Multidisciplinary vocational rehabilitation for patients with chronic arthritis

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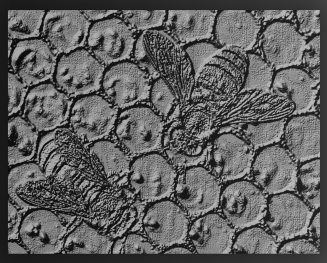

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Randomized comparison of a multidisciplinary job-retention vocational rehabilitation program with usual outpatient care in patients with chronic arthritis at risk for job loss

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Abstract

Objective: Work disability is a major consequence of inflammatory rheumatic conditions. Evidence regarding the effectiveness of interventions aimed at the prevention or reduction of work disability in rheumatic diseases is limited. This randomized controlled trial aimed to investigate the effectiveness of a multidisciplinary job retention vocational rehabilitation program VR-program) in patients with a rheumatic condition who were at risk for job loss.

Methods: 140 patients with a chronic rheumatic condition were randomly assigned to a multidisciplinary job retention VR-program (n=74) or usual outpatient care (UC) (n=66). Patients in the VR group were assessed and guided by a multidisciplinary team, whereas subjects in the UC group received care as initiated by their rheumatologist, supplemented with written information. Main outcome measure was the occurrence of job loss (complete work disability or unemployment), additional outcome measures included job satisfaction pain, functional status, emotional status, and quality of life.

Results: There was no difference between the two groups regarding the proportion of patients having lost their job at any time point, with 24% and 23% of the patients in the VR and UC groups having lost their job after 24 months, respectively. Over the total period of 24 months, patients in the VR group had a significantly greater improvement of the VAS fatigue and of emotional status (all p-values <0.05).

Conclusion: A job retention vocational rehabilitation program did not reduce the risk of job loss but improved fatigue and mental health in patients with chronic rheumatic diseases at risk for job loss.

Introduction

The prevalence of work disability among persons with chronic rheumatic diseases is high. In patients with rheumatoid arthritis (RA), work disability rates are varying between 25% and 50% after 10 years of disease and increasing to 90% in patients with longer disease duration (1-4). Work disability is also substantial in patients with other rheumatic conditions, such as ankylosing spondylitis (5;6) and systemic lupus erythematosus (7).

Costs ensuing from work disability account for a large part of the total costs associated with rheumatic conditions (8;9). In addition to the economic consequences of work disability, its non-economic impact on a person and his or her family may be substantial. Work disability was found to be associated with lower levels of self-esteem, life satisfaction, perceived health status and higher levels of depression and pain (10-14).

Given the large impact of work disability, work retention issues have been identified as one of the aims of the management of patients with rheumatic conditions (15). In the United States and European countries, vocational rehabilitation programs are being offered to patients with the aim of preventing the loss of paid employment or returning patients to work. In contrast with the many studies on factors associated with work disability (4;16), the number of publications reporting on the results of vocational rehabilitation programs is limited (17-19). The results of the few available studies, of which the majority had an uncontrolled design, indicate an overall a positive effect on vocational status (18). A recent randomised controlled trial on the effectiveness of a job retention vocational rehabilitation program (two 1.5-hour sessions) in patients with rheumatic diseases showed that such an intervention delayed and reduced job loss (17). That study did not include outcome measures reflecting the impact of the vocational rehabilitation program on quality of life.

The aim of the present study was to evaluate the effectiveness of a multidisciplinary job retention vocational rehabilitation on the prevention of job loss and on quality of life. For that purpose, we conducted a multicenter, randomised controlled trial among patients with chronic rheumatic diseases who were in paid employment and at risk for job loss.

Subjects and Methods

Study participants. Between March 1999 and June 2001, subjects were recruited at the outpatient rheumatology departments of Leiden University Medical Center and 10 non-academic hospitals within the region of Leiden,

the Netherlands. Participants were between 18-63 years of age and had a chronic rheumatic disease (diagnosis rheumatoid arthritis (RA); ankylosing spondylitis (AS); psoriatic arthritis; reactive arthritis; systemic lupus erythomatosus, SLE; or scleroderma (20-22). All patients had a paid job (working full-time or part-time or being on sick leave, either with or without a partial disability pension) and were having a self-perceived, disease related problem at work, threatening their ability to work. This condition was verified by asking every potential participant the question: "Do you have concerns that your rheumatic condition-related problems at work may result in job loss?". Exclusion criteria were reaching the pension able age within two years or having another disease or situation influencing work ability. The medical ethics committees of all participating hospitals approved this trial and all patients gave written informed consent.

Study protocol. This study was a randomised controlled trial comparing a job retention vocational rehabilitation program (VR group) with usual outpatient care (UC group), with 24 months of follow-up. After enrolment and baseline assessments had been completed, participants were randomly allocated to either the multidisciplinary job retention vocational rehabilitation program or to usual outpatient care. Randomisation was done with stratification for center (academic hospital versus non-academic hospital) and three diagnosis groups (RA; AS, psoriatic arthritis or reactive arthritis; and SLE or scleroderma), according to a randomisation list that was made up by a random digit generator. All clinical assessments were done by a trained research nurse (JB) who was blinded to the patients' treatment status. Assessments were done at baseline and after 6, 12, 18 and 24 months of follow up. To maintain allocation concealment, patients were instructed not to inform the principal investigator or the research nurse about the type of care they received.

