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PREVALENCE OF OUTCOME MEASURE USE BY PHYSIOTHERAPISTS IN THE MANAGEMENT OF LOW BACK PAIN

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Abstract

This multi-centered study examined the prevalence of outcome measure use in physiotherapy practice for low back pain, the frequency and timing of use and the factors associated with their use. A review of 265 charts of clients who had received treatment for low back pain from 53 physiotherapists was completed to identify outcome measure use.

Review of the charts identified seven standardized and thirteen non-standardized outcome measures that were used in clinical practice. Of these, all were measures of impairment except for two that measured disability. Standardized and non-standardized measures were mainly used at the initial evaluation, 27% and 66%. Thirty-four percent (95% CI, 14-50) of the physiotherapists were identified as users of standardized measures. The *users* of standardized measures provided more treatments (p=0.0018), and the treatments were over a longer period of time (p=0.0029) than non-users and the source of payment for the physiotherapy service was from Worker's Compensation, motor vehicle and hospitals rather than from private insurance (p=0.0000035).

Résumé

Cette étude, réalisée à travers plusieurs établissements, a analysé l'incidence d'utilisation des indicateurs de rendement (outcome measure) en physiothérapie, la fréquence et le moment de leur utilisation, et les facteurs associés à leur utilisation. Une révision de 265 dossiers de patients ayant reçu des traitements par des physiothérapeutes pour des douleurs au bas du dos a été complétée afin d'identifier l'utilisation des indicateurs de rendement.

La révision des dossiers a permis d'identifier sept indicateurs de rendement standardisés (standardized outcome measures) et treize non standardisés utilisés en pratique clinique. Sur ce nombre, la majorité mesuraient des déficiences, sauf pour deux qui mesuraient des incapacités. Les indicateurs de rendement standardisées et non standardisées étaient principalement utilisées lors de l'évaluation intiale, 27% et 66% respectivement. Trente-quatre pourcent (95% CI, 14-50) des physiothérapeutes ont été identifiés comme étant des *utilisateurs* d'indicateurs de rendement standardisées. Les utilisateurs d'indicateurs de rendement standardisées ont dispensé plus de traitements ($p=0.0018$), les traitements s'étalaient sur une plus longue période ($p=0.0029$) et la source de paiement pour le service de physiothérapie provenait principalement des indemnités du travailleur, des compagnies d'assurance automobile et des hôpitaux plutôt que des compagnies d'assurance privées ($p=0.0000035$).

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CHAPTER 1

RATIONALE

In Canada's present health system the quality of interventions is being assessed to understand if these health interventions are of benefit to society[1]. Evidence of quality is valuable to patients, to those paying for the services and to the providers of the service, all of whom are trying to make informed choices about interventions. Patients receiving health care interventions expect quality interventions that improve, or at least stabilize their health. The persons or organizations paying for the interventions, be they public or private, are in search of quality for the least cost. Professional bodies seek out knowledge about the quality of interventions to improve the credibility of the specific profession with clients, other professionals, the community and government[11]. The quality of a health care intervention is determined by evaluating its effectiveness and commonly requires the use of some form of outcome measurement. Over the last decade there has been an increased demand for quality tools that will assist health professionals to determine the effectiveness of their interventions. This demand has led to a rise in the development of outcome measures that have sound psychometric properties and an ability to measure a spectrum of outcomes. Ideally, these outcome measures should help the health professional to predict, discriminate or evaluate change in the individual client and to monitor the impact of specific interventions in groups of clients [34].

Physiotherapy is a profession where the lack of proven effectiveness has been identified as a current and future problem[44]. To compensate for this paucity of information, a push has been made by the professional bodies to encourage the use of outcome measures that are specific to the domains of intervention in physiotherapy.

Questions arise regarding the current status of outcome measure use in physical therapy. With the proliferation of tools available to clinicians in recent years it would be anticipated that use of outcome measures would be prevalent in daily clinical practice. Yet, little is known regarding the actual state of outcome measure use in clinical practice. If the use of outcome measures is integral to quality practice in physiotherapy, then knowledge regarding their use and the pattern of their use is important.

A specific clientele seen in physiotherapy was considered necessary to study the use of outcome measures by physiotherapists. It was deemed that the selected clientele should meet a minimum of three criteria: the prevalence of the clientele should be fairly high; there should be some uncertainty regarding best-practice; and outcome measures should be available to measure the specific domains of interest. A condition such as low back pain (LBP) presents a very common problem to physiotherapists, and was considered a suitable condition by which to study the use of outcome measures in physiotherapy. LBP is a condition with a very high prevalence and recurrence rate. This condition has the potential to create a major impact on the individual over extended periods of time, and it is known to be extremely costly to society. It often influences the individual's life on all levels, including impairments, disabilities and handicaps. LBP is difficult to diagnose; treatment has limited proven effectiveness. Outcome measures, both generic and specific to low back pain, are available to clinicians. Thus, LBP was used as the condition by which to explore the prevalence of outcome measure use in physiotherapy practice.

To provide an overview of the whole thesis the remaining chapters are described. Chapter 2 presents the review of the literature and is divided into three sections. The first

section describes the general features of outcome measures used in rehabilitation. A conceptual model is presented that identifies characteristics of measurement that are important in rehabilitation. The second section describes the current knowledge regarding outcome measure use in clinical practice. Finally, section three describes low back pain, specifically illustrating the importance of outcome measure use in complex medical conditions that are routinely seen by physiotherapists.

Chapter 3 describes the methodology used in this study. The first and second sections describe the study design and subjects. The third section presents the sampling frame and recruitment that were used in Montreal and Ottawa. The outcome measure, explanatory variables and the specific data collection are discussed in section four. Section five illustrates the sample size calculation and section six discusses the analyses used to answer the study questions.

Chapter 4 presents the results. Specifically, the measures that are used in clinical practice, the proportion of therapists using outcome measures and the factors associated with therapist use are identified.

Chapter 5 discussed specific measures that are being used in clinical practice and suggests reasons for their use or non-use. Further research, limitations associated with the study and conclusions are also included in Chapter 5.

CHAPTER 2

LITERATURE REVIEW

A physiotherapy outcome measure is a *test or scale, administered and interpreted by physiotherapists, that has been shown to measure accurately a particular attribute of interest to patients and therapists and that is expected to be influenced by intervention*[43]. Outcome measures have been used in a variety of ways in physiotherapy including: to obtain a baseline profile, to set treatment goals, to plan treatment programs and to monitor patient status and the quality of care provided[70]. The use and necessity of outcome measures in physiotherapy is commonly seen in the research setting. Researchers use outcome measurements to quantify the characteristics they study[16]. These measurements provide the basis for which scientific conclusions can be drawn. This is important, as these conclusions are used to provide evidence as to the effectiveness of physiotherapy interventions and to guide clinical practice[61]. Therefore the use of measurement dictates, to a degree, the future for the physiotherapy profession.

Presently, the problem that challenges the physiotherapy profession is that the effectiveness of many physiotherapy interventions has not been well established. This is due in part to the lack of quality in the chosen outcome measure[27]. Over the past few years, strides have been made to increase the quality of outcome measures by critically evaluating the measures' psychometric properties and by considering the attributes the outcome is measuring.

Often outcome measures used in health care are measures with a very narrow perspective of health, such as morbidity and mortality, which are not largely influenced by physiotherapy interventions[19]. A broader spectrum of outcome measurements including those evaluating impairment, disability and handicap is needed for professions in rehabilitation.

2.1 Conceptual Model

To introduce outcome measurement tools that measure attributes important to clients and physiotherapists, a working model familiar to the physiotherapist is used. An accepted conceptual model to assist in a therapist's understanding of outcomes is the International Classification for Impairment, Disability and Handicap[71]. This classification system provides a unified framework and useable terminology which therapists have employed to develop standards of practice.

In the WHO classification model[71], impairments are defined as biochemical, physiologic and anatomical abnormalities (ie: limitation of range of motion or strength). The impairment outcomes are often the components of a particular function (ie: pain, range of motion, strength) and can be used by the therapist to establish a differential diagnosis in the treatment planning phases of the evaluation and again, during re-evaluations.

Disability is defined as any restriction or lack of ability to perform an activity within the range considered normal for a human being (ie: difficulty going up stairs). Disability outcomes are appropriate for use in treatment planning and goal setting. These outcomes are often the functional outcomes that involve the whole person and thus are usually of primary concern to the client. For example, due to their condition a person may be able to sit for a maximum of 10 minutes and then must stand for an hour. The decrease in sustained sitting time influences their ability to function in their normal manner.

The term 'handicap' is defined as a disadvantage for a given individual resulting from an impairment or disability that limits or prevents the fulfillment of a role that is normal (depending on age, sex, social and cultural factors). An example of a handicap is the inability to work if the work environment is not adapted to allow the individual to

return to their previous employment. Handicap outcomes are important to the client, as they involve quality of life issues, yet this outcome is less often addressed as the main focus of treatment in physiotherapy.

Measurement tools exist to assess the domains of impairment, disability and handicap. However, the question arises as to whether these tools are actually being used in clinical practice.

2.2 Outcome use in Clinical Practice

Typically in clinical practice, decisions regarding physiotherapy treatment are made after completing a client history and a physical examination. During the course of treatment physiotherapists will informally measure and re-measure a client's status with questions such as "how are you doing today?", "any changes since the last treatment session?" Pain, range of motion and strength may also be assessed periodically. It is likely that the therapist will gauge a client's progress and modify the treatment plan based on this information. In addition, therapists sometimes create their own measures with the specific purpose of assessing their own clientele. Chesson and colleagues (1996) propose that the creation of what we have termed *home-grown* measures, may arise because therapists are unfamiliar with or, unhappy with, existing measurement tools. If therapists are indeed using a combination of home grown measures and loosely phrased questioning of the clients as their means of decision making and of documenting a patient's progress, this has some potential limitations. The extent to which the results can be replicated, when home-grown tools are used, has not been established. Thus it is possible that a therapist, evaluating the same stable client on two separate occasions, would end up with two very different evaluations. Conversely, it is possible that two therapists, independently evaluating the same client using the same tool, will produce differing results. If these results were then used to plan treatment, it is likely that two different

treatment programs will be prescribed to the client, depending on which therapist has assessed him. As well, there will be a lack of objectivity and consistency that is crucial when tracking a client's change over time and when attempts are made to compare groups of clients[32].

To combat these clinical measurement problems, there has been a movement towards the introduction of standard means of measuring outcomes, enabling therapists to provide accurate, and reproducible results. A measure is considered *standardized* if it has been designed for a specific purpose, provides instructions for administering, scoring and interpreting the scores and includes psychometric properties-reliability, validity and responsiveness[6]. Standardization controls the possible sources of variability that can occur. A *reliable* measure is an instrument that is able to demonstrate that measurements taken on different occasions, by different evaluators and observers will produce the same or similar results. The *validity* of an instrument determines if the scale actually measures the aspects or qualities that we think it is measuring. '*Responsiveness*' or '*sensitivity to change*' is the ability of the instrument to detect the overall effect of treatment[64].

It has yet to be investigated in the actual clinical setting, if therapists apply standardized methods for data gathering that can be used to make reliable decisions regarding evaluation and treatment interventions. The current knowledge of outcome utilization in Canadian physical therapy practice is limited to one study that was completed during the early development stages of outcome measurement in physiotherapy. Specifically, in 1992, a nationwide Canadian survey looked at the extent to which physiotherapists used standardized outcome measures[6]. A random sampling of 207 physiotherapists and 102 department directors was identified. Those not practicing or on temporary leave were excluded with the remaining 176 therapists and 86 directors meeting eligibility. The questionnaire response rates were high, 81% and 77% for therapists and directors, respectively. The primary goal was to identify the use of standardized outcome measures, but a pilot study identified lack of therapist knowledge

regarding the term *outcome measure.* Therefore, the questionnaire used the phrase "what tools were used to document clients' progress" with one choice being "published measurement scales". Approximately 41% of therapists and 49% of directors reported that published measurement scales were being used in their departments. Those most frequently used were manual muscle testing (27% reported use) and the Berg Balance Scale (17% reported use). A secondary goal of the survey was to identify if therapists and directors were satisfied with the way a client's progress was documented. Only 8% of therapists and 12% of directors were satisfied with their current method, and the majority of those were only moderately satisfied (60% of therapists and 59% of directors). Both therapists and directors thought that the use of standardized outcome measures would improve the documentation of a client's progress, 82% and 85% respectively. As well, more than 85% of therapists and directors thought that the actual monitoring of a client's progress would improve. When asked if client care would change with routine use of standardized measures, 27% of therapists and 41% of directors were uncertain. To determine possible reasons why standardized outcome measures were not being used, the potential barriers were investigated. The most common barriers (in descending order) were, *limited knowledge of instruments*, *time*, and *limited knowledge of instrument development.*

The results, provided by the 1992 nationwide survey, identified the paucity in outcome measure knowledge. To help alleviate this problem, these same authors produced a manual promoting the use of standardized outcome measures in clinical decision-making[6]. This manual documented the knowledge base in outcome measures for use in physical rehabilitation. Specifically, a variety of measures were reviewed for their reliability, validity and sensitivity to change. The manual also included a discussion on the process for selecting outcome measures including the purpose for which they were designed and the proposed reason for clinical evaluation. In addition, throughout this

manual the International Classification for Impairment, Disability and Handicap[71] has been integrated to assist physiotherapists in their understanding of outcomes.

Although the study cited above provided an interesting first look at outcome measure use by Canadian physiotherapists, it is important to further explore the use of outcome measures in physiotherapy practice for a number of reasons. The previous study included physiotherapists working in various areas of physiotherapy: of those surveyed 45% worked with various types of client conditions. Most commonly, the service was provided in acute care settings (54% and 58% for therapists and directors respectively), excluding private clinics where much of physiotherapy practice takes place. The survey reported that one of the therapist characteristics associated with standardized measurement use was working in a clinic with more than 12 therapists. Very few therapists work in settings with 12 or more therapists on staff. Therefore, it would be interesting to identify other factors that are associated with measurement use. Most importantly, the survey relied on therapists' reports of use and their recall of the measures that they used rather than gathering data directly from charts which would provide a more reliable account. Finally, it has been 8 years since this study was done. During that time, there has been an increasing dissemination of knowledge regarding outcome measures. Furthermore, changes in health care require that professionals be more accountable. These occurrences may have precipitated changes in the use of outcome measures in daily practice.

2.3 Outcome measure use in low back pain

Low back pain is a suitable condition to use as a model to illustrate the utilization of outcome measures by physiotherapists working in an out-patient setting for three reasons. First, the impact of this condition on society and on the individual is large. Low back pain (LBP) has become an epidemic in the western world. It is estimated that 49%

to 70% of the population will have some form of back pain during their lifetime[49]. The impact of LBP is considerable: it is the most frequent cause of activity limitations in persons younger than 64 years of age[49]. Despite numerous management methods developed for LBP, there has not been a substantial reduction in disability[14]. Indeed, a recent study by Waxman (2000) suggests that the prevalence of LBP may be on the rise[68].

