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ORIGINAL REPORT

EMPLOYEE AND WORK-RELATED PREDICTORS FOR ENTERING REHABILITATION: A COHORT STUDY OF CIVIL SERVANTS

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Objective: **The aim of this study was to determine how employee well-being, psychosocial factors at work, leadership and perceived occupational health services predict entering rehabilitation as modelled in the Job Well-being Pyramid.**
Methods: **A random population of 967 civil servants participated in a survey on psychosocial factors and health at work in 2000 in Finland. A total of 147 employees entered rehabilitation during the median follow-up time of 7 years.**
Results: **Permanent employment, large organizations, feedback from supervisors, client violence and physically monotonous work were associated with an increased rate of entering rehabilitation, whereas physical jobs, clear aims, high appreciation, job satisfaction and job enjoyment were associated with a decreased rate of entering rehabilitation. Employee well-being in general was also associated with entering rehabilitation, and this was decreased by good work ability, good health, mental well-being and physical fitness and increased by constant musculoskeletal symptoms. On the other hand, support from supervisors, job control, work pressure, team climate at work, communication, bullying and discrimination, physical work environment, and sense of coherence appeared to have no association.**
Conclusion: **Various psychosocial factors at work and job well-being predict entering rehabilitation. The association between employee health and entering rehabilitation refers to the fact that the selection process for rehabilitation works reasonably well and those in need of rehabilitation are also granted it. In general, these findings coincide well with the Job Well-being Pyramid model. Improving job conditions and well-being at work is likely to decrease the need for rehabilitation.**

Key words: rehabilitation; psychosocial factors; well-being; cohort study.

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INTRODUCTION

In a successful rehabilitation process employees, employers and the social insurance organization all attain their goals. Employees want to enhance their health and work ability, whereas employers would like to see employees with improved job productivity. The main interests of the social insurance institution, on the other hand, are to decrease the number and length of periods of sick leave and to avoid having to provide disability pensions. Therefore, the employees chosen for rehabilitation should be those who are likely to benefit from it. They should be motivated and committed to rehabilitation. The employer loses the work input of an employee during rehabilitation, yet the social insurance organization pays most of the expenses of rehabilitation. Rehabilitation can be a relatively inexpensive way to prevent or postpone early retirement.

Any type of rehabilitation may have an effect at an early stage of decreased work ability, but may be ineffective later on if applied as the only mode of rehabilitation (1). When chronic disability is present, multimodal medical rehabilitation needs to be combined with vocational rehabilitation in order to reduce absenteeism and disability pension. It is also essential that the workplace is integrated into rehabilitation. Furthermore, ongoing good health and workplace support have the greatest potential to facilitate long-term return-to-work (2).

Disorders, mainly mental or musculoskeletal, have been recognized to have major consequences for employees, employers and society, particularly in terms of unnecessarily long periods of sick leave and undue early retirements. There is a consensus that, through rehabilitation, it is possible to shorten long periods of sick leave and postpone, if not prevent, early retirements. Therefore, in Finland, occupational health services are required by law to support the rehabilitation process by selecting employees for rehabilitation and following them up afterwards (3). When symptoms occur, the collaboration between employees, workplace and the occupational health services is emphasized; the occupational health services having the role of coordinator.

The concept of "functional health" reached a new level in 2001 in the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF) (4). The health and health-related domains are classified from the perspectives of body, individual and society by means of two lists: a list of body functions and structure and a list of activity and participation. Since an individual's functioning and disability always occurs in some environment, the ICF also includes a list of environmental factors. The ICF Core Set has been further developed to serve the needs of vocational rehabilitation (5).

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Another comprehensive concept concerning the multiple factors involved with employees' well-being is visualized in the Job Well-being Pyramid (Fig. 1). The Job Well-being Pyramid, which was developed in Finland, is a hierarchical model on the working environment and its relationships with employee health (1, 6–8). Each side of the Pyramid is an independent entity: Work, Work Ability, and Action. In the Job Well-being Pyramid, the best results are thought to be achieved when problems are prevented at lower levels, e.g. job content, work environment and job well-being. Scientific literature supports this assumption (1, 6–8).

We have tested the validity of the Job Well-being Pyramid among civil servants in Finland. The governmental sector comprises approximately 120,000 employees. The administration is mainly run under 11 ministries, the largest branches of administration being education (25% of total personnel), internal affairs, defence, finance, justice, and employment and the economy. The rate of sickness absence has been quite stable, 8–9 work days/person work year, and the disability pension rate has been approximately 1%. The number of occupational accidents in the state sector has been quite low, being 4.7 per 100 person work years in 2010. We have reported previously that employee well-being, in terms of job satisfaction, health, sense of coherence and physical well-being, predicted sickness absences, occupational accidents and disability pensions (8).