Intervention. The job retention vocational rehabilitation program has been described in detail earlier (23). In brief, the job retention vocational rehabilitation program was delivered at the department of Rheumatology of the Leiden University Medical Center by a multidisciplinary team comprising a rheumatologist, a social worker, a physical therapist, an occupational therapist and a psychologist. Moreover, an occupational physician who was linked to the occupational health service of the Leiden University Medical Center was connected to the team. This occupational

physician was not involved in the guidance of individual patients, but had a general advisory role. The organisation of the program was in the hands of a coordinator. All patients made at least two visits to the hospital in connection with the job retention vocational rehabilitation program.

The intervention consisted of a systematic assessment followed by education, vocational counselling, guidance and medical or non-medical treatment. The basic assessment was done by a rheumatologist (current level of disease activity and joint destruction, presence of extra-articular manifestations or co-morbidity and extent and severity of activity limitations; prognosis regarding future impairments and activity limitations) and the coordinator (education level and previous jobs, systematic registration of the problems encountered in the current working situation, using a list of potential challenges and psychosocial situation). If necessary, additional team members were asked to see the patient in order to gather more information about specific aspects of the work situation. Dependent on the specific problems of the individual patient, the intervention further consisted of education (such as providing written and oral information about the Dutch social security system regarding sick leave and work disability), counselling and guidance (such as the identification of resources for adapting the working environment or working hours, promotion of work self-efficacy), or treatment (such as adaptation of the medical treatment in consultation with the referring rheumatologist, exercise therapy, occupational therapy, functional training of relevant activities or mental restoration).

All information concerning the patient's health status, working situation and working challenges and the course of the process of education, counselling, guidance or treatment was listed in a final report. This report was then sent to the referring rheumatologist and the occupational physician connected with the patient's company if applicable. The total duration of the intervention varied, and lasted on average between 4-12 weeks.

Patients assigned to the UC group were treated and referred to other health professionals in relation to their working problem if regarded necessary by their rheumatologist. In addition, they all received the same written information about the Dutch social security system regarding sick leave and work disability as patients in the VR group.

The referring rheumatologists were informed about the treatment allocation. In both groups, physicians had free choice with respect to their

medical prescriptions and other treatment strategies. All medical treatment and the use of health services during the intervention period and two-year follow-up were recorded in both groups.

Sociodemographic and disease characteristics and the use of health care services. The following variables were recorded at baseline: age, sex, status of living (living with a partner yes/no), diagnosis and disease duration. Co-morbidity was measured with the Charlson index (24) and categorised as not present: Charlson index = 0 or present: Charlson index >0.

Education level was divided into three categories based on the Dutch school system: primary education (0-8 years), secondary education (9-16 years), and higher vocational education/university (17 years and more). Information about the job characteristics included the level and type of objective physical and mental demands at work (25). Category 1 is characterised by predominantly mental demands and 'no' physical demands; category 2 by occupations with a combination of physical effort (light or heavy; standing, walking, lifting, high physical strain on the low back) and mental effort; category 3 by light physical demands (standing, walking, lifting of light objects); and category 4 by heavy physically demanding tasks (lifting of heavy objects, handling of heavy tools, and stooping frequently in combination with standing or walking). In addition, the presence of material or immaterial adaptations at the workplace was recorded (yes/no).

Current sick leave was recorded, with sick leave being defined as being absent from work as officially reported to the employer. At the time the study was conducted and according to the Dutch social security system, employees who were more than one year on full or partial sick leave are entitled a full or partial work disability pension if permanent work disability had officially been determined. If a person was judged to be impaired for 80% or more, this person was entitled full work disability, while those who were impaired for 15-80% were entitled partial work disability. In the Dutch social security system it is possible to receive a partial work disability pension and to remain in paid employment on a part-time basis, in which situation again partial or complete sick leave may occur.

The use of health care services and visits to different health professionals, such as an occupational therapist or the clinical nurse specialist, were measured using a three-monthly diary.

Endpoint measures. The main outcome was the occurrence of job loss, defined as receiving an official full work disability pension or unemployment. The classification of job losses was based on the participants' records of their work status at every follow-up visit. Subjects being less then 1 year on full sick leave were classified as being in paid employment. In addition to job loss, the number of patients in whom the extent of the disability pension had increased (by receiving an official full disability pension or by receiving a new or a larger official partial disability pension) was recorded at every time point.

Secondary outcome measures were satisfaction with the job, pain, fatigue, physical functioning, and quality of life.

Satisfaction with the job was measured on a horizontal visual analogue scale (VAS; range 0-10 cm). The anchor on the left was not at all satisfied and the anchor on the right was fully satisfied with the job. The VAS was only to be filled in by those subjects who had worked at least five days in the last month.

The patient's global assessments of pain and fatigue were measured on a VAS (0-10 cm). The anchors on the left were no pain and no fatigue whereas the anchors on the right were severe pain and severe fatigue. To assess physical functioning, the Health Assessment Questionnaire (HAQ), a 20-item questionnaire comprising 8 domains of activities of daily living (26) was included.

Anxiety and depression were measured by means of a Dutch version of the Hospital Anxiety and Depression Questionnaire (HADS) (27). It contains two 7-item scales: one for anxiety and one for depression both with a score range of 0-21.

Quality of life was measured using the RAND 36-item Health Survey (28). The RAND-36 was converted into 2 summary scales: the physical and mental component summary scales. The RAND includes the same items as the Medical Outcomes Study Short-Form (SF 36) and although the scoring procedures are somewhat different, the effects on final scores are minimal (28).

