Do work ability and well-being matter for return to work? Cut-off points for the Work Ability Index and Life Satisfaction Questionnaire among women with long-term musculoskeletal pain

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Abstract

Background

To determine whether work ability and well-being predict return to work (RTW) among women with long-term neck/shoulder and/or back pain at 1-year follow-up, and to assess the ability of the Work Ability Index (WAI) and Life Satisfaction Questionnaire (LiSat-11) to discriminate between those who did RTW and those who did not RTW (NRTW).

Methods

A survey was sent to 600 women receiving sick leave (SL) benefits from the Swedish Social Insurance Agency. In total, 208 women responded at baseline, and 141 at a 1-year follow-up. To identify whether work ability and well-being predicted RTW, multiple logistic regression analyses were performed with and without adjustment for type of work and pain intensity. To assess the discriminative ability of the WAI and LiSat-11 for women who did RTW and those who did NRTW, receiver operating characteristic curves were fitted.

Results

Work ability predicted RTW, and the results remained significant after adjusting for type of work and pain intensity (OR 1.12, 95% CI: 1.04–1.22). Well-being was not significant. The WAI at baseline adequately discriminated between RTW and NRTW after one year (AUC 0.78, 95% CI: 0.70–0.86), but the LiSat-11 did not.

Conclusions

Our results indicate that work ability is an important factor for RTW among women on SL for long-term neck/shoulder and/or back pain. The findings also indicate that the WAI, but not the LiSat-11, is able to discriminate between RTW and NRTW in the population under study. The WAI may be used to identify women at risk of NRTW.

Introduction

Impaired work ability and reduced well-being due to long-term musculoskeletal pain (MSP) in the neck, shoulder and back are considered occupational health problems that can result in workers taking sick leave (SL) [1–4]. Long-term SL, in particular, constitutes a major economic burden for society [5, 6]. Studies have shown that the prevalence and incidence of SL due to long-term MSP (≥ 3 months) is high among women [2, 7]. According to a recent report from the Swedish Social Insurance Agency (SIA), 61% of Swedes who are on SL for MSP are women [8]. Studies have shown that individuals living with long-

term MSP and on SL may experience negative consequences in life, such as depression, social isolation and reduced income, all of which could be associated with their impaired work ability and reduced well-being [9–11]. Work ability has been defined as a worker's ability to manage his/her work task at a given point in time, in relation to his/her physical and psychosocial capacity [12, 13]. Well-being is a combination of physical, mental and social aspects that correspond to the level of life satisfaction in daily living [14, 15].

The importance of work ability and well-being for return to work (RTW) has previously been studied among people with MSP [3, 4, 16, 17]. Studies have suggested that an individual's resources, such as personal beliefs in one's ability to work, are associated with RTW among people with MSP [18, 19]. In contrast, workplace factors such as high demand and low control at work (job strain) have been shown to hinder workers in their RTW [20]. Ratings of work ability are made in relation to the work performed. Because women and men have different work tasks even in the same job, the rated work ability – and its relation to RTW – may differ between female populations and populations consisting of both men and women [21].

Work ability and well-being may fluctuate over time depending on the work women do in their daily life. It has previously been reported that women have many responsibilities at home, such as shopping and cleaning, which tends to cause them to combine part-time work with unpaid work, i.e. family responsibilities [22, 23]. This extended work may restrict their recovery from MSP, which may influence their work ability and well-being, eventually influencing their RTW. Therefore, it may be interesting to study work ability and well-being to determine whether they facilitate RTW among women on SL for MSP.

The instruments used in this study are the Work Ability Index (WAI) and Life Satisfaction Questionnaire (LiSat-11). WAI is a commonly used instrument for assessing work ability [13] in relation to working life and rehabilitation. The LiSat-11 was originally developed for rehabilitation purposes [24]; in the present study, it was used to assess well-being among women on SL for long-term MSP. In previous studies, both instruments have been shown to be well validated and reliable [25, 26]. Thus, it is important to examine how well these instruments are able to discriminate between RTW and not RTW (NRTW). In addition, it is essential to ascertain whether the WAI and LiSat-11 instruments may be useful in screening women at risk of NRTW, as being on SL is an economic burden. To the authors' knowledge, no previous study has investigated the discriminative ability of the WAI and LiSat-11 to detect RTW in women with long-term MSP.

