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Disease oriented work ability assessment in social insurance medicine

Frans G. Slebus



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The studies presented in this thesis were carried out at the Coronel Institute of Occupational Health, Academic Medical Center, University of Amsterdam, Amsterdam, the Netherlands.

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# **Disease oriented work ability assessment in social insurance medicine**

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## Chapter 1

### **General Introduction**



## Introduction

A large number of people stop working before they reach the age of 65<sup>1,2</sup>. An important reason to discontinue working before the age of 65 is when the development or acquisition of a disease diminishes the functional capacities to such an extent that work demands cannot be fulfilled<sup>2,3</sup>. This results in one becoming work disabled.

In most Western countries drain out of the workforce due to ill health is substantial<sup>4,5,6</sup> and the financial consequences are insured under social security<sup>7,8</sup>. The concerned employees can therefore claim a disability pension.

Generally speaking, before disease-related restriction results in a disability pension, a process of diminished functional capacities resulting in presenteeism and/or absenteeism<sup>9,10,11,12</sup> occurs. In addition, attempts to return to work<sup>13,14</sup> without counterbalancing the reduced functional capacities can be observed. This process takes time, and, before possibly disability pensions are granted, most social security systems impose a waiting period<sup>7</sup>. A failure to return to work within an allotted time does not mean that the incapacitated employee is unable to participate in their work. This can be illustrated by the facts that disease-related retirement appears to vary between organisations<sup>15,16</sup> and countries<sup>17</sup>, employees may return to work after disability pensions have been granted<sup>18</sup>, and the management of ill health retirement varies in practice<sup>7,19</sup>. The assessment of work ability of incapacitated employees who claim disability pensions may therefore vary with the perspective of the assessor. Since returning to work is thought to be associated with subjective well-being and life satisfaction<sup>20,21</sup>, and because labour shortages are predicted in the future<sup>22</sup>, the assessment of the work ability of the incapacitated employee is an important subject for study. Consequently, work disability should not simply be accepted, and high-quality criteria in the input, process, output and outcome of the work ability assessment process<sup>7</sup> are needed. In practice, this implies skilled assessors, inter-collegial consultation, continuous education, coaching, working according to guidelines and protocols, and performing reliable and valid work ability assessments<sup>7</sup>.

## 1.1 Aspects of work ability

In the assessment of work ability, the capacity to participate in work is determined. In the International Classification of Functioning, Disability and Health (ICF) model of the World Health Organisation (WHO)<sup>23</sup>, aspects of work ability can be categorised by six components: (1) disease and disorder, (2) structures and functions, (3) activities, (4) participation, (5) environmental factors and (6) personal factors. In this classification, the capacity to participate in work can be conceptualised as the result of mutually interacting aspects<sup>23</sup>. Due to the fact that participation in work also needs to be stable in terms of hours per day and days per year, the assessment of work ability should be described by aspects of work ability that are prognostic for future participation in a given occupation.

Many theoretical predictors for returning to work, as covered by the components of the ICF model, have been described<sup>24</sup>. Those factors, however, are predominantly based on cross-sectional research and do not address the situations in which as many as 21 months have passed since sick-listing, as is the case in the Netherlands for the assessment of work ability intended for social security purposes. Furthermore, the described factors are mainly not disease-specific. Examples of these factors include age, gender, nature of work and social support<sup>24</sup>, suggesting that the type of disease is less relevant. Counter-arguments against this suggestion are that disease-specific patterns of presenteeism or absenteeism<sup>11,25</sup> are known, that return to work measures for certain diseases have been designed<sup>26</sup>, and that disease-specific guidelines to assess work ability have already been developed<sup>27,28,29,30</sup>. Furthermore, medical support for the disabled employee is oriented in a disease-specific manner in most countries. The central argument for assessing work ability in a disease-specific manner in work ability assessment is when the complaints fit the diagnoses of a patient to appraise the gathered aspects of work ability that are related to participation in work. For example, chest pain during walking in patients with coronary heart disease is a valid reason for slowing down the work pace, while chest pain in patients with psoriasis is thought to be unrelated to the disease. Therefore, it seems reasonable that, in assessing work ability, not only non-disease-specific, but also disease-specific factors for work ability should be considered. A disease-specific approach of work ability assessment does not exclude the relevance of any non-disease-specific aspects.

## 1.2 Quality improvement

Throughout Europe<sup>7</sup>, the assessment of work ability of long-term sick-listed employees is performed by medical advisors on authority of the national institutes of social security. In such settings, and according to Hofstee (1999), qualified assessors should be exchangeable<sup>31</sup>. This implies that the relevant characteristics for the assessment of work ability and methods to assess these should be known among all assessors. However, work ability is ill-defined<sup>2,31</sup>, and there is an inconsistency in the assessment of work ability between medical advisors<sup>32,33</sup>. Guidelines and training to handle these inconsistencies can be assumed not to be applicable in this context because it is not yet known what aspects of work ability should be addressed. Consequently, identifying relevant aspects for the assessment of work ability, and subsequently developing useful instruments to measure them, is a real need in this area. When this endeavour is directed at diseases for which disability pensions are frequently granted, the improvement in quality for the institutes of social medicine, on whose authority work ability is assessed, is understood to be substantial. Identifying relevant aspects for the assessment of work ability and subsequently developing the appropriate instruments should, therefore, first be aimed at diseases for which disability pensions are frequently granted. The figures from the Dutch National Institute of Benefit Schemes show that, of the assessments performed in the Netherlands, approximately one-third concern musculoskeletal diseases, approximately one-third concern psychiatric diseases, and approximately one-third concern all of the remaining diseases<sup>34</sup>. Major Depressive Disorder (MDD), chronic Low Back Pain (cLBP) and Myocardial Infarction (MI) are diseases for which disability pensions are often granted. In addition, MDD is the diagnosis for which the majority of disability pensions are granted in the Netherlands<sup>34</sup>.

## 1.3 Assessment of work ability in the Netherlands

In the Netherlands, medical assessments for work disability are conducted by Insurance Physicians (IPs). Around 1000 IPs work on a daily basis at the Dutch National Institute of Benefit Schemes. IPs are physicians who received four years of post-academic training, including on-the-job training, complemented by theoretical education for one day a week during these four years. After completing the training and their study, they are officially registered as medical specialists in social insurance medicine.

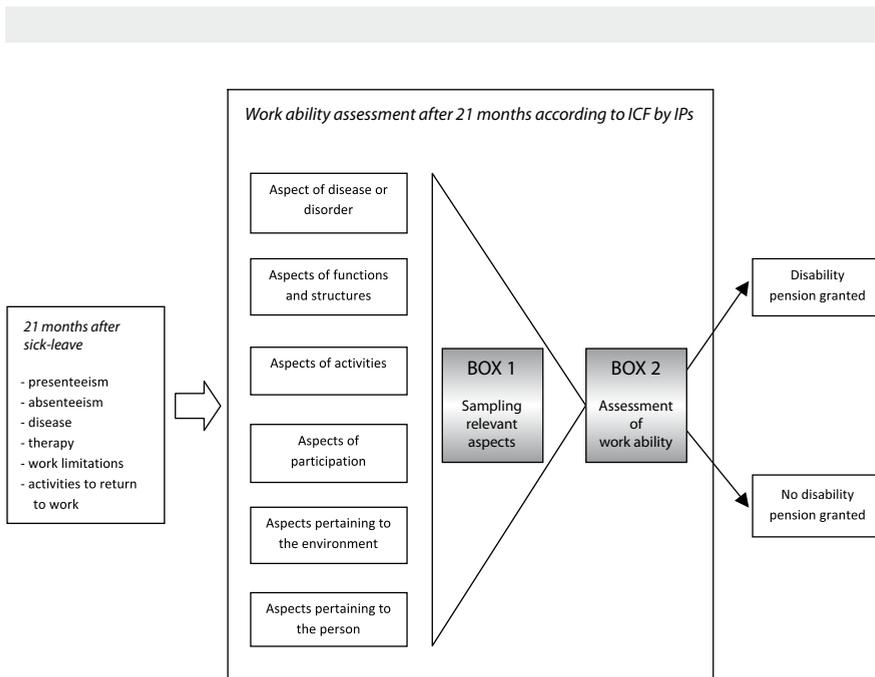
The main duties of IPs in cases where an applicant claims a disability pension are to assess the social-medical history of the claimant, the current work ability of the claimant in their own or another job, the prognosis of the work ability of the claimant, and the possibility for further treatment and/or support<sup>27,28,29,30</sup>. Schematically, the assessment of work ability in the Netherlands is presented in Figure 1.

Before the assessment of work ability is performed, the sick-listed employee is typically on sick leave for a minimum of 21 months. During this period, the patient is usually counselled by an occupational physician and/or treating doctor. After 21 months of sick leave, if the return to work is not (yet fully) achieved, the assessment of work ability is then performed by an accredited IP.

IPs base their assessment of work ability on the social-medical history, an interview, and, when necessary, an examination of the claimant, conducted in consultation with the other medical professionals concerned. As professionals, the IPs are obliged to use guidelines<sup>35,36,37,38</sup>, disease-specific protocols<sup>27,28,29,30</sup>, appropriate interview methods<sup>39</sup> and disease-specific illustrative case histories<sup>40</sup> to help in assessing work ability of the claimant. The regulations stipulate that information should be gathered and that work ability should be preferably conceptualised according to the ICF model. However, specific criteria for what information should be gathered and how to appraise the gathered information to assess work ability however are in many cases missing or incomplete and often not evidence based.

The assessment for the ability to work is noted now in a pre-structured functional ability list in which activities that the claimant is able to perform are described. In this list, the work conditions that should be met before a claimant can safely work, according to the IP, are also listed. This list, in addition to the employee report made by the IP, makes up the base of the administrative process. In this process, a labour expert decides if a client can return to work or if, and to what extent, a disability pension should be granted based on the financial loss of income.

Although all assessments are performed on the authority of the National Institute of Benefit Schemes, IPs have a professional freedom how they assess work ability<sup>41</sup>. The IPs then have to justify and clarify their decisions about work ability to both their professional peers and to the sick-listed patient who was assessed. Therefore, in the judgement of work ability, the perspectives of the sick-listed employee and the IP as a professional are of primary importance.



**Figure 1** Work ability assessment in social insurance medicine in the Netherlands based on the ICF model.

## 1.4 The exchangeability of IPs

There are only a few research studies in insurance medicine that concern assessment practices in assessing work ability. The scarce literature that is published shows that different judgement practices exist between IPs in their appraisals of work ability, not only outside the Netherlands<sup>34,35</sup>, but also within the Netherlands<sup>42</sup>. According to Boonk et al.<sup>42</sup>, some IPs assume maximal work ability when health does not interfere, while others take into account gender, anthropometrics or age. Razenberg<sup>43</sup> and Kerstholt et al.<sup>44</sup> showed that experienced IPs more often base their judgements on reported limitations by clients than the less experienced IPs. It appears that the assessment of work ability is associated with the personal preference of the IP and that the starting point to assess work ability is different between individual IPs.

The inter-rater variation among IPs for the assessment of the number of hours a client is assessed to be able to work appears to be substantial<sup>45</sup>. An important quality criterion in work ability assessment, i.e. the exchangeability of the qualified assessors<sup>33</sup>, is therefore violated. Additional studies to examine more evidence regarding this topic are needed. For Figure 1, this means that, in BOX 1, the relevant aspects must be sampled and that using these relevant aspects when assessing work ability results in BOX 2, which is more reproducible.

## 1.5 Objectives of this thesis

The objectives of this thesis were: (1) to identify aspects of work ability that are relevant for the assessment of work ability in patients with varying diseases after long-term sick leave, including MI, cLBP and MDD according to literature on return to work (RTW) and based on the opinion of IPs or patients; and (2) to test if the use of identified aspects will change variation in work ability assessment by IPs.

In the Netherlands disease-specific protocols prepared by the Dutch Health Council and the Dutch Society of Insurance Medicine are available to support IPs when they assess work ability for long-term sick-listed employees with diseases for which disability pensions are frequently granted. Protocols exist for MDD, MI and cLBP. Although these protocols contain criteria on which diagnoses and treatment can be based, they do not describe evidence on which work ability can be assessed. To develop a scientific basis for the assessment of work ability, this thesis first investigates the literature to identify prognostic factors that can predict work ability of diseased employees who are long-term sick-listed. Thereafter, aspects of work ability relevant to the perspectives of the sick-listed employees and the IP, are investigated. Then it is tested for MDD, which is the disease most frequently associated with disability pensions being granted, if using relevant aspects of work ability by IPs, will change the variation in the assessments of work ability. Four research questions have been formulated:

1. What prognostic factors for work ability have been described in the literature for the three diseases in the Netherlands for which a disability pension is frequently granted: MI, cLBP and MDD?
2. According to IPs, what are relevant aspects of work ability in cases of long-term sick-listed employees with musculoskeletal diseases, psychiatric diseases with a specific emphasis regarding MDD, and other diseases?

3. According to sick-listed survivors of an Acute Coronary Syndrome (ACS), what are the facilitating and hindering factors in their return to work?
4. Does variation in work ability assessment change when disease-specific aspects for work ability are used in the assessment of sick-listed patients with MDD?

## **1.6 Outline of this thesis**

The first research question is answered in Chapter 2, in which the results of a systematic literature search for prognostic factors for work ability of sick-listed employees with MDD, cLBP and MI are presented. The second research question is answered in Chapters 3 and 5. In Chapter 3, the results of a semi-structured interview with Dutch IPs are presented, summarizing the aspects they think are most important in cases that they assess for work ability of sick-listed clients with musculoskeletal diseases, psychiatric diseases and remaining diseases. In Chapter 5, the results of a Delphi study in IPs regarding relevant aspects of work ability in sick-listed patients with MDD are given.

The third research question is answered in Chapter 4, in which hindering and facilitating factors are shown for the return to work for sick-listed patients with an ACS.

The fourth research question is answered in Chapter 6, in which the results are described of a study between groups of IPs that do or do not use disease-specific aspects of work ability when assessing work ability of sick-listed employees with MDD. Finally the main conclusions of the studies are discussed in Chapter 7. In this chapter, implications for IPs and policy makers and recommendations for further research are given.

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## Chapter 2

# **Prognostic factors for work ability in sick-listed employees with chronic diseases**

Slebus FG, Kuijjer PP, Willems JH, Sluiter JK, Frings-Dresen MH.  
*Occup Environ Med.* 2007; 64: 814-819

## Abstract

**Objective:** Identifying prognostic factors for work ability in sick-listed employees with myocardial infarction (MI), chronic low back pain (cLBP) and major depressive disorder (MDD) in order to establish an objective basis for work ability evaluation.

**Design:** Systematic literature search in PubMed database (1 January 1990 to 1 July 2006) with the Yale prognostic research filter. Inclusion criteria were as follows: (1) work-disabled employees; (2) MI, cLBP or MDD patients; (3) longitudinal designs; and (4) return to work or compensation status as outcome measure.

**Results:** Four studies on MI met the inclusion criteria and described the following prognostic factors for work ability in the acute phase of the disease and disablement: lower age; male gender; no financial basis on which to retire; lower physical job demands; fewer somatic complaints; no anxiety attacks; no diabetes; no heart failure; no atrial fibrillation; no Q waves; and a short time interval between MI and presentation at the occupational medicine clinic. Two studies on cLBP met the inclusion criteria and described the following prognostic factors for work ability after 3 months' work disablement: lower age; male gender; no treatment before sick listing; surgery in the first year of sick listing; being a breadwinner; less pain; better general health; higher job satisfaction; lower physical and/or psychological demands at work; and a higher decision latitude at work. No relevant MDD studies were found.

**Conclusion:** In the earlier phases of work disablement in MI and cLBP patients, only a few studies describe disease-specific, environmental and personal prognostic factors for return to work. No studies describe prognostic factors for MDD. More evidence is needed on the topic of prognostic factors for return to work in employees with chronic diseases.

## Introduction

Work disability figures in most western European countries have more than doubled since the 1970s and nowadays more than 5% of the working population receives a disability pension<sup>1</sup>. In most cases, before a pension is granted work ability is assessed by a medical professional in order to predict fitness for work. A scientific basis for these assessments is lacking, however<sup>2,3</sup>.

A number of medical professionals may be involved in the work ability assessment process, including general practitioners, occupational physicians, medical specialists and insurance physicians. Communication between these parties is advised<sup>4</sup> but may be limited in practice<sup>5</sup>. The different medical professionals concerned may have diverse points of view, interests and concerns<sup>6</sup> and it is not clear which items they assess for work ability. In this respect, universally accepted lists of items for consideration in an evaluation of work ability may help identify aspects that are relevant to patient–professional communication, may be useful in helping professionals to prevent long-term work disability and useful for encouraging work ability.

The assessment of work ability concerns a prediction of future fitness for work in the case of a certain disease. Because, as stated by the WHO's International Classification of Functioning (ICF) model<sup>7</sup>, work ability is multi-causal and not only dependent on the disease, the list of items for consideration can be expected to contain disease-specific and non-disease-specific prognostic factors.

To address this issue, a study was set up to research prognostic factors for return to work for the three diseases for which disability pensions are most frequently granted in the Netherlands: myocardial infarction (MI), chronic low back pain (cLBP) and major depressive disorder (MDD)<sup>8</sup>. The research question was formulated as follows: What are prognostic factors for work ability in sick-listed employees with MI, cLBP and MDD?

## Methods

### Systematic search strategy

A systematic search of the PubMed electronic database was carried out to identify relevant studies using Yale University's methodological research filter 'Prognosis and Natural History', in which the keywords were connected with "OR" (Table 1). The different keywords relating to the concept of *work* were connected with "OR" and the different keywords relating to the concept of *ability* were also connected with "OR" (Table 1).

Different keywords for *MI*, *cLBP* and *MDD* were connected with "OR". *MI* or *cLBP* or *MDD* (Table 1) were combined by "AND" with the methodological research filter, *work* and *ability*. Limits were set on age (19–65 years), publication date (1 January 1990 to 1 July 2006), English and Human.

### **Selection of papers**

The following inclusion criteria were applied to the identified studies:

- (a) MI: diagnosed by a cardiologist and requiring hospital admission; cLBP: at least 12 weeks' lower back pain and not having a specific cause; MDD: according to DSM diagnostic criteria
- (b) studies with a prospective or retrospective cohort or case control design
- (c) at the start of the study all participants should be disabled for work
- (d) outcome of return to work or long-term financial compensation for work disability.

