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## Job-related self-efficacy in musculoskeletal disorders – a questionnaire

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### ORIGINAL ARTICLE

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## BACKGROUND

The Return-To-Work Self-Efficacy Scale questionnaire maps self-efficacy upon return to work following acute lower back pain. We wished to translate and validate the questionnaire, as well as to assess the concordance between the translated form and two other forms.

## MATERIAL AND METHOD

The questionnaire was translated into Norwegian according to recommended guidelines. Employees in the health and care service with musculoskeletal symptoms were recruited for the study. Cross-cultural validity was assessed by principal component analysis and internal consistency by Cronbach's alpha. Conceptual validity was assessed by correlation between the translated form and simultaneous measurements from two questionnaires that focus on closely related characteristics: the Tampa scale for kinesiophobia and the Demand-Control-Support model.

## RESULTS

The Norwegian questionnaire is called 'Job-related self-efficacy'. Of a sample of 229 persons, 206 (89.9 %) were included in the analyses. Principal component analysis supported cross-cultural validity through findings of a three-factor structure in accordance with the original questionnaire. Internal consistency was high for all questions in the questionnaire (0.95), as well as for each of the three factors: meet job requirements (0.99), communicate needs to others (0.97) and adapt work duties (0.96), after adjusting for the number of questions. There were low correlations (< 0.40) between Job-Related Self-Efficacy and the Tampa scale for kinesiophobia, and the various factors in the Demand-Control-Support questionnaire, respectively.

## INTERPRETATION

The 'Job-Related Self-Efficacy' questionnaire has satisfactory cross-cultural validity after it was translated, and satisfactory internal consistency.

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### Main findings

The Return-To-Work Self-Efficacy Scale questionnaire measures confidence in the ability to return to work. After translation, the questionnaire had satisfactory cross-cultural validity and internal consistency.

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In Norway, musculoskeletal disorders are the single largest cause of sickness absence or exclusion from the labour market (1, 2). For some, these afflictions cause long-term sickness absence and disability (2, 3). Longer absences reduce the likelihood of returning to work (4).

Self-efficacy is a key theoretical concept described by Bandura, which refers to being confident of possessing what is needed to cope with tasks and achieve goals (5). The concept is used in a number of contexts, including to predict sickness absence, chronic pain or adaptation to various diseases (6). It has been found that patients who have low expectations for recovery tend to return to work less frequently than patients who have higher expectations (7, 8). People with little self-efficacy and low expectations for their ability to function in a job situation may need more support to cope with their work.

We have no good Norwegian instruments to measure self-efficacy for returning to work. The Tampa scale for kinesiophobia (9) and the Demand-Control-Support questionnaire (10) identify phenomena that may have a bearing on return to work, but they do not focus on self-efficacy in particular. The Return-To-Work Self-Efficacy Scale (11) was developed in the United States to identify self-efficacy for returning to work after acute lower-back pain. The original form was used in occupational health clinics in the United States. In these clinics, workers with acute lower-back pain were examined and followed up by a doctor, and the form was completed in the context of the medical examination. The form has later been used in a number of studies to investigate job-related self-efficacy in patients with both acute and chronic pain. It has been translated into Danish, Swedish and Chinese (12, 13). We wished to translate and adapt the form to identify patients' belief in their ability to cope with job tasks and function in their jobs with musculoskeletal disorders. It is completed by the patient, and can be a useful tool for healthcare personnel and others who will assess individual, work-related measures jointly with the patient.

The objective of this study was to translate the questionnaire into Norwegian, investigate its cross-cultural validity and internal consistency, and assess concordance in conceptual validity between the translated form and two other existing forms. We had the following hypotheses:

- The translated version includes the same underlying factors as The Return-To-Work Self-Efficacy Scale: meet job requirements, adapt job tasks and communicate needs to others
- The translated version has high internal consistency, overall and for each underlying factor
- The translated version shows a weak positive correlation with two other questionnaires that measure similar, but somewhat different aspects that have a bearing on return to work (kinesiophobia in musculoskeletal pain, and demand, control and support in the workplace).

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## Material and method

The data material was taken from a study undertaken among healthcare workers with musculoskeletal disorders (14). The project group provided information about the project through leaflets in the workplace and in meetings with managers. Workers who were on sick leave or had reported symptoms to their superiors were invited to participate. Those who made contact were given an appointment for a clinical examination and completed the questionnaire before the examination. Persons who could speak Norwegian and were not on sick leave or whose sick leave was valid for less than three months could participate.