Therefore, the aim was to determine whether work ability and well-being could predict RTW among women with long-term neck/shoulder and/or back pain at a 1-year follow-up, and to assess the ability of the WAI and LiSat-11 to discriminate between those who did RTW and those who did NRTW.

Methods

Study design and sample

A prospective design was used for the study. In the spring of 2016, the SIA sent a baseline postal survey to 600 women in central and northern Sweden who were receiving SL benefits from the SIA. Participants were recruited based on the medical certificate issued by their primary health care or hospital physician.

The inclusion criteria were women aged 18–65 years, ≥ 50% SL from service, and duration of SL ≥ 1 month due to long-term (≥ 3 months) neck/shoulder and/or back pain. Neck/shoulder and/or back pain was classified according to the International Classification of Diseases (ICD-10) diagnostic codes: M53.1 (cervicobrachial syndrome), M54.2 (cervicalgia), M54.4 (lumbago with sciatica), M54.5 (low back pain), M54.9 (dorsalgia unspecified), M75.8 (other shoulder lesions), M75.9 (shoulder lesion, unspecified), and M79.1 (myalgia). Because the specific cause of MSP is often uncertain, many diagnosis codes are used for this population. The diagnosis codes were selected based on a previous study [27] and discussions with the SIA. Understanding the Swedish language was also required for the participants to be able to complete the questionnaire. Women were excluded from the study if they had been diagnosed with rheumatoid arthritis, multiple sclerosis, stroke, cancer, Parkinson, bipolar disease, schizophrenia or pregnancy. These diseases and disorders were chosen as exclusion criteria, as individuals suffering from them may have a different RTW process.

Of the 600 women who received the questionnaire, 275 responded and 67 were excluded based on the exclusion criteria, leaving 208 participants in the study. After one year (Spring 2017), a follow-up survey was sent to the 208 women who responded to the survey at baseline. The response rate was 68%, which corresponds to 141 respondents. An attrition analysis concerning age, work ability and well-being was performed; it indicated no significant difference in mean values at baseline between participants and dropouts at follow-up. The project was approved by the Regional Ethical Review Board in Uppsala, Sweden (Reg. no. 2.3.2–2015/548).

Data Collection

Prior to the selection procedure, two of the authors (MLK and AN) instructed personnel at the SIA on how to select participants. An initial invitation letter and a self-administered questionnaire including eight instruments were sent by the SIA to the participants. The self-administered questionnaires included the WAI [13] and the LiSat-11 [28]. Along with the questionnaire, a letter was sent providing information about the study and ensuring that participants' responses would be kept confidential. The participants gave their written informed consent together with the returned questionnaire. Two reminders were sent two weeks apart. A set of sociodemographic items asking about age, country of birth, cohabitation, education, years in the workforce, economic situation, life-long pain duration, and type of work were also included. Physical activity was measured using the question: How often do you exercise regularly for at least 30 min, e.g. walking, jogging, swimming, cycling or working in the garden? The four response alternatives were: 0 days/week, 1–3 days/week, 4–5 days/week, 6–7 days/week. In addition, a pain figure was included to collect information on the location of pain on the body [29]. Pain intensity was measured using three items in the Multidimensional Pain Inventory [30]: (i) How much pain are you experiencing right now? (ii) How much pain have you experienced on average during the past week? (iii) How much do you suffer from your pain? The participants rated each item on a 7-point Likert scale (0 = no pain; 6 =

extreme pain). An index was created by calculating an average value of the items, with higher values indicating higher pain intensity. The internal consistency of the scale, measured using Cronbach's α, was 0.76. At the 1-year follow-up, the same questionnaire was sent to the baseline participants, with the addition of two questions to detect RTW status: "Are you working right now?" "To what extent are you working?" If participants worked > 50%, they were categorized as RTW; otherwise they were categorized as NRTW.

Work Ability

The WAI [13] was used to measure work ability and reflects the individual's perceived present and immediate future ability to perform work with respect to work demands, health and mental resources. It consists of 7 items covering the individual's: current work ability, work ability in relation to the physical and mental demands of the job, number of current diseases diagnosed by a physician, estimated impairment due to health status, SL over the past 12 months, self-prognosis of work ability in the next two years and mental resources. An index was made by summing up all single items. The total scores ranged from 7 to 49 points, with higher scores indicating greater work ability. The internal consistency of the scale, measured using Cronbach's α, was 0.78.