The aim of this study was to examine to what extent leadership, work-related psychosocial factors, employee well-being and perceived occupational health services predict entering rehabilitation.

METHODS

Participants

The participants in this study are those civil servants who responded to the "All Well at Work?" survey in 2000. A random sample from the Finnish governmental personnel was invited to participate in the survey. The study population represents all administrative branches.

"All Well at Work?" survey

Data were collected via a postal questionnaire. Out of 2,000 invitees, 998 employees (54%) responded. Thirty-one respondents declined to allow the use of their answers in any further study; therefore, 967 participants could be included in this study. The proportion of women and the mean age were slightly higher among the respondents than among the invitees (52% vs 47% and 44.8 years vs 42.4 years, respectively).

The "All Well at Work?" survey measured factors describing psychosocial and organizational working conditions, health, work ability and personal resources. Characteristics of work and work organization were measured according to the main items of the Healthy Organization Questionnaire (9). The main parameters concerning health and work ability were musculoskeletal symptoms, mental strain by the General Health Questionnaire 12 (GHQ-12) (10, 11), and work ability by the Work Ability Index (WAI) (12). Personal resources were measured with the Sense of Coherence Scale (SOC) (13).

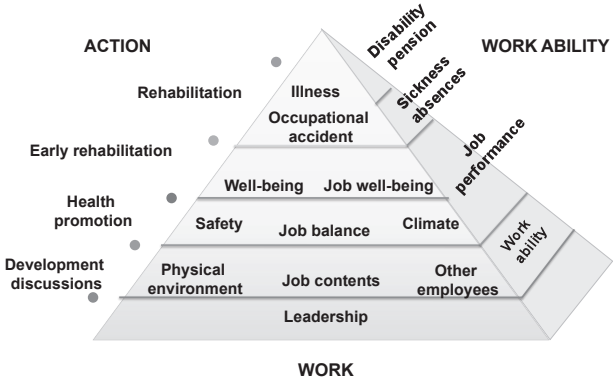

Fig. 1. The job well-being pyramid.

Follow-up

The follow-up was register-based and ended at the end of employment, at pension, at death, or at the end of study on 31 December 2007. Data on rehabilitation were provided by the Social Insurance Institution of Finland. Data on occupational vocational rehabilitation were provided by the Actuary Division of the State Treasury. The follow-up time varied from 0.03 to 7.3 years, the median time being 7.3 years. Two-thirds of the study population reached the maximum follow-up time.

Predictors

The predictors are covered briefly here; a full description is given in Appendix I.

Work-related psychosocial factors. Organizational factors were measured by questions on the type of job contract (permanent or temporary) and the size of the organization (number of employees). Leadership was measured by two questions; one on support and one on feedback from the supervisor. Job content was measured by questions on job type, clarity of aims at work and job control, whereas job balance was measured by two questions on work pressure. Social work climate was assessed by questions on team climate at work, communication, appreciation at work, bullying and discrimination. Physical work environment was measured by questions on client violence, monotonous work movements, crowdedness of workplace and other physical factors.

Employee well-being and work ability. Job well-being was measured by two questions, one on satisfaction and one on enjoyment at work. Health was measured by a single question. Mental well-being was assessed by a single question and the GHQ-12 and SOC scales. The GHQ version with 12 items, with total score ranging from 12 to 48 was used. Also, the SOC was used in its shorter 13-item version, the total score ranging from 7 to 91. Physical well-being was measured by two questions; one on physical fitness and one on musculoskeletal symptoms. Work ability was measured by the WAI, which has 7 items, the index being the sum of all items (7–49).

Work health promotion and occupational health services. Work health promotion was measured by two questions, one on recreation and exercise and one on promotion of mental well-being. Employees' perceptions on occupational health services were assessed by a 3-part question concerning preventive healthcare, care of sickness and disease and rehabilitation.

Outcome

Rehabilitation. The purpose of the rehabilitation is to improve work ability. In Finland, the Social Insurance Institution is the main provider of rehabilitation measures for working age people. It has a statutory duty to arrange rehabilitation as vocational rehabilitation for those with diminished working capacity and as medical rehabilitation for severely handicapped people. In addition, some rehabilitation is discretionary, based on annual appropriations and consists of, for example, vocationally devoted courses for occupational groups without severe symptoms.

Vocational rehabilitation, on the other hand, is granted by the pension system either for preventive purposes or as an alternative to the disability pension if the rehabilitation prospects are considered good.

