicap items, respectively. When calculating RE using the disability subscale of the Roland SIP as the comparative measure, RE for the FACS and the RADL showed that these measures were still less efficient than the disability subscale of the Roland SIP, however, when using the handicap subscale as the comparative measure, the RADL was more efficient than the handicap subscale of the Roland SIP.

To further support the effect size and the RE findings, the results of the paired t-tests confirmed that there were significant changes in the three scales for the entire sample. Paired t-tests also confirmed that there were significant changes in the instruments for the subgroups who were rated as improved by subjects and clinicians.

In summary, both the FACS and the RADL seemed to be able to demonstrate clinically important changes. A medium effect size, as defined by Cohen (1988), for both the FACS and the RADL would be an appropriate indicator of clinically important change. While RE calculations showed that the FACS and the RADL were less efficient than the Roland SIP, RE using the handicap subscale of the Roland SIP as the comparative measure demonstrated that the RADL was more efficient than the handicap subscale of the Roland SIP.

CHAPTER 6

PREDICTIVE TESTING

Objectives

This part of the study was exploratory aimed at gaining a better understanding of the recovery process of injured workers with LBP attending rehabilitation programs. Specifically, the objectives for this phase were to: 1) explore the factors that were related to baseline FACS, baseline RADL, baseline Roland SIP (Roland & Morris, 1983), and clinicians' baseline ratings of functional ability; 2) determine the factors that influenced improvement in the FACS, the RADL, the Roland SIP, as well as clinicians' ratings of functional ability; 3) examine the factors that were associated with clinicians' judgements for return to work; and 4) determine the factors that were related to completion of the program. Because of the small sample of subjects who completed the program (n=32), it was not possible to examine the factors that were related to the follow-up scores for these instruments.

Procedure

Data on the 94 subjects who completed the study were used for the predictive testing. As discussed previously in Chapter Four, clinicians' recommendations for return to work were categorized into the binary response variable of return to work (yes/no). Subjects who were judged as *"able to return to unrestricted work"* were rated as *"YES"* (able to return to work), while respondents who were judged as *"able to return to restricted work"*, *"refer to the Regional Evaluation Centre"*, or *"other"* were rated as *"NO"* (unable to return to work). Using these categorizations, 32 subjects (34%) were judged as able to return to work, while 61 subjects (66%) were not. Program completer also were discussed in Chapter Four--32 subjects (34%) completed the program and 61 subjects (66%) did not.

Statistical Analysis

Multiple regression analysis or logistic regression analysis were used as an exploratory strategy to investigate possible relationships among the explanatory variables and the dependent variables. Multiple regression analysis using backward elimination, or logistic regression analysis using backward elimination were used when the dependent variables were continuous or binary, respectively. Since the forward selection approach can lead to underfitting the data, the backward elimination strategy was used (Kleinbaum, Kupper, & Muller, 1988). When using the backward elimination procedure, it is possible to overfit the data (i.e., to choose a final model of order slightly higher than required) (Kleinbaum, Kupper, & Muller, 1988). While some statistical power may be lost by slightly overfitting the data, this loss is usually negligible (Kleinbaum, Kupper, & Muller, 1988).

In order to determine the independent predictors of the FACS, the RADL, the Roland SIP, and clinicians' overall ratings of clients' functional ability, separate multiple regression analysis using backward elimination was performed for each model. Separate logistic regression analysis using backward elimination was performed to determine the independent predictors of clinicians' judgements of return to work and completion of the CCP. For the logistic regression models, odds ratios and their 95% confidence intervals were calculated. Alpha was set at .1 for elimination of the predictor variables for the backward elimination procedure. The coding for the predictive models is outlined in Appendix X.

A concern in using regression analysis is the sample size and the number of independent variables explored. Norman and Streiner (1994) suggest that the sample size should be five (or 10) times the number of independent variables.

To check for outlying observations in the final multiple regression models, Cook's Distances (D) were performed for each final model. Cook's D measures the influence of each observation on the coefficient estimates (Systat, 1990). Models with observations that had a large Cook's D value (i.e., greater than 2) were recomputed with that observation taken out (Systat, 1990). For the logistic regression analysis, Pearson residuals were used to identify observations that were not well explained by the model (SAS, 1988). Models with high

Pearson residuals (i.e., greater than 3 and less than -3) were recomputed with that observation eliminated.

Results

Factors that influenced baseline FACS, baseline RADL, baseline Roland SIP, and clinicians' overall ratings of baseline functional ability will be presented first. This will be followed by the factors that were associated with improvement in these instruments. The explanatory variables that were related to clinicians' judgements of able to return to work, as well as completion of the program will conclude the chapter.

Factors Associated With Baseline Scores

Factors that influenced baseline FACS, baseline RADL, baseline Roland SIP, and clinicians' baseline ratings of overall functional ability were explored. For each model, the following 22 baseline predictor variables were entered: age, gender, education, marital status, time since injury, previous attender, medication use, other health problems, previous back injury, previous surgery, previous exercise participation, current working status, job satisfaction, clients' return to work expectations, clients' confidence to improve, clients' confidence that program will be beneficial, clients' baseline functional ability ratings, clinicians' baseline ratings that client will improve, clinicians' ratings of clients' motivation, clinicians' return to work expectations, baseline FACS, baseline RADL, and baseline Roland SIP. The procedures used to determine the independent variables that were significantly associated with the dependent variables--baseline FACS, baseline RADL, baseline Roland SIP, and baseline functional ability--are discussed below.

Baseline FACS. Multiple regression analysis using backward elimination was performed to identify the independent variables that would provide the best predictor of baseline FACS. Independent variables (covariates) for the final model that predicted baseline

FACS scores are shown in Table 6.1.

Table 6.1 Independent Variables For Prediction of Baseline FACS Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	-30.697	34.593	.38	
Age	-.628	.293	<.05	.05
Gender	-13.68	5.954	<.05	.06
Marital Status	-17.316	7.294	<.05	.06
Previous Attender	19.705	5.836	<.01	.12
Working Status	24.017	10.393	<.05	.06
Job Satisfaction	.182	.103	<.1	.03
Clients' RTW Expectations	5.965	1.844	<.01	.11
Clients' Confidence to Improve	.302	.098	<.01	.10
Clinicians' Baseline Functional Ability Ratings	.320	.153	<.05	.05
Baseline Roland SIP	-1.132	.637	<.1	.03

Adjusted R^2=.46 R^2=.57 p<.0001 RTW=return to work

Baseline RADL. Multiple regression analysis using backward elimination was performed to identify the independent variable that would give the best prediction for baseline RADL. Independent variables for the final model are shown in Table 6.2.

Table 6.2 Independent Variables For Prediction of Baseline RADL Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	31.733	20.359	.13	
Time Since Injury	.386	.194	<.1	.05
Previous Back Surgery	19.722	9.911	<.1	.05
Baseline Roland SIP	-2.159	.474	<.001	.27

Adjusted R^2 R^2=.36 p<.0001

Baseline Roland SIP. Multiple regression analysis using backward elimination was performed to identify the independent variables that would give the best prediction for baseline Roland SIP. Covariates for the final model are shown in Table 6.3.

Table 6.3 Independent Variables For Prediction of Baseline Roland SIP Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	.214	.275	.44	
Age	-.005	.002	<.05	.06
Previous Back Surgery	.166	.082	<.05	.05
Working Status	.163	.079	<.05	.05
Clinicians' RTW Expectations	.042	.022	<.1	.04
Baseline FACS	-.002	.001	<.1	.03
Baseline RADL	-.004	.001	<.001	.15

Adjusted R^2=.43 R^2=.50 p<.001 RTW=return to work

Clinicians' Ratings of Baseline Functional Ability. Multiple regression analysis using backward elimination was performed to determine the independent variables that would give the best prediction for clinicians' overall ratings of clients' baseline functional ability.

Covariates for the final model are shown in Table 6.4.

Table 6.4 Independent Variables For Prediction of Baseline Functional Ability Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	77.498	16.057	.0001	
Job Satisfaction	-.188	.092	<.05	.06
Clients' Confidence to Improve	-.179	.077	<.05	.07
Clinicians' RTW Expectations	-4.209	2.372	<.1	.04
Baseline FACS	.206	.099	<.05	.06
Baseline RADL	.266	.136	<.1	.05

Adjusted R^2=.30 R^2=.37 p<.01 RTW=return to work

For each final model presented above in the *Factors Associated With Baseline Scores* section, Cook's D values were generally low indicating that highly influential observations were not present.

Factors Associated With Improvement In the Scores

Factors that influenced improvement in the FACS, the RADL, the Roland SIP, as well as clinicians' overall ratings of functional ability were explored. The 22 baseline explanatory variables (described above in the *Factors Associated With Baseline Scores*) were entered. The procedures used to determine the explanatory variables that were significantly associated with improvement in the instruments are discussed below.

Improvement in FACS. Multiple regression analysis using backward elimination was performed to identify the independent variables that would indicate the best prediction of improvement in the FACS. The final model is illustrated in Table 6.5.

Table 6.5 Independent Variables For Prediction of Improvement In FACS Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	-56.233	18.745	.004	
Marital Status	-15.838	7.985	<.1	.06
Time Since Injury	-.469	.249	<.1	.05
Previous Attender	17.839	6.606	<.01	.10
Clients' RTW Expectations	9.069	2.178	<.001	.24

Adjusted R^2=.27 R^2=.33 p<.001 RTW=return to work

Improvement in RADL. Multiple regression analysis using backward elimination was performed to determine the independent variables that would provide the best prediction for improvement in the RADL. The final model is shown in Table 6.6.

Table 6.6 Independent Variable For Prediction of Improvement In RADL Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	1.185	6.382	.85	
Clients' Confidence to Improve	.195	.085	<.05	.10

Adjusted R^2=.08 R^2=.10 p<.05

Improvement in Roland SIP. Multiple regression analysis using backward elimination was calculated to determine the independent variables that would provide the best predictors of improvement in Roland SIP. The final model is outlined in Table 6.7.

Table 6.7 Independent Variables For Prediction of Improvement In Roland SIP Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	-.349	.073	.0001	
Clients' RTW Expectations	.048	.016	<.01	.15

Adjusted R^2=.13 R^2=.15 p<.01 RTW=return to work

Improvement in Clinicians' Ratings of Functional Ability. Multiple regression analysis using backward elimination was calculated to determine the independent variables that would provide the best predictors of improvement in clinicians' overall ratings of functional ability. The final model is outlined in Table 6.8.

Table 6.8 Independent Variables For Prediction of Improvement In Functional Ability Scores

Covariates	*B*	Standard Error	*p* Value	Partial R^2
Constant	-13.852	13.682	.32	
Previous Attender	-9.529	4.661	<.05	.05
Previous Back Injury	8.886	4.179	<.05	.06
Previous Exercise Participation	12.040	4.269	<.01	.10
Clients' Confidence to Improve	.130	.063	<.05	.06
Clinicians' Ratings of Clients' Confidence to Improve	.298	.134	<.05	.06
Baseline RADL	-.290	.104	<.01	.10

Adjusted R^2=.28 R^2=.35 p<.001

For each final model discussed above in the *Factors Associated With Improvement In the Scores* section, Cook's D values were generally low signifying that there were no highly influential observations.

Factors Associated With Clinicians' Ratings of Readiness To Return To Work

To identify the predictor variables that were associated with clinicians' ratings of readiness to return to work, the following 24 independent variables were entered: age, gender, education, marital status, time since injury, previous attender, previous back injury, previous exercise participation, current working status, job satisfaction, clients' return to work expectations, clients' baseline confidence to improve, clients' confidence program will be beneficial, clinicians' baseline confidence that client will improve, clinician' baseline ratings of clients' motivation, clinicians' return to work expectations, medication use at follow-up, clients' follow-up ratings of confidence to return to work, clinicians' ratings of clients' extent of participation, completion of program, follow-up functional ability scores, follow-up FACS scores, follow-up RADL scores, and follow-up Roland SIP scores. Logistic regression analysis using backward elimination was performed to determine the explanatory variables that would yield the best predictors of return to work.

Pearson residuals for the final model were low (-3 to +3) except for subject #7. The data set was checked for possible errors, and since none were found, the model was recomputed with subject #7 eliminated. Pearson residuals for this model were low except for subject #86. The model was then recomputed with subjects #7 and #86 removed. For this model, the Pearson residual for subject #19 was high. Further outliers were not removed from the model, because discarding outliers is a substantive decision (DiIorio, 1991), and may continue to occur each time the model was recomputed with the outlier eliminated.

The final model, with odds ratios and their 95% confidence intervals, is displayed in Table 6.9. The odds ratio (OR) of a prediction of able to return to work for program completers was 4.47 ($1/e^{-1.497}$) times the odds for non-completers, after controlling for follow-up functional ability scores. The OR of a prediction of able to return to work for clinicians' follow-up ratings of functional ability was 2.75 ($e^{10x.101}$) times the odds of a participant who scored 10 points less (e.g., 90 versus 80), after controlling for program completion.

Table 6.9 Independent Variables For Prediction of Clinicians' Recommendations of Able to Return to Work

Covariates	*B*	Standard Error	*p* Value	Odds Ratio	95% CI For Odds Ratios
Constant	-5.926	1.988	.004		
Program Completion	-1.497	.587	<.01	4.47	1.41, 14.12
Follow-up Functional Ability Scores	.101	.025	<.001	2.75	1.68, 4.48

CI=confidence interval

Factors Associated With Completion of the Program

All subjects in the study (those who had completed the program at three weeks, as well as those who had not) were used in the regression analysis. To identify the independent variables that were associated with completion of the program, logistic regression analysis using backward elimination was performed. The 24 independent variables described above in the *Factors Associated With Return To Work* section were entered.

Pearson residuals for the final model were low except for subjects #3, #77, and #102, indicating that these subjects may be outliers. The model was recomputed with these subjects omitted. For the recomputed model, Pearson residuals were low except for subject #59. The model was then recomputed with subjects #3, #77, #102, and #59 eliminated. Pearson residuals for this model were low indicating that there were no highly influential outliers.

The final model is shown in Table 6.10. The OR (odds ratios) and their 95% confidence intervals (CI) are included in the table. For the ORs discussed below, the other covariates in the model were controlled for. For the continuous variables in the model, the ORs were calculated for a difference of 10 points.

The OR of a prediction of program completion for previous attenders was 3.61 ($1/e^{-1.284}$) times the odds for new attenders, while the OR of a prediction of program completion for subjects who were recommended as able to return to work was 10.68 ($1/e^{-2.368}$) times the odds for those who were recommended as unable to return to work. The OR of a prediction

of program completion for the other independent variables in Table 6.10 were as follows: confidence to return to work was 1.62 ($e^{10x.048}$), extent of participation was 1.65 ($e^{10x.050}$), follow-up functional ability scores was .47 ($e^{10x-.075}$), and follow-up RADL scores was .63 ($e^{10x-.046}$) times the odds of a respondent who scored 10 points less. The ORs for follow-up functional ability and follow-up RADL scores were less than 1, indicating an inverse relationship between follow-up functional ability and program completion, and follow-up RADL scores and program completion.

Table 6.10 Independent Variables For Prediction of Completing the Program

Covariates	*B*	Standard Error	*p* Value	Odds Ratio	95% CI For Odds Ratio
Constant	6.811	3.789	.072		
Previous Attender	-1.284	.720	<.1	3.16	.88,14.80
Clinicians' RTW Recommendations	-2.368	.786	<.01	10.68	2.29,49.83
*Confidence to RTW	0.048	.024	<.05	1.62	1.01,2.59
*Extent of Participation	.050	.025	<.05	1.65	1.01,2.69
*Follow-Up Functional Ability Scores	-0.075	.035	<.05	.47	.24,.94
*Follow-Up RADL	-0.046	0.027	<.1	.63	.37,1.07

RTW=return to work CI=confidence interval
*Odds ratios were calculated for a difference of 10 points

Discussion

Overall, the results of the regression analysis are supportive of self-efficacy theory, and the dynamic relationship between efficacy expectations, physical functioning, and resumption of activities. For instance, higher ratings of clients' physical functioning were

associated with higher baseline FACS scores. This finding is consistent with Bandura's (1986) conjecture that there is an association between efficacy expectations and mastery. Clients who are functioning better have greater confidence to perform their daily activities and visa versa. These clients also would have lower disability. Being a new attender was associated with higher baseline self-efficacy scores. Recall that in this study, previous attenders were more likely to have had a prior back injury, as well as more health problems. Therefore, it seems reasonable that new attenders' back condition may not have been as severe, and these clients were better able to perform the physical activities in the program. A longer length of time for clients' return to work expectation was related to higher baseline self-efficacy scores. As discussed previously in Chapter Four, return to work expectation is an example of an outcome expectation. Other studies have demonstrated that poor return to work expectations were related to poorer vocational outcomes (Sandstrom & Esbjorn, 1986), as well as lower level of trunk strength and pain levels during an initial functional capacity evaluation (Papciak & Feuerstein, 1991). Not working while attending the program was associated with higher baseline efficacy expectations. Recall that in this study, there was a significant difference in baseline FACS scores between clients who were working while attending the program versus those who were not working. Being younger, male, and married also were associated with baseline FACS scores.

Factors that predicted higher baseline RADL scores were longer time since injury, no previous back surgery, and lower disability scores. Because of the spontaneous recovery of back pain, clients entering the clinic who have been injured for a longer length of time (but are still within the acute and subacute phases of recovery) will most likely have higher functioning than those who have been injured more recently. It also seems reasonable that clients who have not had previous back surgery, will have a higher functional level, and will be able to resume more activities.

Factors that predicted lower Roland SIP scores were clinicians' ratings of a longer length of time to return to work (return to work expectations), higher baseline self-efficacy scores, and higher resumption of activities scores. It seems probable that participants who

have lower disability scores will have higher confidence to perform activities, and will have resumed their activities to a greater extent. Being younger also was a predictor of lower disability. Studies have shown that older individuals are at greater risk for work disability and have an increased length of stay in rehabilitation programs (Crook, 1994; McIntosh, 1993).

Factors that were associated with higher baseline functional ability were lower job satisfaction, lower confidence to improve to preinjury level, a shorter time for clinicians' return to work expectation, higher baseline FACS scores, and higher baseline RADL scores. These findings, with the exception of lower job satisfaction and lower confidence to improve, seem to make sense. For instance, individuals with higher functional ability would have greater confidence to perform physical activities, as well as increased resumption of ADL. Since the literature has shown that job dissatisfaction may contribute to back pain (Bongers, 1993), the variable--low job satisfaction--may be difficult to explain. However, it could be that clients who had higher physical functioning levels were, in fact, dissatisfied with their jobs.

A longer length of time for clients' return to work expectations was a predictor of improvement in self-efficacy scores, as well as improvement in disability. These findings provide further evidence for the usefulness of return to work expectations in rehabilitation programs. Being a new attender was associated with improvement in self-efficacy. It may be that new attenders may not have had a previous back injury and were functioning better. The factor--higher ratings of confidence to improve--was associated with improvement in resumption of activities, which is consistent with evidence for the association between self-efficacy and resumption of activities. High ratings of clients' confidence to improve and clinicians' high ratings of clients' confidence to improve were predictive of improvement in functional ability scores. The finding that lower baseline resumption of activities was predictive of improvement in functional ability was surprising. However, a possible explanation may be that since only 32 subjects completed the program, the subjects had not yet resumed their daily activities.

The strong relationship (odds ratio of 10.68) between clinicians' ratings regarding

clients' readiness to return to work and completion of the program (in three weeks) could be due to the fact that clinicians consider clients who have completed the program as ready to return to work. While this potential "circularity" may have existed, not all subjects rated as ready to return to work had completed the program or visa versa. For instance, of the 32 subjects who were judged by clinicians as able to return to work, only 16 subjects had completed the program. Similarly, of the 32 early program completers, only 16 subjects were rated as able to return to work, while 16 subjects were rated as unable to return to work. Completing the program and having higher follow-up functional ability scores were the factors that predicted clinicians' recommendations of being able to return to work. These findings support the notion that clients who completed the program had higher physical functioning and were able to return to work.

Factors that were predictive of completion of the program were: being a previous attender, clinicians' recommendations of being able to return to work, higher follow-up confidence to return to work, higher extent of participation, lower functional ability scores, and lower resumption of activities scores. Although lower functional ability scores and lower resumption of daily activities scores were predictive of completion of the program, these findings may have occurred because at follow-up only 32 subjects completed the program. It also may be that clients were not functioning to their maximum when they completed the program, and were not able to resume their usual activities.

