Occupational Rehabilitation

Studies and Research Projects

REPORT **R-797**

Development of a Clinical Practice Guideline on Work Functioning Assessment of the Physically Impaired Person

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PEER REVIEW

In compliance with IRSST policy, the research results published in this document have been peer-reviewed.

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ABSTRACT

Work functioning assessments (WFA) of physically impaired people are a regular part of occupational therapy clinical practice. WFA results serve to determine eligibility for rehabilitation, aid career-transition decision making or determine eligibility for income-replacement benefits (1; 2; 3; 4; 5; 6). They can also be used to plan a back-to-work rehabilitation program or to adapt a workstation. However, there is enormous variability in WFA clinical practice, which raises questions about the overall quality of WFA results. Inaccurate or incomplete WFA results can have major adverse impacts, such as injury, and loss of job, income or self-confidence, on the health and quality of life of workers with physical impairments (5; 6; 7; 8). One of the ways currently being proposed to reduce this variability and increase the quality of health care is the development and dissemination of evidence-based clinical practice guidelines, as they provide reliable information on which clinicians can base their decisions (9). To our knowledge, there are currently no clinical practice guidelines for occupational therapists on WFA.

The purpose of this study was to develop a clinical practice guideline for occupational therapists assessing the work functioning of people with physical impairments. It involved conducting a systematic review of the literature and using the results of the review to prepare a first draft of the guideline. That draft was presented to 24 occupational therapists specialized in WFA (four focus groups and two individual interviews). They were consulted on the format and clarity of the guideline, the appropriateness of each clinical recommendation presented in the guideline and whether the set of recommendations covered the field adequately. The focus group discussions and individual interviews were recorded and transcribed, and a qualitative content analysis was performed (10).

The consultation revealed that the guideline is easy to use. Most of the consultation participants said they concurred with the recommendations drawn from the review of the literature. Although they felt that some recommendations should have been more precise or more complete, they agreed that they covered the field comprehensively. They also confirmed the usefulness of the guideline to both novice and experienced occupational therapists.

To conclude, the study provided a view of current knowledge related to WFA and how it should be applied by occupational therapists. The feedback from experienced therapists helped us to be more precise and more complete with some recommendations and to produce a useful, quality clinical practice guideline.

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1. INTRODUCTION

Work is a major part of our lives, fulfilling many functions (11; 12). It is a source of financial independence, confers social status and, because of its regularity, has a huge influence on how we manage time and space. It can also give meaning to life and provide an opportunity for personal fulfilment. In short, work not only plays a major role in our lives, but is also a key factor in our integration into society. Injury or illness can interfere with this role, however (11; 12; 13). When this role is interrupted, our lives are turned upside down. Consequently, returning to work is a fundamental goal of rehabilitation. Assessing the work functioning of the physically impaired person is an essential part of the rehabilitation process. The results of the assessment provide a solid basis for making decisions about treatment and a safe, sustainable return to work or a career change (3).

In Quebec, occupational therapists (OTs) are frequently involved—whether alone or as part of a multi- or interdisciplinary team—in work functioning assessments (WFA) of people with physical impairments. OTs practise in a variety of settings: rehabilitation centres, hospitals and private clinics. As the literature reveals, there is a significant degree of variability in WFA clinical practice (14; 15; 5). A number of factors can be cited to explain this variability, including the lack of available training, the still emerging conceptual models (16; 17), and the lack of available quality instruments and of studies to validate them(4; 5; 6; 18; 19; 20; 21). The broad variability in WFA clinical practice raises questions about the quality of the services clients receive (7). As differences in clinical practice can lead to different assessments of the same individual, there will inevitably be a risk of harm. Incorrect results can have disastrous consequences for injured or ill workers, including worsening of their condition when they go back to work, ineligibility for career transition assistance, or even an assessment of complete unfitness for work when there are actually still things that can be done to improve the person's capacity to meet work requirements (8; 14).

In rehabilitation, as in all other areas of health care, quality of care is a major issue. Quality of care is defined as the degree to which care is consistent with the state of the art and generally accepted practices (22). At present, one of the ways being proposed to reduce variability in clinical practice and improve the quality of care is to develop and implement clinical practice guidelines (CPGs) (23; 24; 25). Clinical practice guidelines are "systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances" [Field and Lohr, 1990, cited in (9)]. Although a variety of WFA methods are used, the field does not, as far as we know, have CPGs developed using a sound, explicit method. This study will in part seek to fill that gap by producing a practice guideline for WFA.

This research report begins with an overview of the state of the art on WFA and the variability of clinical practice in the field. The purpose of the study is then described and the method used is outlined. The report concludes with a presentation of the findings, their links with the current literature and their implications. The clinical practice guideline developed through this study can be downloaded free of charge from either the IRSST website (www.irsst.qc.ca/en/find-a-publication.html) or the CAPRIT website (www.usherbrooke.ca/caprit/recherche/publications/rapports-de-recherche/).

2. STATE OF THE ART

This section examines various aspects of work functioning assessment, including frames of reference and conceptual models.

2.1 Work Functioning Assessment

2.1.1 Definition and Use

A work functioning assessment (WFA) is an appraisal of a person's ability to work. Normally, in the case of someone who has physical disabilities as a result of illness or injury, the assessment is conducted as part of the occupational rehabilitation process (3). A WFA describes and analyses job tasks and requirements on the basis of different strategies and determines how the worker can fulfil them (6). A medical assessment, in contrast, determines whether a worker is physically or mentally fit to return to work (26). A WFA may therefore be performed in parallel with a medical assessment and supplement it (27).

2.1.2 WFA Objectives

The specific objectives of a WFA may vary widely. For clinical purposes, the following objectives may be pursued: identify a person's problems preventing a return to work, determine the treatment required, serve as a source of information for the person regarding his or her own capacities, document progress made during treatment, determine the person's residual capacities in the process of career change, or issue recommendations to the person and the employer to facilitate a return to work or remaining at work. With respect to administrative purposes, WFA results can be used to determine eligibility for income-replacement benefits and rehabilitation services, or be useful in negotiating a claim settlement (1; 2; 3; 4; 5; 6).

2.1.3 Work-Related Assessments

The various methods used to assess work functioning are often called work-related assessments. There are several types of work-related assessments, as well as various ways to classify them (1; 2; 17; 28; 29). Following Innes and Straker (28), we divide work-related assessments into two broad categories: functional capacity evaluations (FCEs) and workplace assessments (WPAs). This classification was preferred for its simplicity, and because, unlike other classifications, it is not restricted to functional capacity evaluations.

2.1.3.1 Functional Capacity Evaluations

Functional capacity evaluations generally consist of a battery of tests that measure a worker's maximum capacity in terms of certain physical work requirements, such as load handling; sitting, standing and walking tolerance; manual dexterity; and holding constrained positions (e.g., bending, squatting) (1; 17). Evaluations of this kind are usually performed in a clinic and may take anywhere from a few hours to a few days. FCEs involve different data collection methods, including standardized testing (e.g., Valpar work samples) and job task simulations. They can be either job-specific or general (28). Job-specific FCEs measure individual capacity in terms of the particular tasks and requirements of a given job, such as an office job. A general FCE gauges individual capacity in terms of general work requirements. Most of the time, these batteries of tests refer to the physical demand definitions given in the *Dictionary of Occupational Titles* (30) or other similar classification systems (17).

2.1.3.2 Workplace Assessments

A workplace assessment (WPA) puts the worker in a situation where he must perform actual tasks in the work setting to document how the worker interacts with the specific job and environment (28). Direct observations, interviews with stakeholders (e.g., worker, employer) and questionnaires are typical means of gathering data. Such assessments can take anywhere from an hour to several weeks, depending on the objectives. To the best of our knowledge, there is no standard WPA method. Checklists of parameters to be documented in the workplace are sometimes used, however (31; 32). In addition, some conceptual models or frames of reference can serve as guides for the WPA of specific client groups, such as the *Approche idéale de l'évaluation en regard du travail* [ideal approach to work-related assessment] for people who have suffered severe injuries in motor vehicle accidents (14), or the *Marge de manœuvre* [margin of manoeuvre] for those with persistent musculoskeletal pain (33; 34). For WPAs, OTs usually triangulate several data sources and collection methods to obtain a true picture of the person's compatibility with the job in question (14; 31). A wide variety of parameters may be assessed, depending on the person's health, the type of job and the purposes of the assessment. For instance, it may involve conducting a job requirements analysis, determining the person's capacity to perform certain tasks and meet productivity standards, establishing how the person functions socially in the workplace, identifying work accommodation needs, identifying pain or stress control strategies and how to use them effectively, or documenting changes over time in job requirements (e.g., work rate) and the individual's capacity (e.g., fatigue) (14; 31; 33; 35).

2.2 Variability in Clinical Practice

The wide variability in professional WFA practice is a serious issue because of its potential consequences on individual health and safety (14; 5). A number of factors seem to be involved: clinician training and experience, inadequacy of conceptual models, availability of quality clinical evaluation tools and lack of practice standards. These factors are discussed briefly below.

2.2.1 Clinician Training and Experience

Innes and Straker (8) report that clinician training and experience are factors that affect the way assessments are conducted. As Dutil and Vanier (14) point out, if an inadequately trained clinician must deal with a particularly complex case, the assessment results may have little validity. Some authors also note that very few professionals have the proper expertise and specific training required to perform WFAs (7; 36). Occupational therapy training programs still give little attention to this practice in their curriculum. Moreover, continuing education in WFAs is scarce. In current practice, knowledge transfer seems to take place chiefly through mentoring of novice OTs by experienced ones, but this relies on the professional experience that clinicians have acquired individually.

2.2.2 WFA Frames of Reference and Conceptual Models

A number of authors note that, generally speaking, there are few frames of reference and conceptual models for WFA and that those that do exist are often inadequate (16; 17; 20). Some interesting proposals are to be found in the literature, however. These frames of reference and conceptual models take a wide variety of approaches.

2.2.2.1 Frames of Reference

Four frames of reference can be identified in the literature: (i) Dutil and Vanier's *Approche idéale de l'évaluation en regard du travail* [ideal approach to work-related assessment] (14); (ii) a sequential description of all the stages in a WFA that takes the administrative environment into account (2); (iii) a description of how WFA objectives, the dimensions of work functioning and the various stages of rehabilitation fit together (3; 17); and lastly (iv) Gibson and Strong's framework that matches various evaluation tools to be used with dimensions of the individual's work functioning (29).

To summarize, the "ideal approach to work-related assessment" developed by Dutil and Vanier (14) is a framework for work assessment of people who have significant sequelae from severe injuries sustained in motor vehicle accidents (spinal cord injury, traumatic brain injury, multiple orthopedic injuries). The framework is based on the premise that everyone is able to work in the right conditions. According to the authors, the assessment should be done early, in an ecological, continuous manner, by a properly trained multidisciplinary team using a client-focused approach, and services should be coordinated and accessible. The framework has a three-phase structure: (i) preparing for work, (ii) starting and remaining at work and (iii) continuous long-term follow-up. Phase I involves five stages: conduct prework assessment; identify types of job presumed compatible with person's characteristics and environment; look for available jobs of the types identified; analyse available jobs and choose one; and finally, assess the person's ability to get hired for the chosen job. Phase II consists of two stages: workplace assessment and identification of accommodation needs for remaining at work. Phase III has a single stage: long-term follow-up. Dutil and Vanier (14) note that the different stages may overlap, may vary in length and are not all always necessary.

Other authors instead prefer a sequential description of a WFA that takes into consideration the administrative environment in which it is conducted. Abdel-Moty et al. (2) propose a framework for WFA for workers having musculoskeletal problems. Within this framework, a WFA is a four-stage process: (i) determine and state the WFA objective: the referring party drafts a precise statement of what it needs—that is, a determination of general or job-specific work capacity, a description of the potential for work rehabilitation or recommendations to promote a return to work; (ii) refer the person to an agency that provides a work functioning assessment service; (iii) perform the assessment; and (iv) communicate the results in the form of a written report to the referring party. The authors describe each of these stages and make recommendations on carrying them out. Note that within this framework, the type of WFA in question is a functional capacity evaluation. Generally speaking, Abdel-Moty et al. (2) maintain that a standard protocol should be followed for an FCE's battery of tests in order to ensure the quality of the results.

Innes and Straker (3) propose a framework that instead focuses on the times when a WFA is required during rehabilitation. They also specify the usual purposes of WFAs (administrative, therapeutic or both) and state that a clinician who has a clear idea of the purpose of the assessment will be able to choose the appropriate tools or methods. In a second paper, Innes and Straker (17) discuss the choice of tools to be used, but without making any direct, explicit links to the different purposes of a WFA. They do, however, emphasize that the functional levels to be assessed must be identified first. They refer to the framework devised by Packer [cited in (17)], which describes an individual's levels of functioning. The basic or simplest level is the body

system, with the subsequent levels becoming increasingly complex until they reach the highest level in the hierarchy, i.e., assuming a role. Innes and Straker (17) use this hierarchy to classify the different tools and work-related assessments according to the levels of functioning being assessed.

Gibson and Strong (29) take a similar approach, likewise using the level of functioning to be assessed as a guide to the choice of WFA methods and tools. This frame of reference is intended for injured workers. The authors propose using the *International Classification of Functioning, Disability and Health* (ICF) to identify the various dimensions of an individual's functioning (37): body functions and anatomical structures, activities and social participation. The dimensions of functioning are influenced by personal and environmental factors. Gibson and Strong (29) note that there is little correlation between impairments, activities and social participation. It is therefore inappropriate to evaluate one in order to make an inference about another. As in Innes and Straker's frame of reference (17), occupational therapists first specify the dimensions of the functioning to be evaluated and then select the appropriate tools and approaches for each.

In short, these frameworks focus on ordering the stages involved in a work functioning assessment and identifying the types of tools to use at each stage. The main features of the various frameworks are generally very similar.

2.2.2.2 Conceptual Models

Two conceptual models have been identified in relation to WFA in particular: work functioning (35) and margin of manoeuvre (33; 34).

Sandqvist and Henriksson (35) propose a conceptual model for a general clientele based on the dimensions of work functioning and ICF factors. The model takes into account both the individual's functioning specifically at work (including all the dimensions: body functions and anatomical structures, activities and social participation) and personal and environmental factors that can influence the individual's performance at work. It identifies three dimensions of work functioning: work participation, work performance and individual capacity. Work participation is defined as a person's ability to assume the role of a worker by getting and keeping a job. This dimension does not depend solely on the individual, but also on social factors, such as the job market. Work performance is a person's ability to perform job-related tasks and duties satisfactorily. Individual capacity refers to a person's capacities (e.g., muscular strength, sensitivity, memory) that are needed to perform a work activity. These three dimensions influence one another. Although all three dimensions are considered simultaneously as part of functioning, they must also be assessed independently in order to determine their individual impact on functioning. The authors do not specify the assessment methods for these dimensions, except for work performance. They recommend that the assessment be done in the workplace and that the OT must observe the person performing the job tasks for a sufficient length of time in order to arrive at an accurate assessment. The authors also explain that a number of personal factors (e.g., age, sex, skills) and environmental factors (e.g., workstation set-up) can have a positive or negative impact on work functioning. The authors note that an individual's functioning at work varies with time and place, and so the result of the assessment is only a description of the individual's functioning at a specific point in time.