Analysis and statistical methods. The sample size was calculated to allow detection of a 20% difference between the two groups. Assuming 10% job loss in the VR group and 30% job loss in the UC group, with 80% power based on a 2-sided test with a significance level of 0.05, 63 patients per group would be needed to detect a significant difference. Considering a

dropout rate of 10%, 140 patients in total would be needed for the present study.

Data management was performed using the Project Manager Software package version 6.1 (29). Data were automatically and integrally converted to SPSS 11.5 for Windows for statistical analysis.

Baseline characteristics and baseline values of outcome measures were compared with the Mann-Whitney U test, unpaired student t-test or Chi-Square test where appropriate. The primary analyses of effectiveness were based on intention to treat as initially assigned. All available data were used. As a secondary analysis a per protocol analyses was done, comparing the subjects who did actually receive the treatment in the vocational rehabilitation group with the subjects in the usual care group.

Regarding the primary outcome measure job loss, proportions of patients in both groups were compared at each time point with a Chi square test. A logistic regression model with time, randomisation group and a random person effect was used to compare the overall change in percentages over time between the groups (test for interaction between time and randomisation group). The same procedure was followed to compare proportions of patients in whom the extent of the disability pension had increased. To investigate the presence of subgroups of patients who would or who would not benefit from the intervention, tests for interaction between randomisation group and age, diagnosis at baseline, and the presence of sick leave at baseline were performed in the logistic model.

With respect to the secondary outcomes, within each group changes from baseline with the 95% confidence interval (CI) were computed at each time point. Change scores were compared between the two groups with an unpaired student t-test. A linear mixed model with time as covariate was used to compare the difference in trend over the total follow-up period of two years.

Results

196 subjects were assessed for eligibility. Fifty-six subjects were excluded, because they did not meet the inclusion criteria (n=35), refused to participate (n=12) or could not enter the study for other reasons (n=9).

Of the 74 patients randomized to the VR program, 10 (14%) did not take part in the intervention (protocol violations) for various reasons: finding visits to the hospital too troublesome (n=4), hospital admission (n=2), myocardial infarction (n=1), finding a new job (n=1) and unknown (n=2).

Four of these 10 patients did not show up at any of the follow-up visits (lost to follow-up at t=6 months). Over the period of 2 years, 12 participants allocated to the UC group and 13 participants allocated to the VR group withdrew from the trial (Figure 1). Reasons for withdrawal were moving out of the area (n=5), personal and family matters (n=7), not responding to our repeated telephone calls (n=3), death of a heart attack (n=1), time constraints (n=1), loss of interest (n=5) or other reasons (n=3). The baseline sociodemographic and disease characteristics of the 115 completers of the study did not differ from those of the 25 who withdrew (data not shown).