Norman and Streiner (1994) suggest that for regression analysis the sample size should be five (or 10) times the number of independent variables. Since this ratio was not met (there were 94 subjects and 22 independent variables in the multiple regression analyses and 24 independent variables in the logistic regression analyses), the results of the analyses should be interpreted with caution.

Self-efficacy beliefs have the potential to influence physical behaviours such as resumption of ADL, and physical functioning. In summary, the findings of the regression analysis support self-efficacy theory, and the dynamic relationship between clients' efficacy expectations, resumption of daily activities, as well as functional ability. These findings

emphasize the use of clients' efficacy expectations, return to work expectations, and resumption of activities in the rehabilitation of clients with LBP.

CHAPTER 7

DISCUSSION AND RECOMMENDATIONS

The purpose of this final chapter is to discuss the contributions and implications of this research with attention to theoretical, methodological, and practical issues. The chapter begins with a rationale for developing the new scales, addresses the use of the FACS and the RADL as health status measures, continues with the study limitations, and concludes with implications for clinical practice and future research.

Rationale For Developing the New Scales

The ability to evaluate the effectiveness of rehabilitation programs for injured workers has been hampered by a lack of reliable, valid, and clinically meaningful outcome measures. Since return to work seems to be the most convincing evidence that the injured worker has made a significant recovery with meaningful restoration of function, the use of return to work seems to be the traditional outcome measure for these clients (Mayer et al., 1987; Mitchell & Carmen, 1994; Teasell & Harth, 1996).

Unfortunately, return to work is problematic as it may be influenced by several factors including job demands (Ekberg, 1995; Riihimaki, 1991), job satisfaction and social support (Bigos et al., 1991; Bongers et al., 1993), job modifications (Ekberg, 1995), previous back injury (Linton et al., 1993; Tarasuk & Eakin, 1994), age and gender (McIntosh, 1993), the spontaneous recovery of back pain, worker motivation (i.e., fear of losing compensation payments and fear of losing one's job), as well as a host of other psychosocial factors (e.g., coping skills, pain tolerance, previous exercise participation, attitudes towards exercises, and past experiences with rehabilitation). Because these clients may participate in these programs to receive their compensation payments, a major challenge facing clinicians is the fact that these clients may be attending the CCPs on a non-voluntary basis.

While the CCPs assess clients' performance in the area of physical conditioning, there seems to be little consistency in the measures used, and the recording of such information.

For instance, some clinics use knowledge questionnaires to ascertain participants' level of understanding of their back pain, while others have incorporated client satisfaction questionnaires into the program. Most programs encourage client involvement in goal setting, however, the process often tends to be informal and unstandardized. Given the WCB accreditation guidelines for approval of the CCPs, and the current trend to use reliable, valid, and clinically meaningful outcome measures (Cole, Finch, Gowland, & Mayo, 1994; Kane, 1994), the measurement of client outcomes has become paramount.

Some CCPs administer disability measures to their clients to ascertain clients' perception of the impact of their injury on their functioning. Unfortunately, these measures may be limited as they do not address self-efficacy directly, and may encompass various components of the ICIDH (1980).

In other areas of rehabilitation (Dolce et al., 1986; Kaplan et al., 1984; Kores et al., 1990; Lorig et al., 1989), self-efficacy has been shown to be an important factor in influencing treatment outcome. To date, Nicholas' (1989) PSEQ is the only self-efficacy measure that has been specifically tailored for individuals with LBP. However, since the PSEQ was designed for chronic back pain clients, it was not appropriate for clients with LBP attending the CCPs. The primary goal of the CCPs is to prevent the development of chronic pain and disability by returning the injured worker to his or her pre-accident state of physical functioning. Recovery is viewed as the individual's ability to resume occupational roles, as well as other customary daily activities. In view of these considerations, there was a need to develop theoretically-based, psychometrically sound, and clinically sensible instruments that measured clients' self-efficacy to perform physical activities, as well as their perceptions to resume daily activities. Both the FACS and the RADL were developed as outcome measures for examining the recovery of injured workers with LBP undergoing rehabilitation.

Use Of the FACS and the RADL As Health Status Measures

The present study showed that the FACS and the RADL demonstrated good psychometric properties for assessing clients with LBP attending the CCPs. These scales can

be used to provide an understanding of clients' confidence in their ability to perform activities, as well as their resumption of activities, and how their back dysfunction affects their daily activities. These measures are useful at baseline, discharge, and for on going assessments to monitor clients' progress. This information can be easily communicated by clinicians to clients.

Millard and Jones (1991) suggest the following four guidelines for choosing an appropriate measure: sensibility and accuracy to portray levels of the domain for which it was developed; reliability; validity; and practicality of administration. Kirshner and Guyatt (1985) suggest a further guideline--the purpose for which a measure is intended. These guidelines are discussed further below.

Sensibility and Accuracy

Both the FACS and the RADL portray levels of the domain for which they were developed. The FACS was designed using self-efficacy theory (Bandura, 1986). Efficacy expectations are predictive of behaviour and as such represent cognitions that may play a role in facilitating treatment outcomes (Bandura, 1977; Dolce, 1987; Dolce et al., 1986). Individuals' beliefs regarding perceived capabilities in particular domains are theorized to influence choice of activity, effort expended, and persistence in the face of obstacles (Duncan & McAuley, 1993). The FACS also was developed using the DOT (Fishbain et al., 1994). The DOT comprises job demands such as sitting, lifting, walking, carrying, etc. These movements and postures are related to basic physical activities, as well as sports, social, and recreational activities. For the items in the FACS, we focused on the disability component of the ICIDH (WHO, 1980) as it is the linkage (mainly because CCPs focus on improved functioning) between impairment and handicap components, and was the most likely to be influenced by client efficacy expectations.

The RADL was based on the handicap component (consequences of disability) of the ICIDH (WHO, 1980), and was intended to measure clients' perception of the degree to which they had "recovered" or resumed their customary activities such as occupational, social,

sports, and recreational activities, as well as ADL. The RADL can be used by clinicians as a baseline measure of "spontaneous" recovery prior to intervention, as a periodic assessment of progress, as well as a discharge measure for individuals who have sustained work-related injuries.

Too often, measures are developed solely on the basis of clinicians' views, and activities that are most important to clients are left out. Feinstein et al., (1986) suggest that if measures are intended to demonstrate clients' improvement, clients' concept of what should be improved may often be more cogent than the particular beliefs held by clinicians. In this study, participants' views of their back pain and injury, and their opinions about the FACS and the RADL, as well as the other study instruments were sought. The preliminary version of the FACS was developed with input from clinician and client focus groups. Both the FACS and the RADL were pilot tested with clients with LBP attending a CCP for clarity of instructions and rating format, as well as usefulness of content.

Reliability

Both the FACS and the RADL demonstrated high reliability. The reliability results showed that the scales seemed to be highly stable (ANOVA ICCs were .94 for the current FACS, and .83 for the RADL) when administered twice over a short time period to 20 LBP subjects who did not receive any intervention during this time. The internal consistency results, using Cronbach's alpha, showed that the scales were highly consistent (FACS: .96; RADL:.89). These findings may suggest that the items in each scale were homogeneous, and each scale was essentially measuring the same constructs.

Validity

For the validity phase of the study, a separate sample of 94 subjects with LBP who attended one of seven CCPs in Hamilton, Ontario and vicinity were recruited. Subjects completed the five questionnaires (the FACS, the RADL, the Roland SIP (Roland & Morris, 1983), the MCS (Fischer & Fick, 1993), and the PSES (Ryckman et al., 1982)) at entry and

three weeks. Factor analysis for the FACS yielded two factors--confidence to perform specific and general activities, while the RADL yielded three factors--personal, strenuous, and high order activities. These results support the construct validity of the scales. Correlations at follow-up between the FACS, as well as the RADL and the overall Roland SIP were high (r=-.68, p<.0001, and r=-.82, p<.0001, respectively). These findings support the convergent validity of both scales. The correlation between the follow-up PSES and the FACS was low and significant (r=.26, p<.01), while the correlation between the PSES and the RADL was low and non-significant (r=.21). As expected, correlations between the FACS, as well as the RADL and the MCS were negative, low, and non-significant (r=-.14 and r=-.13 for the FACS and the RADL, respectively). These findings support the discriminant validity of both measures. Correlations between follow-up clinicians' ratings of clients' functional ability and the FACS, as well as the RADL were moderate and positive (r=.48, p<.0001 and r=.45, p<.0001, respectively). The follow-up FACS and the RADL were highly correlated with each other (r=.76, p<.0001). These findings provide support for the concurrent validity of both scales. Baseline FACS and RADL scores were able to predict clinicians' recommendations of return to work, providing evidence for the predictive validity of both scales.

Practicality of Administration

Instruments that are used in the clinical setting for LBP should be brief, easy to explain and interpret, suitable for repeated administration at follow-up visits, and easy to score. Both the FACS and the RADL adhere to these requirements as they are relatively short (15 items for the FACS and 12 items for the RADL), and only take approximately five to 10 minutes each to complete. Both scales are suitable as self-administered instruments, the instructions are understandable, the items and the rating format are easy to read, the content is meaningful to clients and clinicians, and the instruments are easy to score.

Purpose of the Measure

Kirshner & Guyatt (1985) suggest that health status measures are useful for three primary purposes--to discriminate between individuals, to predict prognosis or the results of a test, and to evaluate change over time. Since there were significant differences between the FACS and the RADL scores for subjects who, at baseline, were working while attending the program versus those who were not working, and at follow-up, for subjects who were recommended by clinicians as able to return to work versus unable, both scales seemed to be useful as discriminative indexes. Both the FACS and the RADL were able to predict clinicians' recommendations of return to work, attesting to their predictive qualities. Neither the FACS nor the RADL baseline and follow-up scores were strong in their ability to predict return to work. However, it should be kept in mind that return to work recommendations were based on clinicians' ratings, while the FACS and the RADL scores represented clients' self-ratings. As noted earlier in this thesis, both the present study and others (Boyce et al., 1995; Crossman et al., 1995) have found poor correspondence between clients' and clinicians' ratings. Both scales demonstrated their ability to be used as evaluative indexes.

Comparison of the FACS and the RADL With the Roland Sickness Impact Profile (SIP)

While the Roland SIP is considered to be a disability measure, in our opinion, it contains items that cut across the three components of the ICIDH (WHO, 1980). In contrast, the items in the FACS more distinctly tap the disability dimension, while the RADL taps the consequences of disability, or the handicap dimension. The Roland SIP was better than the FACS and the RADL in its ability to demonstrate responsiveness to change from baseline over a three week period. However, because of the dichotomous (yes/no) response format for each item in the Roland SIP, the scale may be less useful to chart incremental progress. For example, the item--*I stay at home most of the time because of my back*--denotes that clients either stay at home or they do not. Consequently, the Roland SIP seems to be useful only as a baseline and a discharge measure. In contrast, because of the 0% to 100% response format in both the FACS and the RADL, these measures can be used at baseline, discharge, and to

evaluate ongoing progress. The factor analysis for the Roland SIP, yielded four factors--ability to perform a mixture of general activities, inactivity, avoidance or curtailment of activities, and limited activity. The items that loaded onto the factors consisted of a mixture of the three dimensions of the ICIDH (WHO, 1980), confirming our opinion that the items cut across the ICIDH components. The results of the item-total correlations for the Roland SIP showed that four of the 24 items were below .20, and should be discarded. In contrast, the item-total correlations for both the FACS and the RADL were much higher than .20. In view of these weaknesses, both the FACS and the RADL seem to be superior to the Roland SIP as recovery measures for assessing and managing clients with LBP.

Early Claimant Cohort Study

The Institute for Work & Health (1995) questioned the effectiveness of the CCP for work-related soft tissue injuries. In a prospective longitudinal cohort study--known as the Early Claimant Cohort (ECC) Study--approximately 1800 injured workers were identified in May 1993, and followed for one year through a series of telephone interviews. Community Clinic attenders were compared to non-clinic attenders (traditional treatment) with respect to quality of life, functional status, pain measures, and return to work. The ECC study found that there were no health-related or lost-time advantages for clinic attenders versus non-attenders. For the first 120 days after injury, workers attending clinics were on average more likely to remain longer on benefits than those not attending. Over the course of one year, the duration of absence from work was not statistically different for the two groups. The spread (time of onset of back injury to start of program) showed that 60% of the subjects were referred to the program within two weeks of onset of back pain, while 17% were referred between four to 10 weeks. As a result of the ECC Study, new admission criteria into the CCP were implemented, and as of November 1995, the new policy restricted eligibility to the CCPs to workers who were at least four weeks post-injury. This was in contrast to the original criteria which allowed workers to be admitted as soon as possible. Our study was based on the original eligibility criteria.

The new policy is in keeping with other findings in the literature. For instance, the evidence with regard to acute LBP was reviewed by the Agency For Health Care Policy and Research (AHCPR) Guidelines, in 1994. The AHCPR Guidelines suggest that primary care clinicians (in the absence of red flags), should intervene diagnostically and therapeutically as little as possible in the first few weeks after symptom onset in order to enable the spontaneous recovery process of back pain to occur. A major concern with regard to the new policy of delayed admission into the CCPs may be that these clients may develop pain-related disability and pain behaviours prior to starting the program (Fordyce, 1995).

There are several similarities between the ECC Study and this thesis. First, the spread for both studies was similar. In our study, 61 subjects (59%) were referred to the program within two weeks of the onset of their back pain, while 18 subjects (17%) were referred between four to 10 weeks. In the EEC Study, 60% and 17%, respectively, were referred for these two time periods. Thus, the majority of the participants who enroled in the CCPs did so within three weeks of their injury in both studies. Second, both studies used the Roland SIP to measure disability for back clients. Analysis of the Roland SIP scores for the ECC study showed that the scores were very similar for clinic attenders versus non-attenders of the CCP, and no significant differences in the rate of improvement were found using the repeated measures analysis of variance ($p=0.8$) (Institute for Work & Health, 1995-Technical Appendix). This finding may have occurred because the non-attenders of the CCPs tended to receive regular physiotherapy and/or chiropractic care more than the clinic attenders, attesting to the similarity of the therapies received in both groups (Institute For Work & Health, 1995). Furthermore, since 60% of the clinic attender group in the ECC Study were not interviewed until after they had started the program, there was a possibility that their baseline data had been influenced by their participation in the CCP. Thus, the Roland SIP data was based on biased (post-treatment) baseline results, and not "true" (i.e., time zero) baseline results. In contrast, our study found that there was a significant difference in the Roland SIP scores from entry to follow-up ($t=-7.99$, $df=93$, $p<.0001$). Finally, the timing for both studies was fairly close. While the ECC Study examined all work-related injuries and

started in May 1993 for 12 months, our study (which examined clients with work-related LBP only) started in July 1994 and continued until September, 1995.

Study Limitations

One criticism of the present study design may be the lack of a control group. In order to construct a measure that is responsive to clinically important change, one must validate the measure with an intervention of known efficacy (Kirshner & Guyatt, 1985; Streiner & Norman, 1989). Since the responsiveness to change in both scales may have occurred due to the spontaneous recovery process of back pain, it may have been beneficial to have a control group of subjects who did not receive any intervention in order to determine if the scales were able to detect a clinically important change in the experimental group only, and not the control group. However, it may be unrealistic (and potentially unethical) to have a control group of subjects who did not receive any treatment. For instance, since the start of the CCPs in 1987, considerable changes have occurred in physiotherapy practice. In 1987, the early, active treatment approach was the exception, today it is the norm. For instance, Battie et al., (1994), in a survey of 186 physiotherapists, found that the top four treatment preferences were: education, aerobic exercise, stretching exercise, and strengthening exercise. Thus, it may not be possible to have a "true" control group who does not receive any treatment. The EEC Study used an observational cohort design and utilized a comparison group of non-community clinic attenders as a control group. Because many of the non-clinic attenders were receiving physiotherapy and/or chiropractic treatments, they, in fact, were receiving active treatments. Furthermore, an inherent weakness in the observational cohort design is that one cannot be confident about the comparability of the entering subjects in the two groups.

Another weakness of the present study was that at follow-up only 32 (34%) participants completed the program. This time frame was chosen in an effort to ensure that as many subjects as possible would not be lost to follow-up (i.e., they may have been discharged from the program and returned to work sooner than anticipated). Since 19 "treatment" days refer to the mean length of stay in the program (number of treatment days)

(Institute For Work & Health, 1995), and not 19 days in total (as was interpreted by the investigator of this study), the time frame for submitting the follow-up measures should have been extended to four weeks so that more subjects could have completed the program.

The scale that the clinicians used to rate clients' functional ability was developed for this study as a proxy for various physical assessments used by different clinics. While an attempt was made initially to solicit actual physical scores on endurance, muscle strength, flexibility, etc., from the programs that were participating in the study, so that the various measures that were being used could be standardized, this information was not forthcoming. While minimal pilot testing was carried out (i.e., the investigator asked one or two clinicians at two of the clinics for their feedback on this scale prior to the start of the study), it should be noted that this scale was not subject to psychometric testing.

Other Recently Developed Self-Efficacy Measures For Low Back Pain Clients

The concurrent development of other self-efficacy measures for LBP clients undergoing rehabilitation attests to the importance of measuring this phenomenon in this population. A recent article by Gibson and Strong (1996) argues for the significance of psychosocial factors, in particular self-efficacy, in occupational rehabilitation. Gibson and Strong (1996) describe several recent self-efficacy measures for this population including: the PSEQ (Pain Self-Efficacy Questionnaire) (Nicholas 1989); the Chronic Self-Efficacy Scale (Anderson, Dowds, Pelletz, Edwards, & Peeters-Asdourian, 1995); the Functional Efficacy Scale (Lackner, Carosella, Feuerstein, 1996; Lackner & Carosella, in press); the Self-Efficacy Scale (Estlander, Vanharanta, Moneta, & Kaivanto, 1994); and the Spinal Function Sort (Matheson & Matheson, 1989; Matheson, Matheson, & Grant, 1993).

The PSEQ developed by Nicholas, 1989 has been reviewed earlier in this thesis. Anderson et al.'s (1995) measure--the Chronic Pain Self-Efficacy Scale (CPSS)--is highly similar to Nicholas' PSEQ in that it also focuses on chronic pain management. The applicability of the other newly developed self-efficacy based tools for acute LBP clients and the psychometric evidence concerning each of these measures is presented below and

compared to the FACS.

Functional Efficacy Scale (FES)

Lackner and Carosella developed the Functional Efficacy Scale (FES) in 1993 (unpublished manual), presented it a scientific conference in 1995, but did not formally publish the scale until this year (Lackner & Carosella, in press). Lackner, Carosella, and Feuerstein (1996) argue that performance-specific (versus pain-specific) self-efficacy expectations may better account for physical performance decrements in individuals with chronic LBP. The 33-item FES consists of discrete physical requirements of work (e.g., lifting, carrying, pushing, pulling) based on the United States Department of Labour job demands. On the FES, patients identify "essential" physical requirements of work, whether they believe they could perform the task, and their confidence about their ability to perform these tasks sufficient to job completion. "Essential" physical activities were operationalized as "the most important tasks of your job and the reason the job exists...if these tasks were removed from your job, your job would not exist." Self-efficacy judgements for each activity range from 10 (very uncertain) to 100 (certain).

A preliminary study (Lackner, Carosella, Feuerstein, 1996) examined the predictive power of the FES on 85 clients with chronic LBP (median length of work disability was seven months, range .5 to 39 months). Subjects completed a number of behavioral tests of physical lifting capacities. Findings revealed that the FES scores were significantly related to physical capacity when reinjury and pain expectations were partialed out. However, neither reinjury nor pain expectations correlated with function when FES scores were partialed out.

While this study further supports the importance of examining performance versus pain-related self-efficacy expectations, the utility of the FES awaits further psychometric support (Gibson & Strong, 1996). Similar to the FACS, the FES item content is based on job demands. The rating instructions of the FES are very specific to job performance, whereas in the FACS, confidence in performance of various movements and postures are related to work, household chores, and recreational pursuits.