In this study, the outcome included group-based rehabilitation courses, vocational training, rehabilitation examinations, work testing, and training aimed at maintaining work capacity, and medical in-patient rehabilitation that goes beyond curative treatment and is necessary to maintain or improve functional capacity and work ability.

RESULTS

Baseline characteristics

The study population consisted of 458 men (47%) and 509 women (53%). The mean age was 45.1 (standard deviation (SD) 9.7) years, and the study population included employees of all ages (Table I). The mean overall tenure was 22.7 years, and mean tenure at governmental service was 16.9 years. Approximately one-third of the study population had a university-level professional education, and approximately half were lower officials. One-quarter had a supervisory post. Most participants had a permanent employment (86%) and a regular day shift (83%). Only 5% of the participants had purely physical work.

Rehabilitation

Of the participants, 118 (12%) had been in rehabilitation during the previous year at the beginning of the study, and 147 (15%) were in rehabilitation during follow-up. Note that the self-reported previous rehabilitation consisted of any kind of measure with rehabilitative intention, whereas the follow-up was based only on data from registers, as mentioned above.

Permanent employment (relative risk (RR) 1.54, 95% confidence interval (CI) 0.75–3.17), large organizations (1.45, 0.85–2.47) and feedback from supervisors (1.50, 0.91–2.48) appeared to be associated with an increased rate of entering rehabilitation, whereas support from supervisors had no association (Table II). Physical job (0.62, 0.26–1.50) and clarity of

Table I. *Baseline characteristics in the "All Well at Work?" survey among civil servants in Finland in 2000 (*n = *967)*

Characteristics	
Age, years, mean (SD) [range]	45.1 (9.7) [23–65]
Overall tenure, years, mean (SD) [range]	22.7 (10.5) [1–50]
Governmental tenure at the beginning of follow-up, years, mean (SD) [range] (*n* = 966)	16.9 (10.1) [0–45]
Sex, *n* (%)	
Men	458 (47)
Women	509 (53)
Professional education, *n* (%)	
Primary	306 (32)
Middle	309 (32)
University or collage, *n* (%)	350 (36)
Professional status, *n* (%)	
Higher office personnel	366 (38)
Lower office personnel	496 (52)
Other employees	92 (10)
Supervisory status, *n* (%)	
Yes	252 (26)
No	708 (74)
Work shift, *n* (%)	
Regular day shift	795 (83)
Varying or periodical shift	139 (14)
Part-time	25 (3)

SD: standard deviation.

Table II. *Association between work factors and leadership and rehabilitation (*n = *967)*

	Rehabilitation		
Factor	Subjects *n*	Cases *n*	RR (95% CI)
Organizational factors			
Job contract	966	147	
Temporary	136	11	1.00
Permanent	830	136	1.54 (0.75–3.17)
Personnel	962	147	
≤100	571	84	1.00
101–500	285	45	1.04 (0.71–1.52
<500	106	18	1.45 (0.85–2.47)
Leadership			
Support from supervisors	958	145	
Seldom or almost never	239	34	1.00
Sometimes	282	37	1.00 (0.61–1.63)
Rather often or always	437	74	1.15 (0.71–1.88)
Feedback from supervisors	958	145	
Seldom or almost never	445	61	1.00
Sometimes	324	49	1.06 (0.70–1.61)
Rather often or always	189	35	1.50 (0.91–2.48)

RRs were adjusted for sex, age, education, change in well-being during previous year, sickness absence during previous year, previous participation in work health promotion, and previous participation in rehabilitation.
RR: risk ratio; CI: confidence interval.

Table III. *Association between job content and balance and rehabilitation (*n = *967)*

	Rehabilitation		
Predictor	Subjects *n*	Cases *n*	RR (95% CI)
Job content			
Job type	965	147	
Mental	728	111	1.00
Both	190	30	0.90 (0.57–1.43)
Physical	47	6	0.62 (0.26–1.50)
Clarity of aims at work	962	146	
Poor or rather poor (2–6)	80	14	1.00
Rather good (7–8)	435	71	0.87 (0.46–1.62)
Very good (9–10)	447	61	0.68 (0.36–1.28)
Job control	954	146	
Low (4–9)	324	51	1.00
Somewhat (10–13)	383	64	1.24 (0.82–1.87)
High (14–20)	247	31	1.04 (0.61–1.79)
Job balance			
Work pressure	962	146	
Seldom or now and then (2–6)	413	59	1.00
Rather often (7–8)	351	56	1.11 (0.75–1.65)
Very often (9–10)	198	31	1.03 (0.63–1.69)

RRs were adjusted for sex, age, education, change in well-being during previous year, sickness absence during previous year, previous participation in work health promotion, and previous participation in rehabilitation.
RR: risk ratio; CI: confidence interval.

aims (0.68, 0.36–1.28) appeared to predict a decreased rate of entering rehabilitation (Table III). Job control and work pressure were not associated with rate of entering rehabilitation.