Recent work by Durand et al. (33; 34) investigates the dimensions influencing a person's interaction with his or her work environment, for a clientele suffering persistent musculoskeletal pain. To this end, they borrow from ergonomics the concept of margin of manoeuvre, or latitude, i.e., "the possibility or the freedom that workers enjoy to devise different ways of working in order to meet production objectives, with no adverse effects on their health" [Vézina, 2001, cited in (34), p. 2]. The underlying premise, applied to rehabilitation, is that a worker with a sufficient margin of manoeuvre can go back to work without jeopardizing his health and that the rehabilitation process consists precisely in maintaining a sufficient margin of manoeuvre during the period of progressive return to work by varying the different dimensions of the margin of manoeuvre. They identify six dimensions: work environment (culture and organization of work), requirements (of the employer, of the tasks, etc.), means at the worker's disposal to fulfil the requirements, the individual (perceptions, capacities, life situation), work activity and control strategies, and lastly the effects of the work situation on production and health. In this proposal, the WFA is not cross-sectional, but rather continuous, and interacts with the actual work requirements. This model is described in detail in a 2008 IRSST report (34).

To sum up, the conceptual models are recent and still generic, which makes it possible to trace out general guidelines. More detailed specifications will be required, however, to make the models operational.

2.2.3 Availability of Clinical Assessment Tools

Innes and Straker (17) report that the lack of agreement on what parameters should be included in a work assessment leads to clinicians relying on intuition to select their approaches and tools. Moreover, a number of papers on work-related assessments, especially FCEs, note that the measurement properties of the evaluations have not been studied widely and are often not good enough for clinical purposes (4; 18; 19; 5; 20; 6). In a study aimed at describing clinical practices associated with work-related assessments, Innes and Straker (38) found that predominantly qualitative data collection and analysis methods are used. They say that qualitative methods appear to be consistent with an "ecological" view of functional assessment, which takes the individual's interaction with the environment into account. In addition, they note that the use of a series of strategies, similar to rigorous qualitative research criteria (e.g., extended fieldwork, data source triangulation), can help make this form of assessment more rigorous.

Other authors instead recommend the use of standard protocols to reduce assessor bias (1; 2; 39). Private companies offer a number of training courses on using the FCE protocols they themselves have developed. At present there is no consensus on which of the available protocols is the best(7).

It also seems clear that the decisions of claims-paying agents (insurers) regarding the choice of work-related assessments are associated with both their perception of the expertise of the clinicians they choose and the cost of an assessment (40). In contrast, neither the measurement properties of a work-related assessment nor the use of conceptual models to guide WFA practice (35; 33; 34) seems to be given much consideration. The cost of tools, evaluation protocols and training also has an impact on their procurement. The financial resources available to rehabilitation centres and clinics are what decide whether or not tools will be purchased. This situation has repercussions, in that it affects clinicians' access to certain work-related

assessments. The work of Cotton et al. (41) backs up this observation by revealing that tools are primarily chosen on the basis of cost and that quality criteria come second.

In short, while a number of tools and methods (qualitative methods, standard protocols) are used, there is very little consensus about work-related assessment choices, with economic factors being the major influence on their procurement by centres or their use by clinicians.

2.2.4 Standards of Practice

According to Strong et al. (7), the wide variability in WFA practice is attributable essentially to a lack of standards. In both Quebec and the rest of Canada, there is an absence of regulations governing who may perform assessments and how they should be carried out. Consequently, a variety of professionals, some having little knowledge or competency in this practice, end up performing WFAs, with less-than-perfect results. Several authors have therefore recommended the establishment of practice standards and the development of practice guidelines in order to reduce this variability and the problems it engenders (7; 42; 43).

So, even though work functioning assessments are commonplace and their results provide the basis for major decisions, they are not founded on clearly defined practice guidelines. Addressing this lack of standards is a necessary first step to improving the quality of care in this area (7).

3. PURPOSE OF STUDY

The purpose of this study is to a develop clinical practice guideline (CPG) on work functioning assessment to respond to the needs of a clientele with physical impairments: “people with an impaired organic system that causes, or in all likelihood may cause, a significant and persistent (including episodic) disability affecting hearing, vision, language or motor activity and for whom the performance of routine activities or the carrying out of social roles is compromised or risks being compromised” [(44), p. 21]. The guideline is intended for Quebec OTs who practise in occupational or work rehabilitation, whether in private practice or the public health system.

4. METHOD

4.1 Study Design

The purpose of this experimental development research project was to improve assessment practice by making systematic use of existing research evidence and to formalize best practices into a clinical practice guideline (CPG) (45). The research method followed was based on the methodological guideline of the French Haute Autorité de Santé (46) and the Appraisal of Guidelines for Research and Evaluation (AGREE) instrument for evaluating the content, structure and presentation of clinical practice guidelines (9). This strategy was adopted in order to maximize the validity and applicability of the clinical practice guideline. The Haute Autorité de Santé (46) proposes four major phases. The aim of Phase I, the preparatory phase, is to define the scope of the practice guideline, conduct a critical analysis of the literature and produce an initial set of recommendations. Clinicians are then consulted to make sure the review of the scope is complete and accurately reflects clinical needs. The purpose of Phase II is to obtain a formal consensus on the recommendations from a group of experts by asking them to rate their agreement with each recommendation based on the research evidence available and their clinical experience. Phase III involves stakeholders' giving their opinions on the applicability, acceptability and readability of the CPG. Finally, Phase IV consists in writing up the final version of the CPG before it is released. This study deals only with the preparatory phase.

4.2 Systematic Review of Literature

To make sure all the relevant literature was identified and the entire field was covered, a search strategy aimed at identifying as many references as possible was devised using an array of keywords and all data sources deemed applicable (47; 48; 49). The following list of keywords was drawn up: work capacity evaluation, functional capacity evaluation, industrial rehabilitation, workplace assessment, job analysis, medicolegal assessment, occupational rehabilitation, work simulation, return to work, disability evaluation, occupational therapy, physical impairment, disabled person. Starting with this list of keywords, a literature search strategy was devised specifically for each database queried: MEDLINE, CINAHL, OTDBASE, PsycINFO, ProQuest dissertations and theses, and EBM. The *Revue Québécoise d'Ergothérapie* had to be searched manually because it is not indexed in the electronic databases. Three related Canadian websites were also queried: the Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST), the Institute for Work and Health (IWH) and the Workers' Compensation Board of British Columbia (WCB-BC). The literature search was done for the period from January 1993 to June 2008. A 15-year span was chosen to ensure adequate coverage of the field. Two languages of publication were chosen: English and French. The data resulting from this review of the literature provided the basis on which the first draft of the guideline was developed and then examined by clinicians. Material published after 2008 was therefore not examined. The literature search strategies used for each database are detailed in Appendix A.

The references identified were transferred to a bibliographic database managed with RefWorks software. Duplicate entries were eliminated and then an initial screen was done on the basis of title and abstract. The items retained had to deal with one of the following three topics: determining work functioning, factors influencing work functioning, and factors favouring or hampering a return to work (including intervention). The screen was conducted by two reviewers experienced in occupational rehabilitation. As the papers covered an extremely wide variety of

topics, an interjudge reliability test was conducted on 75 references to make sure the selection criteria were applied properly and that the selected items were similar. The concordance rate was 96%. On the basis of the title and abstract, three decisions were possible: (1) reference meets selection criteria, (2) reference does not meet criteria or (3) reference cannot be accepted or rejected on basis of title and abstract alone.

As the number of items was still huge, and on a very wide variety of topics, the references selected (Decision 1) and those about which there were doubts (Decision 3) were put through a second screen with further refined criteria: (i) all the references had to concern people with physical disabilities exclusively and (ii) had to be related to WFA in the workplace or in a clinical setting, or (iii) present WFA tools, or (iv) occupational therapy focusing on return to work, which generally encompasses a WFA, or (v) WFAs conducted by professionals other than occupational therapists, or (vi) concern non-occupational therapy return-to-work intervention with a view to identifying innovative assessment methods. Literature dealing with evaluations by career counsellors was excluded, as it focuses on career guidance rather than occupational rehabilitation. This second screen was also subjected to a reliability test with two reviewers to make sure the same items were selected. The concordance rate for 200 references was 92%. The selected references were then categorized by subject: (A) WFAs in general; (B) WFAs for a specific clientele; (C) occupational therapy aimed at return to work; (D) evaluation tools used in occupational rehabilitation; (E) WFAs done by other professionals (e.g., physicians); (F) to be clarified (title and abstract alone not sufficient to determine relevance).

To extract data from the selected literature, a data collection form was drawn up on the basis of a content analysis of 30 WFA-related papers (Appendix B). The data collection form includes the bibliographic record, study objectives and study design or type of literature (e.g., opinion piece). Secondly, the type of work-related assessment is identified (e.g., workplace assessment) as well as the clientele in question (e.g., people with back pain). The form also includes three tables for classifying the collected data by topic. The first table concerns WFA quality criteria, as described by Innes and Straker (50): safe, accurate, comprehensive, credible, flexible, practical and useful. The second table concerns the recommendations, including the supporting evidence, regarding the dimensions to be assessed in a WFA, as well as the methods and sources to be used. The dimensions used in the table are from Sandqvist and Henriksson's (35) work functioning model, described in section 2.2.2.2. The third table groups together the various recommendations, along with the supporting evidence, associated with the different steps in the evaluation process, as described by Innes and Straker (36). These steps are identified as follows: clinician qualifications, clarification of the WFA objective, identification of the data collection sources and methods, the data collection and analysis process, and the documentation or report. A category titled "other" was also added so that hitherto-unidentified themes could later be included. For the first five papers, the data extracted by the two reviewers were compared for verification purposes. The data extraction from the remaining papers was completed by a single reviewer.

As stated, the papers were divided into six categories. For the purposes of the development of the practice guideline, all items in categories A and B and those in category C dealing with WFAs in detail were analysed extensively. The data extracted from these sources covered a large number of topics. However, given the volume of literature to be analysed and the need to limit the

guideline to a reasonable size, it was decided not to assess the quality of the evaluation tools surveyed (category D) nor to draw up recommendations on this topic. Category D documents were therefore rejected. In addition, a reading of some papers on WFAs done by other professionals (category E) showed that the objective of the assessments was very different from the objective targeted by occupational therapy assessments. For instance, a number of papers concerned medical tools used to assess a worker's degree of disability for the purpose of calculating income-replacement benefits. These papers were eliminated. Following the in-depth analysis of the items in categories A, B and C and the decisions to exclude those in categories D and E, the titles and abstracts of the papers in category F were read again. This second reading revealed that they would not be useful for the CPG. So, in the end, only the data collected from analysing the literature in categories A, B and C were retained.

The steps in the literature search and selection process are summarized in Figure 1.

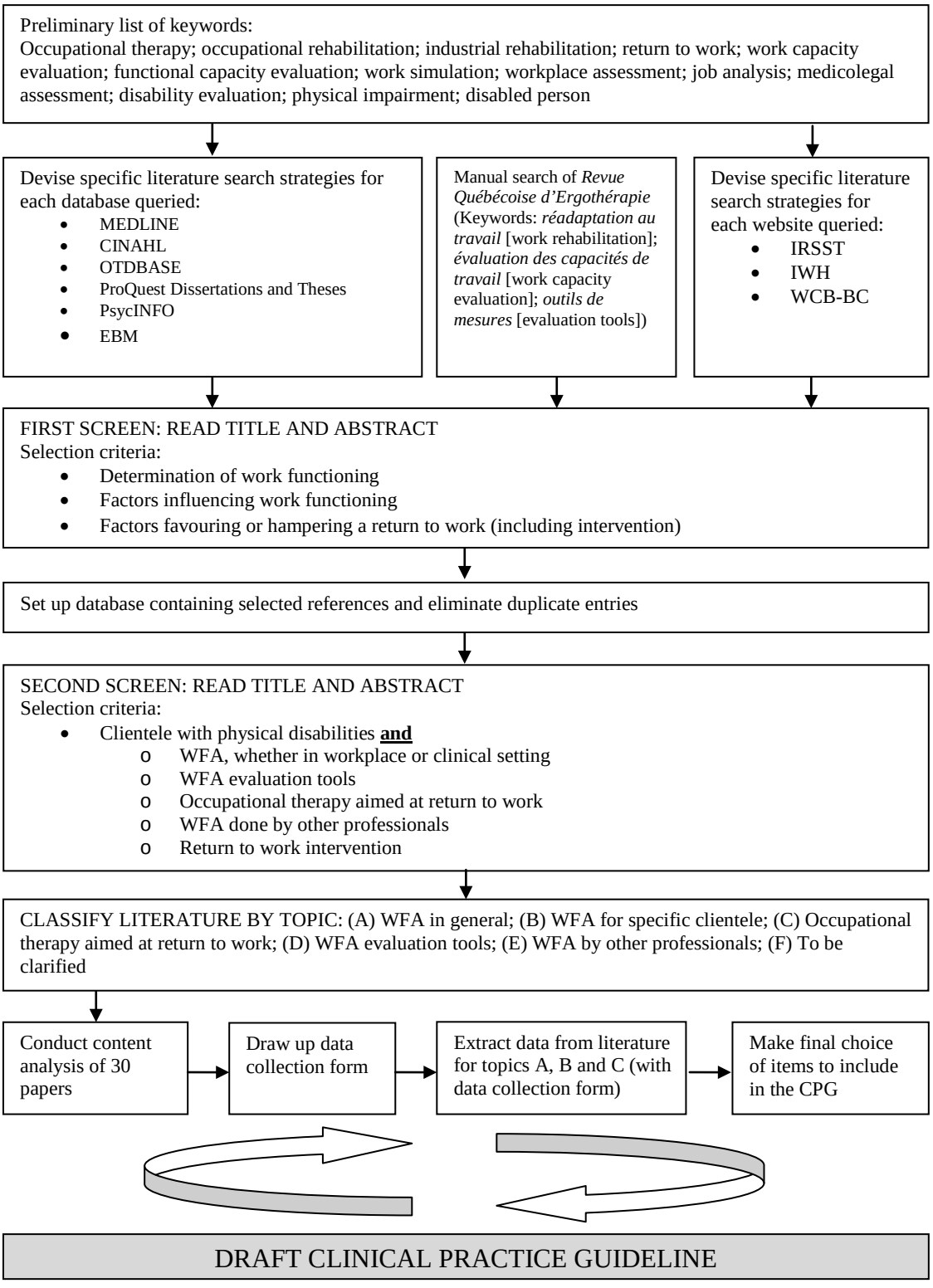

Figure 1 – Literature search and selection strategy

4.3 Assessment of Evidence

Clinical practice guidelines must be based on the available scientific evidence (24; 51). Determining the strength of the evidence allows not only an objective judgment to be made in favour of one study over another, but also informs choices about how to handle the evidence extracted from the studies (48).

The strength of the evidence was assessed on the basis of two criteria: (i) the level of research evidence and (ii) the quality of the paper or study (25; 51). The level of research evidence is related to the study design or research method used; the evidence is strong if the design, like an experimental protocol, is likely to prevent bias. Study quality is associated with how much rigour is used in the conduct of a particular study.