Self-Efficacy Scale (SES)

The Self-Efficacy Scale (SES) (Estlander et al., 1994) is an 8-item scale: walking, running, carrying weights of 4-5 kg in both hands, standing, bicycling, sitting in an armchair, sitting at a desk, and working in a forward bent position (e.g., vacuum cleaning or repairing the car). Respondents are asked to rate, on a 8-point scale, for how long (less than two minutes, 2-5, 5-10, 10-15, 15-25, 25-35, 35-45, more than 45 minutes) they believe they would be able to endure the activity. Possible scores can range from 8 to 64. Estlander et al., (1994) provided no justification for item selection. The only psychometric evidence presented to date concerns internal consistency (alpha=.85), item-item correlations (from 2. to .7), and item-total correlations (from .6 to 8). In their study, Estlander et al., (1994) found that self-efficacy, as measured by the SES, was related to isokinetic trunk performance more so than anthropometric variables, pain, or disability self-ratings. It is noteworthy that no acutely injured clients (less than six weeks post injury) were included in the study. Gibson and Strong (1996) compared the SES to the Spinal Function Sort as will be presented below.

While the FACS and the SES share some similarity in item content (e.g., walking, standing, sitting, carrying), on the FACS the rating qualification ("for as long as you want or need to") is only provided for three of the 15 items (sit, stand, and walk).

Spinal Function Sort (SFS)

The Spinal Function Sort (SFS), developed by Matheson and Matheson in 1989, was first described in the literature in 1993 (Matheson, Matheson, & Grant, 1993). The rationale behind the development of the SFS was that no previous self-efficacy measure focuses on manual and ADL tasks with particular emphasis on the spine. Similar to the FACS, the SFS was based on the United States Department of Labour's Dictionary of Occupational Titles, particularly strength demands associated with lifting and lowering tasks. Accordingly, a 50-card set of pictorial drawings was developed on which subjects are asked to rate on a 5-point scale from "able" to "restricted" to "unable", with a category for unknown ability if the task is unfamiliar. The total score can range from 0 to 200.

Preliminary psychometric evidence for the SFS, reported by Matheson et al., (1989) included split-half reliability, and test-retest reliability over an average three day period. Subjects with diagnosed soft-tissue work-related back injuries were selected from six occupational rehabilitation clinics (n=180). The subjects ranged in "chronicity" from eight to 3422 days post injury (average: 379 days, standard deviation: 564). In this cross-sectional study, they found that individuals who were more recently injured had higher SFS scores and showed more change over a three day period. Factor analysis, head-to-head comparisons, and responsiveness to change over a longer period of time were not assessed by Matheson and Matheson (1989).

Gibson and Strong (1996) provided further psychometric evidence on the SFS. They reported good internal consistency (alpha=.98), four to 14 day test-retest reliability on a subsample of 14 subjects (ICC=.89), and correlations with other measures such as Nicholas' (1989) PSEQ (r=.78), and Estlander et al.'s (1994) SES (r=.55) in support of the convergent validity of the SFS. It should be noted, however, that there were only 42 subjects in the Gibson and Strong (1996) study and all had chronic back pain (greater than three months duration). In fact, the average duration of back disability was 80 months (range from six to 523 months).

In contrast to the FACS, the 50-item SFS does not assess "sleep", "sitting", "standing" (except while painting), "walking", or "stair climbing" (but does assess ladder climbing). In other words, many general movements and postures assessed by the FACS are not depicted in the highly specific work and chores examples contained in the lengthy SFS. The "pictorial" nature of the SFS may be more useful for low literacy clients, as suggested by Gibson and Strong (1996), however, these clients must still be able to interpret the rating scale--which is more complex than the one used in the FACS.

Summary

Several self-efficacy based measures have emerged concurrent with the development of the FACS. Similar to the FACS, the DOT (Fishbain et al., 1994) has been used to

generate the item content that is relevant to injured workers with LBP. As discussed above, both item content and rating formats vary from scale to scale. Some psychometric evidence exists for each of these measures. However, the entire range of psychometric properties--internal consistency, item-scale relationships, factor analysis, test-retest reliability, responsiveness to change (as assessed longitudinally with a rehabilitation intervention)--have not been reported for the other measures. Unlike the FACS, the other scales for the most part have been tested with chronic versus acute/subacute back pain populations. In addition, none of the other measures were developed with the involvement of rehabilitation clients themselves.

The final judgement of which scale is superior will await further psychometric testing of the other measures--the FES (Lackner & Carosella, in press), the SES (Estlander et al., 1994), and the SFS (Gibson & Strong, 1996; Matheson, Matheson, & Grant, 1993)--with acute and subacute back pain populations. Head-to-head comparisons should be conducted with these three new scales and the newly developed FACS. Given the strong performance of the Roland SIP found in this study, further head-to-head comparisons should also include the Roland SIP. However, it will be difficult to administer all of these scales to a single sample at the same time given that back problems preclude sitting for any length of time. While the newly developed scales were not available at the time the FACS was developed and tested in this thesis, a general self-efficacy scale (the PSES by Ryckman et al., 1982), and a disability measure for back pain (the well known Roland SIP by Roland and Morris, 1983) were included. Clinical sensibility and utility are also important factors in the selection of a measure. Length, ease of administration (rating format), and ease of scoring will influence clinical adoption so long as the reliability and validity of the measure is substantial. Unfortunately, measurement validity is not absolute and requires ongoing empirical examination.

Implications For Clinical Practice

The FACS and the RADL can be used to assist clinicians in clinical decision making.

As with any assessment instrument, the decision regarding choice of the most appropriate measure should be based on the psychometric properties of the measure. Both instruments demonstrated high test-retest reliability, high internal consistency, good validity, and responsiveness to clinically important change.

While the main objective of the CCPs is to return injured workers to their preinjury state of functioning, the CCPs currently tend to focus mainly on impairments (i.e., muscle strength, flexibility, endurance, etc.) to improve clients' physical conditioning. With the use of the FACS and the RADL, clinicians can more readily focus on and assess clients' disabilities and handicaps. By utilizing these scales, clients' perceptions of their ability to perform functional activities and their resumption of daily activities at baseline can be obtained. Subsequent administration of these scales will provide clinicians with information of clients' perceptions of their progress. With the use of the FACS and the RADL, participants with low self-efficacy and low resumption of activities can be targeted for further interventions that develop a sense of mastery.

Both the FACS and the RADL are situation-specific instruments. Bandura (1977; 1986) cautions that efficacy expectations must be examined for the domain in question. Situation-specific instruments have theoretical advantages for the following reasons: they have greater salience for clinicians, they are better able to focus on the domain of particular concern, and they tend to exhibit greater responsiveness to situation-specific interventions (Deyo & Patrick, 1989). Since both scales are situation-specific, they are particularly suitable for all individuals with LBP (i.e., both work-related and non-work related back pain). For instance, the FACS and the RADL could be psychometrically tested with clients with LBP due to a motor vehicle accident, or with chronic back pain clients. Both measures could also be used with individuals who are being rehabilitated for other injuries such as cervical, and upper, as well as lower extremity injuries. For these injuries, the FACS could be modified to included the items in the DOT (Fishbain et al., 1994) that would be more applicable to these areas.

Unfortunately, because only 32 clients (34%) completed the program at three week

follow-up, the generalizability of the results are limited to early program completers. It may also be that clients who complete rehabilitation programs early are not as severely injured as those clients who stay in these programs longer. Furthermore, it may be that a self-selection bias may have occurred. For example, these clients may be more motivated to return to work and may have worked harder to achieve this goal. In addition, because only 32 clients completed the program, the results of the study may not be as strong as they could have been.

Implications For Future Research

Since return to work recommendations in this study were based on clinicians' judgements at three weeks follow-up and not actual return to work information, the return to work data should be interpreted with caution. Further work is needed to examine the predictive validity of the both the FACS and the RADL with regard to return to work. To do this, it would be necessary to have a follow-up phase of approximately six months to one year to identify those subjects who actually returned to work, and then determine how they scored on the FACS and the RADL at entry. This phase was not included in this thesis as this would have added an unreasonable time frame to the project.

Further studies need to be conducted to test the psychometric properties of both the FACS and the RADL with other injuries, such as cervical, and upper and lower extremities, as well as chronic LBP. As discussed above, these measures could be modified to include items that would be relevant to these injuries.

Three recently developed measures--the FES (Functional Self-Efficacy Scale) (Lackner & Carosella, 1993; Lackner & Carosella, in press), the SES (Self-Efficacy Scale) (Estlander et al., 1994), and the SFS (Spinal Function Sort) (Gibson & Strong, 1996, Matheson, Matheson, & Grant, 1993)--are also self-efficacy based instruments, focusing on functional ability and intended for LBP populations. As discussed above, these measures should be compared to the FACS and the Roland SIP in future validation studies. Unfortunately, because individuals with LBP are unable to sit for any length of time, it would be difficult to concurrently administer all of these scales in a single study.

In this study, higher follow-up self-efficacy ratings were associated with clinicians' ratings of functional ability. Unlike other studies, such as Ewart et al. (1983) who assessed self-efficacy ratings and treadmill performance sequentially to demonstrate reciprocality, we did not have a direct measure of physical performance. Nor did we measure self-efficacy before and after bouts of exercise or tests of physical capacity. This should be addressed not only with the FACS, but also with the other newly developed self-efficacy measures with rehabilitation clients. To do so, however, one would need standardized measures of the various actual physical conditioning components used in the CCPs (e.g., circuit training).

Conclusions

LBP continues to represent a major challenge to health care providers and the health care system. Its prevalence, complex etiology, and highly recurrent nature suggest that a simple clinical solution is unlikely. Recognizing the influence of cognitive processes on function in LBP is crucial in the rehabilitation of clients. Although a focus on the restoration of physical function through exercises and education may improve muscle strength, flexibility, and endurance, self-efficacy and resumption of ADL play an important role in the rehabilitation process. Both scales provide clinicians with a new approach to assessing and managing clients with back pain. The FACS and the RADL are brief, easy to explain and interpret, and easy to score. Since both scales have been shown to be responsive to change, they are ideal evaluative measures that can be used for monitoring clients' progress as well as baseline and discharge measures.

An understanding of self-efficacy and resumption of daily activities can provide clinicians with a conceptual framework for the evaluation and management of clients with LBP undergoing rehabilitation. With escalating health care costs, particularly those related to workers' compensation, it is essential that the recovery of these clients be assessed with outcome measures that are theoretically-based, psychometrically sound, and clinically sensible.

APPENDICES

APPENDIX A

Instruments Used In the Focus Group Session With Clinicians

- Pain Self-Efficacy Questionnaire
- Scale draft of Functional Abilities Confidence Scale
- Demographic Questionnaire For Clinician Focus Group

ID Number _____

Please rate how confident you are that you can do the following things at present, despite the pain. To answer circle one of the numbers on the scale under each item, where 0 = "not at all confident" and 6 = "completely confident".

For example:

0 1 2 3 4 5 6

Not at all confident — Completely confident

Remember, this questionnaire is not asking whether or not you have been doing these things, but rather how confident you are that you can do them at present, despite the pain.

---

1) I can enjoy things, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

2) I can do most of the household chores (e.g., tidying-up, washing dishes, etc.) despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

3) I can socialize with my friends or family members as often as I used to do, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

4) I can cope with my pain in most situations.

0 1 2 3 4 5 6

Not at all confident — Completely confident

please go to next page

5) I can do some form of work, despite the pain ('work' includes housework, paid and unpaid work).

0 1 2 3 4 5 6

Not at all confident — Completely confident

6) I can still do many of the things I enjoy doing, such as hobbies or leisure activities, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

7) I can cope with my pain without medication.

0 1 2 3 4 5 6

Not at all confident — Completely confident

8) I can still accomplish most of my goals in life, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

9) I can live a normal lifestyle, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

10) I can gradually become more active, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

ID Number _____

Please rate how confident you are that you can do the following things at present. To answer circle one of the numbers on the scale under each item, where 0% = "No Confidence" and 100% = "Completely Confident". This questionnaire is not asking whether or not you have been doing these things, but rather how confident you are that you can do them at present.

1. How confident are you that you can walk more than 1 block?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

2. How confident are you that you can walk about a half a mile?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

3. How confident are you that you can walk more than 1 mile?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

4. How confident are you that you can walk up and down more than one flight of stairs at a time?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

5. How confident are you that you can lift less than 5 pounds?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

6. How confident are you that you can lift more than 5 pounds?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

7. How confident are you that you can lift over 40 pounds?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

please go to next page

8. How confident are you that you can engage in social events for more than one half hour?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

9. How confident are you that you can engage in social events for more than four hours?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

10. How confident are you that you can perform work tasks (includes housework, paid, and unpaid work) for more than one half hour?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

11. How confident are you that you can perform work tasks (includes housework, paid, and unpaid work) for more than four hours?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

12. How confident are you that you can engage in hobbies, leisure activities, and sports for more than one half hour?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

13. How confident are you that you can engage in hobbies, leisure activities, and sports for more than four hours?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

14. How confident are you that you can engage in sexual activities as before?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

15. How confident are you that you can engage in sitting activities?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

please go to next page

16. How confident are you that you are able to get a good night's sleep?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

17. How confident are you that you are able to prevent reinjury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

18. How confident are you that if you complete the rehabilitation program you will feel better?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

19. How confident are you that if you complete the rehabilitation program you will be better able to perform physical activities?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

20. How confident are you that if you complete the rehabilitation program you will be able to return to work?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

21. How confident are you that if you complete the rehabilitation program you will be able to control pain?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
No Confidence										Completely Confident

Demographic Questionnaire For Clinician Focus Group

IMPORTANT - This information is strictly for the purpose of describing people in general and record keeping.

ID Number_____

Name:

Age (yrs):

Sex: Male Female

What is the highest level of formal education that you have completed?

What is your profession?

What year did you graduate?

How long have you been employed at *Link With Work*?

What type of clients/injuries do you treat?

APPENDIX B

Instruments Used In Focus Group Session With Workers

- Informed Consent Form For Focus Group Session
- Pain Self-Efficacy Questionnaire
- Scale draft of Functional Abilities Confidence Scale

Consent Form For Focus Group Session

Study Title: Qualifying and Quantifying Efficacy Expectations of Injured Workers With Low Back Pain Undergoing Treatment

Description of the Focus Group: This focus group is being conducted by Renee Williams, a physiotherapist and an assistant professor in the School of Occupational Therapy and Physiotherapy, McMaster University, and a Ph.D. student in the Department of Health Studies and Gerontology under the supervision of Dr. Anita Myers from the University of Waterloo. This focus group session is being conducted as part of her doctoral thesis to design an instrument for a larger study.

The purpose of a focus group is to explore a specific topic with a small group of people. The purpose of this group is to explore clients' expectations of rehabilitation programs such as the one you are attending. The focus group session will consist of yourself along with approximately 9 other participants. The discussion will centre around personal experiences. You will be asked questions about your back injury, what you expect to get from attending the back program, and what things you feel are necessary to obtain full recovery. As part of the focus group session, a tape recorder will be used. There are no risks involved in participating in the focus group session.

Your views are important to designing programs that serve the needs of injured workers with back injuries. This information will assist us to learn more about back pain.

The focus group session has been discussed with me and I understand that:

1. I will be part of the focus group session that will last approximately one hour. The session will involve a general discussion about expectations and experiences of back rehabilitation programs.

2. Even though I have agreed to take part in the focus group session, I may choose not to take part in any aspect of the discussion.

3. Participating or not participating in this study will in no way affect the medical care that I receive now or in the future.

4. I understand that the focus group session will be taped using a tape recorder but all information collected will be TOTALLY CONFIDENTIAL. No one individual will be identified. Only the researchers, not the program staff, will have access to all information. If the results are published I will not be identified in any way.

5. If I have any comments or inquiries concerning this focus group, I may contact Dr. Anita Myers (519) 885-1211, extension 3664.

I acknowledge that I have been informed about the purpose of the focus group session and agree to participate.

_____	_____	_____
Name (Print)	Signature	Date

I have explained the nature of the focus group session to the subject and believe that s/he understood it.

_____	_____	_____
Name (Print)	Signature	Date

ID Number _____

Please rate how confident you are that you can do the following things at present, despite the pain. To answer circle one of the numbers on the scale under each item, where 0 = "not at all confident" and 6 = "completely confident".

For example:

0 1 2 3 4 5 6

Not at all confident — Completely confident

Remember, this questionnaire is not asking whether or not you have been doing these things, but rather how confident you are that you can do them at present, despite the pain.

---

1) I can enjoy things, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

2) I can do most of the household chores (e.g., tidying-up, washing dishes, etc.) despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

3) I can socialize with my friends or family members as often as I used to do, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

4) I can cope with my pain in most situations.

0 1 2 3 4 5 6

Not at all confident — Completely confident

please go to next page

5) I can do some form of work, despite the pain ('work' includes housework, paid and unpaid work).

0 1 2 3 4 5 6

Not at all confident — Completely confident

6) I can still do many of the things I enjoy doing, such as hobbies or leisure activities, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

7) I can cope with my pain without medication.

0 1 2 3 4 5 6

Not at all confident — Completely confident

8) I can still accomplish most of my goals in life, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

9) I can live a normal lifestyle, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

10) I can gradually become more active, despite the pain.

0 1 2 3 4 5 6

Not at all confident — Completely confident

ID Number _____

Instructions

I. **We would like to know how confident you are that you can do things such as sitting in a chair or seat for as long as you want or need to (item #1). Using the 0 to 100% rating scale, if you feel you cannot sit for any length of time you might rate this item as 0%. Or if you feel totally confident that you are able to do this activity you might rate this item as 100% If you do not feel totally confident, circle the number on the scale that best describes your level of self-confidence.**

II. **Please rate each item twice, first according to how confident you were that you could do this before your injury, and second according to how confident you are now. Circle the number on the scale for each question.**

1. How confident were you that you could sit in any type of chair or seat for as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident were you that you could stand as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident were you that you could walk as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident were you that you could climb up and down stairs before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

5. How confident were you that you could get up and down from a sofa or chair before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident were you that you could get in and out of a car before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident were you that you could get on and off a bus before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

8. How confident were you that you could get in and out of a bathtub before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident were you that you could lie on your back to sleep before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

How confident are you that you perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident were you that you could lie on your side to sleep before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

How confident are you that you perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident were you that you could reach above your head before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

How confident are you that you perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

12. How confident were you that you could bend over and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident were you that you could kneel down and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident were you that you could carry a small box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident were you that you could carry a large box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

16. How confident were you that you could lift a box from a table before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

17. How confident were you that you could lift a box from the floor before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

18. How confident were you that you could push or pull an object before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

How confident are you that you can perform this activity now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

APPENDIX C-1

Instruments Used In Session One of the Pilot Testing Phase

- Informed Consent Form For Instrument Pilot Testing
- Scale draft of the Functional Abilities Confidence Scale
- Roland Sickness Impact Profile
- Oswestry Low Back Disability Scale
- Anxiety Subscale of the General Well-Being Schedule
- Demographic Questionnaire (including the Resumption of Activities of Daily Living)

Informed Consent For Instrument Pilot Testing

Study Title: The Functional Abilities Confidence Scale For Injured Workers With Low Back Pain

Description of the Study: The study is being conducted by Renee Williams, a physiotherapist and an assistant professor in the School of Occupational Therapy and Physiotherapy. McMaster University, and a Ph.D. student in the Department of Health Studies and Gerontology under the supervision of Dr. Anita Myers from the University of Waterloo. This research is being completed for her doctoral thesis to design an instrument for a larger study.

The purpose of the study is to assist us in developing assessment tools that are meaningful to injured workers with back pain. You will be asked to complete five questionnaires about your general health, your back pain, if you are able to perform certain activities of daily living, how you feel about performing these activities, and a self-evaluation questionnaire. There are no risks involved in completing the questionnaires.

Your views are important to designing programs that meet the needs of injured workers with back pain. This information will assist us to learn more about back pain.

This study has been discussed with me and I understand that:

1. I will complete five questionnaires. These questionnaires ask questions about my general health and back pain, how I feel about performing these activities, and a self-evaluation questionnaire. This will take about 30 to 35 minutes of my time. There are no risks involved in participating in this study.

2. Even though I have agreed to take part in the study, I may choose not to complete my part in the interview.

3. Participating or not participating in this study will in no way affect the medical care that I receive now or in the future.

4. All of my answers will be TOTALLY CONFIDENTIAL, No one individual will be identified. Only the researchers will have access to the information. If the results are published I will not be identified in any way. All results will concern groups of people, not individuals.

5. If I have any comments or inquiries concerning this study, I may contact the Office of Human Research at the University of Waterloo (519) 885-1211, extension 6005. I may also contact Dr. Anita Myers (519) 885-1211, extension 3664.

I acknowledge that I have been informed about the purpose of this study and agree to participate.

NAME (PRINT)	SIGNATURE	DATE

I have explained the nature of the study to the subject and believe that s/he understood it.