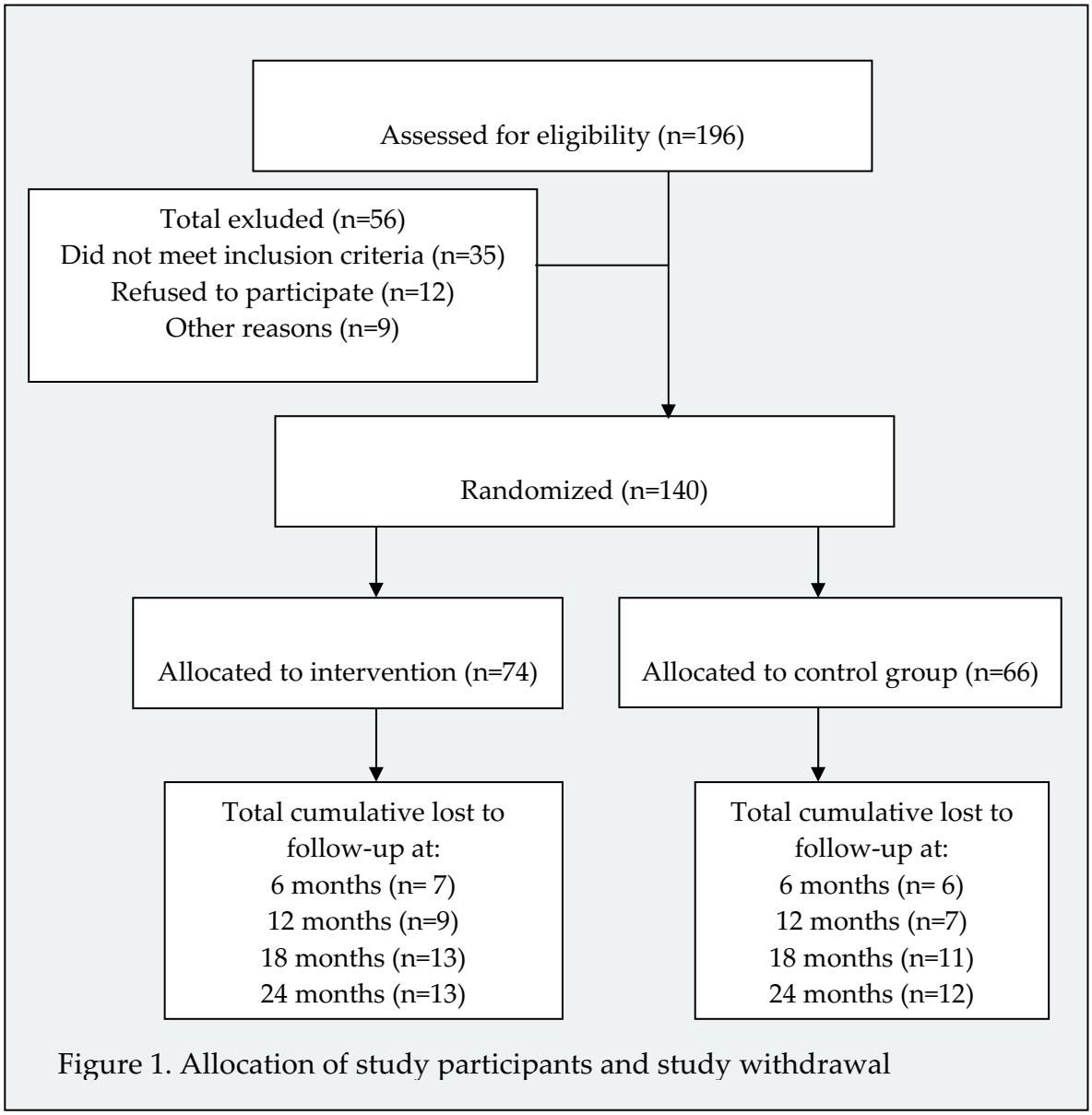

Figure 1. Allocation of study participants and study withdrawal

The sociodemographic and disease characteristics of the 140 study participants at baseline are shown in table 1. There were no statistically significant differences in any of the characteristics between the two groups.

Table 1. Baseline sociodemographic and clinical characteristics* of 140 patients with chronic arthritis participating in a randomized controlled trial comparing a multidisciplinary job retention vocational rehabilitation program with usual care			
	Vocational Rehabilitation (n=74)	Usual care (n=66)	P-value #
Age, years; median (range)	43 (21-57)	44 (24-58)	0.86
Female	41 (55%)	38 (58%)	0.80
Living with partner	61 (82%)	48 (73%)	0.18
Diagnosis			
-Rheumatoid arthritis	34 (46%)	36 (55%)	0.54
-Ankylosing spondylitis, psoriatric or reactive arthritis	17 (23%)	12 (18%)	
-SLE, scleroderma	23 (31%)	18 (27%)	
Duration of disease, months; median (range)	11.0 (0-158)	19.5 (0-174)	0.60
Comorbidity present (Charlson Index >0)	32 (43%)	28 (42%)	0.88
Education level			
-High	15 (20%)	10 (15%)	0.54
-Medium	37 (50%)	39 (59%)	
-Low	22 (30%)	17 (26%)	
Current occupational category			
-Mental demands	20 (28%)	24 (36%)	0.41
-Mixed mental / physical demands	15 (20%)	13 (20%)	
-Light physical demands	20 (27%)	19 (29%)	
-Heavy physical demands	19 (25%)	10 (15%)	
Adaptations at work due to rheumatic disease	22 (29%)	15 (23%)	0.35
Partial work disability benefit	12 (16%)	11 (17%)	0.94
Sick leave	42 (57%)	35 (53%)	0.66
Complete sick leave	21 (50%)	20 (57%)	0.80
Duration of sick leave in weeks; median (range)	16 (1-52)	18 (3-48)	0.80
Duration of sick leave more than 6 weeks	29 (39%)	28 (42%)	0.70
Duration of sick leave more than 40 weeks	6 (8%)	2 (3%)	0.17
* All values are presented as number (%), unless specified otherwise # Chi-Square test or Mann Whitney U test where appropriate			

The use of health services during the intervention period and two-year follow-up. Over the first 6 months of the study as well as during the total two years of follow-up no significant difference between the two groups was found with respect to the mean number of visits to the rheumatology nurse specialist,

occupational therapist, physical therapist, social worker, psychologist or the occupational physician (data not shown). However, subjects in the UC group paid more visits to the rheumatologist in the first six months of the study (2.8, SD 2.0) as compared to the subjects in the intervention group (1.5, SD 1.9; p<0.001).

Permanent job loss and increase in disability pension. Over the total follow-up period, in both groups job loss occurred, predominantly in the first 12 months of follow-up (table 2). All job losses were related to the rheumatic disease and could be classified as receiving a full work disability pension. None of the patients became unemployed for other reasons. There was no statistically significant difference in the proportion of patients with permanent job loss between the groups at any time point. Moreover, the mixed effects logistic regression model did not indicate a different trend over time between the two groups (test for interaction between time and intervention group p=0.13, test for main group effect p=0.86).

Table 2. Job loss and increase in official disability pension (cumulative) in 140 patients with a rheumatic condition randomised to a multidisciplinary job retention VR programme or usual care.

