

A Prospective Study of the Association Between the Readiness for Return to Work Scale and Future Work Participation in Norway

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Abstract *Aim* The aim of the study was to investigate the associations between the Norwegian version of the Readiness for return to work (RTW) scale and future work participation among persons in inpatient occupational rehabilitation. *Methods* A prospective cohort with one year follow up. The participants (n = 179) were persons with reduced work ability who participated in a one-week inpatient rehabilitation program. Four readiness for RTW factors were identified at baseline using explorative factor analysis: ‘RTW inability’ and ‘RTW uncertainty’ among persons not working, and ‘uncertain work maintenance’ and ‘proactive work maintenance’ among persons working. Work participation was measured as days without sickness benefits in the year following the rehabilitation program. The associations between work participation and readiness for RTW factors were analyzed in multivariate linear regression models controlling for gender, age, subjective health complaints, employment status and previous sickness benefit. *Results* High scores on the RTW inability

factor were associated with low future work participation among persons not working before the rehabilitation program. Among persons working before the program, the proactive work maintenance factor was associated with high future work participation. Neither the RTW uncertainty factor nor the uncertain work maintenance factor was associated with future work participation. *Conclusions* The associations between two readiness for RTW factors (RTW inability and proactive work maintenance) and future work participation indicate that these factors can be used as screening tools to tailor occupational rehabilitation programs.

Keywords Occupational rehabilitation · Return to work · Work participation · Sickness absence · Readiness for change · Measurement

Introduction

Working-age persons with health problems might have problems with work participation, leading to sickness absence, long-term or permanent disability benefits, or employment termination such as unemployment or early retirement [1]. Earlier studies have described a range of predictive factors for work participation in persons with work disability [1–4]. These factors are personal, health-related or related to their external context [5]. A study of factors associated with work participation in persons with reduced work ability may identify specific characteristics which can be targeted in rehabilitation programs to promote future work participation [6, 7].

The workers’ own perceptions on return to work (RTW) are among the factors that have been associated with RTW and future work participation after sickness absence [4, 8–

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10]. To address the motivational factors contributing to RTW and maintenance of work participation, the Readiness for RTW model was developed [11] on the basis of the Readiness for Change Model [12]. According to this model, a person progresses through stages of change, from the intention to not engage in RTW in the foreseeable future, to the intention and ability to return to work in a sustainable fashion. The Readiness for RTW scale was developed and validated in a Canadian cohort study [13]. In this study, it was concluded that the psychometric properties of the Readiness for RTW scale confirmed good internal consistency in the Canadian sample, and construct validity of the scale was supported. Prospective associations between the scale and work outcome were not investigated. The scale is divided into two subscales: one for persons not working to assess stages of readiness for RTW; the other part for persons working, but at risk of sickness absence relapse, to assess stages of readiness for work maintenance.

Earlier we have described psychometric properties of the Norwegian version of the Readiness for RTW scale in persons referred to an inpatient occupational rehabilitation program [14]. We identified two scale factors among persons not working; RTW inability and RTW uncertainty. Also, among persons working, we identified two scale factors; uncertain work maintenance and proactive work maintenance. The internal consistency and construct validity of the factors found were satisfactory, except that Cronbach's alpha was only 0.59 for the proactive work maintenance factor. However, the predictive validity of the scale should be studied by investigating the associations between the scale factors and future work participation, before considering the scale for clinical use. If the scale is significantly associated with future work participation, rehabilitation counselors can use individual scoring from the scale to discuss and tailor RTW plans and interventions together with their patients. To our knowledge, no published studies have investigated the prospective association between the Readiness for RTW scale and work participation. Personal, health and work related factors should be controlled for, because they have been associated with work participation in earlier studies and could be potential confounders [1–3, 15–18].

Aim and Hypotheses

The aim of the study was to investigate the associations between the factors in the Norwegian version of the Readiness for RTW scale and future work participation among persons participating in inpatient occupational rehabilitation.

For persons not working before the rehabilitation program we hypothesized that:

1. High scores on the RTW inability factor were associated with low work participation.
2. High scores on the RTW uncertainty factor were associated with low work participation.