NAME (PRINT)	SIGNATURE	DATE

ID Number _____

Instructions

I. **We would like to know how confident you are that you can do things such as sitting in a chair or seat for as long as you want or need to (item #1). Using the 0 to 100% rating scale, if you feel you cannot sit for any length of time you might rate this item as 0%. Or if you feel totally confident that you are able to do this activity you might rate this item as 100%. If you do not feel totally confident, circle the number on the scale that best describes your level of self-confidence. If you do not do an activity, e.g., take a bath, go on a bus, please rate how confident you would be physically if you had to do these things.**

II. **Please rate each item twice, first according to how confident you were that you could do this before your injury, and second according to how confident you are now. Circle the number on the scale for each question.**

Part 1

Please rate each item according to how confident you were that you could do these things before your injury. Circle the number on the scale for each question.

1. How confident were you that you could sit in any type of chair or seat for as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident were you that you could stand as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident were you that you could walk as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident were you that you could climb up and down stairs before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

5. How confident were you that you could get up and down from a sofa or chair before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident were you that you could get in and out of a car before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident were you that you could get on and off a bus before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

8. How confident were you that you could get in and out of a bathtub before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident were you that you could sleep comfortably before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident were you that you could reach above your head before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident were you that you could bend over and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

12. How confident were you that you could kneel down and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident were you that you could carry a small box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident were you that you could carry a large box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident were you that you could lift a box from a table before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

16. How confident were you that you could lift a box from the floor before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

17. How confident were you that you could push or pull an object before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

Part 2

Please rate each item according to how confident you are that you can do these things now. Circle the number on the scale for each question.

1. How confident are you that you can sit in any type of chair or seat for as long as you wanted or needed to now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident are you that you can stand as long as you wanted or needed to now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident are you that you can walk as long as you wanted or needed to now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident are you that you can climb up and down stairs now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

5. How confident are you that you can get up and down from a sofa or chair now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident are you that you can get in and out of a car now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident are you that you can get on and off a bus now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

8. How confident are you that you can get in and out of a bathtub now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident are you that you can sleep comfortably now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely Confident

10. How confident are you that you can reach above your head now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident are you that you can bend over and return to a standing position now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

12. How confident are you that you can kneel down and return to a standing position now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident are you that you can carry a small box now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident are you that you can carry a large box now?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

15. How confident are you that you can lift a box from a table <u>now</u>?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

16. How confident are you that you can lift a box from the floor <u>now</u>?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

17. How confident are you that you can push or pull an object <u>now</u>?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next questionnaire

ID Number _____

Instructions

When your back hurts, you may find it difficult to do some of the things you normally do. This list contains some sentences that people have used to describe themselves when they have back pain. When you read them, you may find that some stand out because they describe you today. As you read the list think of yourself **today**. When you read a sentence that describes you **today**, put a tick against it. If the sentence **does not describe you, then leave the space blank** and go on to the next one. Remember, **only tick (✓) the sentence if you are sure that it describes you today**.

1. I stay at home most of the time because of my back.( )
2. I change position frequently to try and get my back comfortable.( )
3. I walk more slowly than usual because of my back.( )
4. Because of my back, I am not doing any of the jobs that I usually do around the house.( )
5. Because of my back, I use a handrail to get upstairs.( )
6. Because of my back, I lie down to rest often.( )
7. Because of my back, I have to hold on to something to get out of an easy chair.( )
8. Because of my back, I try to get other people to do things for me.( )
9. I get dressed more slowly than usual because of my back.( )
10. I only stand up for short periods of time because of my back.( )
11. Because of my back, I try not to bend or kneel down.( )
12. I find it difficult to get out of a chair because of my back.( )
13. My back is painful almost all of the time.( )
14. I find it difficult to turn over in bed because of my back.( )
15. My appetite is not very good because of my back.( )
16. I have trouble putting my socks (or stockings) on because of my back.( )
17. I only walk short distances because of my back pain.( )
18. I sleep less well because of my back.( )
19. Because of my back pain, I get dressed with help from someone else.( )
20. I sit down for most of the day because of my back.( )
21. I avoid heavy jobs around the house because of my back.( )
22. Because of my back, I am more irritable and bad tempered with people than usual.( )
23. Because of my back, I go upstairs more slowly than usual.( )
24. I stay in bed most of the time because of my back.( )

please go to next questionnaire

ID Number _____

Please read:
This questionnaire has been designed to give information as to how your back pain has affected your ability to manage in everyday life. Please answer every section and mark in each section only the *one box* which applies to you. We realize you may consider that two of the statements in any one section relate to you, but please just *mark the box that most closely describes your problem.*

Section 1 - Pain Intensity
☐ I can tolerate the pain without having to use pain killers.
☐ The pain is bad but I manage without taking pain killers.
☐ Pain killers give complete relief from pain.
☐ Pain killers give moderate relief from pain.
☐ Pain killers give very little relief from pain.
☐ Pain killers have no effect on the pain and I do not use them.

Section 2 - Personal Care (Washing, Dressing, etc)
☐ I can look after myself normally without causing extra pain.
☐ I can look after myself normally but it causes extra pain.
☐ It is painful to look after myself and I am slow and careful.
☐ I need some help but manage most of my personal care.
☐ I need help everyday in most aspects of self-care.
☐ I do not get dressed, wash with difficulty and stay in bed.

Section 3 - Lifting
☐ I can lift heavy weights without extra pain.
☐ I can lift heavy weights but it gives extra pain.
☐ Pain prevents me from lifting heavy weights off the floor, but I manage if they are conveniently positioned, e.g. on a table.
☐ Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned.
☐ I can lift only very light weights.
☐ I cannot lift or carry anything at all.

Section 4 - Walking
☐ Pain does not prevent me walking any distance.
☐ Pain prevents me walking more than 1 mile.
☐ Pain prevents me walking more than 1/2 mile.
☐ Pain prevents me walking more than 1/4 mile.
☐ I can only walk using a stick or crutches.
☐ I am in bed most of the day and have to crawl to the toilet.

please go to next page

Section - Sitting
☐ I can sit in any chair for as long as I like.
☐ I can only sit in my favourite chair for as long as I like.
☐ Pain prevents me from sitting more than 1 hour.
☐ Pain prevents me from sitting more than 1/2 hour.
☐ Pain prevents me from sitting more than 10 minutes.
☐ Pain prevents me from sitting at all.

Section 6 - Standing
☐ I can stand as long as I want without extra pain.
☐ I can stand as long as I want but it give me extra pain.
☐ Pain prevents me from standing for more than 1 hour.
☐ Pain prevents me from standing for more than 30 minutes.
☐ Pain prevents me from standing for more than 10 minutes.
☐ Pain prevents from standing at all.

Section 7 - Sleeping
☐ Pain does not prevent me from sleeping well.
☐ I can sleep well only by using tablets.
☐ Even when I take tablets I have less than six hours sleep.
☐ Even when I take tablets I have less than four hours sleep.
☐ Even when I take tablets I have less than two hours sleep.
☐ Pain prevents me from sleeping at.

Section 8 - Sex Life
☐ My sex life is normal and causes no pain.
☐ My sex life is normal but causes some extra pain.
☐ My sex life is nearly normal but is very painful.
☐ My sex life is severely restricted by pain.
☐ My sex life is nearly absent because of pain.
☐ Pain prevents any sex life at all.

Section 9 - Social Life
☐ My social life is normal and gives me no extra pain.
☐ My social life is normal but increases the degree of pain.
☐ Pain has no significant effect on my social life apart from limiting my energetic interests. e.g. dancing, etc.
☐ Pain has restricted my social life and I do not go out as often.
☐ Pain has restricted my social life to my home.
☐ I have no social life because of pain.

Section 10 - Travelling
☐ I can travel anywhere without extra pain.
☐ I can travel anywhere but it gives me extra pain.
☐ Pain is bad but I manage journeys over two hours.
☐ Pain restricts me to journeys of less than one hour.
☐ Pain restricts me to short journeys under 30 minutes.
☐ Pain prevents me from travelling except to the doctor or hospital.

please go to next questionnaire

ID Number _____

This section contains questions about how you feel and how things have been going with you. For each question, *mark (X) the answer which best applies to you.*

1. Have you been bothered by nervousness or your "nerves"? (DURING THE PAST MONTH)

   1___Extremely so--to the point where I could not work or take care of things
   2___Very much so
   3___Quite a bit
   4___Some--enough to bother me
   5___A little
   6___Not at all

2. Have you been under or felt you were under any strain, stress, or pressure? (DURING THE PAST MONTH)

   1___Yes--almost more than I could bear or stand
   2___Yes--quite a bit of pressure
   3___Yes--some - more than usual
   4___Yes--some - about usual
   5___Yes-a little
   6___Not at all

3. Have you been anxious, worried, or upset? (DURING THE PAST MONTH)

   1___Extremely so--to the point of being sick or almost sick
   2___Very much so
   3___Quite a bit
   4___Some - enough to bother me
   5___A little bit
   6___Not at all

4. How RELAXED or TENSE have you been (DURING THE PAST MONTH)

0	1	2	3	4	5	6	7	8	9	10
Very relaxed										Very tense

please go to next questionnaire

ID Number _____

IMPORTANT - This information is strictly for the purpose of describing people in general and record keeping.

PART A. BACKGROUND INFORMATION

1. How old are you? _____ (Years)

2. **Gender**? Male _____ Female ____

3. What is the **highest level of formal education** that you have completed?

_____

4. Are you **currently married or cohabitating**? Yes ____ No ____

5A. How long ago did your **present** back injury/problem begin? _____ (number of weeks)

5B. Describe **how your injury/problem occurred.**

_____

_____

6. How long ago did you **start** this program? _____ (number of days)

7. Have you attended this **type of program** before? Yes ____ No ____

8A. Have you ever been treated by a **Physiotherapist** before? Yes____ No ____

8B. Have you ever been treated by an **Occupational Therapist** before? Yes____ No____

8C. Have you ever been treated by a **Chiropractor** before? Yes____ No ____

8D. Have you ever been treated by a **Kinesiologist** before? Yes ____ No ____

PART B. HEALTH AND LIFESTYLE

9A. What **medications (pills)** are you currently taking for your back pain?

_____

_____

9B. How **often** do you take these pills?

_____

10. Do you have any other **health problems**? Yes __ No __ (If No, go to question 11A)

please go to next page

10A. If "yes", describe your other **health problems.**

_____

_____

11A. Have you had **any previous back injury(ies)?** Yes ____ No ____ (If No, go to question 12A)

11B. If "yes", how **long ago** was(were) this (these)?

_____

_____

12A. Have you ever had **surgery(ies)** for your back? Yes ____ No ____ (If No, go to question 13A)

12B. If "yes", how **long ago** was (were) this (these)?

_____

_____

13A. Do you smoke **cigarettes**? Yes ____ No ____ (If No, go to question 14A)

13B. If "yes", specify **how many cigarettes** you smoke in a day? ___ (cigarettes per day)

13C. If "yes", specify **how many years** you have been smoking? ___ (Years)

14A. Prior to your injury, did you **exercise or play sports** at least once per week?
Yes ____ No ____ (If No, go to Question 15)

14B. If "yes", list the **types of exercises or sport(s)** you did? How often?

_____ _____
_____ _____
_____ _____

15. Which of the following statements best describes your **involvement in physical activity or exercise <u>prior to your injury</u>**? Please check only one.

I did not exercise and I was not interested in doing so.___
I did not exercise but I was seriously thinking about starting in the near future.___
I exercised some, but not regularly.___
I exercised regularly (3 or more times per week for 20 minutes or more each time). ___

15A. Any comments about your **involvement in physical activity or exercise?**

_____

please go to next page

16. To what extent do you **worry** that the **exercises in this program will worsen your back injury/pain?** Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not Worried										Extremely Worried

17. **Since your injury** to what extent have you **resumed your usual activities** in each of the following areas? As you rate each activity, think of how you are **today**. Please circle the number which best describes your **extent of resumption today**.

a) **Sleeping Patterns**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

b) **Sexual Activity**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

c) **Self-Care** (e.g., washing, dressing, etc.)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

d) **Light Household Chores** (e.g., doing dishes, making beds, preparing meals)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

e) **Heavy Household Chores** (e.g., yardwork, cleaning windows, doing laundry)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

f) **Shopping**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

please go to next page

g) **Socializing With Family and Friends Inside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

h) **Socializing With Family and Friends Outside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

i) **Travelling (In Cars, Buses, etc.) For Less Than 30 Minutes**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

j) **Travelling (In Cars, Buses, etc.) For Longer Than One Hour**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

k) **Engaging In Your Usual Recreational Activities**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

l) **Engaging In Your Usual Paid Employment**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

PART C. VOCATIONAL INFORMATION

18A. Prior to this injury, what **type of work did you do?**

_____

_____

18B. How **long have you been in your present job?** Specify years and months.

_____

19A. Are you **working now** while attending the program? Yes ____ No ____ (If No, please go to question 20)

19B. If "yes", how many **hours per day** are you working? ___ (hours)

19C. If "yes", are you working at the **same job** you did before your injury? Yes ___ No ___

please go to next page

20. Given the **type of work that you do and the relationship with your supervisor and coworkers,** overall how **satisfied** are you with your job? Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Satisfied				Moderately Satisfied						Completely Satisfied

PART D. EXPECTATIONS

21A. How long do you <u>think</u> it will be before you are **physically able to return to work on a full time basis?** Please check only one.

less than 1 week ___
1 to 2 weeks ___
2 to 3 weeks ___
3 to 4 weeks ___
more than 1 month ___
more than 3 months ___
more than 6 months ___

21B. If you do **not** plan to **return to work,** why not?

_____

_____

22. How confident are you that you will be **able to improve to your preinjury level?** Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

23. How confident are you that this **program will be beneficial in helping you to improve** to your preinjury level? Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

APPENDIX C-2

Instruments Used In Session Two of the Pilot Testing Phase

- Scale draft of Functional Abilities Confidence Abilities Scale (*before your back injury* section and *current* injury sections were randomly allocated to subjects)
- Positive and Negative Affect Scale
- Visual Analogue Scale
- Resumption of Activities of Daily Living
- Marlowe-Crowne Scale (Form XI)
- Physical Self-Efficacy Scale

ID Number _____

Instructions

I. **We would like to know how confident you are that you can do things such as sitting in a chair or seat for as long as you want or need to (item #1). Using the 0 to 100% rating scale, if you feel you cannot sit for any length of time you might rate this item as 0%. Or if you feel totally confident that you are able to do this activity you might rate this item as 100%. If you do not feel totally confident, circle the number on the scale that best describes your level of confidence, regardless of the pain and discomfort that you may have. If you do not do an activity, e.g., take a bath, go on a bus, please rate how confident you would be physically if you had to do these things.**

II. **Part 1 asks you to rate each item according to how confident you are that you can do these things today. Part 2 asks you to rate each item according to how confident you were that you could do these things before your injury.**

Part 1

Please rate each item according to how confident you are that you can do these things today. As you read each question, circle the number on the scale that describes you today.

1. How confident are you that you can sit in any type of chair or seat for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident are you that you can stand for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident are you that you can walk as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

4. How confident are you that you can climb up and down stairs?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

5. How confident are you that you can get up and down from a sofa or chair?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident are you that you can get in and out of a car?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident are you that you can get on and off a bus?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

8. How confident are you that you can get in and out of a bathtub?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident are you that you can sleep comfortably?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident are you that you can reach above your head?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

11. How confident are you that you can bend down and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

12. How confident are you that you can kneel down and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident are you that you can carry a small box?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident are you that you can carry a large box?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident are you that you can lift a box from a table?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

16. How confident are you that you can lift a box from the floor?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

17. How confident are you that you can push or pull an object?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

Part 2

Please rate each item according to how confident you were that you could do these things before your injury. Circle the number on the scale for each question.

1. How confident were you that you could sit in any type of chair or seat for as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident were you that you could stand as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident were you that you could walk as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident were you that you could climb up and down stairs before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

5. How confident were you that you could get up and down from a sofa or chair before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident were you that you could get in and out of a car before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

7. How confident were you that you could get on and off a bus before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

8. How confident were you that you could get in and out of a bathtub before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident were you that you could sleep comfortably before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely confident

10. How confident were you that you could reach above your head before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident were you that you could bend down and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

12. How confident were you that you could kneel down and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident were you that you could carry a small box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

14. How confident were you that you could carry a large box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident were you that you could lift a box from a table before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

16. How confident were you that you could lift a box from the floor before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

17. How confident were you that you could push or pull an object before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next questionnaire

ID Number _____

This scale consists of a number of words that describe different **feelings and emotions**. Indicate to what extent you **generally feel this way**. For each word, please circle the number on the scale that applies to you.

1 Not at all	2 A little	3 Moderately	4 Quite a bit	5 Extremely

1.	Interested:	1	2	3	4	5
2.	Distressed:	1	2	3	4	5
3.	Excited:	1	2	3	4	5
4.	Upset:	1	2	3	4	5
5.	Strong:	1	2	3	4	5
6.	Guilty:	1	2	3	4	5
7.	Scared:	1	2	3	4	5
8.	Hostile:	1	2	3	4	5
9.	Enthusiastic:	1	2	3	4	5
10.	Proud:	1	2	3	4	5
11.	Irritable:	1	2	3	4	5
12.	Alert:	1	2	3	4	5
13.	Ashamed:	1	2	3	4	5
14.	Inspired:	1	2	3	4	5
15.	Nervous:	1	2	3	4	5
16.	Determined:	1	2	3	4	5
17.	Attentive:	1	2	3	4	5
18.	Jittery:	1	2	3	4	5
19.	Active:	1	2	3	4	5
20.	Afraid:	1	2	3	4	5

please go to next questionnaire

ID Number _____

Please make a mark along the line that corresponds to the level of **pain** that you are experiencing **now.**

PAIN AS BAD AS IT CAN BE

NO PAIN

please go to next questionnaire

ID Number _____

1. **Since your injury, to what extent have you resumed your usual activities** in each of the following areas? As you rate each activity, think of how you are **today**. Please circle the number which best describes your **extent of resumption.**

a) **Sleeping Patterns**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

b) **Sexual Activity**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

c) **Self-Care** (e.g., washing, dressing, etc.)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

d) **Light Household Chores** (e.g., doing dishes, making beds, preparing meals)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

e) **Heavy Household Chores** (e.g., yardwork, cleaning windows, doing laundry)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

f) **Shopping**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

please go to next page

g) **Socializing With Family and Friends Inside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

h) **Socializing With Family and Friends Outside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

i) **Travelling (In Cars, Buses, etc.) For Less Than 30 Minutes**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

j) **Travelling (In Cars, Buses, etc.) For Longer Than One Hour**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

k) **Engaging In Your Usual Recreational Activities**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

l) **Engaging In Your Usual Paid Employment**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

please go to next questionnaire

ID Number _____

Instructions
Listed below are a number of statements concerning **personal attitudes and traits**. Read each item and decide whether the statement is **TRUE** or **FALSE** as it **pertains to you personally** today. Please circle whether the statement is **TRUE (T)** or **FALSE (F)**.

		TRUE	FALSE
1.	I like to gossip at times.	T	F
2.	There have been occasions when I have taken advantage of someone.	T	F
3.	I'm always willing to admit it when I make a mistake.	T	F
4.	I sometimes try to get even rather than forgive and forget.	T	F
5.	At times I have really insisted on having things my own way.	T	F
6.	I have never been irked when people expressed ideas very different from my own.	T	F
7.	I have never deliberately said something that hurt someone's feelings.	T	F

please go to next questionnaire

ID Number _____

Instructions

Please circle the number on the scale which best describes the extent to which you agree or disagree with each statement as it applies to you **today**.