High appreciation at work appeared to decrease the likelihood of entering rehabilitation (RR 0.75, 95% CI 0.42–1.33) (Table IV). Other factors measuring the social environment, i.e. team climate at work, communication, and bullying and discrimination, appeared not to have any association with rate of entering rehabilitation. Client violence (1.31, 0.76–2.26) and physically monotonous work (1.64, 0.94–2.85) were associated with an increase in rate of entering rehabilitation, whereas there was no such association concerning other factors of physical environment.

The associations between well-being, health and work ability and entering rehabilitation were consistent (Table V). Good levels of job satisfaction (RR 0.69, 95% CI 0.42–1.15), job enjoyment (0.77, 0.48–1.25), health (0.52, 0.26–1.04), mental well-being (0.76, 0.45–1.34), psychiatric distress measured by GHQ-12 (0.73, 0.50–1.08), physical fitness (0.52, 0.29–0.94) and WAI (0.22, 0.10–0.49) predicted a decrease in entering rehabilitation. On the other hand, constant musculoskeletal symptoms predicted an increase in the rate of entering rehabilitation (2.72, 1.55–4.77). SOC was the only factor that appeared to have no association with rehabilitation.

Work health promotion, such as recreation and exercise or promotion of mental well-being, was not associated with entering rehabilitation (Table VI). Neither the preventative

Table IV. A*ssociation between social and physical work environment and rehabilitation (*n = *967)*

	Rehabilitation		
Predictor	Subjects *n*	Cases *n*	RR (95% CI)
Social work environment			
Team climate at work	951	143	
Poor (5–12)	194	31	1.00
Neutral (13–17)	337	46	0.87 (0.55–1.37)
Good (18–25)	420	66	1.07 (0.69–1.66)
Communication	942	135	
Poor (5–12)	131	19	1.00
Neither good nor poor (13–17)	371	52	0.98 (0.55–1.77)
Good (18–25)	440	64	1.12 (0.60–2.11)
Appreciation at work	960	145	
Little or very little	147	26	1.00
Moderate	324	44	0.67 (0.39–1.18)
Much or very much	489	75	0.75 (0.42–1.33)
Bullying and discrimination	955	145	
Sometimes (2–4)	106	21	1.00
Seldom (5–7)	397	56	0.93 (0.50–1.72)
Never (8)	452	68	0.99 (0.52–1.89)
Physical work environment			
Client violence	963	146	
Never	668	92	1.00
Seldom	186	36	1.52 (1.02–2.26)
Now and then or often or very often	109	18	1.31 (0.76–2.26)
Physically monotonous	963	146	
None or doesn't bother	494	61	1.00
Bothers somewhat	375	65	1.28 (0.88–1.86)
Bothers a lot	94	20	1.64 (0.94–2.85)
Crowdedness and noise	961	147	
None or doesn't bother	544	80	1.00
Bothers somewhat	318	52	1.08 (0.73–1.58)
Bothers a lot	99	15	0.98 (0.53–1.82)
Other environmental factors	961	147	
None or doesn't bother	324	45	1.00
Bothers somewhat	412	63	0.92 (0.61–1.39)
Bothers a lot	225	39	1.06 (0.64–1.77)

RRs were adjusted for sex, age, education, change in well-being during previous year, sickness absence during previous year, previous participation in work health promotion, and previous participation in rehabilitation.
RR: risk ratio; CI: confidence interval.

Table V. *Association between well-being, work ability and rehabilitation (*n = *967)*