For persons working before the rehabilitation program our hypotheses were that:

3. High scores on the proactive work maintenance factor were associated with high work participation.
4. High scores on the uncertain work maintenance factor were associated with low work participation.

Methods

Design and Participants

This was a prospective cohort study with one year follow up. The participants were persons with reduced work ability, who were enrolled in a 1-week inpatient occupational rehabilitation program from October 2008 to December 2009. Reduced work ability could be due to musculoskeletal disorders, mental or behavioral disorders, excessive fatigue, burnout syndrome or other disorders. They were in the age group 18–67 years, and most had been on sickness benefits for several months. The patients were either not working, defined as being entirely on sickness benefits, or were currently working with a history of earlier sickness absence and at risk of relapse. Adequate medical treatment and interventions at the workplace should have been carried out before admittance to the rehabilitation program. The patients were referred to the clinic by general practitioners, National Social Insurance offices and hospitals. The criteria for inclusion in the study were completion of the program and ability to understand and complete the questionnaires. Eight persons were not included (3.6 %), seven due to language difficulties or dyslexia, and one person that did not complete the program. More specific information about the sample has been presented in Braathen et al. [14]. A written informed consent was obtained from all eligible participants and the project was approved by The Medical Ethics Committee in Norway (ID 2010/1903b).

The aim of the program was to help the participants to improve their level of functioning and work ability. A physician, a physiotherapist, a work counselor and a sports pedagogue constituted the interdisciplinary team. A structured assessment and follow up was carried out for each participant by the team. The participants attended individual and group based counseling with a cognitive behavioral approach aiming to improve function and make goals and plans for future work participation. Consultations with the work place, the general practitioner and the social

insurance office were arranged when needed to secure adequate follow up regarding health and work after the program, and to discuss and make agreements on RTW options and plans. Educational sessions (involving topics such as awareness of relations between body reactions, emotions and mind, work-related and lifestyle issues) and introduction to various forms of exercise were given in groups. An individual report was sent to the general practitioner and the social insurance office after the program.

In Norway, a person is entitled to tax-paid sickness benefits if he/she is incapable of working due to disease, illness or injury. Sickness benefits are paid from the first day of absence for a period of 52 weeks. After the sickness absence period, work assessment allowance or disability pension can be granted.

Definitions and Data Collection

Data was collected by self-reported questionnaires at the first day of the rehabilitation program, patient journals and register data on sickness benefits one year before and one year after the program from the National Social Insurance database. The variables were defined and measured as follows:

Readiness for RTW was measured by the Norwegian version of the original Readiness for RTW scale [14]. The scale is a 22-item instrument with 13 items for persons not working (Scale A), and nine items for persons working part-time or full-time (Scale B). Each item is scored on a five point ordinal scale (1 = strongly disagree, 5 = strongly agree).

- In Scale A (Table 2) that assesses stages of readiness for RTW, we have earlier identified two factors: (1) The RTW inability factor includes items 1, 2, 4, 5 and 13. Persons scoring high on the inability to RTW factor are, in our interpretation, not considering start of activity or RTW-related behavior. (2) The RTW uncertainty factor includes items 10, 11 and 12. Persons scoring high on the RTW uncertainty factor are, in our interpretation, considering RTW, but they are uncertain about their possibilities in relation to health and their ability to return to work.
- In Scale B (Table 2) that assesses stages of readiness for work maintenance, we have also identified two factors: (1) Proactive work maintenance includes items 2, 4 and 9. In our interpretation, persons scoring high on this factor have found strategies to manage work and need less help to stay at work. (2) Uncertain work maintenance includes items 1, 3, 5, 6, 7. Persons scoring high on this factor have a high degree of uncertainty about their ability to continue working.

Personal and work factors measured in this study were: Gender, age (18–45 years or above 45 years), educational

level (12 years or less vs 13 years or more), diagnoses (ICD 10), employment status (employed vs. not employed) and type of work (manual vs. other work).