1 Strongly Agree	2 Moderately Agree	3 Neither Agree Nor Disagree	4 Moderately Disagree	5 Strongly Disagree

1.	I have excellent reflexes.	1	2	3	4	5
2.	I am not agile and graceful.	1	2	3	4	5
3.	I am rarely embarrassed by my voice.	1	2	3	4	5
4.	My physique is rather strong.	1	2	3	4	5
5.	Sometimes I do not hold up well under stress.	1	2	3	4	5
6.	I can't run fast.	1	2	3	4	5
7.	I have physical defects that sometimes bother me.	1	2	3	4	5
8.	I don't feel in control when I take tests of physical dexterity.	1	2	3	4	5
9.	I am never intimidated by the thought of a sexual encounter.	1	2	3	4	5
10.	People think negative things about me because of my posture.	1	2	3	4	5
11.	I am not hesitant about disagreeing with people bigger than me.	1	2	3	4	5
12.	I have poor muscle tone.	1	2	3	4	5
13.	I take little pride in my ability in sports.	1	2	3	4	5
14.	Athletic people usually do not receive more attention than me.	1	2	3	4	5
15.	I am sometimes envious of those better looking than myself.	1	2	3	4	5
16.	Sometimes my laugh embarrasses me.	1	2	3	4	5
17.	I am not concerned with the impression my physique makes on others.	1	2	3	4	5
18.	Sometimes I feel uncomfortable shaking hands because of my hands are clammy.	1	2	3	4	5
19.	My speed has helped me out of some tight spots.	1	2	3	4	5
20.	I find that I am not accident prone.	1	2	3	4	5
21.	I have a strong grip.	1	2	3	4	5
22.	Because of my agility, I have been able to do things which many others could not do.	1	2	3	4	5

please go to next questionnaire

APPENDIX D

Instruments Used In the Reliability Phase

- Informed Consent For Instrument Psychometric Testing
- Functional Abilities Confidence Scale
- Demographic Questionnaire (including the Resumption of Activities of Daily Living)

Consent Form For Instrument Psychometric Testing

Study Title: The Functional Abilities Confident Scale For Injured Workers With Low Back Pain

Description of Study: This study is being conducted by Renee Williams, a physiotherapist and an assistant professor in the School of Occupational Therapy and Physiotherapy, McMaster University, and a Ph.D. student in the Department of Health Studies and Gerontology under the supervision of Dr. Anita Myers from the University of Waterloo. This research is being completed for her doctoral thesis.

The purpose of this study is to assist us in designing assessment tools that are meaningful to injured workers with back pain. You will be asked to complete two questionnaires about your general health, your back pain, if you are able to perform certain activities of daily living, and how you feel about performing these activities. You will be asked to complete these questionnaires at the start of the program and one or two days later. There are no risks involved in completing the questionnaires.

Your views are important to designing programs that meet the needs of injured workers with back pain. This information will assist us to learn more about back pain.

This study has been discussed with me and I understand that:

1. I will complete two questionnaires at admission into the program and 1 to 2 days later. These questionnaires ask questions about my general health and back pain, if I can perform certain activities of daily living, and how I feel about performing these activities. This will take about 15 minutes of my time. There are no risks involved in participating in this study.

2. Even though I have agreed to take part in the study, I may choose not to complete the questionnaires.

3. Participating or not participating in this study will in no way affect the medical care that I receive now or in the future.

4. All of my answers will be TOTALLY CONFIDENTIAL. No one individual will be identified. Only the researchers will have access to the information. If the results are published I will not be identified in any way. All results will concern groups of people, not individuals.

5. If I have any comments or inquiries concerning this study, I may contact the Office of Human Research at the University of Waterloo (519) 885-1211, extension 6005. I may also contact Dr. Anita Myers (519) 885-1211, extension 3664.

I acknowledge that I have been informed about the purpose of this study and agree to participate.

NAME (PRINT)	SIGNATURE	DATE

I have explained the nature of the study to the subject and believe that s/he understood it.

NAME (PRINT)	SIGNATURE	DATE

ID Number _____

Instructions

I. **We would like to know how confident you are that you can do things such as sitting in a chair or seat for as long as you want or need to (item #1). Using the 0 to 100% rating scale, if you feel you cannot sit for any length of time you might rate this item as 0%. Or if you feel totally confident that you are able to do this activity you might rate this item as 100%. Circle the number on the scale that best describes your level of confidence that you could perform the activity, regardless of pain and discomfort that you may have. If you do not do an activity, e.g., go on a bus, please rate how confident you would be physically if you had to do these things.**

II. **Part 1 asks you to rate each item according to how confident you are that you can do these things today. Part 2 asks you to rate each item according to how confident you were that you could do these things before your injury.**

Part 1

Please rate each item according to how confident you are that you can do these things today. As you read each question, circle the number on the scale that describes you today. Circle the number on the scale for each question.

1. How confident are you that you can sit in any type of chair or seat for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident are you that you can stand for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident are you that you can walk as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident are you that you can climb up and down stairs?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

5. How confident are you that you can get up and down from a sofa or chair?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident are you that you can get in and out of a car and/or bus?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident are you that you can sleep comfortably?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

8. How confident are you that you can reach above your head?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident are you that you can bend down and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident are you that you can kneel down and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident are you that you can carry a small box?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

12. How confident are you that you can carry a large box?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident are you that you can lift a box from a table?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident are you that you can lift a box from the floor?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident are you that you can push or pull an object?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

Part 2

Please rate each item according to how confident you were that you could do these things before your injury. Circle the number on the scale for each question.

1. How confident were you that you could sit in any type of chair or seat for as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident were you that you could stand as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

3. How confident were you that you could walk as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident were you that you could climb up and down stairs before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

5. How confident were you that you could get up and down from a sofa or chair before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident were you that you could get in and out of a car and/or bus before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident were you that you could sleep comfortably before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely Confident

8. How confident were you that you could reach above your head before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident were you that you could bend down and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

10. How confident were you that you could kneel down and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident were you that you could carry a small box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

12. How confident were you that you could carry a large box before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident were you that you could lift a box from a table before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident were you that you could lift a box from the floor before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident were you that you could push or pull an object before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next questionnaire

ID Number _____

IMPORTANT - This information is strictly for the purpose of describing people in general and record keeping.

PART A. BACKGROUND INFORMATION

1. How old are you? _____ (Years)

2. **Gender?** Male _____ Female ____

3. What is the **highest level of formal education** that you have completed?

_____

4. Are you **currently married or cohabitating?** Yes ____ No ____

5A. How long ago did your **present** back injury/problem begin? _____ (number of weeks)

5B. Describe **how your injury/problem occurred.**

_____

_____

6. How long ago did you **start** this program? _____ (number of days)

7. Have you attended this **type of program** before? Yes ____ No ____

8A. Have you ever been treated by a **Physiotherapist** before? Yes____ No ____

8B. Have you ever been treated by an **Occupational Therapist** before? Yes____ No____

8C. Have you ever been treated by a **Chiropractor** before? Yes____ No ____

8D. Have you ever been treated by a **Kinesiologist** before? Yes ____ No ____

PART B. HEALTH AND LIFESTYLE

9A. What **medications (pills)** are you currently taking for your back pain?

_____

_____

9B. How **often** do you take these pills?

_____

10. Do you have any other **health problems?** Yes __ No __ (If No, go to question 11A)

please go to next page

10A. If "yes", describe your other **health problems.**

_____

_____

11A. Have you had **any previous back injury(ies)?** Yes ____ No ____ (If No, go to question 12A)

11B. If "yes", how **long ago** was(were) this (these)?

_____

_____

12A. Have you ever had **surgery(ies)** for your back? Yes ____ No ____ (If No, go to question 13A)

12B. If "yes", how **long ago** was (were) this (these)?

_____

_____

13A. Do you smoke **cigarettes?** Yes ____ No ____ (If No, go to question 14A)

13B. If "yes", specify **how many cigarettes** you smoke in a day? ___ (cigarettes per day)

13C. If "yes", specify **how many years** you have been smoking? ___ (Years)

14A. Prior to your injury, did you **exercise or play sports** at least once per week?
Yes ____ No ____ (If No, go to Question 15)

14B. If "yes", list the **types of exercises or sport(s)** you did? How often?

_____

_____

15. Which of the following statements best describes your **involvement in physical activity or exercise prior to your injury**? Please check only one.

I did not exercise and I was not interested in doing so.___
I did not exercise but I was seriously thinking about starting in the near future.___
I exercised some, but not regularly.___
I exercised regularly (3 or more times per week for 20 minutes or more each time).___

please go to next page

15A. Any comments about your **involvement in physical activity or exercise?**

_____

_____

16. To what extent do you **worry** that the **exercises in this program will worsen your back injury/pain?** Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not Worried										Extremely Worried

17. **Since your injury** to what extent have you **resumed your usual activities** in each of the following areas? As you rate each activity, think of how you are **today**. Please circle the number which best describes your **extent of resumption today**.

a) **Sleeping Patterns**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

b) **Sexual Activity**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

c) **Self-Care** (e.g., washing, dressing, etc.)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

d) **Light Household Chores** (e.g., doing dishes, making beds, preparing meals)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

e) **Heavy Household Chores** (e.g., yardwork, cleaning windows, doing laundry)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

please go to next page

f) **Shopping**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

g) **Socializing With Family and Friends Inside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

h) **Socializing With Family and Friends Outside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

i) **Travelling (In Cars, Buses, etc.) For Less Than 30 Minutes**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

j) **Travelling (In Cars, Buses, etc.) For Longer Than One Hour**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

k) **Engaging In Your Usual Recreational Activities**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

l) **Engaging In Your Usual Paid Employment**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All				Moderate Resumption						Complete Resumption

PART C. VOCATIONAL INFORMATION

18A. Prior to this injury, what **type of work did you do?**

_____

_____

18B. How **long have you been in your present job?** Specify years and months.

_____

please go to next page

19A. Are you **working now** while attending the program? Yes ____ No ____ (If No, please go to question 20)

19B. If "yes", how many **hours per day** are you working? ___ (hours)

19C. If "yes", are you working at the **same job** you did before your injury? Yes ___ No ___

20. Given the **type of work that you do and the relationship with your supervisor and coworkers**, overall how **satisfied** are you with your job? Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Satisfied				Moderately Satisfied						Completely Satisfied

PART D. EXPECTATIONS

21A. How long do you <u>think</u> it will be before you are **physically able to return to work on a full time basis?** Please check only one.

less than 1 week ___
1 to 2 weeks ___
2 to 3 weeks ___
3 to 4 weeks ___
more than 1 month ___
more than 3 months ___
more than 6 months ___

21B. If you do **not** plan to **return to work**, why not?

_____

_____

22. How confident are you that you will be **able to improve to your preinjury level?** Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

23. How confident are you that this **program will be beneficial in helping you to improve** to your preinjury level? Please circle the appropriate number.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

Appendix E-1

Subject Participation For the Test-Retest Reliability Phase (N=20)

Clinic	Total Number Approached	Number of Refusals	Number of Subjects At Time 1	Number of Subjects At Time 2
Canadian Back Institute	2	0	2	1
Fit For the Future	3	0	3	3
Early Treatment Centre	17	2	15	15
West-End Physiotherapy	1	0	1	1
Total	23	2	21	20

Appendix E-2

Characteristics of the Test-Retest Reliability Sample (N=20)

Characteristic	Mean (SD) or Frequency (Percent)
Age (years)	39.1 (9.3)
Range	19-56
Sex Males	12 (60%)
Females	8 (40%)
Marital Status Married/Cohabitating	14 (70%)
Not Married	6 (30%)
Education	
Elementary School (some or all)	2 (10%)
High School (some or all)	12 (60%)
College/University (some or all)	6 (30%)
Time Since Injury (weeks)	5.2 (6.7)
Range	1-24
Previous Back Injury Yes	11 (55%)
No	9 (45%)
Attended Similar Program Before Yes	4 (20%)
No	16 (80%)
Previous Back Surgery Yes	1 (5%)
No	19 (95%)
Medication Use Yes	18 (90%)
No	2 (10%)
Other Health Problems Yes	6 (30%)
No	14 (70%)
Current Working Status Working	4 (20%)
Not Working	16 (80%)
Participation In Exercise/Sports Yes	14 (70%)
No	6 (30%)
Involvement In Physical Activity	
• *did not exercise*	3 (15%)
• *did not exercise but was thinking of starting*	0
• *exercised some but not regularly*	12 (50%)
• *exercised regularly*	5 (25%)

Appendix F-1

Mean Item Ratings On the Current FACS For the Reliability Sample (N=20)

	Time 1				Time 2			
	N	Mean	SD	Range	N	Mean	SD	Range
Q1	20	35.50	27.58	0-90	20	30.00	22.94	10-100
Q2	20	49.50	33.00	0-100	20	44.00	35.45	10-100
Q3	20	40.25	33.11	0-100	20	42.50	31.93	0-100
Q4	20	50.50	32.52	10-100	20	50.00	33.09	10-100
Q5	20	53.00	26.77	0-100	20	54.50	30.17	20-100
Q6	20	56.84	28.88	0-100	19	55.26	29.88	20-100
Q7	20	48.00	31.39	0-100	20	49.00	26.54	10-100
Q8	20	77.50	29.71	10-100	20	70.50	26.65	20-100
Q9	20	42.50	28.99	0-100	20	46.00	28.73	0-100
Q10	19	48.95	30.53	10-100	19	48.95	26.44	10-100
Q11	20	66.50	28.34	10-100	20	61.50	29.61	10-100
Q12	20	33.50	30.99	0-100	20	35.00	31.71	0-100
Q13	19	50.53	32.23	0-100	20	50.05	26.01	0-100
Q14	20	23.50	24.55	0-100	20	27.50	25.73	0-90
Q15	19	34.74	33.89	0-100	20	40.53	30.64	0-100
Total	20	47.10	21.15	11.33-87.33	20	47.10	22.61	11.33-88.67

Appendix F-2

Mean Item Ratings On the Preinjury FACS For the Reliability Sample (N=20)

	Time 1			Time 2		
	Mean	**SD**	**Range**	**Mean**	**SD**	**Range**
Q1	89.00	21.00	10-100	88.50	15.99	50-100
Q2	88.50	20.33	10-100	88.50	15.65	50-100
Q3	91.00	11.19	70-100	89.50	17.31	40-100
Q4	96.00	6.80	80-100	94.00	10.95	60-100
Q5	94.50	13.56	40-100	96.00	6.81	80-100
Q6	96.50	7.45	70-100	96.50	7.45	70-100
Q7	93.50	8.75	70-100	94.00	9.40	60-100
Q8	97.00	5.71	80-100	98.00	5.24	80-100
Q9	93.50	10.40	70-100	96.00	7.54	70-100
Q10	94.50	8.87	70-100	96.00	9.40	60-100
Q11	97.00	7.33	70-100	98.00	6.96	70-100
Q12	90.50	19.86	30-100	91.00	15.18	50-100
Q13	94.00	13.92	40-100	97.50	7.16	70-100
Q14	91.00	19.44	20-100	92.50	15.17	50-100
Q15	90.50	23.05	20-100	94.00	12.73	50-100
Total	93.13	9.79	63.33-100	94.00	8.74	63.33-100

Appendix F-3

Mean Item Ratings On the RADL For the Reliability Sample (N=20)

	Time 1				Time 2			
	N	Mean	SD	Range	N	Mean	SD	Range
Qa	20	59.50	28.92	20-100	20	54.00	25.42	20-100
Qb	18	34.36	36.28	0-100	16	31.87	29.71	0-80
Qc	20	80.00	25.54	10-100	20	70.75	30.10	10-100
Qd	20	59.50	36.34	0-100	20	52.00	33.34	0-100
Qe	19	19.47	29.53	0-90	20	20.00	22.11	0-80
Qf	19	37.89	36.90	0-100	20	43.16	31.10	0-100
Qg	20	68.50	33.76	10-100	20	62.50	31.09	10-100
Qh	20	59.00	35.37	0-100	20	51.00	34.16	0-100
Qi	20	57.00	31.30	10-100	20	49.00	27.70	0-100
Qj	18	29.44	38.87	0-100	19	24.44	30.53	0-100
Qk	19	24.21	29.31	0-90	20	23.16	26.04	0-70
Ql	20	18.00	29.12	0-90	20	16.50	25.39	0-80
Total	20	46.44	22.71	15-91.67	20	41.95	21.11	7.5-80.83

APPENDIX G

Categorizations of Impairment, Disability, and Handicap Items For the Roland Sickness Impact Profile

Instructions

When your back hurts, you may find it difficult to do some of the things you normally do. This list contains some sentences that people have used to describe themselves when they have back pain. When you read them, you may find that some stand out because they describe you today. As you read the list think of yourself **today**. When you read a sentence that describes you **today**, put a tick against it. If the sentence **does not describe you, then leave the space blank** and go on to the next one. Remember, **only tick** (✓) the sentence if you are sure that it describes you **today**.

1. I stay at home most of the time because of my back.( )(H)
2. I change position frequently to try and get my back comfortable.( )(D)
3. I walk more slowly than usual because of my back.( )(D)
4. Because of my back, I am not doing any of the jobs that I usually do around the house.( )(H)
5. Because of my back, I use a handrail to get upstairs.( )(D)
6. Because of my back, I lie down to rest often.( )(D)
7. Because of my back, I have to hold on to something to get out of an easy chair.( )(D)
8. Because of my back, I try to get other people to do things for me.( )(H)
9. I get dressed more slowly than usual because of my back.( )(H)
10. I only stand up for short periods of time because of my back.( )(D)
11. Because of my back, I try not to bend or kneel down.( )(D)
12. I find it difficult to get out of a chair because of my back.( )(D)
13. My back is painful almost all of the time.( )(I)
14. I find it difficult to turn over in bed because of my back.( )(D)
15. My appetite is not very good because of my back.( )(I)
16. I have trouble putting my socks (or stockings) on because of my back.( )(H)
17. I only walk short distances because of my back pain.( )(D)
18. I sleep less well because of my back.( )(D)
19. Because of my back pain, I get dressed with help from someone else.( )(H)
20. I sit down for most of the day because of my back.( )(D)
21. I avoid heavy jobs around the house because of my back.( )(H)
22. Because of my back, I am more irritable and bad tempered with people than usual.( )(I)
23. Because of my back, I go upstairs more slowly than usual.( )(D)
24. I stay in bed most of the time because of my back.( )(H)

I = Impairment D = Disability H = Handicap

Impairment = 3 items
Disability = 13 items
Handicap = 8 items

APPENDIX H-1

Clinician Questionnaires At Baseline - Validity Phase

- Informed Consent Form For Instrument Psychometric Testing
- Functional Abilities Confidence Scale
- Demographic Questionnaire (including the Resumption of Activities of Daily Living)
- Marlowe-Crowne Scale
- Physical Self-Efficacy Scale
- Roland Sickness Impact Profile

Consent Form For Instrument Psychometric Testing

Study Title: The Functional Abilities Confident Scale For Injured Workers With Low Back Pain

Description of Study: This study is being conducted by Renee Williams, a physiotherapist and an assistant professor in the School of Occupational Therapy and Physiotherapy, McMaster University, and a Ph.D. student in the Department of Health Studies and Gerontology under the supervision of Dr. Anita Myers from the University of Waterloo. This research is being completed for her doctoral thesis.

The purpose of this study is to assist us in designing assessment tools that are meaningful to injured workers with back pain. You will be asked to complete five questionnaires about your general health, your back pain, if you are able to perform certain activities of daily living, how you feel about performing these activities, and a self-evaluation questionnaire. You will be asked to complete these questionnaires at the start of the program and three weeks later or at discharge. There are no risks involved in completing the questionnaires.

Your views are important to designing programs that meet the needs of injured workers with back pain. This information will assist us to learn more about back pain.

This study has been discussed with me and I understand that:

1. I will complete five questionnaires at admission into the program and three weeks later or at discharge. These questionnaires ask questions about my general health and back pain, if I can perform certain activities of daily living, how I feel about performing these activities, and a self-evaluation questionnaire. This will take about 30 minutes of my time. There are no risks involved in participating in this study.

2. Even though I have agreed to take part in the study, I may choose not to complete the questionnaires.

3. Participating or not participating in this study will in no way affect the medical care that I receive now or in the future.

4. All of my answers will be TOTALLY CONFIDENTIAL. No one individual will be identified. Only the researchers will have access to the information. If the results are published I will not be identified in any way. All results will concern groups of people, not individuals.

5. If I have any comments or inquiries concerning this study, I may contact the Office of Human Research at the University of Waterloo (519) 885-1211, extension 6005. I may also contact Dr. Anita Myers (519) 885-1211, extension 3664.

I acknowledge that I have been informed about the purpose of this study and agree to participate.

NAME (PRINT)	SIGNATURE	DATE

I have explained the nature of the study to the subject and believe that s/he understood it.

NAME (PRINT)	SIGNATURE	DATE

ID Number _____

Instructions

We would like to know how **confident you are that you can do things** such as sitting in a chair or seat for as long as you want or need to (item #1). Using the **0 to 100% rating scale**, if you feel you cannot sit for any length of time you might rate this item as 0%. Or if you feel totally confident that you are able to do this activity you might rate this item as 100%. **Circle the number** on the scale that best describes your **level of confidence that you could perform the activity, regardless of pain and discomfort** that you may have. If you **do not do an activity**, e.g., go on a bus, please **rate how confident you would be physically if you had to do these things.**

Part 1

Please rate each item according to how confident you are that you can do these things today. Circle the number on the scale for each question.