Second, LBP is the most common condition seen in physiotherapy outpatient clinics[30], yet its treatment is often controversial, frustrating, and challenging for clinicians and clients. Adding to the difficulty is the great variability in the time-course of this condition. Some patients are better within days, while others will continue to experience back pain for many months or years. Thus, the natural history of back pain has not been well established[67].

Identification and treatment are further complicated by the high rate of recurrence. Those that experience an episode of back pain are very likely to experience another sometime in the future. This estimated 60-85% recurrence rate[49] makes it difficult to identify and verify prognostic characteristics.

Third, the diagnostic specificity of LBP, or more accurately, the lack thereof, adds another complex piece to decision-making regarding the interventions and management strategies used with this condition. In up to 85% of cases of LBP, no definite anatomic or physiologic diagnosis can be made[65], nor can the diagnostic tests differentiate between disc, facet and musculoligamentous pain. Commonly employed tests such as computed tomography scans, considered to be objective, lack diagnostic specificity [65] such that two individuals with virtually identical scan results, one will have clinical symptoms, the other will not.

The optimal treatment for LBP is still unknown although much research has been conducted on the effectiveness of physiotherapy treatment and LBP. The measures that researchers choose to evaluate treatment are interesting to review. To the clinician, these

measures may serve as examples of instruments that potentially could be used in clinical practice.

If outcome measures are being used in research related to treatment for LBP the use of these measures should be especially evident in randomized clinical trials (RCT), as RCT's are the accepted method for establishing the efficacy of treatment methods, thereby minimizing methodological problems[56]. The following literature review identifies randomized controlled trials (RCT) that investigate the effectiveness of exercise on LBP. Although many varied LBP treatments exist the optimal treatment for LBP remains unknown. Therefore, a specific treatment for LBP was investigated because it is the most frequently used treatment by physiotherapists for LBP[2] and there have been numerous RCT's published in the literature. The articles are separated into two categories, acute and chronic LBP, due to the potentially different treatment practices and outcomes associated with each.

2.3.1 Acute Low Back Pain

The literature review identified nine studies[10;12;20;21;23;25;40;59;60] that investigated the effectiveness of exercise on *acute LBP* (appendix 1, Table 1). Acute back pain was defined as LBP persisting for 6 weeks or less. All of the studies used impairment or disability as outcome measures. Of the 32 measurement tools used in the studies, 22 of these measures (70%) were standardized.

Attributes measured

Studies that were published after 1993 were more likely to use standardized outcome measures, for both impairment and disability. However, most of those published pre-1993 contained standardized impairment outcomes but only one of four included standardized disability outcomes. Three studies,[12;20;40] published in 1993 or later, used at least one handicap outcome but none of the handicap outcomes were

standardized. Only one study, published before 1993[59] used any handicap outcomes, however these were not standardized.

Similar items represented the impairment attribute: range of motion, strength and pain whereas items that represented the disability attribute differed depending on the measure. For example, mental health, general well being, emotional reactions, physical mobility, and social support were some of the items used to measure the disability attribute. The handicap attributes were generally related to work (ability to return to work, return to work or duration of absence) and sick leave

Affect of Quality on Effectiveness

Three of nine studies [10;23;59] have shown that exercise is an effective treatment, but the quality of the outcome measures varied. For example, Delitto and colleagues (1993) used one standardized disability outcome as the only measure. Stankovic and colleagues (1990, 1995) used impairment, disability and handicap outcome measures, but of the six measures that were used only two (impairment measures) were standardized. Farrel and colleagues (1982) used four standardized impairment measures and one non-standardized disability measure.

In contrast, Dettori (1995), Malmivaara (1995), Faas (1993, 1995) and Gilbert (1985) have shown that exercise is not more effective than other conservative treatment, including no intervention. Of these four studies, three[12;20;40] used impairment, disability and handicap as outcome measures that were standardized and one[25] used standardized impairment and disability outcome measures.

This review illustrates that those studies that evaluated the continuum of impairment, disability and handicap in a standardized manner provided a high level of evidence that exercise was not more effective than other conservative treatments for acute LBP. In contrast, those studies that used a minimal number of standardized impairment and disability measures provided evidence that exercise is effective for treatment of acute LBP. The variability in the quality of the measures, standardized or non-standardized, as

well as the nature of the characteristics being measured may have contributed to the differences seen amongst studies. This makes it difficult to reach a clear consensus about the effects of exercise on acute LBP.

Variety of Measures Used

Another reason that exercise has not clearly been shown to be an effective treatment for acute LBP could be due to the lack of consistency in the outcome measures that were used. For example, seven different disability measurement tools were used in the studies; only one, the Oswestry Disability Questionnaire, was used more than once. This variability in measurement instruments does not allow comparisons to be made between studies.

It is remarkable that such an assortment of instruments has been used to measure the same attribute, disability. If a researchers' utilization of outcome measures for LBP is to be an example for clinicians, this variety may in fact confuse clinicians who are attempting to choose appropriate outcome measures.

2.3.2 Chronic Low Back Pain

The literature review also identified 14 RCTs in which the effectiveness of exercise on chronic LBP[3;15;18;24;28;31;33;36-38;41;41;42;45;47;50;55] was investigated (appendix 1, Table 2). Chronic LBP was defined as LBP that lasted for 12 weeks or more. Of the 66 measures used in chronic LBP studies, about half (38) of these were standardized.

Attribute measured

Of the seventy attributes, 50 were measures of impairment, 17 were measures of disability and only 3 were measures of handicap. For example, measurement tools for pain, range of motion, strength and neurological status were used to measure impairment. It appears that disability measures are beginning to be used in clinical trials, although their use remains inconsistent and the use of handicap measures has been minimal.

Of the fourteen articles, only two studies[3;38] used a handicap outcome measure (non-standardized). This is surprising, as it is expected that the chronic LBP condition would warrant the use of handicap outcome measures.

The items used to represent the impairment, disability and handicap attributes in the chronic population were comparable to those previously mentioned in the acute population.

Effect of quality on effectiveness

Ten of the fourteen studies used impairment and disability outcomes. These measures were all standardized except for those used by Johannssen and colleagues (1995). The consistency of standardized measure use within each study enables a conclusion to be made on the effectiveness of the interventions. There is a high level of evidence that exercise is effective for chronic LBP.

Variety of measures used

Although all the studies used measures of impairment, four [18;33;36;55]used only impairment measures. These four studies used a total of 16 impairment measures of which only two were standardized. It is surprising that one of these studies[55] was published fairly recently.

This review is encouraging for the physiotherapy profession, as it demonstrates that several functional measures that are reliable and valid now exist and that these measures can be used with this population. The Roland Morris Back Pain Questionnaire [52;53] and Oswestry Disability Questionnaire[22] illustrate two selected examples of specific questionnaires that are used to measure health related quality-of-life in back pain populations and both measures have established psychometric properties[13]. One of the greatest benefits of these measures is that health related outcomes are used to measure a patient's function and disability. Secondly, the measure of health status has important relevance for patients and society.

Overall, a trend towards standardized outcome use in research is evident. Although disability measures are beginning to be used in clinical trials, their use remains inconsistent and the use of handicap measures is negligible. It is important to note that researchers are now beginning to measure the patient's perspective on quality of life, as indicated by improved well-being and functional status. These health status measures are especially important in the field of physiotherapy where clinicians treat individuals with persistent and subsequent disabling conditions, such as LBP, that impact on the quality of life[54]. Although the use of these measures in clinical trials is not yet consistent, the studies that have used measures of function or health status have more often indicated improvement after treatment and provided a higher level of evidence than the traditional measures of impairment,[58;66] thereby establishing the effectiveness of physiotherapy intervention.

Summary and conclusions:

For health services such as physiotherapy, the evaluation of outcome of care is necessary for quality assurance, and accountability[70]. Over the past decade, the development and testing of outcome measures has increased to provide standardized measures that physiotherapists can use in the clinical setting. Unfortunately, there has been very little published work on the use of outcome measures in daily clinical practice, so information about the use of these instruments in the real world remains largely unknown. The use of outcome measures by physiotherapists could assist in their movement towards identifying effective interventions both for the individual client and for groups of clients. Thus, it is important to determine the prevalence of outcome measure use and factors associated with use.

2.4 Objectives

The objectives of this study were:

1) To determine the prevalence of standardized outcome measure use and the frequency and timing of use in the physiotherapy management of low back pain and,
2) To determine the factors associated with use of standardized outcome measures by physiotherapists

For the purpose of this study the following definitions will be used:

An ***outcome measure*** is a test or scale, administered and interpreted by physiotherapists, that has been shown to measure accurately a particular attribute of interest to patients and therapists and that is expected to be influenced by intervention [43].

A ***standardized outcome*** measure is defined as an outcome measure that has been published with specified procedures for administration, scoring and interpretation, and evidence of reliability and validity.

Low back pain is defined as the presence of at least one of the following terms documented in a client's chart: low back, back pain, backache, radiating pain down the leg, sciatica, pain/paresthesia radiating into lower extremity, disc herniation, nerve root impingement (L1-S5), buttock or posterior thigh pain [4].

CHAPTER 3

MATERIALS AND METHODS

3.1 Study Design

This was a multi-centered, retrospective cross-sectional study. Participants were fifty-three physiotherapists working in or within a 30-kilometer radius of two Canadian cities, Montreal, Quebec, and Ottawa, Ontario. To identify patterns of outcome measure use in the treatment of individuals with low back pain, the principle investigator (C.K.) reviewed, for each physiotherapist, five randomly selected charts.

3.2 Subjects

3.2.1 Therapist Enrollment

The subjects in this study were licensed physiotherapists. To become a potential subject a physiotherapist fulfilled the specific inclusion/exclusion criteria cited below during the study period from January 1 to July 1, 1999. A random sample of those meeting the criteria was asked to participate in the study. Those who agreed signed an informed consent form. If the therapist agreed to participate, the owner or manager of the clinic was asked to allow the study to be conducted within their facility and was also asked to provide a letter to that effect. If an owner/manager of a clinic or the therapist refused to participate, another therapist was randomly selected from the potential pool of eligible subjects. Attempts were made to collect baseline information on non-participating therapists and clinics.

3.2.2 Inclusion Criteria

- registered as an active member with the licensing body in their province
- working in the identified setting for a minimum 4 months during the study period

- treating a minimum of 5 clients per week with low back pain
- working in an out-patient orthopedic setting that is either hospital based or private practice
- working within a 30 km radius of one of the two cities (Montreal or Ottawa)

3.2.3 Exclusion Criteria

- participating in research that involved low back pain outcome measure use during the study period
- conducting assessments with
    - i) no continuation of treatment by the same therapist or
    - ii) treatment continued by another therapist
- a chart that contained only assessments

3.3.0 Sampling frame and recruitment

The clinics where physiotherapists practiced in two cities: Montreal, Quebec and Ottawa, Ontario, and the area within a 30-kilometer radius from each of the cities were used as data collection sites. The name and place of work of any registered physiotherapist is public information. Therefore, recruitment of physiotherapists was possible through the provincial licensing bodies. Therapists from two provinces were chosen in an effort to increase the generalizability of the findings.

3.3.1 Montreal Recruitment

In Montreal, the most recent version of the Repertory of Physical Therapists, published for the years 1996-1997, was used as an initial step to identify potential

physiotherapists. The Repertory included all physiotherapists working in Quebec during 1996-1997, categorized by region. There were sixteen possible regions of which three (Region 6, Region 13, and Region 16) contained therapists that were within 30 kilometers from the city center. The Repertory also has information regarding the clientele seen by the therapist: those who indicated that they worked exclusively with neurological conditions were considered ineligible. To determine the feasibility of using the Repertory to locate physiotherapists, a convenience sample of 10 physiotherapists were chosen and attempts were made to locate them. Eight of these therapists (80%) were successfully located.

The second listing, also provided by the professional order of physical therapists of Quebec, identified therapists working in private practice during 1999 who had permitted their name and work address to be provided to non-physiotherapist specific sources (ie: advertising, business information). Using a combination of both listings it was possible to locate 90% of the therapists.

Early in the recruitment of therapists in Montreal, it was realized that therapists who spoke French only were going to be difficult to contact because the primary investigator (C.K.) was not proficient in communicating in French. Efforts were made to address this by asking two therapists and a physiotherapy student to assist in the recruitment process. As this was a non-funded project, it was difficult to sustain these volunteers and therefore, the majority of the recruitment was done in English.

3.3.2 Ottawa Recruitment

The College of Physiotherapists for Ontario lists all of the registered physiotherapists alphabetically on the College's web site. Initial eligibility was

ascertained for individuals on the list by identifying the postal codes of work environments within 30km of Ottawa.

3.3.3 Ottawa and Montreal

For each city, physiotherapists were assigned sequential identification numbers. Then, using a table of random numbers, potential participants were identified and subsequently contacted by telephone at their place of work.

When the physiotherapist was contacted, the project was briefly described and eligibility was ascertained (Appendix 2). As well, the therapist was also asked to complete a 17-item questionnaire used to elicit information on therapist characteristics (Appendix 3). The content of the questionnaire was described at the initial telephone contact and a copy was sent ahead allowing the therapist or clinic to collect the relevant information prior to the in-person interview.

3.3.4 Translation of the questionnaire

As some of the therapists in Montreal and Ottawa were French speaking, the questionnaire underwent French translation. The English and French versions were pre-tested by 12 bilingual clinicians that worked in either a private practice (4) or outpatient hospital setting (8). For each version the clinicians were asked to verify face validity for each question. The clinicians also verified that the questions in each version had the same meaning. Clinicians provided written suggestions and modifications. Minor revisions were made to four of the French questions (terminology) and one question was completely removed from both versions.

3.3.5 Follow-up

If the therapist was not present or was unable to be reached during a particular telephone call, then verification of his/her work status was obtained. If he/she was presently employed at the clinic, a request was made to secure a contact time that would be convenient for the individual. Renewed attempts were made on the arranged days. If he/she was no longer employed by the clinic, attempts to locate the individual were made through available means (ie: if the new employer was known by past employer). If a physiotherapist could not be contacted by telephone within two weeks of the first attempt, an information package including a description of the study, consent form and questionnaire was faxed to their present work location, if the location was known.

A therapist who met the eligibility criteria and who gave verbal consent to participate was informed that the clinic owner or hospital manager would be contacted to provide consent for the clinic to participate. Once the clinic owner or hospital manager had agreed to participate, a written consent was obtained at a scheduled meeting with the therapist. Whenever possible, baseline socio-demographic information was gathered from therapists who were not eligible or who did not wish to participate in the study. In addition, clinic descriptors were obtained for both participating and non-participating clinics by a brief telephone interview with the clinic owner or director.

In instances where the therapist agreed but the clinic refused access to the charts, the therapist was replaced, using the random selection procedure. A clinic that had previously refused to participate was re-approached for consent if another physiotherapist from their clinic was randomly selected.

Clinic owners and directors that agreed to participate provided access to the selected therapist's daily schedule list and corresponding charts.