Subjective health complaints were assessed by the Subjective Health Complaints Inventory [19], a 29-item questionnaire measuring common health complaints over the last 30 days, rated on a 4-point scale. The total sum score were used in our analyses.

Previous sickness benefit was measured as the number of days on sickness benefits during the year before rehabilitation, adjusted for partial benefits. Relevant sickness benefits were sickness absence benefit, medical rehabilitation allowance, vocational rehabilitation allowance, work assessment allowance, temporary disability pension and partial disability pension.

Work participation was measured as the number of days without registered sickness benefits during the year after the rehabilitation program, adjusted for partial benefits.

Analysis

All data were checked and analyzed using the PASW statistics software (Released 2009, PASW Statistics for Windows, Version 18.0, SPSS Inc., Chicago). Probability values <0.05 (2- sided) were considered statistically significant. To test for associations with work participation, both bivariate (Spearman's rho correlation) and multivariate (linear regression) analyses were conducted. In the linear regression analyses, the dependent variable was work participation. The main independent variables were the factor scores computed from the explorative factor analyses of the Readiness for RTW scale in Braathen et al. [14]. The factor scores were computed using the regression method for estimating factor score coefficients. The scores that are produced have a mean of 0 and a variance equal to the squared multiple correlation between the estimated factor scores and the true factor values. The following variables were controlled for in the regression model: Age, gender, subjective health complaints and previous sickness benefit. In addition, it was controlled for if a person had an employment contract or not among persons not working shortly before the rehabilitation program. In the regression analyses, the variables were included stepwise: (1) readiness factor scores, (2) gender and age, (3) subjective health complaints, and (4) previous sickness benefit and employment contract. Since the dependent variable did not meet the assumptions of linearity, it was \lg_{10} transformed. The standardized residuals in the transformed regression model showed approximate normality when inspecting the p-plot in the analyses among persons not working before the rehabilitation program. Among persons working before the program, the standardized residuals were still not normally

distributed after transformation of the dependent variable. Thus, we also analyzed the data using logistic regression analyses; firstly by using 182 days of work participation, and secondly the median work participation in the samples as outcome measures. For both analyses we found similar results, and chose to present the linear regression analyses in this study. The statistical power of the study may not be sufficient to adjust for the potential confounders, and therefore we also conducted a regression analysis using a backward stepwise elimination of these confounders. These analyses also produced the same results.

Results

193 of 221 persons consented to participate in the study (87.3 %). We obtained data on registered sickness benefits from 192 of them. As seven persons did not answer the Readiness for RTW scale, and six persons answered the Readiness for RTW scale B—working while they reported to receive sickness benefit, they were excluded from the analyses. Thus, 179 persons were included in the analyses.

The Readiness for RTW Scale A—Not Working

Among persons who answered the Readiness for RTW scale A—not working (100 % sickness benefits, $n = 119$), the median work participation was 56 adjusted days (Table 1). 45.4 % had musculoskeletal disorders, including pain (ICD10: M16-M89, R51, R52.2, S13.4), 48.7 % had mental or behavioral disorders including fatigue and burnout (ICD-10: F06- F54, G93.3, R45.2, R45.8, R53, Z60, Z73) and 5.9 % had other disorders (ICD10: E10, H90.3, I70, J45.0, K51.9, T90.9, Z50.1). In bivariate analyses, scoring high on the RTW inability factor was moderately associated with low work participation ($p < 0.01$) (Table 2). In addition, low work participation was moderately associated with high scores on subjective health complaints ($p < 0.01$), weakly associated with unemployment ($p < 0.05$) and strongly associated with many sickness benefit days the year before rehabilitation ($p < 0.01$). Of the singular items in Readiness for RTW scale A, number 1, 2, 4 and 5 were weakly to moderately associated with work participation (Table 2).

The linear regression analysis showed that the RTW inability factor was significantly associated with low work participation (Table 3). Due to the inclusion of previous sickness benefit, which was strongly associated with the outcome, the association between the RTW inability factor and work participation was weaker in the adjusted model ($p < 0.01$ vs. $p = 0.02$). The RTW uncertainty factor was not associated with work participation ($p = 0.72$).

