Vocational rehabilitation of patients with prolonged fatigue

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Citation for published version (APA):
Joosen, M. C. W. (2011). Vocational rehabilitation of patients with prolonged fatigue

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Summary
Fatigue is a common complaint in both the general and working populations. In most cases, fatigue is a temporary state that abates after rest. However, sometimes fatigue persists and develops into a long-lasting condition with little chance of recovery without therapy. These complaints of prolonged fatigue are accompanied by individual, social, and occupational problems and may lead to sickness absences and/or work disability. Therefore, prolonged fatigue is a serious health problem, affecting not only the patient but also posing grave economic consequences. Consequently, caregivers, occupational physicians, employers and the patients itself are involved in the (occupational) recovery process.

In most cases, fatigue cannot be explained by a single factor. Moreover, the precise aetiology of prolonged fatigue is still unknown. However, factors involved in the persistence of fatigue complaints and related disability have been identified and appear to be of biopsychosocial origin. These perpetuating factors are of great importance in the treatment of prolonged fatigue. In the Netherlands, outpatient vocational rehabilitation (VR) institutions offer services for workers with prolonged fatigue. These institutions use multi-component treatments to increase physical and mental functioning and facilitate work participation. However, knowledge of the precise content and effects of these treatments in practice is lacking. We hypothesise that (multi-component) VR treatment will positively affect daily life functioning and work participation in patients with prolonged fatigue complaints.

The main objective of this thesis is to generate knowledge about the role that different existing VR treatments play with respect to daily life functioning and work participation of patients with prolonged fatigue complaints. In this thesis, the following research questions are answered:
1) Which VR treatments are practiced in the Netherlands and what is their content?
2) Can VR treatments improve daily functioning and work participation in patients with prolonged fatigue on the short- and the long-term?
3) What are fatigued patients’ perspectives regarding work experiences before and after receiving VR treatment?

Chapter 2 addresses the first research question and provides an inventory of VR treatments in use in the Netherlands. The purpose of this inventory was to increase visibility and transparency of current care for fatigued workers. We contacted 99 members of the Dutch sector organisation of vocational rehabilitation institutions
(Boaborea) to search, list and extract data on existing VR treatments used for sick-listed or impaired workers with prolonged fatigue complaints. VR institutions were contacted by email and telephone, and a key person involved with VR treatment was asked to complete an online questionnaire containing five domains: organisation characteristics, patient population, treatment aims, outcomes, and VR treatment content.

Thirteen VR treatments were identified from the ten VR institutions that were willing to participate and met our inclusion criteria. The treatments are used not only for patients with prolonged fatigue complaints, but also for patients with chronic pain, common mental health and physical complaints. The 13 treatments aimed to facilitate one’s return-to-work (RTW), increase functioning in daily life activities (n=11), improve social participation (n=9) and decrease fatigue complaints (n=9). Regarding the outcomes, treatments were mainly considered to be successful when the patient could cope with his or her limitations and capacities (n=6), when the employer was satisfied with the outcome and collaboration with VR treatment (n=6), when patients returned to their original jobs (n=5) and when balance was reached between daily life and work (n=5). Most VR treatments (n=8) used multi-component treatments, that included physical training, psychological or cognitive behavioural therapy, and work-directed interventions. Furthermore, most VR treatments had a total duration of 3 to 6 months, with 8 to 40 sessions during the treatment phase and they employed a combination of individual and group sessions to deliver treatment components. In conclusion, the majority of specialised VR institutions offer multi-component treatments with fatigued workers to improve functioning in daily life and participation at work. This inventory allows for the content and aims of treatments offered at VR institutions to be transparent and visible, thereby helping patients, employers, and (occupational) physicians to make treatment decisions.

The pilot study presented in Chapter 3 served as the first step in answering the second research question by exploring patient changes in physiological parameters and fatigue complaints after a six-week physical training programme. Dysregulation of physiological stress-systems may be associated with fatigue complaints, particularly in the persistence of prolonged fatigue. Therefore, we investigated whether or not physiological parameters and fatigue complaints would change after participation in a physical training programme. The training consisted mainly of physical endurance
training using an individualised, progressive workout plan based on daily heart rate
levels, next to relaxation therapy, and breathing exercises. Eighteen fatigued patients
participated and visited the training three times a week in 2005. Before the training
programme began, fatigue complaints were assessed with the Checklist Individual
Strength (CIS). Physiological parameters (heart rate variability (HRV) and respiratory
rate) were recorded at rest and during recovery after a bicycle exercise test. After the
programme began, these measurements were repeated at three weeks and six weeks.
After six weeks, fatigue scores decreased in all patients, with the mean fatigue scores
decreasing significantly compared to baseline values (p=.001). HRV improved
(increased) significantly (related to recovery and restoration) as we expected at rest
(p<.04) but not during recovery. Respiratory rates both at rest and during recovery
improved (decreased) significantly, as expected after six weeks (p=.001 for both).
These results suggest that a six-week training programme in patients with severe
complaints of fatigue has the potential to improve physiological parameters and
fatigue symptoms.