Well-being

Well-being was measured using the LiSat-11 [28], which consists of 11 items. Each item was rated on a 6-point ordinal scale ranging from 1 = very dissatisfied to 6 = very satisfied, higher scores reflecting greater well-being. The well-being index was created by calculating the average score of the items, i.e. sum of item scores divided by the total number of items. The internal consistency of the scale, measured using Cronbach's α, was 0.86.

Statistical Analysis

Prior to the analyses, the normality of the data was assessed using scatterplots; all variables were approximately normally distributed. No outliers in the data were observed. Descriptive statistics are presented as proportions, means, and standard deviations.

To determine whether work ability and well-being predict RTW, multiple logistic regression analyses were conducted in which potential confounding factors were adjusted for. Because the number of participants allowed us to consider two confounding factors only [31], we selected type of work and pain intensity. The reasons for choosing these factors are that work ability depends on type of work [32] and that pain intensity has been found to be associated with work ability [33, 34]. Nagelkerke's pseudo R^2 was used as a measure of goodness-of-fit of the logistic regression model. Multi-collinearity between the predictors was examined using the variance inflation factor (VIF).

To assess the discriminative abilities of the WAI and LiSat-11 regarding RTW and NRTW, receiver operating characteristic (ROC) curves were fitted and the area under each curve (AUC) was estimated using 95% confidence intervals. An AUC value of 0.5 represents discrimination by chance, and a value of 1 is considered perfect discrimination [35]. Sensitivity and specificity for three specific cut-off points were

derived from ROC curves: the lower and higher cut-off points had 95% sensitivity and specificity, respectively. The middle cut-off point was identified as the score with the maximum sum of sensitivity and specificity. Sensitivity represents true-positive rates, i.e., RTW was correctly identified as RTW, while specificity refers to true-negative rates, i.e., NRTW was correctly classified as NRTW. In all tests, the level of significance was set at $p < 0.05$. The statistical program SPSS (IBM, US) version 24 was used for all analyses.

Results

Table 1 presents the baseline characteristics of participants in the two groups: RTW and NRTW. Of the 141 women, 94 had RTW and 47 NRTW at the 1-year follow-up. At baseline, the mean work ability scores among women who had RTW and NRTW were approximately 26 and 18 points, respectively. The mean baseline scores for well-being were 4.2 and 3.9 points for RTW and NRTW, respectively.

Table 1
Baseline characteristics of participants who did RTW and who did NRTW after the 1-year follow-up.

Variables	RTW (n = 94)	NRTW(n = 47)
Age (M, SD), years	49.04 ± 9.5	53.51 ± 8.3
Country of birth, n (%)	93 (98.9)	44 (93.6)
Sweden	1 (1.1)	3 (6.4)
Others		
Cohabitation, n (%)	75 (79.8)	30 (63.8)
Living with partner	17 (18.1)	12 (25.6)
Living alone	2 (2.1)	5 (10.6)
Living apart		
Education, n (%)	13 (13.8)	10 (21.3)
Elementary	45 (47.9)	22 (46.8)
Upper secondary	32 (34.0)	14 (29.8)
University	4 (4.3)	1 (2.1)
Others		
Years in the workforce[1] (M, Range)	30.04 (6–46)	32 (3–47)
Economic situation, n (%)	5 (5.8)	9 (19.2)
Very dissatisfied	19 (20.4)	8 (17.0)
Dissatisfied	36 (38.5)	21 (44.7)
Acceptable	27 (28.7)	5 (10.6)
Good	6 (6.6)	4 (8.5)
Very good		
Life-long pain duration (M, Range), months	57.79 (3-264)	81.41 (4-264)
Pain intensity[2] (M, SD)	3.70 ± 1.2	4.76 ± 0.8
Pain area, n (%)	65 (69.1)	32 (68.1)
Neck/shoulders	63 (67.0)	38 (80.9)
Back	36 (25.5)	25 (17.7)
Neck/shoulders and back		