The methods used to assess the level of research evidence and the quality of the studies or papers are described in the following sections.

4.3.1 Levels of Research Evidence

In this study, MERGE, the method for evaluating research and guideline evidence, was selected at the outset to classify the strength of the evidence found in the review of the literature (51). It is a five-level scale, going from systematic review (level 1) to expert opinions and descriptive studies (level 5) (51). The analysis revealed that the level of research evidence in the field in question was almost exclusively at the lowest level of the MERGE classification. Since all the results were essentially at the same level, the classification did not discern any differences in quality between them. A decision was therefore made to use Burns and Grove's (52) classification instead, which would allow a more precise assessment of the contribution of each study. It has the advantage of being more complete: besides experimental studies, it also encompasses non-experimental and qualitative studies. The Burns and Grove classification (52) distinguishes 11 levels of evidence, going from strongest to weakest (Table 1).

Table 1 – Levels of research evidence, according to Burns & Grove (52)

I	Systematic reviews of experimental studies (well-designed randomized controlled trials [RCTs])
II	Meta-analyses of experimental (RCT) and quasi-experimental studies
III	Integrative reviews of experimental (RCT) and quasi-experimental studies
IV	Single experimental study (RCT)
V	Single quasi-experimental study
VI	Meta-analyses of correlational studies
VII	Integrative reviews of correlational and descriptive studies
VIII	Qualitative research metasynthesis and metasummaries
IX	Single correlational study
X	Single qualitative or descriptive study
XI	Opinions of respected authorities based upon clinical evidence, reports of expert committees

4.3.2 Quality of Studies and Literature

A number of checklists for assessing study quality were used. To assess the quality of quantitative studies (experimental and quasi-experimental designs), the MERGE method (51)

was chosen at the start of the study. In the end it was not used, however, as the studies selected did not have experimental designs. Qualitative studies were assessed using the assessment checklist devised by Cesario et al. (53), which is outlined in Appendix C. Mixed-design studies were assessed using Pluye et al.'s assessment checklist (54), which is also presented in Appendix C. Unfortunately, as far as we know, no assessment checklist was available for papers dealing with conceptual models and frameworks, literature reviews and descriptive studies. Assessment checklists therefore had to be created on the basis of the literature on methodology relative to those types of research; they are also outlined in Appendix C. Opinions of experts in the field and descriptions of intervention were not analysed for quality, although an overall assessment was made using general criteria: coherence and accuracy of remarks, and structured arguments supported by evidence when applicable. Table 2 summarizes the different types of studies selected and the assessment checklists used to assess their quality.

Table 2 – Assessment checklists used to assess quality of studies/papers, by type

Type of study/paper	Assessment checklist
Reviews of literature (so-called "mixed" or "integrative" reviews of studies)	Based on following papers on methodology: Kirkevolt (55), Beyea and Nicoll (56), Burns and Grove (52), Whittemore and Knafl (57)
Conceptual models or frameworks	Based on criteria of Burns and Grove (52)
Cross-sectional descriptive studies	Based on criteria of Beaucage and Bonnier Viger (58)
Qualitative studies	Cesario et al. (53)
Mixed designs	Pluye et al. (54)
Opinions of experts or respected authorities, descriptions of intervention and programs	Critical reading only (applicability of content, coherence and accuracy of remarks, structured argument supported by research evidence when applicable)

The quality assessment was done by two reviewers, as recommended by Davis et al. (23), SIGN(24), NICE (47), and Higgins and Green (48). The reviewers filled in their checklists separately, compared results and discussed any differences.

4.4 CPG Development Method

This section sets out the method followed in putting together the draft clinical practice guideline and the process for consulting expert clinicians on its content and presentation.

4.4.1 Draft Guideline

The first draft of the CPG was based on the content analysis of the selected literature. In concrete terms, this meant extracting recommendations from the studies, along with the arguments supporting them. The recommendations were then grouped into provisional categories. Recommendations already covered by Quebec laws and regulations (e.g., Act Respecting Access to Documents Held by Public Bodies and the Protection of Personal Information) or by rules of the Ordre des ergothérapeutes du Québec [Quebec college of occupational therapists] (e.g., recordkeeping, professional competencies and responsibilities) were excluded, as that information is already available in literature published by the organizations in question. The recommendations retained were classified by conceptual similarity. Then, for each new category, the various supporting arguments were combined and synthesized. In addition, some recommendations and arguments were refined on the basis of other papers not found with the

search strategies used. The quality of these papers was assessed using the same method as for those found with the literature search. Where recommendations and arguments were inconsistent, those from papers having a higher level of research evidence were preferred.

Furthermore, Sandqvist and Henriksson's model of work functioning (35) was used to identify and define concepts referred to in the CPG. This model was chosen for several reasons. First, it appears to be the only published model developed specifically for WFA, which means it can be used to define the key concepts involved here. Rather than vaguely identifying the need for a WFA, this model is one of the few that allows a clear statement of the purpose of the evaluation and, consequently, helps guide OTs as they seek the most effective assessment strategies for meeting the WFA objective. Second, the model uses the *International Classification of Functioning, Disability and Health* (37). Since an international consensus has been reached on this classification, the CPG terminology will be understood by a broad audience. In the future, this should make it easier to update the CPG, as numerous publications may be using the ICF by then.

The recommendations were validated throughout their development. The data reduction was reviewed by two researchers involved in this study. The validation process also helped to ensure that the guideline was clearly structured and that the recommendations and arguments were worded as unambiguously as possible.

4.4.2 Consultation of Expert Clinicians

Clinical experts were consulted in four focus groups and two individual interviews. This initial assessment of the draft CPG was conducted to make sure the entire field had been covered, that the recommendations were clear and complete, and that the format of the guideline made it easy to use. This section outlines the criteria used to select potential participants, the recruiting process, and the methods followed for data collection and results analysis.

4.4.2.1 Potential Participants and Recruiting

Selected participants had to (i) be an occupational therapist practising in Quebec; (ii) have, at the time of the study, at least five years' clinical experience in occupational rehabilitation or work functioning assessment of clients having physical impairments; (iii) be regarded by their peers as experts in the field. They were recruited from the greater metropolitan areas of Sherbrooke, Montreal, Quebec City and Gatineau. These areas were chosen not only because they have the highest concentrations of OTs engaged in occupational rehabilitation, but also because WFA services have been offered there for a long time. Recruitment was done using the snowball sampling method, given that there is no list or aggregation of occupational therapists in the field (59). OTs already recognized for their expertise were contacted first. Other participants were identified by getting in touch with Quebec rehabilitation centres that provide occupational rehabilitation services. Officials there gave the names and contact information of OTs they considered to be experts or authorities in the field. The project leader then called these potential participants personally to ask them to take part. The advantage of this strategy is that personal contact boosts recruitment for this type of study (60). The potential participants were given a clear explanation of the value of the study, its purpose and the expected results. The specific importance of their personal participation was also made clear to them. As a follow-up to the

telephone call, a personal letter was sent to each of them, providing information about the group meetings.

4.4.2.2 Method

The focus group technique was chosen to seek participants' feedback about the content and format of the CPG. The purpose of a focus group is to gather information in order to find out what a specific group of people think about a subject or problem (60). It is not a question of reaching a consensus, but instead of getting a perspective on the full range of possibilities. The advantage of a focus group is that participants hear what the others have to say and then expand on their original comments (61). When the consultation concerns a specific document and the group is made up of specialists, five or six participants per group is recommended so as to allow each one to offer feedback on all parts of the document (10). Participants were provided with the draft CPG two or three weeks before the meeting to give them time to read through them.

Before the focus groups met, a discussion guide was drawn up to give some structure to the meetings (10). The guide also helped to ensure that each group dealt with the same questions and facilitated subsequent analysis of the discussions (60). The discussion guide was developed following the steps suggested by Krueger & Casey (60). A first draft was prepared by the lead author (SR), who kept in mind the aspects of the CPG for which feedback was wanted. Various types of questions were prepared (60). A pilot test was conducted in the form of an individual interview with an OT having three years' experience in occupational rehabilitation. It was used to check that the questions were clear and that they flowed from one to the next. Adjustments were made to the discussion guide in light of the pilot test results. The guide is given in Appendix D.

4.4.2.3 Data Collection

Two focus groups met in late February and two others in early March 2009. In addition, two individual interviews were conducted with participants who couldn't attend the focus group meetings because of other unforeseen circumstances. The group meetings were held outside working hours, at public health care rehabilitation centres, at the Université de Sherbrooke and at offices of the Agence de santé et des services sociaux. Each of the focus meetings was run by a facilitator. A cofacilitator took notes on the content of the discussions and made sure all the questions were dealt with. At the end, the facilitator and co-facilitator recapped the discussions for the participants so that the content could be refined or corrected. A written summary of the results of the meeting was then produced. Participants' comments were recorded and transcribed. This method of proceeding ensured access to the raw material at all times during the different stages of the data analysis. Participants were also asked to fill in a short questionnaire on their professional profile so that we would later be able to provide an overall description of the study participants. The questionnaire is given in Appendix E.

4.4.2.4 Data Analysis

On the basis of the transcript, a person experienced in work functioning assessment and occupational rehabilitation (SR) performed a content analysis (10) on the feedback to each question. The process was then validated by a researcher experienced in qualitative analysis methods and occupational rehabilitation (MJD). The transcript content analysis was done using a mixed analysis grid, meaning that while some categories were determined ahead of time, others

could emerge over the course of the analysis (10). The predetermined categories were directly related to the questions used in the focus group discussions (presentation of the CPG and content of different sections).

4.5 Ethical Considerations

This project was approved by the research ethics committee of the Université de Sherbrooke's CHUS hospital in March 2008. The information and consent form was mailed to participants at the same time as the material about the group meetings. The participants gave their permission for the audio recording. Confidentiality was preserved by removing personal details from the content of the discussions. The names of the participants were removed when the recordings were transcribed.

5. FINDINGS

Presentation of the findings has been split into three parts: the results of the systematic review of the literature, the main points of the draft CPG and the feedback from participants.

5.1 Systematic Review of Literature

5.1.1 Literature Search

The number of items selected at the various stages in the literature search and screening process is shown in Figure 2. Note that of the 108 items identified, 11 could not be obtained despite the assistance of a Université de Sherbrooke librarian. In the end, a total of 50 items were used.

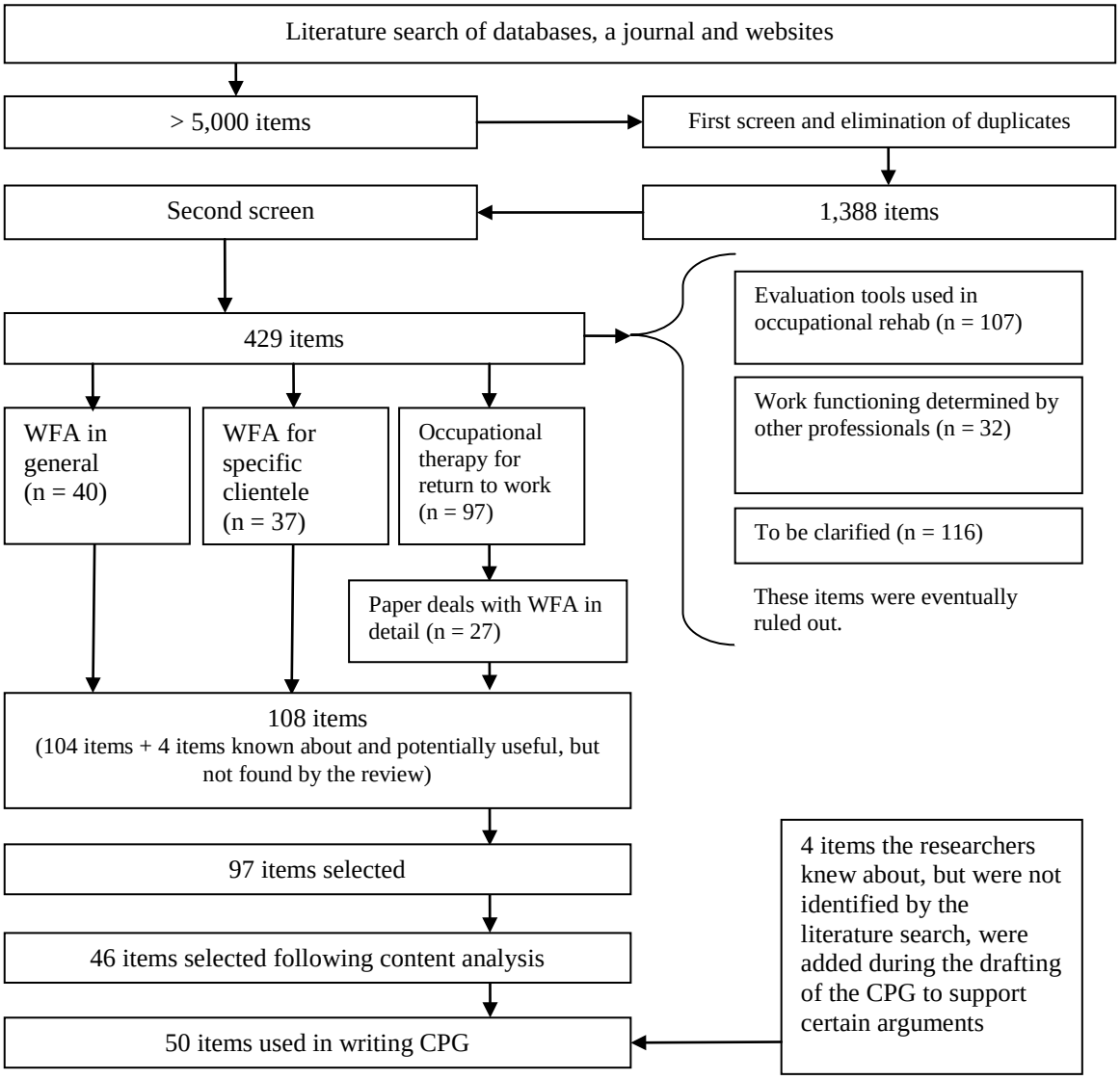

Figure 2 – Results of literature search and selection

Of the 50 documents used, slightly more than half (n = 29) were published after 2000. Most of them were written by Canadian (n = 17), American (n = 14) or Australian (n = 14) authors and the remainder by Europeans (n = 5). A wide variety of topics are covered, but the most common ones are analysis and critiques of WFA approaches (n = 8); descriptions of clinical practices (n = 6); conceptual models or frames of reference (n = 5); clinician guidelines (n = 5); and WFA quality criteria (n = 4).

Classification of the 50 selected documents by level of research evidence shows that 23 (18 literature reviews and 5 theoretical papers) had an evidence level of VII on the Burns and Grove scale (52). Thirteen items had an evidence level of X: 4 cross-sectional descriptive studies, 7 qualitative studies and 1 mixed study that combines a qualitative method with a cross-sectional descriptive design (n = 2 papers for this one study). Finally, another 13 items that present experts' opinions or describe interventions or programs had an evidence level of XI. One paper about the development of a tool for an initial interview was also selected. It could not be classified on the Burns and Grove (52) scale, however, as the scale does not cover this type of study.

