Return to work after hand injury
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Summary
Consequences of hand injuries can be disturbing. Besides the physical consequences of the injury, also psychosocial and work-related difficulties may severely complicate participating in society. Scientific studies repeatedly found factors from these different domains to influence return to work. However, uncertainty and inconsistencies remain evident, as most studies only enclose one or few factors, mostly from only one domain.

Current rehabilitation treatment is predominantly aimed at functional recovery of the hand, and only in a later stage attention is given to return to work and participation in society. Patients often take longer to return to work than medically expected. In theory, most hand injuries that can be treated according to protocols should be stable enough to (partly) resume work activities after ten to twelve weeks.

Starting point of this thesis was the assumption that hand-injured patients could benefit from a psychosocial treatment component with regard to return to work, in addition to the largely medically and functionally oriented rehabilitation treatment. The following research questions were formulated:

1. How much time do hand-injured patients in a Dutch rehabilitation setting take to RTW after their injury?
2. What factors from a biomedical, psychosocial and work-related perspective determine RTW in hand-injured patients?
3. Is the Dictionary of Occupational Titles (DOT) a valid instrument in the process of RTW in hand-injured patients?
4. How can an intervention be developed that is highly adjusted to the local practice and the target population in which it eventually will be used?
5. What are early results of the proposed intervention and is the intervention feasible in clinical practice?

These questions were answered in chapter 2 to 6 by a combination of quantitative and qualitative studies.

In chapter 2 results of a survey study are described. Return to work data of 84 patients with a hand injury or hand disorder was obtained, of whom 62 patients had an acute injury. Only 48% of the patients returned to work within 10 weeks. Determinants of return to work were pain, symptoms of post-traumatic stress disorder...
(S-PTSD) and trauma location (whether the injury was sustained at work). Strikingly, even though none of the patients was diagnosed with PTSD, only few symptoms of PTSD already delayed return to work. For this reason, S-PTSD was further investigated in the following study (chapter 3). In this study all patients from chapter 2 with an acute hand injury were included. All factors that were related univariately to S-PTSD, were included in a regression analysis. Pain and aesthetics of the hand remained significant in the regression analysis. When patients experienced more pain or were less satisfied with aesthetics of the hand, they experienced more symptoms of PTSD. No significant interaction effects were found. A limitation in both chapters 2 and 3 was the limited sample size, withholding us from drawing hard conclusions.

To investigate the large amount of possible determinants of RTW and PTSD, larger studies should be conducted.

To support hand-injured patients in their process of return to work, a valid estimation of upper extremity workload should be provided. The Dictionary of Occupational Titles (DOT) claims to describe (physical) workload of all job functions. The DOT categorizes job functions into five categories that increase in work demands, which are mutually exclusive. This classification is based on intensity, strength, material handling, and energy expenditure. Chapter 4 describes a study on the validity of the DOT for assessing work load of patients with hand injuries. From a large database with healthy subjects ten groups of job functions were selected with sufficient size to analyse four hypotheses. Combining items from a questionnaire resulted in an upper extremity work demand (UEWD) score. This UEWD-score correlated only weakly with the DOT-categories. Within the selected job function groups, large variance in UEWD was found, while the DOT suggests that employees with similar job functions (within one category) should have equal work demands as well. Within a DOT-category, UEWD-scores of different job functions differed significantly from each other; while between DOT-categories (DOT 1 vs. DOT 3) similar UEWD-scores were detected. These results indicate that the DOT cannot be validly used in the process of return to work of patients with a hand injury. A limitation of this study is the self-constructed UEWD-score. Even though based on a validated questionnaire, reliability and validity of the UEWD-score is not known. Furthermore, almost no job functions in the Netherlands are classified in the most severe DOT-category, and therefore this category could not be included in the analyses. Up till now, the most valid manner to estimate work demands are job analyses, of which results can be
compared to results of functional capacity evaluations. This remains the optimal way of matching job function with employee.