The first author (FS) applied the inclusion criteria. In the event of uncertainty, the other authors (JS, PK, MF) were consulted as a group. For each included study a data extraction form was used to note down the following: patient sample; duration of work disability at the start of the study; moment of measurement of prognostic factor in the study; follow-up; loss to follow-up; outcome measure of return to work or compensation status; adjustment for other possible prognostic factors; and the rationale of the studied prognostic factors. Each data extraction form was discussed by the authors (FS, JS, PK, MF). Then it was checked if the included studies met at least four of the six formulated quality criteria according to Straus et al.<sup>9</sup> i.e.: (1) all participants should be employees; (2) all participants should be work disabled at the start of the study; (3) the follow-up should be at least 1 year; (4) loss to follow-up should be less than 20%; (5) there should be adjustment for important prognostic factors; and, (6) the used set of prognostic factors should be justified. When the discussion regarding inclusion was inconclusive, JS, PK and MF studied the original paper, and a further discussion about inclusion took place. Upon reaching a consensus the article was included or excluded.

### **Further selection of papers**

When the discussion regarding the inclusion yielded no papers at all for disease-specific prognostic factors, studies from the initial identified papers with a cross-sectional design were also considered.

**Table 1** Yale prognostic filter and keywords for work, ability, MDD, cLBP and MI.

<b>Prognostic filter (Yale)</b>	cohort studies[mh] OR prognosis[mh] OR mortality[mh] OR morbidity[mh] OR natural history OR prognost*[tiab] OR course[tiab] OR predict*[tiab] OR outcome assessment[mh] OR outcome*[tiab] OR inception cohort* OR disease progression[mh] OR survival analysis[mh]
<b>Work</b>	work OR working OR worker OR workers OR occupation OR occupations OR occupational OR vocation OR vocational OR labor OR labour OR job OR jobs OR employ OR employment OR unemployment OR retirement OR retirements OR pension OR pensions OR return to work OR RTW OR work rehabilitation OR vocational rehabilitation OR sick listed
<b>Ability</b>	ability OR abilities OR able OR disablement OR disabled OR unable OR disability OR disabilities OR capability OR capabilities OR capable OR incapable OR functioning OR performance OR dysfunction OR capacity OR incapacity OR participation
<b>MI</b>	Infarction, Myocardial OR Infarctions, Myocardial OR Myocardial Infarctions OR Myocardial Infarct OR Infarct, Myocardial OR Infarcts, Myocardial OR Myocardial Infarcts
<b>cLBP</b>	Back Pain, Low OR Back Pains, Low OR Low Back Pains OR Pain, Low Back OR Pains, Low Back OR Low Back Ache OR Ache, Low Back OR Aches, Low Back OR Back Ache, Low OR Back Aches, Low OR Low Back Aches OR Low Backache OR Backache, Low OR Backaches, Low OR Low Backaches OR Lower Back Pain OR Back Pain, Lower OR Back Pains, Lower OR Lower Back Pains OR Pain, Lower Back OR Pains, Lower Back OR Lumbago OR Low Back Pain, Mechanical OR Mechanical Low Back Pain OR Low Back Pain, Posterior Compartment OR Low Back Pain, Postural OR Postural Low Back Pain OR Low Back Pain, Recurrent OR Recurrent Low Back Pain
<b>MDD</b>	Depressive Disorders OR Disorder, Depressive OR Disorders, Depressive OR Neurosis, Depressive OR Depressive Neuroses OR Depressive Neurosis OR Neuroses, Depressive OR Melancholia OR Melancholias OR Unipolar Depression OR Depression, Unipolar OR Depressions, Unipolar OR Unipolar Depressions OR Depression, Endogenous OR Depressions, Endogenous OR Endogenous Depression OR Endogenous Depressions OR Depressive Syndrome OR Depressive Syndromes OR Syndrome, Depressive OR Syndromes, Depressive OR Depression, Neurotic OR Depressions, Neurotic OR Neurotic Depression OR Neurotic Depressions

## Results

The search strategy identified 961 studies. A Total of 955 studies failed to meet the inclusion criteria. The six remaining studies met at least five of the six formulated quality criteria accordingly to Straus et al.<sup>9</sup> (table 2).

Study	Participants at employees at start study?	Participants at work disabled because MI or cLPB at start of study?	Follow-up $\geq 1$ year?	Loss to follow-up $\leq 20\%$	Adjustment for other prognostic factors?	Justification for used set of prognostic factors?	Total
Froom et al., 1999 <sup>10</sup>	Yes	Yes	Yes	Yes	Yes	Yes	6
Boudrez and de Backer, 2000 <sup>11</sup>	Yes	Yes	Yes	Yes	Yes	Yes	6
Hansson and Hansson, 2000 <sup>12</sup>	Yes	Yes	Yes	Yes	Yes	Yes	6
Van der Giezen et al., 2000 <sup>13</sup>	Yes	Yes	Yes	Yes	Yes	Yes	6
Nielsen et al., 2004 <sup>14</sup>	Yes	Yes	Yes	Yes	Yes	Not mentioned	5
Hamalainen et al., 2004 <sup>15</sup>	Yes	Yes	Yes	Not mentioned	Yes	Yes	5

## Prognostic factors for work ability in MI patients

### Study characteristics

The search strategy identified 164 articles on MI. After applying the inclusion criteria four articles on MI remained. The sample sizes of the MI studies ranged from 90<sup>11</sup> to 5074<sup>15</sup> and the follow-up range was one<sup>11</sup>, two<sup>10,15</sup> and four years<sup>14</sup>. Loss to follow-up was not mentioned in the study of Hamalainen et al.<sup>15</sup> and was less than 5% in the other studies. Three of the four studies concerned employees who were admitted to the hospital because of MI<sup>11,14,15</sup>. The study of Froom et al. concerned employees who consulted an occupational health clinic after 1 to 14 months<sup>10</sup>. The studies concerned different countries and did not use the same data sources. Return to work was not defined in the same way in the included studies. Froom et al. defined return to work as an eight-hour working day<sup>10</sup>, while Nielsen et al. defined return to work as the resumption of a former job or the starting of a new job, on a full-time or part-time basis<sup>14</sup>. All studies were adjusted for other relevant prognostic factors.

### Prognostic factors

As shown in table 3, younger age and having lower physical demands at work are mentioned as predictive factors for return to work in three out of the four studies.<sup>10,11,14</sup> Prognostic factors were determined shortly after admittance to the hospital in three out of the four studies<sup>11,14,15</sup> and after average 3 months in the fourth study<sup>10</sup>. Some factors, such as Q waves, angina before MI and age, cannot be expected to change in the course of the disease. Others, such as anxiety, diabetes and workload, may reasonably be expected to change.

## Prognostic factors for work ability in cLBP patients

### Study characteristics

The search strategy identified 353 articles on cLBP. After applying the inclusion criteria two articles on cLBP remained. The sample sizes of the cLBP studies ranged from 328<sup>13</sup> to 2752<sup>12</sup> and the follow-up was one year in both studies. Loss to follow-up ranged from 10%<sup>13</sup> to 15%<sup>12</sup>. The study by van der Giezen et al.<sup>13</sup> concerned Dutch employees who were sick-listed for three to four months. The study by Hansson and Hansson<sup>12</sup> concerned employees from different countries who were sick-listed for three months. The exact

**Table 3** Prognostic factors significantly increasing the chance for successful return to work in myocardial infarction (MI) patients.

Study	Nielsen et al., 2004 <sup>14</sup> Only MI	Nielsen et al., 2004 <sup>14</sup> MI and LVEF* ≤ 35%	Hamalainen et al., 2004 <sup>15</sup>	Boudrez and de Backer, 2000 <sup>11</sup>	Froom et al., 1999 <sup>0</sup>
Study population	Employees with MI who were admitted to the hospital (N=195; 88% male**, 31% ≥60 years old**)	Employees with MI who were admitted to the hospital (N=47; 88% male**, 31% ≥60 years old**)	Employees with MI who were admitted to the hospital (N=5047; 86% male all 35-59 years old at start study)	Employees with MI who were admitted to the hospital (N=90; 93% male; mean age 49 years)	Employees with MI who were admitted to occupational health clinic (N=216; 91.7% male; 30.6% >54 years old)
Location of study	Denmark	Denmark	Finland	Belgium	Israel
Source of data on prognostic factors	Medical records and interviews	Medical record and interviews	National and social security registrations	Medical records and questionnaires	Medical records
Length of work disability at begin of study	Currently not working because of hospital admittance for acute MI	Currently not working because of hospital admittance for acute MI	Currently not working because of hospital admittance for acute MI	Currently not working because of hospital admittance for acute MI	3 months (range 1-14) not working after MI
Definition of successful RTW	Resumption of old job or start new job, on full or part time basis	Resumption of old job or start new job, on full or part time basis	Long-term disability pension	Return to work (not specified)	Resumption of old job or start new job, on full or part time basis
Follow up	4 years	4 years	2 years	1 year	2 years

<b>Prognostic factors</b>	≤ 60 years old	≤ 60 years old	Lower age (per 5 years)	≤ 54 years old
		Male		
	No financial basis on which to retire			
	No anxiety attacks	Light or sedentary job	Lower physical exertion job	Workload ≤ 5 METs*** Short time interval between MI and presentation at occupational medicine clinic
	LVEF* > 35%			Not suffering from diabetes No heart failure at admission Non-Q-wave MI
	No atrial fibrillation			No angina before MI
			Fewer somatic complaints	

\* Left Ventricular Ejection Fraction; \*\* percentage refers to N = 242 (195 MI + 47 MI with LVEF ≤ 35%) patients;  
\*\*\* Metabolic Equivalent

duration and profile of cLPB was not mentioned in the studies. It was assumed that because the employees were sick-listed for 3 months because of LBP that it concerned cLPB. Both studies defined return to work as the resumption of work. Both studies were adjusted for other relevant prognostic factors.

**Table 4** Prognostic factors significantly increasing the chance for successful return to work in chronic low back pain (cLBP) patients.

Study	Hansson and Hansson, 2000 <sup>12*</sup>	van der Giezen et al., 2000 <sup>13</sup>
Study population	Employees sick-listed due to cLPB in six countries (N=2752; 39-74% male**; mean age 39-49 years**)	Sick-listed employees because of cLPB (N=328; 59% male; mean age 39 years)
Location of study	Denmark, Germany, Israel, The Netherlands, Sweden, The United States	The Netherlands
Source of data on prognostic factors	Interviews and questionnaires	Interviews and questionnaires
Length of work disability at begin of study	3 months	3-4 months
Definition of successful RTW	Return to work (not specified)	Resumption of old job or start of new job, on full or part time basis
Follow up	1 year	1 year
<b>Prognostic factors</b>	Lower age	Lower age (per 10 years)
	Male	
	No treatment for low back pain before sick-listing	
	Surgery in the first year of sick-listing	
		Being a breadwinner
		Less pain
		Better general health
		More job satisfaction
	Lower physical demands at work	
	Lower psychological demands at work	
	Higher decision latitude at work	

\*prognostic factors depended on location of study; \*\* depended on location of study

### **Prognostic factors**

As shown in table 4, younger age is a predictive factor for return to work in both studies. The prognostic factors found in the studies are determined after three to four months' work disablement by Van der Giezen et al.<sup>13</sup>, and after at least three months' work disablement by Hansson and Hansson<sup>12</sup>. Some factors, such as age and gender cannot be expected to change in the course of the disease. Others, such as pain, general health and physical job demands, may reasonably be expected to change.

## **Prognostic factors for work ability in MDD patients**

### **MDD study characteristics**

The search identified 444 studies on MDD. After applying the inclusion criteria no studies on MDD remained.

## **Discussion**

Four prognostic studies on MI, in which participants were recently work disabled at the start of the study, and two prognostic studies on cLBP, in which the participants had been work disabled for 3 to 4 months at the start of the study, were found. The studies found met five or more of the six quality criteria formulated according to Straus et al.<sup>9</sup>. For MDD, no studies that dealt with prognostic factors for work ability were found. No studies in which, at the start of the study, the participants had been work disabled for more than a year, i.e. the period after which long-term disability pensions were granted in the Netherlands in 2004<sup>8</sup>, were found.

Although we performed a sensitive literature search, our search yielded only six studies. The studies that were found did not use the same sets of potential prognostic factors. A sound theoretical background for which prognostic factors should be investigated is missing. As a consequence, studies identified prognostic factors that were not investigated in other studies. Finding only a few studies that did not investigate the same prognostic factors limits the generalisability of the results.

Although determined in different phases of work disablement, the studies on MI and cLBP identified common prognostic factors. LVEF > 35%, light or sedentary job, no financial basis on which to retire and no anxiety attacks in the MI studies seem comparable with

pain intensity, physical demands at work, being a breadwinner and general health in the cLBP studies. Generally speaking, disease-specific and non-disease-specific prognostic factors appear for work ability. Therefore, in addressing work ability, treating physicians should, in general, on the one hand treat the disease and on the other hand focus on non-disease-specific factors that are amenable to change. However, it cannot be ruled out that some of the prognostic factors are significant by chance. There is as yet no evidence that just because a prognostic factor is modifiable, it will change the prognosis for work ability. At present, the prognostic factors found should be used with caution and only as flags for work ability and as indicators for its prognosis.

The MI studies described prognostic factors determined among recently hospitalised MI patients. Because prognostic factors for return to work may change<sup>16,17</sup>, it is not clear whether described factors are also relevant in the prediction of work ability in later phases of disablement. Both the course of predictive factors and the relation of this course to work ability in work-disabled MI employees are relevant in this context and no such studies have been carried out to date on this topic.

Two studies on cLBP in which the participants were 3 to 4 months work disabled at start of the studies were identified. Checking for the prognostic factors may indicate recommendations for adequate pain management, for the improvement of the patient's general health, for the reduction of obstacles at work that aggravate symptoms and, for return to work.

MDD is the fourth leading cause of disease burden on society<sup>18</sup> and is, at least in the Netherlands, the most common diagnosis in long-term work-disabled employees. No studies for prognostic factors were found, however. It has been demonstrated that in many cases MDD has a chronic relapsing course and that work ability fluctuates with the severity of MDD<sup>19,20</sup>. Therefore, until such time as more evidence becomes available, the course and the severity of MDD could be considered when giving advice on work ability.

The prognostic factors identified in the present study do not belong to the same domains of health as defined by the WHO's International Classification of Functioning (ICF) model<sup>7</sup>. Our findings are in accordance with the ICF model because the model states that work participation is multi-causal<sup>7</sup> and not only dependent on the disease. Supporting disabled patients in returning to work may therefore exceed the expertise of the individual doctor who operates in a certain health domain. Therefore cooperation between different professionals may be necessary. Categorising the prognostic factors according to the ICF domains may be beneficial in this respect. Disease-specific factors

such as pain intensity, LVEF and atrial fibrillation point to possible disease-specific MI or cLBP interventions. Personal factors like age, gender, disease history and co-morbidity point to interventions that can empower the employee as an individual. Environmental factors like physical demands at work, psychological demands at work and decision latitude are directed at workplace interventions from which not only the work-disabled employee but other employees could benefit. Tools for handling work disability should therefore encompass all domains of the ICF model and also address the cooperation of different professionals.

Since work disability figures are rising, every doctor will encounter short-, medium- or long-term disabled patients. Patients and/or stakeholders in the disability determination process will enquire as to the prognosis for work ability. Although relevant studies were found, this study demonstrates the strong need for more evidence on prognostic factors for work ability. Because the study concentrates on three common diseases it is reasonable to assume that this lack of knowledge applies for other diseases as well.

In the present study many studies were not included because they did not concern (only) work disabled employees; they concerned depressive disorders other than MDD; heart disease but not MI per se; acute or sub-acute LBP instead of cLBP; a cross-sectional instead of a longitudinal design; a short-term follow-up; or they did not concern return to work or its equivalent as outcome.

Future studies on prognostic factors for work ability in chronic diseases should be planned and can learn from the present study. The outcome of future studies should be return to work with long-term follow-up. In each particular study participants should all have the same disease and should all be in the same (short-, medium- or long-term) phase of the disablement process. Because functioning in work is multi-dimensional, the factors to be explored in these longitudinal future studies should at least encompass all components from the ICF model. In this respect qualitative research to elucidate possible barriers and facilitators for return to work known by employees, employers and other stakeholders in the work disablement process may be helpful.

## **Conclusion**

In the earlier phases of work disablement in MI and cLBP patients, only a few studies describes disease-specific, environmental and personal prognostic factors for return to work. No studies describe prognostic factors for MDD. More evidence is needed on the topic of prognostic factors for return to work for chronic diseases.

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## Chapter 3

### **Work ability evaluation: a piece of cake or a hard nut to crack?**

## Abstract

**Purpose:** To describe what aspects, categorized according to the ICF model, insurance physicians (IPs) take into account in assessing short-term and long-term work ability.

**Method:** An interview study on a random sample of 60 IPs of the Dutch National Institute for Employee Benefit Schemes, stratified by region and years of experience.