The table below lists the documents used in drafting the CPG and indicates the level of research evidence associated with each one.

Table 3 – Documents used to write CPG, by level of research evidence

Levels of evidence	Study types	Items
I, II, III, IV, V, VI	• Systematic reviews and meta-analyses of experimental studies • Systematic reviews of experimental and quasi-experimental studies • Experimental and quasi-experimental studies • Meta-analyses of correlational studies	None
VII	• Integrative reviews of studies*	Abdel-Moty et al. (1996) Baker & Jacob (2003) Dion-Hubert & Therriault (1992) Gross (2004) Innes & Straker (1999a) Innes & Straker (1999b) Innes & Straker (1998a) Innes & Straker (1998b) Innes & Straker (1998c) King et al. (1998) Lysaght (1997) Pransky & Dempsey (2004) Serra et al. (2007) Strong (2002) Sullivan et al. (2006) Vlaeyen & Linton (2000) Velozo (1993) Wind et al. (2005)

	• Papers setting out a frame of reference or conceptual model*	Dutil & Vanier (1998) Gibson & Strong (2003) Kielhofner (2008) Law et al. (1996) Sandqvist & Henriksson (2004)
VIII	• Metasynthesis and metasummaries of qualitative studies	None
IX	• Correlational studies	None
X	• Longitudinal studies	None
	• Cross-sectional descriptive studies	Cotton et al. (2006) Innes & Straker (2003) Innes & Straker (2002b) Lysaght & Wright (2005)
	• Qualitative studies	Allen et al. (2006) Bootes & Chapparo (2002) Costa-Black et al. (2007) Durand et al. (2008) Innes & Straker (2003a) Innes & Straker (2002a) Mercier (1998)
	• Mixed studies (descriptive and qualitative)	Strong et al. (2004a) Strong et al. (2004b)
XI	• Reports by recognized experts • Clinical papers reporting on interventions and programs*	Angelo (1993) CAOT (2002) Brollier et al. (1994) Canelon (1995) Chappell et al. (2003) Durand et al. (1998) Fisher & Short-DeGraft (1993) Hart et al. (1993) Joss (2007) Lacerte &Wright (1992) Lambert et al. (2006) Travis (2002) Trombly (1995)

*Although not allowed for in Burns and Grove's original scale (2009), literature reviews that cover correlational, descriptive and qualitative studies, as well as experts' reports, have been classified as level VII. Similarly, papers outlining a frame of reference or conceptual model have also been classified as level VII. Papers describing clinical interventions and programs have been classified as level XI.

5.1.2 Quality of Papers/Studies

The selected items were assessed for quality. The assessment results are presented here by level of research evidence.

5.1.2.1 Level of Research Evidence VII

Literature reviews, conceptual models and frames of reference are classified as level VII. As already noted in the "Method" section, quality assessment checklists were developed to assess the quality of publications dealing with reviews of the literature, conceptual models or frames of

reference. The checklists have a series of criteria, and a point is awarded when a paper meets the criterion. The more criteria a paper meets, the higher the assessed quality. The assessment checklists are outlined in Appendix C.

Table 4 shows the results of the literature review quality assessment. Of the 18 literature reviews, 3 were deemed excellent (meeting three quarters of the 25 checklist criteria). Most of the papers, however, satisfied only half of the quality criteria on the list. This low quality was due to the failure of the review articles to describe their methods. The papers also lacked specific information about the strength of their evidence. One paper (Abdel-Moty et al., 1996) met barely a quarter of the checklist criteria (6/25). The paper was selected despite its low quality assessment because it addressed some topics not covered by the other literature review items.

Table 4 – Quality of integrative reviews of studies

Paper	Score
Abdel-Moty et al. (1996)	6/25
Baker & Jacob (2003)	10/25
Dion-Hubert & Therriault (1992)	10/25
Gross (2004)	9/25
Innes & Straker (1999a)	19/25
Innes & Straker (1999b)	19/25
Innes & Straker (1998a)	11/25
Innes & Straker (1998b)	12/25
Innes & Straker (1998c)	10/25
King et al. (1998)	10/25
Lysaght (1997)	10/25
Pransky & Dempsey (2004)	13/25
Serra et al. (2007)	17/25
Strong (2002)	9/25
Sullivan et al. (2006)	12/25
Vlaeyen & Linton (2000)	11/25
Velozo (1993)	11/25
Wind et al. (2005)	23/25

The 5 papers dealing with conceptual models and frames of reference were all assessed as excellent (Table 5), meeting three quarters of the 19 checklist criteria. Two checklist criteria apply only to conceptual models or frameworks that have more than one construct. However, three of the five papers involved only one construct. To ensure that the quality of the papers was represented faithfully, the score was adjusted to make it out of 17 rather than 19.

Table 5 – Quality of papers outlining a conceptual model or frame of reference

Paper	Score
Dutil & Vanier (1998)	16/19
Gibson & Strong (2003)	14/17
Kielhofner (2008)	16/19
Law et al. (1996)	16/17
Sandqvist & Henriksson (2004)	17/17

5.1.2.2 Level of Research Evidence X

The 11 descriptive and qualitative studies were classified as evidence level X. One mixed study was also put into this category. As shown in Table 6, three of the four descriptive studies selected were deemed to be of excellent quality, meeting over three quarters of the 22 criteria on the checklist. The fourth one, Cotton et al. (2006), had a lower score because some aspects of the method were not described.

Table 6 – Quality of cross-sectional descriptive studies

Paper	Score
Cotton et al. (2006)	15/22
Innes & Straker (2003)	21/22
Innes & Straker (2002b)	22/22
Lysaght & Wright (2005)	18/22

The qualitative studies selected were all assessed as excellent according to the criteria of Cesario et al. (2002). They are Allen et al. (2006), Bootes and Chapparo (2002), Costa-Black et al. (2007), Durand et al. (2008), Innes and Straker (2003a), Innes and Straker (2002a) and Mercier (1998).

Only one mixed study was selected. It was assessed using the quality assessment checklist of Pluye et al. (2009). The study was the subject of two papers: Strong et al. (2004a) and Strong et al. (2004b). Its quality score (8/12) took into account what was reported in both papers. The score was not higher because certain aspects of the study method were not described.

5.1.2.3 Level of Research Evidence XI

As stated in the previous chapter, the quality of the literature at evidence level XI was not assessed using checklists of specific criteria. The items were selected on the basis of how their content related to the CPG and an overall assessment of their quality using very general criteria: well-written, well-structured argument supported by research evidence where necessary. See Table 3 for the list of authors.

5.2 Clinical Practice Guideline

There were four sections to the clinical practice guideline. The first section contained a summary of the 17 recommendations, a short description of CPG development and a description of the levels of research evidence into which the studies had been classified. The second section, titled “General Concepts,” provided information needed to understand the recommendations, including the conceptual model used, the concept definitions, the role of WFA in the occupational rehabilitation process and the different types of work-related assessment. The third section, the main part of the document, set out the 17 recommendations, along with the supporting arguments based on current research findings. The level of scientific evidence was also specified at the end of each argument. The fourth and last section presented a clinical vignette illustrating the concrete application of the recommendations.

5.3 Assessment of the Clinical Practice Guideline by Participants

Participants expressed their views on the general structure of the CPG as well as on the content of the different sections. In the following pages, the characteristics of the participants are

presented, and then their comments are discussed, organized by topic, as follows: overall impression, format of the CPG, "Recommendations" section, "Levels of Evidence and Summary of Recommendations" section, "General Concepts" section and "Clinical Vignette" section. Concerns about the applicability of the CPG and the need for assessment tools were also expressed repeatedly by participants during the interviews. These emergent themes are also dealt with here.

5.3.1 Participants

Through snowball recruitment, we identified 34 OT experts in occupational rehabilitation with clients having physical impairments in the greater metropolitan areas of Montreal, Sherbrooke, Quebec City and Gatineau. Twenty-four of them agreed to take part in one of the four focus groups held in February and March 2009. Two participants were unexpectedly unable to attend the focus group meetings (unsafe road conditions, family reasons). They agreed to be interviewed individually in March and April 2009. The focus group questions were also used for the individual interviews. The 10 OTs who did not attend did not do so because they had less than five years' experience in occupational rehabilitation (n = 1), were unavailable (n = 6) or did not return our calls (n = 3). As shown in Table 7, the participants were OTs with an average of 15 years' experience, and half of them worked in the private sector. Most of them performed WFAs as part of an inter- or multidisciplinary team. They all said that following their initial occupational therapy training, they took further training specific to occupational rehabilitation or work functioning assessment.

Table 7 – Participant profiles (n = 24)

Years of OT experience	Mean: 15 Range: 6–33	
Years of occupational rehabilitation experience	Mean: 11 Range: 3–31*	
Average number of WFAs done annually	Mean: 19; Median: 13 Range: 0–100**	
Number of participants who had other WFA or occupational rehabilitation training after their initial OT training	• Postgraduate training:	6
	• Professional development provided by public system:	19
	• Training or certification offered by FCE providers:	12
	• Workplace training/supervision:	14
	• Self-taught:	14
Type of practice	• Private practice only:	11
	• Physical disability rehabilitation centre only (public system):	9
	• Hospital only (public system):	1
	• Both private practice and public system:	3
WFA alone or as part of inter- or multidisciplinary team	• Alone exclusively:	3
	• As part of team exclusively:	15
	• Alone and as part of team:	6

*Even though the selection criteria were clearly stated at recruitment, one of the participants had less than five years' experience in occupational rehabilitation.

**Three participants were working full-time as clinical coordinators at the time of the study.

5.3.2 General Assessment and Format of CPG

Participants' comments about their general assessment of the CPG are discussed in the following paragraphs. Many positive comments were made. Participants thought the CPG was easy to read, "comprehensive" and "well grounded" in clinical reality. They also noted that the CPG addresses a need for greater conceptual clarification and organization of knowledge in the field.

Comments about the format of the CPG concerned the structure of the guideline and the way the information is presented. They also dealt with how easy it is to find information. Participants liked the overall structure of the document, with its different sections. They also liked the way the information is presented. They gave positive feedback about the tables and figures, the fact that the recommendations are set off in boxes and that there are references throughout the text. They also thought that the text was well organized and that the headings and subheadings made content easy to find.

Some participants suggested that in the "Recommendations" section, the various recommendations should be grouped together more clearly, visually—or else numbered—to associate them with their attributes of excellence and so make the whole thing easier to read. In response, a visual indicator was added in the margin, a vertical band with the name of the attribute with which the recommendation is associated. The recommendations were also numbered.

Many participants had trouble remembering the definitions of the concepts from the work functioning model when they were reading the recommendations. They said it was because the model was new to them. They suggested additions to make reading easier: a glossary and a concept review in a separate box. We decided to add a glossary at the end of the document.

Participants also had a problem understanding the work functioning model when reading the "Summary of Recommendations" section at the beginning. They pointed out that at the beginning, some readers have trouble understanding the recommendations because they are not familiar with the underlying conceptual model. Opinions diverged on where the summary of recommendations should be placed. Some participants said they liked having an initial overview before reading the guideline in its entirety and suggested adding a note to reassure readers that the concepts would be defined later. Others suggested moving the "Summary of Recommendations" section to the end.

It was also suggested that the "Levels of Research Evidence" section should be placed at the end. Some participants regarded this section as being of secondary importance compared with the rest of the CPG content.

The section on levels of research evidence, including the summary of recommendations, was moved to between the clinical vignette and the glossary to make it easier for readers to refer to this section when reading the vignette.

5.3.3 "Recommendations" Section

The "Recommendations" section is the main part of the document. It contains the 17 recommendations presented to the focus group participants (see Table 8). Each recommendation is supported by a summary of the related research evidence (arguments).

Table 8 – Recommendations (presented in draft CPG)

1. The OT must check if any medical restrictions are present and modify or omit tests that do not respect those restrictions or, if necessary, postpone the WFA if the person's condition is not suitable. The OT must also be vigilant about the person's safety throughout the assessment and be prepared to modify or cease procedures if necessary.
2. The WFA must assess the three dimensions of work functioning: work participation, work performance, individual capacity.
3. The WFA must look at the personal, environmental and time factors that influence the person's work functioning.
4. The WFA must consider the dynamic, changing nature of the interaction between the person and her environment. The WFA result is a description of work functioning at a specific point in time and should be regarded as such.
5. When performing a WFA, the OT should take a top-down approach, that is, begin by assessing work participation and performance and then do a detailed assessment of individual capacity and factors that interfere with functioning.
6. When performing the WFA, the OT must have a broader perspective of occupation than just the work involved and take into account the person's other roles.
7. When the person present a severe impairment (such as spinal cord injury or traumatic brain injury), the WFA must be performed by a team of professionals from complementary disciplines.
8. The team doing the WFA must set up mechanisms to facilitate communication between its members and their participation in drawing up objectives, making decisions and analysing the various obtained data.
9. The WFA must be started early in the rehabilitation process.
10. The WFA must be done continuously throughout the occupational rehabilitation process.
11. The OT must fully understand the need for the WFA before proceeding.
12. The OT must identify the dimension(s) of work functioning to be assessed in order to choose evaluation tools suitable for the aspect(s) in question.
13. The type of work-related assessment should be chosen according to the objective of the WFA.
14. The OT must adapt the WFA to the circumstances of the person's workplace and situation.
15. The OT must aim for efficiency when deciding on the type of work-related assessment and methods to use.
16. To perform a WFA, the OT must use several data sources and collection methods.
17. To ensure a rigorous WFA, the OT must use strategies suited to the type of work-related assessment chosen.

Participants' comments are presented below according to the different topics discussed during the interviews: the clarity, content and comprehensiveness of the recommendations, and the quality of the supporting arguments.

5.3.3.1 Clarity of Recommendations

While participants stated that the wording of most of the recommendations (12/17) was clear, they thought that recommendations 5, 11, 12, 15 and 17 needed clarification.

Table 9 – Comments and corrections regarding clarity of recommendations

Recommendations	Comments	Corrections made
5	Many participants were unfamiliar with the term "top-down approach."[1]	In the CPG, the wording was changed to "approach from the general to the specific."[2]
11	The term "need" was deemed to be too vague.	The term was changed to "objectives." In addition, a reference to the table on WFA objectives was added.
12	Some participants reported they had trouble grasping the concepts of Sandqvist and Henriksson's model (35) and making connections with current practice.	The model was described in greater detail, and the recommendation was rewritten to clarify the connection with the information given in the supporting arguments.
15	Participants thought the terms "practical" and "efficient" were not very clear and did not regard them as equivalent.	Further information was added in the accompanying text to clarify the meaning of the two terms.
17	Participants said they felt recommendation 17 was incomplete.	The recommendation was rewritten to make it clearer and more explicit.

5.3.3.2 Content of Recommendations

Participants generally found the recommendations to be useful and worthwhile, but had specific comments about the content of recommendations 5, 7, 8, 13 and 14.