	Vocational rehabilitation (n=74)	Usual care (n=66)	p-value*
Job loss			
6 months	6/66 (9%)	3/59 (5%)	0.39
12 months	12/64 (19%)	11/58 (19%)	0.97
18 months	11/59 (19%)	13/55 (24%)	0.51
24 months	14/59 (24%)	12/53 (23%)	0.89
Job loss or increase in official disability pension			
6 months	14/66 (21%)	4/59 (7%)*	0.02
12 months	26/64 (41%)	19/58 (33%)	0.37
18 months	26/59 (44%)	23/55 (42%)	0.81
24 months	31/59 (53%)	23/53 (43%)	0.33

* Chi-Square test

In a secondary per protocol analysis, comparing the 64 subjects who did actually receive the treatment in the VR group with the 66 subjects in the UC group, there was no statistically significant difference in the proportion of patients with job loss between the groups at any time point or over the

follow-up total period (data not shown).
With respect to the primary outcome measure job loss, there was no significant interaction between randomisation group and age, diagnose at baseline, and the presence of sick leave at baseline as performed in a logistic model.
Regarding deterioration of the working situation defined as either full work disablement or institution or increase of a partial disability pension, initially more subjects in the VR group than in the UC group became either fully work disabled (job loss) or to a greater extent partially work disabled at six months of follow-up (p=0.02). However, after 12 months this difference disappeared. Regarding this endpoint, over the whole time period there was no statistically significant difference between the two groups (test for interaction between time and randomisation group p= 0.09, test for main effect p= 0.27).

Table 3. Clinical outcome data at baseline and change scores from baseline in 140 patients with chronic arthritis at risk for job loss randomised to a multidisciplinary job-retention vocational rehabilitation program ∞ usual care) (second part of table, see next page)

		Baseline+	6 months	12 months
Job satisfaction[5] (VAS[1]; 0-10)	VR UC	5.57 (2.55) 5.53 (2.55)	0.18 (-.92, 1.27) 0.15 (-.80, 1.10)	1.78 (0.85, 2.70) 0.53 (-.48, 1.55)
Pain (VAS[1]; 0-10)	VR UC	4.37 (2.31) 4.71 (2.27)	-0.70 (-1.40, 0.01) -0.20 (-.81, 0.41)	-0.31 (-1.08, 0.47) -0.58 (-1.28, 0.13)
Fatigue (VAS[1]; 0-10)	VR UC	6.11 (2.42) 5.43 (2.74)	-0.23 (-.92, 0.47) 0.11 (-.53, 0.75)	-0.58 (-1.29, 0.14) -0.55 (-1.38, 0.28)
HAQ[3] (0-3)	VR UC	0.76 (0.50) 0.83 (0.55)	0.03 (-.08, 0.13) -0.04 (-.16, 0.08)	-0.04 (-.15, 0.06) -0.07 (-.19, 0.05)
HADS[2] Anxiety	VR UC	7.20 (4.00) 6.80 (4.10)	-0.30 (-1.08, 0.48) -0.43 (-1.39,0.54)	-0.83 (-1.78, 0.11) -0.25 (-1.37,0.89)
HADS[2] Depression	VR UC	6.10 (3.30) 5.70 (3.50)	-0.02 (-1.05, 1.01) 0.28 (-0.54, 1.10)	-.46 (-1.50, 0.57) 0.02 (-0.89, 0.92)
RAND SSC[4] Physical health	VR UC	40.64 (17.66) 43.32 (19.03)	5.75 (-0.45, 11.95) 5.96 (0.38, 11.53)	13.6 (7.04, 20.18) 11.7 (5.04, 18.39)
RAND SSC[4] Mental health	VR UC	59.59 (24.08) 64.10 (23.31)	-1.40 (-8.40, 5.54) 1.72 (-5.05, 8.50)	5.31 (-1.99, 12.61) 3.33 (-4.42, 11.08)

[1]VAS= Visual Analogue Scale, [2]HADS=Hospital Anxiety and Depression Score,
[3]HAQ=Health Assessment Questionnaire, [4]RAND SSC=RAND summary scale
[5] VAS Job satisfaction was only filled in by those subjects who worked five days or more in the past month. Numbers of subjects were 58, 46, 46, 37, 37 (at baseline, 6, 12, 18 and 24 months of follow-up) for the intervention group and 46, 39, 41, 32, 37 for the usual care group, respectively.

In contrast with the 54 subjects who deteriorated regarding the extent of the disability pension, 7 subjects improved (three in the VR group and four in the UC group). Two subjects, both in the UC group, who were partially work disabled at baseline, did not receive a disability pension anymore after 12 months of follow-up. In addition, four subjects who were fully work disabled became partially work disabled (three from the VR group after 12, 18 and 24 months and 1 from UC group after 24 months of follow-up), whereas one subject in the UC group who was fully work disabled did not receive a disability pension after 12 months of follow-up.

Job satisfaction, physical and mental functioning and quality of life. In table 3 it is shown that over the total follow-up period of 24 months, patients in the VR group showed a significantly greater improvement of fatigue, the HADS-depression and anxiety sub-scales and mental health as measured by the RAND 36 summary scale mental health than patients in the UC group.

Table 3. (first part, see previous page)