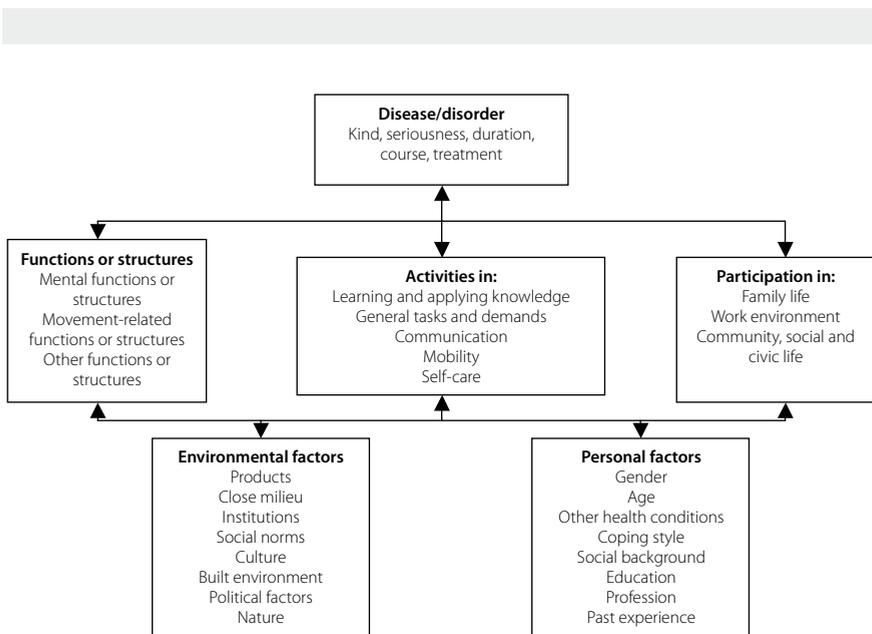
**Results:** In determining work ability, a wide range of aspects were used. In the case of musculoskeletal disease, 75% of the IPs considered the 'function and structures' component important. With psychiatric and other diseases, however, the 'participation factor' component was considered important by 85% and 80%, respectively. Aspects relating to the 'environmental factor' and 'personal factor' components were mentioned as important by fewer than 25 %. In assessing the short-term and long-term prognosis of work ability, the 'disease or disorder' component was primarily used with a rate of over 75%.

**Conclusions:** In determining work ability, insurance physicians predominantly consider aspects relating to the 'functions and structures' and 'participation' components of the ICF model important. The 'environmental factor' and 'personal factor' components were not often mentioned. In assessing the short-term and long-term prognosis of work ability, the 'disease or disorder' component was predominantly used. It can be argued that 'environmental factors' and 'personal factors' should also more often be used in assessing work ability.

## Introduction

Disease manifests itself in many different ways, including in diminished work ability. When this occurs, benefits may be claimed<sup>1</sup>. It has been signalled that it is 'notorious difficult, in practice, to determine what constitutes work disability and work incapacity'<sup>2</sup>. Therefore, the process to determine work ability should be elucidated. Physicians are important players in the benefit determination process<sup>3</sup>. They assess the functional abilities of an employee and when functional abilities match required work demands, work ability exists<sup>4</sup>. Because there are no generally accepted instruments to assess work ability<sup>5</sup>, the professional basis for the physicians' judgments is unclear.

One model that describes determinants of work ability is the WHO's International Classification of Functioning (ICF) model<sup>6</sup> that is globally agreed-on, aetiologically neutral<sup>7</sup> and nowadays used more and more<sup>8,9</sup>. The model stipulates that functioning, or in our terms work ability, depends on six mutually related components.



**Figure 1** The ICF model and its components. The content of the components was established in the classification stage of the present study (see method section, classification).

The components are, successively: disease and disorder; functions and structures; activities pertaining to the execution of a task or action by an individual; participation pertaining to the involvement in a life situation; environmental factors; and personal factors (see figure 1).

Krause et al mentioned almost 100 determinants for work ability and divided them into several headings, such as: social-demographic factors; psychological factors; attitudes and beliefs; health behaviours; clinical measures; characteristics of the injury or illness; medical and vocational rehabilitation; barriers for return to work and employer characteristics<sup>10</sup>. The mentioned determinants encompass all components of the ICF model. Whether or not these determinants are used by physicians to assess work ability is unknown.

Most physicians don't receive any training in the treatment or management of work disability<sup>11</sup> and, although many act as gatekeepers for benefits<sup>12</sup>, it is not their core business. In the Netherlands, unlike other countries, insurance physicians (IPs) are registered medical specialists who carry out their assessments on a daily basis and receive four year training in assessing work ability. Although all the components of the ICF model are addressed in the training of Dutch IPs<sup>13</sup> it still remains the question whether or not they use all ICF components in their assessment of work ability. Therefore the aim of the present study is to determine the aspects, categorized according to the ICF model, that IPs take into account in assessing short-term and long-term work ability.

## Methods

### Sampling

An interview study was conducted from January to March 2005. The study population consisted of well over 1,000 insurance physicians (IPs) working in the Netherlands. These IPs were employed by the National Institute for Employee Benefit Schemes. This institute is responsible for all work ability assessments under social security regulations for employees. The IPs were medical specialists and had been trained on the job to assess the work ability of employees unable to perform their jobs because of disease or disorder. A group of 268 IPs, randomly selected out of the four regions (North, East, South and West) of the Netherlands, were asked by letter to participate. One hundred and fifty two responded and 111 signed an informed consent form to which a short questionnaire was attached to compile personal characteristics, such as years of experience. A random

sample of 60 of those willing to participate was selected for the interview. We stratified by region<sup>14</sup> and experience ( $\leq 5$  years and  $> 5$  years) to obtain a wide range of possible answers. To prevent socially acceptable answers, the interview was held by telephone instead of face to face<sup>15</sup>.

In order to provide a cognitive frame for the determination of work ability, the participants were randomly assigned to one of three disease groups: musculoskeletal disease, psychiatric disease, or 'other' as being neither a musculoskeletal nor a psychiatric disease.

According to the regulations of the ethics committee, ethics approval was not required because the study did not concern patients.

### **Classification**

The ICF model was used as the research model. To obtain a concrete picture of the components, constructs, domains and categories of ICF, we studied several sources<sup>1,6,10,13,16,17</sup>. In the sources, determinants of work ability were identified and categorized according to the components of ICF. The classification was discussed by the authors FS, JS, PK and MF to make the conceptualisations of the components clearer and to identify what their content should be.

### **Interviews**

The interviews were conducted by telephone, and had an expected duration of 30 minutes. All the interviews were conducted by one of the authors (FS) who had 15 years experience in interviewing claimants. Answers were classified and written down, using paper and pencil. Two pre-study interviews revealed that the answers were given in short classifiable statements. Six interviews were selected by two of the other authors (JS and PK) in order to listen in to, to classify the given answers and to compare their classification with the classification of FS.

First, the interviewed physicians were instructed to focus themselves to a disease according to one of the assigned disease groups. Then the following questions were asked:

- 1- What aspects do you assess in order to determine an employee's work ability?
- 2- Which of these aspects do you consider to be the three most important in assessing work ability?
- 3- Regarding a prognosis of five days, three months or five years, what aspects do you consider, respectively?

The interviewer obtained in-depth answers with open questions, asking the respondents to explain exactly what they meant with certain statements, to give examples, to specify what they focus on, etc. An answer was accepted as being sufficiently precise when it fit in the content of one of the six components of the ICF model. When it proved impossible to refine an answer and the answer did not fit in one of the six ICF model's components, the answer was accepted in a 'remaining' category.

## Analysis

The mean, standard deviation and range of personal characteristics, age and years of experience were calculated. One researcher (FS) then began by categorizing each participant's answers to the three questions according to the ICF components. The categorisation was subsequently discussed by four authors (FS, JS, PK and MF) and, where necessary, re-categorized based on consensus between these authors. Next, the result of a random sample of 10 IPs, was discussed again and checked for consensus. The number of IPs that used a component in work ability determination was summed up. In this study, a component of the ICF model was considered important if 75% of the IPs prioritized it as such during the interview.

## Results

Sixty IPs were interviewed. All were trained in assessing work ability. The personal characteristics of the responding IPs and those selected are presented in table 1.

**Table 1** Mean, standard deviation and range of the personal characteristics of the IPs. (F=female, M=male)

	<b>Responding IPs</b> N=152 F=43%, M=57%			<b>Not willing to participate</b> N=41 F=46%, M=54%			<b>Willing to participate</b> N=111 F=41%, M=59%			<b>Selected for participation</b> N=60 F=37%, M=63%		
	Mean	Sd	Range	Mean	Sd	Range	Mean	Sd	Range	Mean	Sd	Range
Age (years)	45	8	26-60	48	10	27-60	45	8	26-60	45	8	26-60
Experience (years)	11	7	0-32	12	8	0-29	11	6	2-32	10	6	2-25

On average, the interviews in the study lasted 16 minutes (sd: 5, range: 7-28 minutes). Answers could easily be categorized and there were no observed differences in the way answers were categorized between investigators. Much discussion to reach consensus was not necessary. Two of the six interviews intended to be listened in to were not because the two IPs could not be contacted on the settled time.

As can be seen in box 1, all components of the ICF model were mentioned. The aspects mentioned were diverse; for instance, signs and symptoms in comparison to factors, such as job demands and conflicts. Working life was scarcely used as an indicator of work ability, but much more the context of community life, social life and civic life. Some answers that referred to the relation between the components of the ICF model could not be categorized according to *one* of the components of the ICF model. Consistency and plausibility of facts are examples of those answers.

<b>Box 1</b> Examples of answers per ICF component.	
<b>ICF component</b>	<b>Examples of given answers</b>
Disease or disorder	Diagnosis, course, treatment, medication, severity
Functions or structures	Signs and symptoms, function, apathy, mood, attention, results from tests, objective findings, condition, anxiety, concentration
Activities	Sitting, standing, walking, lifting, undressing, eating, cycling
Participation	All activities during a day, working, functioning at home, holidays, shopping, care for children, walking the dog, limitations in social life, sports, hobbies, family life, social life
Environmental factors	Assistance, workplace factors, composition of the family, job demands, conflict with employer, conflicts with family, internal guidelines of the National Institute for Employee Benefits Schemes
Personal factors	Coping, compliance to therapy, illness behaviour, motivation, age

Table 2 shows that 58 of the 60 IPs mentioned aspects pertaining to the 'participation' component. Fifty-two and 53 IPs mentioned 'disease or disorder' and 'functions or structures' components, respectively. Twenty-four, 27 and 38 IPs mentioned 'activities', 'environmental factors' and 'personal factors,' correspondingly. An overall look at this group of 60 IPs would reveal that 'participation' was considered the most important aspect (73%). 'Functions or structures' ranked second with 60%. However, both were below the 75% that we had defined in advance as determining importance.

**Table 2** Components of the ICF model and the number and percentage of IPs who used them in the assessment of work ability, cross-tabulated by disease grouping.

ICF component	Total N=60		Musculoskeletal disease N=20		Psychiatric disease N=20		'Other' disease N=20	
	Mentioned <sup>1</sup>	Important	Mentioned <sup>2</sup>	Important	Mentioned <sup>2</sup>	Important	Mentioned <sup>2</sup>	Important
Disease or disorder	52 (87%)	26	18 (90%)	8	17 (85%)	5	17 (85%)	13
Functions and structures	53 (88%)	36	20 (100%)	<b>15*</b>	17 (85%)	11	16 (80%)	10
Activities	24 (40%)	5	10 (50%)	2	6 (30%)	2	8 (40%)	1
Participation	58 (97%)	44	18 (90%)	11	20 (100%)	<b>17*</b>	20 (100%)	<b>16*</b>
Environmental factors	27 (45%)	4	10 (50%)	2	10 (50%)	2	7 (35%)	0
Personal factors	38 (63%)	15	14 (45%)	4	15 (75%)	8	9 (45%)	3

\* Over 75% of the IPs labelled the aspect as important; <sup>1</sup> percentage of N=60; <sup>2</sup> percentage of N=20

Seventy-five percent of the IPs considered 'functions or structures' important in musculoskeletal disease. For psychiatric and 'other' diseases, 'participation' was considered important by 85% and 80%, respectively. The ICF components: 'activities,' 'environmental factors' and 'personal factors' were mentioned by fewer than 25% of the IPs. In total 20 IPs

gave answers like plausibility and consistency that referred to the relation between the different components of the ICF model. The answers could therefore not be categorized in *one* of the components. Ten IPs thought these answers as important in assessing work ability.

Table 3 shows that 'disease or disorder' was considered the most important component for the prognosis of work ability for five consecutive days, as well as for three months *and* five years. For the five-day prognosis, 55% of the IPs considered 'environmental factors' with regard to musculoskeletal disease and 55% considered 'participation' in the case of psychiatric disease. For the short-term and long-term prognosis, the other components were mentioned by fewer than 30% of the IPs.

**Table 3** The components of the ICF model and the number of IPs who used them in determining the prognosis of work ability for five days, three months and five years.

	Musculoskeletal disease (N=20)			Psychiatric disease (N=20)			Other disease (N=20)		
	5 days	3 months	5 yrs	5 days	3 months	5 yrs	5 days	3 months	5 yrs
Disease or disorder	19	19	15	15	20	16	15	15	15
Functions and structures	6	4	1	2	1	2	3	1	0
Activities	1	1	1	0	0	0	0	0	0
Participation	5	3	1	11	3	0	4	2	0
Environmental factors	11	5	1	5	3	2	1	4	3
Personal factors	4	5	5	3	3	4	1	4	3

The IPs believed that the five-year prognosis was only possible for very severe diseases, such as some forms of cancer, or amyotrophic lateral sclerosis. Three IPs gave answers that referred to the relation between the components and not to the components themselves.

## Discussion

Aspects regarding the 'disease or disorder,' 'functions or structures' and 'participation' components of the ICF model were mainly mentioned to assess work ability in the benefit determination process. In the case of musculoskeletal disease, the 'function and structure' component was mentioned most frequently as being important. By contrast, the 'participation' component was cited most with regard to psychiatric and other diseases. In determining the short-term and long-term prognosis of work ability, IPs mostly referred to the 'disease or disorder' component.

'Environmental and personal factors' were not often mentioned in the assessment of work ability and its prognosis. Any barriers individuals may have in themselves or in their environment to remain in the workforce may be considered irrelevant, and therefore, unimportant. This view is open to argument, as there are many determinants of work disability, only one of which is disease. In a recent review, de Croon et al found that biomedical variables did not consistently predict work disability in rheumatoid arthritis patients. However, there was strong evidence that physical job demands, low functional capacity, old age, and low education did predict work disability<sup>18</sup>. Detaillé et al mapped factors that helped currently employed people with rheumatoid arthritis, diabetes mellitus or hearing loss to continue working<sup>19</sup>. They found that factors enabling employees to continue working were the ability to cope with the illness, support from management and colleagues, adequate working conditions, support from patients' organizations and society, support from medical professionals and facilities, and benefits. Krause et al mentioned almost 100 determinants of the duration of disability and return to work<sup>10</sup>. Most of these were related to personal and environmental aspects. The articles cited here illustrate that the factors that hinder work ability are not necessarily direct consequences of disease. By checking for those non-disease factors that can play a role in diminished work ability but are no direct consequences of disease, the association between disease and work ability can be made clearer. Because it is often just the strait consequence of disease on work ability that is insured, insurance physicians should investigate environmental and personal factors in order to ensure themselves that those factors do not hinder work ability.

Because disease, functions or structures are weak indicators of work ability, it is logical that IPs take other considerations into account. Hobbies, sports, social life and family life were frequently mentioned in the present study. Like work ability, these fall under the participation component. IPs probably think that the effects

of disease will not only manifest themselves in work, but also in other social areas. Since participation implies an environment in which one is involved, it is questionable whether participation in itself is a good indicator of work ability. In our view, participation can only be seen as an indicator of work ability if the circumstances in which participation takes place are comparable with those at work. Thus IPs should also investigate environmental factors when they use participation as an indicator in assessing work ability. Moreover, participation implies social involvement, and the personal qualities associated with that. Marginal participation may not necessarily be caused by disease. Personal factors, such as the individual's capacity to cope, can also diminish work ability. In light of that, these factors should also be investigated.

The ICF model's components make it possible to identify more barriers for return to work than those pertaining to the disease component. As mentioned earlier this will lead, not only to the elucidation of the relation between disease and work ability, but also to a fairer assessment: the employee is described as a person and not as a disease. Therefore, not only professional guidelines for assessing work ability should address the environmental and personal factors, but these factors should also be used in practice in work ability evaluation.

## **Conclusion**

In determining work ability, insurance physicians predominantly consider aspects relating to the 'functions and structures' and 'participation' components of the ICF model as important. The 'environmental factor' and 'personal factor' components were not often mentioned. In assessing the prognosis of work ability, the 'disease or disorder' component was predominantly used. It can be argued that 'environmental factors' and 'personal factors' should more often be used in work ability assessments.

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## Chapter 4

# **Factors associated with return to work after admission for acute coronary syndrome: the patient's perspective**

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*(submitted for publication)*

## Abstract

**Aims:** To describe the time perspective of returning to work and the factors that facilitate and hinder returning to work in a group of survivors of acute coronary syndrome (ACS) and explore differences in STEMI (ST segment elevation myocardial infarction) versus NSTEMI/UA (Non ST segment elevation myocardial infarction or Unstable Angina).

**Methods:** Retrospective semi-structured telephone survey two to three years after hospitalisation with 84 employed Dutch ACS-patients from one academic medical hospital.

**Results:** Forty-nine (58%) patients returned to work within three months, whereas 74 patients (88%) at least returned once within two years after the event. Two years after hospitalisation, 30 patients (36%) were not working at their pre-ACS levels. NSTEMI/UA patients returned to work 2.7 months sooner than STEMI patients. For all ACS-patients, the most mentioned categories of facilitating factors to return to work were no illness perception and not having signs or symptoms of heart disease. Physical incapacity, co-morbidity, and mental incapacity were the top three categories of hindering factors.

**Conclusion:** Within two years, 10 (12%) patients had not returned to work once, and 20 (24%) were not working at pre-ACS levels. Disease factors, functional factors, environmental factors, and personal factors were listed as affecting subjects' work ability level. NSTEMI/UA patients returned to work 2.7 months sooner than STEMI patients.

In the daily practice doctors must know and must be keen on those factors they can influence to achieve return to work.

## Introduction

Evidence-based care for patients with Acute Coronary Syndrome (ACS) is aimed at the reduction of mortality, morbidity, and early rehabilitation. Acute care<sup>1,2</sup> for ACS patients has improved in the last decade<sup>3</sup>. Between 1999 and 2006, the in-hospital death rate for ST-segment elevation myocardial infarction (STEMI) decreased from 8.4% to 4.6%, and the in-hospital heart failure for STEMI decreased from 19.5% to 11.0%<sup>3</sup>.

Many patients who develop ACS are of working age<sup>4</sup> and will, consequently, be sick-listed during hospitalisation. After being discharged from the hospital, returning to work is an important issue. This is not only because of the potential loss of income, but also because returning to work is thought to be associated with subjective well-being and life satisfaction<sup>5,6</sup>. Furthermore, from a societal perspective, returning to work is important because of predicted labour shortages in the near future<sup>7</sup>.