Table 1 Descriptive statistics of work participation during the year after rehabilitation among the participants according to gender, age, employment, type of work, education, subjective health complaints and number of days on sickness benefits the year before the program

Characteristics of participants		Work participation of persons not working—Scale A: median number of adjusted days (n)	Work participation of persons working—Scale B: median number of adjusted days (n)
Whole sample		56.0 (n = 119)	182.3 (n = 60)
Gender	Women	55.0 (n = 74)	182.0 (n = 35)
	Men	94.0 (n = 45)	182.5 (n = 25)
Age	45 years or less	57.0 (n = 61)	159.7 (n = 30)
	>45	37.2 (n = 58)	198.8 (n = 30)
Employment contract	Yes	90.0 (n = 77)	182.3 (n = 60)
	No	0.0 (n = 42)	
Type of work	Manual	32.5 (n = 41)	226.0 (n = 17)
	Other	56.8 (n = 77)	147.0 (n = 43)
Education	12 years or less	29.5 (n = 74)	128.5 (n = 35)
	More than 12 years	95.0 (n = 45)	255.8 (n = 22)
Subjective health complaints	Median or less	131.0 (n = 60)*	182.3 (n = 30)
	Above median	2.0 (n = 59)*	147.5 (n = 30)
Days on sickness benefits before the program	Median days or less	161.0 (n = 59)*	304.8 (n = 30)*
	Above median	0.0 (n = 60)*	87.0 (n = 30)*

* Significant difference between groups ($p < 0.05$, independent samples Mann–Whitney U test)

The Readiness for RTW Scale B—Working

Among persons who answered the Readiness for RTW scale B—working (full time or part-time combined with partial sickness benefits, $n = 60$), the median work participation were 182 adjusted days (Table 1). 60 % had musculoskeletal disorders including pain (ICD10: G44.2, M22.2-M79.8, R51, S13.4), 28.3 % had mental or behavioral disorders including fatigue and burnout (ICD10: F32-F48, R53, T73.3, Z73.6) and 11.7 % had other disorders (ICD10: A09, E05.9, E32.9, H44, H93.1, I69.1, L50.8). In the bivariate analyses, having many days on sickness benefits the year before rehabilitation was strongly associated with low work participation ($p < 0.01$) (Table 2). Of the singular items in scale B, number 4 and 5 were weakly associated with high work participation (Table 2).

The linear regression analysis showed that the readiness factor proactive work maintenance was significantly associated with high work participation in the adjusted model ($p = 0.03$) (Table 4). The uncertain work maintenance factor was not associated with work participation ($p = 0.83$).

Discussion

Among persons not working, the RTW inability factor was significantly associated with low work participation, whereas the RTW uncertainty factor was not. Among

persons working, the proactive work maintenance factor was significantly associated with high work participation in the adjusted model. The uncertain work maintenance factor was not associated with work participation. Previous sickness benefit was a strong predictor of low work participation in both samples.

Persons who scored high on the RTW inability factor meant that they were unable to work, and they were not considering to start any activity or change behavior to support their return to work. As hypothesized they had low work participation in the follow-up year. This association supports hypothesis I, and indicates that scale A can be used as part of a screening tool for persons on sickness

Table 2 Bivariate correlations (spearman’s rho correlation coefficients) between work participation and readiness factors, readiness items, gender, age, subjective health complaints, employment and

days on sickness benefits before the program, in persons answering the Readiness for RTW scale (Persons not working answering Scale A, $n = 119$, and persons working answering Scale B, $n = 60$)