3.3.6 Procedure for Data Abstraction

The following procedure was undertaken to identify the five charts to be reviewed for each therapist. Each day of work (Monday to Friday excluding national holidays) for the study period (January 1 to June 30, 1999) was written on an individual piece of paper 3cm X 8cm in dimension and placed into a bag. For each therapist 5 papers were randomly selected from the bag of dates: this was done without replacing the previously selected dates. Then, using the selected dates, charts of the therapist under study were identified from the clinic's daily scheduling book or where in existence, from the clinic's computer database. All the charts from this day were evaluated to identify initial assessments for LBP as per the previous definitions of *initial assessment* and *LBP*.

If more than one chart with an initial visit of a client with LBP had been completed on this day, each eligible chart was identified and given a sequential identification number. A table of random numbers was consulted to choose the identification number to be selected.

If no initial LBP visits occurred on the selected day the charts of the previous, and the subsequent, day were reviewed. This entire procedure was repeated until 5 charts were selected for each therapist.

The charts were reviewed in their totality to identify all evaluations recorded from initial treatment until time of discharge and the data were recorded onto the data abstraction form by the chart abstractor. To facilitate data abstraction, the form included a list of all standardized, and commonly used non-standardized, LBP outcome measures including their abbreviations and acronyms in French and English (appendix 4).

All chart information was entered into a computerized database system by the chart abstractor. In addition, information on the characteristics of the physiotherapist, client and clinic were entered into the database.

3.3.7 Ethics Approval

This study received ethics approval from the McGill University Ethics Review Board. In addition, 5 facilities required ethics approval from their individual Review Boards and the individual review processes were completed in each case.

3.4 Measures

3.4.1 Classification of outcome measure use

The major outcome of interest was whether a physiotherapist was a *user* of outcome measures. A ***user*** was defined, for the purpose of this study, by the written documentation of use of a minimum of one outcome measure in at least three of the five charts reviewed. The basis for determining this definition of ***user*** was to provide a representative sample of usual practice for each therapist. It was deemed that reviewing only one chart would not be an accurate representation on the therapist. Reviewing more than ten charts would be repetitive of the therapists' usual practice and was not practical. Five charts were deemed a reasonable estimation of the therapists' usual practice. The consistency by which the therapist documented using an outcome measure determined whether they were a ***user*** of outcome measures. Therefore, the therapist would need to document in at least half of the reviewed charts (ie: three of the five charts reviewed). Documentation of an outcome measure in any chart required that the title, the section

being evaluated, and results of the assessment, be documented within the chart or that the completed measure be placed within the chart.

The following criteria were used to establish if the measurement was standardized or non-standardized. An outcome measure was considered ***standardized*** if it had been published with specific procedures for administration, scoring and interpretation, and with evidence of reliability and validity. ***A non-standardized outcome*** measure was a measure without any published psychometric properties. For example, it is common for therapists to develop scales for use within their clinical setting, without any evaluation of the psychometric properties.

To further quantify the use of standardized measures *frequency* and *timing* of use was determined. Information on the timing of use was documented for three time frames a) initial assessment, b) discharge and c) any time in the interim.

The ***initial assessment*** was defined as an initial in-person physiotherapist/client interaction as indicated by a recorded inscription in the chart, and for clients with a previous visit, a recorded inscription occurring a minimum of 3 months from the last written documentation for this client.

A ***discharge assessment*** was the final recorded visit of the client occurring either:

1) when the physiotherapist decided that treatment was complete as substantiated by documentation in the chart or
2) when the client decided that treatment was complete, in which case the physiotherapist may or may not have written a note documenting the client's choice.

In the latter situation where a final note was not documented then *discharge* was defined as no attendance for at least six weeks after the last documented physiotherapist-client interaction.

The ***interim assessment*** was any point between the initial assessment and discharge.

The information on ***frequency*** and ***timing*** of use was gathered for the three stated time frames.

3.4.2 Data Collection Forms

Data Abstraction Form

The form included a list of all standardized and commonly used non-standardized LBP outcome measures including their abbreviations and acronyms. An intensive search was made of the CINAHL database from the years 1985 through 1999 and the MEDLINE database from 1960 to 1999. The key words or a combination of the key words were used to identify standardized and non-standardized outcome measures that were used with clients with low back pain were *low back pain*, *low back*, *reliability*, *outcome measures*, *standardized measures*, *scales*, or *validity*. The titles and abstracts were reviewed to determine the relevancy of the measure. To ensure no measures had been overlooked, measures known to the investigators were specifically identified and their psychometric properties were reviewed.

To obtain a list of presently used clinical standardized and non-standardized outcome measures, 3 physiotherapists that worked in a private practice were consulted. These therapists were asked to provide a comprehensive list of clinical measures typically

used for clients with LBP. To check for completeness, a Chief Examiner with the Orthopedic Division (Canadian Physiotherapy Association) reviewed the list.

In addition, the data collection form was used to gather information related to the clients including age, gender, number of treatments, the time from initial to discharge treatment, previous history of LBP and type of payer.

*Physiotherapist Questionn*aire

Socio-demographic data on all physiotherapists was obtained from the 17-item (24 subcomponents) questionnaire. Information included in the questionnaire was the therapist's age, sex, the year graduated, place of training and continuing education. In addition to socio-demographic data the questionnaire also asked about basic practice information including, average time spent evaluating and documenting patient status, the therapists' previous participation in outcome measure research, and their reported use of outcome measures. The data was collected in either English or French depending on the therapist's choice.

Clinic Questionnaire

Demographic clinic data of the environment where each physiotherapist worked, was obtained from an 8-item questionnaire. Information included in the questionnaire was the clinic's style of documenting initial and subsequent visits, main source(s) of reimbursement, the number of therapists working in the clinic, the number of physiotherapy student placements in the clinic and the number of in-services within the

clinic. The owner or manager completed the questionnaire in their choice of language (French or English).

3.4.3 Collection of explanatory variables

Information potentially related to the use of standardized measures was collected on the characteristics of 1) the physiotherapist, 2) the client and 3) the clinic.

The therapist related information consisted of: age, sex, time since graduation, clients/hour (observed from their schedule book), length of initial assessment, participation in research at a previous time interval, intensity of work (part-time or full-time), and additional training since graduation.

The client related information included information such as: age, sex, payer, length of treatment, number of treatments date. of documented previous LBP and if applicable, clients LBP history.

The clinic related information included: type of practice (hospital, private), computer use within clinic, participation in research, quality assurance mandate, student internships, and the agencies that provided payment for treating the client (Worker's Compensation, motor vehicle insurance, private insurance, self-pay, hospital).

3.5 Sample size

The primary outcome was the proportion of therapists using standardized outcome measures. If we found in this study that 40% of therapists were *users,* we wanted to be relatively confident that this proportion reflected, as closely as possible, the true prevalence of use by physiotherapists. Therefore, the maximum discrepancy that was

accepted between the sample and the population was ±5 percent with a 95 percent certainty that the discrepancy is within these limits.

Confidence Interval of 95% (z±1.96, two tailed)

Margin of error 5% (.05)

p* guessed value at true proportion

$$n = \frac{(z^2)}{(m)} p^*(1-p^*)$$

Therefore, a sample size estimate of 368 physiotherapists would be required to identify that 40% of physiotherapists, with a confidence interval of 35% to 45%, were using standardized outcome measures. In the study by Cole et al. only 20% of therapists identified an instrument for their use of standardized outcome measures[6]. Using this value, 20% (confidence interval 16% to 24%) as the minimum number of therapists using some type of standardized outcome measures this would give a sample size of 246 physiotherapists. These sample sizes will provide the range (246-368 subjects) from which the sample will reflect the population with a 5% error.

Quite early in the study it became evident that the prevalence of outcome measure use was much lower than previously thought. Little variability between the therapists indicated that there was a consistent and reproducible response[8]. Therefore, adjustments were made to the sample size. To achieve the anticipated 5% population proportion with a confidence level of 95% and a precision of 10 percentage points, a sample size of 73 subjects would be required.

3.6 Analysis

Descriptive statistics were used to compare characteristics of *users* and *non-users*. First, standardized outcome measure *users* and *non-users* were identified and their characteristics compared. Then, non-standardized outcome measure *users* and *non-users* were identified.

To identify the most commonly used measures a frequency distribution for each standardized measure was expressed as a percentage of therapists *ever* using the measure. For each therapist *ever* was defined as the use of the tool in any of the five charts reviewed.

To answer the question of what factors are associated with being a *user or non-user*, univariate analysis were performed. For example, the association between a *user* (yes/no) and type of practice (hospital based or private based) was explored. A Bonferroni correction was made to account for multiple correlations (n=11). The level of significance is set at p=0.0045.

The initial protocol of this study indicated the use of a multiple logistic regression to further explore the contribution of the potential variables and which variables most explain the use or non-use of standardized outcome measures. The low prevalence of use that limited the potential for multivariate analyses of variables associated with use did not warrant this procedure.

CHAPTER 4

RESULTS

4.1.1 Therapist Demographics

In Montreal, Quebec, 1337 physiotherapists were listed as potential participants. Of these, 151 physiotherapists were randomly selected and contacted by telephone. 29 were determined to be eligible, and 22 (76%) agreed to participate. Not working in an out-patient setting was the main reason therapists were not eligible. An additional exclusion was required at the time of chart abstraction. Specifically, one therapist indicated that she had seen, on average, five or more individuals with low back pain in any given week during the study period, but a review of the therapist's scheduling book revealed fewer.

In Ottawa a total of 424 potential subjects were identified as potential participants. One hundred and forty-six physiotherapists were randomly selected and contacted to determine eligibility. Forty-six met the eligibility criteria. Of those, 38 (83%) agreed to participate and 3 refused (7%) to participate. An additional 8 therapists were excluded, as 4 clinic owners did not permit chart access. Table 1 illustrates the reasons for therapist and clinic owner/manager refusals for both Ottawa and Montreal.

In total, 53 of the 75 therapists participated, with a total participation of 71%. No significant differences are seen between the characteristics of those participating and not participating (Table 2).

Characteristics of participating therapists according to location of work are shown in Table 3. The proportion of females to males was 4:1. All except three therapists had a minimum of a Bachelor's degree in physiotherapy. The institutions the therapists

attended for their physiotherapy programs are shown in Table 4. There are 13 universities in Canada that offer Physiotherapy degree programs, and 10 are represented in this study. The majority of therapists (n=51, 96%) had taken at least one continuing education course related to the lumbar spine. The scope of the courses included the McKenzie series, Canadian Association of Manual Therapy series, and courses specific to osteopathy and acupuncture. No significant differences except gender distribution and language of charting were found between the therapists practicing in Montreal and Ottawa in demographic and baseline characteristics: further analysis was completed with the two groups combined (Table 3).

The language predominately used in communicating with clients in Ottawa was English. Half of the therapists in Montreal used French and half used English. The language of communication was almost always the language of documentation in client charts. For all therapists, the most common range of time for the initial evaluation for LBP (not including documentation and waiting time) was 30-45 minutes (44% of therapists) and documentation took 11-15 minutes (38% of therapists). The average time spent on a subsequent visit (excluding documentation and waiting time) was 30-45 minutes (49% of therapists). Documentation of a subsequent visit was 1-5 minutes (74% of therapists).

4.1.2 Client Characteristics

Client characteristics are used to illustrate the sample of LBP clients represented in the 265 charts. The mean length of treatment for clients with LBP was 6.6 weeks (SD 10.9; range 2 days to 50 weeks). The distribution is skewed to the right, with over 50% of clients having more than four weeks of treatment in total. There was an equal

representation of males (48%) and females (52%). 160 (60%) of the clients had a previous LBP injury. The average number of visits the clients attended was 10.9 (SD 12.2; range 2-77). Almost 50% of clients received more than 15 visits.

Table 1: Stated reason for not participating

Stated reason	Therapist n=22 (n,%)
Too busy	5 (23)
Does not want to be involved in physiotherapy	1 (5)
Clinic owner(s) refuse	12 (55)
Confidentiality of someone else viewing patient files	4 (18)

Table 2: Baseline characteristics of participants and non-participants

	Participants n=53	Non-participants n=22	P-value**
	n (%)	n (%)	
Gender			
Male	10 (19)	5 (23)	0.704
Female	43 (81)	17 (77)	
Location of Work			
Montreal	21 (40)	8 (36)	0.791
Ottawa	32 (60)	14 (64)	
Type of Facility			
Hospital	10 (19)	2 (9)	0.293
Private	43 (81)	20 (91)	
First Language			
French	16 (30)	8 (36)	0.155
English	34 (64)	10 (46)	
Other	3 (6)	4 (18)	

Note** No significant differences between participants and non-participants ($p<0.05$)

Table 3: Participating therapist characteristics by location of work

	Montreal n=21	Ottawa n=32	P value**
Age, in years (mean, SD)	37.5 (±7.6)	38.5 (±7.9)	
	n (%)	n (%)	
Gender			
Male	8 (38)	2 (6)	0.003
Female	13 (62)	30 (94)	
Type of facility			
Hospital	4 (19)	6 (19)	
Private	17 (81)	26 (81)	
Work status			
Full-time	17 (81)	22 (69)	
Part-time	4 (19)	10 (31)	
Education (highest level):			
Diploma	1 (5)	2 (6)	
Bachelor's	20 (95)	29 (91)	
Master's	0 0	1 (3)	
Role in clinic			
Owner	9 (43)	11 (34)	
Staff therapist	12 (57)	21 (66)	
Training			
Osteopath +PT	2 (10)	1 (3)	
Pt only	19 (90)	31 (97)	
Language in chart			
English	11 (53)	32 (100)	0.0001
French	10 (47)	0	
Time duration of (in minutes):			
Initial visit			
≤ 45	12 (57)	20 (63)	
> 45	9 (43)	12 (37)	
Initial documentation			
0-10	10 (48)	22 (69)	
> 11	11 (52)	10 (31)	
Subsequent visit††			
≤45	8 (38)	28 (88)	
> 45	13 (62)	4 (12)	
Subsequent documentation			
1-10	16 (76)	23 (72)	
> 11	5 (24)	9 (28)	
How paid *			
Hourly	8 (38)	9 (29)	
Percentage	8 (38)	17 (55)	
Other	5 (34)	5 (16)	

*Note for Ottawa n= 31; **Significant at p<0.002

Table 4: Institutions represented according to the university the physiotherapist obtained their undergraduate physiotherapy degree or diploma

University Attended	Therapists	
	n	(%)
Dalhousie	1	(2)
Laval	2	(4)
Manitoba	1	(2)
McGill	22	(42)
McMaster	1	(2)
Montreal	6	(11)
Ottawa	7	(13)
Queens	3	(6)
Saskatchewan	1	(2)
Toronto	7	(13)
Western Ontario	2	(4)

4.1.3 Clinic Environment

The participating physiotherapists represented 40 different clinics. Each participating facility reported on the number of physiotherapists in their facility, hospital practices recorded only the number of physiotherapists in their outpatient service. The average number of full time therapists was 2.8(SD 2.2; range 0–10) and 1.9 part–time therapists (SD 1.4; range 0-5). The main source of reimbursement in the clinics was private insurance (63%) and hospitals (30%). Most clinics did not host physiotherapy students (90%). Three-quarters of the clinics had more than one in-service (ie: an educational session within the facility) over a 2-year period. Half of the clinic owners were also participants.