Much like chronic diseases, such as cancer<sup>8</sup> and rheumatoid arthritis<sup>9</sup>, work participation in ACS patients has become a topic of interest for researchers<sup>10,11,12</sup>. Promoting the return to work in the follow-up care of ACS patients will promote health because returning to work encourages the patient to be active in their daily life. In a recent study by Bhattacharyya et al., it was shown that the mean time for return to work was three months. Furthermore, 80% of ACS patients in their study returned to work within 12 months, 64% of whom returned full time<sup>10</sup>. These data show that returning to work can be expected after hospitalisation; however, it is unclear when ACS patients return to work after hospitalisation and whether their return to work is long-lasting. Although clinicians might think patients with Non ST-segment elevation myocardial infarction or Unstable Angina (NSTEMI/UA) return to work sooner than ST-segment elevation myocardial infarction (STEMI) patients because the long-term mortality in STEMI patients is higher<sup>13</sup>, this appeared not to be the case<sup>10</sup>.

Participation in work is influenced by many factors, as outlined in the International Classification of Functioning, Disability and Health (ICF) model of the WHO<sup>13</sup>. In this model, the ability to work is the result of interacting factors of the disease, mental and physical functions, activities, and environmental and personal factors, which are predictable at the time of hospitalisation. These include age<sup>15,16,17,18,19</sup>, illness perception<sup>20</sup>, heart failure<sup>16,18</sup>, physical complaints<sup>21</sup>, doctor's advice<sup>11</sup>, depressed mood<sup>10</sup>, anxiety<sup>16</sup>, co-morbidity<sup>18</sup>, financial situation<sup>16</sup>, and work demands<sup>16,18,21</sup>. These factors, however, do not indicate *how* returning to work can be achieved, because they are determined early in the process of returning to work<sup>22</sup>, and because returning to work part-time or at the pre-ACS level is

time-dependent<sup>10</sup>, these factors most likely do not predict the timing of the return to work or the working hours that can be achieved. In this respect, it is interesting to know if there is a difference in factors between STEMI and NSTEMI/UA patients.

The discussion of the return to work with ACS patients has, however, not yet been fully incorporated into clinical practice<sup>11</sup>, and the barriers that ACS patients may encounter when attempting to return to work have not been explored. Knowledge of those issues might facilitate the return to work process, as well as communication with patients. To elucidate the perspectives of ACS patients that are associated with returning to work, we formulated the following research questions:

- (i) What percentage of ACS patients return to work part-time or to pre-ACS levels, and what is the time frame of their return after discharge from the hospital?
- (ii) What factors do ACS patients perceive as facilitating or hindering their return to work in the short- and long-term after discharge from the hospital?

For both questions, differences between STEMI and NSTEMI/UA were explored.

## Methods

To answer the two research questions, a retrospective telephone survey was performed with ACS patients who were admitted to the Academic Medical Center (AMC) in Amsterdam, The Netherlands. The survey was performed between November 2007 and February 2008.

### Sampling of participants

Admission records of the Cardiac Care Unit (CCU) were used to recruit patients for the survey. Patients listed consecutively and living in the Amsterdam area were selected. The patient's name, address, age, gender, heart disease history, possible interventions during hospitalisation, and co-morbidity were recorded from individual discharge letters. Inclusion criteria were: (1) age on admission between 18 and 63 years old, (2) admission between the first of October 2004 and the first of April 2006, and (3) diagnosed with ACS. Acute coronary syndrome was assumed when the discharge diagnosis was STEMI, NSTEMI, UA, or ACS.

All patients who had given permission for contact at discharge and were still alive

according to the Dutch register of Births, Deaths, and Marriages were contacted. Patients who were engaged in paid employment before they developed ACS, regardless of the number of working hours per week, were selected for the telephone survey.

### **The survey**

A verbal questionnaire was developed and used during the interviews by the first author (FS), who is an experienced interviewer. The survey consisted of the following items: (1) the nature of the work patients performed before and after admission for ACS, (2) the date of return to work, (3) the number of working hours before and after ACS, and (4) the factors perceived as facilitating or hindering their return to work.

### **Analysis**

Data of the survey were entered in SPSS 16.0. The demographics were calculated, as were the percentages of partial *and* full return to work for three, six, nine and 24 months after discharge from the CCU. The number of months after patients first started work, independent of working hours, was reproduced in a Kaplan-Meier curve. The equality of the survival distribution of STEMI and NSTEMI/UA patients was tested with the Log Rank test ( $p < 0.05$ ).

The ICF model<sup>14</sup> was used to categorize the facilitating and hindering factors influencing patients' return to work in both the short-term (three months) and the long-term (24 months) after hospital discharge. Discussion took place between authors regarding the categorization of the factors identified by the patients. First, the authors captured the mentioned reasons in categorisation terms, and, thereafter, the terms were categorized using the ICF model. Discussion took place until authors could agree with the categorisation term and ICF category in which a given reason should be categorized.

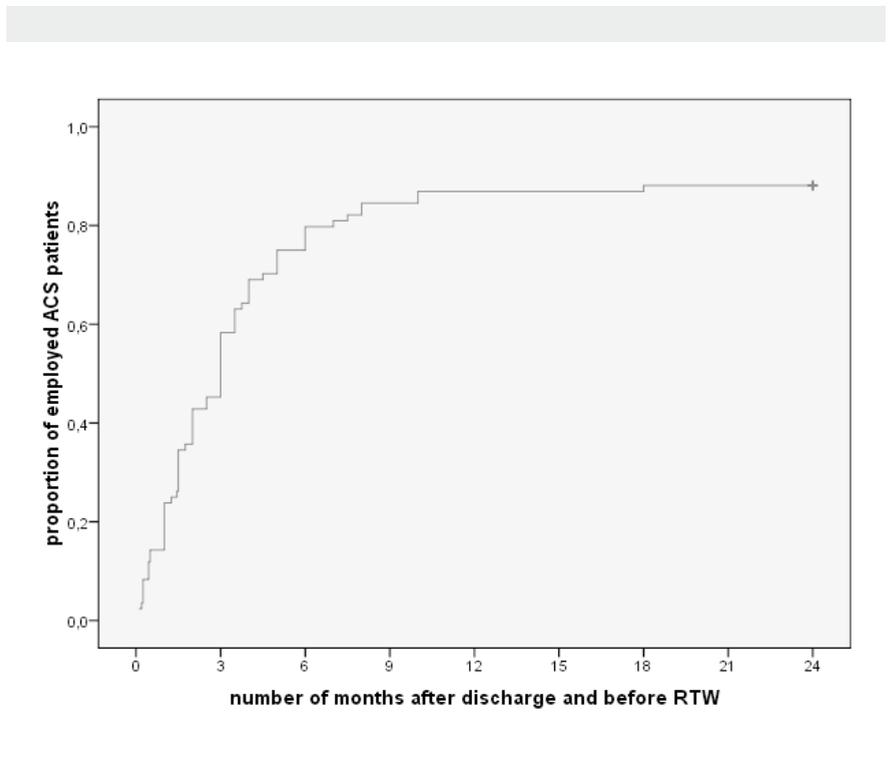
### **Results**

A total of 234 patients were identified on the admission records of the CCU. After checking the register of Births, Deaths, and Marriages, 15 patients were found to be deceased. Of the remaining 219 patients, 132 (60%) were contacted by telephone within the study period. Patients were called a minimum of seven times on different days and at different times before being classified as non-responders. Of those who could be reached, 84 (63%) had engaged in paid work before hospital admission for ACS and were, therefore, eligible for the study. The mean age of the 84 participants was 55 years (range

26-64, S.D. eight years), and 75 (89%) were male. Twenty patients (24%) had a history of previous cardiac events. The discharge diagnosis was STEMI in 51 patients (63%) and NSTEMI/UA in 30 patients (37%). Three discharge letters were not clear enough to distinct the difference between STEMI and NSTEMI/UA. Sixty-nine patients (82%) underwent a percutaneous coronary intervention (PCI) during the initial hospitalisation.

### Return to work

Forty-nine patients (58%) returned to work within three months. By six months, 54 (80%) patients had returned to work. These numbers increased to 71 (85%) at nine months and 74 (88%) at 24 months. The percentage of patients who returned to work, regardless of working hours, are illustrated in a Kaplan-Meier curve (Fig. 1).



**Figure 1** Proportion of employed ACS patients (n=84) and number of months before the patients returned to work after discharge from the hospital. RTW: return to work.

Even within a few days after discharge from the hospital, some patients returned to their pre-ACS work. The majority returned to work within nine months after discharge. NSTEMI/UA patients returned to work 2.7 months sooner than STEMI patients ( $p=0.02$ ).

### Returning to pre-ACS working hours

At three, six, nine, and 24 months, 21 (25%), 37 (46%), 45 (56%), and 54 (64%) patients, respectively, had returned to work with their full pre-ACS working hours. Of the 30 patients (36%) who did not return to pre-ACS working hours 24 months after discharge from the hospital, 10 patients (12%) did not return to work at all.

### Factors facilitating the return to work

The facilitating factors associated with returning to work within three months are presented in Table 1. In the first column, the answer categories are given, and examples of answers are given in the second column. Not having complaints of heart disease and feeling good were the most commonly mentioned reasons for returning to work

**Table 1** Factors (n=45) facilitating the return to work within three months after discharge from the hospital reported by the total group of 84 patients (not all patients reported facilitating factors). Table listed in order of frequency of the reasons given.

Categorisation terms (number of times categorised)	Examples of facilitating reasons
Signs or symptoms of disease (19)	"No heart complaints anymore"
Illness perception (17)	"Felt good"
	"Nothing did hurt"
Work content (2)	"Work adjustment"
Relationships at work (1)	"Nice fellow workers"
The ability to participate (1)	"Was able to do everything"
Functioning of medical care (1)	"The information given by the doctor"
Treatment because of disease (1)	"Good treatment"
Family relationships (1)	"The stress at home diminished"
Financial situation (1)	"Could not afford not working"
Motivation (1)	"Was motivated"

within three months. Information regarding the return to work given by doctors was mentioned once. Factors within the work environment, such as supportive colleagues, were also mentioned once.

### Hindering factors for returning to work

The factors hindering the return to work within three months of being discharged from the hospital are presented in Table 2. Table 3 presents the factors hindering a return to work or a return to pre-ACS working levels within 24 months of being discharged from the hospital. In the first column, the answer categories are given. The second column contains examples of answers. We found that a wide diversity of hindering factors were given for not returning to work.

**Table 2** Factors (n=77) hindering the return to work, independent of working hours, within three months after hospital discharge in order of frequency of reasons given, reported by the total group of 84 patients.

Factor categories (number of times mentioned)	Examples
Physical capacity (19)	"Tiredness"
Co-morbidity (13)	"Diabetes" "Low back pain"
Mental capacity (8)	"Concentration problems"
Terms of employment (6)	"Was sacked after returning to work"
Motivation (5)	"Was not enthusiastic to work anymore" "There was no urge to work"
Side effects of medication (5)	"Dizziness because of medication"
Social security (5)	"The rules made it possible to retire"
Signs or symptoms of disease (5)	"Still heart complaints"
Treatment because of disease (5)	"Rehabilitation program" "Waiting for PCI"
Work content (2)	"Too high physical work demands" "Too high psychological work demands"
Relationships at work (2)	"Problems with the boss"
Self confidence (1)	"Felt insecure when working"
Course of disease (1)	"Was frequently ill"

Table 2 shows that physical and mental incapacity, the existence of co-morbidities, unfavourable terms of employment, and motivational problems were frequently mentioned reasons that hindered the return to work after discharge. Age was mentioned once as a hindering reason.

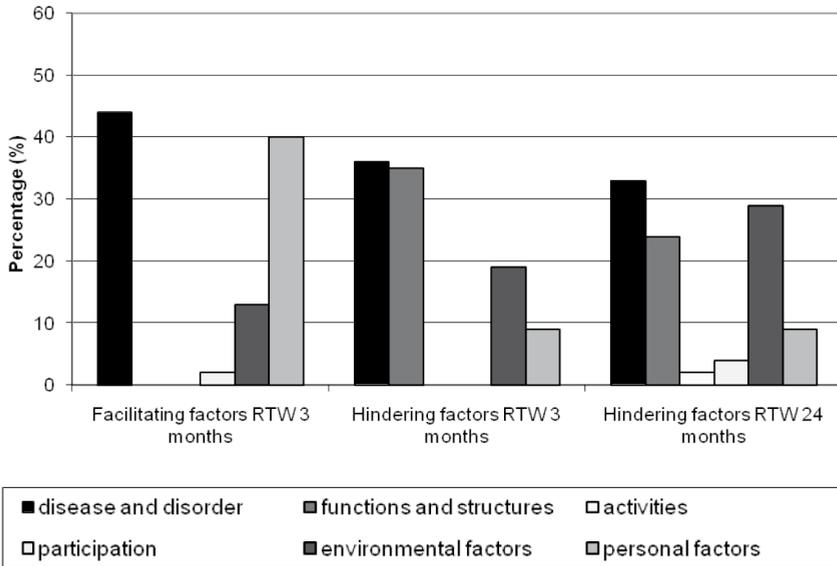
Physical capacity, co-morbidity, terms of employment, and social security were the most frequently cited categories for not working or not returning at pre-ACS working hours (Table 3).

**Table 3** Reasons (n=55) given for not restarting or not returning to the previous job full time 24 months after discharge from the hospital. The data are based on 30 patients and are presented in the order of response frequency.

Response category (number of times given)	Examples
Physical capacity (8)	"Was too tired"
Co-morbidity (8)	"Carcinoma" "Hernia"
Terms of employment (7)	"Was sacked"
Social security (7)	"It was possible to retire"
Course of disease (6)	"Was again hospitalized"
Condition of the heart (4)	"20% pump stroke"
Motivation (3)	"Did not want to work anymore"
Signs or symptoms of disease (3)	"Too tired because of heart disease"
Work content (2)	"Too high work demands"
The ability to participate (2)	"Was sacked because of dis-functioning"
Mental capacity (1)	"Concentration problems"
Side effects of medication (1)	"Could not stand the medication"
Needed capacity in work (1)	"Problems with walking"
Age (1)	"Was too old"
Self confidence (1)	"Felt insecure when working"

### ICF categories of facilitating or hindering factors.

The percentage of factors facilitating the return to work within three months divided among the ICF categories are illustrated in Figure 2. The factors hindering the return



**Figure 2** Percentages of reported factors divided by facilitating return to work within 3 months, hindering return to work within 3 months and hindering at 24 months after discharge from the hospital and divided by ICF category. RTW: return to work.

to work within three months and the factors hindering the return to work at pre-ACS levels within 24 months after discharge, both divided among the ICF categories, are also presented in Figure 2.

As can be observed the figure 2, we were on average unable to categorise the factors as participation or activity problems.

Hindering reasons to return to work (n=41) at pre-ACS levels within 24 months after discharge of STEMI patients could be categorised 10 times (23%) as a disease factor, 11 times 27% as a function and structure factor and 14 times (34%) as an environmental factor. These figures of hindering reasons (n=12) were for NSTEMI/UA patients 9 (75%), 1 (8%), and 2 (17%) respectively.

## Discussion

Forty-nine patients (58%) in this study had returned to work within three months of being discharged from the hospital. Two years after hospitalisation, 74 patients (88%) had returned to work, but 20 patients (24%) were unable to work at their pre-ACS levels 24 months after discharge. Restarting work, therefore, does not automatically imply that pre-ACS working hours are achieved.

Reasons categorised as illness perception and not having signs or symptoms of cardiac disease were by far the most mentioned facilitating factors to return to work within three months. Reasons categorised as decreased physical capacity, the existence of co-morbidity, less mental capacity, unfavourable terms of employment, less motivation and were categories of factors that frequently hindered the return to work.

NSTEMI/UA patients returned to work 2.7 months sooner than STEMI patients. Hindering factors for returning to work at pre-ACS working levels of STEMI compared to NSTEMI/UA patients could be categorized less as disease factors and more as functional and environmental factors.

A strong point of our study compared to other studies<sup>10,11,15-21</sup> is our focus on the patients' perspective for returning to work and their ability to return to work at pre-ACS levels. We found that 36% of the patients did not return at all or returned to work at less than their pre-ACS working hours. These values are nearly twice as high as those reported by Bhattacharyya et al.<sup>10</sup>. The focus on the limited pre-ACS working levels may explain the differences found in our study.

Recall bias cannot be ruled out in our study, but it should not be prominent since an ACS is a major life event that should be marked in time and vividly present in one's memory. Furthermore, answers that classify patients as vulnerable, for example, "was not enthusiastic anymore to work," imply that patients have reflected on the factors associated with the return to work, making a recall bias less likely.

Contrary to prognostic studies on the return to work after heart events<sup>10,11,15-21</sup>, our study shows factors that matter in the perspective of patients when the patients actually return to work, and with that, the meaning of prognostic factors for the return to work are given. For instance, age is a known prognostic factor<sup>15,16,17,18,19</sup>, that was only mentioned once in our study. This can be explained by the fact that older age is associated with early retirement or unemployment, factors that were mentioned more often in our study. Another example might be depression, which was rarely mentioned in our study,

but which is a known prognostic factor<sup>10</sup>. A lack of motivation was, however, mentioned five times and can be a symptom of depression.

Knowing the perspective of ACS patients in return to work matters might facilitate communication with patients but also gives opportunities to stimulate return to work. Even if the patient is not motivated, doctors can give advice to return to work.

The existence of co-morbidity has not been cited in many studies as a prognostic factor for ACS patients to return to work<sup>22</sup>, but in our study and in other diseases, such as lower back pain<sup>23</sup>, co-morbidity is an important issue. Because ACS is a major life event, there is a chance that co-morbidity will be overlooked in the follow-up. In discussing return to work, therefore, special attention should be paid to possible co-morbidities.

Categorising the facilitating and hindering factors according to the ICF model showed that the activity and participation categories could not be scored as being in opposition with the other categories. This implies that ACS patients do not define the ability to participate in work in terms of activities that can no longer be performed or in participation problems they encounter, but in terms of their disease, their capacities, the environment in which they live, and the person that they are. When discussing the ability to return to work, multiple issues can, therefore, be expected. In this discussion this study showed, although based on small numbers, that it can be anticipated that STEMI patients return to work later and report less disease factors, like co-morbidities, but they report more function factors, like physical incapacity and environmental factors. This pattern indicates problems in the fit between the work that *has* to be performed and the work that *can* be performed.