	Rehabilitation		
Predictor	Subjects *n*	Cases *n*	RR (95% CI)
Well-being			
Job satisfaction	967		960
Rather or very dissatisfied	100	18	1.00
Neither satisfied nor dissatisfied	204	28	0.57 (0.31–1.05)
Rather or very satisfied	663	101	0.69 (0.42–1.15)
Job enjoyment	967		960
Seldom or almost never	140	25	1.00
Occasionally	401	58	0.71 (0.44–1.14)
Rather or very often	426	64	0.77 (0.48–1.25)
Health	962		958
Rather or very poor	53	15	1.00
Moderate	236	38	0.52 (0.27–1.01)
Rather or very good	673	93	0.52 (0.26–1.04)
Mental well-being	961		957
Rather or very poor	98	20	1.00
Moderate	290	53	0.94 (0.55–1.59)
Rather or very good	573	73	0.78 (0.45–1.34)
GHQ-12	954		
"Case" (4–12)	184	42	1.00
Healthy (0–3)	770	103	0.73 (0.50–1.08)
SOC	944		938
Weak (13–45)	45	9	1.00
Moderate (46–71)	176	31	0.94 (0.44–2.01)
Strong (72–91)	723	105	0.87 (0.43–1.75)
Physical fitness	963		959
Rather or very poor	80	19	1.00
Moderate	323	56	0.72 (0.41–1.27)
Rather or very good	560	72	0.52 (0.29–0.94)
Musculoskeletal symptoms	961		956
None	222	17	1.00
Occasionally	491	69	1.59 (0.93–2.73)
Constantly	248	61	2.72 (1.55–4.77)
Work ability			
WAI	916		913
Poor (7–27)	38	14	1.00
Moderately poor (28–36)	136	29	0.42 (0.21–0.84)
Good (37–43)	453	69	0.30 (0.15–0.62)
Excellent (44–49)	289	29	0.22 (0.10–0.49)

RRs were adjusted for sex, age, education, change in well-being during previous year, sickness absence during previous year, previous participation in work health promotion, and previous participation in rehabilitation.
RR: risk ratio; CI: confidence interval; GHQ: General Health Questionnaire; SOC: Sense of Coherence; WAI: Work Ability Index.

Table VI. *Association between health promotion at work, occupational healthcare and rehabilitation (*n = *967)*

	Rehabilitation		
Predictor	Subjects *n*	Cases *n*	RR (95% CI)
Work health promotion			
Recreation and exercise	966	147	
Rather or very little	253	34	1.00
Somewhat	309	47	1.18 (0.74–1.88)
Rather or very much	404	66	1.18 (0.73–1.93)
Promotion of mental well-being	964	147	
Rather or very little	577	88	1.00
Somewhat	255	37	0.84 (0.55–1.28)
Rather or very much	132	22	1.11 (0.65–1.89)
Occupational healthcare			
Prevention	942	144	
Rather or very badly	327	59	1.00
Neither well nor badly	310	42	1.00 (0.61–1.66)
Rather or very well	305	43	1.06 (0.56–2.03)
Health care	947	146	
Rather or very badly	111	23	1.00
Neither well nor badly	252	33	0.69 (0.39–1.22)
Rather or very well	584	90	1.07 (0.61–1.86)
Rehabilitation	932	143	
Rather or very badly	265	52	1.00
Neither well nor badly	318	43	0.57 (0.34–0.96)
Rather or very well	349	48	0.49 (0.26–0.94)

RRs were adjusted for sex, age, education, change in well-being during previous year, sickness absence during previous year, previous participation in work health promotion, and previous participation in rehabilitation.
RR: risk ratio; CI: confidence interval.

nor healthcare measures provided by the occupational health services appeared to be associated with the rate of entering rehabilitation, although those employees who had no opinion on healthcare services entered rehabilitation less often than others (RR 0.69, 95% CI 0.39–1.22). Instead, the rehabilitation services perceived as good were associated with a decreased rate of entering rehabilitation (0.49, 0.26–0.94).

DISCUSSION

Ill-health, diseases, disabilities and decreased work ability are the most common reasons for entering rehabilitation. Yet, it is not always evident that a disease is the reason for decreased work ability. The aim of this study was to identify to what extent employee well-being, work-related psychosocial factors, leadership, and perceived occupational health services predict entering rehabilitation, as modelled in the Job Well-being Pyramid. We found that the overall entity complied well with the model and that all levels of the pyramid were associated with entering rehabilitation even though some individual factors showed no association.

Permanent employment and large organizations were associated with an increased rate of entering rehabilitation. Temporary workers tend to be younger and probably healthier, as do those with permanent employment contracts, which may partly explain the result even though the analyses were adjusted for age and previous sickness absences. On the other hand, the application process for rehabilitation takes time and neither the employee nor the employer are willing to start a long application process during a short temporary or fixed-term contract. Other authors have also noted that the rehabilitation system is more likely to grant rehabilitation to those with permanent employment than to those without employment (14, 15). Employees with temporary or atypical employment are easily missed, and nowadays the development projects on work-related rehabilitation in Finland increasingly also attempt to involve workers with atypical employment and those who are self-employed (16–18). As for organization size, it may be easier to pursue rehabilitation in large organizations.