The sample size in the study is based on the recommendation that validation studies should include more than 100 participants (15). We included forms that were completed before a set date. Completion of less than 80 % of the questions in each of the three forms resulted in exclusion. The participants also answered questions about gender, age, sickness absence, smoking habits and exercise, and indicated the location of the pain on a body diagram.

### Translation

The Return-To-Work Self-Efficacy Scale measures confidence in the ability to overcome barriers to returning to work and resuming normal job activities after a bout of acute back pain. The questionnaire consists of 19 questions/statements that are answered on a scale from 1 (not at all confident) to 10 (totally confident). Total scores range from 19 to 190, where a high score represents a high degree of confidence in the ability to cope with the job.

The translation into Norwegian was made according to recommended guidelines (16). Three native speakers of Norwegian translated independently of each other: one psychologist who had participated in the development of the original instrument in the United States (SER), a translator with no medical background and a physiotherapist trained in the UK and Australia (KVF). The process was coordinated by a physiotherapist (TM). Once agreement on the Norwegian version had been reached, the questionnaire was back-translated into English by two native speakers of English, neither of whom with any medical background. The Norwegian-language translators and the coordinator reviewed the back-translated version and made some minor adjustments to the questionnaire to determine what would be the best possible terms adapted to Norwegian culture. The Norwegian version was given the title 'Jobb-relatert mestringstro' (appendix).

### Validation

Two questionnaires were used to assess the conceptual validity of Job-Related Self-Efficacy: the Tampa scale for kinesiophobia and Demand-Control-Support. The former is based on a model of avoidance behaviour, fear of work-related activity and fear of movement and (re)injury. It contains 13 questions (9), with total scores in the range 13–52, where a high score indicates a stronger fear of movement and (re)injury. The Demand-Control-Support questionnaire (10) is based on a frequently used stress model that elucidates the association between job characteristics and well-being, health and job performance (17). The questionnaire consists of 17 questions/statements that cover three factors: psychological demands, decision-making control and social support in the workplace. Scores are totalled for each factor.

Cross-cultural validity was assessed by comparing the scores in the original questionnaire with those in the translated version. The original form was completed by persons with acute lower-back pain in various occupations in the United States, and no sick note was required for inclusion (11). Internal consistency was assessed by analysing the correlation between the questions. To be able to compare internal consistency throughout the questionnaire (19 questions) with each of the three factors, Spearman-Brown's prediction formula (18), p. 88) was used to adjust for the unequal number of questions in the three factors. Conceptual validity was assessed by examining the correlation between Job-Related Self-Efficacy, the Tampa scale for kinesiophobia and Demand-Control-Support. A high correlation between the questionnaires would indicate a high degree of conceptual overlap, while a low correlation would support the discriminating conceptual validity of the scale. The selected questionnaires include phenomena that are related to some extent, and we expected to find a significant, but low correlation ((19).

### Analysis

The statistical analysis was undertaken with the aid of IBM SPSS Statistics, version 21, and Microsoft Office Excel 2007. Gender, age, sickness status, lifestyle, exercise and musculoskeletal symptoms were analysed using descriptive statistics and categorised as shown in Table 1. Cross-cultural validity was analysed with the aid of exploratory factor analysis (principal component analysis with Varimax rotation). Internal consistency for each of the three factors and for all 19 questions combined was estimated by using Cronbach's alpha, adjusted for the unequal number of questions with the aid of Spearman-Brown's prediction formula to make the groups comparable. Conceptual validity was measured by Pearson's correlation coefficient. The statistical significance level was set at  $p \leq 0.05$ .

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#### Table 1

Demographic overview of those included (N = 206 employees in the health and care services) in the study, which aimed to validate the Norwegian translation of The Return-To-Work Self-Efficacy Scale questionnaire

Variable	Included N (%)
Gender	
Woman	190 (92.2)
Man	16 (7.8)
Age	
21–30	25 (12.1)
31–45	62 (30.1)
46–67	119 (57.8)
Sick leave	
Not on sick leave	135 (65.5)
On full sick leave	33 (16.0)
On partial sick leave	37 (18.0)
Missing	1 (0.5)
Smoking	
Daily smoker	45 (21.8)
Occasional smoker	20 (9.7)
Non-smoker	137 (66.5)
Missing	4 (1.9)
Exercise (≥ 20 min, sweaty/short of breath)	
Never	6 (2.9)
Less than once per week	31 (15.0)
1–2 times per week	85 (41.3)
3–4 times per week	64 (31.1)
5 times or more per week	20 (9.7)
Musculoskeletal disorders	
Lower-back pain	85 (41.3)
Extensive muscular pain	45 (21.8)
Neck pain	33 (16.0)
Shoulder pain	26 (12.6)
Other	16 (7.8)
Missing	1 (0.5)

## Ethics

The study was approved by the Regional Committee for Medical and Health Research Ethics and complies with the ethical guidelines in the Helsinki Declaration.