Terms of employment and social security are embedded in social arrangements, and it seems that they fall outside the domain of the cardiologist. Discussing return to work in an early phase of the recovery process, however, might motivate patients to do so. This study shows that returning to work is an issue for ACS patients, both in the short- and long-term following discharge from the hospital. Moreover, in gaining the patient's perspective, different factors can influence this process and its eventual outcome. Those different factors fall within the realms of different specialists, such as cardiologists, general practitioners, occupational health specialists, and insurance physicians who can share the responsibility to achieve returning to work in cardiac patients. Recognising and discussing factors that are important for returning to work, such as motivation, doctors' advice, and having a supportive work environment may encourage the patient to return to work. In the daily practice doctors must know and must be keen on those factors

they can influence to achieve return to work. Future research is necessary to evaluate whether intervention based on these factors can truly lead to achieve this goal.

## **Conclusion**

Up to three months after hospital discharge, many ACS patients returned to work. Within two years, 74 patients (88%) at least returned to work once. Twenty patients (24%) did not return to work at pre-ACS levels. The most mentioned categories of facilitating factors to return to work were illness perception and not having signs or symptoms of heart disease. Physical incapacity, the existence of co-morbidity, mental incapacity, unfavourable terms of employment, less motivation, were top five categories of factors that hindered the return to work.

NSTEMI/UA patients returned to work significantly earlier than STEMI patients, and reasons hindering STEMI patients to return to work to pre-ACS levels opposed to NSTEMI/UA patients could be more often categorized as functional and environmental factors.

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## Chapter 5

# **Work ability in sick-listed patients with Major Depressive Disorder**

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## Abstract

**Background:** Major depressive disorder (MDD) is often a chronic relapsing disease resulting in work-disability. For evaluation purposes a practical set of aspects of work ability would be helpful.

**Aims:** To identify the most important disease specific aspects of work ability for sick-listed employees with MDD.

**Methods:** An experts brainstorming session identified the specific abilities that were thought to be associated with work ability in sick-listed employees with MDD and that could also be associated with the items of the Hamilton Rating scale for Depression (HRSD). Sixty-four insurance physicians (IPs) were then selected to participate in a two-round Delphi study. The aim of the first Delphi round was to identify the abilities that were thought to be important by at least 80% of the IPs. In the second Delphi round, the abilities ranked in the top ten by at least 55% of the IPs were identified as being the most important items.

**Results:** Sixty-one IPs participated in the two Delphi rounds. The most important abilities to be evaluated in work ability evaluation for sick-listed employees with MDD were: to take notice; to sustain attention; to focus attention; to complete operations; to think in a goal-directed manner; to remember; to perform routine operations; to undertake structured work activities; to recall; and to perform autonomously.

**Conclusions:** According to 55% of the IPs, there were ten important aspects of work ability that have to be considered in a work ability evaluation of sick-listed employees with MDD.

## Introduction

Major depressive disorder (MDD) is a common disease<sup>1</sup>. In 2003, 7% of the Dutch population of working age (12-month prevalence) suffered from MDD<sup>2</sup>. In many cases MDD is a relapsing and chronic disease<sup>3</sup>. Symptoms of MDD such as loss of energy, diminished interest, diminished ability to think or concentrate and psychomotor agitation may be responsible for poor functioning. Because of the high prevalence of MDD, its relapsing and chronic course and the residual symptoms<sup>4</sup>, it is not difficult to imagine that MDD results in much disability in society. MDD is associated with productivity loss and absenteeism<sup>5</sup>. When an absent employee with MDD is protractedly not able to return to work, a disability pension can be considered. However, the work ability of the employee first has to be evaluated and a doctor may be asked to do this.

In the Netherlands, it is the responsibility of insurance physicians (IPs) to assess work ability, and they receive a four-year training course in order to be able to do this. Their assessment is based on an interview and examination of the sick-listed patient and, if necessary, consultation with other professionals concerned.

The term 'work ability' can be taken as meaning that a person's abilities fit the demands of his job. This fit should also be lasting because work implies continuity. Therefore, work ability assessments could be based on prognostic factors that predict a lasting return to work. The assumption is that the severity of MDD interferes with the employee's functioning at work<sup>6</sup>. Several instruments are available to measure the severity of MDD<sup>7</sup>. Those instruments, however, do not assess aspects of work ability. To our knowledge, it is not known which aspects of work ability should be evaluated by doctors in the case of sick-listed employees with MDD. In a recent systematic literature review, we were not able to identify papers that described prognostic factors for return to work in sick-listed employees with MDD<sup>8</sup>. Knowing which aspects to assess would be helpful in structuring the communication between doctor and patient about a return to work. Knowledge of these aspects would also be useful for professionals when communicating about interventions which could facilitate a return to work. Therefore, we set up a study to explore and develop consensus about those aspects. The aim of this study was to identify the most important aspects of work ability that need to be evaluated in sick-listed employees with MDD.

## Methods

A Delphi study was performed in two rounds. The input for the first round was prepared using the results of an expert brainstorming session.

The participants for the brainstorming session and the Delphi study were insurance physicians (IPs). In the Netherlands, about a thousand IPs work at the National Institute for Employee Benefit Schemes. They are experts in work ability evaluation because they are registered medical specialists who are trained to assess - on a daily basis- the work ability of employees who have been sick-listed for up to two years.

At the end of 2006, a group of eight IPs from the Dutch Research Centre for Insurance Medicine in the Netherlands was invited to participate in a two-hour brainstorming session. The aim of the session was to explore aspects of work ability in sick-listed employees with MDD that could be associated with the 17-item version of the Hamilton Rating Scale for Depression (HRSD)<sup>9</sup>. The HRSD was used because it encompasses both the symptoms and severity of MDD<sup>10</sup>. First, the IPs received a form on which they had to write down the aspects of work ability they thought were associated with individual HRSD items. Next, each item with its associated aspects of work ability was discussed in the group of eight IPs. The session was recorded on tape and notes were made. The aspects of work ability mentioned were listed and thereafter discussed by the authors (FS, PK, HW, MF, and JS). Duplicates were removed. The criterion for including an item in the first Delphi round questionnaire was that the item could be seen as an aspect of work ability in terms of performable activities.

All regions of the Netherlands were adequately represented in a sample of at least 60 IPs. Thirty-five senior IPs, who worked in those regions and who were responsible for instructing IPs, were contacted by telephone. They were asked to inform two or three of their IPs who were experienced in work ability evaluation for sick-listed employees with MDD about the study. The IPs who wanted to participate received an explanatory letter, signed an informed consent form and filled in a short demographic questionnaire. Personal characteristics were required, such as age, gender, year of registration, years of experience and number of work ability evaluations for sick-listed employees with MDD per year. Only the IPs who had performed at least five work ability evaluations for sick-listed employees with MDD in the past year were included.

For the first Delphi round five versions, containing randomly listed items of the brainstorming session, were generated using Research Randomizer ([www.randomizer.com](http://www.randomizer.com)).

org) thus ensuring the items at the beginning of the list would not get the most attention when read. In the last week of January 2007, the IPs received one of the five versions of the first-round questionnaire by email.

Every item of the questionnaire had to be judged by the IPs as “important”, “not important” or “I do not know” for assessing work ability for sick-listed employees with MDD. The IPs could also mention items they considered were missing from the questionnaire or they could make other comments. If the completed questionnaire was not returned within two weeks of the questionnaire being sent, the IP was reminded first by email and thereafter by telephone that he should return the questionnaire.

The returned questionnaires of the first Delphi round were filed and the answers were analysed in SPSS 13.0. The most relevant items were searched for. ‘Important’ was defined as: “at least 80% of the IPs should judge the item of the questionnaire as important”<sup>11</sup>. Comments and self-reported items were discussed in the research group (FS, PK, HW, MF, and JS). Those items were discussed until consensus was reached on whether to insert the item in the questionnaire of the second round or not.

A questionnaire of the most important items and the inserted comments from the first round of the Delphi was developed for the second Delphi round. Five versions were made using Research Randomizer ([www.randomizer.org](http://www.randomizer.org)). In the second week of March 2007, the IPs who participated in the first round received one of the five versions of the second-round questionnaire by email. The IPs had to rank the items according to importance for assessing work ability in sick-listed employees with MDD. The most important item should be given rank 1, the runner-up rank 2 and so on.

If the completed questionnaire was not returned within two weeks of the questionnaire being sent, the IP was reminded first by email and thereafter by telephone that he should return the questionnaire. The returned questionnaires were filed and the given ranking of the second Delphi round was analysed in SPSS 13.0. The most relevant items were searched for. ‘Relevant’ was defined as: “those items that were ranked in the top ten by more than 55% of the IPs”<sup>11</sup>.

## Results

Using the forms, notes and tapes from the brainstorming session, 104 items were listed that the experts thought should be associated with work ability. After removing duplicates and applying the inclusion criterion, a list of 59 items remained. These items were used in the first Delphi round questionnaire.

Sixty-four IPs, who came from all regions of the Netherlands and who had performed at least five work ability evaluations for sick-listed employees with MDD during the past year, were willing to participate in the first Delphi round. Forty-one percent were female and the mean age was 48 years (Standard deviation (Sd) = 8; range 31-60). They had worked as an IP for between 4 and 32 years (mean 15; Sd = 8;) and performed on average 52 MDD work ability evaluations per year (Sd = 29; range 5-150).

Sixty-three IPs (98%) returned the first-round questionnaire. Of the 59 items, 16 were scored by at least 80% of the IPs as important. "To be able to solve problems" was frequently self-reported as an extra item by the IPs. Because such an item was not included in the first-round questionnaire, consensus was reached in the research group (FS, PK, HW, MF, and JS) to insert it as an extra item for the second round. The 17 items for the second round are presented in the first column of table 1. These abilities vary in kind from aspects of mental functioning like attention, thinking and memory to more specific aspects of activity and participation<sup>12</sup> like handling pressure of work, handling work tempo, undertaking structured work activities, and performing autonomously. In table 1, the second column provides examples for the abilities at stake.

Sixty-one IPs out of 63 (97%) returned both the second-round and the first-round questionnaires. As table 1 shows, ten items are rated as relevant, according to the definition that at least 55% of the IPs should rank their item in the top ten. Table 1 also shows that the top three items, which according to IPs should be considered in work ability evaluations of sick-listed employees with MDD, are all related to attention functions.

## Discussion

Our study identified ten aspects of work ability that should be evaluated in sick-listed employees with MDD. These were: to be able to take notice; to be able to sustain attention; to be able to focus attention; to be able to complete operations; to be able to think in a goal-directed manner; to be able to remember; to be able to perform routine operations; to be able to undertake structured work activities; to be able to recall; and to be able to perform autonomously.

There are no absolute criteria which can guarantee the reproducibility of Delphi studies<sup>11,13,14,15</sup>. The questionnaires used, the definition of consensus, the panel size, the type of experts and loss to follow-up should be considered in this respect. We think

this Delphi study is reproducible because there was a wide range of abilities for consideration in the first-round questionnaire, the definitions of consensus were clear, a large group of experts who perform work ability evaluation on a daily basis were included and the response rate was very high.

We created a first-round Delphi questionnaire by requiring the experts to apply the Hamilton Rating Scale for Depression (HRSD). The HRSD is a frequently used instrument to measure and monitor the severity of MDD<sup>9,10</sup>. The HRSD encompasses the full spectrum of symptoms and severity of MDD. By associating the items of the HRSD with aspects of work ability, we produced a set of items that is related to both the full spectrum of symptoms and severity of MDD *and* to work ability. Because MDD is one of the leading causes of disability worldwide<sup>16</sup>, we think a disease-specific set of items to evaluate aspects of work ability could be of great practical value in general practice. Moreover, MDD is also one of the leading causes of work disability<sup>17</sup>.

Because MDD is in many cases a chronic relapsing disease, patients with MDD are likely to consult the doctor who is treating them. As symptoms of MDD interfere with a person's functioning in general, their functioning at work is an important issue. Patients with MDD may ask their doctor if they can work. However, MDD is not an unequivocal disease. MDD is diagnosed when five or more symptoms have been present for at least two weeks and when this represents a change from previous functioning. One of the symptoms that should certainly be present is a depressed mood, or loss of interest or pleasure. The other symptoms include: weight loss or gain; insomnia or hypersomnia; psychomotor retardation or agitation; fatigue or loss of energy; feelings of worthlessness; diminished ability to think or concentrate; and recurrent thoughts of death. There are many combinations of symptoms possible and it is not immediately clear how the symptoms may be related to work ability. The symptoms are associated with *disabilities* whereas in work ability evaluation, the *ability* to function at work has to be assessed. This study identified ten relevant abilities which need to be evaluated when assessing work ability in sick-listed employees with MDD. If the set of items found in this study is used, it may no longer be necessary to transform symptoms of depression into disabilities and the disabilities into the ability to function at work. The list of items can therefore be considered as helpful in structuring the consultation when assessing the work ability of sick-listed patients with MDD without it being too time-consuming.

The items found in this study may also be applicable to the interventions in the workplace that are needed to overcome the diminished abilities of a sick-listed employee. For instance, support may be needed when the employee is not able to perform as

**Table 1** Important and relevant aspects of work ability and percentage of IPs (N=61) who ranked these aspects in the top ten. Grey column: 55% is the pre-determined cut-off for consensus.

Ability to:	Examples of ability	Percentage of IPs that ranked the item in the top 10					
		>80%	>67%	>60%	>55%	>50%	>33%
take notice	e.g. a truck driver should be able to notice a car accident that happens in front of him	x	x	x	x	x	x
sustain attention	e.g. a bus driver should be able to remain alert enough to drive in the correct lane even on a long, uninteresting road in the late afternoon	x	x	x	x	x	x
focus attention	e.g. a teacher should be able to concentrate on the subject of the lesson even when the students are noisy	x	x	x	x	x	x
complete operations	e.g. a baker should not only be able to put the dough in the oven but also to concentrate on, manage and finish the whole baking process up to removing the bread from the oven.	x	x	x	x	x	x
think in a goal-directed manner	e.g. an anaesthetist working in an operating theatre should first stabilise relevant parameters in the patient before filling in forms or performing other functions with a lower priority			x	x	x	x
remember	e.g. a hotel porter should be able to remember where he has put his guests' luggage			x	x	x	x
perform routine operations	e.g. a school nurse should be able to vaccinate hundreds of children a day and to do this in the standard and safe way she has learned			x	x	x	x
undertake structured work activities	e.g. a bricklayer should be able to lay bricks exactly according to a given wall design				x	x	x
recall	e.g. a medical doctor must be able to recall acquired knowledge in order to evaluate the patient's complaints				x	x	x

Ability to:	Examples of ability	Percentage of IPs that ranked the item in the top 10					
		>80%	>67%	>60%	>55%	>50%	>33%
perform autonomously	e.g. a general practitioner should be able to make decisions about the management of patients independently				X	X	X
operate at speed	e.g. a cashier should be able to constantly work at high speed so that customers do not have to wait long					X	X
divide one's attention	e.g. a taxi driver must remain alert in traffic, and at the same time be able to follow a planned route, any instructions received by mobile phone regarding the next trip, and the client's attempts at conversation					X	X
handle pressure of work	e.g. a cashier should not become nervous when five clients are waiting						X
handle pace of work	e.g. a worker on a conveyor belt should be able to cope with work in a set pace						X
take the initiative	e.g. a policeman should immediately start assisting in a serious traffic accident without being asked to do so						X
control emotions	e.g. a psychologist should be able to hide personal grief when working						
solve problems	e.g. Even when the client is angry, a garage mechanic should not only be able to detect what is wrong with a car, but also carry out repairs without constantly asking for help from colleagues.						

autonomously as in the past. So, the list might also be helpful in communicating with any other professionals concerned with the patient's work ability. Therefore the list is recommended for use in everyday practice by general practitioners, psychologists, psychiatrists, occupational health professionals and insurance physicians when the work ability of sick-listed patients with MDD is assessed.

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## Chapter 6

# **Work ability assessment of long-term sick-listed depressed employees with the use of a checklist**

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*(submitted for publication)*

## Abstract

**Purpose:** To assess the mean score and variation of work ability provided by Dutch Insurance Physicians (IPs) in five different real case history vignettes of long-term, sick-listed employees with Major Depressive Disorder (MDD) with and without the aid of a checklist.

**Method:** In a post test only randomized experiment, 25 IPs assessed work ability for five cases on a scale of 0 to 100 without the use of the checklist, while 21 IPs used the checklist. Differences between groups in mean and absolute variation of assessments were tested with independent t-tests. Intra Class Correlation (ICC) analysis was used to determine if IPs could distinguish between the vignettes.

**Results:** When using the checklist, the mean work ability score of all vignettes was 3 to 12 points higher. There was no difference in variation in work ability scores per vignette and between groups. ICC was 0.64 for both groups.

**Conclusion:** The use of the checklist increased the mean score of work ability but had no effect on its variation. The inter-rater reliability was moderate.

## Introduction

The estimated annual prevalence of Major Depressive Disorder (MDD) is around 7% in the working population<sup>1</sup>, and MDD frequently has a chronic course with residual symptoms<sup>2,3,4</sup>. There is an individual and social need to keep employees with MDD in the workforce, because participation in a work environment is associated with subjective well-being and life satisfaction<sup>5,6</sup>, and because of expected labour shortages in the near future<sup>7</sup>. However, because employees with MDD have problems with functioning and work performance<sup>8</sup>, it is not surprising that MDD is associated with substantial presenteeism, absenteeism, job loss<sup>9</sup>, and ill health retirement<sup>10</sup>. The remaining work ability of sick-listed MDD employees should therefore be properly determined.

Assessing the work ability of employees with MDD involves considering aspects of work ability in relation to the symptoms of MDD presented by the employee that may be relevant to their work activities. This is a complex task because MDD is not a univocal disease but is compounded by different symptoms with varying degrees of intensity, such as fatigue or loss of energy, feelings of worthlessness, diminished ability to think or concentrate, and recurrent thoughts of death.