Chapter 5 describes the developmental process of the novel intervention aimed at facilitating return to work of hand-injured patients. The process unfolded itself into four iterative and interactive steps. In the first step the problem was defined and further explored by combining clinical expertise with patient experiences, values and needs. During this phase experts from the field were interviewed, and focus group interviews were conducted with hand therapists and hand-injured patients. Communication between company doctors and rehabilitation doctors appeared to be difficult due to privacy legislation. Hand therapists mostly worked with patients on the functional recovery of the hand, but tried to incorporate activities that are required at the patient’s workplace into treatment. Patients mentioned to experience some psychosocial difficulties as well, but these problems were not anticipated on during rehabilitation treatment.

In the second step an overview is given of the scientific literature on the content of current rehabilitation treatment and return-to-work interventions in other diagnostic groups. In contrast to the large amount of literature available on the physical treatment of hand injuries, only few studies could be found that described psychosocial interventions aimed at facilitating return to work after acute injuries. More of these psychosocial return-to-work interventions were retrieved for patients with chronic disorders. The therapy approach that best fitted our target population and the problems described in step 1 was selected for further exploration. Solution-focused therapy (SFT) appeared the best fit. SFT works with the strengths of the client, is aimed at the direct future and returning responsibility to the patient.

In the third step, principles and practices of SFT were further explicated. Several techniques of the approach are explained. SFT appears to be easy to adjust to different target populations, and has been used with several types of problems.

SFT is translated towards the clinical setting under study and the target population in the fourth step. Four topics were selected based on information gained in the previous steps. Each of the following topics gave shape to a session: 1) Governmental workplace regulations; 2) Social support; 3) Professional development
& retraining; 4) Physical recovery & cognitive problems. Sessions were organized in carousel format. During each session one of the topics was discussed and an assignment was performed by the patients. SFT served as the framework during all sessions. By combining information from the various sources as mentioned before in a process of co-creation, an intervention was developed that is highly tailored to the clinical setting and meets the wishes of patients and experts, but also has a firm scientific base. This probably has a positive effect on acceptance of the intervention in the local setting, and thereby increases treatment integrity.

In chapter 6 early results on effectiveness of the novel intervention are given. The intervention was tested in a pilot study involving 21 patients with an acute hand injury. Results of this pilot cohort were compared to results of 47 patients with acute hand injuries from chapter 2. Even though a clinically and economically significant difference was found between the median of the two cohorts (return to work of the pilot cohort 10.6 weeks versus 15.0 weeks in the historical cohort), this difference was not statistically significant. Problem orientation, health locus of control and symptoms of PTSD were measured at three moments. No differences were found on these outcome measures. Patients reported to be highly satisfied with the sessions. However, self-employed patients appeared to benefit less from the intervention. As no evidence was found for any specific ingredients of the intervention, it is suggested to investigate other explaining factors in future studies, such as common factors.

Chapter 7 critically reflects on results of the previous chapters, discusses limitations of the studies, clinical implications for the local setting and new ideas for future research. The combination of both quantitative as qualitative research methods resulted in a thoroughly founded intervention, which appears to be promising with regard to return to work. The mixture of latest scientific insights, experience and knowledge from clinical experts and wishes and needs of patients gave shape to a highly tailored intervention for the clinical setting and the target population, what may increase treatment integrity.

An important limitation that repeatedly affected the studies in this thesis was the limited sample size. Less patients than expected could be included in the studies. Expectations on sample size are often based on previous studies, of which inclusion criteria may slightly differ, or in which a lower time investment and another effort was
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asked from participants (for instance, survey study versus intervention study).

Another recurrent limitation is return to work as an outcome measure. In the studies presented in this thesis, return to work was measured with a return form. This caused the moment of return to work often to be retrospectively defined, increasing the risk of recall bias. Additionally, return to work was operationalized as working for at least 12 hours per week. Although based on Dutch law, this remains an arbitrary outcome measure. A clear and concise definition of return to work is still to be formulated. To increase reliability of return to work data, it could be considered to include the employer in the process of data gathering.

Follow-up studies are needed to verify results of the presented studies. Interaction effects of more factors with influence on return to work should be investigated in larger sample sizes. The novel intervention might be improved by adding more diagnostic groups to the target population.

In conclusion, the novel intervention appears to be a promising addition to regular rehabilitation treatment, but more research is required on effectiveness.