In our study the psychosocial factors at work affected the rate of entry to rehabilitation. Feedback from supervisors was associated with an increased rate of entering rehabilitation, whereas perceived support from supervisors had no association. This apparent inconsistency may be due to methodological issues, such as poorly formulated questions concerning the perceived behaviour of the supervisor. The finding concerning feedback from supervisors may also be true, in the sense that a good supervisor monitors the well-being of workers and supports rehabilitation if an employee appears to be in need of it. In other words, good workplaces both prevent the need for rehabilitation and support employees in seeking entry to rehabilitation.

Clear aims and high levels of appreciation at work were associated with a decreased rate of entering rehabilitation, whereas job control, work pressure, team climate at work, communication, bullying and discrimination appeared to have no association. The latter factors may have methodological weaknesses. The study population was reasonably homogenous concerning work pressure and bullying and discrimination, thus a small but true effect may not have been detected. Furthermore, the impact of factors such as job control, team climate and communication may be too indirect to be predictive for rehabilitation.

Client violence and physically monotonous work were associated with an increased rate of entering rehabilitation, whereas physical employment was associated with a decreased rate, and other physical work environment factors appeared to have no association with entering rehabilitation. It is likely that monotonous work increases the need for rehabilitation, but other associations or the lack of them are not as straightforward. The finding on client violence probably represents more the impact of profession than the client violence as such. Namely, those professionals such as policemen and prison officers, who mostly encounter violent clients, have demanding jobs both psychosocially and physically. Physical work, on the other hand, appears to decrease the need for rehabilitation, which may reflect the fact that a physically demanding job keeps an employee physically fit, but also that physically unfit or unhealthy workers pursue physically less demanding work. The questions on crowdedness and noise in the workplace and other physical factors, such as temperature, lighting, draughts and indoor air quality, were too ambiguous, and thus methodologically weak, and our findings of no associations concerning them cannot be considered reliable.

Our findings that job satisfaction and job enjoyment were predictive concerning entering rehabilitation were consistent with published research in which job satisfaction has been associated with both the health and mental and physical well-being of employees (8, 19). The importance of work that not only is within the individual's physical abilities, but also fulfils the worker's emotional and intellectual needs, has been emphasized (2). There are factors beyond the employees' tangible environment that help them to manage and overcome the difficulties they experience. These include personal characteristics and a variety of other experiential influences associated with undertaking tasks and actions. Together with the desire to be working, job enjoyment and personal satisfaction influence all return-to-work phases, but particularly the later ones. Young's (2) findings suggest an opportunity for proactive intervention and early rehabilitation.

It is important to define properly the risk groups that are in obvious need of rehabilitation and to find those employees who are likely to benefit from and reach the goals of rehabilitation. In our study, decreased health, mental and physical well-being and work ability was associated with entering rehabilitation, referring to the fact that the selection process worked well and those entering rehabilitation were indeed in need of it. On the other hand, the authors of another Finnish cohort study suspected that preventive measures to reduce the risk of disability pension amongst high-risk employees through rehabilitation are not targeted as intended (15). They reported that many risk factors previously found to be associated with high risks of early retirement on health grounds were not predictive for future participation in rehabilitation. Yet, their findings concerning the type of job contract and job control were similar to ours.

In our study, GHQ was associated with entering rehabilitation. The GHQ is a good predictor of sick leave and disability pension (8), and could therefore also serve as a predictor of the need for rehabilitation. From the well-being measures we used, the SOC was the only one that had no association with entering rehabilitation, which was unexpected because it has predicted sickness absences and disability pension as mentioned earlier. In theory, the SOC is conceptually more a measure of the construct and psychological resources of one's personality (19) than of mental well-being, and the phenomenon that the SOC describes may not be influential in the selection process for rehabilitation.

For measuring work ability, the WAI has been used in occupational health services in Finland for years. It detects well those subjects whose work ability has decreased, and offers an easy way to assess the potential need for rehabilitation. However, rehabilitation is also aimed at those who are at risk of diminishing work ability. In one Finnish study concerning early rehabilitation, the participants were initially in a worse condition than the non-participants for all measures, e.g. GHQ, musculoskeletal symptoms and WAI, and the two-year follow-up showed that the criteria for selecting the correct target group were largely fulfilled and early rehabilitation covered the majority of persons in need (20). It is evident that more sensitive scales than the WAI are needed in order to target rehabilitation activities early enough. The GHQ-12 might serve as such an auxiliary scale and should be further evaluated in this respect. In addition, the SOC merits further testing before any final conclusions on its predictive value.

Work health promotion had no association with entering rehabilitation in our study, which accords with the literature (1). Nevertheless, the finding may refer both to the fact that the interventions were ineffective and that the follow-up time was too short. The perceived competence of occupational health services in prevention or healthcare also appeared to have no association with entering rehabilitation. Yet, the U-shaped association between healthcare services and entering rehabilitation may be a true one: those who are healthy and do not use occupational health services are neutral in their opinion about them. The perceived good competence of occupational health services in rehabilitation instead did predict the employee's later participation in rehabilitation. The rehabilitative activities provided by the occupational health services are likely to decrease the need to seek rehabilitation from other sources.