Table 10 – Comments and corrections regarding content of recommendations

Recommendation	Comments	Corrections made
5	Views varied on the usefulness and use of the top-down approach.	No change was made because the recommendation is in keeping with a systemic conceptualization of work functioning and is consistent with ecological approaches to WFA.
7	Participants said that, contrary to what is stated, the need for an evaluation by an interdisciplinary team is not necessarily related to the impairment severity. Rather, it is related to the complexity of the case.	This recommendation was amended to address the concept of disability complexity, rather than impairment severity. The accompanying rationale was also made more explicit by explaining that the complexity of a case, functionally speaking, depends primarily on the quality of the interactions between the various personal and environmental factors.

[1] This study was conducted in French. The expression "top-down" has no obvious meaning for French speakers and there is no exact equivalent expression in French.

[2] This modification was not necessary in the English version of the CPG.

8	Participants noted that the recommendation emphasizes team communication mechanisms and that these alone do not guarantee a comprehensive WFA. They explained that for an interdisciplinary team to be effective, all team members must agree to follow ground rules and rules of conduct that allow them to work together to achieve a common goal.	This recommendation was rewritten to include information on the nature of the conduct expected within the team, such as adopting a common framework and seeking consensus. In addition, the rationale supporting the recommendation was refined with respect to the conditions required for interdisciplinary teamwork and, in particular, for forming clinical opinions and making decisions.
13	Participants suggested making references to the table identifying WFA objectives and to the decision tree regarding the most appropriate type of work-related assessment to use.	The recommendation box was moved to just after the rationale (referring to the WFA objectives) and just before the decision tree.
14	Participants said the recommendation should specify that the WFA needs to be tailored not only to the work environment and the person in question, but also to other factors, such as the mandate given by the referring party and the economic situation at the specific time.	The "economic situation" factor was added to the rationale and the recommendation. The mandate given by the referring party is dealt with in recommendation 11 (WFA objectives).

5.3.3.3 Comprehensiveness of Recommendations

In reply to the question about whether recommendations needed to be added to or removed from the CPG, participants said all the existing recommendations were important and that they fully covered the field. They did not feel any recommendations needed to be added.

5.3.3.4 Quality of Supporting Arguments

In response to participants' comments, minor changes were made to the arguments supporting seven recommendations (1, 2, 6, 9, 10, 11 and 17) to make them more specific or more complete.

Table 11 – Comments and corrections regarding quality of arguments

Recommendation	Comments	Corrections made
1	Some participants explained that sometimes there are grounds (under a mandate or WFA objectives) for exceeding the functional limitations set by the physician. In this case the OT must obtain medical authorization before performing a WFA that goes beyond the specified functional limitations.	A more precise statement about the importance of obtaining medical authorization was added to the arguments supporting this recommendation.
2	The differences between the concepts of "individual capacity," "work performance" and "work participation" are not clear.	Examples were added to clarify the explanations of the work functioning model in the General Concepts section to make it easier to understand. A page

		reference was also added to make it easier to find where the model is presented. A glossary was added at the end of the CPG.
6	Participants said they agreed with this recommendation because, in their experience, occupational balance contributes to long-term employment. They noted that despite this, some people choose to drop most of their activities and roles outside of work in order to concentrate on staying at work.	The argument supporting this recommendation was rewritten to specify that work can also impede the resumption of activities, roles and responsibilities outside of work. Whenever that is the case, the OT should report it.
9	Some participants thought that the WFA should be done at the end of the rehabilitation process in order to ensure a valid assessment of the person's work functioning. However, others argued that the WFA should be started as soon as possible as a means of guiding the rehabilitation process, but not for formulating a final opinion if it is impossible or untimely to do so.	Information was added to emphasize that the WFA should be started early as a means of guiding the rehabilitation process.
10	A few participants noted a discrepancy between what is recommended and their own clinical practice. They explained that a WFA is not continuous, but is done at the very end of the rehabilitation process.	Participants appeared to be using a different classification of work-related assessments than the one used in the CPG. A reminder that the terms are defined earlier in the CPG was added to ensure the recommendation is properly understood. Readers are referred to the pages in question and to the glossary at the end of the document.
11	Participants suggested specifying that it is also necessary to take into account the fact that the needs/objectives of the claims-paying agent, the client and the therapist's employer (organization's mission) may be different.	Information was added to the arguments to stress the necessity of negotiating the needs and objectives of all stakeholders before proceeding with the WFA to ensure it serves a useful purpose.
17	Some terms need further explanation, including "negative case analysis," "data saturation" and "extended engagement in the field."	Concrete examples were added to aid understanding.

5.3.3.5 Texts, Tables and Figures Accompanying Recommendations

Overall, participants liked the tables and figures in the document because they provided a good summary of the information and made things easier to understand. However, the participants expressed varied opinions on the usefulness of tables 4, 5 and 6, which present information on the frequency of use of various data sources, data collection methods and strategies required to ensure WFA validity. Some participants said that it was interesting to learn about frequency of use. Others remarked that they felt "validated" in the way they were doing things because the tables reflected their clinical practice. Some said that the tables provided a good visual overview

and made the text easier to understand. Others felt that the tables did not add anything. Lists of sources, data collection methods and strategies to ensure assessment rigour would have been sufficient, in their view. In the end, no changes were made to the tables in the second version of the CPG..

5.3.4 "Levels of Research Evidence and Summary of Recommendations" Section

The "Levels of Research Evidence" section explains briefly that the CPG was developed on the basis of a systematic review of the literature. It also outlines the hierarchy of levels of research evidence used in the CPG. Some participants thought that the section was interesting and valuable because it provided a critical perspective on the research evidence in the field.

Some suggested that the level of evidence should be specified for each entry in the "References" section. Others found the table of levels of evidence hard to understand and felt that it needed to be simplified. They also found some of the research jargon pretty impenetrable and even off-putting. A few participants said they liked the "Summary of Recommendations" section because it provided an overview of the CPG. Lastly, a few would have liked to have had a more detailed description of how the CPG was developed and how the relevant literature was chosen.

In the new version of the CPG, the section on levels of research evidence and summary of recommendations was moved to the end, just after the clinical vignette. The title "Levels of Research Evidence" was changed to "Development of the CPG," as an explanation of the process was added, and the use of levels of research evidence is one of the stages in the process. A general explanation of levels of research evidence was also added. A table classifying the references by level of research evidence was added as an appendix to the CPG. However, an explanation of the different study designs and methods referred to in the levels of evidence table was not added, as it would have exceeded the scope of the CPG.

5.3.5 "General Concepts" Section

The "General Concepts" section defines what is meant by the term "work" in the context of the CPG and explains what a WFA is. It also sets out the conceptual model used for the recommendation. The purpose of the section is to make it easier for readers to understand the recommendations and to clear up current ambiguities in the field as much as possible, with respect to both concepts and terminology (3; 62).

Participants found this section to be very helpful for understanding the rest of the CPG. They also thought it was very clear and that the figures and tables made it easier to understand the explanations. The figure on the occupational rehabilitation process and the table on WFA objectives were deemed to be particularly useful, as they were very comprehensive and well organized.

5.3.6 "Clinical Vignette" Section

The clinical vignette included at the very end of the CPG presents a concrete application of the recommendations. The purpose is to help readers understand the recommendations by seeing how they should be followed in a typical clinical case.

Most participants liked the clinical vignette. They thought it was clear and provided a good example of using the recommendations. They also remarked that it was a typical case. They said that a clinical vignette is particularly helpful to novice OTs. A few participants felt, however, that the links with the recommendations were not sufficiently explicit and that an inexperienced OT would have trouble making the connections. They suggested more emphasis be placed on demonstrating and explaining the connections between the clinical vignette and the recommendations, the figure on the occupational rehabilitation process and the figure on the decision tree for choosing the type of WFA.

The clinical vignette section was rewritten to make it easier for readers to see the connections between the different stages of the rehabilitation process, the recommendations and the decision tree.

5.3.7 Concerns and Needs of Participants

Participants' comments not directly related to the purpose of the consultations (focus groups) are discussed below. They address concerns and needs that are important for occupational therapists practising WFAs. First of all, there are obstacles to the recommended clinical practices, as well as a need for lists of quality tools and concrete examples of procedures that can be used.

Some participants expressed their concerns about following the CPG in an actual clinical situation. They said that a number of clinical practices run into obstacles of various kinds: mandate given by the claims-paying agent, no targeted job, unavailability of tools, work organization, etc. More specifically, in practice, it is often hard to carry out a comprehensive WFA (recommendation 2). They also noted that the "work participation" aspect was of little interest to claims-paying agents. Similarly, recommendation 6, regarding the need to take a broad view of a person's other roles, may also be hard to follow because of the restrictive mandate stipulated by the claims-paying agent. Nonetheless, participants stated that OTs have a duty to express their concerns about aspects of an assessment that are excluded from a mandate but that are significant from a clinical standpoint.

Furthermore, beginning a WFA early (recommendation 9) is not always possible because the referral to the occupational therapist often occurs late. Continuity of a WFA and starting it early (recommendations 9 and 10) can both be impeded by obstacles related to the way the OT's employer organizes the work. In some establishments, the client is first put through a functional rehabilitation program that is distinct from the occupational rehabilitation program. Consequently, occupational rehabilitation does not begin until the client has completed the functional rehabilitation program, which can take months.

Some participants said they had trouble understanding how certain recommendations could be followed in concrete terms and that there was a lack of detailed advice about the tools to use. In a few interviews, some participants had difficulty grasping how to assess the various aspects of work functioning and the factors involved. As a way of addressing this problem, participants suggested including a greater number of clinical examples in the explanations. In addition, in several interviews, participants said they would have liked to have a list of evaluation and assessment tools to use and a list of resources to consult.

6. DISCUSSION

The purpose of this study was to develop a clinical practice guideline for occupational therapists performing WFAs of people with physical impairments. As noted earlier, the literature and clinical reality in Quebec show great variability in clinical practices (14; 15; 7), which raises questions about the quality of WFAs and their results (7). The CPG addresses a need to standardize and improve the quality of clinical practice in this field. To our knowledge, this is the first WFA CPG developed by following a systematic, structured method.

There are four sections to the discussion: the systematic review of the literature, the content analysis of the selected references, the drafting of the preliminary version of the CPG and the feedback from the expert clinicians. In each section, the main findings, the strengths and limitations of the study, and the chief implications for research and/or clinical practice are discussed.

6.1 Systematic Review of Literature

The first stage involved searching for literature in the field and assessing the quality.

6.1.1 Literature Search

The results of the literature search were influenced by an array of factors, including the type of search strategy used, access to the identified papers, limitation of the search to publications in English and French, the paradigm shift that has occurred in the field and the type of analysis chosen.

6.1.1.1 Search Strategy

A systematic, reproducible literature search strategy described as “sensitive” was adopted. The aim of the search strategy was to identify all literature dealing with WFA to ensure comprehensive coverage of the field (48; 49; 47; 63). The use of many keywords and several data sources naturally led to a very large number of papers being identified. The disadvantage of this wide-net strategy was that significant human and financial resources were required to screen and analyse the papers (24; 47; 64).

Despite the fact that a “sensitive” literature search strategy was used, four of the papers targeted when a preliminary review was done at the initial project development stage were not identified. There are a number of possible explanations for this. First, the research report by Dutil and Vanier (1998) was not published in a journal and so has not been indexed in the databases. The thesis by Mercier (1998) is not listed in the ProQuest dissertation and thesis database, which suggests an indexing error. The paper by Lacerte and Wright (1992) was published prior to the study’s target period. Lastly, the paper by Law et al. (1996) deals with a general conceptual model of occupational therapy, and so was not identified by the keywords used in the search. As a result, none of the four items was found using the search strategy, even though they were all deemed to be related to the topic. This indicates that even if a “sensitive” search strategy is used, literature that would be useful in developing practice guidelines may not be identified. Experts in the field therefore need to be consulted to see if they know of any other relevant literature that should be added to the search results.

6.1.1.2 Selecting Papers

The literature review was restricted to publications in English and French. It is quite likely that significant papers exist in other languages and that they raise interesting points not covered by the literature in English and French. The language-of-publication limitation no doubt introduced a bias, given that most of the papers selected were published in countries with heavy British and American influences (Canada, United States, Australia, United Kingdom). The CPG may well be easier to follow in these countries than in others. Before the CPG is used in other countries, it would have to be adapted to the context of WFA practice there (63).

Literature published over 15 years ago was also excluded because of the paradigm shift in practice that has occurred since then. In principle, the time period chosen for the literature search ensured ample coverage of the field. From the late 1930s through to the 1980s, the biomedical model prevailed. In that reductionist model, in order to be understood properly, a phenomenon must be broken down into its different components, and organic deficiencies are considered to be the chief cause of incapacity and disability. During that period, the so-called "prevocational" approach to rehabilitation, which focuses on reducing incapacity, was predominant in occupational therapy. More specifically, the goal was to help people reach an optimum physical or mental condition that would allow them to meet the requirements of work once again. This approach advocated the evaluation and development of general work capacity in a clinical setting, without regard for the many work environment factors that influence work functioning. Similarly, work was perceived primarily in terms of the different components of a job, rather than from a systemic perspective of work as an activity (65; 66; 67; 68; 69). More recently, the realization of the limitations of the biomedical model with respect to the complexities of human behaviour, the recalling of the values and beliefs that led to the founding of occupational therapy and, above all, the advancement of knowledge have led to the development of conceptual models of functioning that focus the assessment much more on the person-environment interaction (11; 70; 12; 14; 35; 71; 72; 73; 20). Similarly, in occupational rehabilitation, a more systemic approach is advocated (74; 6; 32; 33; 34; 75). Therefore, given this paradigm shift, only literature from the last 15 years was targeted for the CPG. As a result, the content of the CPG is essentially very contemporary and does not offer any historical perspective, unlike many integrative literature reviews.

For this study, literature was selected through a two-stage screening process. The first screen used broad selection criteria to identify a wide range of papers, while more restrictive criteria were used for the second screen. This strategy was used to ensure no papers were eliminated prematurely, given that the development of the CPG was an iterative process switching back and forth between reading the literature and writing the recommendations. It was therefore important to ensure that all decisions about the topics to be covered by the CPG had been made before any papers were excluded, which would have introduced bias, as relevant literature would have been ignored (57). According to Beyea and Nicoll (56), when the literature is too extensive to manage properly, it is better to restrict the range of topics, but to cover them completely. By following this strategy, we were able to ensure that all the topics dealt with in the CPG were well documented.

The results of the interjudge reliability testing of the selected literature indicate that the selection criteria were clear. This confirms the low risk of error in identifying the relevant literature.

6.1.2 Assessment of Research Evidence

As a number of authors recommend, the data from the literature were assessed for quality, based on the quality of the study and the level of research evidence (25; 51; 57). This analysis ensured the quality of the content of the CPG.

Several methods of assessing quality are possible when the types of studies vary widely.(57; 54). The strategy chosen was to use specific checklists for each study type. This standardized, explicit approach was deemed the most rigorous (51). It does have certain disadvantages, however. First, as it requires a finer analysis, it takes more time than a assessment based solely on general criteria. Second, for some study types, there were no checklists: we had to develop three checklists for study types identified in the selected literature. Third, the quality of published checklists is uncertain. While Cesario et al. (53) and Pluye et al. (54) developed their checklists in a rigorous manner, so far no study has examined their reliability or validity, beyond face validity. To reduce the risk of assessment error, each document was appraised separately by two reviewers, as is recommended (47; 23; 48; 24). However, the fact that no methodological expert was involved, contrary to what is recommended for study analysis, may have weakened the validity of the results (54; 76).

