The use of FCE in work related rehabilitation - the German Pension model

Marco Streibelt
German Federal Pension Insurance
Dept. Rehabilitation
The German way to get people back to work
The German Pension Insurance
The GFPI – facts and figures

→ More than 16,000,000 insured people all over Germany

→ Tasks and benefits:
  – Prevention and Rehabilitation (medical and vocational)
  – Pension payments (retirement pensions and pensions due to reduced earning capacity)

→ Funded by contributions of employers and employees

→ Some basic key figures (2017)
  – ~ 860,000 claims for rehab → ~ 560,000 approvals for rehab
  – Expenses (incl. transfer payments): 2,65 billions euro
Rehab on behalf of the GPI

- **Legal preconditions**
  - defined in the Social security statute book VI (§ 9,10)

- **Rehabilitation approved by the GPI with the aim of “improving or restoring work ability”**
  - Primary (stay at work) as well as secondary (return to work) prevention

- **German characteristics: access to rehabilitation**
  - Application for rehab (all insured person)
  - Evaluation of the applied documents (physician of the GPI)
  - Selection of appropriate measures
  - Assignment to service provider
Medical Rehabilitation (MR)

- Long history (~120 years)
- "Standard" treatment in Germany
  - Mainly in "Kurorte" (spa), far away from home, medical model
  - Full-time multimodal intervention, duration: 3 to 4 wks, ~60 to 80 hours
- 1990: "Rehab commission critique"
  - Aim: RTW ???
  - No evidence regarding absolute effects (MR vs. no MR)
The „Work-related Medical Rehab“ Model
WMR – elements and target group

- Intensified MR focussed on the individual work conditions
- Basic principle: work performance
- Core elements:
  - Work-related diagnostics (incl. FCE)
  - Work-related psychosocial counselling
  - Work-related education groups
  - Functional capacity training
- Target group: „high risk of non RTW“
  - Long term sick leave, unemployment, negative subjective RTW prognosis
  - Changing the work (need for further voc rehab)

Recommendation: ~11 hours per rehab

Streibelt and Buschmann-Steinhage 2011, GPI 2015
FCE in WMR

- Test of (physical) work capacity
  - standardized, valid test systems AND
  - orientated on the individual job demands („performance model“)

- FCE systems
  - WorkWell Systems (German: EFL), Sapphire
  - ELA (German for „evaluation of capacity at job“ → see: Torsten later)

- Use in WMR
  - aim: observing the „real“ job performance
  - observation of only 4 to 6 important tests (decision by rehab-team for each patient) → individual short protocol
  - duration: up to 1 hour (incl. description of job demands)
FCE in WMR

- result:
  - profile of work capacity and job demands
- “presumed” work performance
- basis for the following WMR treatment (functional capacity training)
WMR – identifying the target group

Table 3. Predictive performance of the SIMBO-C in predicting occurrence of critical RTW events during a 3-month follow-up period.