Readiness for RTW scale and control variables	Work participation	
	Not working sample	Working sample
<i>Items Readiness for RTW scale A—not working</i>		
RTW inability factor (item 1, 2, 4 ^a , 5 ^a , 13)	-0.34**	
1: You don’t think you will ever be able to go back to work	-0.38**	
2: As far as you’re concerned, there is no point in thinking about returning to work	-0.30**	
4: Physically, you are starting to feel ready to go back to work ^a	-0.24**	
5: You have been increasing your activities at home in order to build up your strength to go back to work ^a	-0.21*	
13: As far as you are concerned, you don’t need to go back to work ever	-0.12	
RTW uncertainty factor (item 10 ^a , 11, 12)	0.04	
10: You have a date for your first day back at work ^a	-0.14	
11: You wish you had more ideas about how to get back to work	0.09	
12: You would like to have some advice about how to go back to work	0.14	
<i>Items Readiness for RTW scale B—working</i>		
Proactive work maintenance factor (2, 4, 9 ^a)		0.21
2: You have learnt different ways to cope with your pain so that you can stay at work		0.20
4: You have found strategies to make your work manageable so you can stay at work		0.28*
9: You feel you may need help in order to stay at work ^a		-0.15
Uncertain work maintenance factor (item 1, 3, 5, 6, 7)		0.01
1: You are doing everything you can to stay at work		0.20
3: You are taking steps to prevent having to go off work again due to your injury		-0.06
5: You are back at work but not sure you can keep up the effort		-0.27*
6: You worry about having to stop working again due to your injury		-0.13
7: You still find yourself struggling to stay at work due to the effects of your injury		0.12
<i>Control variables</i>		
Gender	-0.08	-0.06
Age	-0.12	0.04
Subjective health complaints	-0.30**	-0.01
Employment contract	-0.18*	
Days on sickness benefits before the program	-0.57**	-0.53**

* $p < 0.05$ ** $p < 0.01$

^a item reversed

Table 3 Stepwise linear regression analysis of persons answering the Readiness for RTW Scale A—not working (n = 119)

	B	p value	Exp (B)	95 % CI for Exp (B)
<i>Crude model</i>				
The RTW inability factor	-0.45	<0.01	-0.40	-0.64 to -0.26
The RTW uncertainty factor	0.08	0.49	0.07	-0.14 to 0.29
<i>Adjusted model</i>				
The RTW inability factor	-0.24	0.02	-0.21	-0.43 to -0.05
The RTW uncertainty factor	0.03	0.72	0.03	-0.14 to 0.21

The RTW inability factor and the RTW uncertainty factor were the main independent variables, and the dependent variable work participation was lg10 transformed. Crude and adjusted models are presented

Control variables in the adjusted model: gender, age, subjective health complaints, employment contract and days on sickness benefits before the program. The adjusted models explained 62.4 % (RTW inability factor) and 59.8 % (RTW uncertainty factor) of the variance

$p < 0.05$ in bold

Table 4 Stepwise linear regression analyses of persons answering the Readiness for RTW Scale B—working (n = 60)

	B	p value	Exp (B)	95 % CI for Exp (B)
<i>Crude model</i>				
The proactive work maintenance factor	0.18	0.14	0.19	-0.06 to 0.43
The uncertain work maintenance factor	-0.01	0.91	-0.01	-0.25 to 0.22
<i>Adjusted model</i>				
The proactive work maintenance factor	0.24	0.03	0.25	0.03 to 0.46
The uncertain work maintenance factor	0.02	0.83	0.03	-0.20 to 0.24

The proactive work maintenance factor and the uncertain work maintenance factor were the main independent variables, and the dependent variable work participation was lg10 transformed. Crude and adjusted models are presented

Control variables in the adjusted model: gender, age, subjective health complaints and days on sickness benefits before the program. The adjusted models explained 58.9 % (Proactive work maintenance factor) and 53.6 % (Uncertain work maintenance factor) of the variance

$p < 0.05$ in bold

benefits who are eligible for occupational interventions, to improve tailoring of the individual interventions. It seems necessary that persons with high RTW inability scores receive interventions that improve their work ability or change their perceptions towards resuming work. The

association between negative RTW perception and actual RTW has been corroborated in other studies [8, 9, 20–22].