While the use of assessment checklists is considered to be a scientifically rigorous strategy, a number of weaknesses have also been noted (51). Eakin and Mykhalovskiy (77) feel that the use of checklists to assess the quality of qualitative studies distracts readers and makes it harder for them to understand the findings and appreciate their significance. In their view, checklists put the emphasis on procedures, that is, on verifying the quality of the execution of research techniques or methods, and this, they say, leads to a simplistic assessment of the quality of qualitative studies. Nevertheless, the authors also believe that developing a quick assessment tool that emphasizes an in-depth understanding of data interpretation and the significance of findings is a challenge that has yet to be addressed (77). For quantitative studies, Van der Velde et al. (78) show that the results of the quality assessment of a given study vary with the method used. They compared the use of an assessment checklist made up of a series of criteria used by the Cochrane Back Review Group with the best-evidence synthesis method, which consists in a few questions designed to guide the reviewer in reaching an opinion about the methodological aspects of the study. Van der Velde et al. (78) note that each method has its strengths and weaknesses. Using a checklist is faster, which is an obvious advantage when there are a large number of studies to be appraised. In contrast, the best-evidence synthesis method depends on the reviewer's expertise and so is more subject to reviewer bias. One drawback of the Cochrane Back Review Group method is that it involves simply totting up the criteria that are met, meaning that the impact of each unsatisfied criterion on the validity of the results is not weighted. Given that each criterion has the same weight in the total score, studies with a few deficiencies that can have a major impact on results can end up with a higher score than studies with a greater number of deficiencies but that have less of an impact. It should also be noted that in this study, assessment by the best-evidence synthesis method identified weaknesses in studies that had not been identified using the Cochrane Back Review Group checklist.

To sum up, evaluating study quality is a fundamental part of assessing scientific evidence. However, the current checklist method still has a number of weaknesses. Further research is therefore needed to investigate and validate current methods or tools.

Despite their real or potential weaknesses, the checklists used in this study did provide an overall assessment of the quality of the papers. The checklists served to inform CPG readers about the quality of the data presented and also helped us deal with contradictory data when drafting the recommendations. As a result, it was possible to make informed, scientifically rigorous decisions about what evidence to retain as the basis for the CPG when the data from the literature were inconsistent.

According to the findings of the checklist-based assessment, many of the papers identified as relevant to this study were of good quality. This helps raise confidence in the CPG. One type of document was an exception, however. The quality of the literature reviews was deemed to be "highly variable." More specifically, just 3 of the 18 reviews were considered to be of "excellent quality." Integrative literature reviews, scoping studies and mixed research synthesis studies are fairly recent types of studies, and quality criteria for them were published only a short time ago (52; 54; 57; 79; 80). It is now considered appropriate to demonstrate explicitly that the review was conducted rigorously and systematically, according to quality criteria recognized by the scientific community. Unlike more recent reviews, older ones do not describe their method in detail. This explains why the newer papers were chiefly the ones that scored well on the checklist-based assessment.

In this study, our sources are on the lower levels of the Burns and Grove (52) scale of levels of research evidence (levels VII to XI). As mentioned earlier, the sources available are qualitative and descriptive studies and theoretical papers (conceptual models and frames of reference) or else reviews of these types of studies. Considering the findings of qualitative studies for evidence-based practice is a recent development (24; 49) and has been the subject of controversy (80). The prevailing positivist model advocates randomized controlled trials (RCTs) as the gold standard by which studies are to be measured. Qualitative studies are therefore inevitably ranked at the bottom on the scale of levels of research evidence. They are almost a fallback whenever there are not sufficient data from "less biased" studies. Nevertheless, many authors consider data from qualitative research to be essential in the development of clinical practices, as they facilitate understanding of complex human experiences that cannot be captured by experimental protocols (49). Qualitative data are therefore extremely important in developing client-centred practices (49; 80). Gelo et al. (81) argue that quantitative and qualitative research ought to be regarded as complementing each other. Combining the findings of both would lead to a more accurate, more complete understanding of human phenomena. As a result, even if the statements in the CPG are based on "low-ranking" evidence, they still provide useful advice for clinical decision making.

6.2 Content Analysis of Literature and First Draft of the Clinical Practice Guideline

As mentioned earlier, the type of literature review chosen in this study is recent and is known under several names: integrative literature review (55; 56; 57; 52), scoping study (79), systematic mixed-studies review (54) and mixed-research synthesis study (80). In contrast to systematic reviews of the literature on the effectiveness of an intervention, this type of review is not limited to the selection of experimental studies. This means that the production of meta-analyses is completely excluded. On account of the wide variety of types of studies included in the selected literature, the decision was made to conduct a narrative or qualitative content analysis. A number

of different methods have been proposed for this type of analysis (80; 79; 56; 57). Since the review method used was an integrated design, as described by Sandelowski et al. (80), the data in the literature were chiefly targeted not in terms of study design, but rather according to their potential to serve the purpose of the review, which was to draw up recommendations for WFA practice.

The method used to analyse the data and draw conclusions satisfies most of the quality criteria set out in the literature (56; 57; 52; 55). Indeed, the method followed by the lead author of the CPG is qualitative, systematic and explicitly described. The interpretation was verified independently by the project's two other researchers to ensure the accuracy of the results. Steps were taken to prevent the exclusion of relevant evidence ("sensitive" search strategy, data collection form). Contradictory data were handled in an explicit way (based on study quality). The conclusions of the literature review are presented in the CPG. The data that support WFA practices are clearly identified, and the resulting summary provides a comprehensive picture of the field. As a result, the quality of the CPG content is excellent under currently applicable criteria.

6.3 Feedback from Expert Clinicians (Focus Groups and Interviews)

Participants provided generally positive feedback on the first draft of the CPG, while also offering some constructive criticism. They commented on certain aspects in particular: the recommendations about interdisciplinary cooperation, the conceptual model used, the recommendation in favour of a top-down approach and implementing the CPG's recommendations in a context influenced by claims-paying agents.

6.3.1 Interdisciplinary Cooperation

Recommendation 7, stating that the WFA should be performed by an interdisciplinary team if a client has a severe impairment, drew feedback from participants. They argued that the need for a team assessment is not necessarily related to the severity of the impairment, but rather the complexity of the case. As mentioned earlier, a client with a severe impairment can progress favourably toward a return to work without necessarily requiring intervention by an interdisciplinary team. In contrast, a client with a mild impairment may have a complex case that requires the involvement of clinicians from a variety of disciplines to succeed in getting the person back to work. Participants' comments reflected current knowledge: the severity of impairment is not the main factor in a return to work. Other factors also come into play: personal factors such as age or a state of depression, and environmental factors such as the impossibility of adapting tasks or lack of support from the employer (35; 82; 83). In short, a combination of negative factors, rather than the severity of the impairment per se, is what makes a case complex clinically, requiring interdisciplinary involvement in the WFA (74).

The comments from participants also prompted a rewriting of recommendation 8, which stresses the need to establish mechanisms that facilitate the involvement of team members in the WFA. Participants suggested including advice about the type of behaviour required from members of an interdisciplinary team to ensure a WFA is complete. The original wording of the recommendation put the emphasis on communication, whereas participants maintained that communication alone does not ensure that team members work together. Participants' feedback was in line with the work of D'Amour (84) on interprofessional cooperation. Interprofessional

cooperation—whereby team members pool their knowledge, skills and experience to provide better service—is affected by a number of factors, including the setting of ground rules, the adoption of a common goal, and the need for professionals to realize they are dependent on one another to achieve this goal.

6.3.2 Conceptual Model

Participants made a number of criticisms and comments about the conceptual model used for the CPG.

Recommendation 2 states that the WFA must address the three dimensions of work functioning, but many participants had trouble grasping the concepts of Sandqvist and Henriksson's (35) work functioning model. They would have liked to see a more explicit explanation of the model, along with examples, to make it easier to understand and apply in a real clinical setting. In part, the comments reflect the fact that the model is still in development and that the concepts have yet to be validated (35). Participants' dissatisfaction is thus essentially a reflection of the model's insufficient detail. The lack of a comprehensive, detailed conceptual model is a long-standing problem with respect to WFAs in occupational therapy. It was pointed out by Velozo in a paper on WFAs back in 1993. So, while Sandqvist and Henriksson's (35) model is a major contribution to the literature, it appears that it is still not sufficiently detailed to meet the needs of occupational therapists.

On a different but related topic, adoption of a model also depends on a clinician's attitude toward new developments. At present in Quebec, the main frame of reference used by rehabilitation centres is the *Classification du processus de production du handicap (PPH)* [or disability creation process (DCP) classification] (85). But this framework was not adopted by the WHO, which instead opted in 2000 for the *International Classification of Functioning, Disability and Health* (ICF). Sandqvist and Henriksson (35) based their model on the ICF and so it corresponds more closely to the WHO's conceptualization of functioning and disability. As a result, in the Quebec rehabilitation context, the ICF and Sandqvist and Henriksson's (35) work functioning model are innovations.

The diffusion of innovations theory expounded by Rogers [cited in (23) and (86)] may shed some light on participants' reaction to the model. According to Rogers, the adoption of an innovation is influenced by five factors: (i) how much of an improvement over current practice it is perceived to be; (ii) how compatible with the clinician's values, experience and needs it is perceived to be; (iii) its perceived complexity or simplicity; (iv) how easily it can be experimented with; and (v) how visible the results are. These factors could explain participants' feedback about the model. For instance, if, on first reading, participants perceived the work functioning model as hard to grasp, not offering any appreciable improvement over the DCP and, in addition, not really compatible with the model used by interdisciplinary teams, then they may well not have devoted much time to trying to comprehend the model's concepts. This is a plausible hypothesis, given that participants mentioned on several occasions that they liked the DCP and asked why it hadn't been used for the CPG instead of the work functioning model.

6.3.3 Reactions to Top-Down Approach

The feedback on recommendation 5 regarding the use of the top-down approach and that on recommendation 2 stressing that a WFA must take all three dimensions of work functioning into account appear to indicate paradoxical views among some participants. While recommendation 2 was adopted almost unanimously by participants, recommendation 5, which was drafted in tandem with recommendation 2 and which proposes an approach to evaluating the different dimensions of work functioning, was hotly debated. A number of participants disagreed with the use of the top-down approach. More specifically, they argued that the OT only had to assess one aspect of work functioning, which is the person's capacity. According to Vachon (87), this seeming paradox could be due to the difference between how participants perceive their practice and what their practice is actually like. For example, there are OTs who are convinced they subscribe to a biopsychosocial paradigm, yet they analyse clinical situations and practise occupational therapy in accordance with a biomedical paradigm, without being aware of it. Indeed, recommendation 2 is fairly general and does not suggest any specific procedure. So long as aspects of practice are discussed in theoretical terms, it is easier for OTs to state that they subscribe to them. Recommendation 5 (advocating a top-down approach), on the other hand, is more explicit in that the arguments in favour of it set out a series of steps for the assessment: the OT begins by discussing the work participation dimension with the client, then explores the work performance dimension by observing the person doing the tasks (real or simulated). Subsequently, on the basis of the problems identified at the previous step, the OT targets the client's capacities that require specific evaluation. Participants could therefore easily compare their practice with what was advocated in the arguments for recommendation 5. So, although the latter recommendation shares the same concept as recommendation 2—that is, a multidimensional conception of work functioning that participants agreed with—it was the subject of heated debate.

6.3.4 Following CPG Recommendations When Claims-Paying Agents (Insurers) Are a Factor

Although participants were generally in favour of the CPG, they expressed concerns about the pressure exercised by claims-paying agents (insurers) on their clinical practice. This pressure is seen as an obstacle to the use of research evidence and to the adoption of an approach designed to ensure early, continuous and comprehensive WFAs (recommendations 2 to 10). The following explanatory factors are discussed below: insurers' control over eligible rehabilitation services, the market economy in which many OTs practise and insurers' view that there is a single, direct connection between impairment and disability.

It is an obvious fact that insurers must control their costs in order to ensure their viability (88; 89). They can achieve this by helping people recover their capacities as quickly as possible through rehabilitation (88; 90). In many cases, they set limits on which rehabilitation services are covered (89). Those limits put clinicians in awkward ethical situations in which they sometimes have to choose between providing services according to the client's needs or providing services according to what the claims-paying agent has authorized (89).

In addition, the market economy in which occupational therapy services are provided has an impact on WFA practices. Service providers often compete for referrals from insurers (7). This competition has a major influence on clinical practice, as clinicians want to ensure that the party

paying for the services is satisfied. In Ontario, for instance, Strong et al. (7) observed WFA practices that did not take into account the various personal and environmental factors required for a good understanding of work functioning. Clinicians were performing WFAs in a way that focuses almost entirely on personal physical factors, even though this is contrary to the philosophy and approach advocated by the Canadian Association of Occupational Therapists (91). In the United States, Lysaght and Wright (92) also found that despite having traditionally contrasting philosophies and professional fields, OTs and physiotherapists specializing in occupational rehabilitation provide quite similar services and take similar approaches. Here again, the market economy and the restrictions on what treatments are covered are cited as factors influencing practice.

Insurers can control their costs not just by restricting what rehabilitation services they will pay for, but also in some cases by limiting access to income-replacement benefits (88). Most insurers insist that there must be a clear link between the accident, the injury and the disability, or between the illness and the disability, to make sure that they pay out benefits only to people who really need them and to reduce cases of fraud. This conceptualization of a direct, one-way relationship between impairment and disability has been dismissed by several authors (74; 93). As mentioned earlier, impairment is not the sole factor involved in a return to work, as personal and environmental factors may have an even more significant impact (35; 82; 83). On account of their administrative rules and regulations, however, insurers are not always in a position to abandon the direct-connection view in favour of one in which multiple factors are involved and the connections are multidirectional (86; 93; 94). It is therefore possible that occupational therapists who would like to perform comprehensive WFAs may come up against this one-way conceptualization and decisions that stem from it.

Since clinicians, insurers and employers do not always share the same views of disability and the same requirements, it is easy for clinicians to perceive certain actions by insurers or employers as obstacles to rehabilitation. In this context, cooperation among stakeholders in an occupational rehabilitation process may prove to be awkward and may represent a considerable challenge (86). Nonetheless, since working in partnership has been documented as an essential strategy in a successful return to work (40; 74; 95), clinicians are urged to be attentive and open to the viewpoints of their different partners when drawing up and implementing treatment plans (96). This is consistent with the arguments in support of recommendation 11, which states that for a WFA to be useful, the OT must clarify the objectives of the various stakeholders with respect to the assessment right from the outset. If the WFA cannot meet these objectives, the OT should clearly inform the stakeholders to that effect (40; 97). Since the return to work is a challenge not only for the injured worker and the health professionals involved, but also for the worker's employer and insurer (86; 90), OTs should take a global view of the realities of occupational rehabilitation and not focus solely on the clinical aspects (43; 98) so that they can influence stakeholder decisions throughout the process.