Chapter 4 also addresses the second research question and describes a retrospective
study encompassing the evaluation of a multi-component treatment programme,
practiced by an outpatient institution. The treatment lasted 18 weeks and consisted of
physical training, psychological sessions and RTW sessions. The treatment was aimed
to decrease fatigue complaints, improve daily life functioning and facilitate RTW.
Thirty-two patients with prolonged fatigue and functional impairments were included,
from 2002 to 2006. Fatigue complaints, mental health, physical functioning, and work
participation (i.e., mean percentage of the working hours, compared to contractual
working hours before treatment and after treatment) were measured pre-treatment,
post-treatment and at three months follow-up. Finally, patient and employer
satisfaction were measured.

Results showed that after the training period, fatigue complaints decreased
significantly (p<.001) and work participation increased significantly (p<.001) from
22% to 84% return to the original hours worked. Additionally, physical functioning
and mental health improved significantly (p<.05). Furthermore, 90% of patients
reported that their complaints were diminished after completing the programme, and
82% of the employers were satisfied with the results achieved. Given these results, it
seems that multi-component treatments improves fatigue complaints, daily 
functioning, and work participation in fatigued patients with functional limitations.
The research presented in Chapter 5 continues on the previous two studies to answer 
the second research question and describes an evaluation of the process and outcomes 
of three existing VR treatments in patients with prolonged fatigue. The VR treatments 
were designed and practiced by outpatient institutions. Using a prospective pre-/post-
test design with repeated measurements (before treatment, immediately after 
treatment, and three months after treatment), we evaluated the process and short-term 
outcomes of each VR treatment (between 2006 and 2008). Primary outcomes (fatigue, 
work participation) and secondary outcomes (physical and social functioning, mental 
health, HRV) were assessed over time using linear mixed model analyses. To conduct 
the process evaluation, information about patient recruitment, content completeness, 
and patient satisfaction were examined.

One hundred patients (30 patients in VR treatment 1, 29 in VR treatment 2 and 
41 in VR treatment 3) who had reported severe, disabling fatigue for many years 
(mean=2.5 years) participated. The three VR treatments were administered according 
to the pre-defined programme protocols; all used multi-component treatments with a 
biopsychosocial approach. All three VR treatments targeted biological/physical, 
psychological, social/occupational factors that were thought to hamper patient ability 
to recover and participate in daily life and at work. However, differences in content of 
the VR treatments mainly involved the specific intervention technique used and the 
manner in which treatment was communicated. Almost all patients met their personal 
goals, and the majority of patients stated that the intervention effectively diminished 
factors constraining them at work. The aims of the VR treatments were achieved after 
three months: work participation (p<.010), physical functioning (p<.001), mental 
health (p<.001), and social functioning (p<.001) improved considerably in all three 
VRIs. Furthermore, fatigue decreased (p<.001) in patients in all three VR treatments, 
with mean scores below scores, that indicate severe chronic fatigue (mean CIS 
score=76) and a high risk of receiving treatment (mean VBBA need for recovery 
score=55). Physiologically, HRV improved in two VR treatments (p=.04); HRV was 
not measured in the remaining VR treatment due to logistic constraints. In conclusion, 
our results suggest that the three, biopsychosocial, patient-tailored VR treatments 
provided clinically relevant and statistically significant short-term outcomes regarding 
symptoms, daily functioning, and participation at work for fatigued patients.
Chapter 6 addresses the third research question and presents results from a qualitative survey. The purpose of this study was to gain insight into fatigued workers’ perspectives regarding work experiences before and after receiving VR treatments. Six months after treatment, patients were interviewed about work-related problems, arrangements made before the VR treatment and how the VR experience affected work participation. We used a sub-sample of participants from the evaluation study presented in chapter 5. A random sampling strategy was used to select 30 of the 100 workers, stratified by treatment; 21 interviews were analysed before saturation of data was reached. Two researchers performed partially independent qualitative analyses. The results revealed themes that were discussed by the project team and were organised into domains, categories and sub-categories.