		18 months	24 months	P value#
Job satisfaction[5] (VAS[1]; 0-10)	VR UC	1.65 (0.55, 2.74) 0.24 (-.96, 1.45)	2.00 (1.25, 2.75) 0.88 (-.33, 2.11)	0.12
Pain (VAS[1]; 0-10)	VR UC	-0.43 (-1.19, 0.32) -0.33 (-1.00, 0.34)	-0.59 (-1.28, 0.09 -0.42 (-1.16, 0.32)	0.85
Fatigue (VAS[1]; 0-10)	VR UC	-0.48 (-1.20, 0.25) -0.05 (-.88, 0.77)	-1.23(-1.91, .54)* -0.15 (-1.03, 0.73)	0.04
HAQ[3] (0-3)	VR UC	0.00 (-.11, 0.11) 0.08 (-.04, 0.21)	-0.01 (-.14, 0.12) -0.10 (-.23, 0.03)	0.43
HADS[2] Anxiety	VR UC	-.94 (-1.87, -.020) -0.34 (-1.53, 0.89)	-1.83 (-2.86, -.80)* -0.03 (-1.26, 1.34)	0.01
HADS[2] Depression	VR UC	-0.64 (-1.71, 0.44) -0.21 (-1.36, 0.93)	-1.66 (-2.72,-.60)* 0.15 (-1.12, 1.42)	0.04
RAND SSC[4] Physical health	VR UC	13.78 (6.32, 1.25) 9.32 (2.75, 15.90)	13.72 (6.73, 0.71) 11.69 (5.36, 8.02)	0.63
RAND SSC[4] Mental health	VR UC	11.20 (2.40, 0.06) 3.60 (-4.78, 12.00)	13.61(6.61,20.60) 2.16 (-5.30, 9.62)*	0.01

[+]All differences between baseline values p>0.05, unpaired student t-test,
=linear mixed model, *p<0.05, unpaired student t-test

Moreover, there was a trend towards a greater improvement of job satisfaction in the VR group. Pain, functional ability and physical health did not differ between the two groups over time.

Discussion

The results of this randomised controlled study showed that participating in a vocational rehabilitation program had no effect on remaining in paid employment. However, there was a significant effect on fatigue and mental health as compared to the usual care.

To our knowledge, this is the second randomised controlled trial investigating the effectiveness of a vocational rehabilitation program for patients with rheumatic diseases at the level of prevention of job loss. In contrast to our study, Allaire (17) and co-workers found that job loss was significantly delayed and reduced among study participants who received a job retention vocational rehabilitation intervention.

There may be several possible explanations for this discrepancy. First, there may have been differences regarding the components and execution of the intervention. Although job accommodation, vocational counselling and guidance, education and self-advocacy were elements of the interventions in both the study by Allaire et al. and the present study, the focus and intensity may have varied. Moreover, the program as provided in the study by Allaire et al. was conducted in connection with an ongoing state vocational rehabilitation program, whereas in the present study the intervention was delivered in a health care setting. In the Dutch health care and social security system the occupational physician plays an important role in the process of vocational rehabilitation. The occupational physician is linked to occupational health services, with which all companies are legally obliged to have a contract since January 1998. The co-operation between occupational physicians and other health professionals, including our multidisciplinary vocational rehabilitation team, has however previously been found to be an important but often troublesome element in the vocational guidance of patients with a health related problem at work (15;23;30-32).

A second explanation for the difference with the results of the study by Allaire may be that differences in the contrast between the vocational rehabilitation program and usual care may have occurred between the two studies. In our study, patients were directly referred for participation in the

trial by the rheumatologist, who was thus aware of the working problems the patient encountered. Moreover, the rheumatologist was informed about the treatment allocation in a later stage, another factor which could have induced enhanced treatment or referrals in connection with the work problem in the UC group. Indeed, patients in the UC group initially paid more visits to the rheumatologist than patients in the VR group. The patients' participation in the trial could have made rheumatologists aware of their patients' problem at work and if a patient was allocated to the usual care group they could have had the feeling they needed to act on account of their patients. In addition, it is possible that patients who were allocated to the control group made an extra appointment with their rheumatologist to discuss their working problem and potential solutions. In the study by Allaire, the connection between regular rheumatologic care and the trial appeared to be less close.

A third explanation for the discrepancy between the results of the two trials may be that the populations studied were different. In general, patients in the study by Allaire et al were about five years older, were more often female, and had better functional status as measured with the HAQ than the patients in the present study. Moreover, there may have been differences in the severity of the working problems. In our study, more than 40% of the patients in both groups were on sick leave at baseline, many of them longer than six weeks. Long-term sick leave usually indicates substantial limitations in work capacity and often precedes permanent work disability. At the time the study was conducted, the genuine setting of vocational rehabilitation plans by the occupational physician in collaboration with the patient and the employer was often postponed until the medical examination for a work disability pension approached at 12 months of sick leave, making job loss unavoidable. Although subjects in our study were motivated to stay in the work force, with a relatively long period with sickness absence, individuals may have come to lose their belief in their own capacity for employment and accept their inability to work. A relatively long duration of sick leave may also have played a role in the initial excess job loss in the VR group. In our study, there were 6 patients in the VR group and 2 patients in the UC group with a duration of sick leave of more than 40 weeks. Although this difference did not reach statistical significance, it is conceivable that the few extra patients with a relatively long duration of sick leave at the start of the study in the VR group could explain the initial excess job loss in the VR group. Overall, it

could be that for those patients with a relatively long duration of sick leave, the intervention was provided too late to make a difference. Only recently the Dutch occupational health law has changed and employees on sick leave are now seen by the occupational physician in the first six weeks of sick leave.

Despite the fact that our study did not demonstrate a quantitative effect regarding the prevention of job loss, a beneficial effect of the vocational rehabilitation program on fatigue, and mental health depression was found. Fatigue has been described as persistent disease-related threat to employment (23;33;34). In order to cope with fatigue patients can make a number of job accommodations such as altering working hours, taking more and shorter breaks, working at home, delegating specific tasks or making adaptations aimed at conserving energy in their personal lives in order to save themselves for the job. These changes take time and may not have a direct effect on the short term working situation. Two studies (35;36) report the relationship between fatigue and health related quality of life as measured with the SF-36 in patients with chronic arthritis. Fatigue, general, physical and mental health, went hand in hand with diminished work productivity and work quality.