1. How confident are you that you can **sit** in any type of chair or seat for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident are you that you can **stand** for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident are you that you can **walk** as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident are you that you can **climb** up and down stairs?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

5. How confident are you that you can **get up and down** from a sofa or chair?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

6. How confident are you that you can **get in and out** of a car and/or bus?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident are you that you can **sleep** comfortably?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

8. How confident are you that you can **reach** above your head?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident are you that you can **bend down** and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident are you that you can **kneel down** and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident are you that you can **carry a small box**?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

12. How confident are you that you can **carry a large box**?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident are you that you can **lift a box from a table**?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

14. How confident are you that you can **lift a box from the floor?**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident are you that you can **push or pull** an object?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

Part 2

Please rate each item again according to how confident you were that you could do these things before your injury. Circle the number on the scale for each question.

1. How confident were you that you could **sit** in any type of chair or seat for as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident were you that you could **stand** as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident were you that you could **walk** as long as you wanted or needed to before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident were you that you could **climb** up and down stairs before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

5. How confident were you that you could **get up and down** from a sofa or chair before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident were you that you could **get in and out** of a car and/or bus before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident were you that you could **sleep** comfortably before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

8. How confident were you that you could **reach** above your head before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident were you that you could **bend down** and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident were you that you could **kneel down** and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident were you that you could **carry a small box** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

12. How confident were you that you could **carry a large box** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident were you that you could **lift a box from a table** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident were you that you could **lift a box from the floor** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident were you that you could **push or pull** an object before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next questionnaire

ID Number _____

This questionnaire asks general and specific questions about your back condition and your habits. It will be used to describe the participants in the study, not specific individuals.

1. How old are you? _____ (Years)

2. Are you **Male** _____ or **Female** ____?

3. What is the **highest level of formal education** that you have completed?

_____

4. Are you **currently married or cohabitating**? Yes ____ No ____

5. How long ago did your **present** back injury/problem begin? _____ (number of weeks)

6. Describe **how your injury/problem occurred.**

_____

_____

7. How long ago did you **start** this program? _____ (number of days)

8. Have you attended this **type of program** before? Yes ____ No ____

9a. Are you currently taking **medications (pills)** for your back and/or leg pain?

Yes ___ No ___ (If No, go to question 10a)

9b. If "yes", what **medications (pills)** are you taking? How often?

_____ _____

_____ _____

10a. Do you have any other **health problems**? Yes __ No __ (If No, go to question 11a)

10b. If "yes", describe your other **health problems.**

_____

_____

11a. Have you had **any previous back injury(ies)**? Yes ____ No ____ (If No, go to question 12a)

please go to next page

11b. If "yes", how **long ago** was(were) this (these)?

_____

_____

12a. Have you ever had **surgery(ies)** for your back? Yes ____ No ____ (If No, go to question 13a)

12b. If "yes", how **long ago** was (were) this (these)?

_____

_____

13a. Prior to your injury, did you **exercise or play sports** at least once per week?
Yes ____ No ____ (If No, go to Question 14)

13b. If "yes", list the **types of exercises or sport(s)** you did? How often?

_____ _____
_____ _____
_____ _____

14. Which of the following statements best describes your **involvement in physical activity or exercise** **prior to your injury**? Please check only one.

I did not exercise and I was not interested in doing so.___
I did not exercise but I was seriously thinking about starting in the near future.___
I exercised some, but not regularly.___
I exercised regularly (3 or more times per week for 20 minutes or more each time). ___

Any comments about your **involvement in physical activity or exercise?**

_____

_____

15. To what extent do you **worry** that the **exercises in this program will worsen your back injury/pain**? Circle the number on the scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not Worried										Extremely Worried

please go to next page

16. **Since your injury to what extent have you resumed your usual activities in each of the following areas? If you do not do an activity, put N/A (non-applicable) beside the scale. As you rate each activity, think of how you are today. Circle the number on the scale for each question.**

a) **Sleeping Patterns**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

b) **Sexual Activity**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

c) **Self-Care** (e.g., washing, dressing, etc.)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

d) **Light Household Chores** (e.g., doing dishes, making beds, preparing meals)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

e) **Heavy Household Chores** (e.g., yardwork, cleaning windows, doing laundry)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

f) **Shopping**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

g) **Socializing With Family and Friends Inside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

h) **Socializing With Family and Friends Outside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

please go to next page

i) **Travelling (In Cars, Buses, etc.) For Less Than 30 Minutes**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

j) **Travelling (In Cars, Buses, etc.) For Longer Than One Hour**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

k) **Engaging In Your Usual Recreational Activities**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

l) **Engaging In Your Usual Paid Employment**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

17. Prior to this injury, what **type of work did you do?**

_____

_____

18. How **long have you been in your present job?** Specify years and months.

_____

19a. Are you **working now** while attending the program? Yes ____ No ____ (If No, please go to question 20)

19b. If "yes", how many **hours per day** are you working? ___ (hours)

19c. If "yes", are you working at the **same job** you did before your injury? Yes ___ No ___

20. Given the **type of work that you do and the relationship with your supervisor and coworkers,** overall how **satisfied** are you with your job? Please circle the number on the scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Satisfied					Moderately Satisfied					Completely Satisfied

please go to next page

21. How long do you **think** it will be before you are **physically able to return to work on a full time basis? Please check only one.**

less than 1 week ___
1 to 2 weeks ___
2 to 3 weeks ___
3 to 4 weeks ___
more than 1 month ___
more than 3 months ___
more than 6 months ___
unlikely to return ___

22. How confident are you that you will be **able to improve to your preinjury level?** Please circle the number on the scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

23. How confident are you that this **program will be beneficial in helping you to improve** to your preinjury level? Please circle the number on the scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

please go to next questionnaire

ID Number _____

Instructions
Listed below are a number of statements concerning **personal attitudes and traits.** Read each statement and decide whether the statement is **TRUE** or **FALSE** as it **pertains to you personally today.** Please circle whether the statement is **TRUE (T)** or **FALSE (F).**

		TRUE	FALSE
1.	I like to gossip at times.	T	F
2.	There have been occasions when I have taken advantage of someone.	T	F
3.	I'm always willing to admit it when I make a mistake.	T	F
4.	I sometimes try to get even rather than forgive and forget.	T	F
5.	At times I have really insisted on having things my own way.	T	F
6.	I have never been irked when people expressed ideas very different from my own.	T	F
7.	I have never deliberately said something that hurt someone's feelings.	T	F

please go to next questionnaire

ID Number _____

Instructions

Please circle the number on the scale which best describes the extent to which you agree or disagree with each statement as it applies to you **today**.

1 Strongly Agree	2 Moderately Agree	3 Neither Agree Nor Disagree	4 Moderately Disagree	5 Strongly Disagree

1.	I have excellent reflexes.	1	2	3	4	5
2.	I am not agile and graceful.	1	2	3	4	5
3.	I am rarely embarrassed by my voice.	1	2	3	4	5
4.	My physique is rather strong.	1	2	3	4	5
5.	Sometimes I do not hold up well under stress.	1	2	3	4	5
6.	I can't run fast.	1	2	3	4	5
7.	I have physical defects that sometimes bother me.	1	2	3	4	5
8.	I don't feel in control when I take tests of physical dexterity.	1	2	3	4	5
9.	I am never intimidated by the thought of a sexual encounter.	1	2	3	4	5
10.	People think negative things about me because of my posture.	1	2	3	4	5
11.	I am not hesitant about disagreeing with people bigger than me.	1	2	3	4	5
12.	I have poor muscle tone.	1	2	3	4	5
13.	I take little pride in my ability in sports.	1	2	3	4	5
14.	Athletic people usually do not receive more attention than me.	1	2	3	4	5
15.	I am sometimes envious of those better looking than myself.	1	2	3	4	5
16.	Sometimes my laugh embarrasses me.	1	2	3	4	5
17.	I am not concerned with the impression my physique makes on others.	1	2	3	4	5
18.	Sometimes I feel uncomfortable shaking hands because of my hands are clammy.	1	2	3	4	5
19.	My speed has helped me out of some tight spots.	1	2	3	4	5
20.	I find that I am not accident prone.	1	2	3	4	5
21.	I have a strong grip.	1	2	3	4	5
22.	Because of my agility, I have been able to do things which many others could not do.	1	2	3	4	5

please go to next questionnaire

ID Number _____

Instructions

When your back hurts, you may find it difficult to do some of the things you normally do. This list contains some sentences that people have used to describe themselves when they have back pain. When you read them, you may find that some stand out because they describe you today. As you read the list think of yourself **today**. When you read a sentence that describes you **today**, put a tick against it. If the sentence **does not describe you, then leave the space blank** and go on to the next one. Remember, **only tick (✓)** the sentence if you are sure that it describes you **today**.

1. I stay at home most of the time because of my back.( )
2. I change position frequently to try and get my back comfortable.( )
3. I walk more slowly than usual because of my back.( )
4. Because of my back, I am not doing any of the jobs that I usually do around the house.( )
5. Because of my back, I use a handrail to get upstairs.( )
6. Because of my back, I lie down to rest often.( )
7. Because of my back, I have to hold on to something to get out of an easy chair.( )
8. Because of my back, I try to get other people to do things for me.( )
9. I get dressed more slowly than usual because of my back.( )
10. I only stand up for short periods of time because of my back.( )
11. Because of my back, I try not to bend or kneel down.( )
12. I find it difficult to get out of a chair because of my back.( )
13. My back is painful almost all of the time.( )
14. I find it difficult to turn over in bed because of my back.( )
15. My appetite is not very good because of my back.( )
16. I have trouble putting my socks (or stockings) on because of my back.( )
17. I only walk short distances because of my back pain.( )
18. I sleep less well because of my back.( )
19. Because of my back pain, I get dressed with help from someone else.( )
20. I sit down for most of the day because of my back.( )
21. I avoid heavy jobs around the house because of my back.( )
22. Because of my back, I am more irritable and bad tempered with people than usual.( )
23. Because of my back, I go upstairs more slowly than usual.( )
24. I stay in bed most of the time because of my back.( )

please go to next questionnaire

APPENDIX H-2

Clinician Questionnaire At Baseline - Validity Phase

- Baseline Assessment

ID Number_____

Baseline Assessment

1. Please describe the client's level of **physical conditioning** for each of the following. Circle the number on the scale.

a) How would you rate this client's **endurance** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

b) How would you rate this client's **muscle strength** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

c) How would you rate this client's **range of motion** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

d) How would you rate this client's **locomotion** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

e) How would you rate this client's **overall ability** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Completely Unable — Completely Able

2. Was the above physical assessment completed by yourself ___? or another staff member ___?
If completed by another staff member, specify _____

3. How confident are **you** that this client **will be able to improve to his/her preinjury level** through participation in the program? Circle the number on the scale.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Not At All Confident — Completely Confident

4. How **motivated** do you think this client is to **participate fully in the program**? Circle the number on the scale.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Not At All Motivated — Completely Motivated

please go to next page

5. How long do you think it will be before this client is **able to return to work on a full time basis?** Please check only one.

less than 1 week ___
1 to 2 weeks ___
2 to 3 weeks ___
3 to 4 weeks ___
more than 1 month ___
more than 3 months ___
more than 6 months ___
unlikely to return to work full time ___

6. If you think that this client will **not be returning to work,** why not?

_____

_____

7. Are there any **comments or qualifications** on the above ratings that you would like to make?

_____

_____

APPENDIX I-1

Client Questionnaires At Follow-Up - Validity Phase

- Functional Abilities Confidence Scale
- Marlowe-Crowne Scale
- Physical Self-Efficacy Scale
- Roland Sickness Impact Profile
- Clients' Ratings At Discharge

ID Number _____

Instructions

We would like to know how **confident you are that you can do things** such as sitting in a chair or seat for as long as you want or need to (item #1). Using the **0 to 100% rating scale**, if you feel you cannot sit for any length of time you might rate this item as 0%. Or if you feel totally confident that you are able to do this activity you might rate this item as 100%. **Circle the number** on the scale that best describes your **level of confidence that you could perform the activity, regardless of pain and discomfort** that you may have. If you **do not do an activity**, e.g., go on a bus, please **rate how confident you would be physically if you had to do these things.**

Part 1

Please rate each item according to how confident you are that you can do these things today. Circle the number on the scale for each question.

1. How confident are you that you can **sit** in any type of chair or seat for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident are you that you can **stand** for as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident are you that you can **walk** as long as you want or need to?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident are you that you can **climb** up and down stairs?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

5. How confident are you that you can **get up and down** from a sofa or chair?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

6. How confident are you that you can **get in and out** of a car and/or bus?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident are you that you can **sleep** comfortably?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

8. How confident are you that you can **reach** above your head?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident are you that you can **bend down** and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident are you that you can **kneel down** and return to a standing position?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident are you that you can **carry a small box**?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

12. How confident are you that you can **carry a large box**?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident are you that you can **lift a box from a table**?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

14. How confident are you that you can **lift a box from the floor?**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident are you that you can **push or pull** an object?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

Part 2

Please rate each item again according to how confident you <u>were</u> that you could do these things <u>before your injury</u>. Circle the number on the scale for each question.

1. How confident <u>were</u> you that you could **sit** in any type of chair or seat for as long as you wanted or needed to <u>before your back injury</u>?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

2. How confident <u>were</u> you that you could **stand** as long as you wanted or needed to <u>before your back injury</u>?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

3. How confident <u>were</u> you that you could **walk** as long as you wanted or needed to <u>before your back injury</u>?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

4. How confident <u>were</u> you that you could **climb** up and down stairs <u>before your back injury</u>?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

5. How confident were you that you could **get up and down** from a sofa or chair before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

6. How confident were you that you could **get in and out** of a car and/or bus before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

7. How confident were you that you could **sleep** comfortably before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

8. How confident were you that you could **reach** above your head before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

9. How confident were you that you could **bend down** and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

10. How confident were you that you could **kneel down** and return to a standing position before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

11. How confident were you that you could **carry a small box** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next page

12. How confident were you that you could **carry a large box** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

13. How confident were you that you could **lift a box from a table** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

14. How confident were you that you could **lift a box from the floor** before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

15. How confident were you that you could **push or pull** an object before your back injury?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not at all confident										Completely confident

please go to next questionnaire

ID Number _____

Listed below are a number of statements concerning **personal attitudes and traits.** Read each statement and decide whether the statement is **TRUE** or **FALSE** as it **pertains to you personally.** Please circle whether the statement is **TRUE (T)** or **FALSE (F).**

		TRUE	FALSE
1.	I like to gossip at times.	T	F
2.	There have been occasions when I have taken advantage of someone.	T	F
3.	I'm always willing to admit it when I make a mistake.	T	F
4.	I sometimes try to get even rather than forgive and forget.	T	F
5.	At times I have really insisted on having things my own way.	T	F
6.	I have never been irked when people expressed ideas very different from my own.	T	F
7.	I have never deliberately said something that hurt someone's feelings.	T	F

please go to next questionnaire

ID Number _____

Instructions

Please circle the number on the scale which best describes the extent to which you agree or disagree with each statement as it applies to you today.

1 Strongly Agree	2 Moderately Agree	3 Neither Agree Nor Disagree	4 Moderately Disagree	5 Strongly Disagree

1.	I have excellent reflexes.	1	2	3	4	5
2.	I am not agile and graceful.	1	2	3	4	5
3.	I am rarely embarrassed by my voice.	1	2	3	4	5
4.	My physique is rather strong.	1	2	3	4	5
5.	Sometimes I do not hold up well under stress.	1	2	3	4	5
6.	I can't run fast.	1	2	3	4	5
7.	I have physical defects that sometimes bother me.	1	2	3	4	5
8.	I don't feel in control when I take tests of physical dexterity.	1	2	3	4	5
9.	I am never intimidated by the thought of a sexual encounter.	1	2	3	4	5
10.	People think negative things about me because of my posture.	1	2	3	4	5
11.	I am not hesitant about disagreeing with people bigger than me.	1	2	3	4	5
12.	I have poor muscle tone.	1	2	3	4	5
13.	I take little pride in my ability in sports.	1	2	3	4	5
14.	Athletic people usually do not receive more attention than me.	1	2	3	4	5
15.	I am sometimes envious of those better looking than myself.	1	2	3	4	5
16.	Sometimes my laugh embarrasses me.	1	2	3	4	5
17.	I am not concerned with the impression my physique makes on others.	1	2	3	4	5
18.	Sometimes I feel uncomfortable shaking hands because of my hands are clammy.	1	2	3	4	5
19.	My speed has helped me out of some tight spots.	1	2	3	4	5
20.	I find that I am not accident prone.	1	2	3	4	5
21.	I have a strong grip.	1	2	3	4	5
22.	Because of my agility, I have been able to do things which many others could not do.	1	2	3	4	5

please go to next questionnaire

ID Number _____

Instructions

When your back hurts, you may find it difficult to do some of the things you normally do. This list contains some sentences that people have used to describe themselves when they have back pain. When you read them, you may find that some stand out because they describe you today. As you read the list think of yourself **today**. When you read a sentence that describes you **today**, put a tick against it. If the sentence **does not describe you, then leave the space blank** and go on to the next one. Remember, **only tick (✓) the sentence if you are sure that it describes you today**.

1. I stay at home most of the time because of my back.( )
2. I change position frequently to try and get my back comfortable.( )
3. I walk more slowly than usual because of my back.( )
4. Because of my back, I am not doing any of the jobs that I usually do around the house.( )
5. Because of my back, I use a handrail to get upstairs.( )
6. Because of my back, I lie down to rest often.( )
7. Because of my back, I have to hold on to something to get out of an easy chair.( )
8. Because of my back, I try to get other people to do things for me.( )
9. I get dressed more slowly than usual because of my back.( )
10. I only stand up for short periods of time because of my back.( )
11. Because of my back, I try not to bend or kneel down.( )
12. I find it difficult to get out of a chair because of my back.( )
13. My back is painful almost all of the time.( )
14. I find it difficult to turn over in bed because of my back.( )
15. My appetite is not very good because of my back.( )
16. I have trouble putting my socks (or stockings) on because of my back.( )
17. I only walk short distances because of my back pain.( )
18. I sleep less well because of my back.( )
19. Because of my back pain, I get dressed with help from someone else.( )
20. I sit down for most of the day because of my back.( )
21. I avoid heavy jobs around the house because of my back.( )
22. Because of my back, I am more irritable and bad tempered with people than usual.( )
23. Because of my back, I go upstairs more slowly than usual.( )
24. I stay in bed most of the time because of my back.( )

please go to next questionnaire

ID Number _____

Client's Ratings At Discharge

1. How confident are you that you have **improved to your preinjury level?** Please circle the number on the scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

2. **Since your injury,** to what extent have you **resumed your usual activities** in each of the following areas? If you do **not** do an activity, put **N/A** (non-applicable) beside the scale. As you rate each activity, think of how you are **today**. Circle the number on the scale for each question.

a) **Sleeping Patterns**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

b) **Sexual Activity**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

c) **Self-Care** (e.g., washing, dressing, etc.)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

d) **Light Household Chores** (e.g., doing dishes, making beds, preparing meals)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

e) **Heavy Household Chores** (e.g., yardwork, cleaning windows, doing laundry)

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

f) **Shopping**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

please go to next page

g) **Socializing With Family and Friends Inside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

h) **Socializing With Family and Friends Outside Your Home**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

i) **Travelling (In Cars, Buses, etc.) For Less Than 30 Minutes**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

j) **Travelling (In Cars, Buses, etc.) For Longer Than One Hour**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

k) **Engaging In Your Usual Recreational Activities**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

l) **Engaging In Your Usual Paid Employment**

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All					Moderate Resumption					Complete Resumption

3. How confident are you that you are now **physically able to return to full time work?** Circle the number on the scale.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Not At All Confident										Completely Confident

4a. Are you currently taking **medications (pills)** for your back and/or leg pain?

Yes ___ No ___ (if No, go to question 5)

please go to next page

4b. If "yes", what **medications (pills)** are you taking? How often?

_____ _____

_____ _____

5. Do you think your back condition has **changed** since you started the program? Check **YES** if you think that it is **better or worse.** Check **NO** if you think that it is the **same.**

YES___ (Is it better __? or worse ___?)
NO ___ (About the same)

please go to next questionnaire

Thank you for participating in this study. Do you have any **questions or comments** about this study? Please feel free to give us your **impressions.**

_____

_____

_____

_____

We are thinking of conducting a **follow-up phase** to this study. We are interested in what happens to clients like you who have participated in these types of program.