## Results

Altogether 229 persons completed the questionnaire. Of these, 23 were excluded because they had answered less than 80 % of the questions. Of 206 (90 %) included persons, 190 answered all questions in the Job-Related Self-Efficacy questionnaire, and 184 answered all questions in the other two forms. The average age of the 206 included persons was 46 years (range 21–67) and 190 (92 %) were women. 85 (41 %) of the participants reported lower-back pain as a main problem (Table 1).

### Cross-cultural validity

Exploratory factor analysis identified three factors with an explained variance ranging from 18.2 % to 31.6 % in the Norwegian version, with a total of 72 % explained variance (Table 2). In comparison, the explained variance in the three factors in the original American version ranged from 17 % to 33 %, with a total of 73 % explained variance. Table 2 also shows factor load as an expression of the association between each of the variables and the underlying factor.

**Table 2**

Average scores on questions 1–19 in the Job-Related Self-Efficacy questionnaire (N = 206) and the American questionnaire The Return-To-Work Self-Efficacy Scale (11) (N = 399), with factor loads from principal component analysis. Rotated component matrix with Varimax rotation. Factor loads < 0.4 are not shown.

Questions	Norway	Factor load Norway (translated version)			USA	Factor load USA (original version)		
	Average (SD)	Meet job requirements	Communicate needs	Adapt job activities	Average (SD)	Meet job requirements	Communicate needs	Adapt job activities
2. Fulfil all of your duties and responsibilities.	6.61 (2.92)	0.85			6.16 (3.52)	0.88		
5. Meet expectations for job performance.	6.51 (2.66)	0.77			6.11 (3.41)	0.90		
6. Perform most of your daily activities at work.	6.89 (2.85)	0.90			6.03 (3.47)	0.87		
9. Keep up with the pace at work.	6.22 (2.78)	0.79			5.83 (3.44)	0.86		
13. Meet your production requirements.	6.50 (2.70)	0.86			5.84 (3.42)	0.88		
15. Do everything you're trained to do.	6.57 (3.03)	0.86			6.34 (3.45)	0.88		
18. Do your work without slowing others down.	6.44 (2.96)	0.82			6.26 (3.46)	0.85		
1. Suggest to your supervisor ways to change your work to reduce discomfort.	6.53 (3.04)		0.67		6.03 (3.07)		0.47	0.60
4. Explain any physical limitations you may have to your co-workers.	6.53 (2.82)		0.72		6.61 (3.19)		0.63	
8. Get co-workers to help you with activities that might cause discomfort.	6.59 (2.74)		0.54		6.55 (3.22)		0.54	0.42
11. Get emotional support from co-workers.	7.25 (2.45)		0.71		6.14 (3.23)		0.66	
16. Describe to your supervisor the nature of your injury and your medical treatment.	7.73 (2.57)		0.80		8.28 (2.37)		0.79	
17. Discuss openly with your supervisor things that may contribute to your discomfort.	8.03 (2.34)		0.83		7.50 (2.80)		0.82	

Questions	Norway	Factor load Norway (translated version)			USA	Factor load USA (original version)		
How confident are you that you could ...	Average (SD)	Meet job requirements	Communicate needs	Adapt job activities	Average (SD)	Meet job requirements	Communicate needs	Adapt job activities
3. Change the type of work activities you do to reduce discomfort.	6.04 (2.72)	0.48	0.45	0.56	5.13 (3.16)			0.73
7. Avoid re-injury.	4.32 (2.60)			0.71	5.83 (3.33)	0.48		0.59
10. Modify the way you work to reduce discomfort.	6.26 (2.51)	0.48		0.62	5.82 (3.11)	0.51		0.67
12. Avoid activities that are likely to increase pain.	5.69 (2.68)			0.73	5.72 (3.25)			0.74
14. Reduce your physical workload.	5.41 (2.73)			0.72	4.88 (3.04)			0.75
19. Request changes in your workstation or work area to reduce discomfort.	5.99 (3.16)		0.52	0.58	5.50 (3.37)		0.42	0.60
<b>Explained variance</b>		<b>31.6 %</b>	<b>22.2 %</b>	<b>18.2 %</b>		<b>33.0 %</b>	<b>17.0 %</b>	<b>23.0 %</b>
<b>Total explained variance</b>			<b>72.0 %</b>				<b>73.0 %</b>	

### Internal consistency

Cronbach's alpha was 0.95 for all 19 questions in total, 0.96 for factor 1 (7 questions), 0.90 for factor 2 (6 questions) and 0.88 for factor 3 (6 questions). After adjustment for the unequal number of questions, Cronbach's alpha was 0.99 for factor 1, 0.97 for factor 2 and 0.96 for factor 3.