Variables	RTW (n = 94)	NRTW(n = 47)
Physical activity, n (%)	12 (12.8)	7 (15.0)
0 day/week	48 (51.1)	16 (34.0)
1–3 days/week	24 (25.5)	12 (25.5)
4–5 days/week	10 (10.6)	12 (25.5)
6–7 days/week		
Type of work[3], n (%)	35 (37.2)	16 (34.0)
White collar	59 (62.8)	31 (66.0)
Blue collar		
Work ability[4] (M, SD)	25.74 (7.4)	18.16 (6.0)
Well-being[5] (M, SD)	4.20 (0.8)	3.93 (0.9)

[1]Total working years before going on SL; [2]Pain intensity measured using the Multidimensional Pain Inventory, scale 0–6 (higher values indicate higher pain intensity). [3]Type of work (white collar, e.g., employees in office administration, nurses and teachers, and blue collar, e.g., employees in elderly care, childcare and cleaning). [4]Work ability was measured using the WAI scale, where possible points range from 7 to 49; [5]Well-being was measured by LiSat-11 scale, where possible points range from 1 to 6. RTW = return to work; NRTW = not return to work; SL = sick leave; M = mean and SD = standard deviation.

Work ability and well-being as predictors

Table 2 indicates increased odds of RTW for women who rated high on work ability; the result remained significant after adjusting for type of work and pain intensity (OR 1.12, 95% CI: 1.04–1.22). Well-being did not significantly predict RTW in the unadjusted or in the adjusted analyses. The value of VIF was less than 1.2, indicating no multi-collinearity between the independent variables in the prediction models [36]. The Nagelkerke's pseudo R^2 of the adjusted model was 32%.

Table 2
Multiple logistic regression analyses of work ability and well-being as predictors of RTW at the 1-year follow-up.

Predictors	Unadjusted analysis			Adjusted analysis		
	OR	95% CI	*p*-value	OR	95% CI	*p*-value
Work ability	1.16	(1.07–1.25)	< 0.001	1.12	(1.04–1.22)	0.005
Well-being	1.01	(0.96–1.06)	0.68	1.01	(0.97–1.07)	0.58
Type of work[1]				1.25	(0.48–3.25)	0.65
Pain intensity				0.55	(0.34–0.93)	0.02

[1]Type of work = White collar, e.g., employees in office administration, nurses and teachers, as well as blue collar, e.g., employees in elderly care, childcare and cleaning; OR = odds ratio; CI = confidence interval; RTW = return to work.

Discriminative ability of the WAI and LiSat-11

Table 3 shows the ability of the WAI and LiSat-11 to discriminate between RTW and NRTW. The WAI at baseline adequately discriminated between RTW and NRTW (AUC 0.78, 95% CI: 0.70–0.86). In other words, the WAI correctly identified 78% of the women who had RTW at the follow-up. For the cut-off point of 14.50, the true-positive (sensitivity) and the true-negative (specificity) were 0.95 and 0.34, respectively, indicating that among women who had WAI ≥ 14.50, 95% were correctly classified as RTW, and in women with WAI < 14.50, 34% were correctly identified as NRTW. For the cut-off point of 28.50, sensitivity and specificity were 0.34 and 0.95, respectively. The maximum combination of sensitivity and specificity (0.66 and 0.77, respectively) was observed for the cut-off point of 22.50. The LiSat-11 at baseline did not significantly discriminate between RTW and NRTW.

Table 3
Area under the receiver operating characteristic curve for the Work Ability Index (WAI) and the Life Satisfaction questionnaire (LiSat-11) at baseline. Sensitivity and specificity of the instruments for detecting RTW.

	n	AUC	*p*-value	95% CI	Cut-off point	Sensitivity	Specificity
WAI	207	0.78	< 0.001	0.70–0.86			
95% of sensitivity					14.50	0.95	0.34
Max (sensitivity + specificity)					22.50	0.66	0.77
95% of specificity					28.50	0.34	0.95
LiSat-11	168	0.59	0.15	0.47–0.70			
95% of sensitivity					2.72	0.95	0.12
Max (sensitivity + specificity)					4.50	0.40	0.77
95% of specificity					5.41	0.07	0.95

WAI scale 7–49 points (higher values indicate greater work ability); LiSat-11 scale 1–6 points (higher values indicate greater well-being); RTW = return to work; AUC = Area under curve; CI = Confidence Interval; n = number of observations; Max = the maximum value of the sensitivity and specificity.

Discussion

The present results showed that work ability, but not well-being, was able to predict RTW after 1 year among women with long-term neck/shoulder and/or back pain. Further, the baseline WAI scores adequately discriminated between RTW and NRTW at the 1-year follow-up, while the baseline LiSat-11 scores did not.