The assessment of work ability in the Netherlands is performed by Insurance Physicians (IPs) when employees are long-term sick-listed on the basis of an interview and examination of the client and eventually, consultation of other professionals concerned. Although the subjective interpretation of the IP who performs the assessment should be minimal<sup>11</sup>, IPs routinely interpret work ability individually<sup>12</sup> and the inter-rater reliability of the assessment of work ability is not well studied<sup>13</sup>. More studies on the reliability of judgements of work ability are necessary to develop the professional base of work ability assessments. In relation to IPs, this means that the sources that can affect reliability are identified and reduced. Some sources may be: (a) raters may obtain different information as a result of asking different questions; (b) raters may differ in what they notice and remember when presented with the same information; (c) raters may differ in the significance they attach to what is observed; and (d) raters may use different criteria to score the same information<sup>14</sup>. In this respect, it can be hypothesized that shared starting points used to assess work ability will improve measurement outcomes. Therefore, we developed a consensus-based checklist that consists of ten aspects that were considered relevant by IPs in work ability assessments of long-term sick-listed MDD employees<sup>15</sup>. The hypothesis for the present study is that the use of checklist in work ability assessment will diminish variation in judgements because IPs will focus on the same aspects of work

ability. To assess the effect of using the checklist on the variation in judgements of IPs, we formulated the following research question:

- (i) What is the effect on work ability assessment of sick-listed MDD employees by IPs when the checklist is used compared to when the checklist is not used?
- (ii) What is the effect on the variation in work ability assessment of sick-listed MDD employees by IPs when the checklist is used compared to when the checklist is not used?

## Methods

We performed a post-test only randomized experiment. A group of IPs who assessed the work ability of five real case history vignettes without the help of the checklist (control group) were compared with the judgements of a group of IPs who assessed work ability of the same five real case history vignettes with the help of the checklist (intervention group).

### The checklist

The checklist was developed in an earlier study<sup>15</sup>. In Table 1, the 10 aspects that have to be considered in insurance medicine when work ability is assessed for employees with MDD are presented in the first column. In the second column, examples of the aspects are presented. The participants of the intervention group had to study the items of the checklist and to take the items into account when they assessed work ability of the real case history vignettes.

### The vignettes

Figure 1 shows the procedure that was followed to select the five real case history vignettes<sup>16,17,18,19,20</sup> that were used in this study.

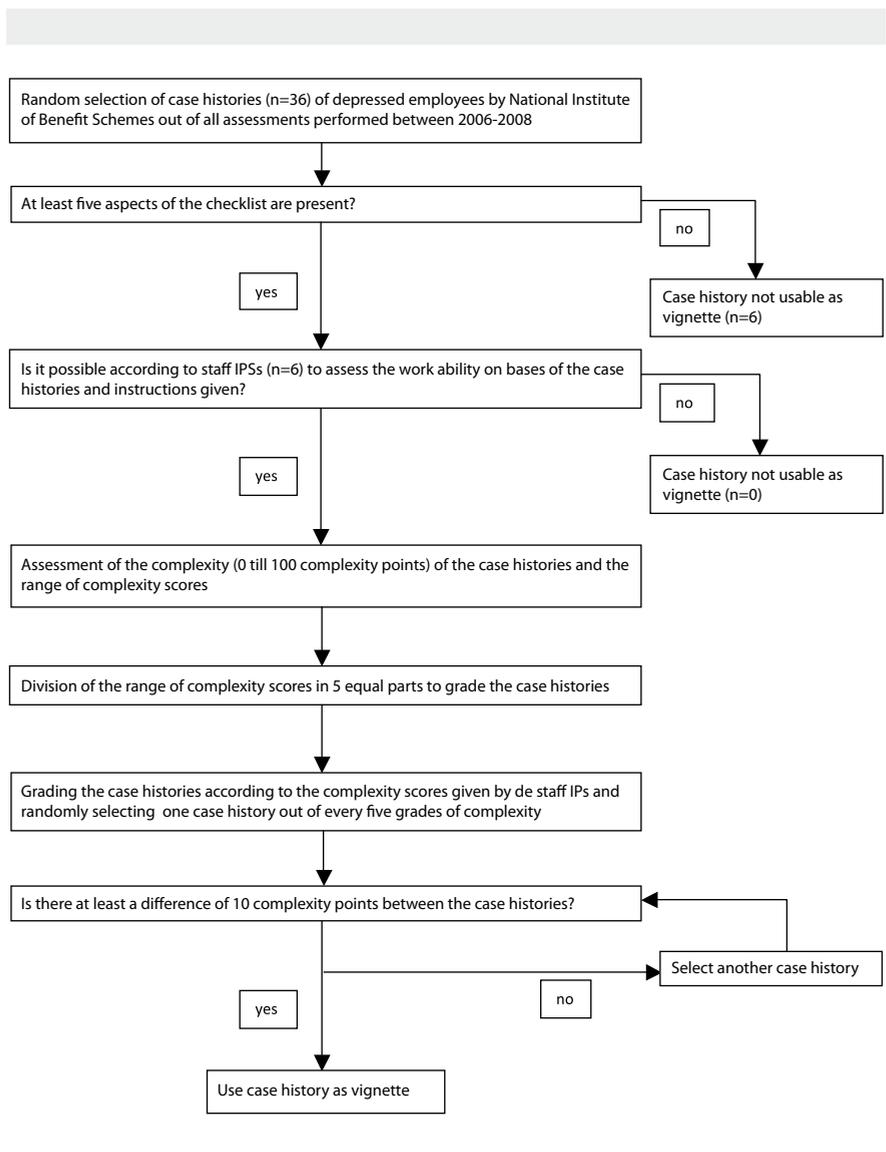
First, and as is seen in Figure 1, the main office of the National Institute of Benefit Schemes randomly selected 50 reports of employees with MDD made by IPs in the period between 2006 and 2008. The medical insurance histories of those reports were scrutinized by the researchers (FS, PK, HW, MF, JS) for the presence of aspects of work ability of the checklist. Only when the medical-insurance history contained at least five of the ten items of the checklist, the medical insurance history was included as a possible vignette.

**Table 1** The 10 items of the checklist and examples of the items<sup>15</sup>.

<b>Ability to:</b>	<b>Examples of ability:</b>
Take notice	A truck driver should be able to notice a car accident that happens in front of him.
Sustain attention	A bus driver should be able to remain alert enough to drive in the correct lane even on a long, uninteresting road in the late afternoon.
Focus attention	A teacher should be able to concentrate on the subject of the lesson even when the students are noisy.
Complete operations	A baker should not only be able to put the dough in the oven but also to concentrate on, manage, and finish the whole baking process up to removing the bread from the oven.
Think in a goal-directed manner	An anesthetist working in an operating theater should first stabilize relevant parameters in the patient before filling in forms or performing other functions with a lower priority.
Remember	A hotel porter should be able to remember where he has put his guests' luggage.
Perform routine operations	A school nurse should be able to vaccinate hundreds of children a day and to do this in the standard and safe way she has learned.
Undertake structured work activities	A bricklayer should be able to lay bricks exactly according to a given wall design.
recall	A medical doctor must be able to recall acquired knowledge in order to evaluate the patient's complaints
perform autonomously	A general practitioner should be able to make decisions about the management of patients independently

After identifying 30 possible real case histories, the cases were randomized and thereafter divided for assessment by six staff IPs of the National Institute of Benefit Schemes. In daily practice, those staff IPs coach and instruct IPs concerning work ability assessment. The staff IPs had to rate the complexity of the real case histories on a Visual Analogue Scale (VAS) (0-100 complexity points), 0 meaning 'not at all complex' and 100 meaning 'very complex'. The staff IPs were also asked to comment on the case histories' comprehensibility and usability concerning the assessment of work ability<sup>20</sup> and to check the instructions given. Finally, they were asked to assess the work ability of the real case histories as a pre-test before the start of this study.

The range of complexity scores of the case histories as provided by the staff IPs was divided into five equal parts, each representing a complexity grade; grade 1 had the lowest complexity score and grade 5 the highest. The real case histories were graded



**Figure 1** Flow chart for the selection of the vignettes.

according to the complexity scores given by the staff IPs. Out of each grade, one real case history was randomly selected. It was then checked if the selected real case histories differed by at least 10 points in complexity of the VAS from each other. The complexity

scores for the five real case histories were: 6, 17, 34, 51 and 75, and therefore the five selected real case histories were used in this study as vignettes. The pre-test of the work ability assessment instrument was good. Fifty sets of the five vignettes in different orders were made with a randomised sequence selector ([www.randomizer.com](http://www.randomizer.com)), to rule out the possibility that the order of vignettes would influence the outcomes.

### **Sampling of participants**

Out of all four regions (North, East, South and West) of the Netherlands, 15 offices of the National Institute of Benefit Schemes were contacted. At those 15 offices, approximately 1000 IPs are working on a daily basis to assess work ability of work disabled employees. IPs receive four years of in-company training before they are registered as an IP. IPs who performed work ability assessments of long-term sick listed employees were asked to participate. It was estimated that two groups of around 25 IPs<sup>21</sup> were needed to answer the research question.

Names of IPs from the four regions of the Netherland who performed work ability assessments of long-term sick-listed employees were gathered from staff IPs. Next, these IPs were contacted by telephone by FS and asked whether they wanted to participate. The IPs who agreed to participate were informed of the study and signed an informed consent before the start of the study. They also completed a short form that was attached to the informed consent form to gather information about their age, gender, experience as an IP, and registration period as an IP.

IPs were randomized into two groups. To prevent 'cross talking' between the two groups, the offices of the National Institute of Benefit Schemes where the IPs worked were identified. According to the office where the IP worked, the IP was presented the same set of five vignettes with the checklist or without. Work ability of the vignettes was assessed on a Visual Analogue Scale (0-100); 0 meaning 'no work ability' and 100 meaning 'as much work ability as before MDD'.

### **Analysis**

Data of age, gender, experience as an IP, and registration period as an IP of the intake forms and, judgements of the work ability were entered in SPSS 16.0. Difference between the control and intervention group (use of the checklist) for age of IPs, years of experience, and years of registration as IP was tested with T-tests for independent samples ( $p < 0.05$ ), and possible differences between the two groups in gender was tested with the Chi-square test ( $p < 0.05$ ).

For each vignette, the mean, the range, and the standard deviation of assessed work ability score was calculated. Moreover, for the two groups of IPs for each vignette, the absolute difference of each IP with regard to their own mean group score of a vignette was calculated and used as a variation score. The distinction between the two groups for the variation score per vignette was tested for each vignette with a T-test for independent samples ( $p < 0.05$ ).

Intra-Class-Correlation analysis two-way random, absolute agreement, single measures<sup>22</sup> was used to determine how well the IPs were able to distinguish the vignettes from each other. Good is:  $ICC > 0.80$ ; moderate is:  $0.50 \leq ICC \leq 0.80$ ; and, poor is  $ICC < 0.50$ <sup>23</sup>.

## Results

### Participants

Fifty-one IPs were contacted, and one IP refused to participate in the study because of involvement in another research project. Twenty five IPs of the control group (100%) and 21 IPs of the intervention group (85%) returned their forms. The mean age of all participants was 50 years (SD 5; range 39-61); the mean years of working as an IP was 17 years (SD 6; range 5-25). The mean number of years of registration as an IP was 10 years (SD 6; range 0-23). Thirty-five percent of the IPs were female. No significant differences in age, years of working as IP, years of registration as IP, or gender were found between the intervention and the control group.

### The assessment of work ability

In Table 2, the mean, the range, and standard deviation of the judgement of work ability per vignette for the control and the intervention group are presented, respectively. On a scale from 0 to 100, a wide range of mean work ability scores from 47 up to 95 per vignette were found. In the intervention group, the mean scores of work ability judgements for vignettes 1 to 5 are with 3, 12, 5, 8 and 9 points, respectively, on average higher than in the control group. There was a significant higher work ability score ( $p=0.04$ ) on vignette 2 in the intervention group.

Table 3 presents, per vignette, the mean absolute variation score, the standard deviation of the variation score, and the test results between groups. No significant differences in the scores between the control and intervention group were found.

**Table 2** Mean, range (min-max), standard deviation and p-values of work ability assessment of the five vignettes for control and intervention group.

	Vignette 1	Vignette 2	Vignette 3	Vignette 4	Vignette 5
<b>Mean score</b>					
- control	28	51	81	22	75
- intervention	31	63	86	30	84
<b>Range</b>					
- control	0-77	10-78	40-10	0-80	41-100
- intervention	0-71	16-100	40-100	1-96	53-100
<b>Standard deviation</b>					
- control	23	20	15	24	18
- intervention	21	22	14	26	15
<b>P-value</b>	0.57	0.04	0.25	0.26	0.07

**Table 3** Mean, standard deviation, and p-values of variation of work ability assessment of the five vignettes for control and intervention group.

	Vignette 1	Vignette 2	Vignette 3	Vignette 4	Vignette 5
<b>Mean variation</b>					
- control	19	15	12	19	15
- intervention	18	15	10	20	12
<b>Standard deviation</b>					
- control	12	12	9	13	15
- intervention	11	15	10	17	12
<b>P-value</b>	0.75	0.99	0.63	0.91	0.22

## Discussion

The mean assessment of work ability was higher when the checklist was used and significantly different in one out of the five used real case histories. Irrespective of the use of the checklist, there was a wide range in work ability assessments in every long-term sick-listed MDD case. No significant difference between the checklist and the

no-checklist group was found in the absolute variation of the judgements per vignette. Irrespective of the use of the checklist, the IPs were moderately able to distinguish between the cases described in the vignettes with regard to work ability.

### **Interpretation of the results**

Contrary to our hypothesis, we were not able to demonstrate that assessment variation diminished when the checklist was used. The use of vignettes instead of real patients cannot be a sufficient explanation for this finding because the assessment of work ability is comparable with a diagnostic process<sup>24</sup>, and it was previously determined that the validity of vignettes equals standardized patients<sup>17</sup>. Furthermore, real case histories used as vignettes have proven reliable when diagnosis criteria were investigated<sup>16</sup>. Other sources of variation should, therefore, be responsible for our findings. Raters might have differed in the significance they attached to what they 'observed' in the text of the cases. One other possible source might be the unknown relative importance of the items in the checklist, resulting in different criteria used in the assessment of work ability. However, if the use of the checklist introduced more variation our results should have pointed in the opposite direction as we expected, which they did not.

The items of the checklist are thought to be of extra assistance in assessing work ability because all vignettes were judged higher when the checklist was used. Since both groups of IPs had assess the same real case histories, differences in obtaining information<sup>14</sup> as possible sources of variance can be ruled out as source for higher work ability assessments. Therefore, the groups of IPs must have differed in what they noticed and thought was important when they assessed the work ability of the real case histories<sup>14</sup>.

Because the ICC of the assessments was moderate (0.64), the need for further testing of the checklist in real patients seems obvious.

### **Should the checklist be used?**

In the Netherlands, the assessment of an IP is the criterion for the level of work ability, but there are no known criteria in the literature to assess work ability of long-term sick-listed MDD employees<sup>25</sup>. In an earlier study, we showed that IPs base their assessment for durable work ability on diagnostic aspects and think that aspects of the participation of the employee in society is important in assessing work ability<sup>26</sup>. When asked what aspects are important to assess whether long-term sick-listed MDD employees can participate in work, IPs provided the 10 aspects of the checklist used in

this study<sup>15</sup>. Those aspects can be seen as criteria in work ability assessment, and, up to now, no better criteria exist in the scientific literature. Using these criteria in this study did not result in less variation among IPs' equal work ability assessments. Therefore, the question at stake is whether these items should already be used in practice. In our opinion, the answer is yes. Besides the fact that an assessment should be reliable, an assessment should also be explicable and at least be based on the opinion of professional experts as the lowest level of evidence. Because the checklist is based on what professionals reported to find relevant in work ability assessment of long-term sick-listed MDD employees, the checklist can be considered as their professional standard. Trying to assess work ability in terms of the checklist will result in more transparency and, because of that, better quality, than explaining the judgements of work ability in terms of patients' expressions .

It can be concluded that the use of a checklist of aspects of work ability results in higher work ability ratings but does not diminish the variation in judgements of work ability. The assessment of work ability of long-term sick-listed MDD employees by IPs contains substantial variation and is moderately reliable between raters.

It is recommended that the community of IPs establishes how to use the items of the checklist best in practice with regard to assessing work ability and instruct the users of the checklist more precisely in this respect.

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## Chapter 7

### **General discussion**



## General discussion

The objectives of this thesis were: (1) to identify aspects of work ability that are relevant for the assessment of work ability in patients with varying diseases after long-term sick leave, including Myocardial Infarction (MI), chronic Low Back Pain (cLBP) and Major Depressive Disorder (MDD) according to literature on return to work (RTW) and based on the opinion of Insurance Physicians (IPs) or patients; and (2) to test if the use of identified aspects will change variation in work ability assessment by IPs. The background of these objectives is that prepared disease-specific protocols<sup>1,2,3,4</sup> meant to support IPs when they assess work ability for diseases, including MDD, cLBP and MI, do not describe criteria based on evidence or instruments on which work ability can be assessed.

To answer the objectives of this thesis, four research questions were formulated. This chapter begins with the results of the studies performed to answer the research questions. Thereafter the considerations are followed by the implications of the findings for work ability assessments of IPs. Finally, recommendations for future research and policy are given.

### 7.1 Main findings

The main findings regarding the following four research questions are presented in this section. The first research question was:

- (1) What prognostic factors for work ability have been described in the literature for the three diseases in the Netherlands for which a disability pension is frequently granted: MI, cLBP and MDD?

A systematic search of the literature was performed to address this question and return to work was used as proxy for work ability. For MI, four studies were found that describe the following prognostic factors for faster return to work in the acute phase of the disease: lower age; male gender; no financial basis on which to retire; lower physical job demands; fewer somatic complaints; no anxiety attacks; no diabetes; no heart failure; no atrial fibrillation; no Q waves; and a short time interval between MI and presentation at the occupational medicine clinic. For cLBP, the following prognostic factors for return to work after three months of work disablement have been found in two independent studies and included the following: lower age; male gender; no treatment before sick listing; surgery in the first year of sick listing; being a breadwinner; less pain; better

general health; higher job satisfaction; lower physical and/or psychological demands at work; and a higher decision latitude at work. No relevant MDD studies could be identified during an exhaustive search of the literature.