The RTW uncertainty factor was not associated with low future work participation; hence hypothesis II was not supported. Several mechanisms might explain this lack of association between the RTW uncertainty factor and future work participation. For some persons in our sample, high RTW uncertainty could be a result of an unsettled and unclear health situation. During the rehabilitation program, however, their health problems may have been clarified and managed appropriately, and they were able to return to work. Other persons might have experienced high uncertainty of RTW because they perceived their work threatening to their health. They, therefore, were considering a work change, and needed more time to find a solution. Recent research has found strong associations between how persons perceive their illness and their expectations for return to work [23]. Stewart et al. [24] showed that RTW uncertainty plays a key role in workers' formation of RTW perceptions, and that uncertainty is influenced by different biopsychosocial dimensions, including contextual factors. Thus, factors at the workplace, in the family, or in the labor market are important in the formation of RTW uncertainty. Uncertain RTW perceptions have earlier been associated with longer time to RTW than positive RTW perceptions, but less than with negative RTW perceptions in injured workers [25]. The missing negative association between RTW uncertainty and work participation may be the result of successful interventions during or after the rehabilitation program, directed towards the reasons behind the perceived uncertainty, moderating the readiness factors impact on future work participation. It is, however, also possible that the lack of association is a result of the vulnerability of the RTW uncertainty factor, since it includes only three items.

Among persons working before the program, high scores on the proactive work maintenance factor were associated with high work participation in the adjusted model, supporting hypothesis III. This factor may be used to screen the need for interventions in persons that have returned to work, but at risk of sickness absence relapse. The factor can also be an indicator of how persons manage their work situation and of RTW sustainability. RTW sustainability has shown to be important, as the RTW process after long-term sickness absence often is complex and time-consuming, with multiple transitions between work and sickness benefits [26]. It is likely that proactive employees in general will perform better than others with respect to avoiding sickness absence since they need less help and counseling to stay at work.

The hypothesis that high scores on the uncertain work maintenance factor were associated with low work participation was not supported. Thus, our results do not fully support the operationalization of the stages of change in Franche et al. [13]. We found that stages indicating

uncertainty are not associated with work participation, while more clear-cut stages, like RTW inability and proactive work maintenance, were significantly associated with work participation. Other studies do not consistently support the presence of the original five stages in the Readiness for Change model [12], neither in RTW behavior nor in other categories of behavior [11, 13, 27]. The model has also been criticized for poorly addressing the impact of social determinants on behavior change, which in a RTW process is of great importance [11]. A person's readiness for RTW must be conceptualized as the result of his or her interactions with the systems involved in RTW; the workplace/labor market, the health care, the insurance system and the family. The majority of the persons working shortly before the program were working part-time in combination with a sickness benefit. This challenges the Readiness for RTW model, because of its clear distinction between working and not working. Future research needs to further investigate the operationalization of stages before practical use.

Implications

The results indicate that information from two of the factors in the Readiness for RTW scale can support the rehabilitation counselors' selection of individually tailored RTW interventions. It may be used as a screening tool in rehabilitation practice to guide further assessment, goal setting and RTW decision-making. High RTW inability scores might be used by rehabilitation counselors to discuss barriers for RTW with the patients and other stakeholders (e.g. the employer and the social insurance office) and to discuss alternative management strategies. More emphasis may initially be needed on actions that improve health, functioning and fear-avoidance behavior. Rehabilitation counselors may also raise the consciousness of consequences of not working, and provide information about benefits of working among these patients. In such situations, the counselor could also support adequate management strategies, to provide reassurance and to assist increased self-efficacy of the patients. Those with low RTW inability scores may be more ready to return to work, and may need more emphasis on actions at the work place, such as work accommodation.

The proactive work maintenance factor is an indicator of how persons manage their work situation and of RTW sustainability. Low scores on this factor could be used by rehabilitation counselors to initiate further assessment of factors that influence their perception of work maintenance, and tailor interventions that prevent relapse into sickness benefits. Such interventions could for example be communication with the employer to provide supervisor or coworker support, or to modify work demands. The Readiness for RTW scale might be used together with other instruments to support the

assessment and intervention of rehabilitation counselors and others involved in the RTW process, in a similar way as in the risk factor-based intervention strategy model suggested by Steenstra et al. [28]. However, before implementing tailored interventions a number of steps still have to be undertaken. The Readiness for RTW scale needs to be further explored within the context of RTW intervention research.

