Cochrane Rehabilitation: developments in evidence-based rehabilitation

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What do Cochrane do?

• During the past 20 years, Cochrane has helped to transform the way health decisions are made.
• We gather and summarize the best evidence from research to help you make informed choices about treatment.
• Whether you are a doctor or nurse, patient or carer, researcher or funder, Cochrane evidence provides a powerful tool to enhance your healthcare knowledge and decision making.
• The most important Cochrane product are Systematic Reviews.
What are Systematic Reviews?

The Concept of a Systematic Review

Systematic review process

Systematic Review
Reviews

- Meta-analysis
- Systematic Review
- Methods
- Narrative Review
- Not reproducible
Growing trend in SRs 1970 --> 2007!

A systematic review of physical and rehabilitation medicine topics, as developed by the Cochrane Collaboration

EURAMEDICOPHYS 2007;43:381-90  S. NEGRINI 1, S. MINOZZI 2, M. TARICO 3, V. ZILIANI 1, F. ZAINA 1

Archives of Physical Medicine and Rehabilitation

journal homepage: www.archives-pmr.org

Archives of Physical Medicine and Rehabilitation 2016;97:1226-7

EDITORIAL

Cochrane Physical and Rehabilitation Medicine: A New Field to Bridge Between Best Evidence and the Specific Needs of Our Field
Rehabilitation include many health conditions:
- musculoskeletal,
- neurological,
- cardiorespiratory,
- uro-gynecological,
- oncological,
- age-related disorders (both pediatric and geriatric).

http://www.cochranelibrary.com/

4 CRGs have > 20 Reviews of PRM interest (Back and Neck; Bone, Joint and Muscle Trauma; Musculoskeletal; Stroke),

Rehab examples
Exercise-based cardiac rehabilitation in heart transplant recipients (Review)

Cochrane Database of Systematic Reviews

April 2017

10 RCTs that involved a total of 300 participants whose mean age was 54.4 years.
Exercise-based cardiac rehabilitation in heart transplant recipients (Review)

### Exercise versus no exercise for post-heart transplant recipients

**Patient or population:** Post-heart transplant recipients  
**Settings:** Home and centre (hospital, cardiac rehabilitation clinic or physiotherapy department)  
**Intervention:** Exercise versus no exercise

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Illustrative comparative risks* (95% CI)</th>
<th>Relative effect (95% CI)</th>
<th>No of Participants (studies)</th>
<th>Quality of the evidence (GRADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assumed risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>Exercise versus no exercise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise capacity (VO$_{2peak}$)</td>
<td>The mean exercise capacity in the intervention groups was 2.49 higher (1.63 to 3.36 higher)</td>
<td>+</td>
<td>284 (9 studies)</td>
<td>Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.</td>
</tr>
<tr>
<td>Follow-up: median 9 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health-related quality of life</td>
<td>HRQoL in comparator &gt; HRQoL in intervention, in 16/19 domains</td>
<td>HRQoL in intervention &gt; HRQoL in comparator, in 3/19 domains</td>
<td>120 (3 studies)</td>
<td>Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.</td>
</tr>
<tr>
<td>Follow-up: median 12 weeks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Exercise-based cardiac rehabilitation in heart transplant recipients (Review)

**Exercise capacity (VO2peak)**

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Experimental (mL/kg/min)</th>
<th>Control (mL/kg/min)</th>
<th>Mean Difference</th>
<th>Weight</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bernardi 2007</td>
<td>13 19.61 (2.34)</td>
<td>11 15.6 (5.84)</td>
<td></td>
<td>5.5 %</td>
<td>4.01 [ 0.33, 7.69 ]</td>
</tr>
<tr>
<td>Braith 2008</td>
<td>9 19.4 (5.5)</td>
<td>7 16.8 (2.8)</td>
<td></td>
<td>4.4 %</td>
<td>2.60 [-1.55, 6.75]</td>
</tr>
<tr>
<td>Haykowsky 2009</td>
<td>22 3.43 (3.3)</td>
<td>21 0.04 (2.2)</td>
<td></td>
<td>26.9 %</td>
<td>3.39 [ 1.72, 5.06 ]</td>
</tr>
<tr>
<td>Hermann 2011</td>
<td>14 28.3 (6.1)</td>
<td>13 23.4 (5.7)</td>
<td></td>
<td>3.8 %</td>
<td>4.90 [ 0.45, 9.35 ]</td>
</tr>
<tr>
<td>Kobashigawa 1999</td>
<td>14 13.6 (4.75)</td>
<td>13 12.3 (3.65)</td>
<td></td>
<td>7.4 %</td>
<td>1.30 [-1.88, 4.48 ]</td>
</tr>
<tr>
<td>Nytronen 2012</td>
<td>24 30.9 (5.3)</td>
<td>24 28 (6.7)</td>
<td></td>
<td>6.4 %</td>
<td>2.90 [-0.52, 6.32 ]</td>
</tr>
<tr>
<td>Pascoalino 2015</td>
<td>33 23.2 (6.68)</td>
<td>9 20.1 (4.5)</td>
<td></td>
<td>5.4 %</td>
<td>3.10 [-0.62, 6.82 ]</td>
</tr>
<tr>
<td>Tegtbur 2003</td>
<td>8 20.1 (4.2)</td>
<td>12 18.5 (2.8)</td>
<td></td>
<td>6.8 %</td>
<td>1.60 [-1.71, 4.91 ]</td>
</tr>
<tr>
<td>Wu 2008</td>
<td>14 1 (2.5)</td>
<td>23 -0.5 (1.8)</td>
<td></td>
<td>33.3 %</td>
<td>1.50 [ 0.00, 3.00 ]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td>151 133</td>
<td></td>
<td>100.0 %</td>
<td>2.49 [ 1.63, 3.36 ]</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Chi² = 5.54, df = 8 (P = 0.70); I² = 0.0%
Test for overall effect: Z = 5.64 (P < 0.000001)
Test for subgroup differences: Not applicable
RCTs that involved a total of 234 participants

**Low quality:** Further research is **very likely** to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

**Very low quality:** We are **very uncertain about the estimate**.
Virtual reality for rehabilitation in Parkinson’s disease (Review)

Dockx K, Nieuwboer A

Evidence Comments

As a rule of thumb, 0.2 SD represents a small difference, 0.5 a moderate difference, and 0.8 a large difference.