We would appreciate it if you would consider the possibility of **participating in a follow-up study.** At some point, a few months from now, we may be contacting you by either **phone or mail.** An **interview or questionnaire** similar to what you have just completed but **much shorter** would be involved. Remember, by providing your name, you are simply indicating your willingness to **consider** such an interview. If you are contacted, and it is not convenient for you to fill out the questionnaire, you can always decline at that time.

Name _____

Address _____

_____

Phone Number _____

If you should move, is there a family member or a close friend that we can contact to obtain your address or phone number? Yes____ No____

If yes, please specify

Name _____

PhoneNumber _____

Thank you for participating in this study

APPENDIX I-2

Clinician Questionnaire At Follow-Up - Validity Phase

- Discharge Assessment

ID Number _____

Discharge Assessment

1. Please describe the client's level of **physical conditioning** in each of the following. Circle the number on the scale.

a) How would you rate this client's **endurance** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

b) How would you rate this client's **muscle strength** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

c) How would you rate this client's **range of motion** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

d) How would you rate this client's **locomotion** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

e) How would you rate this client's **overall ability** to perform functional activities?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Completely Unable — Completely Able

2. Was the above physical assessment completed by yourself ____ ? or another staff member ____ ? If by another staff member, specify _____

3. Now that the client has been through some or all of the program, how would you rate his/her **extent of participation**? Circle the number on the scale.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Did Not Participate At All — Fully and Completely Participated

4a. Did the client **complete** the program? Yes __ No __

4b. Indicate the **number of sessions** that this client completed. _____

please go to next page

4c. If "no", what was the reason that this client **did not complete** the program?

_____

_____

5. What was the **date of the discharge assessment?** _____

6. What would you **recommend** for this client? Please check only one.

Return to unrestricted work ___
Return to restricted work ___
Refer to the Regional Evaluation Centre ___
Other ___ Please Specify

7. Do you think that this client's back condition has **changed** since the start of the program? Check **YES** if you think that it has **improved or deteriorated.** Check **NO** if you think that it is the **same.**

YES___ (Is it improved ___? or deteriorated ___?)
NO ___ (About the same)

8. Are there any **comments or qualifications** on the above ratings that you would like to make?

_____

_____

APPENDIX J
Characteristics of the Validity Sample

Characteristics	Study Completers (n=94)	Study Drop-Outs (n=10)
	Mean (SD) or Frequency (Percent)	Mean (SD) or Frequency (Percent)
Age (years)****	37.01 (10.98)	27.3 (5.1)
Range	19-64	20-35
Sex Males	69 (73%)	8 (80%)
Females	25 (27%)	2 (20%)
Marital Status Married/Cohabitating	70 (74%)	6 (60%)
Not Married	24 (26%)	4 (40%)
Education		
Elementary School (some or all)	7 (7%)	0
High School (some or all)	62 (66%)	7 (70%)
College/University (some or all)	25 (27%)	3 (30%)
Time Since Injury (weeks)	5.90 (11.40)	11.5 (17.3)
Range	1-52	1-56
Previous Back Injury Yes	54 (57%)	4 (40%)
No	40 (43%)	6 (60%)
Attended Similar Program Before Yes	27 (29%)	3 (30%)
No	67 (71%)	7 (70%)
Previous Back Surgery Yes	6 (6%)	0
No	88 (94%)	10 (100%)
Medication Use Yes	66 (70%)	8 (80%)
No	28 (30%)	2 (20%)
Other Health Problems Yes	16 (17%)	2 (20%)
No	78 (83%)	8 (80%)
Current Working Status* Working	12 (13%)	4 (40%)
Not Working	80 (87%) (n=92)	6 (60%)
Participation In Exercise/Sports		
Yes	62 (66%)	8 (80%)
No	32 (34%)	2 (20%)
Involvement In Physical Activity		
• *did not exercise*	7 (7%)	0
• *did not exercise but was thinking of starting*	10 (11%)	1 (10%)
• *exercised some but not regularly*	47 (50%)	3 (30%)
• *exercised regularly*	30 (32%)	6 (60%)

*$p < .05$ ****$p < .0001$

APPENDIX K-1

Characteristics of Subjects With and Without Previous Back Injury

Characteristics	With Previous Back Injury (n=54)	Without Previous Back Injury (n=40)
	Mean (SD) or Frequency (Percent)	Mean (SD) or Frequency (Percent)
Age (years)**	39.63 (11.08)	33.47 (9.90)
Range	19-64	20-53
Sex Males	41 (76%)	28 (70%)
Females	13 (24%)	12 (30%)
Marital Status Married/Cohabitating	43 (80%)	27 (68%)
Not Married	11 (20%)	13 (32%)
Time Since Current Injury (weeks)	6.20 (11.20)	5.57 (11.87)
Range	1-52	1-50
Time Since Previous Injury (months)	51.17 (42.13)	--
Range	3-180	
Attended Similar Program Before**** Yes	24 (44%)	3 (8%)
No	30 (56%)	37 (92%)
Medication Use Yes	36 (67%)	30 (75%)
No	18 (33%)	10 (25%)
Other Health Problems Yes	12 (22%)	4 (10%)
No	42 (78%)	36 (90%)
Current Work Status Working	6 (12%)	6 (15%)
Not Working	47 (88%) (n=53)	34 (85%)
Participation In Exercise/Sports		
Yes	38 (70%)	24 (60%)
No	16 (30%)	16 (40%)
Involvement In Physical Activity		
• *did not exercise*	6 (11%)	0
• *did not exercise but was thinking of starting*	2 (4%)	8 (20%)
• *exercised some but not regularly*	27 (50%)	19 (48%)
• *exercised regularly*	19 (35%)	13 (32%)

** $p<.01$ **** $p<.0001$

APPENDIX K-2

Characteristics of Previous Attenders Versus New Attenders

Characteristics	Previous Attenders (n=27)	New Attenders (n=67)
	Mean (SD) or Frequency (Percent)	Mean (SD) or Frequency (Percent)
Age (years)	38.78 (11.91)	36.30 (10.59)
Range	19-64	20-61
Sex Males	21 (78%)	48 (72%)
Females	6 (22%)	19 (28%)
Marital Status Married/Cohabitating	22 (81%)	48 (72%)
Not Married	5 (19%)	19 (28%)
Time Since Injury (weeks)	6.59 (11.26)	5.6 (11.57)
Range	1-56	1-52
Previous Back Injury**** Yes	24 (89%)	30 (45%)
No	3 (11%)	37 (55%)
Medication Use Yes	22 (81%)	44 (66%)
No	5 (19%)	23 (34%)
Other Health Problems Yes	8 (30%)	8 (12%)
No	19 (70%)	59 (88%)
Current Work Status Working	3 (12%)	9 (14%)
Not Working	23 (88%) (n=26)	57 (86%) (n=66)
Participation In Exercise/Sports*		
Yes	23 (85%)	39 (58%)
No	4 (15%)	28 (42%)
Involvement In Physical Activity		
• *did not exercise*	1 (3%)	5 (8%)
• *did not exercise but was thinking of starting*	0	10 (13%)
• *exercised some but not regularly*	12 (44%)	34 (51%)
• *exercised regularly*	14 (53%)	18 (27%)

* $p<.05$ **** $p<.0001$

APPENDIX L-1

Item-Total Correlations and Changes In Alpha For the Current FACS

Deleted Variable	Correlation With Total	Alpha
Q1 *sit*	0.64	0.96
Q2 *stand*	0.69	0.96
Q3 *walk*	0.75	0.96
Q4 *climb up and down stairs*	0.80	0.95
Q5 *get up and down from sofa/chair*	0.83	0.95
Q6 *get in and out of car/bus*	0.79	0.95
Q7 *sleep*	0.76	0.96
Q8 *reach above head*	0.64	0.96
Q9 *bend down*	0.82	0.95
Q10 *kneel down*	0.83	0.95
Q11 *carry small box*	0.74	0.96
Q12 *carry large box*	0.71	0.96
Q13 *lift box from table*	0.80	0.95
Q14 *lift box from floor*	0.84	0.95
Q15 *push or pull object*	0.77	0.96

APPENDIX L-2

Item-Total Correlations and Changes In Alpha For the Preinjury FACS

Deleted Variable	Correlation With Total	Alpha
Q1 *sit*	0.88	0.98
Q2 *stand*	0.90	0.98
Q3 *walk*	0.89	0.98
Q4 *climb up and down stairs*	0.87	0.98
Q5 *get up and down from sofa/chair*	0.87	0.98
Q6 *get in and out of car/bus*	0.94	0.98
Q7 *sleep*	0.75	0.99
Q8 *reach above head*	0.90	0.98
Q9 *bend down*	0.89	0.98
Q10 *kneel down*	0.89	0.98
Q11 *carry small box*	0.94	0.98
Q12 *carry large box*	0.93	0.98
Q13 *lift box from table*	0.91	0.98
Q14 *lift box from floor*	0.91	0.98
Q15 *push or pull object*	0.94	0.98

APPENDIX L-3

Item-Total Correlations and Changes In Alpha For the RADL

Deleted Variable	Correlation With Total	Alpha
Qa *sleeping*	0.52	0.89
Qb *sexual activities*	0.58	0.88
Qc *self-care*	0.46	0.89
Qd *light household chores*	0.71	0.88
Qe *heavy household chores*	0.59	0.88
Qf *shopping*	0.68	0.88
Qg *socializing with friends inside home*	0.64	0.88
Qh *socializing with friends outside home*	0.82	0.87
Qi *travelling for less than 30 minutes*	0.62	0.88
Qj *travelling for more than one hour*	0.60	0.88
Qk *recreational activities*	0.55	0.89
Ql *engaging in paid employment*	0.43	0.89

APPENDIX M-1

Correlation Matrix For the Current FACS

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Q1	1.000						
Q2	0.687	1.000					
Q3	0.578	0.815	1.000				
Q4	0.504	0.593	0.702	1.000			
Q5	0.546	0.540	0.614	0.756	1.000		
Q6	0.527	0.536	0.636	0.678	0.833	1.000	
Q7	0.492	0.562	0.668	0.689	0.673	0.632	1.000
Q8	0.388	0.465	0.470	0.536	0.508	0.534	0.550
Q9	0.575	0.523	0.549	0.664	0.738	0.665	0.661
Q10	0.531	0.512	0.581	0.664	0.742	0.693	0.693
Q11	0.426	0.418	0.453	0.590	0.636	0.625	0.506
Q12	0.403	0.518	0.601	0.585	0.569	0.520	0.599
Q13	0.523	0.520	0.530	0.619	0.625	0.632	0.530
Q14	0.522	0.543	0.621	0.698	0.714	0.606	0.647
Q15	0.484	0.483	0.550	0.618	0.651	0.613	0.575

	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Q8	1.000							
Q9	0.571	1.000						
Q10	0.609	0.801	1.000					
Q11	0.593	0.630	0.677	1.000				
Q12	0.402	0.578	0.601	0.612	1.000			
Q13	0.577	0.677	0.723	0.812	0.634	1.000		
Q14	0.496	0.775	0.736	0.666	0.725	0.753	1.000	
Q15	0.555	0.641	0.632	0.651	0.647	0.689	0.803	1.000

APPENDIX M-2

Correlation Matrix For the Preinjury FACS

	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Q1	1.000						
Q2	0.902	1.000					
Q3	0.834	0.854	1.000				
Q4	0.781	0.808	0.920	1.000			
Q5	0.817	0.819	0.822	0.809	1.000		
Q6	0.826	0.849	0.869	0.866	0.899	1.000	
Q7	0.638	0.714	0.631	0.621	0.779	0.742	1.000
Q8	0.763	0.817	0.815	0.822	0.774	0.899	0.734
Q9	0.802	0.793	0.766	0.764	0.750	0.851	0.647
Q10	0.799	0.778	0.812	0.806	0.782	0.876	0.634
Q11	0.804	0.813	0.850	0.844	0.783	0.901	0.680
Q12	0.845	0.839	0.786	0.757	0.792	0.862	0.724
Q13	0.793	0.802	0.766	0.744	0.715	0.825	0.664
Q14	0.822	0.791	0.757	0.746	0.760	0.840	0.678
Q15	0.829	0.824	0.831	0.785	0.762	0.869	0.707

	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Q8	1.000							
Q9	0.812	1.000						
Q10	0.794	0.867	1.000					
Q11	0.912	0.869	0.874	1.000				
Q12	0.823	0.846	0.827	0.906	1.000			
Q13	0.817	0.887	0.845	0.905	0.941	1.000		
Q14	0.786	0.857	0.818	0.870	0.950	0.927	1.000	
Q15	0.839	0.853	0.842	0.923	0.951	0.936	0.923	1.000

APPENDIX M-3

Correlation Matrix For the RADL

	Qa	Qb	Qc	Qd	Qe	Qf	Qg	Qh	Qi	Qj	Qk	Ql
Qa	1.000											
Qb	0.431	1.000										
Qc	0.406	0.338	1.000									
Qd	0.432	0.419	0.499	1.000								
Qe	**0.189**	0.334	**0.175**	0.621	1.000							
Qf	0.437	0.452	**0.278**	0.626	0.584	1.000						
Qg	0.459	0.448	0.512	0.476	**0.220**	0.450	1.000					
Qh	0.531	0.592	0.447	0.577	0.473	0.594	0.739	1.000				
Qi	0.386	0.357	0.473	0.444	**0.254**	0.363	0.606	0.619	1.000			
Qj	**0.214**	0.302	**0.197**	0.432	0.501	0.411	0.367	0.532	0.601	1.000		
Qk	**0.256**	0.391	**0.203**	0.423	0.616	0.489	**0.258**	0.482	**0.218**	0.428	1.000	
Ql	**0.164**	**0.260**	**-0.010**	0.301	0.413	0.361	**0.217**	0.398	**0.264**	0.521	0.361	1.000

APPENDIX N-1

Factor Analysis of the Current FACS

Current FACS

	Factor 1	Factor 2
Q1 *sit*	0.30	**0.73**
Q2 *stand*	0.24	**0.88**
Q3 *walk*	0.34	**0.84**
Q4 *climb up and down stairs*	***0.61***	***0.58***
Q5 *get up and down from chair/sofa*	**0.69**	0.50
Q6 *get in and out of car/bus*	**0.64**	0.51
Q7 *sleep*	***0.55***	***0.59***
Q8 *reach above head*	**0.64**	0.30
Q9 *bend down*	**0.74**	0.42
Q10 *kneel down*	**0.78**	0.40
Q11 *carry small box*	**0.86**	0.16
Q12 *carry large box*	**0.65**	0.39
Q13 *lift box from table*	**0.83**	0.28
Q14 *lift box from floor*	**0.79**	0.40
Q15 *push or pull object*	**0.76**	0.33

APPENDIX N-2

Factor Analysis of the Preinjury FACS

	Factor 1	Factor 2
Q1 *sit*	0.60	**0.68**
Q2 *stand*	0.54	**0.75**
Q3 *walk*	0.48	**0.80**
Q4 *climb up and down stairs*	0.46	**0.80**
Q5 *get up and down from chair/sofa*	0.40	**0.85**
Q6 *get in and out of car/bus*	0.59	**0.76**
Q7 *sleep*	0.39	**0.71**
Q8 *reach above head*	0.60	**0.69**
Q9 *bend down*	**0.77**	0.51
Q10 *kneel down*	**0.69**	0.59
Q11 *carry small box*	**0.75**	0.59
Q12 *carry large box*	**0.82**	0.51
Q13 *lift box from table*	**0.88**	0.42
Q14 *lift box from floor*	**0.85**	0.45
Q15 *push or pull object*	**0.82**	0.52

APPENDIX N-3

Factor Analysis of the RADL

	Factor Loading Matrix 1			Factor Loading Matrix 2			
	Factor 1	**Factor 2**	**Factor 3**	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 4**
Qa *sleeping*	**0.69**	0.26	-0.03	0.13	0.29	**0.75**	-0.02
Qb *sexual activities*	**0.53**	0.43	0.09	0.27	0.11	**0.75**	0.15
Qc *self-care*	**0.78**	0.08	-0.04	0.20	**0.80**	0.23	-0.19
Qd *light chores*	0.52	**0.61**	0.16	**0.68**	0.50	0.23	0.07
Qe *heavy chores*	0.06	**0.83**	0.28	**0.87**	0.10	0.03	0.26
Qf *shopping*	0.39	**0.70**	0.18	**0.65**	0.19	0.43	0.17
Qg *socializing inside home*	**0.78**	0.09	0.32	0.06	**0.63**	0.52	0.25
Qh *socializing outside home*	**0.67**	0.40	0.42	0.33	0.45	**0.59**	0.39
Qi *travelling <30 minutes*	***0.65***	-0.03	***0.62***	0.03	**0.73**	0.21	0.50
Qj *travelling >1 hour*	0.20	0.30	**0.82**	0.34	0.35	0.01	**0.76**
Qk *recreational activities*	0.12	**0.77**	0.20	**0.73**	-0.01	0.25	0.22
Ql *paid employment*	-0.07	0.39	**0.71**	0.28	-0.14	0.20	**0.77**

APPENDIX O-1

Item-Total Correlations For the Current FACS For Grouping of Items That Loaded Highest Onto the Factors

Deleted Variable	Correlation With Total	Alpha
FACTOR 1		
Q4 *climb up and down stairs*	0.80	0.96
Q5 *get up and down from sofa/chair*	0.85	0.95
Q6 *get in and out of car/bus*	0.80	0.96
Q7 *sleep*	0.77	0.96
Q8 *reach above head*	0.66	0.96
Q9 *bend down*	0.83	0.95
Q10 *kneel down*	0.85	0.95
Q11 *carry small box*	0.79	0.96
Q12 *carry large box*	0.72	0.96
Q13 *lift box from table*	0.82	0.95
Q14 *lift box from floor*	0.87	0.95
Q15 *push or pull object*	0.79	0.96
FACTOR 2		
Q1 *sit*	0.65	0.90
Q2 *stand*	0.83	0.87
Q3 *walk*	0.84	0.86
Q4 *climb up and down stairs*	0.76	0.88
Q7 *sleep*	0.72	0.89

APPENDIX O-2

Item-Total Correlations For the Preinjury FACS
For Grouping of Items That Loaded Highest Onto the Factors

Deleted Variable	Correlation With Total	Alpha
FACTOR 1		
Q9 *bend down*	0.90	0.98
Q10 *kneel down*	0.88	0.98
Q11 *carry small box*	0.94	0.98
Q12 *carry large box*	0.95	0.98
Q13 *lift box from table*	0.96	0.98
Q14 *lift box from floor*	0.94	0.98
Q15 *push or pull object*	0.95	0.98
FACTOR 2		
Q1 *sit*	0.87	0.97
Q2 *stand*	0.91	0.97
Q3 *walk*	0.91	0.97
Q4 *climb up and down stairs*	0.88	0.97
Q5 *get up and down from sofa/chair*	0.90	0.97
Q6 *get in and out of car/bus*	0.94	0.96
Q7 *sleep*	0.78	0.97
Q8 *reach above head*	0.88	0.97

APPENDIX O-3

Item-Total Correlations For the RADL For Grouping of Items That Loaded Highest Onto the Factors

FACTOR LOADING MATRIX 1

Deleted Variable	Correlation With Total	Alpha
FACTOR 1		
Qa *sleeping*	0.60	0.85
Qb *sexual activities*	0.58	0.86
Qc *self-care*	0.62	0.85
Qg *socializing with friends inside home*	0.75	0.82
Qh *socializing with friends outside home*	0.78	0.82
Qi *travelling for less than 30 minutes*	0.63	0.85
FACTOR 2		
Qd *light household chores*	0.67	0.82
Qe *heavy household chores*	0.77	0.78
Qf *shopping*	0.71	0.80
Qk *recreational activities*	0.62	0.84
FACTOR 3		
Qi *travelling for less than 30 minutes*	0.46	0.65
Qj *travelling for more than one hour*	0.68	0.34
Ql *engaging in paid employment*	0.38	0.74

APPENDIX O-3 (continued)

Item-Total Correlations For the RADL
For Grouping of Items That Loaded Highest Onto the Factors