<table>
<thead>
<tr>
<th>SIMBO (scale)</th>
<th>MD (n = 250)</th>
<th>MD with active employment (n = 199)</th>
<th>MSD (n = 151)</th>
<th>MSD with active employment (n = 128)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUC</td>
<td>0.885 (0.838, 0.920)</td>
<td>0.900 (0.852, 0.948)</td>
<td>0.899 (0.841, 0.943)</td>
<td>0.885 (0.804, 0.965)</td>
</tr>
<tr>
<td>SIMBO (27 pts)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Youden index</td>
<td>0.669</td>
<td>0.712</td>
<td>0.759</td>
<td>0.738</td>
</tr>
<tr>
<td>Prevalence</td>
<td>51.2</td>
<td>44.2</td>
<td>35.8</td>
<td>28.1</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>87.1 (79.8, 92.0)</td>
<td>86.4 (77.3, 92.2)</td>
<td>87.5 (75.3, 94.1)</td>
<td>82.4 (66.5, 91.7)</td>
</tr>
<tr>
<td>Specificity</td>
<td>79.9 (72.3, 85.8)</td>
<td>84.8 (77.2, 90.1)</td>
<td>88.4 (80.7, 93.2)</td>
<td>91.5 (84.1, 95.6)</td>
</tr>
<tr>
<td>PPV</td>
<td>78.9 (71.1, 85.1)</td>
<td>79.6 (70.0, 86.7)</td>
<td>77.8 (65.1, 86.8)</td>
<td>77.8 (61.9, 88.3)</td>
</tr>
<tr>
<td>NPV</td>
<td>87.7 (80.7, 92.4)</td>
<td>90.1 (83.1, 94.4)</td>
<td>93.8 (87.2, 97.1)</td>
<td>93.5 (86.5, 97.0)</td>
</tr>
<tr>
<td>Total agreement</td>
<td>83.2</td>
<td>85.4</td>
<td>88.1</td>
<td>89.1</td>
</tr>
<tr>
<td>LR+</td>
<td>4.32 (3.06, 6.10)</td>
<td>5.67 (3.67, 8.74)</td>
<td>7.51 (4.37, 12.92)</td>
<td>9.68 (4.90, 19.12)</td>
</tr>
<tr>
<td>LR−</td>
<td>0.16 (0.10, 0.26)</td>
<td>0.16 (0.09, 0.28)</td>
<td>0.14 (0.07, 0.30)</td>
<td>0.19 (0.09, 0.40)</td>
</tr>
<tr>
<td>DOR</td>
<td>26.68 (13.42, 53.05)</td>
<td>35.35 (15.73, 79.46)</td>
<td>53.08 (18.65, 151.08)</td>
<td>50.17 (16.03, 157.04)</td>
</tr>
<tr>
<td>Nagelkerke $R^2$</td>
<td>0.355</td>
<td>0.402</td>
<td>0.459</td>
<td>0.443</td>
</tr>
</tbody>
</table>

MD: mental diseases; MSD: musculoskeletal diseases; AUC: area under curve; PPV: positive predictive value; NPV: negative predictive value; LR+: positive likelihood; LR−: negative likelihood; DOR: diagnostic odds ratio.

*In %, in parentheses – 95% confidence interval.

Evidence of WMR

Musculoskeletal disorders

- Outcome: „stable RTW“ (working without sick leave after rehab)

- Increased Outcome of about 20%-points
  - MR: 40%, WMR: 60%
  - Number needed to treat: 5

- Only observed for WMR target group

* Bethge et al. 2011, ** Streibelt and Bethge 2014a
WMR – implementation

Implementation – MSD rehab

2014:

- 80 rehab centres
- Capacity: 1,800 places

Short info:
- 2017: ~42,000 WMR
WMR in routine – Do we improve the RTW chance?
WMR – success of implementation?

- „Effectiveness“
  - effects under real conditions

- Propensity score matching

- Cases:
  - assignment to WMR

- Controls:
  - assignment to MR, but comparable to WMR cases

- Balanced groups
  - treatment effect „for the treated“
WMR intensity (hours)

64 WMR rehab centers
## WMR – need vs. assignment

<table>
<thead>
<tr>
<th>SIMBO &lt; 20</th>
<th>MR</th>
<th>WMR</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3704</td>
<td>548</td>
<td>4252</td>
</tr>
<tr>
<td>SIMBO ≥ 20</td>
<td>2207</td>
<td>660</td>
<td>2867</td>
</tr>
<tr>
<td></td>
<td>5911</td>
<td>1208</td>
<td>7119</td>
</tr>
</tbody>
</table>
Primary Outcome: Stable RTW

Stable RTW

<table>
<thead>
<tr>
<th></th>
<th>MR</th>
<th>WMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTW in %</td>
<td>75.3</td>
<td>81.1</td>
</tr>
</tbody>
</table>

n = 1260; p = 0.035; Number needed to treat = 17
Moderators of benefit

Low WMR intensity

High WMR intensity

n = 1215
Conclusions

- Development and implementation of WMR in Germany
  - A good story!
  - new paradigm in med rehab on behalf of the GPI
  - documented evidence: benefit for the target group
  - decreased effect compared to RCT

- FCE: Core element in WMR diagnostic
  - individual short protocols
  - useful, when based on real work demands
  - test adaptation necessary
  - high „individual“ validity, but low „statistical“ validity?

- Future challenges
  - better identification of the target group
  - Guideline based application of WMR (intensity)
Thank you very much!

Dr. Marco Streibelt

phone  030/865-81591  
mail    dr.marco.streibelt@drv-bund.de