Measuring disability in patients with chronic low back pain
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General discussion

Chapter 9
General discussion

This thesis focused on measuring disability in patients with Chronic Low Back Pain (CLBP). The usefulness of two instruments, the Roland Morris Disability Questionnaire (Dutch language version, RMDQ-Dv) and the Isernhagen Work Systems Functional Capacity Evaluation (IWS FCE), was studied on the ability to assess, evaluate and predict disability and functioning. The thesis focused on limitations in ADL, limitations in work-related activities and restrictions in work participation. Most studies were performed in patients with CLBP. Only chapter 4, measuring physical performance via self-report, was performed in healthy subjects. In this general discussion, the usefulness of the RMDQ-Dv and IWS FCE to assess, evaluate and predict disability and functioning in patients with CLBP will be discussed, using results from the studies presented in this thesis and from previous studies. Clinical implications of these findings and recommendations for further research are presented.

Limitations in ADL

The RMDQ-Dv was used to measure limitations in ADL. The RMDQ-Dv appears to be a reliable instrument to assess limitations in ADL in patients with CLBP. However, a large natural variation of 6 points on a scoring range of 0-24 was found, which should be taken into account when using this instrument in clinical practice (chapter 2). The sensitivity to measure change with the RMDQ-Dv was good to very good, depending on the external criterion used (chapter 3). Measuring change in groups of patients was best assessed when using the natural variation as external criterion, followed by a change in self-reported pain intensity. In clinical practice, these results mean that the RMDQ-Dv can be used to assess self-reported limitations in ADL and to evaluate change after treatment in self-reported limitations in ADL in groups of patients. When using the RMDQ-Dv in individual patients, patients have to change at least 6 points on a scale of 0-24 of the RMDQ-Dv to exceed the natural variation and before one can decide that a ‘real change’ has occurred (chapter 2). The question remains whether this ‘real change’ indeed is a clinically important change. Patients who were judged as ‘not changed’ according to the natural variation of the RMDQ-Dv, did change on other external criteria related to the construct of functional status (chapter 3). Because treatment goals may be achieved despite the absence of a ‘real change’ assessed by the RMDQ-Dv, it is recommended to use an additional, more specific questionnaire. A more specific instrument that might be used to measure limitations in ADL, is the Patient Specific Questionnaire (PSQ). The PSQ is responsive. The reliability, stability and validity have not been investigated yet. If patients improve less than 6 points on the RMDQ-Dv, the RMDQ-Dv is not
sufficiently sensitive to measure change. In addition, the RMDQ-Dv cannot be used as evaluative outcome measure in individual patients with an initial score less than 6, because those patients cannot improve 6 points. In patients with a baseline score less than 6 or a change lower than 6 points, an other questionnaire, more sensitive to measure change in limitations in ADL should be used. Different instruments are available, for example the Oswestry Low Back Pain Disability Questionnaire4 and the Quebec Back Pain Disability Questionnaire.5 Both instruments use a 6-point scoring range per activity. Reliability, responsiveness and validity of these instruments are good.1,3,5-7 The RMDQ, Oswestry and Quebec questionnaires have been compared on their usefulness for a functional assessment.8 The RMDQ and Quebec were both useful for a functional assessment.8 The Oswestry however, focussed mainly on functional pain assessment. In addition, because the Quebec was more sensitive to measure change than the Oswestry, the best alternative questionnaire for measuring change in self-reported limitations in ADL is the Quebec. Recently, a new functional status questionnaire was developed. This Pain Disability Questionnaire (PDQ) showed good reliability, responsiveness and construct validity.9 Besides a functional status component, the PDQ also includes psychosocial variables.9 Future research should determine the usefulness of this instrument in patients with CLBP.

Limitations in work-related activities

The IWS FCE was used to measure limitations in work-related activities. Several subtests of the IWS FCE have proven good reliability in patients with CLBP.10 In addition, several subtests could be directly matched with observed work demands (chapter 8). Lifting performance assessed by the IWS FCE was different from self-reported performance or a calculated lifting limit, using the lifting guideline of the National Institute of Occupational Safety and Health. Therefore, it is concluded that, despite measuring similar constructs, different perspectives and instruments generate different outcomes in the assessment of limitations in work-related activities11,12 (chapters 4 and 5). Due to the lack of a gold standard, it is preferable to use different perspectives to assess limitations in work-related activities.11 The IWS FCE can be used for the assessment of performance of work-related activities and to assess whether the performance of work-related activities is sufficient to perform those activities at work. The large amount of natural variation in several IWS FCE tests limits the use of this instrument in clinical practice in individual patients, both in the assessment of performance of work-related activities and the evaluation of change.10 Although the importance of investigating the responsiveness of FCEs has been acknowledged,13-15 the responsiveness of the IWS FCE have not been investigated yet. This may be due to the lack of a gold standard to measure limitations in work activities.16 Because of the large natural variation and the unknown responsiveness, the IWS FCE is
less suitable to measure change in performance of work-related activities. Possible other work-related instruments have been investigated, but these instruments were not reliable.\textsuperscript{17,18} This means that at this moment, no instrument is available that is known to be sufficiently reliable, valid and responsive to measure change in performance of work-related activities.