FACTOR LOADING MATRIX 2

Deleted Variable	Correlation With Total	Alpha
FACTOR 1		
Qd *light household chores*	0.67	0.82
Qe *heavy household chores*	0.77	0.78
Qf *shopping*	0.71	0.80
Qk *recreational activities*	0.62	0.84
FACTOR 2		
Qc *self-care*	0.67	0.73
Qg *socializing with friends inside home*	0.68	0.72
Qi *travelling for less than 30 minutes*	0.63	0.77
FACTOR 3		
Qa *sleeping*	0.59	0.76
Qb *sexual activities*	0.63	0.73
Qh *socializing with friends outside home*	0.69	0.66
FACTOR 4		
Qj *travelling for more than one hour*	0.48	--
Ql *engaging in paid employment*	0.48	--

APPENDIX P-1

Item-Total Correlations and Changes In Alpha For the Roland Sickness Impact Profile

Deleted Variable	Correlation With Total	Alpha
Q1 *stay at home*	0.50	0.82
Q2 *change position*	0.35	0.83
Q3 *walk more slowly*	0.61	0.82
Q4 *not doing jobs around house*	0.39	0.83
Q5 *use handrail to get upstairs*	0.51	0.82
Q6 *lie down to rest*	0.32	0.83
Q7 *hold on to get out of chair*	0.48	0.82
Q8 *get others to do things*	0.28	0.83
Q9 *dress more slowly*	0.53	0.82
Q10 *stand up for short periods*	0.44	0.82
Q11 *try not to bend or kneel*	0.54	0.82
Q12 *difficult to get out of chair*	0.44	0.82
Q13 *painful almost all of time*	0.33	0.83
Q14 *difficult to turn over in bed*	0.33	0.83
Q15 *appetite not good*	0.21	0.83
Q16 *trouble putting on socks*	0.48	0.82
Q17 *only walk short distances*	0.58	0.82
Q18 *sleep less well*	0.42	0.82
Q19 *dressed with help*	0.18	0.83
Q20 *sit down most of day*	0.19	0.83
Q21 *avoid heavy jobs around house*	0.21	0.83
Q22 *irritable and bad tempered*	0.07	0.84
Q23 *go upstairs slowly*	0.61	0.82
Q24 *stay in bed most of time*	0.05	0.84

APPENDIX P-2

Frequency of Roland Sickness Impact Profile Items That Were Ticked At Baseline and Follow-Up

	Baseline	Follow-Up	Number of Subjects Responding YES At Both Times
	Frequency (Percent)	Frequency (Percent)	N
Q1 *stay at home*	47 (50)	29 (30.9)	19
Q2 *change position*	90 (95.7)	85 (90.4)	85
Q3 *walk more slowly*	78 (83)	53 (56.4)	51
Q4 *not doing jobs around house*	62 (66)	48 (51.1)	35
Q5 *use handrail to get upstairs*	57 (60.6)	45 (47.9)	36
Q6 *lie down to rest*	58 (61.7)	37 (39.4)	30
Q7 *hold on to get out of chair*	58 (61.7)	46 (48.9)	38
Q8 *get others to do things*	38 (40.4)	34 (36.2)	24
Q9 *dress more slowly*	67 (71.3)	43 (45.7)	42
Q10 *stand up for short periods*	60 (63.8)	40 (42.6)	34
Q11 *try not to bend or kneel*	73 (77.7)	51 (54.3)	44
Q12 *difficult to get out of chair*	63 (67)	43 (45.7)	38
Q13 *painful almost all of time*	57 (60.6)	37 (39.4)	31
Q14 *difficult to turn over in bed*	68 (72.3)	42 (44.7)	39
Q15 *appetite not good*	20 (21.3)	14 (14.9)	6
Q16 *trouble putting on socks*	68 (72.3)	45 (47.9)	43
Q17 *only walk short distances*	61 (64.9)	37 (39.4)	32
Q18 *sleep less well*	67 (71.3)	57 (60.6)	48
Q19 *dressed with help*	9 (9.6)	1 (1.1)	1
Q20 *sit down most of day*	18 (19.1)	6 (6.4)	2
Q21 *avoid heavy jobs around house*	85 (90.4)	75 (79.8)	69
Q22 *irritable and bad tempered*	45 (47.9)	31 (33)	24
Q23 *go upstairs slowly*	71 (75.5)	51 (54.3)	45
Q24 *stay in bed most of time*	10 (10.6)	0 (100)	0

APPENDIX P-3

Smoothed Correlation Matrix For the Roland Sickness Impact Profile

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Q1	1.00											
Q2	0.260	1.00										
Q3	0.355	0.698	1.00									
Q4	0.289	-0.047	0.415	1.00								
Q5	0.404	0.480	0.696	0.265	1.00							
Q6	0.243	0.368	0.410	0.147	0.132	1.00						
Q7	0.350	0.377	0.488	0.182	0.608	0.221	1.00					
Q8	0.498	-0.081	0.296	0.088	0.380	0.066	0.347	1.00				
Q9	0.552	0.438	0.589	0.358	0.599	-0.002	0.454	0.373	1.00			
Q10	0.232	0.459	0.640	0.387	0.405	0.410	0.151	-0.056	0.330	1.00		
Q11	0.347	0.494	0.593	0.340	0.452	0.287	0.725	0.200	0.561	0.396	1.00	
Q12	0.311	0.544	0.511	0.254	0.508	0.140	0.742	0.211	0.655	0.219	0.562	1.00
Q13	0.489	0.313	0.315	0.250	0.464	0.002	0.377	0.136	0.231	0.247	0.239	0.228
Q14	0.369	0.502	0.418	0.211	0.179	0.201	0.205	0.254	0.246	0.027	0.168	0.252
Q15	0.485	-0.018	0.121	0.160	0.132	0.066	0.041	0.274	0.457	0.182	-0.106	0.100
Q16	0.437	0.579	0.390	0.046	0.446	0.285	0.048	0.216	0.590	0.306	0.461	0.514
Q17	0.578	0.485	0.726	0.438	0.473	0.373	0.368	0.227	0.581	0.540	0.522	0.459
Q18	0.403	0.557	0.597	-0.054	0.321	0.338	0.375	0.359	0.231	0.129	0.370	0.140
Q19	0.386	-0.176	0.142	0.233	0.386	-0.301	0.390	0.471	0.299	0.039	0.221	0.150
Q20	0.324	-0.101	0.167	0.438	-0.008	0.175	0.081	0.060	0.154	0.365	0.330	-0.049
Q21	0.000	0.318	0.357	0.199	0.048	0.473	0.161	0.004	0.126	0.386	0.453	-0.003
Q22	0.136	-0.272	-0.066	0.267	-0.127	0.233	-0.138	0.179	0.036	0.050	-0.143	-0.225
Q23	0.446	0.555	0.556	0.071	0.744	0.215	0.680	0.373	0.647	0.297	0.589	0.574
Q24	0.436	-0.216	-0.182	-0.034	-0.056	0.468	0.040	0.217	-0.083	-0.102	-0.083	-0.169

APPENDIX P-3 (continued)

Smoothed Correlation Matrix For the Roland Sickness Impact Profile

	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24
Q13	1.00											
Q14	0.319	1.00										
Q15	0.174	0.111	1.00									
Q16	0.206	0.501	0.241	1.00								
Q17	0.314	0.331	0.088	0.399	1.00							
Q18	0.341	0.570	0.139	0.475	0.358	1.00						
Q19	0.400	0.254	0.055	0.278	0.337	0.114	1.00					
Q20	-0.014	0.153	0.186	0.150	0.248	0.052	0.442	1.00				
Q21	0.221	0.147	0.014	0.271	0.187	0.385	-0.282	-0.138	1.00			
Q22	0.222	0.022	0.224	0.016	-0.008	0.054	0.060	0.119	0.287	1.00		
Q23	0.468	0.197	0.358	0.640	0.444	0.470	0.225	-0.101	0.329	-0.170	1.00	
Q24	0.074	-0.102	0.398	0.171	0.136	0.189	0.030	0.153	0.038	0.296	0.241	1.00

APPENDIX P-4

Factor Analysis for the Roland Sickness Impact Profile

	Factor 1	Factor 2	Factor 3	Factor 4
Q1 *stay at home* (H)	-0.51	**0.61**	-0.02	0.27
Q2 *change position* (D)	**-0.70**	-0.26	0.54	-0.09
Q3 *walk more slowly* (D)	**-0.71**	-0.10	0.39	0.40
Q4 *not doing jobs around house* (H)	-0.15	0.06	0.03	**0.74**
Q5 *use handrail to get upstairs* (D)	**-0.77**	0.17	-0.03	0.16
Q6 *lie down to rest* (D)	-0.11	0.28	**0.73**	0.15
Q7 *hold on to get out of chair* (D)	**-0.76**	0.04	-0.03	0.05
Q8 *get others to do things* (H)	-0.39	**0.45**	-0.21	0.05
Q9 *dress more slowly* (H)	**-0.72**	0.11	-0.06	0.29
Q10 *stand up for short periods* (D)	-0.29	-0.10	0.43	**0.56**
Q11 *try not to bend or kneel* (D)	**-0.65**	-0.10	0.22	0.31
Q12 *difficult to get out of chair* (D)	**-0.75**	-0.17	-0.02	0.08
Q13 *painful almost all of time* (I)	**-0.43**	0.22	0.02	0.14
Q14 *difficult to turn over in bed* (D)	**-0.40**	0.15	0.15	0.08
Q15 *appetite not good* (I)	-0.16	**0.50**	-0.01	0.10
Q16 *trouble putting on socks* (H)	**-0.65**	0.22	0.21	0.01
Q17 *only walk short distances* (D)	**-0.56**	0.12	0.22	0.47
Q18 *sleep less well* (D)	**-0.51**	0.30	0.38	-0.09
Q19 *dressed with help* (H)	-0.38	0.27	**-0.57**	0.35
Q20 *sit down most of day* (D)	-0.00	0.21	-0.06	**0.61**
Q21 *avoid heavy jobs around house* (H)	-0.16	0.05	**0.64**	0.08
Q22 *irritable and bad tempered* (I)	0.22	**0.44**	0.14	0.23
Q23 *go upstairs slowly* (D)	**-0.85**	0.22	0.14	-0.12
Q24 *stay in bed most of time* (H)	0.09	**0.78**	0.16	-0.09

I=Impairment D=Disability H=Handicap

APPENDIX Q

Clients' Expectations At Entry

Questions Re: Expectations	Study Completers (n=94)	Study Drop-Outs (n=10)
	Mean (SD) or Frequency (Percent)	Mean (SD) or Frequency (Percent)
To what extent do you worry that the exercises in this program will worsen your back injury/pain?	25.96(32.27)	22.00(28.98)
Range	0-100	0-100
Given the type of job that you do and the relationship with your supervisor and coworkers, overall how satisfied are you with your job?	69.51(26.38)	78.00(16.19)
Range	0-100	50-100
*How confident are you that you will be able to improve to your preinjury level?*****	74.25(29.46)	92.50(8.58)
Range	0-100	80-100
How confident are you that this program will be beneficial in helping you to improve to your preinjury level?	75.11(27.77)	76.00(22.21)
Range	0-100	40-100
How long do you think it will be before you are able to return to work on a full time basis?	(n=92)	
• *less than 1 week*	1 (2%)	1 (10%)
• *1 to 2 weeks*	16 (17%)	1 (10%)
• *2 to 3 weeks*	15 (16%)	1 (10%)
• *3 to 4 weeks*	21 (23%)	3 (30%)
• *more than 1 month*	24 (26%)	1 (10%)
• *more than 3 months*	6 (7%)	0
• *more than 6 months*	0	0
• *unlikely to return*	5 (5%)	1 (10%)
• *N/A (already working)*	4 (4%)	2 (20%)

**** $p < .0001$

APPENDIX R

Clinicians' Expectations of Clients At Entry

Questions Re: Expectations	Study Completers (n=94)	Study Drop-Outs (n=10)
	Mean (SD) or Frequency (Percent)	Mean (SD) or Frequency (Percent)
Was the assessment of the client's functional ability		
completed by yourself?	94 (100%)	10 (100%)
completed by another member?	0	0
How confident are you that this client will be able to improve to his/her preinjury level through participation in the program?	84.10 (17.21)	86.50 (27.69)
Range	30-100	10-100
How motivated do you think this client is to participate fully in the program?	85.43 (15.63)	79.00 (22.34)
Range	30-100	50-100
How long do you think it will be before this client is able to return to work on a full time basis?	(n=92)	(n=9)
• *less than one week*	0	0
• *1 to 2 weeks*	3 (3%)	1 (11%)
• *2 to 3 weeks*	8 (9%)	1 (11%)
• *3 to 4 weeks*	34 (37%)	3 (33%)
• *more than 1 month*	34 (37%)	2 (22%)
• *more than 3 months*	7 (8%)	0
• *more than 6 months*	0	0
• *unlikely to return*	2 (2%)	0
• *N/A (already working)*	4 (4%)	2 (22%)

APPENDIX S

Clients' Ratings At Follow-Up

Questions	Mean (SD) Or Frequency (Percent)
How confident are you that you have improved to your preinjury level?	55 (30.11)
Range	0-100 (n=90)
How confident are you that you are now able to return to full time work?	44.84 (36.43)
Range	0-100 (n=93)
Medication Use	
Yes	38 (40%)
No	56 (60%)
Do you think that your back condition has changed since you started the program? Check YES if you think that it is better or worse. Check NO if you think that it is the same.	
YES • *better*	70 (75%)
• *worse*	4 (4%)
NO (no change)	20 (21%)

APPENDIX T

Clinicians' Ratings At Follow-Up

Questions	Mean (SD) Or Frequency (Percent)
Was the assessment of the client's functional ability	
• *completed by yourself?*	90 (96%)
• *completed by another staff member?*	4 (4%)
Now that the client has been through some or all of the program, how would you rate his/her extent of participation?	88.51 (16.72)
Range	30-100
Did the client complete the program? *Yes*	32 (34%)
No	61 (66%) (n=93)
How many sessions did the client complete?	13.67 (3.16)
Range	4-21 (n=90)
Do you think that this client's back condition has changed since the start of the program? Check YES if you think that it has improved or deteriorated. Check NO if you think that it is the same.	
YES • *better*	87 (93%)
• *worse*	1 (1%)
NO (no change)	6 (6%)

APPENDIX U

Characteristics of Subjects Who Were Recommended To Return To Work Versus Unable To Return To Work (n=93)

Characteristics		Return To Work (n=32)	No Return To Work (n=61)
		Mean (SD) or Frequency (Percent)	Mean (SD) or Frequency (Percent)
Age		37.4 (10.9)	36.8 (11.2)
	Range	21-61	19-64
Sex	Males	27 (84.4)	42 (68.9)
	Females	5 (15.6)	19 (31.2)
Marital Status	Married/Cohabitating	25 (78.1)	44 (72.1)
	Not Married	7 (21.9)	17 (27.9)
Education	Elementary School (some or all)	2 (6.3)	5 (8.2)
	High School (some or all)	20 (62.5)	41 (67.2)
	College/University (some or all)	10 (31.3)	15 (24.6)
Time Since Injury (weeks)		7.6 (13.6)	5.1 (10.1)
	Range	1-50	1-52
Previous Back Injury	Yes	19 (59.4)	34 (55.7)
	No	13 (40.6)	27 (44.3)
Attended Similar Program Before	Yes	10 (31.3)	17 (27.9)
	No	22 (68.8)	44 (72.1)
Previous Back Surgery	Yes	4 (12.5)	2 (3.3)
	No	28 (87.5)	59 (96.7)
Medication Use	Yes	20 (62.5)	45 (73.8)
	No	12 (37.5)	16 (26.2)
Other Health Problems	Yes	7 (21.9)	9 (14.8)
	No	25 (78.1)	52 (85.3)
Current Working Status	Yes	6 (18.8)	6 (10.2) (n=60)
	No	26 (81.3)	54 (89.8)
Participation In Exercise/Sports	Yes	19 (59.4)	43 (70.5)
	No	13 (40.6)	18 (29.5)
Involvement In Physical Activity			
• *did not exercise*		2 (6.3)	5 (8.2)
• *did not exercise but was thinking of starting*		5 (15.6)	5 (8.2)
• *exercised some but not regularly*		15 (46.9)	31 (50.8)
• *exercised regularly*		10 (31.3)	20 (32.8)
Job Satisfaction		67.2 (26.1)	70.7 (26.7)
	Range	0-100	0-100
Completed Program*	Yes	16 (51.6) (n=31)	16 (26.2)
	No	15 (49.4)	45 (73.8)

* $p < .05$

APPENDIX V

Characteristics of Program Completers Versus Non-Completers (n=93)

Characteristics		Program Completers (n=32)	Program Non-Completers (n=61)
Age		35.3 (9.8)	37.7 (11.5)
	Range	19-56	20-64
Sex	Males	25 (78.1)	44 (72.1)
	Females	7 (21.9)	17 (27.9)
Marital Status	Married/Cohabitating	26 (81.3)	44 (72.1)
	Not Married	6 (18.8)	17 (27.9)
Education	Elementary School (some or all)	1 (3.1)	6 (9.8)
	High School (some or all)	22 (68.8)	39 (63.9)
	College/University (some or all)	9 (28.1)	16 (26.2)
Time Since Injury (weeks)		3.1 (2.3)	7.5 (13.9)
	Range	1-9	1-52
Previous Back Injury	Yes	21 (65.6)	33 (54.1)
	No	11 (34.4)	28 (45.9)
Attended Similar Program Before	Yes	13 (40.6)	14 (23.0)
	No	19 (59.4)	47 (77.1)
Previous Back Surgery	Yes	1 (3.1)	5 (8.2)
	No	31 (96.9)	56 (91.8)
Medication Use	Yes	19 (59.4)	46 (75.4)
	No	13 (40.6)	15 (24.6)
Other Health Problems	Yes	3 (9.4)	13 (21.3)
	No	29 (90.6)	48 (78.7)
Current Working Status	Yes	4 (12.9)	8 (13.3)
	No	27 (87.1)	52 (86.7)
Participation In Exercise/Sports	Yes	23 (6.3)	39 (63.9)
	No	9 (28.1)	22 (36.1)
Involvement In Physical Activity			
• *did not exercise*		2 (6.3)	5 (8.2)
• *did not exercise but was thinking of starting*		3 (9.4)	6 (9.8)
• *exercised some but not regularly*		19 (59.4)	28 (45.9)
• *exercised regularly*		8 (25)	22 (36.1)
Job Satisfaction		69.8 (26.7)	69.0 (24.5)
	Range	0-100	0-100
Return To Work*	Yes	16 (50)	15 (25.4) (n=59)
Recommendations	No	16 (50)	44 (74.6)

* $p < .05$

APPENDIX W-1

Mean Overall Ratings On the FACS and the RADL For Subjects Who Were Judged As Able To Return To Work Versus Unable To Return To Work

Subgroups	Baseline FACS	Follow-Up FACS	Baseline RADL	Follow-Up RADL
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Return To Work	(n=32)*	(n=32)	(n=30)***	(n=29)
	57.49 (26.19)	72.92 (24.12)	51.39 (22.36)	72 (24.17)
Range	11.33-100	14-100	20.83-88.18	16.67-100
Unable To Return To Work	(n=60)***	(n=60)	(n=55)**	(n=53)
	46.74 (24.68)	57.88 (21.59)	41.70 (19.71)	55.48 (19.98)
Range	3.33-100	12.67-100	3.33-86.67	22.5-95

*$p < .05$ **$p < .01$ ***$p < .001$

APPENDIX W-2

Mean Overall Ratings On the FACS and the RADL For Program Completers Versus Program Non-Completers

Subgroups	Baseline FACS	Follow-Up FACS	Baseline RADL	Follow-Up RADL
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Completers	(n=32)*	(n=32)	(n=31)***	(n=28)
	52.04 (24.96)	64.20 (24.66)	42.14 (20.85)	62.21 (23.47)
Range	16.67-100	14-100	12.73-83.64	16.66-98.33
Non-Completers	(n=61)***	(n=61)	(n=55)***	(n=55)
	49.02 (26.51)	61.26 (24.02)	46.05 (21.53)	59.81 (23.58)
Range	30.67-100	0-100	3.33-88.18	7.5-100

*$p < .05$ ***$p < .001$

APPENDIX X

Coding For Predictive Models

Gender:	male=1 female =2
Marital Status:	married=1 not married=2
Previous Attender:	yes=1 no=2
Medication Use:	yes=1 no=2
Previous Back Injury:	yes=1 no=2
Previous Back Surgery:	yes=1 no=2
Previous Exercise Participation:	yes=1 no=2
Current Working Status:	yes=1 no=2
Completers:	yes=1 no=2
Return to Work Recommendations:	yes=1 no=2

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