4.2.1 Measures used in clinical practice

To explore the scope of outcome measures (OM) that were used in clinical practice 265 LBP charts were reviewed. The non-standardized (NSOM) and standardized (SOM) measures used and the timing of their use are listed in rank order in tables 5 and 6, respectively. All but two of the illustrated measures evaluates an impairment attribute. The Roland Morris Disability Questionnaire and the Patient Specific Functional Scale were the only measures of disability; there was no handicap attributes measured. All outcome measures (OMs) were used more frequently at the initial time period as compared to the interim and discharge time periods.

The Pain Drawing is administered in a self-report format. In this study it was the therapists (100%) who completed the Pain Drawing for the client. 'The Pain Drawing'

measure was initially considered standardized it was re-classified as non-standardized because the method of administration had been substantially changed.

Figure 1 shows the distribution of NSOM and SOM used at the three different time periods (initial, interim, discharge). The majority (60%) of the charts contained between 7 and 12 NSOMs at initial evaluation, whereas the majority (48%) of the charts at discharge contained only 1-3 NSOMs (Figure 1a). Most of the charts did not contain any standardized measures, Figure 1b. For the charts that did contain SOMs, the majority used one SOM measure (28%) at the initial time period, and less than 10% contained SOMs at interim and discharge.

Table 5: The thirteen non-standardized measures* and the timing of their use in physiotherapy charts (n=265)

Measure	Initial Assessment n (%)	Interim Assessment n (%)	Discharge Assessment n (%)
active movements	255 (96)	142 (54)	133 (50)
neurological exam	237 (89)	41 (15)	33 (12)
neurotension tests	233 (88)	62 (23)	36 (14)
combined active movements	220 (83)	118 (45)	94 (35)
pain drawing**	209 (79)	0	0
observations	194 (73)	44 (17)	31 (12)
posture	189 (71)	44 (17)	24 (9)
palpation	146 (55)	59 (22)	56 (21)
flexibility	139 (52)	59 (22)	43 (16)
muscle recruitment	135 (51)	56 (21)	49 (18)
accessory movements	126 (48)	122 (46)	73 (28)
stability tests	79 (30)	52 (20)	19 (7)
passive intervertebral movements	77 (29)	42 (16)	28 (11)

* a non-standardized measure is a measure without any published psychometric properties
** The Pain Drawing is a standardized measure but used in a non-standardized manner

Table 6: The seven standardized measures* and the timing of their use in physiotherapy charts (n=265)

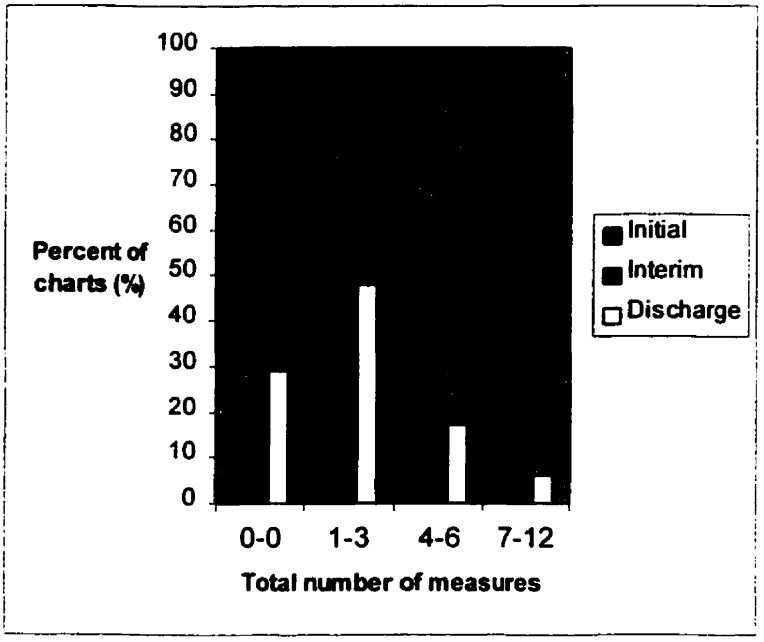
Measure	Initial Assessment n(%)	Interim Assessment n(%)	Discharge Assessment n(%)
Numeric Pain Rating Scale	71 (27)	20 (8)	10 (4)
Visual Analog Scale	11 (4)	5 (2)	3 (1)
Fingertip to floor	10 (4)	5 (2)	1 (0)
Schober and modified versions	6 (2)	3 (1)	4 (2)
Patient Specific Functional Scale	5 (2)	5 (2)	2 (1)
Inclinometer	4 (2)	1 (0)	1 (0)
Roland Morris Disability Scale	4 (2)	5 (2)	3 (1)

* a standardized measure denotes any measure with published procedures, scoring, interpretation and reliable and validity properties

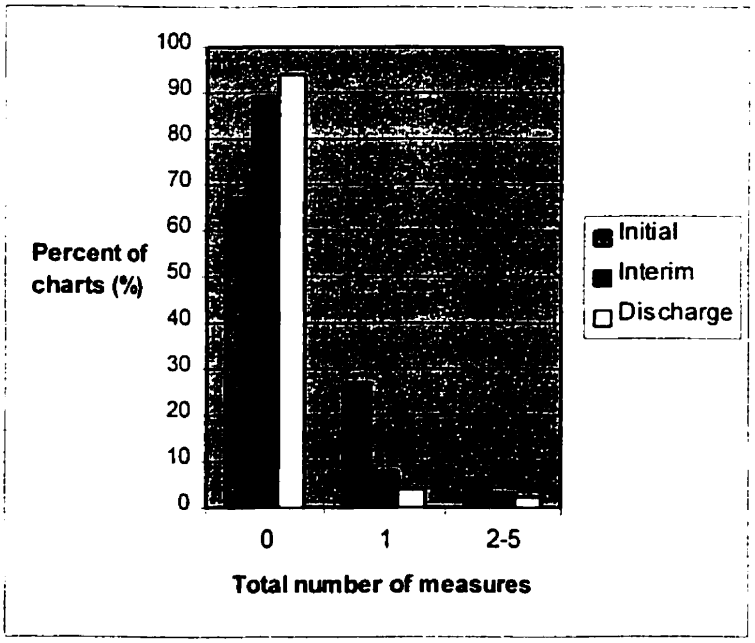
Note: percentages for n lower than 6 are a result of rounding off to the nearest whole number

Figure 1. Distribution of measure use at the three points in time (initial, interim and discharge evaluations) according to the chart (n=265).

1a) Non-standardized

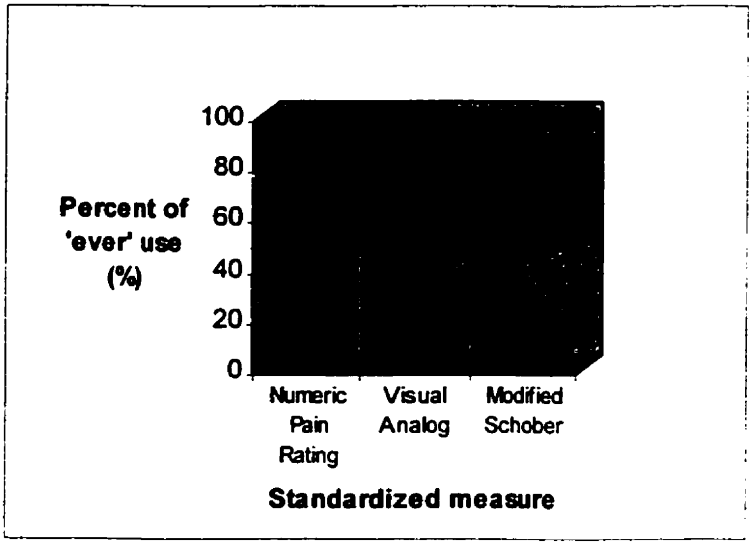


1 b) Standardized



To further explore the SOMs that were used, a frequency distribution illustrating the top three (out of five) SOMs that were *ever* used by a therapist are shown, figure 2. *Ever* was defined as the use of the tool in any of the five charts reviewed.

Figure 2: The percentage of therapists 'ever' using a standardized measure according to the top three measures.



4.3.1 The proportion of classified *users*:

The proportion of standardized and non-standardized outcome measure *users* was 34%(95% CI, 14-50) and 100%, respectively. It is interesting to note that 9 therapists reported using SOM between January 1 and June 30, 1999, yet the number of therapists identified as users from chart abstraction was 18 (p= 0.058). There was 22% agreement between those that said they were *users* and those that were identified as *user* from charts (Table 7).

Table 7: The agreement between self-report *users* (yes/no) and chart defined *users* (yes/no) for use of outcome

		User by chart		
		Yes	No	Total
User by therapist report	Yes	4	5	9
	No	14	30	44
	Total	18	35	53

The standardized measures that therapists reported they were using with LBP clients are listed in Table 8.

Table 8: Therapist reported measures used in their present clinical practice according to attribute measured

Attribute	Measure
Impairment	Straight leg raise
	Modified Schober*
	Pain Scale (0-10)*/ NPRS
	Pain Analog Scale*/ VAS
	Spinal Sort
	Standardized Strength Test
	EPIC Lifting evaluation
	Range of motion
	Waddell
Disability	Oswestry Disability*
	Roland Morris Disability*
	Patient Specific Functional Scale

*reported more than once

To investigate factors associated with being a *user of SOM* the characteristics of the therapist, the clinic environment and the client were evaluated univariately. When standardized users and non-users were compared (Table 9), the most noted therapist

characteristics were that *users* had the tendency to take more time to document an initial evaluation (p=0.089) and work was a hospital setting (p=0.054). There was no significant difference between *user* and *non-users* in the number of patients seen per hour.

Variables associated with the clinic environment were analyzed to explore their association with the therapist being a *user* or *non-user* (Table 10). When more than one participating therapist worked in a clinic, each therapist was ascribed that clinic. Thus, 2 clinics where *users* worked and 8 clinics where *non-users* worked (p=0.300) and their characteristics are represented more than once. The clinic characteristic that was associated with being a user was when the main source of reimbursement for clients with LBP was not private insurance (p=0.038). There was no significant difference between *user* and *non-users* in the language frequently used or the number of therapists (full-time or part-time).

Three client characteristics, source of payment, average length of treatment and number of treatments, shown in table 11, were significantly (p<0.0045) associated with being a user. Users had provided more treatments for their clients and over a longer period of time than non-users, the clients of users had a longer period of low back pain history than non-users and the source of payment for the client was more frequently from hospitals, worker's compensation or motor vehicle insurance than from private insurance.

Table 9: Therapist characteristics according to user and non-user of standardized outcome measures (n=53)

Therapist Characteristics	User n=18		Non-user n=35		p-value**
Age in years **(mean,SD)**	37.0 (±7.26)		38.7 (±7.98)		
	n	**%**	**n**	**%**	
Gender					
Female	15	(83)	28	(80)	
Work status					
Full-time	14	(78)	25	(71)	
Clinic Environment					
Location of work (Ottawa)	10	(56)	21	(60)	
Setting of work					
Private Practice	12	(67)	31	(89)	0.054
Hospital	6	(33)	4	(11)	
Patients per hour*					
1-2	5	(28)	16	(47)	
>2-3	11	(61)	15	(44)	
More than 3	2	(11)	3	(9)	
Method of Payment*					
Hourly	9	(47)	8	(21)	0.142
Percentage of clients	6	(35)	19	(58)	
Other	3	(18)	7	(21)	
Time spent on Evaluation (in minutes)					
Initial (excluding documentation)					
≤45	9	(50)	23	(66)	0.089
>46	9	(50)	12	(34)	
Initial (documentation only)					
1 to 10	8	(44)	24	(68)	
>10	10	(56)	11	(32)	
Interim (excluding documentation)					
≤45	11	(61)	25	(72)	
>45	7	(39)	10	(28)	
Interim (documentation only)					
1 to 5	14	(78)	25	(71)	
6 to 15	4	(22)	10	(29)	

Note: *n=34 for non-users

**No significant differences between user/ non-user for any variables p<0.0045 (Bonferroni correction)

Table 10: Clinic characteristics according to user and non-user of standardized outcome measures (n=53)

Clinic Characteristics	Users n=18		Non-users n=35		P-value**
	n	%	n	%	
Source of payment					
Worker's compensation and automobile insurance	4	(22)	2	(6)	0.038
Private	9	(50)	29	(83)	
Hospital	5	(28)	4	(11)	
Language used in clinic					
English	12	(67)	21	(60)	
French	4	(22)	6	(17)	
English and French	2	(11)	8	(23)	
Full-time therapists					
0-1	8	(44)	8	(23)	0.116
2-3	7	(39)	12	(34)	
≥4	3	(17)	15	(43)	
Part-time therapists					
0-1	8	(45)	11	(31)	
≥2	10	(55)	24	(69)	
Bachelor level students					
0-2	12	(67)	30	(85)	0.171
≥3	6	(33)	5	(15)	
Inservices over a two year period					
0-4	9	(50)	22	(62)	
≥5	9	(50)	13	(38)	

** No significant differences between user/ non-user for any clinic variables p<0.0045 (Bonferroni correction)

Table 11: Client characteristics according to user and non-user of standardized outcome measures (n=265)

Client Characteristics	Users n=90	Non-users n=175	P-value
Age in years, mean (SD)	45.1 (±16.9)	47.5 (±19.4)	
Gender n (%)			
male	38 (42)	88 (53)	
Length of treatment			
Weeks n(%)			
< 4	17 (19)	67 (38)	p=0.0039**
4-8	23 (25)	41 (24)	
> 8	50 (56)	67 (38)	
mean (SD)	63.1 (± 55.2)	46.5 (± 59.2)	
Clients prior low back pain history*:			
Years n(%)			
None	26 (29)	76 (44)	
<1	7 (8)	15 (8)	p=0.0490
≥1	56 (63)	82 (47)	
Number of treatments n(%)			
2-5	28 (31)	78 (44)	p=0.0018**
6-15	35 (39)	75 (43)	
≥16	27 (30)	22 (13)	
mean (SD)	14.9 (±16.2)	8.9 (± 8.9)	
Source of payment for services			
Worker's Compensation and automobile insurance	11 (12)	16 (9)	p=0.0000035**
Private	49 (54)	142 (81)	
Hospital	30 (33)	17 (10)	

*users n=89, non-user n=173

** Significant differences between user/ non-user for client variables p<0.0045 (Bonferroni correction)

A brief summary of the results:

- All but one of the measures chosen by therapists evaluated an impairment attribute. There was two disability attributes measured and there was no handicap attribute measured

- Non-standardized and standardize outcome measures were used most frequently at the initial time period

- The most commonly used standardized outcome measures that were *ever* used by a therapist were: Numeric Pain Rating Scale, Visual Analog and Modified Schober

- The proportion of standardized *users* was 34(95% CI, 14-50)

- Therapist and Clinic variables were not significantly associated with the therapist being a *user* of outcome measures

- Three client characteristics were significantly ($p<0.0045$) associated with the therapist being a *user* of outcome measures they were: source of payment, average length of treatment and number of treatments

CHAPTER 5

DISCUSSION

What is being used?