**Restrictions in work participation**

The International Classification of Functioning Disability and Health (ICF) emphasise the importance of the relation between body structures, body functions, activities, (work) participation and environmental and personal factors in the assessment, evaluation and prediction of disability and functioning. It is not clear yet, which factors in the different domains are of main importance in the prediction of work participation and sickness absence in patients with CLBP. This thesis presented that no core set of predictors exists for sickness absence in general, but the characteristics of the study (decision to report sick or to return to work, study population, timing of follow-up measurement, predictors and outcome definition) influences study outcome (chapter 6). Results from a cross-sectional study indicated that working patients reported fewer limitations in ADL than non-working patients, assessed by the RMDQ-Dv. Thus, this measurement instrument might have value in predicting sickness absence after rehabilitation treatment (chapter 7). The value of the IWS FCE in predicting restrictions in work is still a point of discussion despite the fact that in the last decade, much more (prospective) research has become available. Prospective research on the IWS FCE showed poor to moderate relationships with return to work\textsuperscript{19-24}, and concerns were raised about the content and construct validity\textsuperscript{25,26} (chapter 8). Performing work-related activities might be only a small, and perhaps an aspect of little importance in predicting work restrictions in patients with CLBP. It can be questioned whether patients with CLBP are ‘limited enough’ in performance of work-related activities, to cause work disability. Research has shown that patients may be less limited in performing work-related activities than previously thought\textsuperscript{11} (chapter 8). Although there is much need of objective assessment methods to determine performance of work-related activities, it seems that self-reported measurements of performance are more important than objective measurements of performance in the prediction of restrictions in work participation (chapter 7). This finding should however be further validated in a prospective study in patients with CLBP.

**Measuring disability**

It seems that measuring disability is more complicated than just measuring limitations in ADL or work-related activities, or only focus on restrictions in work
participation. Differences between self-report and performance measurement instruments, the use of different operational definitions of concepts, the use of different external criteria or measurement instruments influence the outcome of disability measurement in patients with CLBP, as was shown in chapters 3, 4, 5 and 6. Recent research into the measurement of work disability supports this.\textsuperscript{27,28} Although return to work may be an important outcome in disability research, using this outcome does not mean that the patient is fully recovered from his or her health complaint. Also, having a significant improvement in health does not automatically mean that patients regaining work activities.\textsuperscript{29} Thus, the use of either return to work or (self-reported) improvement in health as outcome, is not sufficient to measure disability and functioning in patients with CLBP.

**Clinical implications**

**Usefulness of the RMDQ-Dv**
The RMDQ-Dv is a useful and valuable instrument when determining need for rehabilitation, evaluation of change in self-reported limitations in ADL and predicting disability and functioning in work in groups of patients. However, the natural variation of the instrument should be taken into account when using this instrument in individual patients. Also, prospective research is needed to support or refute the hypothesis that the RMDQ-Dv can be used in predicting disability and functioning in work. Although the RMDQ aims to assess functional status, the influences of different external criteria also showed that the domain of functional status is not fully covered by using the RMDQ. It is recommended that the RMDQ-Dv should be part of a multimode disability assessment battery.

**Usefulness of the IWS FCE**
In this thesis, it was shown that the IWS FCE can be used for the assessment of performance of work-related activities and to assess whether the performance of work-related activities are sufficient to perform those activities at work. Because of the large natural variation and the unknown responsiveness, the IWS FCE is less suitable to measure change in performance of work-related activities. In addition, the current standardised IWS FCE protocol seems to have little contribution in predicting work ability, and to predict sickness absence by matching work ability and work demands. A recent study showed that experts in the field of reintegration were mainly positive in the usefulness of the FCE in their field, whereas experts in the field of work-disability were less positive.\textsuperscript{30} Twenty percent of all experts found that the FCE was useful as prognostic instrument in determining work ability. Arguments against the usefulness were that the assessment was only at one moment, no new information was provided, patients had a large influence on test results, not all aspects of importance were measured, and the patients work situation differed from the FCE testing situation.\textsuperscript{30} It is recommended that the protocol be adjusted by determining item relevancy
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(in terms of amplitude, frequency and duration) with respect to work demands, when using the IWS FCE in predicting work ability. The standardised IWS FCE can be used as a tool in treatment programs, to improve limitations reported by the patients, by showing them that they can perform more than thought. Although the IWS FCE was designed to be a functional assessment method, the term ‘functional’ might be misleading. The IWS FCE is based upon the job factors of the Dictionary of Occupational Titles.\textsuperscript{31,32} This dictionary describes the physical activities (job factors) that a job requires in a systematic way, by means of physical demands analysis. Therefore, ‘functional’ in the FCE should only be interpreted in terms of physical work capacity.