Participants believed that the following problems limited their ability to work: symptoms of prolonged fatigue and personal limitations like a lack of self-reflection on individual capacity and limitations. Additional difficulties with interpersonal relations, performing activities at work, demanding work conditions, and work-life imbalance contributed to problems with work participation. Prior to the VR treatment, VR strategies like work adaptations, social support, and advices or referrals by occupational physician to psychological or physical care were employed. After attending a VR treatment, fatigued workers reported positive experiences with work and personal challenges (i.e., increased awareness, coping skills and confidence), improved activities at work, and effective work adaptations. However, some workers reported unsatisfactory recovery and stated that fatigue symptoms and absence from work persisted. Thus, while aggravating working conditions, difficulty with work activities, and interpersonal relations can limit one’s functioning at work, our findings suggest that a lack of self-reflection on individual capacities and limitations can also greatly affect work ability in fatigued workers. VR treatments that encourage workers to reflect on personal characteristics (behavioural patterns in daily life and work), learn coping strategies, and stimulate a phased-RTW strategy, serve to positively affect work participation. These findings stress the importance of involving such personal factors in the recovery process and RTW beyond singly adapting the worksite.

Chapter 7 presents the long-term outcomes of existing multi-component VR treatments offered in outpatient institutions. This study addresses the second research question of this thesis. For this study, participants from the evaluation study described
in chapter 5 were followed for 18 months after completing VR treatment. To evaluate real-world VR care, we studied participants who received any of the three treatments and reported the long-term outcomes of the entire group of patients. The main goal of the VR treatments was to improve individual and occupational functioning in patients with prolonged fatigue complaints by achieving a normal balance between activity and rest, and subsequently between daily life and work. We measured outcomes before treatment (t0), after treatment (t1) and at long-term follow-ups: six (t2), 12 (t3) and 18 months (t4) after treatment. Primary outcomes (fatigue, work participation, work ability) and secondary outcomes (physical functioning, mental health, social functioning, HRV) were assessed using linear mixed model analyses. Post-hoc, long-term outcomes were compared with t0 and t1.

Of the 100 patients who started treatment, 60 remained and could be assessed after 18-months. These 60 patients did not differ from the drop-outs with regard to personal characteristics, fatigue duration, fatigue severity and RTW percentage upon evaluation of short-term outcomes. The primary outcome parameters significantly improved (p<.001) upon the follow-up measurements compared with t0 and showed no relapse when compared with t1. Moreover, the percentage of cases with severe fatigue (CIS score>76) decreased from 87% at baseline to 46% after treatment and to 37% after 18 months. Additionally, work ability and work participation increased (p<.001) after treatment stopped. The secondary outcomes (physical functioning, mental health, social functioning, HRV) improved significantly (p<.001, p<.001, p<.001 and p=.049, respectively) over the long-term compared with t0. After six-months (t2), mental health and social functioning further increased compared with the end of treatment (t1) (p<.003, p=.003, respectively). These long-term improvements can be interpreted as clinically relevant due to the large effect sizes (d>1.2 for all significant outcomes). In conclusion, multi-component VR treatments can decrease fatigue symptoms and improve individual and social functioning and work participation in patients with severe prolonged fatigue over a long-term period without a relapse of symptoms and activities. These results are important in the field of occupational health for the prevention and management of sickness absences in patients with prolonged fatigue complaints.
In **Chapter 8**, the main research findings and recommendations for further research and practice are discussed. The three research questions of this thesis can be answered as follows:

1. In the Netherlands, the majority of specialised VR treatments use multi-component treatments to treat impaired workers with prolonged fatigue. These VR treatments include physical, psychological, and work-directed interventions and are aimed to improve daily functioning and facilitate work participation.

2. Short-term and long-term outcome evaluation of multi-component VR treatment shows that these strategies significantly improve individual functioning and work participation and decrease fatigue symptoms without relapse. In addition, VR treatments result in clinically relevant improvements in fatigue complaints, daily functioning, physiological parameters, and occupational participation level in patients with severe prolonged fatigue.

3. According to the patients themselves, VR treatments that encourage patients to reflect on personal characteristics, lifestyle and work habits; learning coping strategies and use a phased-RTW strategy may yield positive results with respect to work participation.

These findings stress the importance of the multi-component VR treatments practiced in the Netherlands for impaired workers with prolonged fatigue. Therefore, we recommended the use of such biopsychosocial-based treatments in patients with disabling, prolonged fatigue. Additionally, addressing personal factors during the recovery process and RTW process beyond modifying the worksite can be of additional value. These results are of importance in the field of occupational health for the prevention and management of sickness absence, like referral to VR treatment. However, as employers play an important role in the RTW process of impaired workers and often finance the actual outpatient VR treatments, future research should investigate the employers’ perspectives of this process. Moreover, a study of the costs incurred for VR treatments and sickness absence is also warranted.