Work ability

The present results revealed an association between perceived work ability and RTW. This is in line with previous studies indicating that self-reported work ability increased the chance of RTW and sustainable RTW in women with MSP, including neck, shoulder and back pain [10, 17]. Similarly, previous studies have found that impaired work ability predicted future long-term SL, symptoms such as MSP and depression as well as poor health among women on SL for neck/shoulder pain [37, 38]. This indicates that impaired work ability among women on SL for long-term MSP plays an important role not only for RTW, but also for general health.

After controlling for the confounders, type of work and pain intensity, the results remained approximately the same. However, pain intensity appeared to be significantly associated with RTW. In fact, the effect of pain intensity on RTW was greater than the effect of work ability on RTW. This may be the case because women's RTW could depend on their work ability. Because these women were experiencing MSP, pain

intensity may be one of the important factors affecting that work ability. A previous study found an association between self-reported greater pain intensity and perceived lower work ability among women with long-term neck/shoulder and/or back pain [34].

Our findings regarding AUC values showed that WAI scores adequately discriminated between those who RTW and those who NRTW. Given the sensitivity and specificity of the WAI, this instrument may be used to identify women at risk for NRTW. The present findings suggested that the maximum combination of sensitivity and specificity was observed at the WAI cut-off point of 22.50 at baseline. Naturally, the choice of WAI cut-off points depends on the purpose of the screening. Sensitivity and specificity may not be equally important, and the appropriate cut-off point should be selected accordingly. Even if the best combination of sensitivity and specificity was found at the WAI cut-off point of 22.50, it may be relevant for healthcare providers to use the WAI cut-off point of ≥ 28.50 in rehabilitation to detect women at risk for NRTW. By identifying this group, preventive measures may be used more cost-effectively. Further investigation of validation is needed before the present findings can be recommended for use in screening for risk of NRTW in a rehabilitation setting.

Well-being

In the present study, well-being did not predict RTW. One explanation could be that even women with lower LiSat-11 scores may RTW owing to their economic situation and/or work identity. It was previously found that economic situation was a confounding factor related to well-being among women on SL for neck/shoulder and/or back pain [34]. In addition, being at work is positively associated with general health and well-being among female workers who have been on long-term SL [10].

The results also showed that the LiSat-11 cannot be used to screen for RTW and NRTW in this population. In a previous study, the EuroQol, an instrument measuring health-related quality of life, was able to predict RTW or NRTW among individuals on SL for back and neck pain [39]. One reason for the difference in findings could be differences in the focus of the LiSat-11 and EuroQol; while the LiSat-11 measures satisfaction of life as a whole, the EuroQol measures health-related quality of life [40]. Thus, it may be that this difference in focus makes the EuroQol a better candidate for screening. Further studies are required to examine whether other instruments measuring well-being/quality of life, e.g. the EuroQoL, may be better able to discriminate between RTW and NRTW in this population of women.

Strengths And Limitations

One strength of the present study was the prospective design that included a 1-year follow-up of 68% of the participants. Further, we used inclusion criteria for participant selection that were based on ICD-10 codes provided by a physician. However, the participants were not randomly selected. This could entail possible sampling bias, which may affect the external validity of the study. Because the SIA invited the women to take part in the study, we had no access to non-respondents' data. For this reason, a non-response analysis could not be performed. It was unknown whether the participants had first returned to work and then relapsed to being on SL again prior to the follow-up measurement, or whether the

participants who were working < 50% at baseline had opportunities to receive support from the workplace and were, for this reason, more likely to be back at work compared to the participants who did not work at all. Moreover, information on whether or not the participants received treatment during the 1-year period was lacking. Another potential limitation was the use of self-reported data to assess work ability, which may have caused common method bias in the results. In the present study, RTW was classified as working > 50% of their service, which may affect the generalizability of the results.

Conclusions

Our results indicate that work ability is important for RTW among women on SL for long-term neck/shoulder and/or back pain. Well-being, on the other hand, did not affect RTW. Accordingly, the findings indicate that the WAI, but not the LiSat-11, is able to discriminate between RTW and NRTW in the population under study. Thus, work ability should be prioritized by healthcare professionals responsible for rehabilitation among female workers on SL for long-term neck/shoulder and/or back pain.