### Conceptual validity

Job-Related Self-Efficacy had a low correlation with the Tampa scale for kinesiophobia and Demand-Control-Support. Job-Related Self-Efficacy correlated negatively ( $r = -0.29$ ,  $p < 0.01$ ) with the Tampa scale for kinesiophobia. There was a negative correlation ( $r = -0.33$ ,  $p < 0.01$ ) between Job-Related Self-Efficacy and demands in the Demand-Control-Support questionnaire, while there was positive correlation between Job-Related Self-Efficacy and social support ( $r = 0.32$ ,  $p < 0.01$ ) and control ( $r = 0.39$ ,  $p < 0.01$ ). We found the strongest correlation between Job-Related Self-Efficacy and control ( $r = 0.39$ ,  $p < 0.01$ ) and the weakest correlation between Job-Related Self-Efficacy and the Tampa scale for kinesiophobia ( $r = -0.29$ ,  $p < 0.01$ ).

## Discussion

The purpose of the Job-Related Self-Efficacy questionnaire is to measure confidence in coping with job activities and functioning at work with musculoskeletal disorders.

An investigation of cross-cultural validity requires data from comparable populations. In our study, the sample consisted mainly of women in the health and care sector, while the American sample included representation of both genders and various occupations (11). The large concurrence in results, despite the fact that the questionnaire was used in samples drawn from different occupations and cultures, indicates that the questionnaire is robust. The cross-cultural validation shows that the translated questionnaire contains the same underlying three factors as the original questionnaire.

Internal consistency was high, both for the total score and for each factor. Cronbach's alpha was high for all questions in total in Job-Related Self-Efficacy and even higher for questions in the three factors *meet job requirements*, *communicate needs to co-workers and superiors* and *adapt job activities* after correction for the number of questions. This concurs with what Shaw and co-authors found in the original questionnaire (11).

While Job-Related Self-Efficacy measures confidence in returning to work, the Tampa scale for kinesiophobia measures fear of movement and pain/exacerbation. The questionnaires have different theoretical bases. Low self-efficacy and fear of pain related to musculoskeletal disorders may both preclude a person from working (8). We may assume that self-efficacy and kinesiophobia are related concepts and that the answers to the two questionnaires will co-vary to some extent. This is confirmed both in the American study (11) and our finding of a low correlation between Job-Related Self-Efficacy and the Tampa scale for kinesiophobia.

A number of studies have shown that self-efficacy is more important than kinesiophobia for explaining impairment as a result of pain (20–22). Identification of self-efficacy may therefore be especially important when the goal is to return to work (7). We found a low correlation between the questionnaires Job-Related Self-Efficacy and Demand-Control-Support. Shaw (11) compared The Return-to-Work Self-Efficacy Scale with other questionnaires and also found low correlations.

People may have relatively similar health and environment, but still differ in their success in returning to, functioning in and remaining at work in the face of musculoskeletal disorders. Insight into the employee's confidence in his or her ability to remain in or return to work after sick leave may contribute to solutions in case of musculoskeletal disorders. By using the questions in the questionnaire and the responses to them as a concrete basis, interventions can be adapted to the job situation of each individual (6, 7).

A person with high self-efficacy needs less follow-up and fewer interventions than someone whose self-efficacy is low as revealed by the scores on the questionnaire. This is supported by the original version, which showed that the questionnaire predicts who will return to work and who will remain on sick leave (11).

One weakness of this study is its lack of reliability testing. In addition, the Norwegian version should be tested on samples that are representative of different occupations and genders.

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## Conclusion

The Job-Related Self-Efficacy questionnaire has satisfactory cross-cultural validity when assessed against the original questionnaire and satisfactory internal consistency. The questionnaire measures confidence in the ability to function at work for people with musculoskeletal disorders.

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*The article has undergone peer review.*

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Publisert: 7 August 2019. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.18.0571

Received 6.7.2018, first revision submitted 1.2.2019, accepted 21.5.2019.

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