7. CONCLUSION

Work is such an important part of adult life that when someone suffers a physical impairment, continuing to work or going back to work is one of the main objectives of rehabilitation. A work functioning assessment is a routine professional practice for occupational therapists working in rehabilitation. At present, however, this practice is subject to wide variability. With a view to providing Quebec OTs with a tool to help them improve the quality of their clinical practice, this study was aimed at developing a clinical practice guideline for performing WFAs of people with physical impairments. This is the first comprehensive, systematic CPG on WFAs.

The CPG provides clinicians and researchers with a summary of current knowledge in the field. The systematic review of the literature conducted for the development of the CPG shows that the level of research evidence in the field is relatively low. Most studies report on how occupational therapists perceive and describe WFA practice. As a result, the CPG is based chiefly on pragmatic knowledge. Moreover, many authors have noted the limitations of existing evaluation tools and approaches, as well as the need to adopt a systemic conceptual model for assessing work functioning. To address this deficiency, this CPG incorporates the work functioning model based on a host of factors related to the individual and his or her environment. In addition, the integrative literature review conducted for the purposes of the study highlighted the need to pursue further research that goes beyond the stage of simply describing work functioning to actually explain it. Moving to this next stage will promote the development of better WFA tools and approaches.

The CPG must now be validated by a formal consensus method (46; 64). At the same time, a study of the obstacles to, and facilitators of, CPG implementation is also required.

In spite of the research still needed in this field, and specifically with regard to this CPG, it should be stressed that it has been developed with rigour and will hopefully prove useful to occupational therapists who wish to update their knowledge and improve their clinical practice.

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Appendix A: Literature Search Strategies Used, by Data Source

CINAHL

001 Work Capacity Evaluation/
002 Occupational Therapy Assessment/
003 Disability Evaluation/
004 limit 3 to (adolescence <13 to 18 years> or adult <19 to 44 years> or middle age <45 to 64 years>)
005 workplace assessment {Including Related Terms}
006 workplace assessment$.mp.
007 5 or 6
008 employee, disabled/ or nurses, disabled/
009 disabled/ or amputees/
010 8 or 9
011 limit 10 to (yr="1993 - 2008" and (English or French))
012 Occupational Diseases/ or occupational-related injuries/
013 Hearing loss, noise-induced/
014 stress, occupational/
015 exp Hearing Disorders/
016 exp Vision Disorders/
017 exp Cumulative Trauma Disorders/
018 exp Cerebrovascular Disorders/rh [Rehabilitation]
019 exp Cerebrovascular Disorders/
020 exp Musculoskeletal Diseases/
021 trauma, nervous system/ or exp craniocerebral trauma/ or exp spinal cord injuries/
022 pain/ or exp back pain/ or headache/ or metatarsalgia/ or neck pain/ or exp neuralgia/ or pain, intractable/
023 exp Headache Disorders/
024 paralysis/ or hemiplegia/ or exp paraplegia/ or quadriplegia/ or exp paresis/
025 arthritis/ or exp arthritis, rheumatoid/ or exp osteoarthritis/ or exp spondylarthritis
026 exp Bursitis/
027 exp Tendinopathy/
028 Tennis Elbow/
029 exp Peripheral Nervous System Diseases/
030 exp multiple sclerosis/ or multiple sclerosis, chronic progressive/ or multiple sclerosis, relapsing-remitting/
031 "Rehabilitation, Vocational"/
032 "Task Performance and Analysis"/
033 Work Simplification$.mp. [mp=title, subject heading word, abstract, instrumentation]
034 work simulation {Including Related Terms}
035 work simulation$.mp.
036 34 or 35
037 functional capacity evaluation {Including Related Terms}
038 functional capacity evaluation$.mp.
039 37 or 38

040 job analysis {Including Related Terms}
041 job analysis.mp.
042 40 or 41
043 Work Environment/
044 Job Characteristics/
045 Workload Measurement/
046 Functional Assessment/
047 medicolegal assessment {Including Related Terms}
048 medicolegal assessment.mp.
049 47 or 48
050 Job Re-Entry/
051 Job Accommodation/
052 "Employment of Disabled"/
053 return to work {Including Related Terms}
054 return to work.mp.
055 53 or 54
056 occupational rehabilitation {Including Related Terms}
057 occupational rehabilitation.mp.
058 56 or 57
059 industrial rehabilitation {Including Related Terms}
060 industrial rehabilitation.mp.
061 59 or 60
062 Attitude to Disability/
063 physically disabled {Including Related Terms}
064 (physic$ adj3 disabled).mp.
065 physical impairment$.mp.
066 physical impairment {Including Related Terms}
067 disabled person$.mp.
068 disabled person {Including Related Terms}
069 63 or 64 or 65 or 66 or 67 or 68
070 69 not 10
071 limit 70 to (yr="1993 - 2008" and (English or French))
072 1 and 11
073 1 and 71
074 2 and 11
075 2 and 71
076 4 and 11
077 4 and 71
078 31 and 11
079 31 and 71
080 32 and 11
081 32 and 71
082 43 and 11
083 43 and 71
084 44 and 11
085 44 and 71

086 45 and 11
087 45 and 71
088 46 and 11
089 46 and 71
090 50 and 11
091 50 and 71
092 51 and 11
093 51 and 71
094 52 and 11
095 52 and 71
096 62 and 11
097 62 and 71
098 36 and (11 or 71)
099 39 and (11 or 71)
100 42 and (11 or 71)
101 49 and (11 or 71)
102 55 and (11 or 71)
103 58 and (11 or 71)
104 61 and (11 or 71)
105 *Disability Evaluation/
106 105 and 4 and (11 or 71)
107 *"Rehabilitation, Vocational"/ and (11 or 71)
108 *Functional Assessment/
109 limit 108 to ((adolescence <13 to 18 years> or adult <19 to 44 years> or middle age <45 to 64 years>) and (yr="1993 - 2008" and (English or French))
110 109 and (11 or 71)
111 limit 46 to ((adolescence <13 to 18 years> or adult <19 to 44 years> or middle age <45 to 64 years>) and (yr="1993 - 2008" and (English or French))
112 111 and (11 or 71)
113 *"Employment of Disabled"/
114 Employment, Supported/
115 113 and (11 or 71)
116 114 and (11 or 71)
117 limit 115 to yr="1998-2008"
118 *Attitude to Disability/ and (11 or 71)
119 limit 118 to (adolescence <13 to 18 years> or adult <19 to 44 years> or middle age <45 to 64 years>)
120 72 or 73 or 74 or 75 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 90 or 91 or 92 or 93 or 98 or 99 or 100 or 101 or 102 or 103 or 104 or 106 or 107 or 110 or 119

EBM

01 functional capacity evaluation.mp.
02 occupational rehabilitation.mp.
03 Work Capacity Evaluation.mp. [mp=ti, ot, ab, tx, kw, ct, sh, hw]
04 disability evaluation.mp.

05 vocational rehabilitation.mp.
1 or 2 or 3 or 4 or 5

MEDLINE

001 Work Capacity Evaluation/
002 limit 1 to (yr="1993 - 2008" and (English or French))
003 *Disability Evaluation/
004 3 not 1
005 limit 4 to (yr="1993 - 2008" and (English or French))
006 workplace assessment
007 workplace assessment$.mp.
008 6 or 7
009 limit 8 to (yr="1993 - 2008" and (English or French))
010 disabled persons/ or amputees/ or hearing impaired persons/ or visually impaired persons/
011 limit 10 to (yr="1993 - 2008" and (English or French))
012 Occupational Diseases/
013 exp Cumulative Trauma Disorders/
014 exp Cerebrovascular Disorders/rh [Rehabilitation]
015 exp Cerebrovascular Disorders/
016 exp Musculoskeletal Diseases/
017 trauma, nervous system/ or exp craniocerebral trauma/ or exp spinal cord injuries/
018 pain/ or exp back pain/ or headache/ or metatarsalgia/ or neck pain/ or exp neuralgia/ or pain, intractable/
019 exp Headache Disorders/
020 paralysis/ or hemiplegia/ or exp paraplegia/ or quadriplegia/ or exp paresis/
021 arthritis/ or exp arthritis, rheumatoid/ or exp osteoarthritis/ or exp spondylarthritis/
022 exp Bursitis/
023 exp Tendinopathy/
024 Tennis Elbow/
025 exp Peripheral Nervous System Diseases/
026 exp multiple sclerosis/ or multiple sclerosis, chronic progressive/ or multiple sclerosis, relapsing-remitting/
027 "Rehabilitation, Vocational"/
028 limit 27 to (yr="1993 - 2008" and (English or French))
029 "Task Performance and Analysis"/
030 limit 29 to (yr="1993 - 2008" and (English or French))
031 *"Task Performance and Analysis"/
032 limit 31 to (yr="1993 - 2008" and (English or French))
033 Work Simplification/
034 limit 33 to (yr="1993 - 2008" and (English or French))
035 work simulation
036 work simulation$.mp.
037 35 or 36

038 limit 37 to (yr="1993 - 2008" and (English or French))
039 functional capacity evaluation
040 functional capacity evaluation$.mp.
041 39 or 40
042 limit 41 to (yr="1993 - 2008" and (English or French))
043 job analysis
044 job analysis.mp.
045 43 or 44
046 limit 45 to (yr="1993 - 2008" and (English or French))
047 medicolegal assessment
048 medicolegal assessment$.mp.
049 47 or 48
050 limit 49 to (yr="1993 - 2008" and (English or French))
051 return to work
052 return to work.mp.
053 51 or 52
054 limit 53 to (yr="1993 - 2008" and (English or French))
055 occupational rehabilitation
056 occupational rehabilitation.mp.
057 55 or 56
058 limit 57 to (yr="1993 - 2008" and (English or French))
059 industrial rehabilitation
060 industrial rehabilitation.mp.
061 59 or 60
062 limit 61 to (yr="1993 - 2008" and (English or French))
063 physically disabled
064 (physic$ adj3 disabled).mp.
065 physical impairment$.mp.
066 physical impairment
067 disabled person$.mp.
068 disabled persons
069 (63 or 64 or 65 or 66) not 10
070 limit 69 to (yr="1993 - 2008" and (English or French))
071 (67 or 68) not (10 or 69)
072 limit 71 to (yr="1993 - 2008" and (English or French))
073 2 and 11
074 2 and 70
075 2 and 72
076 73 or 74 or 75
077 limit 4 to (yr="1993 - 2008" and ("adolescent (13 to 18 years)" or "adult (19 to 44 years)" or "middle age (45 to 64 years)") and (English or French))
078 77 and 11
079 77 and 70
080 77 and 72
081 78 or 79 or 80
082 81 not 76

083 9 and (11 or 70 or 72)
084 28 and (11 or 70 or 72)
085 30 and (11 or 70 or 72)
086 32 and (11 or 70 or 72)
087 34 and (11 or 70 or 72)
088 38 and (11 or 70 or 72)
089 42 and (11 or 70 or 72)
090 46 and (11 or 70 or 72)
091 50 and (11 or 70 or 72)
092 54 and (11 or 70 or 72)
093 58 and (11 or 70 or 72)
094 62 and (11 or 70 or 72)
095 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94
096 2 and (12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26)
097 *Work Capacity Evaluation/
098 96 and 97
099 98 not (82 or 76)
100 *Rehabilitation, Vocational/
101 84 and 100
102 83 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 101
103 102 not (82 or 76 or 99)
104 76 or 82 or 99 or 103

OTDBASE
Use of descriptors
VOCATIONAL
- Assessment/instrument
- Prevocational
- Rehabilitation
- Work

No date limits

Revue Québécoise d'Ergothérapie
Manual search
September 1992–Spring 2001

ProQuest dissertations and theses
1993–2008
Citations and abstracts
Search terms
- Work W/3 capacity W/3 evaluation
- "capacity evaluation" W/3 work
- "work capacity evaluation"
- "work capacity"
- "functional capacity evaluation"

- "work-related assessment"
- "workplace assessment"
- "Job analysis"
- "medico-legal assessment"
- "work simulation"
- "return to work"
- "work rehabilitation"
- "vocational rehabilitation"
- Work and "occupational therapy"
- Work and "physical impairment"
- Work and handicap*
- Évaluation w/3 "capacités fonctionnelles"
- "évaluation des capacités" w/3 travail
- Réadaptation w/3 travail
- "retour au travail"
- Simulation w/3 "tâches de travail"
- Évaluation w/3 "milieu de travail"
- Évaluation w/3 "tâche de travail"
- Ergothérapie
- Ergothérapie and travail
- "déficience physique" and travail
- Handicap* and travail
- Réadaptation and travail

PsychINFO
1993–2008
French–English
18–65 years old
Search terms

- Work-related assessment
- Work capacity evaluation
- Functional capacity evaluation
- Return to work
- Occupational therapy and work not mental health
- Occupational rehabilitation not mental health not mental retardation
- Industrial rehabilitation not mental health not mental retardation
- Workplace assessment not mental health not mental retardation
- Job analysis not mental health not mental retardation
- Medico-legal assessment not mental health not mental retardation
- Work simulation not mental health not mental retardation
- Évaluation des capacités de travail
- Évaluation w/3 capacité* w/3 travail
- Évaluation des capacités fonctionnelles
- Ergothérapie

- Travail
- Évaluation en milieu de travail
- Retour au travail
- Réadaptation and travail

Web
IRSST
www.irsst.qc.ca
Searched on 2008-05-23
1993–2008

- IRSST publications
  - Réadaptation

IWH
www.iwh.on.ca
Searched on 2008-06-02
1993–2008

- Home page
- Systematic review
- Research
- Knowledge transfer
- Research highlights
- Evidence-based practice
- Measurement of health and function
- Workplace intervention and evaluation

WCB-BC
www.worksafebc.com
Searched on 2008-05-23
1993–2008

- Publications
  - Work capacity evaluation
  - Functional capacity evaluation
  - Return to work
  - Occupational therapy

First 30 results

Appendix B: Data Collection Form

Bibliographic record	
Purpose of study	
Study type/design/methods	
Type of work-related assessment (WRA)	• General FCE • Job-specific FCE • Workplace assessment • Job analysis • Other:
Clientele	
WFA quality criteria A quality WFA is	
• Safe	
• Accurate	
• Comprehensive	
• Credible	
• Flexible	
• Practical	
• Useful	

Dimensions and factors to be assessed		Methods of data collection/ aspect evaluation (strategies/tools)	Data sources	Evidence supporting recommendations
Work functioning				
Work participation				
Work performance				
• Work activities				
• Work tasks				
Capacities				
Anatomical structures/ body functions				
Personal factors				
Environmental factors				
Temporal factors				

Overall process	Recommendations	Evidence supporting recommendations
Qualified, experienced clinician		
Clarifies WFA objectives		
Identifies data sources		
Identifies data collection methods		
Collects data		
Analyses data		
Drafts report		
Other		

Appendix C: Study Quality-Assessment Checklists

Quality-Assessment Checklist for Qualitative Studies (Cesario et al., 2002)

Study	Notes	Description
Identification	Author Title Year of publication Reference	
Method	Grounded theory, phenomenology, etc.	
Subject of study	Research questions, objectives	
Participants		
Data collection methods		
Data analysis method		
Results		

Score: 3 = good = 75–100% of criteria met
2 = fair = 50–74% of criteria met
1 = low = 25–49% of criteria met
0 = no evidence = < 25% of criteria met

Assessment criteria	**Notes**	**Comments**	**Score**
1. Descriptive vividness *"To achieve descriptive vividness, the site, subjects (informants), experience of collecting data, and thinking of the researcher during the data collection process must be described so clearly that the reader has the sense of personally experiencing the event."* (Burns & Grove, 2003)	• Is essential descriptive information included? • Is there clarity in the description of the study? • Is there credibility in the description of the study? • Is there adequate length of time spent at the site to gain the familiarity necessary for vivid description? • Does the researcher validate findings with the study participants? • Is the descriptive narrative written clearly? (vividly?)		
2. Methodological Congruence *"Evaluation of methodological congruence requires*			

knowledge of the philosophy and the methodological approach the researcher used." *"Qualitative researcher should … cite references for additional information."* (Burns & Grove, 2003)	
a) Rigour in documentation	Are all elements or steps of the study presented accurately and clearly? 1. Introduction • Phenomenon is identified • Philosophical base of study is made explicit • Purpose and type of qualitative study is stated • Study questions or aims are identified • Assumptions are identified 2. Literature review 3. Statements of methods • Access to site, sample, and population • Researcher's role and interview structure 4. Data collection 5. Data analysis 6. Conclusions/findings
b) Procedural rigour	• Has the researcher asked the right questions? Does the researcher tap the participant's experience versus her or his theoretical knowledge of the phenomenon? • Did the researcher describe steps taken to ensure that the participant did not misrepresent herself or himself, or misinform the researcher? • Did the researcher describe steps taken to deter the informant from substituting supposition about an event rather than recalling the actual experience? • Did the researcher eliminate the potential for "elite bias" by placing equal weight on high-status or elite informant data and low-status or less articulate informant data? • Did the researcher describe steps taken to avoid influence or distortion of the events observed by her or his presence? (like the Hawthorne effect) • Were sufficient data gathered?