The second research question was:

- (2) According to IPs, what are the relevant aspects of work ability in the case of sick-listed employees with musculoskeletal diseases, psychiatric diseases with a specific emphasis regarding MDD, and other diseases?

In total, 60 Dutch IPs were interviewed to determine what aspects they take into account when assessing short-term and long-term work ability in long-term sick-listed employees. In the case of musculoskeletal diseases, the majority of IPs (75%) considered aspects of the ICF's function and structures component to be important. However, with psychiatric and other diseases, aspects in the participation factor component were considered to be important by most IPs, 85% and 80%, respectively. Aspects relating to the environmental factor and personal factor components were mentioned as important by less than 25% of the IPs. In assessing the short-term and long-term prognosis of work ability, aspects of the disease or disorder component were primarily used by 75% or more of the IPs interviewed during the study.

An expert brainstorming session with 8 IPs and a 2-round Delphi study with 64 Dutch IPs identified the 10 most important aspects to take into account when assessing work ability of long-term sick-listed employees with MDD. These ten aspects are: to take notice; to sustain attention; to focus attention; to complete operations; to think in a goal-directed manner; to remember; to perform routine operations; to undertake structured work activities; to recall; and to perform autonomously.

The third research question was:

- (3) According to sick-listed survivors of an acute coronary syndrome (ACS), what are the facilitating and hindering factors to return to work?

A retrospective, semi-structured, telephone survey 2-3 years after hospitalisation of patients revealed that 88% of the ACS patients (n=84) return to work once within 2 years after the event. However, 36% are not working 2 years after hospitalisation at their pre-ACS levels. ACS sub-diagnosis is relevant for the chance to return to work. For all ACS-patients, the most frequently mentioned facilitating factors for return to work were no-illness perception and not having signs or symptoms of heart disease. Physical incapacity, co-morbidity, mental incapacity, unfavourable terms of employment and

decreased motivation were top five hindering factors that were mentioned to return to work within three months. Twenty-four months after discharge of the hospital physical incapacity, co-morbidity, unfavourable terms of employment and the possibility to retire were frequently mentioned hindering factors to return to work at pre-ACS work hours.

The final research question that was studied was:

- (4) Does variation in work ability assessment change when disease-specific aspects for work ability are used in the assessment of sick-listed patients with MDD?

In a post-test randomised experiment, the effect of using the MDD checklist for the ten aspects of work ability, to be taken into account when assessing work ability of five real case history vignettes of MDD employees, was investigated. This was determined by a group of 25 IPs that did not use the checklist and a group of 21 IPs that used the checklist. Work ability was assessed to be higher for all vignettes in the group of IPs that used the checklist. However, no difference in variation of work ability assessments was found between both groups of IPs. Irrespective of the use of the checklist, the reproducibility between raters was moderate (ICC: 0.64) for assessing the work ability in MDD cases.

## 7.2 Considerations

The scientific basis of insurance medicine is just beginning to develop. In recently prepared disease specific protocols<sup>1,2,3,4</sup> instruments or scientific evidence on which work ability assessments could be based were to a great extent missing. This thesis is the first thesis to develop knowledge of disease-specific and non-disease-specific aspects to be taken into account when assessing work ability in the social insurance context. In work ability assessments IPs gather information that can be categorized according to one of the six components of the ICF model<sup>5</sup>. To assess work ability IPs have to appraise the relevant aspects of work ability to assess work ability in a medico-legal context. Some choices made in this thesis to identify relevant aspects of work ability have to be discussed.

### The ICF model

Protocols for IPs recommend assessing work ability of long-term sick-listed employees according to the ICF model for all diseases. The ICF model is used in the introduction and in Chapter 2, 3, 4 and 5 to categorise relevant aspects of work ability. The ICF model is a classification that can describe problems in participation in patients with a condition or

in a defined context<sup>6</sup>. This is a conceptual model; therefore, finding aspects of work ability that can be categorized in one of its components does not mean that those aspects are prognostic for participation in work. Future studies should test whether these aspects are actually prognostic for work ability. Although the ICF model does not predict work ability, it is of use for IPs when assessing work ability in long-term sick-listed employees. This is because the model encompasses all aspects of participation and considering it will stimulate the assessor to remember aspects that might be relevant. The result may also be that the variation in assessments is reduced.

### **Evidence**

Evidence should be gathered because the scientific basis of work ability assessments is mainly based on expert opinions. At the moment no specific guidelines for work ability assessment are given in protocols for IPs<sup>1,2,3,4</sup>. Therefore, this thesis used methodologies like reviews of the literature and interviews with IPs and patients to collect the minimal existing evidence. This evidence was used to describe the opinions of IPs and patients on a group level. In Chapter 6 an intervention study was performed to test the effect of an instrument used to be helpful between assessors on work ability assessment. Based on the present knowledge, in the near future, more studies examining the effect of protocols on work ability assessment should be performed. Because the assessment of work ability implies the exchangeability of IPs<sup>7</sup> the core issue of work ability assessment should be that the quality of the rating for work ability assessment must be in agreement between IPs, regardless of the IP involved.

### **Other perspectives than the perspective of IPs**

Durable work ability was assessed in an interview with IPs and clients. Investigating the perspectives of IPs and clients does not mean that the aspects of other persons involved, such as employers, supervisors, labour experts, medical specialists, or general practitioners, are of no interest<sup>8,9</sup>. Therefore, the identified aspects of work ability from the interview study (Chapter 3) and the Delphi study (Chapter 5) are just a beginning. For this reasons this may have created a limited set of aspects related to work ability. For instance, Chapter 3 showed that IPs hardly address personal and environmental factors. In addition, studies on disability pensioners<sup>10,11</sup> and studies on return to work programs<sup>12,13</sup> address environmental and personal factors when return to work is to be achieved. Therefore, other stakeholders concerned with the work ability of the client can likely expand the set of aspects of work ability as detailed in Chapter 5.

### **The medico-legal context of work ability assessment**

Another point to be discussed is that IPs perform work ability assessments in a medico-legal context. The law is broadly formulated and is narrowed by jurisprudence to a certain extent. The law says that a disease<sup>14</sup> can lead to disability pensions. Jurisprudence dictates that personal (i.e. like children to take care of) and environmental factors (i.e. to live too far from the company) cannot be arguments to grant disability pensions<sup>15,16</sup>. Chapters 3 and 5 show that IPs follow the law *and* the jurisprudence by relatively neglecting environmental and personal factors. For this reasons, they may not have answered the questions in a medical perspective in which health is to be conceptualised according to the ICF model. Considering personal and environmental factors when assessing work ability is a medical necessity. In addition it also makes more transparent on which medical criteria the pension is granted and which other aspects are relevant, but no reason for granting a disability pension.

### **Return to work versus work ability**

In Chapter 2 prognostic factors for return to work (RTW) are used to identify aspects of work ability in patients with MI, cLBP and MDD. RTW is therefore used as proxy for work ability. However, RTW is not the same as work ability. Work ability concerns the physical and mental capacity of a person. A prerequisite for RTW is that the work ability of a person at least equals the work demands. That is work should not exceed human capacities to meet such demands without causing work-related health problems, when the demands are met on a daily basis for approximately five working days a week over a period<sup>17</sup>, according to the legal context of at least three months<sup>18</sup>. Therefore, RTW issues encompass more than simply the physical and mental capacities of a person. For instance, we have learned from Chapter 2 that a client's financial base to retire and the time that has passed before a client visits an occupational health clinic can be prognostic factors for RTW. These factors are of use for occupational health physicians when RTW is to be achieved. The previously mentioned prognostic factors should, however, not be taken into account when work ability is assessed because they do not define the work environment in which the human capacity meets work demands. On the other hand, prognostic factors such as support and decision latitude must be taken into account when work ability is assessed because they do define the work environment in which the human capacity meets work demands.

## 7.3 Implications for IPs

The assessment of work ability is one of the duties for IPs. In addition, they also have to assess the social medical history, the prognosis of the work ability, and the possibility for further treatment and/or support of the long-term sick-listed employee<sup>1,2,3,4</sup>. To complete these tasks, information is gathered and interpreted in the light of the employee's particular disease. This thesis produces relevant insights that can support IPs with the following tasks.

1. In assessing the social medical history, useful prognostic factors for return to work for MI clients include the following: lower age; male gender; no financial basis on which to retire; lower physical job demands; fewer somatic complaints; no anxiety attacks; no diabetes; no heart failure; no atrial fibrillation; no Q waves; and a short time interval between MI and presentation at the occupational medicine clinic. For cLBP clients, factors for RTW include the following: lower age; male gender; no treatment before sick listing; surgery in the first year of sick listing; being a breadwinner; less pain; better general health; higher job satisfaction; lower physical and/or psychological demands at work; and a higher decision latitude at work. The identified aspects can be used as yellow flags and make the IP question why return to work has not been achieved.
2. IPs can already apply the experimental checklist of aspects of work ability from Chapter 5 for work ability assessments of long-term sick-listed MDD clients. As shown in Chapter 2, there are no known prognostic factors for work ability for these clients described in the literature. As shown in Chapter 5 IPs share relevant aspects of work ability for MDD. Therefore, the aspects presented in Chapter 5 are the best evidence for assessing work ability for MDD clients. Applying those aspects when assessing work ability, however, does not diminish variation between IPs, but results in higher work ability assessments, as presented in Chapter 6. Caution should therefore be taken when using the list to assess work ability. The checklist should not be solely used to assess work ability. Additional sources of information, such as the opinions of other professionals concerned with the work ability of clients, must also be considered.
3. When disease-specific prognostic factors are used to assess work ability, Chapter 5 shows that early phase factors of Chapter 2 may not be the same as factors hindering return to work two years after the employee were sick-listed. In addition, factors can be phase specific<sup>19</sup>. Therefore considering prognostic

factors when assessing work ability implies that factors should be at stake at the time of the assessment of work ability.

4. Work ability is assessed during an interview between an IP and a client. Communication is facilitated with the awareness of what is important in the interview. The ICF model offers a framework for the interview to assess work ability. In this study it appeared that IPs were not inclined to use environmental and personal factors when assessing work ability, while from the perspective of the clients, these factors may be important. Furthermore, patients neglect activities and participation factors. During work ability assessment, IPs should pay extra attention to environmental and personal factors and should try to stimulate clients to express reasons for why they are not returning to work in terms of both activity and participation.
5. Chapter 6 shows that there is a wide variation in work ability assessments of the same case histories. As professionals, IPs must assess work ability of the same client in the same way. Education and training to accomplish this consistency is needed and recommended.

## **7.4 Recommendations for future research**

This thesis identified aspects of work ability. However, further development of instruments based on the aspects and implementation of these instruments is still needed. Therefore, the following specific recommendations for future research have been formulated: Further development of the MDD checklist and starting development of checklists based on prognostic factors for return to work for MI and cLBP clients, decision analysis and implementation in practice. How should the MDD checklists be expanded according to clients and other professionals concerned with work ability? What is the priority of the items in relation to work ability? How can the MDD checklist be effectively implemented in the daily practice of IPs? What is the quality improvement in the outcome of work ability assessment of a specific implementation?

## **7.5 Recommendations for policymakers**

1. Illustrative case histories to help IPs with their assessment tasks<sup>20</sup> are already developed. Illustrative case histories must be developed in which the MDD checklist, with aspects of work ability, and prognostic factors for return to work for MI and cLBP are demonstrated.
2. To improve the agreement among IPs in work ability assessments, the employer of IPs should facilitate the evaluation of assessments of work ability by organising continuous peers feedback systems.
3. IPs are registered and re-registered once every five years as medical specialist. To be (re-) registered IPs have to follow accredited education and training. It should be stimulated that IPs who assess work ability receive accredited education or training on work ability assessment.

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## **Summary**



## Chapter 1

Work ability assessment of employees who are sick-listed for a minimum of 21 months is an important task of Dutch IPs. It is also a complex task because work ability is determined by many factors. To accomplish this task, IPs gather all sorts of information. Disease-specific protocols conceptualise work participation according to the ICF model and assist IPs with information gathering. Work ability assessment implies the identification of information that predicts durable participation in work. The existing protocols are not sufficient in helping IPs to select the relevant information on which durable participation in work can be assessed.

Different IPs should comparably rate the work ability of the same long-term sick-listed employee. Past studies presume that there is substantial variation between IPs in work ability assessments. To reduce variation of work ability assessments among IPs, it can be assumed that IPs should focus on the same relevant aspects and/or aspects they collectively think are relevant. Until now, scientific evidence on those aspects is, to a great extent, missing. Identification of those aspects of work ability and the development of instruments are real needs.

The objectives of this thesis were: (1) to identify aspects of work ability that are relevant for the assessment of work ability in patients with varying diseases, including Myocardial Infarction (MI), chronic Low Back Pain (cLBP) and Major Depressive Disorder (MDD) according to literature on return to work (RTW) and based on the opinion of Insurance Physicians (IPs) or patients; and (2) to test if the use of identified aspects will change variation in work ability assessment by IPs.

To begin the development of evidence, the following four research questions concerning diseases for which disability pensions are frequently granted were formulated:

1. What prognostic factors for return to work have been described in the literature for the three diseases in the Netherlands for which a disability pension is frequently granted: MI, cLBP and MDD?
2. According to IPs, what are relevant aspects of work ability in cases of long-term sick-listed employees with musculoskeletal diseases, psychiatric diseases with a specific emphasis regarding MDD, and other diseases?
3. According to sick-listed survivors of an acute coronary syndrome, what are the facilitating and hindering factors to return to work?
4. Does variation in work ability assessment change when disease-specific aspects for work ability are used in the assessment of sick-listed patients with MDD?

The results of the studies performed to answer the questions are presented in Chapters 2 through 6. The considerations, implications for future research and recommendations are all discussed in Chapter 7.

## Chapter 2

The first research question is addressed in Chapter 2. The aim of the study in this chapter was to identify prognostic factors for work ability in sick-listed employees with myocardial infarction (MI), (cLBP) and (MDD). These factors were identified in order to establish an objective basis for work ability evaluation. A Systematic literature search in the PubMed database (January 1, 1990, to July 1, 2006) with the Yale prognostic research filter was performed. Inclusion criteria were: (1) work-disabled employees; (2) MI, cLBP or MDD patients; (3) longitudinal designs; and (4) return to work or compensation status as an outcome measure. From this search, it appeared that four studies on MI met the inclusion criteria and described the following prognostic factors for faster return to work in the acute phase of the disease and disablement: low age; male gender; no financial basis on which to retire; low physical job demands; few somatic complaints; no anxiety attacks; no diabetes; no heart failure; no atrial fibrillation; no Q waves; and a short time interval between MI and presentation at the occupational medicine clinic. Two studies on cLBP met the inclusion criteria and described the following prognostic factors for faster return to work after three months of work disablement: low age; male gender; no treatment before sick listing; surgery in the first year of sick listing; being a breadwinner; less pain; good general health; high job satisfaction; low physical and/or psychological demands at work; and a higher decision latitude at work. No relevant MDD studies were found.

It was concluded that only a few studies describe disease-specific, environmental and personal prognostic factors for returning to work in the earlier phases of work disablement in MI and cLBP patients. No study describes prognostic factors for MDD. Almost no relevant studies have been reported in patients who have been long-term sick-listed.

## Chapter 3

In Chapter 3 the second research question was addressed. The purpose of the study performed was to describe what aspects, as categorised according to the ICF model, insurance physicians (IPs) take into account in assessing short-term and long-term work ability in cases of long-term sick-listed employees with musculoskeletal diseases, psychiatric diseases and other diseases. These aspects were investigated with a telephonic survey on a random sample of 60 IPs from the Dutch National Institute for Employee Benefit Schemes, stratified by both region and years of experience. It appeared that, in determining work ability, a wide range of aspects were employed by IPs. In the case of musculoskeletal disease, 75% of the IPs considered the functions and structures important. With psychiatric and other diseases, however, participation was considered important by 85% and 80%, respectively. Aspects relating to the environmental factor and personal factor components were mentioned as important by fewer than 25% of all IPs. In assessing the short-term and long-term prognosis of work ability, the disease aspects were primarily used, with a rate of over 75%. It was concluded that, in determining work ability, IPs predominantly considered aspects relating to the functions and structures and participation components of the ICF model as important. The environmental factor and personal factor components were not as frequently mentioned. In assessing the short-term and long-term prognosis of work ability, the disease or disorder component was predominantly used. It can be argued that environmental factors and personal factors should also be used more often in assessing work ability.

## Chapter 4

In Chapter 4, the third research question was addressed. In this chapter, the time perspective of returning to work and factors that facilitate and hinder returning to work in a group of survivors of acute coronary syndrome (ACS) were described. In addition, differences in patients with ST-segment elevation myocardial infarction (STEMI) versus non-ST-segment elevation myocardial infarction or Unstable Angina (NSTEMI/UA) were explored. A semi-structured telephone survey occurring 2-3 years after hospitalisation with 84 employed Dutch ACS-patients from 1 academic medical hospital was performed. In total, 49 patients (58%) returned to work within 3 months, whereas at least 74 (88%) returned at least once within 2 years after the event. Two years after hospitalisation, 30

(36%) patients were not working at their pre-ACS levels. On average, NSTEMI/UA patients returned to work 2.7 months sooner than STEMI patients. For all ACS-patients, the most frequently mentioned categories of facilitating factors to return to work were not having signs or symptoms of heart disease and no illness perception. Physical incapacity, comorbidity, and mental incapacity were the top three categories of hindering factors. It was concluded that within 2 years, 10 (12%) ACS patients had not returned to work at least once, and 20 (24%) were not working at pre-ACS levels. Disease factors, functional factors, environmental factors, and personal factors were listed as affecting a subject's work ability level.

## Chapter 5

In Chapter 5, the second research question was specifically focused on MDD. MDD is the disease that is most frequently granted long-term disability pensions. This chapter describes the development of a practical set of aspects of work ability to be used when assessing work ability of employees who are sick-listed with MDD. In an expert brainstorming session, IPs first identified the specific abilities that were thought to be associated with work ability in long-term sick-listed employees with MDD that could also be associated with the items of the Hamilton Rating Scale for Depression. Then, 64 insurance physicians (IPs) were selected to participate in a 2-round Delphi study. The aim of the first Delphi round was to identify the abilities that were thought to be important by at least 80% of the IPs. In the second Delphi round, the abilities ranked in the top 10 by at least 55% of the IPs were identified as being the most important items.