The ICF is a known model for rehabilitation, yet the ICF Core Set awaits further validation. The findings of our study are mostly consistent with the ICF conceptualization, even though our study was based on the Job Well-being Pyramid model. Our findings coincided well with what was expected based on the pyramid model. Items on the Work side of the pyramid, such as leadership, work resources, perceptual level of work, well-being and health, were predictors of entering rehabilitation.

In conclusion, psychosocial factors at work predict entering rehabilitation, yet the measurement of psychosocial factors is prone to methodological weaknesses, which may hide or attenuate true associations. Factors that are perceived more personally, such as feedback from supervisors and appreciation at work, may have more direct impact than, for example, team climate and communication. In general, the findings of this study coincide well with the Job Well-being Pyramid model. Improving job conditions and well-being at work is likely to decrease the need for rehabilitation.

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APPENDIX I. Description of predictors

Leadership

Support was measured by the question "Do you get support from your supervisor when in need?", and feedback was measured by the question "Do you get feedback from your supervisor on how you have succeeded on your job?" Both answers were provided on a 5-point Likert scale from "almost never" (1) to "always" (5). The correlation between these questions was 0.60.

Job content

Job type was measured by the question "Do you consider your work more physical or mental in nature?" The response categories were mental, physical or equally both. Clarity of aims at work was based on a 2-part question "How clear to you are: (a) the aims of your own job, and (b) the tasks and aims of your work unit?". Answers were provided on a 5-point Likert scale from "very unclear" (1) to "very clear" (5), the sum of all items varying from 2 to 10. The inter-item correlation was 0.68 and Cronbach's alpha 0.80.

Job control was based on a 4-part question "How well can you control: (a) the many-sidedness and versatility, (b) the content, (c) the amount of your job, and (d) the principles and practices at your workplace". Answers were provided on a 5-point Likert scale from "very little" (1) to "very much" (5), the sum of all items varying from 4 to 20. The inter-item correlation between job control factors varied from 0.40 to 0.80, and Cronbach's alpha was 0.84. The correlation between the summary measures of clarity of aims at work and job control was 0.24.

Job balance

Job balance was measured by 2 questions on work pressure: "How often do you need to hurry to keep up with your work?" and "How often are you pressed by undone work?" Answers were provided on a 5-point Likert scale from "nearly never" (1) to "very often" (5), the sum varying from 2 to 10. The inter-item correlation was 0.69 and Cronbach's alpha 0.81.

Social work environment

Team climate at work was based on a 5-part question "What is the climate at your work community like: (a) tensed and competitive, each pursuing their own interests, (b) encouraging and supportive of new ideas, (c) prejudiced and sticking to old practices, (d) relaxed and nice, and (e) quarrelsome and fighting?". Answers were provided on a 5-point Likert scale from "fully disagree" (1) to "fully agree" (5). Items (a), (c) and (e) were reversed before summing up, the sum of all items thus varying from 5 to 25. The inter-item correlation coefficient between work climate factors after the above mentioned scale inversion varied from 0.47 to 0.68, and Cronbach's alpha was 0.87.

Communication was based on 5 questions: "Do you discuss together on tasks, goals and how to attain them in your work unit?", "How well does your team work in groups?", "Does your team cooperate well with other teams?", "How well has communication worked concerning your own job?", and "How well has communication worked concerning your work unit?". Answers were provided on 5-point Likert scales, from "very seldom" (1) to "very often" (5) for the first question, and from "very poorly" (1) to "very well" (5) for the other questions. The inter-item correlation varied from 0.28 to 0.68, and Cronbach's alpha was 0.79.

Appreciation at work was assessed by the question "Is your work appreciated in your work community?" The answer ranged from "very little" (1) to "very much" (5).

Bullying was measured by the question "Do you feel yourself a target of mental violence or bullying in your workplace?", and discrimination by the question "Do you feel that you are discriminated against at your work place?". The answer for bullying ranged from "yes" (1) to "previously but not anymore" (2) to "no, I don't" (3). The answer for discrimination was provided on a 5-point Likert scale from "very often" (1) to "never" (5). Correlation between these 2 questions was 0.60 and Cronbach's alpha 0.68.