In addition to the beneficial effect on fatigue and mental health, a trend towards greater satisfaction with the job for those who remained in the work force was seen. This positive trend might have reached statistical significance if the study sample had been larger. However, the considerable drop-out rate in the present study, which was larger than anticipated, has negatively affected the statistical power of this study.

Although the results of the present study did not confirm the positive effect of the previous study by Allaire et al, there is ample rationale for the future development and evaluation of vocational rehabilitation programs. First, work disability remains a major problem in patients with rheumatic diseases, and second there are a number of starting points for the design of effective interventions. For the effectiveness of job retention vocational rehabilitation programs it is important that patients at risk for work disability are identified in an early stage. It has been found however, that rheumatologists often do not recognize the working problems (15;23;33;37), and the same might apply to other health professionals. Nowadays, a number of instruments to measure work disability have become available, such as the work limitations questionnaire (WLQ) or the work instability scale (38-40). The broad implementation of such instruments in the clinical

setting of rheumatologic care, especially in connection with early arthritis clinics, deserves consideration.

Apart from its timing, the connection between the health care system and vocational rehabilitation systems needs to be further developed. With respect to the Dutch situation, the role of the occupational physician as a potential participant in the vocational rehabilitation process should be explained more clearly and more communication should take place in earlier phases of vocational guidance (23).

In conclusion, a job retention vocational rehabilitation program did not reduce the risk of job loss but improved fatigue and mental health in patients with rheumatic diseases. With the development of vocational rehabilitation interventions, the provision of these services in early phases of the work problems and the collaboration between various health care professionals including occupational physicians, employers and the patient/employer themselves deserve special attention.

References

1. Yelin E, Meenan R, Nevitt M, Epstein W. Work disability in rheumatoid arthritis: effects of disease, social, and work factors. Ann Intern Med 1980; 93(4):551-556.
2. Meenan RF, Yelin EH, Nevitt M, Epstein WV. The impact of chronic disease: a sociomedical profile of rheumatoid arthritis. Arthritis Rheum 1981; 24(3):544-549.
3. Jantti J, Aho K, Kaarela K, Kautiainen H. Work disability in an inception cohort of patients with seropositive rheumatoid arthritis: a 20 year study. Rheumatology (Oxford) 1999; 38(11):1138-1141.
4. Verstappen SMM, Bijlsma JW, Verkleij H, Buskens E, Blaauw AAM, Ter Borg EJ et al. overview of work disability in rheumatoid arthritis patients as observed in cross-sectional and longitudinal surveys. Arthritis Rheum 2004; 51(3):488-497.
5. Chorus AM, Miedema HS, Wevers CW, van Der LS. Work factors and behavioural coping in relation to withdrawal from the labour force in patients with rheumatoid arthritis. Ann Rheum Dis 2001; 60(11):1025-1032.
6. Boonen A, de Vet H, van der Heijde D, van Der Linden S. Work status and its determinants among patients with ankylosing spondylitis. A systematic literature review. J Rheumatol 2001; 28(5):1056-1062.
7. Partridge AJ, Karlson EW, Daltroy LH, Lew RA, Wright EA, Fossel AH et al. Risk factors for early work disability in systemic lupus erythematosus: results from a multicenter study. Arthritis Rheum 1997; 40(12):2199-2206.
8. Cooper NJ. Economic burden of rheumatoid arthritis: a systematic review. Rheumatology (Oxford) 2000; 39(1):28-33.

9. Boonen A, van der HD, Landewe R, Spoorenberg A, Schouten H, Rutten-van Molken M et al. Work status and productivity costs due to ankylosing spondylitis: comparison of three European countries. Ann Rheum Dis 2002; 61(5):429-437.
10. Urbanek T, Sitajova H, Hudakova G. Problems of rheumatoid arthritis and ankylosing spondylitis patients in their labor and life environments. Czech Med 1984; 7(2):78-89.
11. van Jaarsveld CH, Jacobs JW, Schrijvers AJ, Albada-Kuipers GA, Hofman DM, Bijlsma JW. Effects of rheumatoid arthritis on employment and social participation during the first years of disease in The Netherlands. Br J Rheumatol 1998; 37(8):848-853.
12. Young A, Dixey J, Cox N, Davies P, Devlin J, Emery P et al. How does functional disability in early rheumatoid arthritis (RA) affect patients and their lives? Results of 5 years of follow-up in 732 patients from the Early RA Study (ERAS). Rheumatology (Oxford) 2000; 39(6):603-611.
13. Raspe HH. Social and emotional problems in early rheumatoid arthritis. 75 patients followed up for two years. Clin Rheumatol 1987; 6:S5.
14. Pincus T, Griffith J, Pearce S, Isenberg D. Prevalence of self-reported depression in patients with rheumatoid arthritis. Br J Rheumatol 1996; 35(9):879-883.
15. Gilworth G, Haigh R, Tennant A, Chamberlain MA, Harvey AR. Do rheumatologists recognize their patients' work-related problems? Rheumatology (Oxford) 2001; 40(11):1206-1210.
16. de Croon EM., Sluiter JK, Nijssen TF, Dijkmans BA, Lankhorst GJ, Frings-Dresen MH. Predictive factors of workdisability in rheumatoid arthritis: systematic literature review. Ann Rheum Dis 2004; 63(11):1362-1367.
17. Allaire SH, Li W, LaValley MP. Reduction of job loss in persons with rheumatic diseases receiving vocational rehabilitation: a randomized controlled trial. Arthritis Rheum 2003; 48(11):3212-3218.
18. de Buck PDM, Schoones JW, Allaire SH, Vliet Vlieland TP. Vocational rehabilitation in patients with chronic rheumatic diseases: a systematic literature review. Semin Arthritis Rheum 2002; 32(3):196-203.
19. Schmidt SH, Oort-Marburger D, Meijman TF. Employment after rehabilitation for musculoskeletal impairments: the impact of vocational rehabilitation and working on a trial basis. Arch Phys Med Rehabil 1995; 76(10):950-954.
20. Arnett FC, Edworthy SM, Bloch DA, McShane DJ, Fries JF, Cooper NS et al. The American Rheumatism Association 1987 revised criteria for the classification of rheumatoid arthritis. Arthritis Rheum 1988; 31(3):315-324.
21. Tan EM, Cohen AS, Fries JF, Masi AT, McShane DJ, Rothfield NF et al. The 1982 revised criteria for the classification of systemic lupus erythematosus. Arthritis Rheum 1982; 25(11):1271-1277.
22. van Der Linden S, Valkenburg HA, Cats A. Evaluation of diagnostic criteria for ankylosing spondylitis. A proposal for modification of the New York criteria. Arthritis Rheum 1984; 27(4):361-368.