	• Was sufficient time spent gathering data? • Were the approaches for gaining access to the site or participants appropriate? • Was the selection of participants appropriate?
c) Ethical rigour	• Were participants informed of their rights? • Was informed consent obtained from the participants and documented? • Were mechanisms developed and implemented to protect participants' rights?
d) Confirmability (Auditability)	• Was the description of the data collection process adequate? • Were the records of the raw data sufficient to allow judgments to be made? • Did the researcher describe the decision rules for arriving at ratings or judgments? • Could other researchers arrive at similar conclusions after applying the decision rules to the data? • Did the researcher record the nature of the decisions, the data on which they were based, and the reasoning that entered into the decisions?
3. Analytical preciseness	• Did the interpretive theoretical statements correspond with the findings? • Did the set of themes, categories, or theoretical statements depict or describe a whole picture? • Can the hypotheses or propositions developed during the study be verified by data? • Were the hypotheses or propositions presented in the research report? • Are the study conclusions based on the data gathered?
4. Theoretical connectedness *"Theoretical connectedness requires that the theoretical schema developed from the study be clearly expressed, logically consistent, reflective of the data, and compatible with the knowledge base of nursing."* (Burns & Grove, 2003)	• Are the theoretical concepts adequately defined and/or validated by data? • Are the relationships among the concepts clearly expressed? • Are the proposed relationships among the concepts validated by data? • Does the theory developed during the study yield a

	comprehensive picture of the phenomenon under study? • Is a conceptual framework or map derived from the data? • Is there a clear connection made between the data and the frameworks?
5. Heuristic relevance *"To be of value, the results of a study should have heuristic relevance for the reader. This value is reflected in the reader's ability to recognize the phenomenon described in the study, its theoretical significance, its applicability to nursing practice, and its influence on future research."*	
a) Intuitive recognition *"Intuitive recognition indicates that when individuals are confronted with the theory derived from the data, it has meaning within their personal knowledge base. They immediately recognize the phenomenon and its relationship to a theoretical perspective in nursing."*	• Is the phenomenon described well? • Would other researchers recognize or be familiar with the phenomenon? • Is the description of the phenomenon consistent with common meanings or experiences?
b) Relationship to existing body of knowledge	• Did the researcher examine the existing body of knowledge? Was the process studied related to *occupational therapy* and health? (do we need this?)
c) Applicability	• Are the findings relevant to occupational therapy practice? • Are the findings important for the discipline of *Occupational therapy*? • Can the findings contribute to theory development?

Quality of evidence	
Total score	QI (22.5–30), excellent QII (15–22.4), QIII (< 15)

Quality-Assessment Checklist for Mixed-Design Studies (Pluye et al., 2009)

Bibliographic record	
Design/methods used	
Purpose of study	

Score: %

Types of mixed-methods study components or primary studies in systematic mixed-studies reviews context	**Methodological quality criteria**	**Yes = 1 No = 0**
1. Qualitative	• Qualitative objective or question • Appropriate qualitative approach or design or method • Description of the context • Description of participants and justification of sampling • Description of qualitative data collection and analysis • Description of researchers' reflexivity	
2. Quantitative experimental	• Appropriate sequence generation and/or randomization • Allocation concealment and/or blinding • Complete outcome data and/or low withdrawal/drop out	
3. Quantitative observational	• Appropriate sampling and sample • Justification of measurements (validity and standards) • Control of confounding variables	
4. Mixed methods	• Justification of the mixed methods design • Combination of qualitative and quantitative data collection-analysis techniques or procedures • Integration of qualitative and quantitative data or results	

Authors' notes regarding use of checklist—Caution notice: Outside quantitative experimental studies, the implication of clustering primary studies or study components by quality score has not been critically examined. With respect to systematic reviews of quantitative experimental studies, the clustering of primary studies and the weighting of quantitative results by quality score is discouraged. Potential applications: With respect to mixed methods research in general: Appraisal of the methodological quality of qualitative, quantitative and mixed methods components.

Quality-Assessment Checklist for Descriptive Studies (Beaucage & Bonnier Viger, 1996)

Bibliographic record	
Design/methods	
Study objectives	
Study subjects/participants	
Type of WRA and clientele, if applicable	

TOTAL: /22

Section	Criteria	Comments
Abstract	Does paper address readers' concerns (comparable clientele, levels of care, etc.)?	
	Are all sections of study covered in abstract?	
Introduction	Are study objectives clearly expressed?	
	Is rationale for study (relevance) convincingly set out?	
	Is rationale adequately supported by references?	
	Is type of descriptive population study specified?	
Method	Is study population clearly defined?	
	Were variables chosen in relation to study topic?	
	Are data sources well defined?	
	Are criteria used to define cases clearly presented?	
	Are types of observations and way they were made described explicitly?	
	Is way cases were selected for analysis clearly set out?	
	Is plan of analysis clear and well structured?	
	Are analysis methods used appropriate to achieve objectives?	
Results	Are results presented clearly and systematically in relation to plan of analysis?	
	Are frequency measurements for specific observations set out clearly in relation to all variables used in study?	
	Are interpretations of statistical tests presented clearly in relation to plan of analysis?	
Discussion	Is interpretation of results presented clearly and does it refer to relevant literature?	
	Is potential bias discussed explicitly?	
	Are limitations of study results discussed?	
	Is degree to which results can be generalized discussed?	
	Are indications about avenues for future research suggested and discussed?	

Quality-Assessment Checklist for Frames of Reference and Conceptual Models (based on Burns & Grove, 2009)

Bibliographic record	
Name of model or frame of reference	
Phenomenon studied	

Total score:

Criteria	**Yes = 1 No = 0**
1. Abstract is well structured.	
2. Paper is well structured; headings and subheadings are used appropriately.	
3. Problem is clearly defined.	
4. Purpose is clearly stated.	
5. Results of review of theoretical and empirical literature are set out.	
6. Concepts are clearly identified and defined.	
7. Definition of each concept supported by • Literature on WFAs or occupational rehabilitation, or • Concept analysis if concept comes from another field, or • Author's own definition of an innovative concept, along with the rationale for it	
8. Constructs are clearly identified and defined.	
9. If several constructs are used, concepts are explicitly connected to construct to which they relate.	
10. Connections between concepts are clearly presented, and direction of the connections is specified.	
11. Existing data regarding connections between concepts are identified and analysed.	
12. All concepts are interrelated.	
13. Model provides overview of phenomenon explained.	
14. Visual representation of model or framework is well organized and all concepts are shown.	
15. Concepts related to same construct are grouped together visually.	
16. Relationships between concepts are all presented and illustrated clearly.	
17. Uses of frame of reference or model are proposed in connection with research and/or clinical practice.	
18. Limitations or weaknesses of frame of reference or model are stated explicitly.	
19. Research needs/avenues are identified.	

Quality-Assessment Checklist for Integrative Literature Reviews (Whittemore & Knafl, 2005; Beyea & Nicoll, 1998; Kirkevolt, 1997; Burns & Grove, 2009)

Bibliographic record	
Subject of review	

Total score: /25

	Criteria	Yes = 1 No = 0
	1. There is a structured abstract.	
Problem formulation stage	2. Problem or subject addressed by review is clearly set out.	
	3. Purpose of review is clearly stated.	
	4. Variables of interest are identified (e.g., concepts, target population, health care problem).	
	5. Types of studies and literature are specified (types of empirical studies, inclusion of theoretical literature).	
Literature search stage	6. Literature search strategy is well defined.	
	7. Literature search strategy combines at least two or three methods (e.g., purposive sampling, comprehensive search, computerized databases, ancestry searching, journal hand searching, networking, searching research registries).	
	8. All aspects of strategy are documented and justified: a. Keywords b. Databases c. Additional search strategies d. Inclusion and exclusion criteria for studies and literature	
	9. At least two people were involved in selecting sources (literature) so as to limit bias.	
Data evaluation stage	10. Method used to assess literature quality is described explicitly.	
	11. Method of assessing literature quality is consistent with types of literature selected. Three possibilities are suggested, but are open to discussion: • Studies with similar research designs o Assessment checklist with design-specific criteria to calculate score o Specify score that determines inclusion or exclusion of source • Studies with diverse study designs o Only assess quality of studies with discrepant findings to determine whether outliers are attributable to study quality • Combination of empirical and theoretical sources	

	○ Quality assessment approach similar to that used in historical research (authenticity, quality, informational value and representativeness of available information [Kirkevolt, 1997]) ○ Theory analysis and critiquing techniques for theoretical papers ○ Or two instruments with quality criteria used for two types of literature (empirical and theoretical). Instruments have two-point scale (high or low) for methodological or theoretical rigour (depending on case) and relevance/importance/value of findings for review.
	12. At least two people were involved in appraising quality of sources (literature) in order to reduce bias.
Data analysis stage	13. Data analysis method is identified explicitly; it is qualitative and systematic. (Data are ordered, coded, categorized and summarized.)
	14. Interpretation of data audited by outside specialist.
Conclusion drawing and verification	15. Review findings are presented by problem/key concept.
	16. Strength of evidence is indicated.
	17. Inadequate or missing knowledge on topic is identified. / Research data to support clinical practice in question identified.
	18. Origin of clinical practice in question is identified.
	19. Synthesis integrates all results of review to produce comprehensive portrayal and new conceptualization of topic/phenomenon.
	20. Measures taken to ensure accuracy of results: • Patterns, themes, relationships and/or conclusions verified with primary source data (literature) to ensure accuracy and confirmability (no researcher bias) • Care taken to avoid premature analytic closure • Care taken to avoid exclusion of pertinent evidence • Way of dealing with conflicting evidence described (e.g., compare frequencies of positive and negative findings, explore factors that might explain variability) • Record kept during analysis to document decisions, thoughts, ideas, alternative hypotheses, hunches, etc.
Presentation	21. Conclusions supported by explicit details from literature.
	22. Conclusions lead to new understanding of topic/phenomenon.
	23. Implications for clinical practice are set out.
	24. Implications for research are set out.
	25. Limitations of method used are explicitly stated.

Appendix D: Interview Guide for Focus Groups

Arrival, setting up and latecomers	Invite for lunch Collect consent forms and participant profile form	15 min
Start	Welcome Explain interview procedure Reason for recording No right or wrong answers; want all viewpoints, even contradictory ones	2 min
Opening question	1. We'll start by going round the table and introducing ourselves. Please state your name, where you work and who your main clients are.	5 min
Introduction	2. What is your **overall impression** of the CPG? • What was your reaction when you were reading it?	5 min
Transition question	3. Regarding the **format**, is the CPG **easy to consult**? • Is it organized in a clear, easy-to-understand way? In a practical way? • Are there things that should be structured differently, to make the CPG easier to consult?	5–10 min
Key questions	Now we're going to examine the different sections of the guide. We'll start with the core part of the document: the recommendations. 4. In your view, are the **recommendations** (along with the supporting **text/arguments**) sufficiently **clear** and **precise**? • Are there any recommendations that need to be **rewritten**? 5. Are the recommendations **useful**? • For a novice therapist? An experienced one? • Could some recommendations be **dropped**? **6.** Are there any recommendations that should be **added**? • Recommendations that are useful or important to follow in practice, but are not included in the CPG? 7. Are the **tables and figures** in the "Recommendations" section **useful**? **Clear**? • Table 3 – Aspects of functioning and recommended WFAs	1 h, 15 min

- Figure 4 – Decision tree
- Table 4 – Data sources
- Table 5 – Data collection methods
- Table 6 – Strategies for rigorous WFAs

8. Do the **other sections** of the document **help you understand the recommendations**?
   - Levels of evidence and summary of recommendations
   - General concepts
   - Clinical vignette
9. Is the **content** of these sections **clear** and easy to understand?
10. Are the **tables and figures** in the other sections **useful? Clear?**
    - Table 1 – Levels of research evidence
    - Figure 1 – Work functioning
    - Figure 2 – Occupational rehabilitation process
    - Table 2 – WFA objectives
    - Figure 3 – Continuum situating work-related assessments by specificity of results
11. Are there things in these sections that could be **dropped**?
12. Are there things that need to be **added**?

Final questions (Give short recap of the discussions) 10 min

13. Does that sum up the main points of what was said?

Remind participants of the purpose of the focus group

14. Is there anything we should have touched on, but didn't?

Conclusion Thank participants

Hand out envelopes with compensation

Appendix E: Participant Profile Questionnaire

a) Number of years' experience as occupational therapist: _____

b) Number of years' experience in occupational rehabilitation and/or work capacity evaluation: _____

c) Training in occupational rehabilitation and/or work capacity evaluation taken after your original occupational therapy training. Tick off those that apply.
- Graduate studies (microprogram, diploma, master's, PhD) [ ]
- Professional development course in public system [ ]
- Training or certification offered by FCE provider (e.g., Matheson and Associates) [ ]
- Workplace training or supervision [ ]
- Self-taught [ ]
- Other [ ]; please specify: _____

d) Type of practice. Tick off those that apply.
- Private practice [ ]
- Physical disability rehabilitation centre [ ]
- Other [ ]; please specify: _____

e) Number of WFAs and/or FCEs performed annually on average: _____
If none, explain why (e.g., I am a full-time clinical coordinator):
_____

f) With your clients, do you practise . . . (tick off those that apply)?
- As sole clinician [ ]
- As part of an inter- or multidisciplinary team [ ]
- Other [ ]; please specify: _____