In total, 61 IPs participated in the 2 Delphi rounds. The most important abilities in a work ability evaluation for sick-listed employees with MDD were to take notice, to sustain attention, to focus attention, to complete operations, to think in a goal-directed manner, to remember, to perform routine operations, to undertake structured work activities, and to recall and to perform autonomously. According to 55% of the IPs, there were 10 important aspects of work ability that have to be considered in a work ability evaluation of long-term sick-listed employees with MDD.

## Chapter 6

In Chapter 6, the fourth research question was addressed. The purpose of study in this chapter was to assess the mean score and variation of work ability provided by Dutch IPs in five different real case history vignettes of long-term, sick-listed employees with MDD. This was assessed with and without the aid of a checklist that was described previously in Chapter 4. In a post-test-only randomised experiment, 25 IPs assessed work ability for 5 cases on a scale of 0 to 100 without the use of the checklist, while 21 IPs used the checklist. Differences between the groups in the mean and absolute variation of assessments were tested with independent t-tests. Intra Class Correlation (ICC) analysis was used to determine if IPs could distinguish between the vignettes.

When using the checklist, the mean work ability score of all vignettes was 3 to 12 points higher in comparison when the checklist was not used. There was no difference in variation of work ability scores per vignette and between groups. The ICC was 0.64 for both groups. It was concluded that use of the checklist increased the mean score of work ability but had no effect on its variation.

## Chapter 7

It is concluded that, for sick-listed employees with MI or cLBP, prognostic factors exist in which return to work can be predicted. When work ability was assessed for long-term sick-listed employees with MI and cLBP, it should be understood that there were probably factors that determined work ability 21 months after the employee was sick-listed other than the identified prognostic factors for RTW in MI and cLBP clients. In the perspective of IPs, work ability was based in ICF terms on the kind of disease of the employee, on the functional and structural qualities of the employee, and on participation possibilities of the employee. The perspective of clients' personal aspects, such as motivation and environmental factors (e.g. work demands), can also be important for the possibility to participate in work.

In assessments of work ability of long-term sick-listed MDD employees, the variation in assessments among IPs is wide, irrespective of the use of an experimental list of aspects of work ability. Further development of the checklist for MDD clients is needed. The use of the checklist result in higher work ability assessments in comparison when the checklist was not used. It is not recommended to solely use the checklist to assess

## Summary

work ability, but to collect information from other professionals concerned with the work ability of the client. Further, it is recommended that training and educating of IPs to assess work ability is necessary and that the use of prognostic factors and the checklist in work ability assessments must be demonstrated in the form of illustrative case histories.





## **Samenvatting**



## Samenvatting

Het beoordelen van het werkvermogen van werknemers die langdurig (21 maanden) niet in staat zijn hun werk volledig te hervatten, is een belangrijke taak van Nederlandse verzekeringsartsen. Het is een complexe taak omdat werkvermogen van vele factoren afhangt. Om deze taak zo goed mogelijk uit te voeren, verzamelen verzekeringsartsen tijdens een spreekuur veel informatie. Individuele verzekeringsartsen kunnen voor ogenschijnlijk dezelfde gevallen verschillende typen informatie beoordelen om het werkvermogen in te schatten. Uit studies blijkt dat er grote variatie bestaat in beoordelingen van werkvermogen tussen verzekeringsartsen. Vermindering van deze variatie is te verwachten indien verzekeringsartsen hun beoordelingen baseren op dezelfde aspecten. Deze aspecten zijn echter niet eenduidig. Om een bijdrage te leveren aan de eenduidigheid bij de beoordeling van het werkvermogen zijn de doelen van dit proefschrift, het identificeren van aspecten van werkvermogen en het testen of deze aspecten invloed hebben op de beoordeling van het werkvermogen. De volgende onderzoeksvragen zijn hiervoor geformuleerd en beantwoord:

- 1) Welke voorspellende factoren voor werkvermogen zijn in de literatuur bekend voor werknemers die langdurig verzuimen met een hartinfarct, chronische lage rugpijn en depressie?
- 2) Wat zijn volgens verzekeringsartsen belangrijke aspecten van werkvermogen van werknemers die langdurig verzuimen met aandoeningen van het bewegingsapparaat, psychische ziektebeelden zoals bijvoorbeeld depressie en andere ziektebeelden?
- 3) Wat zijn volgens overlevenden van een hartaanval bevorderende en belemmerende factoren voor terugkeer naar het werk?
- 4) Verandert de variatie tussen verzekeringsartsen in de beoordeling van het werkvermogen van werknemers die langdurig verzuimen met een depressie indien er bij de beoordeling gebruikt wordt gemaakt van een checklist met aspecten van werkvermogen die volgens verzekeringsartsen van belang zijn?

Voor de eerste onderzoeksvraag is de internationale literatuur systematisch bestudeerd (hoofdstuk 2) om informatie te verzamelen over het werkvermogen van langdurig arbeidsongeschikte werknemers met een hartaanval, chronische lage rugpijn of een depressieve stoornis. Een systematische literatuurstudie is verricht in de database Pubmed. Er zijn vier studies gevonden die voorspellende factoren voor snellere

terugkeer naar werk voor hartinfarctpatiënten beschrijven. Deze prognostische factoren zijn in het begin van de arbeidsongeschiktheidsperiode bepaald. De factoren zijn: jonge leeftijd, het mannelijke geslacht, lage lichamelijke werkbelasting, te weinig geld om niet te werken, lichamelijke klachten, geen angstaanvallen, geen diabetes, geen hartfalen, geen atrium fibrilleren, geen Q golfen op het ECG en het zich snel aanmelden bij een arbodienst. Verder zijn er twee studies over arbeidsongeschikte werknemers met chronische lage rugklachten gevonden. Deze studies beschrijven voorspellende factoren voor snellere terugkeer naar werk die drie maanden na ziekmelding zijn vastgesteld. De factoren zijn: jonge leeftijd, het mannelijke geslacht, geen behandeling voor ziekmelding, operatie in het jaar van ziekmelding, kostwinnaar zijn, weinig pijn, goede algemene gezondheid, tevredenheid met werk, weinig lichamelijke en geestelijke belasting op werk en veel beslissingsvrijheid in het werk. Er zijn geen studies gevonden die voorspellende factoren voor werkvermogen bij patiënten met een depressieve stoornis beschrijven. Omdat verzekeringsartsen het werkvermogen beoordelen van werknemers die 21 maanden arbeidsongeschikt zijn, kunnen de factoren die gevonden zijn over hart- en rugpijn patiënten mogelijk minder bruikbaar zijn voor het vaststellen van werkvermogen voor werknemers die langdurig verzuimen. Deze factoren kunnen voor de verzekeringsarts wel behulpzaam zijn om een oordeel te vormen of de te beoordelen cliënt eigenlijk al had kunnen terugkeren naar werk.

Omdat in de literatuur geen aspecten bekend zijn waarop het beoordelen van werkvermogen van langdurig arbeidsongeschikte werknemers kan worden gebaseerd, is voor de tweede onderzoeksvraag telefonisch aan 60 willekeurige verzekeringsartsen gevraagd (hoofdstuk 3) welke aspecten zij, onderverdeeld volgens het ziekte gevolgen model van de Wereld Gezondheids Organisatie, in overweging nemen bij het beoordelen van werkvermogen.

Bij cliënten met aandoeningen aan het bewegingsapparaat vindt 75% van de verzekeringsartsen vooral aspecten van belang die verstoring in lichamelijke functies aangeven. Bij psychische ziektebeelden en bij overige ziektebeelden vindt 85%, respectievelijk 80% van de verzekeringsartsen vooral aspecten over participatie van de werknemer van belang. Omgevings- en persoonlijke factoren worden door minder dan 25% van de verzekeringsartsen als belangrijk beschouwd bij het beoordelen van het werkvermogen. Voor het beoordelen van de duurzaamheid van het werkvermogen wordt door 75% van de verzekeringsartsen aspecten aangeven die te classificeren zijn als 'ziekte en gebrek'.

Voor onderzoeksvraag drie zijn aspecten van werkvermogen vanuit het perspectief van cliënten (hoofdstuk 4) onderzocht voor patiënten die een hartaanval hebben overleefd. Aan 84 patiënten is twee tot drie jaar nadat zij het ziekenhuis hebben verlaten, gevraagd naar het tijdstip van werkhervatting en de bevorderende en belemmerende factoren die bij hen een rol speelden voor terugkeer naar werk. Het blijkt dat binnen twee jaar na ontslag uit het ziekenhuis 88% van de patiënten op zijn minst een start heeft gemaakt met werk. Naast de 12% van de patiënten die helemaal niet is gestart met werk blijkt dat twee jaar na ontslag uit het ziekenhuis 24% van de patiënten niet werkt zoals voor de hartaanval. Het niet hebben van hartklachten of zichzelf goed voelen zijn vaak genoemde redenen die bevorderend zijn om het werk te hervatten. Volgens de patiënten zijn belangrijke belemmerende redenen om weer aan het werk te gaan fysiek en mentaal verminderde capaciteit, de beëindiging van de arbeidsovereenkomst, aanwezigheid van andere ziekten, en gebrek aan motivatie om te werken. Geconcludeerd kan worden dat er, vanuit het perspectief van de cliënt, ziekte-, omgevings- en persoonsfactoren van belang zijn voor terugkeer naar werk.

Voor de tweede onderzoeksvraag is vanuit het perspectief van de verzekeringsarts ziektespecifiek voor depressie, ook een exploratie naar aspecten van werkvermogen uitgevoerd (hoofdstuk 5). De bedoeling was om de belangrijkste aspecten van het werkvermogen te identificeren waarop verzekeringsartsen hun oordeel over het werkvermogen van langdurig arbeidsongeschikte depressieve werknemers baseren. Er zijn 10 aspecten van werkvermogen geïdentificeerd die volgens 55% van de verzekeringsartsen belangrijk worden gevonden: aandacht kunnen opbrengen, aandacht kunnen volhouden, zich kunnen concentreren, handelingen kunnen afmaken, adequaat kunnen reageren, kunnen inprenten, routinewerkzaamheden kunnen uitvoeren, gestructureerd werk kunnen uitvoeren, zaken kunnen herinneren, zelfstandig kunnen handelen.

Vervolgens is in het kader van de vierde onderzoeksvraag een experimenteel onderzoek uitgevoerd (hoofdstuk 6). Hierin werd onderzocht of door gebruik van de 10 geïdentificeerde voor depressie ziektespecifieke aspecten van werkvermogen in een checklist, de variatie in oordelen over werkvermogen tussen verzekeringsartsen verandert. Hiervoor zijn 25 verzekeringsartsen gevraagd om voor vijf casussen met sociaal medische ziektegeschiedenissen het werkvermogen te beoordelen. Tevens is aan 25 andere verzekeringsartsen hetzelfde gevraagd maar dan zonder dat zij de checklist gebruiken. Uit het onderzoek blijkt dat voor beide groepen de variatie in de

beoordelingen van het werkvermogen hoog is. Het gebruik van de checklist heeft geen invloed op de variatie in oordelen. Het werkvermogen wordt bij alle casussen hoger beoordeeld bij gebruik van de checklist in vergelijking met niet gebruik van de checklist.

Op basis van de voor dit proefschrift verrichte studies wordt geconcludeerd (hoofdstuk 7) dat:

- er voor cliënten met een hartaanval en chronische lage rugklachten prognostische factoren vlak na ziekmelding bekend zijn waarmee een oordeel kan worden gevormd of deze cliënten ten tijde van de beoordelingen hun werkzaamheden zouden hebben kunnen hervatten; voor depressie zijn deze factoren niet bekend.
- prognostische aspecten voor werkvermogen, die in de literatuur zijn beschreven bij patiënten met een hartaanval en chronische lage rugklachten, niet altijd van toepassing zijn 21 maanden na de eerste arbeidsongeschiktheidsdag.
- volgens verzekeringsartsen voor het beoordelen van het werkvermogen vooral factoren van belang zijn die te maken hebben met de ziekte, de verstoring in lichamelijke functies en participatie.
- vanuit het perspectief van de cliënt ook omgevings- en persoonlijke factoren van belang zijn.
- Bijna negentig procent van de patiënten, die een hartaanval overleeft, weer een start maakt met werken en dat twee jaar na ontslag uit het ziekenhuis ruim een derde van de patiënten, die een hartaanval heeft overleefd, niet werkt of niet werkt op het werkniveau van voor de aanval.
- volgens verzekeringsartsen bij depressie 10 aspecten belangrijk zijn bij het beoordelen van het werkvermogen. Het hanteren van deze 10 aspecten bij de beoordeling van het werkvermogen blijkt geen invloed te hebben op de variatie van de oordelen over het werkvermogen, maar wel op de hoogte van de werkvermogen inschatting.

De volgende aanbevelingen worden gedaan (hoofdstuk 7):

- Er is, gezien de grote variatie in oordelen over werkvermogen tussen verzekeringsartsen bij dezelfde dossiers over depressie, meer scholing en training vereist voor het vaststellen van het werkvermogen.
- Er is nader onderzoek nodig naar de verdere ontwikkeling en invoering in de

praktijk van de checklist met aspecten van werkvermogen bij depressieve werknemers. Hierbij kan inbreng van andere professionals en cliënten van belang zijn.

- Er moeten instrumenten worden ontwikkeld die voortbouwen op de in dit proefschrift geïdentificeerde prognostische factoren voor het werkvermogen van patiënten die een hartaanval hebben overleefd en patiënten met chronische rugklachten.
- Er moeten in het kader van de medi-prudentie casussen worden ontwikkeld waarin het gebruik van de 10 aspecten voor werkvermogen bij depressieve arbeidsongeschikte werknemers tot uiting komt. Ook moeten er casussen worden ontwikkeld waarin het gebruik van de prognostische factoren voor de beoordeling van cliënten met een hartinfarct en chronische lage rugklachten wordt geïllustreerd.
- Individuele verzekeringsartsen dienen een directe terugkoppeling op hun oordelen van het werkvermogen te krijgen.
- (Her)registratie van verzekeringsartsen moet afhankelijk worden gemaakt van (na)scholing op het gebied van het vaststellen van het werkvermogen.



**Dankwoord**  
**Publications**



De intrinsieke wens om te promoveren bestond bij mij al ruim 20 jaar toen ik ruim zes jaar geleden solliciteerde als promovendus. Op dat moment kon ik niet op veel onderzoekservaring buigen. Ook was ik niet erg belesen en bovendien was ik moeilijk instrueerbaar. Gestructureerde intensieve deskundige begeleiding was datgene dat ik nodig had om een promotietraject tot een goed einde te kunnen brengen en de vraag voor mij was of deze begeleiding wel mogelijk was.

Met het tot stand komen van dit proefschrift is mijn vraag bevestigend beantwoord. Dit antwoord impliceert dat er naar mijn idee bovenmatige inspanningen zijn geleverd door mijn begeleiders die ik hierbij allereerst persoonlijk wil bedanken.

In de eerste plaats wil ik promotor Monique Frings-Dresen, bedanken. Voor jou was het geen vraag of je de gestructureerde deskundige intensieve begeleiding zou kunnen geven want je doet niet anders en het was voor jou, door mijn beperkingen, eerder een extra uitdaging om deze begeleiding ook op het gebied van de verzekeringsgeneeskunde vorm te geven.

Je streven naar begrijpelijkheid en je streven naar eenvoud die je tot de laatste letter van het proefschrift hebt volgehouden, bleken steeds tot verbeteringen te leiden.

Han Willems, promotor, je bent de aanstichter van het promotietraject en je bent erbij betrokken geweest vanaf het moment dat het traject een aanvang nam. Ook toen het traject een wat andere wending nam, was je bereid om er tijd in te blijven investeren. Je zakelijke en spitsvondige opmerkingen waren in de discussies vaak richtinggevend waarmee de voortgang van het promotietraject werd bevorderd.

Judith Sluiter, copromotor, altijd het overzicht houdend en motor achter de voortgang van het promotietraject. Je onuitputtelijke inzet, je creativiteit, je lef, en je kennis zijn van beslissende invloed geweest op het verloop en afronding van het promotietraject. Je hield altijd het geloof op een goede afloop en droeg dat op mij over of sprak mij hierop aan. Bij dit aanspreken gaf je mij altijd richting hoe het beter zou kunnen. Ook wist je, als ik het met alle kritiek die ik over mij heen kreeg even niet zag zitten, de kritiek in het juiste perspectief te plaatsen zodat ik weer verder kon.

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## Dankwoord

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Naast diegenen die direct zijn betrokken bij het tot stand komen van dit proefschrift en promotie zijn ook anderen belangrijk geweest. Een aantal van hen wil ik met name noemen.

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Roland Rombout, je bent bereid mijn paranimf te zijn en ik kon mijn gedachten altijd toetsen aan jouw scherpzinnigheid.

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Mijn speciale gedachte gaat uit naar mijn vader. Je uitte geregeld je trots dat ik het promotietraject was aangegaan. Je informeerde geregeld naar het tijdstip waarop

de studie zou zijn afgerond. Helaas kon je door je overlijden de afronding niet meer meemaken. Je betrokkenheid heeft een blijvende plaats in mijn hart.

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**The following parts of this thesis have been published:**

**Slebus FG**, Kuijjer PP, Willems JH, Sluiter JK, Frings-Dresen MH. Prognostic factors for work ability in sick-listed employees with chronic diseases. *Occup Environ Med* 2007;64:814-819.

**Slebus FG**, Sluiter JK, Kuijjer PP, Willems JH, Frings-Dresen MH. Work ability evaluation: a piece of cake or a hard nut to crack? *Disabil Rehabil* 2007;29:1295-300.

**Slebus FG**, Kuijjer PP, Willems JH, Frings-Dresen MH, Sluiter JK. Work ability in sick-listed patients with major depressive disorder. *Occup Med* 2008;58:475-479.

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**Slebus FG**, Kuijjer PP, Willems JH, Frings-Dresen MH, Sluiter JK. Judgement of work ability of depressed employees and the use of a checklist.

**Other publications:**

**Slebus FG**, Braakman R, Schipper J, van Dongen KJ, Westendorp-de Serière M. Non-corresponding radiological and surgical diagnoses in patients operated for sciatica. *Acta Neurochir* 1988;94:137-143.

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