This study set out to determine the prevalence of outcome measure use in the treatment of low back pain. The findings suggest that the use of quantitative clinical measurement has not yet become routine in physiotherapist practice. Indeed, while this study identified a limited number of standardized measurement tools, for the most part, no tools are used in daily practice. Even the three most commonly used tools, the Numeric Pain Rating Scale (NPRS), the modified Schober and the Visual Analog Scale, were found in less than one-third of the charts. It is interesting that all three of these tools assess impairment, either in range of motion or pain. The choice of these measures may be because traditionally, reducing pain and improving range of motion have been the key areas of focus in low back pain treatment.

Standardized measures, modified by the user so that they no longer met administration guidelines, were also used in clinical practice. For example, the Pain Drawing, a standardized measure, was frequently used. However, the standardized format requires the client to draw, on a sketch of a body outline, the areas of pain, numbness, and pins and needles. Using one or more of the validated methods the drawing is scored by the therapist to identify symptom location, to diagnose, or to use as a psychological screening tool[48]. Interestingly, the findings illustrate that it was the physiotherapists who completed the pain drawing based on the description of the symptoms by the client.

Although, the measure has been validated in the low back pain population[17;48;51], no reliability studies have been done on therapist-respondent use of this scale.

Non-standardized outcome measures were regularly recorded in the therapists' notes ten times more than standardized measures. The most commonly used non-standardized measures, instruments that had not been evaluated for reliability or validity, were range of motion (measured by the amount of flexion, extension, and side flexion), the neurological exam, and neural tension tests. Other measures, less commonly used, were accessory movement, passive intervertebral movements (PIVMS), and palpation. In part, the high use of these measures can be explained because of the 'Standards of practice' set by the provincial licensing bodies. The licensing bodies for Quebec and Ontario, require that subjective and objective results of the assessments and treatments be recorded in the dossier[7;35]. To ensure that these practice standards are being met, the licensing bodies randomly audit therapist's charts. The clinicians' choice of tool may be because they consider these measures important to their practice since they highlight the signs and symptoms of the client's problem and because these measures were integral components in their physiotherapy training.

Standardized measures that were used

The seven different standardized measures identified in the therapists' charts represented five measures of impairment. The impairment measures included two different measures of pain (Visual Analog Scale and the Numeric Pain Rating Scale-NPRS) and three different measures of range of motion (inclinometer, modified schober and fingertip to floor). Two measures of disability were also identified (Patient Specific Functional Scale-PSFS, and Roland Morris Disability Scale –RMD).

The NPRS was clearly the most commonly used standardized measure as over half of the therapists used this instrument. The qualities of this measure can be used to

illustrate why it was so popular[29]. First, the NPRS measures pain, an attribute that both the therapist and client find important. Second, the measure is very quick and easy to use. The client is verbally asked to rate their pain on a rating scale 0-10. The client's numerical response is the score; no calculation of results is required. Third, the measure is inexpensive. The NPRS is administered verbally, therefore there is no equipment required (ie: photocopying of instrument, pencil, physical machinery). Finally, this instrument can be used with a variety of client conditions; it is not exclusive to clients with low back pain. It would be interesting to investigate if other instruments possess these same qualities, and if so, would these instruments facilitate physiotherapists' use of standardized outcome measures.

Interestingly only one therapist was responsible for the two measures of disability that were present in this study. How did this one therapist choose to use a measure of disability? The two different measures of disability used by this therapist illustrate how the purpose for using an outcome measure influences the choice of measure. At first sight the PSFS and the RMD appear quite similar as both measures are reliable, valid, sensitive to change [52;53;62;63], and are used as measures of disability, yet the tools are being used for two different purposes.

The PSFS[62], is an example of a measure that is designed as a client-specific tool to be used within one individual. The therapist specifically asks the client to communicate three functions or tasks that the client is having difficulty with. These tasks are then graded by the client on an 11-point scale (0-10). Then, at a future date(s) the client is again asked to grade the difficulty of the previously stated written task(s). This measure is unique as it identifies tasks that are important to the client. It is similar to what a therapist would typically ask a client informally "How are you doing today". The disadvantage of this measure is again due to it being individually tailored to a client so that the results can only be compared within the individual, to assess change in a person's condition.

The Roland Morris Disability Scale[52;53] is a standard set of 24 questions that asks the client to place a checkmark by the sentence that describes how they are 'today'. Two sample questions of the RMD are "I find it difficult to get out of a chair because of my back" or "Because of my back, I use a handrail to get upstairs". The advantage of this tool is that it can be used to compare within individual clients or within groups of clients. The RMD is presented in a self-report format, so the client can complete it independently without therapist involvement. The disadvantage is that specificity to the individual client is lost.

Each measure has advantages and disadvantages that the therapist must consider prior to performing the tests, so that the information the therapist wants is measured. Not only is the information gathered from these standardized outcome measures useful and meaningful to clinicians but the information is also important to the client. Although both measures are sensitive to change, this characteristic is lacking in some standardized measures. Sensitivity to change is an important next step to evaluate in outcome measures and one that requires further research.

Factors associated with use

The second objective of this study was to determine factors that are associated with outcome measure use. Three of the four client characteristics were significantly associated with a therapist being a user of SOM. Users provided more treatments, and the treatments were carried out over a longer period of time than non-users and the source of payment for the physiotherapy service was more likely to be from Worker's Compensation Insurance, motor vehicle insurance and hospitals rather than from private insurance. Interestingly, on a daily basis, user and non-user therapist activities, such as number of clients per hour, the duration of time provided for evaluation and treatments and duration of time for documentation did not differ significantly.

Lack of available time is one of the most commonly suggested reasons for therapists not using outcome measures[6;9;14]. For the therapist, there is a cost of time and energy associated with the use of outcome measures that must be considered. Theoretically, a self-report measure would not take much therapist time as the client completes the measure independently whereas a therapist administered measure would require direct therapist time and therefore, more therapist time and training[14]. The cost associated with using an outcome measure must be balanced against the course of treatment. The therapist must decide if a "brief" course of treatment is deemed worthy of the cost. For example, what are the costs associated with using an outcome measure with a client that was expected to complete their treatment in two days compared to a client that was expected to complete their treatment in four weeks? Establishing the course of treatment is difficult, the therapist must know before evaluating the client how long the expected duration of treatment will be. Predicting the course of treatment in conditions such as LBP, where the natural history has not been established, becomes almost impossible.

Considering that the majority of physiotherapy treatments are paid for by private health insurance companies the amount of client's time that can be used for evaluation becomes a concern to therapists, especially if the client has an expectation that intervention is the true service, not evaluation. If the use of a standardized measure provides the therapist with information that is useful and meaningful for clinical use, perhaps this would offset the 'cost' of time. Presently, there is a lack of clinical meaning in many standardized measures and further evaluation is required.

A hypothesis as to the reason the source of service was associated with outcome measure use can be made although testing the hypothesis is beyond the scope of this study. For third party payers, such as Worker's Compensation and Motor Vehicle insurance companies, documentation is required every two to four weeks to verify the

client needs to have further physiotherapy treatments. Therefore, the client is dependent on the therapist to provide an accurate and reliable account of their condition to substantiate the continuation of services.

The reason for increased standardized outcome measure use in hospitals is similar to third party payers except that it is the physiotherapist's existence in hospitals that requires verification. In the last few years' budget restrictions have been applied to hospitals thereby affecting the services offered in a hospital. Physiotherapy has been and potentially continues to be an affected service. Thus, physiotherapists are using standardized measures to quantify what they do and how effective their programs are to substantiate their existence in the hospital setting.

In the current system, there is no incentive for therapists to use standardized outcome measures for clients that have private insurance. The continuation or cessation of service is largely dependant on the client and the client's satisfaction of service or state of their condition. The therapist only needs to prove to the client that their condition is changing, hopefully for the better. If the instruments the therapist uses to measure client change are not reliable, valid or sensitive to change the therapist is unable to confidently known a change has been made, the results will not be consistent or correct. This is a great loss for the therapist as the intervention may be effecting change but it is impossible to measure. The amount of information that could be gathered for the profession would be immense if therapists that treated clients with private insurance used outcome measures. The validation of treatment in the clinical setting would have an impact on the profession as a whole.

Non-standardized measure use

If the non-standardized measures that are being used in clinical practice are important to the clinicians, have researchers failed to meet the needs of clinicians by

developing and standardizing measures that have not been used in clinical practice? Today, standardized measures exist that replicate some of the non-standardized measures used in clinical practice. Measures such as range of motion can be reliably assessed using an inclinometer[26;69], or Modified Schober measure[69],. Abdominal and extensor endurance tests can be reliably evaluated in the clinic[46]. Pain can be measured using a visual analog scale or a numeric pain rating scale [29]. Possibly the lack of integration of all of these measures into clinical practice is a result of lack of knowledge[6]. Although a small proportion of the therapists appear aware of some of the available measures the majority require further information concerning available and useful instruments.

Perhaps measures need to be developed with consideration of therapists' needs and assessment processes in order to encourage outcome use. Clinicians', as demonstrated in this study, commonly used accessory movements and neurotension tests. These are examples of measures that clinicians want to use in clinical practice. The reliability of clinical measures such as accessory movements and neurotension tests are yet to be determined. Two studies[5;39]were unable to verify the reliability of accessory movements in the lumbar spine. Further reliability studies have not been done to refute these findings nor have alternative assessment procedures been developed to assist in clinical accuracy. The responsibility must be on researchers to support present therapist evaluations with evidence and not create new unknown measures that may be difficult to adopt. Focus groups that discuss the needs of clinicians, and researchers could potentially link the clinic- research gap.

Conceivably, researchers recognized the limited scope of present clinical measures in assessing functional status and activities that are important for the client. All the non-standardized and standardized measures used in this study, except for two disability measures, evaluated attributes of impairment. The evolution of outcome measures demonstrates that impairment measures cannot be used to approximate functional level or disability[13]. Function must be measured independently. The real

challenge is not to disregard measures of impairment, but to integrate other attributes of measurement into clinical practice.

The age of the physiotherapist was thought to have an impact on their measurement style. It was hypothesized that a therapist who had graduated within the 'outcome measure revolution', approximately over the last eight years where there has been a surge of outcome measure information, would have had more exposure and instruction in their training regarding the use of measures and measurement properties than a therapist who had graduated prior to the 'outcome measure revolution' longer than 8 years ago, and before the advent of standardized measurement tools. However, there was no difference between the average age of those using and not using standardized measures. Are standardized outcome measures being taught in physiotherapy undergraduate programs? Unequivocally, yes. The challenge for the institutions is to integrate and emphasize standardized measurement into the curriculum to the same extent that traditional assessment methods are taught. The students themselves play a major role in the acceptance and integration of these new measures. For example, when students are taught how to complete a client assessment there are many practical sessions set aside for the student to learn the proper skill. The students may even set extra practice sessions for themselves to learn the required skills. Although the consistent integration of standardized outcome measures into the practical assessment sessions may facilitate the connection of assessment and standardized outcome measures as a routine clinical skill. A gap in the integration may occur when the student goes to a real clinical setting for a clinical placement. Perhaps it is during this period where the student compares the difference as to what they learn in school to what is happening in clinical practice. It is possible that if outcome measure use is not advocated in the clinical setting the usefulness of this skill is not reinforced. Indeed, this is only one possible scenario as there may be many precipitators that play a role in the integration of outcome measures.

Timing of use

The timing of use was similar for both categories (standardized and non-standardized) of outcome measures. As expected most measures were completed at initial evaluation. The initial evaluation is typically an information gathering process that attempts to identify the client's problems and to establish a differential diagnosis. Over half of the total NSOM were used at initial evaluation, indicating that a "package of tests" may be regularly used, whereas very few (1-3) measures were used at discharge. Conversely, most of the charts did not contain any standardized measures. For the charts that did contain SOM, one measure, the Numeric Pain Rating Scale, was commonly used and this was at the initial time period.

It is interesting to note that outcome measures were not routinely used during the course of treatment, nor at discharge. This lack of use raises an important issue. If an outcome measure is, as the term denotes, used because of an interest in determining outcome, and, if outcome is almost never ascertained at interim or discharge points, then do we still have an outcome measure?

5.1 Limitations

The first area of limitation of this study was the cross-sectional study design. This design does not allow cause and effect to be established between two variables, because the data are gathered at one point in time. The lack of prior information establishing factors associated with outcome use by physiotherapists made it necessary to use this study design.

A second area of limitation is the participant response rate (71%). Although the response rate was fairly high, the lack of use of outcome measures may be more prominent in the non-participators and refusal to participate could have been based upon this reasoning. This might have been the reasoning for the therapists that based their refusal on the confidentiality of their charts. However, baseline characteristics for participating and non-participating therapists were not different. Regardless, the

characteristics for the participating therapists and clinics were found to be representative of physiotherapists working in an out-patient setting and treating clients with LBP. Therefore, the results are likely to be generalizable to Montreal and Ottawa and their surrounding regions.

A third area of potential limitation was the use of chart reviews. The validity of using chart reviews has been questioned in the research setting due to the variability between charts. This is a descriptive study investigating the use of outcome measures. Therefore, we wanted to establish what was actually happening at the clinic. The findings support the use of a chart review, as the therapist's recall of outcome measure use was much lower than what was found in the chart review. The chart review involved charts of clients that are representative of LBP patients that typically go to physiotherapy.

The final area of potential limitation was the use of multiple chi-square comparisons. By chance alone a level of significance for one factor out of many can be found. To conduct multiple comparisons a larger sample size was needed to say with certainty that factors are associated. The findings represent comparisons that were established prior to data collection and analysis that would answer the research question. A Bonferroni correction (p-value 0.0045) was used to account for the multiple comparisons made in this study.

In summary, the results showed that:

- A small proportion of physiotherapists are using standardized outcome measures
- Many non-standardized measures are being used that measure impairment
- Users of standardized outcome measures are more likely to provide their clients with more treatments, over a longer period of time and their source of payment is from Worker's Compensation, Automobile Insurance or Hospitals

- Outcome measures are primarily used at initial evaluation

5.2 Conclusions

The use of health outcomes is necessary to document whether the decisions made about health care are of benefit to society[1]thus ultimately establishing the effectiveness and efficiency of the health care system [57]. This is of great importance with conditions such as low back pain that are difficult to diagnose and have limited proven effective physiotherapy treatment. A system is necessary but the system must enable the therapist to predict, discriminate and evaluate change so the efficiency and effectiveness are maximized. Standardized measures exist for measuring domains of interest in physiotherapy practice but as this study illustrates, their use in actual clinical practice for low back pain is minimal.

This study provides a better understanding of the current practice patterns of physiotherapists and outcome measure use. Together physiotherapist clinicians, researchers, educators and the physiotherapy association need to discuss the role that outcome measurement will play in the future of outpatient orthopedic physiotherapy practice. Perhaps the focus can be on linking outcome measures to clinical practice now that reliable and valid measures are evident for use.

Various future research topics were highlighted throughout the discussion section. Two additional future research items are now suggested.

First, although there were no significant differences between the participating and non-participating therapists the years of experience between the two groups were not compared and may provide insight into the characteristics of those who chose not participate.