Methodological Considerations

The study investigated readiness for RTW among persons with reduced work ability in occupational rehabilitation. The strengths of the study were the high participation rate and nearly complete data sets. The register data on sickness benefits gave us reliable and accurate information on work participation. In this sample, misclassification of work participation is unlikely in persons who were not working and not receiving sickness benefits (e.g. provided income by their spouse or other benefits). Data on gender, age, subjective health complaints, employment status and days on sickness benefits before the program gave us the possibility to control for these variables in the regression analyses. We also checked for possible interaction effects between the variables in the regression models, including possible interactions between the readiness factors, without finding interactions influencing the results. However, a small sample may have limited the ability to show group differences as hypothesized in the analysis. Possible variables influencing work participation were not included in the analyses. Inclusion of high manual workload and education was considered since these factors are known to influence work participation [3]. However, these variables were not significantly associated with work participation and were removed from the regression models to prevent overestimation. Nevertheless, it is likely that the association between the scale factors and work participation are different for persons with high and low education.

The participants were a narrowly selected sample of persons participating in a five-days inpatient occupational rehabilitation program. The sample differed from the sample in the study that developed and validated the original Readiness for RTW scale, with respect to setting, social security system and patient group [13]. Our sample included persons with different health problems, time off work was longer and combinations of work and sickness benefits were more common. Further studies are warranted to improve relevance of the readiness for RTW items with regard to culture, social security system and patient setting.

Conclusion

The RTW inability factor was associated with low work participation among persons not working, and the proactive

work maintenance factor was associated with high work participation among persons working. It seems appropriate to use these factors as screening tools in tailoring occupational rehabilitation programs.