References

1. Hubertsson J, Englund M, Hallgårde U, Lidwall U, Löfvendahl S, Petersson IF. Sick leave patterns in common musculoskeletal disorders – a study of doctor prescribed sick leave. BMC Musculoskelet Disord. 2014;15:176.
2. Pekkala J, Rahkonen O, Pietiläinen O, Lahelma E, Blomgren J. Sickness absence due to different musculoskeletal diagnoses by occupational class: a register-based study among 1.2 million Finnish employees. Occup Environ Med. 2018:oemed-2017-104571.
3. Miranda H, Kaila-Kangas L, Heliövaara M, Leino-Arjas P, Haukka E, Liira J, Viikari-Juntura E. Musculoskeletal pain at multiple sites and its effects on work ability in a general working population. Occup Environ Med. 2010;67:449–55.
4. Malmberg-Ceder K, Haanpää M, Korhonen PE, Kautiainen H, Soinila S. Relationship of musculoskeletal pain and well-being at work – Does pain matter? Scand J Pain. 2017;15:38–43.
5. Sell L. Predicting long-term sickness absence and early retirement pension from self-reported work ability. Int Arch Occup Environ Health. 2009;82:1133–8.
6. Vingård E, Alexanderson K, Norlund A. Chapter 9. Consequences of being on sick leave. Scand J Public Heal Suppl. 2004;32:207–215.
7. Harker J, Reid KJ, Bekkering GE, Kellen E, Bala MM, Riemsma R, Worthy G, Misso K, Kleijnen J. Epidemiology of chronic pain in Denmark and Sweden. Pain Res Treat. 2012;2012.
8. The Swedish Social Insurance Agency. Social Insurance in Figs. 2018. Sweden: The Swedish Social Insurance Agency. Accessed: 25-Aug-2018. SE–103 51 Stockholm. Report No. ISBN: 978-91-7500-404-4; 2018.
9. Ahlstrom L, Dellve L, Hagberg M, Ahlberg K. Women with Neck Pain on Long-Term Sick Leave—Approaches Used in the Return to Work Process: A Qualitative Study. J Occup Rehabil. 2017;27:92–

105.

10. Alem MER, Moriguchi CS, Turi AC, Trevizani T, Saldanha T, Sato TDO, Coury HJCG. Sustained Return to Work after Long-term Sick Leave Improves Work Ability and Quality of Life. J Ergon. 2017;07.
11. Ockander MK, Timpka T. Women's experiences of long term sickness absence: Implications for rehabilitation practice and theory. Scand J Public Health. 2003;31:143–8.
12. Tengland PA. The concept of work ability. J Occup Rehabil. 2011;21:275–85.
13. Tuomi K, Ilmarinen J, Jahkola A, Katajarinne L, Tulkki A. Work Ability Index. Helsinki: Finnish Institute of Occupational Health; 1998.
14. Diener E, editor. Assessing well-being: The collected works of Ed Diener. New York: Springer Science + Business Media; 2009.
15. Melin R, Fugl-Meyer KS, Fugl-Meyer AR. Life satisfaction in 18-to 64-year-old Swedes: In relation to education, employment situation, health and physical activity. J Rehabil Med. 2003;35:84–90.
16. Vindholmen S, Høigaard R, Espnes GA, Seiler S. Return to work after vocational rehabilitation: does mindfulness matter? Psychol Res Behav Manag. 2014:77.
17. Sviridova O, Gard G, Michaelson P. Predictors for return to work after multimodal rehabilitation in persons with persistent musculoskeletal pain. Edorium J Disabil Rehabil. 2018;4.
18. Heymans MW, De Vet HCW, Knol DL, Bongers PM, Koes BW, Mechelen W Van. Workers' beliefs and expectations affect return to work over 12 months. J Occup Rehabil. 2006;16:685–95.
19. Steenstra IA, Munhall C, Irvin E, Oranye N, Passmore S, Van Eerd D, Mahood Q, Hogg-Johnson S. Systematic Review of Prognostic Factors for Return to Work in Workers with Sub Acute and Chronic Low Back Pain. J Occup Rehabil. 2017;27:369–81.
20. 10.1186/s12889-016-3942-8
    Haveraaen LA, Skarpaas LS, Aas RW. Job demands and decision control predicted return to work: the rapid-RTW cohort study. BMC Public Health [Internet]. 2017;17:154. Available from: https://doi.org/10.1186/s12889-016-3942-8.
21. Lewis C, Mathiassen SE. State of Knowledge Report: Physical work, gender, and health in working life. Swedish work environment authority. Accessed: 15-Jan-2017. ISSN 1650–3171. Report 2013:9; 2013.
22. OECD. Gender Publication- Closing the Gender Gap: Act Now OECD. 2012.
23. OECD
    OECD. Employment: Time spent in paid and unpaid work, by sex. 2019. Available from: https://stats.oecd.org/index.aspx?queryid=54757.
24. Jacobsson L, Lexell J. Life satisfaction after traumatic brain injury: comparison of ratings with the Life Satisfaction Questionnaire (LiSat-11) and the Satisfaction With Life Scale (SWLS). Health Qual Life Outcomes. 2016;14:10.
25. De Zwart BCH, Frings-Dresen MHW, Van Duivenbooden JC. Test-retest reliability of the Work Ability Index questionnaire. Occup Med (Chic Ill). 2002;52:177–81.