Second, is it feasible for therapists to use these measures in everyday outpatient orthopedic clinical practice? Further research should investigate how to implement outcome measurement efficiently and effectively into actual clinical practice and the effect the implementation of outcome measurement has on quality of care.

REFERENCE LIST

1. Summary report from the National Forum on Health. www.nfh.hc-sc.gc.ca/publica/evidence/preface.htm. 1995.
Ref Type: Electronic Citation

2. Battie MC, Cherkin DC, Dunn R, Ciol MA, Wheeler KJ. Managing low back pain: attitudes and treatment preferences of physical therapists. *Phys Ther* 1994;74:219-226.

3. Bentsen H, Lindgarde F, Manthorpe R. The effect of dynamic strength back exercise and/or a home training program in 57-year-old women with chronic low back pain. Results of a prospective randomized study with a 3-year follow-up period. *Spine* 1997;22:1494-1500.

4. Binkley J, Finch E, Hall J, Black T, Gowland C. Diagnostic classification of patients with low back pain: report on a survey of physical therapy experts [published erratum appears in Phys Ther 1993 May;73(5):330]. *Phys Ther* 1993;73:138-150.

5. Binkley J, Stratford PW, Gill C. Interrater reliability of lumbar accessory motion mobility testing. *Phys Ther* 1995;75:786-792.

6. Cole B, Finch E, Gowland C, Mayo N. *Physical Rehabilitation Outcome Measures.* Toronto: Canadian Physiotherapy Association-Publishing Supply and Services, 1994.

7. College of Physiotherapists of Ontario. College by laws-Health Regulations. http://www.collegept.org/html/PH_BY-LAWS.HTML . 1999.
Ref Type: Electronic Citation

8. Colton T. *Statistics in medicine.* Boston: Little, Brown and Company, 1974.

9. Delitto A. Are measures of function and disability important in low back care? *Phys Ther* 1994;74:452-462.

10. Delitto A, Cibulka MT, Erhard RE, Bowling RW, Tenhula JA. Evidence for use of an extension-mobilization category in acute low back syndrome: a prescriptive validation pilot study [see comments]. *Phys Ther* 1993;73:216-222.

11. Department of National Health and Welfare/Canadian Association of Occupational Therapy. Toward Outcome Measures in Occupational Therapy. 1987. Ontario, Canada, Department of National Health and Welfare. Ref Type: Report

12. Dettori JR, Bullock SH, Sutlive TG, Franklin RJ, Patience T. The effects of spinal flexion and extension exercises and their associated postures in patients with acute low back pain [see comments]. *Spine* 1995;20:2303-2312.

13. Deyo RA. Measuring the functional status of patients with low back pain. *Arch Phys Med Rehabil* 1988;69:1044-1053.

14. Deyo RA, Andersson G, Bombardier C et al. Outcome measures for studying patients with low back pain. *Spine* 1994;19:2032S-2036S.

15. Deyo RA, Walsh NE, Martin DC, Schoenfeld LS, Ramamurthy S. A controlled trial of transcutaneous electrical nerve stimulation (TENS) and exercise for chronic low back pain [see comments]. *N Engl J Med* 1990;322:1627-1634.

16. Domholdt E. *Physical therapy reserach: principles and applications.* Philadelphia: WB Saunders Company, 1993.

17. Dzioba RB, Doxey NC. A prospective investigation into the orthopaedic and psychologic predictors of outcome of first lumbar surgery following industrial injury. *Spine* 1984;9:614-623.

18. Elnaggar I, Nordin M, Sheikgzadeh A, Parnianpour M, Kahanovitz N. Effects of spinal flexion and extension exercises on low back pain and spinal mibility in chronic mechanical low back pain patients. *Spine* 1991;16:967-972.

19. Epstein RS, Sherwood LM. From outcomes research to disease managment: A guide for the perplexed. *Annals of Internal Medicine* 1996;124:832-837.

20. Faas A, Chavannes AW, van Eijk JT, Gubbels JW. A randomized, placebo-controlled trial of exercise therapy in patients with acute low back pain [see comments]. *Spine* 1993;18:1388-1395.

21. Faas A, van Eijk JT, Chavannes AW, Gubbels JW. A randomized trial of exercise therapy in patients with acute low back pain. Efficacy on sickness absence [see comments]. *Spine* 1995;20:941-947.

22. Fairbank JC, Couper J, Davies JB, O'Brien JP. The Oswestry low back pain disability questionnaire. *Physiotherapy* 1980;66:271-273.

23. Farrell JP, Twomey LT. Acute low back pain. Comparison of two conservative treatment approaches. *Med J Aust* 1982;1:160-164.

24. Frost H, Klaber Moffett JA, Moser JS, Fairbank JC. Randomised controlled trial for evaluation of fitness programme for patients with chronic low back pain [see comments]. *BMJ* 1995;310:151-154.

25. Gilbert JR, Taylor DW, Hildebrand A, Evans C. Clinical trial of common treatments for low back pain in family practice. *Br Med J (Clin Res Ed)* 1985;291:791-794.

26. Gill K, Krag MH, Johnson GB, Haugh LD, Pope MH. Repeatability of four clinical methods for assessment of lumbar spinal motion. *Spine* 1988;13:50-53.

27. Gonnella C. Our new venture. *Arch Phys Med Rehabil* 1992;73:s1-s2.

28. Hansen FR, Bendix T, Skov P et al. Intensive, dynamic back-muscle exercises, conventional physiotherapy, or placebo-control treatment of low-back pain. A randomized, observer- blind trial. *Spine* 1993;18:98-108.

29. Jensen MP, Karoly P, Braver S. The measurement of clinical pain intensity: a comparison of six methods. *Pain* 1986;27:117-126.

30. Jette AM, Davis KD. A comparison of hospital-based and private outpatient physical therapy practices [see comments]. *Phys Ther* 1991;71:366-375.

31. Johannsen F, Remvig L, Kryger P et al. Exercises for chronic low back pain: a clinical trial. *Journal of Orthopedic & Sports Physical Therapy* 1995;22:52-59.

32. Johnston MV, Keith RA, Hinderer SR. Measurement standards for interdisciplinary medical rehabilitation. *Arch Phys Med Rehabil* 1992;73:S3-23.

33. Kendall PH, Jenkins JM. Exercises for backache: A double-blind controlled trial. *Physiotherapy* 1968;54:154-157.

34. Kirshner B, Guyatt G. A methodological framework for assessing health indices. *J Chronic Dis* 1985;38:27-36.

35. L'Ordre des physiotherapeutes du Quebec. Physiotherapy Regulations. 2.02, 3-399-3-400. 1998.
Ref Type: Report

36. Lidstrom A, Zachrisson M. Physical therapy on low back pain and sciatica. An attempt at evaluation. *Scand J Rehabil Med* 1970;2:37-42.

37. Lindstrom I, Ohlund C, Eek Ceal. The effect of graded activity on patients with subacute low back pain. *Spine* 1992;17.

38. Lindstrom I, Ohlund C, Eek Ceal. The effect of graded activity on patients with subacute low back pain: A randomized prospective clinical study with an operant-conditioning behavioral approach. *Phys Ther* 1992;72:279-293.

39. Maher C. Perception of stiffness in manipulative physiotherapy. *Physiotherapy Theory & Practice* 1995;11:35-44.

40. Malmivaara A, Hakkinen U, Aro T et al. The treatment of acute low back pain--bed rest, exercises, or ordinary activity? [see comments]. *N Engl J Med* 1995;332:351-355.

41. Manniche C, Asmussen K, Lauritsen Beal. Intensive dynamic back exercises with or without hyperextension in chronic back pain after surgery for lumbar disc protrusion: A clinical trial. *Spine* 1993;18:560-567.

42. Manniche C, Lundberg E, Christensen I, Bentzen L, Hesselsoe G. Intensive dynamic back exercises for chronic low back pain: a clinical trial. *Pain* 1991;47:53-63.

43. Mayo NE. Outcome measures or measuring outcome [editorial]. *Physiother Can* 1994;46:145-151.

44. McAuley, C. Chair of Research Division. Canadian Physiotherapy Association. 1999.
Ref Type: Personal Communication

45. McIlveen B, Robertson VJ. A randomised control study of the outcome of hydrotherapy for subjects with low back or back and leg pain. *Physiotherapy* 1998;84:17-26.

46. Moreland J, Finch E, Stratford P, Balsor B, Gill C. Interrater reliability of six tests of trunk muscle function and endurance. *Joournal of Orthopedic & Sports Physical Therapy* 1997;26:258-263.

47. O'Sullivan PB, Phyty GD, Twomey LT, Allison GT. Evaluation of specific stabilizing exercise in the treatment of chronic low back pain with radiologic diagnosis of spondylolysis or spondylolisthesis. *Spine* 1997;22:2959-2967.

48. Ohnmeiss DD. Repeatability of pain drawings in a low back pain population. *Spine* 2000;25:980-988.

49. Pope M, Andersson G, Frymoyer J, Chaffin D. *Occupational low back pain: assessment, treatment and prevention.* St.Louis: Mosby-year Book, 1991.

50. Risch SV, Norvell NK, Pollock ML et al. Lumbar strengthening in chronic low back pain patients. Physiologic and psychological benefits. *Spine* 1993;18:232-238.

51. Roach KE, Brown MD, Dunigan KM, Kusek CL, Walas M. Test-retest reliability of patient reports of low back pain. *J Orthop Sports Phys Ther* 1997;26:253-259.

52. Roland M, Morris R. A study of the natural history of back pain. Part I: development of a reliable and sensitive measure of disability in low-back pain. *Spine* 1983;8:141-144.

53. Roland M, Morris R. A study of the natural history of low-back pain. Part II: development of guidelines for trials of treatment in primary care. *Spine* 1983;8:145-150.

54. Ruta DA, Garratt AM, Wardlaw D, Russell IT. Developing a valid and reliable measure of health outcome for patients with low back pain. *Spine* 1994;19:1887-1896.

55. Sachs BL, Ahmad SS, LaCroix M et al. Objective assessment for exercise treatment on the B-200 isostation as part of work tolerance rehabilitation. A random prospective blind evaluation with comparison control population. *Spine* 1994;19:49-52.

56. Sackett DL, Haynes RB, Guyatt G, Tugwell P. *Clinical Epidemiology: A basic science for clinical medicine.* Toronto: Little, Brown and Company, 1991;295.

57. Schraeder C, Shelton P, Britt T, Parker R, Leonard J. Population-based research data as a means to address health outcomes. *J Ambulatory Care Manage* 1997;20:39-46.

58. Spitzer WO, Leblanc FE, Dupuis Meal. Scientific approach to the assessment and management of activity-related spinal disorders. A monograph for clinicians. Report of the Quebec Task Force of Spinal Disorders. *Spine* 1987;S4-S59.

59. Stankovic R, Johnell O. Conservative treatment of acute low-back pain. A prospective randomized trial: McKenzie method of treatment versus patient education in "mini back school" [see comments]. *Spine* 1990;15:120-123.

60. Stankovic R, Johnell O. Conservative treatment of acute low back pain. A 5-year follow-up study of two methods of treatment [see comments]. *Spine* 1995;20:469-472.

61. Stratford P. Letter to Editor. *Orthopedic Division Review* 2000;4.

62. Stratford P, Gill C, Westaway M, Binkley J. Assessing diability and change on individual patients: a report of a patient specific measure. *Physiother Can* 1995;47:253-263.

63. Stratford PW, Binkley J, Solomon P, Finch E, Gill C, Moreland J. Defining the minimum level of detectable change for the Roland-Morris questionnaire. *Phys Ther* 1996;76:359-365.

64. Streiner DL, Normal GR. *Health measurement scales:A practical guide to their development and use.* New York: Oxford University Press, 1998.

65. Teasell RW, White K. Clinical approaches to low back pain. Part 1. Epidemiology, diagnosis, and prevention. *Can Fam Physician* 1994;40:481-485.

66. van Tudler MW, Koes BW, Bouter LM. Conservative treatment of acute and chronic nonspecific low back pain. *Spine* 1997;22:2128-2156.

67. Von Korff M. Studying the natural history of back pain. *Spine* 1994;19:2041s-2046s.

68. Waxman R, Tennant A, Helliwell P. A Prospective Follow-Up Study of Low Back Pain in the Community. *Spine* 2000;25:2085-2090.

69. Williams R, Binkley J, Bloch R, Goldsmith CH, Minuk T. Reliability of the modified-modified Schober and double inclinometer methods for measuring lumbar flexion and extension. *Phys Ther* 1993;73:33-44.

70. Wood-Dauphinee S. Enid Graham Memorial Lecture. *Physiother Can* 1997;49:263-268.

71. World Health Organization(WHO). *International Classification of Impairments, Disabilities and Handicaps, A manual of classification relating to the consequences of disease.* Geneva: World Health Organization, 1980.

Appendix 1.

Table 1: Summary of the literature review articles conducted on the effectiveness of exercise and acute low back pain

Authors	Exercise Regimen (no of patients)	Reference Treatment (no of patients)	Outcome measure	Stand-ardized	Class	Results
Dettori et al., 1995	a)Flexion exercise (57) b)extension exercise (62)	control-ice pack application (30)	Roland Morris Questionnaire Ability to return to work Pain Spinal flexion/extension Straight leg raise Subject's satisfaction	yes no yes yes yes no	D H I I I D/I	Neither flexion nor extension exercises and postural instruction affected outcome
Malmivaara et al., 1995	a)bed rest (67) b)no bed rest with low back exercises	c)control group-continue usual activity as able, no forced bed rest (67)	Functional status -Oswestry Disability scale Health related quality of life Duration of absence from work Straight leg raise Modified Schober Pain	 yes ? No yes yes yes	 D D/H H I I I	Bed rest leads to slower recovery. The differences between b and c were shown in the outcomes: pain, functional status, days absent from work
Faas et al., 1993 and 1995[1]	a)Stretching, flexion, side movements, advice (156)	b)usual care by general practioner (155) c)Placebo ultrasound therapy (162)	Pain-VAS Nottingham Health Profile Questionnaire for days reported sick	yes yes no	I D H	No significant differences in functional health status, pain, or affect on sickness absense or duration of absense
Delitto et al., 1993	a)McKenzie extension exercise (14) b)Williams flexion oriented exercise (10)		Oswestry LBP Questionnaire	yes	D	Subjects' rate of improvement was dependent on the treatment group assigned (extension group faster than flexion)
Stankovic et al., 1990 and 1995[1]	McKenzie extension exercises (50)	Mini-back school (50)	Return to work Sick leave Pain recurrence Pain Range of motion-low back Patient's ability to self help	no no yes yes no no	H H I I I I/D	Less pain and better spinal mobility in extension exercises at 3 weeks and after 1 year. Number of recurrences after 1 and 5 yr significantly less in extension exercises.

