From evidence to practice: improving work participation outcomes by work-related medical rehabilitation in patients with chronic musculoskeletal diseases

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1. Background

2. Methods

3. Results

4. Discussion
From evidence to practice

- Strong evidence in favor of work-related medical rehabilitation
- Implementation possible though not finally completed
- Patients with a high risk of failing return to work

- Similar effects in routine care only if patients and dose are alike
- Reduction of the effects in real care very likely:

  Is there any effect at all in favor of work-related medical rehabilitation in routine care?

Bethge M. *Rehabilitation* 2017;56:14-21; Bethge M. *Bundesgesundheitsblatt* 2017;60:427-35
Methods

- **Sample**: approved rehabilitation due to musculoskeletal disorders
- **Time of measurement**: before rehabilitation, 3 and 10 months after completing the rehabilitation
- **Intervention**: work-related medical rehabilitation (WMR)
- **Controls**: medical rehabilitation (MR)
- **Propensity score matching**: similar controls and unbiased estimation of the treatment effect

# Sample characteristics

<table>
<thead>
<tr>
<th></th>
<th>WMR</th>
<th>MR</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>mean (SD) or %</td>
</tr>
<tr>
<td><strong>Age in years, mean (SD)</strong></td>
<td>641</td>
<td>52.1 (7.8)</td>
</tr>
<tr>
<td><strong>Sex: % female</strong></td>
<td>641</td>
<td>76.3</td>
</tr>
<tr>
<td><strong>Diagnosis: % M40-M54 (ICD-10)</strong></td>
<td>641</td>
<td>90.6</td>
</tr>
<tr>
<td><strong>Comorbidity: % F00-F99 (ICD-10)</strong></td>
<td>641</td>
<td>22.5</td>
</tr>
<tr>
<td><strong>SIMBO (0-100), mean (SD)</strong></td>
<td>636</td>
<td>28.4 (25.0)</td>
</tr>
<tr>
<td><strong>Work Ability Score (0-10), mean (SD)</strong></td>
<td>634</td>
<td>4.1 (2.4)</td>
</tr>
<tr>
<td><strong>Sickness absence in weeks, mean (SD)</strong></td>
<td>628</td>
<td>13.2 (13.9)</td>
</tr>
<tr>
<td><strong>Employment: % unemployed</strong></td>
<td>641</td>
<td>7.6</td>
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SD = standard deviation; SIMBO = German abbreviation of a risk score to identify need for work-related medical rehabilitation; WMR = work-related medical rehabilitation; MR = medical rehabilitation; Samples were balanced by propensity score matching.
Dose delivered

FCE in min

Social counseling in min

WRPG in min

FCT in min

n = 1282; all $p < 0.001$

FCE = functional capacity evaluation; WRPG = work-related psychological groups; FCT = functional capacity training
Dose delivered II

64 departments for work-related medical rehabilitation (n = 641)
Dose received

• Work-related contents (12 items; binary; 0 to 12 points)
  – Example: “Did you discuss your return to work in your rehabilitation program?“

• Consistency (6 items; 5-point; 0 to 24 points)
  – Example: “The team as a whole dealt very intensively with my health-related problems that were related to my working life.“

• Achievement (8 items; 5-point scaled; 0 to 32 points)
  – Example: “I am well prepared for returning to work.”
Dose received II

- Content: MR 6.0, WMR 7.9; n = 1274; p < 0.001
- Consistency: MR 13.0, WMR 15.6; n = 1236; p < 0.001
- Achievement: MR 16.1, WMR 18.4; n = 1187; p < 0.001
Return to work

**Return to work**

- **Stable return to work in %**
  - MR: 75.3%
  - WMR: 81.1%

**Time to return to work (median)**

- MR: 20.3
- WMR: 10.8

- **n = 1260; p = 0.035**
- **n = 1251; p = 0.033**
### Other outcomes

<table>
<thead>
<tr>
<th></th>
<th>WMR</th>
<th>MR</th>
<th>Difference or Odds Ratio</th>
<th>95% CI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average predicted scores (SE)</td>
<td>Average predicted scores (SE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Ability Score</td>
<td>5.82 (0.12)</td>
<td>5.43 (0.12)</td>
<td>0.38</td>
<td>0.05; 0.72</td>
<td>0.024</td>
</tr>
<tr>
<td>Unemployment#</td>
<td>0.12 (0.01)</td>
<td>0.18 (0.02)</td>
<td>0.54</td>
<td>0.35; 0.83</td>
<td>0.005</td>
</tr>
<tr>
<td>Pain disability</td>
<td>45.38 (0.94)</td>
<td>47.32 (0.90)</td>
<td>-1.94</td>
<td>-4.49; 0.61</td>
<td>0.136</td>
</tr>
<tr>
<td>Pain intensity</td>
<td>50.66 (0.78)</td>
<td>52.79 (0.77)</td>
<td>-2.13</td>
<td>-4.27; 0.01</td>
<td>0.051</td>
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<tr>
<td>Depression</td>
<td>1.95 (0.06)</td>
<td>2.12 (0.06)</td>
<td>-0.17</td>
<td>-0.33; -0.01</td>
<td>0.040</td>
</tr>
<tr>
<td>Fear-avoidance beliefs</td>
<td>4.18 (0.10)</td>
<td>4.53 (0.10)</td>
<td>-0.35</td>
<td>-0.62; -0.08</td>
<td>0.011</td>
</tr>
<tr>
<td>Self-management</td>
<td>5.55 (0.07)</td>
<td>5.34 (0.07)</td>
<td>0.21</td>
<td>0.01; 0.41</td>
<td>0.039</td>
</tr>
</tbody>
</table>

WMR = work-related medical rehabilitation; MR = medical rehabilitation; SE = standard error; CI = confidence interval; # Probabilities and odds ratios are reported for binary outcomes, means and unstandardized mean differences are reported otherwise.
Why was the effect of WMR reduced in routine care?

**Poor implementation of WMR**
(low consistency, < 17 out of 24 points)

**Good implementation of WMR**
(high consistency, at least 17 out of 24 points)

n = 1215
Conclusion

- WMR improved work participation outcomes also in routine care.

- Consistent but reduced effects in favor of WMR

- Reduced effect as half of the patients reached had low risks of failing to return to work and high heterogeneity of program implementation

- Similar effects as in randomized controlled trial only if patients reached as intended and good implementation (about 20 points)
Thank you.