26. Boonstra A, Reneman M, Posthumus B, Stewart J, Preuper R. HR. Reliability of the Life Satisfaction Questionnaire to assess patients with chronic musculoskeletal pain. 2008.
27. Björklund M, Djupsjöbacka M, Svedmark Å, Häger C. Effects of tailored neck-shoulder pain treatment based on a decision model guided by clinical assessments and standardized functional tests. A study protocol of a randomized controlled trial. BMC Musculoskelet Disord. 2012;13.
28. Fugl-Meyer AR, Melin R, Fugl-Meyer KS. Life satisfaction in 18- to 64-year-old Swedes: In relation to gender, age, partner and immigrant status. J Rehabil Med. 2002;34:239–46.
29. Margolis RB, Tait RC, Krause SJ. A rating system for use with patient pain drawings. Pain. 1986 January;24:57–65.
30. Bergström G, Jensen IB, Bodin L, Linton SJ, Nygren ÅL, Carlsson SG. Reliability and factor structure of the multidimensional pain inventory - Swedish language version (MPI-S). Pain. 1998;75:101–10.
31. Peduzzi P, Concato J, Kemper E, Holford TR, Feinstem AR. A simulation study of the number of events per variable in logistic regression analysis. J Clin Epidemiol. 1996;49:1373–9.
32. Converso D, Sottimano I, Guidetti G, Loera B, Cortini M, Viotti S. Aging and Work Ability: The Moderating Role of Job and Personal Resources. Front Psychol. 2018 January;10:8:2262.
33. Magnago TSB, de S, Lima, de Prochnow ACS, Ceron A, MD da S, Tavares, JP, Urbanetto J de S. Intensity of musculoskeletal pain and (in) ability to work in nursing. Rev Lat Am Enfermagem. 2012;20:1125–1133.
34. Rashid M, Kristofferzon M-L, Heiden M, Nilsson A. Factors related to work ability and well-being among women on sick leave due to long-term pain in the neck/shoulders and/or back: A cross-sectional study. BMC Public Health. 2018;18:1–8.
35. Hanley JA, McNeil BJ. The meaning and use of the area under a receiver operating characteristic (ROC) curve. Radiology. 1982 April;143:29–36.
36. O'Brien RM. A caution regarding rules of thumb for variance inflation factors. Qual Quant. 2007;41:673–90.
37. Ahlstrom L, Grimby-Ekman A, Hagberg M, Dellve L. The work ability index and single-item question: Associations with sick leave, symptoms, and health - A prospective study of women on long-term sick leave. Scand J Work Environ Heal. 2010;36:404–12.
38. Jørgensen MB, Faber A, Hansen JV, Holtermann A, Søgaard K. Effects on musculoskeletal pain, work ability and sickness absence in a 1-year randomised controlled trial among cleaners. BMC Public Health. 2011;11:840.
39. Hansson E, Hansson T, Jonsson R. Predictors for work ability and disability in men and women with low-back or neck problems. Eur Spine J. 2006;15:780–93.
40. Herdman M, Badia X, Berra S. EuroQol-5D: a simple alternative for measuring health-related quality of life in primary care. Aten Primaria. 2001 November 1;28:425–430.