23. de Buck PDM, Breedveld J, van der Giesen FJ, Vliet Vlieland TPM. A multidisciplinary job retention vocational rehabilitation programme for patients with chronic rheumatic diseases: patients' and occupational physicians' satisfaction. Ann Rheum Dis 2003; 2004(63):562-568.
24. Charlson ME, Pompei P, Ales KL, MacKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Disease 1987; 40(5):373-383.
25. de Zwart BC, Broersen JP, van der Beek AJ, Frings-Dresen MH, van Dijk FJ. Occupational classification according to work demands: an evaluation study. Int J Occup Med Environ Health 1997; 10(3):283-295.
26. Siegert CE, Vleming LJ, Vandenbroucke JP, Cats A. Measurements of disability in Dutch rheumatoid arthritis patients. Clin Rheumatology 1984; 3(3):305-309.
27. Spinhoven P, Ormel J, Sloekers PP, Kempen GI, Speckens AE, Van Hemert AM. A validation study of the Hospital Anxiety and Depression Scale (HADS) in different groups of Dutch subjects. Psychol Med 1997; 27(2):363-370.
28. Hays RD, Sherbourne CD, Mazel RM. The RAND 36-Item Health Survey 1.0. Health Econ 1993; 2(3):217-227.
29. Ronald Brand. Project Manager software by Medical Research Data Management Leiden 1997, The Netherlands.
30. van Amstel R, Buijs P. Voor verbetering vatbaar (deel 2), medisch specialisten over hun samenwerking met bedrijfsartsen bij sociaal-medische begeleiding. Reportnumber 1070110, 2001. TNO Arbeid, Hoofddorp, the Netherlands.
31. van Dijk FJ, Prins R. Occupational health care and work incapacity: recent developments in The Netherlands. Occup Med (Lond) 1995; 45(3):159-166.
32. Mau W, Bornmann M, Weber H, Weidemann HF. [Deficiencies in rehabilitation measures in the course of early chronic polyarthritis] Defizite rehabilitativer Massnahmen im Verlauf der fruhen chronischen Polyarthritis. Z Rheumatol 1996; 55(4):223-229.
33. Mancuso CA, Paget SA, Charlson ME. Adaptations made by rheumaroid arthritis patients to continue working: A pilot study of work place challenges and succesful adaptations. Arthritis Care Res 2000; 13(2), 89-99.
34. Wolfe F, Hawley DJ, Wilson K. The prevalence and meaning of fatigue in rheumatic disease. J Rheumatol 1996; 23:1407-1417.
35. Manocchia M, Keller S, Ware JE. Sleep problems, health-related quality of life, work functioning and health care utilization among the chronically ill. Qual Life Res 2001; 10(4):331-345.
36. Rupp I, Boshuizen HC, Jacobi CE, Dinant HJ, van den Bos GAM. Impact of fatigue on health-related quality of life in rheumatoid arthritis. Arthritis Rheum 2004; 51(4):578-585.
37. Barrett EM, Scott DG, Wiles NJ, Symmons DP. The impact of rheumatoid arthritis on employment status in the early years of disease: a UK community-based study. Rheumatology (Oxford) 2000; 39(12):1403-1409.
38. Gilworth G, Chamberlain MA, Harvey AR, Woodhouse A., Smith J., Smyth

M.G. et al. Development of a work instability scale for rheumatoid arthritis. Arthritis Rheum 2003; 49(3):349-354.
39. Lerner D, Amick BC 3rd, Rogers WH, Malspeis S, Bungay KC. The work limitations questionnaire. Med Care 2001; 39(1):72-85.
40. Allaire SH. Measures of adult work disability. The work limitations questionnaire (WLQ) and the rheumatoid arthritis work instability scale (RA-WIS). Arthritis Rheum 2003; 49(5S):S85-S89.