References

- Lagerveld SE, Bultmann U, Franche RL, van Dijk FJ, Vlasveld MC, van der Feltz-Cornelis CM, et al. Factors associated with work participation and work functioning in depressed workers: a systematic review. *J Occup Rehabil*. 2010;20(3):275–92.
- Cornelius LR, van der Klink JJ, Groothoff JW, Brouwer S. Prognostic factors of long term disability due to mental disorders: a systematic review. *J Occup Rehabil*. 2011;21(2):259–74.
- Detaille SI, Heerkens YF, Engels JA, van der Gulden JW, van Dijk FJ. Common prognostic factors of work disability among employees with a chronic somatic disease: a systematic review of cohort studies. *Scand J Work Environ Health*. 2009;35(4):261–81.
- Iles RA, Davidson M, Taylor NF. Psychosocial predictors of failure to return to work in non-chronic non-specific low back pain: a systematic review. *Occup Environ Med*. 2008;65(8):507–17.
- World Health Organization. International classification of functioning, disability and health. Switzerland: ICF; 2001.
- Marois E, Durand MJ. Does participation in interdisciplinary work rehabilitation programme influence return to work obstacles and predictive factors? *Disabil Rehabil*. 2009;31(12):994–1007.
- Lydell M, Grahn B, Mansson J, Baigi A, Marklund B. Predictive factors of sustained return to work for persons with musculoskeletal disorders who participated in rehabilitation. *Work*. 2009;33(3):317–28.
- Reiso H, Nygard JF, Brage S, Gulbrandsen P, Tellnes G. Work ability and duration of certified sickness absence. *Scand J Public Health*. 2001;29(3):218–25.
- Reiso H, Nygard JF, Jorgensen GS, Holanger R, Soldal D, Brusgaard D. Back to work: predictors of return to work among patients with back disorders certified as sick: a two-year follow-up study. *Spine*. 2003;28(13):1468–73.
- Schultz IZ, Crook J, Meloche GR, Berkowitz J, Milner R, Zuberbier OA, et al. Psychosocial factors predictive of occupational low back disability: towards development of a return-to-work model. *Pain*. 2004;107(1–2):77–85.
- Franché RL, Krause N. Readiness for return to work following injury or illness: conceptualizing the interpersonal impact of health care, workplace, and insurance factors. *J Occup Rehabil*. 2002;12(4):233–56.
- Prochaska JO, DiClemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. *Am Psychol*. 1992;47(9):1102–14.
- Franché RL, Corbiere M, Lee H, Breslin FC, Hepburn CG. The readiness for return-to-work (RRTW) scale: development and validation of a self-report staging scale in lost-time claimants with musculoskeletal disorders. *J Occup Rehabil*. 2007;17(3):450–72.
- Braathén TN, Brage S, Tellnes G, Eftedal M. Psychometric properties of the readiness for return to work scale in inpatient occupational rehabilitation in Norway. *J Occup Rehabil*. 2013;23(3):371–80.
- Nieuwenhuijsen K, Verbeek JH, de Boer AG, Blonk RW, van Dijk FJ. Predicting the duration of sickness absence for patients with common mental disorders in occupational health care. *Scand J Work Environ Health*. 2006;32(1):67–74.
- Roelen CA, Koopmans PC, Groothoff JW. Subjective health complaints in relation to sickness absence. *Work*. 2010;37(1):15–21.
- Audhoe SS, Hoving JL, Nieuwenhuijsen K, Friperon R, de Jong PR, Sluiter JK, et al. Prognostic factors for the work participation of sick-listed unemployed and temporary agency workers with psychological problems. *J Occup Rehabil*. 2012;22(4):437–46.
- Stover M, Pape K, Johnsen R, Fleten N, Sund ER, Claussen B, et al. Unemployment and disability pension—an 18-year follow-up study of a 40-year-old population in a Norwegian county. *BMC Public Health*. 2012;12:148.
- Eriksen HR, Ihlebaek C, Ursin H. A scoring system for subjective health complaints (SHC). *Scand J Public Health*. 1999;27(1):63–72.
- Nieuwenhuijsen K, Noordik E, van Dijk FJ, van der Klink JJ. Return to work perceptions and actual return to work in workers with common mental disorders. *J Occup Rehabil*. 2013; 23(2):290–9.
- Shaw WS, Reme SE, Linton SJ, Huang YH, Pransky G. 3rd place, PREMUS best paper competition: development of the return-to-work self-efficacy (RTWSE-19) questionnaire—psychometric properties and predictive validity. *Scand J Work Environ Health*. 2011;37(2):109–19.
- Li-Tsang CW, Chan HH, Lam CS, Lo-Hui KY, Chan CC. Psychosocial aspects of injured workers' returning to work (RTW) in Hong Kong. *J Occup Rehabil*. 2007;17(2):279–88.
- Lovvik C, Overland S, Hysing M, Broadbent E, Reme SE. Association between illness perceptions and return-to-work expectations in workers with common mental health symptoms. *J Occup Rehabil*. 2013. doi:10.1007/s10926-013-9439-8.
- Stewart AM, Polak E, Young R, Schultz IZ. Injured workers' construction of expectations of return to work with sub-acute back pain: the role of perceived uncertainty. *J Occup Rehabil*. 2012;22(1):1–14.
- Cole DC, Mondloch MV, Hogg-Johnson S. Listening to injured workers: how recovery expectations predict outcomes—a prospective study. *CMAJ*. 2002;166(6):749–54.
- Oyeflaten I, Lie SA, Ihlebaek CM, Eriksen HR. Multiple transitions in sick leave, disability benefits, and return to work—a 4-year follow-up of patients participating in a work-related rehabilitation program. *BMC Public Health*. 2012;12:748.
- Kerns RD, Rosenberg R, Jamison RN, Caudill MA, Haythornthwaite J. Readiness to adopt a self-management approach to chronic pain: the Pain Stages of Change Questionnaire (PSOCQ). *Pain*. 1997;72(1–2):227–34.
- Steenstra IA, Ibrahim SA, Franche RL, Hogg-Johnson S, Shaw WS, Pransky GS. Validation of a risk factor-based intervention strategy model using data from the readiness for return to work cohort study. *J Occup Rehabil*. 2010;20(3):394–405.