**Implications for rehabilitation medicine**

Because of the influence of different instruments and perspectives, it is recommended to use different measurement instruments and different perspectives in the assessment of functioning and disability in patients with CLBP. Guiding principles for rehabilitation treatment are to focus on the consequences of CLBP on functioning, and to improve self-reported limitations. Consequences of CLBP can be different in individual patients, therefore, a multidisciplinary approach is highly recommended in the treatment of CLBP. Because of the relation between self-reported limitations and a change in self-reported pain intensity\textsuperscript{3} (chapter 3) and a perceived decline in physical activity,\textsuperscript{33} it is recommended that attention should be given to the (perceived) decline in functioning.

**Implications for other disciplines**

Occupational medicine may play a role in determining the nature of the complaints, the work-relatedness and the work-relevance of CLBP. It should be investigated to what extent physical or psychosocial factors determine the level of functioning. A workplace assessment may give insight in these factors.\textsuperscript{34} Also, a model was developed to investigate the work-relatedness of LBP with respect to the extent in that LBP is caused by work-related factors.\textsuperscript{35} This model might give some focus points in treating individual patients. The difficulty in measuring disability may have consequences for occupational and social insurance medicine. These disciplines also use measurement instruments based on the activity level of functioning. It was shown in this thesis, that the transition from work-related activities to work-participation is not straightforward. Therefore, it should be investigated to what extent the assessment of disability in occupational and social insurance medicine is representative for measuring work disability. In the Netherlands, the Act on Work and Income Based on Work Capacity (WIA), a new law for providing disability pensions is implemented in 2006. This law focuses on functioning instead of disability. This means that in the domain of work, a wide range of physical and psychosocial aspects should be investigated. The question is to what extent implementing this law is evidence based, because it was shown in this thesis that it is not possible yet to investigate the concepts disability and functioning as a whole.
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Recommendations for further research

- In this thesis, it was hypothesised that self-reported measures of performance are more important in predicting sickness absence during follow-up than objective measures of performance. This study was however cross-sectional. Therefore, a prospective research should be performed to validate this hypothesis in patients with CLBP.

- In this thesis an explorative study was performed into the relation between performing work-related activities and sickness absence during follow-up. Although workers with CLBP were limited in performing work-related activities, the study showed that in these 18 workers, the performance was sufficient to perform his or her job. Because of the importance of decline in functioning in relation to self-reported limitations, it is interesting to investigate whether a decline in performing work-related activities plays a role in the prediction of sickness absence.

- There is much need of developing objective, reliable, valid and responsive measurement instruments to measure limitations in work-related activities. Although the IWS FCE has some major limitations with respect to the large natural variation and validity with respect to work-disability, no alternatives are available to objectively measure limitations in work-related activities. In addition, the IWS FCE provides an objective assessment of several work-related activities. Therefore, it is recommended to adjust the existing FCE protocol by determining item relevancy (on amplitude, frequency, duration) with respect to work demands and subsequently, translating these work demands into a job-specific FCE protocol.

- It is desirable to be able to determine subgroups in which the work-relatedness or work-relevance of CLBP needs specific attention. Therefore, the starting point in research into assessing work-related disability should be aimed at investigating the work-relatedness and work relevance in patients with CLBP.

- At this moment, the quantitative and standardised way of assessing work-related disability by using the IWS FCE is not sufficient to predict the ability to work and short- and long-term effects in terms of sickness absence. Therefore, it is recommended to make a shift in focus in the assessment of work-related disability. This means a more qualitative way of assessing work capacity, work demands and other factors that determine work-related disability.

- The ICF may be a useful framework to structure the research and clinical practice into disability and functioning in LBP. A first attempt was made to develop ICF core sets for LBP. This core set includes (different numbers of) categories on body functions, body structures, activities, participation and environmental factors. The next step is to translate this core set into practical, reliable and valid measurement instruments, and to analyse whether suggested relations exist in patients with CLBP.
References

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