Gait (assessed composite measure of gait speed, step length, and stride length, Dysal Gait Index) (measured in SD higher scores better outcomes)

Gait (assessed step and stride length) (measured in SD higher scores better outcomes)
### Virtual reality for rehabilitation in Parkinson’s disease (Review)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Effect Size Description</th>
<th>Number of Studies</th>
<th>Quality of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Balance</strong> (assessed with composite measure: Berg Balance Scale, Timed Up and Go Test, Single-Leg Stance Test) (measured in SD units; higher scores mean better outcomes)</td>
<td>Balance score in the virtual reality groups was on average 0.34 standard deviations higher (0.04 lower to 0.71 higher) than in the control groups.</td>
<td>155 (5 RCTs)</td>
<td>LOW 23</td>
</tr>
<tr>
<td><strong>Quality of life</strong> (assessed with PDQ-39) (higher values mean better outcomes)</td>
<td>The mean change in quality of life in the control groups ranged from -1.88 to 11.4 The mean change in the virtual reality groups was on average 3.73 higher (2.16 lower to 9.61 higher) than in the control groups.</td>
<td>106 (4 RCTs)</td>
<td>VERY LOW 123</td>
</tr>
<tr>
<td><strong>Number of adverse events</strong></td>
<td>All studies reported that no adverse event had taken place in either the virtual reality or the active intervention</td>
<td>115 (4 RCTs)</td>
<td>LOW 12</td>
</tr>
</tbody>
</table>
Caregiver-mediated exercises for improving outcomes after stroke (Review)

Vloothuis JDM, Mulder M, Veerbeek JM, Konijnenbelt M, Visser-Meily JMA, Ket JCF, Kwakkel G, van Wegen EEH

9 RCTs, 333 patient-caregiver couples

| Patient or population | Setting: inpatient and community | Intervention: caregiving | Comparison: control |

| Outcomes |

**Patient:** ADL measure
- Barthel Index: Scale 0 to 100
  - (follow-up: 2 studies; 6 months)
- FIM: Scale 7 to 126
  - (no follow-up)

**Caregiver:** measures of mood, burden and QoL
- Caregiver Strain Index: Scale 0 to 13
  - (follow-up 3 months)
- Caregiver Burden: Scale 22 to 88
  - (no follow-up)

**Gait and gait-related measures:** walking distance measured with the Six-Minute Walk Test
- in metres walked in minutes
  - (follow-up: 1 study; 3 months)

Scores are better for the intervention group
- half of the trials have a low risk of bias, and for the risk of bias, there is an unclear risk of bias in clinical heterogeneity
- I² = 44%

Scores are better for the intervention group
- I number of studies
  - I² = 37%

Scores are better for the intervention group
- unclear risk of bias
- I number of studies
  - I² = 33%

December 2016

Review: Caregiver-mediated exercises for improving outcomes after stroke

Comparison: 5 Sensitivity analysis - caregiver-mediated exercise (CME)-core - end of intervention

Outcome: 1 Patient: activities of daily living (ADL) measures: Barthel Index

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Experimental</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Weight</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean(SD)</td>
<td>N</td>
<td>Mean(SD)</td>
<td>IV,Fixed,95% CI</td>
</tr>
<tr>
<td>Galvin 2011</td>
<td>20</td>
<td>88.5 (15.6)</td>
<td>20</td>
<td>81.8 (18.7)</td>
<td>47.2 %</td>
</tr>
<tr>
<td>Wang 2015</td>
<td>25</td>
<td>89.6 (12.4)</td>
<td>26</td>
<td>77.7 (23)</td>
<td>52.8 %</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>45</strong></td>
<td><strong>46</strong></td>
<td><strong>-10.9 (11.1)</strong></td>
<td><strong>100.0 %</strong></td>
<td><strong>9.45 [2.11, 16.78]</strong></td>
</tr>
</tbody>
</table>

Heterogeneity: \( \chi^2 = 0.48, \text{ df } = 1 (P = 0.49); I^2 = 0.0% \)
Test for overall effect: \( Z = 2.53 (P = 0.012) \)
Test for subgroup differences: Not applicable
A. Thrombolytic Therapy

<table>
<thead>
<tr>
<th>Year</th>
<th>Cumulative RCTs</th>
<th>Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>1965</td>
<td>2</td>
<td>65</td>
</tr>
<tr>
<td>1970</td>
<td>4</td>
<td>316</td>
</tr>
<tr>
<td>1975</td>
<td>15</td>
<td>3311</td>
</tr>
<tr>
<td>1980</td>
<td>23</td>
<td>5767</td>
</tr>
<tr>
<td>1985</td>
<td>43</td>
<td>21059</td>
</tr>
<tr>
<td>1990</td>
<td>70</td>
<td>48154</td>
</tr>
</tbody>
</table>

Odds Ratio (Log scale)

Textbook/Review Recommendations

- Routine
- Specific
- Rare/Never
- Experimental
- Not Mentioned

Total mortality
In Evidence We Trust