Authors	Exercise Regimen (no of patients)	Reference Treatment (no of patients)	Outcome measure	Sensitive	Grade	Results
Gilbert et al., 1985	a)isometric flexion, education, bed rest (65) b) isometric flexion and bed rest (62)	c)bed rest (60) d)no intervention(65)	Straight leg raise Lumber flexion MMPI Pain-McGill Questionnaire Patient daily diary	yes yes yes yes no	I I D/I I D	No significant difference was found in any of the interventions with these outcome measures
Farrell et al., 1982	Isometric abdominal exercises, microwave diathermy(24)	Passive mobilisation and manipulation (24)	Function limitations Severity of LBP Lumbar movements -spondylometer -rotameter Straight leg raise Number of days to reach symptom-free status	yes yes yes yes yes no	D I I I I I	Manipulation groups symptom-free in significantly less days

? unknown properties

Table 2: Summary of the literature review articles conducted on the effectiveness of exercise and chronic low back pain

Authors	Exercise Regimen (no of patients)	Reference Treatment (no of patients)	Outcome measure	Significant Improvement	Class	Results
McIlveen et al., 1998	Hydrotherapy (45) -exercise in water	Waiting list (50)	Modified Schober Hydrogoniometer Oswestry LBP McGill Pain Neurological tests	yes yes yes yes no*	I I D I I	Oswestry LBP scale showed signficant difference between groups; no other significant difference
O'Sullivan et al., 1997	Stabilizing exercises (21)	regular weekly general exercise directed by medical practitioner (21)	McGill Pain Oswestry LBP Inclinometer	yes yes yes	I D I	Stabilizing exercises showed significant reduction in pain and disability levels
Bentsen et al., 1997	Dynamic strength back exercises at fitness center then home program (41)	Home training program (33)	Disability -Nordic questionnaire -Million questionnaire Modified Schober Lateral Flexion Straight leg raise Sick-leave Health service use	 yes yes yes no yes no no	 D D I I I H ?	No significant differences were seen between the groups only an increased adherence to exercise was noted in the fitness center group
Frost et al., 1995	fitness program and back school education (36)	back school education (35)	Oswestry LBP Pain: diary Pain: self-efficacy Pain: locus of control Functional Capacity General health Questionnaire (GHQ)	yes yes yes yes yes yes	D I I I D D	Significant differences between groups in changes before and after treatment for all outcomes but Pain-locus of control and GHQ
Johannssen et al., 1995	a)dynamic endurance exercise/stretching (20) b)coordination/ balance exercises(20)		Isokinetic-Kin ComII Modified Schober Back Pain scale Disability rating General well being	no yes no no no	I I I D D	Significant improvement with back extension strength but no correlation with LBP improvement
Sachs et al., 1994	Rehabilitation program plus exercise on B-200 isostation	Rehabilitation program	Range of Motion Isometric strength Velocity of motion	no no no	I I I	No significant difference in range of motion

Authors	Exercise Regimen (no of patients)	Reference Treatment (no of patients)				
Hansen et al., 1993	Intensive dynamic back muscle training (60)	a)Standard treatment (59) b)Placebo control (61)	Overall treatment affect Pain-VAS	yes yes	D I	a)significant difference between groups with pain b)intensive and standard treatment significantly higher than placebo at all evaluations
Risch et al., 1993	Dynamic extension exercise program	Waiting list control group	Locus of control scale WHYMPI Mental Health Inventory Sickness Impact Profile Isometric strength curve	? Yes yes yes yes	D I D D I	Significant differences were seen in mean pain score and physical disability(subscale of Sickness impact Profile)
Manniche et al., 1993	Intensive dynamic exercises plus hyperextension (31)	Intensive dynamic exercises (31)	Low Back Pain Rating Scale (LBP-RS) Total score -Pain -Physical impairment -Disability	yes**	 I I D	no difference in outcome from subscores; after 3 mos. total difference between groups is significant
Lindstrom et al., 1992[a,b]	Individual program; endurance, strength training, lifting, (51)	Traditional care(52)	Spinal mobility -Modified Schober -Kyphometer -Goniometer Whole body mobility -functional battery Strength -dynamometer -graded weight system Return to work Sick leave during 2nd year	 yes yes yes no yes no no no	 I I I D I I H H	a) no significant differences in functional mobility but significant differences in spinal mobility and strength b) proportion of patients return to work at 6 and 12 weeks significant c) duration of sick leave due to LBP significantly different after 1 yr
Elnagger et al., 1991	McKenzie extension(28) Williams flexion(28)		McGill Pain Spinal Mobility -tracker system	yes no	I I	a)no significant difference between the groups for severity of pain b)significant difference between the groups in sagittal mobility

Authors	Exercise Regimen (no of patients)	Reference Treatment (no of patients)				
Deyo et al., 1990	a)Stretching exercise and TENS (34) b)Stretching exercise and sham TENS (29)	TENS (31) Sham TENS (31)	Functional: -Sickness Impact Profile -self assessment Pain rating: -overall improvement -VAS Pain scale -VAS improvement -pain frequency Physical Measures: -straight leg raise -finger tip-floor -Schober Medical services -visits to other health care providers	 yes no yes yes yes yes yes yes yes no	 D I I I I I I I I	Higher Self-assessment (functional), higher overall improvement(pain), and lower frequency of pain (pain) were shown in the exercise group at four weeks. 2 months after active intervention there was no significant difference
Manniche et al., 1988 and 1991[1]	a) thermotherapy, massage, mild isometrics (32) b)modified back strengthening (32) c)intensive back strengthening (27)		LBP-RS -Pain -Disability -Physical impairment	yes**	 I D I	a) total score was significantly better in the intensive group b) all three subscales showed significant improvement for intensive exs.; only subscale-pain was not significant for modified exercise
Lidstrom et al., 1970	a)isometric strength and pelvic traction (20) b)mobilizing, strengthening, massage, hot packs (21)	Hot packs and rest (21)	Clinical evaluation: -muscle tests -finger tip to floor	 no no	 I I	Interventions (a and b) had significant difference from the control group; no significant difference between interventions a and b

Authors	Exercise Regimen (no of patients)	Reference Treatment (no of patients)	Outcome Measure			
Kendall et al., 1968	a)Isometric flexion (14) b)Mobilization (14) c)Extension (14)		Symptoms -total duration of backache -number of episodes -duration of present episode -main site of pain Intensity of symptoms Physical signs -finger tip to floor -spinal extension -straight leg raise	 no no no no no no no no	 I I I I I I I I	Significantly larger group of patients benefitted from flexion exercises than the other two groups (b and c)

**unpublished validation but reference made in the article to the validity
? unknown property

a Spine volume 17 number 6 1992

b Physical therapy volume 72 number 4 1992

I Two different papers using the same evaluated subjects

Appendix 2: Data Abstraction forms

TherNum [ ]

Data Abstraction

Chart Number ◉1 ◉2 ◉3 ◉4 ◉5

Therapist Name_____

	Abbreviations	Initial	Interim	Discharge	Total
Aberdeen Low back Scale	ALBPS				
Clinical Overall Score	COS				
Dallas Pain Sore	DRS				
Duke Health Profile	DHP				
Fingertip to floor	FTF				
Functional Rating Scale	FRS				
General Health Questionnaire	GHQ				
Inclinometer	Inclino, IM				
Isokinetic Dynamometer	Cybex, kinetic, dyna				
Lifting Dynamometer	Lido, lifttask, isometri				
Leighton Flexometer	LF, flexometer, leighto				
McGill Pain Questionnaire Escuela Nordica mcGill	MPQ EMN				
Million Instrument	Million, Nordic Quest, Nordic				
Minnesota Multiphasic Personality inventory	MMPI				
Modified Schober Escuela Nordica	MS MMS, Schober, SM				
Nottingham Health Profile	NHP				
Numeric Pain Rating Scale	NPRS				
Oswestry Low Back Pain Quest. Escuela Oswestry	OPQ				
Pain Drawing	two body outlines,fr/bk				
Partial sit-up/curl up	Abdonimal muscle streng/end				
Patient specific funcional Scale	PSFS				
Pressure Biofeedback for muscular endurance	PBF				
Quebec Back Pain Disability	QBPDS				
Roland Morris Questionnaire Escuela Roland Morris	RMQ, DQ RM				
Return to Work	RTW, back to work				
Sickness Impact Profile	SIP				
Short Form 36	SF-36				
Sorenson test for endurance of the back muscles	Biering-Sorenson				
Spondylometer/rotameter					
Straight leg raise-goniomete	SLR				
Visual Analog Scale Escuela Analog visual	VAS, V.A.S. E.A.V				
Waddell Disability Index	WDS				
West Haven-Yale Multidimensional Pain Inventory	WHYMPI				
	Total	0	0	0	

Chart1 ever ○ yes ○ no

Chart2 ever ○ yes ○ no

Chart3 ever ○ yes ○ no

Chart4 ever ○ yes ○ no

Chart5 ever ○ yes ○ no

User ○ yes ○ no

Pts/day [0]

Computer ○ yes ○ no

Data Abstraction 2

TherNum ____
Clinic No. ____

Therapist Name_____
Clinic Name_____

Chart Number ◉ 1 ◉ 2 ◉ 3 ◉ 4 ◉ 5

	Initial	Interim	Discharge	Total
Observation (description)				
Posture (description)				
Active Movements: :with fractions of movement (1/2, 1/4, 1/3, ROM				
Combined Special Movements :FF, SF, LSF, RSF, EXT or a combination of thes :H or I movement pattern				
Neurological exam: Examen neurologique :reflexes (superficial and deep tendon reflexes :muscle testing :sensation (pin prick, 2 pt discrimination, touc :thermal discrimination				
Neural tension tests: Tension nerveuse :passive neck flexion (PNF) :SLR eyeball measurements :prone knee bend (PKB) :Slump test				
PPIVM's- passive physiological intervertebral movements				
Accessory movements: Mouvement accessoire :P/A :Unilateral P/A :transverse pressures (or the sign				
Stability test Stabilité :shear (ant/pos). :rotation : torsion				
Muscle flexibility Flexibilité				
Muscle recruitment				
Palpation-soft tissue and/or Positional findings (often used in) picuture form with a KEY to represent tender, stiff, hypermobile, elicited pain, prominent area)				
Total				

Chart1 ever ○ yes ○ no Chart2 ever ○ yes ○ no Chart3 ever ○ yes ○ no

Chart4 ever ○ yes ○ no Chart5 ever ○ yes ○ no User ○ yes ○ no

Other information: Computer ○ yes ○ no

Patients/day ____

source of payment ____

Quality assurance mandat ____

Length of Rx(In-dschg) ____

age ____ # of Rx's ____

Previous LBP(dates) ____

Pt gender ○ male ○ female

Appendix 3:Questionnaires

Physiotherapist Questionnaire

Name_____ Identification #_____

Name of clinic_____

1. Birthdate _____
   (year/month/day)

2. Education completed to date:

Education Level	Year Completed	University or Institution attended
Bachelors Degree		
Masters Degree		
PhD		
Other (ie:specialty) _____		

For the following questions, mark the box that best represents <u>your</u> work habits between January 1, and June 30, 1999.

3. During the period between January 1 and June 30, 1999 I worked in:
   - ☐ Montreal and surrounding area
   - ☐ Ottawa and surrounding area

4. On average, the time I spent at work in the period January 1 and June 30, 1999, during one week was equal to:
   - ☐ Full-time equivalent work
   - ☐ Part-time equivalent work

5. During the period between January 1 and June 30, 1999, the language I predominately used when I communicated with clients in the clinical setting was:
   - ☐ English
   - ☐ French
   - ☐ Other (please specify)_____

For the following questions, mark the box that best represents <u>your</u> work habits between January 1, and June 30, 1999.

6. During the period between January 1 and June 30, 1999, the language I predominately used to write in my charts was:
   - ☐ English
   - ☐ French
   - ☐ Other (please specify)_____

7. On average, during the period between January 1 and June 30, 1999, the time I spent on an initial evaluation (not including documentation and waiting time) for low back pain was:
   - ☐ Less than 30 minutes
   - ☐ 30-45 minutes
   - ☐ 46-60 minutes
   - ☐ Greater than 60 minutes

8. On average, during the period between January 1 and June 30, 1999, the time I spent documenting an initial evaluation for low back pain was:
   - ☐ 0
   - ☐ 1-5 minutes
   - ☐ 6-10 minutes
   - ☐ 11-15 minutes
   - ☐ Greater than 15 minutes

9. On average, during the period between January 1 and June 30, 1999, the time I spent on a subsequent visit for a client with low back pain (excluding documentation and waiting time) was:
   - ☐ Less than 30 minutes
   - ☐ 30-45 minutes
   - ☐ 46-60 minutes
   - ☐ Greater than 60 minutes

10. On average, during the period between January 1 and June 30, 1999, the time it took to chart a subsequent visit for a client with low back pain was:
    - ☐ 0
    - ☐ 1-5 minutes
    - ☐ 6-10 minutes
    - ☐ 11-15 minutes
    - ☐ Greater than 15 minutes

11. How were you paid during the period between January 1 and June 30, 1999?
    - ☐ hourly
    - ☐ percentage of clients seen
    - ☐ Other, please specify_____

For the following questions a "standardized outcome measure" is defined as a published measurement scale (ie: Roland-Morris Back pain questionnaire, Modified Schober, Quebec Back Pain Disability Scale)

12. During the period between January 1 and June 30, 1999, did you use standardized outcome measures in your practice?
    ☐ yes ☐ no

13. Presently in your daily practice do you use any standardized outcome measures?
    ☐ yes ☐ no

14. If YES to Question 13, then please specify the specific outcome measures that you use _____

15. Have you participated in any research involving the use of standardized outcome measures?
    ☐ yes ☐ no

16. If YES to Question 15, then please specify:

a. Were these measures specific to orthopedic conditions? ☐ yes ☐ no

b. List the specific outcome measure(s) being used:

_____

_____

c. When did the study begin? (month and year)

_____

d. When did the study end? (month and year)

_____

Thank you for taking the time to complete this questionnaire

Questionnaire pour Physiothérapeutes

Nom :_____ Identification#_____

Nom de la clinic: _____

1. Date de Naissance_____
   (jour/mois/année)

2. Éducation complétée à date:

Niveau	Année	Université ou Institution
Bachelier		
Maîtrise		
PhD		
Autre (ie :specialité)		

Pour les questions suivantes, cochez la case qui représente le mieux votre travail entre le 1er janvier 1999 et le 30 juin 1999.

3. Entre le 1 janvier et le 30 juin 1999, je travaillais à :
   - ☐ Montréal et la région avoisinante
   - ☐ Ottawa et la région avoisinante

4. En moyenne, par semaine, le temps que vous avez consacré à ce travail du 1er janvier 1999 au 30 juin 1999 était l'équivalent à:
   - ☐ temps plein
   - ☐ temps partiel

5. Durant la période du 1er janvier au 30 juin 1999, quelle langue avez-vous surtout utilisée pour communiquer avec vos clients en clinique:
   - ☐ l'anglais
   - ☐ le français
   - ☐ autre (veuillez spécifié)_____

Pour les questions suivantes, cochez la case qui représente le mieux votre travail entre le 1er janvier 1999 et le 30 juin 1999.