Physical work environment

The client violence was questioned by "How often has a client threatened you, been violent to you, or threatened you with violence?". The answer was provided on a 5-point Likert scale from "very often" (1) to "never" (5). The other 3 factors were measured by the question "How much are you bothered by the following factors in your work environment: (a) recurring, monotonous movements or hard or uncomfortable positions, (b) the crowdedness, noise or unsettledness of your work environment, and (c) uncomfortable room temperature, draughts, weak indoor air quality, poor lighting, etc.?". Answers were provided on a 3-point scale from "does not occur or does not bother" (1) to "bothers a lot" (3). The correlation between these 4 factors varied from 0.02 to 0.44.

Job well-being

Job satisfaction was measured by a single question "How satisfied are you with your work?" The answer was provided on a 5-point Likert scale from "very dissatisfied" (1) to "very satisfied" (5). Job enjoyment was measured by question "How often do you feel enjoyment in your job?" The answer was provided on a 5-point Likert scale from "almost never" (1) to "very often" (5). The correlation between these questions was 0.61.

Mental well-being

Mental well-being was assessed by a single question "What do you think your mental well-being is at the moment?" The answer ranged on a Likert scale from "very poor" (1) to "very good" (5).

GHQ-12. Psychiatric morbidity was assessed by the version of GHQ with 12 items, the total score ranging from 12–48. Typical questions are "Have you recently lost much sleep over worry?", "Have you recently felt constantly under strain?", "Have you recently been losing confidence in yourself?" and "Have you recently felt capable of making decisions about things?". All items have a 4-point Likert scale, with 1 and 2 meaning that things are at least as well as usual, or at least not worse than usual, and 3 and 4 that things have become worse than usual. The inter-item correlation varied from 0.19 to 0.67, and Cronbach's alpha was 0.89.

SOC. The original scale consists of 29 items, but the shorter version with 13 items was used in this study, the total score ranging from 7 to 91. Typical questions are "Do you have the feeling that you don't really care about what goes on around you?" (meaningfulness), "Has it happened that people whom you counted on disappointed you?" (manageability), and "Do you have very mixed-up feelings and ideas?" (comprehensibility). All items have a 7-point Likert scale, e.g. from "very seldom or never" (1) to "very often" (7), or from "never" (1) to "all the time" (7). After reversing the scoring for items 1–3, 7 and 10, the inter-item correlation varied from 0.07 to 0.69 and Cronbach's alpha was 0.87.

Physical well-being

Physical fitness was measured by the question "What do you think your physical fitness is at the moment compared with others at same age?", and the answer ranged on a Likert scale from "very poor" (1) to "very good" (5). The occurrence of musculoskeletal symptoms was measured by a 4-part question "During the last 6 months, have you had any musculoskeletal symptoms that have restricted or troubled you in your life or at working in your: (a) neck or shoulder area, (b) upper extremities, (c) back, or (d) lower extremities?" The answer varied from "no, I haven't" (1) to "yes, occasionally" (2) to "yes, constantly or nearly constantly" (3). For analysis, the answer was categorized to "none" (1) if the employee reported no symptoms at all, to "occasionally" (2) if there had been at most occasional symptoms in any body region, and "constantly" (3), if the employee reported constant symptoms in any body region.

The correlation coefficient between health and mental well-being and physical fitness was 0.11 and 0.63, respectively, and between mental well-being and physical fitness 0.38.

Work ability

Work ability was measured by the Work Ability Index, which comprises 7 items, the index being the sum of all items (7–49). Each item is scored using a Likert scale, the actual points varying from item to item. The items are (scores in parentheses): current work ability compared with the lifetime best (0–10), work ability in relation to the demands of the job (2–10), number of current diseases diagnosed by a physician (1–7), estimated work impairment due to diseases (1–6), sick leave during the past year (12 months) (1–5), own prognosis of work ability 2 years from now (1–7), and mental resources (1–4). The inter-item correlation varied from 0.17 to 0.66, and Cronbach's alpha was 0.82.

Work health promotion

Work health promotion was measured by 2 questions. Recreation and exercise was measured by the question "Does your work place invest in the improvement of employee well-being by arranging recreational activities, work site exercise or other opportunities to do exercise?" and promotion of mental well-being by the question "Has there been arranged any activities to promote coping in mental work at your work place?". The answer was provided on a 5-point Likert scale from "very little" (1) to "very much" (5). The correlation between these questions was 0.58.

Occupational health services

Employees' perceptions on occupational health services were assessed by a 3-part question "How well do the occupational health services of your workplace serve your needs in: (a) preventive healthcare, (b) care of sickness and disease, and (c) rehabilitation". Answers were provided on a 5-point Likert scale, from "very badly" (1) to "very well" (5). The inter-item correlation varied from 0.57 to 0.79.