6. Durant la période du 1er janvier au 30 juin 1999, la langue que vous avez utilisée pour remplir vos dossiers étaient:
   - ☐ l'anglais
   - ☐ le français
   - ☐ autre (veuillez spécifié)_____

7. En moyenne, durant la période du 1er janvier au 30 juin 1999, le temps que vous avez utilisé pour une évaluation initiale (excluant la documentation et le temps d'attente) pour les douleurs lombaires était :
   - ☐ moins de 30 minutes
   - ☐ de 30 à 45 minutes
   - ☐ de 46 à 60 minutes
   - ☐ plus de 60 minutes

8. En moyenne, durant la période du 1er janvier au 30 juin 1999, le temps que vous avez passé à documenter une évaluation initiale pour clients avec douleurs lombaires était:
   - ☐ 0
   - ☐ 1-5 minutes
   - ☐ 6-10 minutes
   - ☐ 11-15 minutes
   - ☐ plus de 15 minutes

9. En moyenne, durant cette période, une visite ultérieure d'un client avec douleurs lombaires (excluant le temps de documentation et le temps d'attente)était :
   - ☐ moins de 30 minutes
   - ☐ de 30 à 45 minutes
   - ☐ de 46 à 60 minutes
   - ☐ plus de 60 minutes

10. En moyenne, durant la période du 1er janvier au 30 juin, 1999 le temps consacré à documenter une visite ultérieure d'un client avec douleurs lombaires était :
    - ☐ 0
    - ☐ 1-5 minutes
    - ☐ 6-10 minutes
    - ☐ 11-15 minutes
    - ☐ plus de 15 minutes

11. Quel était la base de vos rémunérations durant la période du 1er janvier au 30 juin 1999?

- ☐ taux horaire
- ☐ pourcentage de chaque client
- ☐ autre (veuillez spécifier)_____

Pour les questions suivantes, un"indicateur de rendement" est défini comme étant un indicateur de mesure de rendement qui a été publié (ie :Echelle d'Oswestry, Schober Modifié, Echelle de Roland-Morris, Echelle Québecoise d'incapacité pour la lombalgie)

12. Durant la période du 1er janvier au 30 juin 1999, avez vous fait usage d'indicateurs de rendement standardisés dans votre pratique?
    ☐ oui ☐ non

13. Utilisez-vous des indicateurs de rendement dans votre pratique quotidienne ?
    ☐ oui ☐ non

14. Si OUI, une question 13 veuillez spécifier l'indicateur de rendement que vous utilisez : _____.

15. Avez-vous participé (pris part) à des recherches comprenant l'usage " d'évaluation indicateur de rendement "?
    ☐ oui ☐ non

16. Si OUI, une question 15 veuillez spécifie :

    a. Si ces recherches étaient spécifiques à des conditions orthopédiques? ☐ oui ☐ non

    b. Les évaluations indicateur de rendement étaient :
    _____
    _____

    c. Quand cette étude a-t-elle commencé? (mois et année)
    _____

    d. Quand cette étude a-t-elle pris fin? (mois et année)
    _____

C'est fini! Merci beaucoup

Clinic Owner (or Manager) Questionnaire

Clinic Name_____

For the following questions, mark the box that best represents your physiotherapy clinic between January 1, 1999 and June 30, 1999.

1) In your clinic which best describes the charting practices used during an initial evaluation for clients with low back pain:

   a) All therapists use the same type of evaluation form?
   ☐ yes ☐ no

   b) If YES, then is this form specific for clients with LBP? (ie: spinal form)
   ☐ yes ☐ no

2) In your clinic which best describes the charting for subsequent treatments and evaluations for clients with low back pain:

   a) All physiotherapists use the same type of form for subsequent charting ?
   ☐ yes ☐ no

   b) If YES, then is this form specific for clients with LBP? (ie: spinal form)
   ☐ yes ☐ no

3) For clients with LBP, what was the main source of reimbursement, in your clinic:
   ☐ Worker's Compensation (CSST, WCB)
   ☐ Motor Vehicle Insurance Company (SAAQ)
   ☐ Private Insurance
   ☐ Other (please specify)_____

4) The language predominantly used in your clinic was:
   ☐ English
   ☐ French
   ☐ Other (please specify)_____

For the following questions, mark the box that best represents your physiotherapy clinic between January 1, 1999 and June 30, 1999

5) The number of full-time equivalents in your physiotherapy clinic were: (approximately)
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ 4
   - ☐ 5 or more, please indicate_____

6) The number of part-time equivalents in your physiotherapy clinic were: (approximately)
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ 4
   - ☐ 5 or more, please indicate_____

7) Over one year, the number of Bachelor level physiotherapy student placements in your clinic were: (approximately)
   - ☐ 0
   - ☐ 1-2
   - ☐ 3-4
   - ☐ 5 or more

8) On average, the number of in-services (ie: invited speaker, therapist presentation, educational report etc) within your clinic during the two year period ***June 30, 1997- June 30, 1999*** were:
   - ☐ 0
   - ☐ 1-4
   - ☐ 5-9
   - ☐ 10 or more

Nom : _____
Nom de la clinic : _____
Clinic ID : _____

Questionnaire du propriétaire ou gérant de la clinique

Pour les questions suivantes, cochez la case qui représente le mieux votre clinique de physiothérapie entre le 1er janvier et le 30 juin 1999

1. Dans votre clinique, qu'est-ce qui décrit le mieux la façon dont la tenue de dossier est faite lors de l'évaluation initiale des clients avec une douleur lombaire?

   a) Tous les thérapeutes utilisent le même formulaire d'évaluation
   ☐ oui ☐ non

   b) Si oui, est-ce que ce formulaire d'évaluation est spécifique aux clients avec une douleur lombaire?
   ☐ oui ☐ non

2. Dans votre clinique, qu'est-ce qui décrit le mieux la tenue de dossier pour les traitements subséquents des clients avec une douleur lombaire?

   a) Tous les thérapeutes utilisent la même méthode de tenue de dossier :
   ☐ oui ☐ non

   b) Si oui, est-ce que cette méthode est spécifique aux clients avec une douleur lombaire?
   ☐ oui ☐ non

3. Pour les traitements de vos clients avec une douleur lombaire, quelle était la source principale de remboursement :

   ☐ La compensation des travailleurs (ex :CSST)
   ☐ La compagnie re d'assurance automobile (ex :SAAQ)
   ☐ Une compagnie d'assurance privée
   ☐ Autre (veuillez spécifier)_____

4. Quelle était la langue principale utilisée dans votre clinique?
   ☐ l'anglais
   ☐ le français
   ☐ Autre (veuillez spécifier)_____

Pour les questions suivantes, cochez la case qui représente le mieux votre clinique de physiothérapie entre le 1er janvier et le 30 juin 1999.

5. Quel était le nombre approximatif d'employés à temps plein dans votre clinique lors de la période en question? (physiothérapie seulement)
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ 4
   - ☐ 5 ou plus (veuillez indiquer)_____

6. Quel était le nombre approximatif d'employés à temps partiel dans votre clinique lors de la période en question? (physiothérapie seulement)?
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ 4
   - ☐ 5 ou plus (veuillez indiquer)_____

7. Quel est le nombre approximatif de stagiaires en physiothérapie (programme universitaire) que vous accueillez annuellement dans votre clinique?
   - ☐ 0
   - ☐ 1-2
   - ☐ 3-4
   - ☐ 5 et plus

8. Quel est le nombre approximatif de sessions internes d'éducation (invité spécial; présentations théoriques ou pratiques données pas les physiothérapeutes de la clinique) qui ont eu lieu à votre clinique sur une période de deux ans entre le 30 juin 1996 et le 30 juin 1998?
   - ☐ 0
   - ☐ 1-4
   - ☐ 5-9
   - ☐ 10 et plus

Appendix 4: Consent Forms

McGill

Faculty of Medicine
3655 Drummond Street
Montreal, QC H3G 1Y6
Fax: (514) 398-3595

Faculté de médecine
3655, rue Drummond
Montréal, QC, H3G 1Y6
Télécopieur: (514) 398-3595

Therapist Informed Consent

Title: Practice patterns of Canadian physiotherapists managing low back pain

Researchers at McGill University are conducting a study investigating what outcome measures are being used in clinical practice for patients with low back pain. The purpose of this study is to gain better knowledge on the current practice in measuring low back pain.

If you choose to participate a selection of your charts will be reviewed. Once you have given permission that you will participate, the researchers will contact the clinic owner or manager to ask permission to review your particular charts. Only the charts of clients with low back pain will be identified. This review will include the months of Jan 1,1999 through to June 30, 1999. Approximately 5 random charts will be reviewed. In addition, you will be asked to complete a short questionnaire that will take about five minutes. The questionnaire will be directed towards your physiotherapy practice history.

Participation is voluntary. Declining participation at any time will involve no penalty or loss of benefits as a result of this study. All of the information that is obtained will be kept confidential. A study number will be assigned to you and this will be the only identifier that will appear on the information you provide. Any publications arising from this work will identify group results only.

The results of this study will provide physiotherapists with a better understanding of the measures being used in the evaluation of clients with low back pain. Also, identifying areas of measurement being used in the clinic may provide directions for future research on measurement and low back pain.

Contact numbers: If you have any questions regarding the research, now or during the course of the project please contact the investigator Carmen Kirkness at (514) 483-5361 or Nicol Korner-Bitensky at (514) 398-4504.

By signing this consent form you acknowledge that the study has been explained to you and that you understand the content of this consent form. You agree that you have had the opportunity to ask questions, that your questions have been answered to your satisfaction and you agree to participate in the study.

Declaration of the Participant: The study has been explained to me and my questions have been answered to my satisfaction. I agree to participate in this study. A copy of this consent form has been given to the participant named below.

	Signature	**Print name**	**Date**
Participant	_____		
Witness	_____		

McGill

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Montreal, QC H3G 1Y6
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3655, rue Drummond
Montréal, QC, H3G 1Y6
Télécopieur: (514) 398-3595

Formule de consentement
Investeguer : La pratique courante de physiotherapié

Les chercheurs de l'Université McGill entreprennent une étude pour investiguer les mesures de résultats utilisées en milieu clinique pour les patients avec des douleurs lombairs. Le but de cette étude est de mieux connaître la pratique courante des mesures utilisées dans l'évaluation des douleurs lombaires.

Si vous décidez de participer à cette étude, certains de vos dossiers seront révisés. Dès que vous aurez décidé d'y participer, les chercheurs appelleront le propriétaire de la clinique où vous travaillez pour obtenir la permission de réviser vos dossiers. Seuls les dossiers de vos patients avec douleurs lombaires ayant été traités entre le 1er janvier et le 30 juin 1999 seront identifiés. Environ cinq dossiers seront consultés. On vous demandera aussi de remplir un court questionnaire sur votre expérience en physiothérapie, ce qui devrait vous prendre environ cinq minutes.

La participation à ce projet est sur une base volontaire. Un refus de participer à ce projet, à ce et en tout moment, n'impliquera aucune conséquence pour vous. L'information obtenue demeurera confidentielle. Un numéro vous sera assigné et sera votre seule source d'identification. Toute publication émanant de ce projet identifiera seulement les résultats de groupe.

Les résultats de cette étude permettront aux physiothérapeutes d'avoir une meilleure idée des mesures utilisées lors de l'évaluation de patients avec douleurs lombaires. En plus, l'identification des mesures utilisées en milieu clinique permettra l'orientation de recherches futures sur les douleurs lombaires.

Personne contact :

Si vous avez des questions sur ce projet, maintenant ou pendant l'étude, vous n'avez qu'à contacter Carmen Kirkness au (514) 483-5361 ou Nicol Korner-Bitensky au (514) 398-4504.

En signant ce consentement, vous certifiez que cette étude vous a été expliquée et que vous en avez bien compris tous les détails. Vous reconnaissez avoir eu l'opportunité de poser des questions, d'avoir obtenu des réponses satisfaisantes à vos questions et d'avoir accepté de participer à cette étude.

Déclaration du participant :

Cette étude m'a été expliquée et on a répondu à mes questions de façon satisfaisante. Je consens à participer à cette étude. Une copie de ce document à été remise au participant nommé ci-dessous.

Signature du participant	Nom en lettres carrées	Date
Signature du témoin	Nom en lettres carrées	Date

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Agreement for clinic owner or manager

Title: Practice patterns of Canadian physiotherapists managing low back pain.

We are contacting you because *(name of physiotherapist)*, a physiotherapist that worked in your clinic between the period January 1 to June 30,1999, agreed to participate in a research study being conducted at McGill University. This study is investigating what outcome measures are being used in clinical practice for patients with low back pain. The purpose of this study is to gain better knowledge on the current practice in measuring low back pain.

We are asking if you will allow the researchers to access a selection of *(name of physiotherapist)* charts to be reviewed. Only the charts of clients with low back pain will be identified. The review will include the months of Jan 1,1999 through to June 30, 1999. Approximately 5 random charts will be reviewed. In addition, you will be asked to complete a short questionnaire that will take five minutes. The questionnaire will be directed towards your clinic's characteristics.

A study number will be assigned to the clinic and this will be the only identifier that will appear from the information you provide. Any publications arising from this work will identify group results only.

The results of this study will provide physiotherapists with a better understanding of the measures being used in the evaluation of clients with low back pain. Also, identifying areas of measurement being used in the clinic may provide directions for further research on measurement and low back pain.

Contact numbers: If you have any questions regarding the research, now or during the course of the project please contact the investigator Carmen Kirkness at (514) 483-5361 or Nicol Korner-Bitensky at (514) 398-4504.

	Signatures	Print name	Date
Clinic owner or manager	_____		
Investigator	_____		

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Convention pour le propriétaire ou le gérant de la clinique
Investeguer : La practique courante de physiotherapié

Nous vous contactons car (*nom*), un physiothérapeute ayant travaillé à votre clinique entre le 1er janvier et le 30 juin 1999, a accepté de participer à un projet de recherche organisé par l'Université McGill. Cette étude évalue les mesures de résultats utilisées en pratique clinique pour les patients souffrant de douleur lombaire. Le but de cette étude est de mieux connaître la pratique courante des mesures utilisées dans l'évaluation des lombalgies.

Nous vous demandons donc si vous autorisez les chercheurs à accéder à une sélection des dossiers de (*nom*) pour que ceux-ci soient révisés. Seulement les dossiers des patients ayant des douleurs lombaires seront identifiés. Cette révision portera sur la période du 1er janvier au 30 juin 1999. Environ cinq dossiers seront révisés. De plus, on vous demandera de compléter un court questionnaire décrivant les caractéristiques de votre clinique. Le tout ne prendra que 5 minutes de votre temps.

Un numéro vous sera assigné et ce numéro sera la seule identification apparaissant sur l'information que vous divulguerez. Toute publication basée sur ce travail n'identifiera que les résultats de groupe.

Les résultats de cette étude permettront aux physiothérapeutes de mieux comprendre les mesures de résultats utilisées dans l'évaluation des patients souffrant de douleurs lombaires. En plus, l'identification des mesures utilisées en clinique permettra possiblement de diriger les recherches futures sur les maux du dos.

Contacts : Si vous avez des questions au sujet de cette étude, veuillez contacter Carmen Kirkness au (514) 483-5361 ou Nicole Korner-Bitensky au (514) 398-4504.

Signatures nom en lettres moulées Date

Participant _____

Témoin _____