Improving Care in COPD: Rehabilitation

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Senior Scientist,
West Park Healthcare Centre, Toronto, Ontario
Disclosure of Conflict of Interest

- I have no conflict to declare
Outline: Cochrane Reviews (in last 4-5 years)

- Pulmonary Rehabilitation
- Self-Management
- Adjuncts to PR
Pulmonary Rehabilitation Systematic Reviews

1. Pulmonary rehabilitation for COPD

2. Pulmonary rehabilitation following acute exacerbation in COPD
Systematic Review- Pulmonary Rehabilitation in COPD

Pulmonary rehabilitation for chronic obstructive pulmonary disease (Review)

McCarthy B, Casey D, Devane D, Murphy K, Murphy E, Lacasse Y 2015

Objective:
- Determine the effects of pulmonary rehab vs. usual care on COPD patients
- Assessing
  - HRQoL
  - Exercise Capacity

Characteristics of Studies:
- Randomized controlled trials
- Number of participants: 12-350
Systematic Review - Pulmonary Rehabilitation in COPD

Outcome: Change in CRQ, Dyspnoea

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Pulmonary rehab</th>
<th>Usual care</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(Random, 95% CI)</td>
</tr>
<tr>
<td>Cambach 1997</td>
<td>14</td>
<td>1.2 (1.2)</td>
<td>8</td>
<td>0 (0.8)</td>
<td>13.5 %</td>
</tr>
<tr>
<td>Goldstein 1994</td>
<td>40</td>
<td>0.68 (1.14)</td>
<td>39</td>
<td>0.02 (1.3)</td>
<td>24.7 %</td>
</tr>
<tr>
<td>Griffiths 2000</td>
<td>93</td>
<td>1 (1.28)</td>
<td>91</td>
<td>-0.18 (1)</td>
<td>39.2 %</td>
</tr>
<tr>
<td>McNamara 2013</td>
<td>30</td>
<td>2.15 (3.7793)</td>
<td>15</td>
<td>0 (1.81)</td>
<td>4.2 %</td>
</tr>
<tr>
<td>O’Shea 2007</td>
<td>27</td>
<td>0.6 (1.5)</td>
<td>27</td>
<td>0 (1)</td>
<td>18.4 %</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>204</strong></td>
<td><strong>180</strong></td>
<td></td>
<td><strong>100.0 %</strong></td>
<td><strong>0.99 [0.64, 1.34]</strong></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.05; Chi² = 6.09, df = 4 (P = 0.19); I² = 34%
Test for overall effect: Z = 5.55 (P < 0.00001)
Test for subgroup differences: Not applicable
Systematic Review- Pulmonary Rehabilitation in COPD

**Outcome:** Change in CRQ-Dyspnoea

**Subgroup Analysis:** Community-based vs. Hospital-based PR

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Pulmonary rehab</th>
<th>Usual care</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,Random,95% CI</td>
</tr>
<tr>
<td>1 QoL - Community Based CRQ (Dyspnoea)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>342</td>
<td>291</td>
<td>45.7 %</td>
<td>0.58 [0.34, 0.81]</td>
<td></td>
</tr>
<tr>
<td>2 QoL - Hospital Based CRQ (Dyspnoea)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>353</td>
<td>297</td>
<td>54.3 %</td>
<td>0.99 [0.66, 1.32]</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>695</td>
<td>588</td>
<td>100.0 %</td>
<td>0.82 [0.59, 1.05]</td>
<td></td>
</tr>
</tbody>
</table>
Systematic Review- Pulmonary Rehabilitation in COPD

Conclusions:

• Pulmonary rehabilitation relieves dyspnoea and fatigue, improves emotional function and enhances the sense of control that individuals have over their condition.

• Sub-group analysis showed more improvement in CRQ domains in hospital-based vs. community-based PR
Objective:
• Determining effects of PR after acute exacerbations in COPD
• Assessing
  ○ Hospital readmissions
  ○ HRQoL
  ○ Exercise capacity
  ○ Mortality

Characteristics of studies:
• Randomized controlled trials
• Number of participants: 26-389
• Rehabilitation vs. usual care
Systematic Review—Pulmonary Rehabilitation in AECOPD

**Outcome:** Hospital Readmission

Figure 3. Forest plot of comparison: I Rehabilitation versus control, outcome: 1.1 Hospital readmission (to end of follow-up).

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Pulmonary rehab</th>
<th>Control</th>
<th>Odds Ratio M-H, Random, 95% CI</th>
<th>Risk of Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events Total</td>
<td>Events Total</td>
<td>Weight</td>
<td>M-H, Random, 95% CI</td>
</tr>
<tr>
<td>Behnke 2000</td>
<td>3 14</td>
<td>9 12</td>
<td>8.8%</td>
<td>0.09 [0.01, 0.56]</td>
</tr>
<tr>
<td>Eaton 2009</td>
<td>11 47</td>
<td>15 50</td>
<td>14.8%</td>
<td>0.71 [0.29, 1.77]</td>
</tr>
<tr>
<td>Greening 2014</td>
<td>108 169</td>
<td>84 151</td>
<td>17.8%</td>
<td>1.41 [0.90, 2.21]</td>
</tr>
<tr>
<td>Ko 2011</td>
<td>16 30</td>
<td>13 30</td>
<td>14.0%</td>
<td>1.49 [0.54, 4.14]</td>
</tr>
<tr>
<td>Ko 2016</td>
<td>44 90</td>
<td>63 90</td>
<td>16.8%</td>
<td>0.41 [0.22, 0.76]</td>
</tr>
<tr>
<td>Man 2004</td>
<td>2 20</td>
<td>12 21</td>
<td>9.5%</td>
<td>0.08 [0.02, 0.45]</td>
</tr>
<tr>
<td>Murphy 2005</td>
<td>2 13</td>
<td>5 13</td>
<td>8.5%</td>
<td>0.29 [0.04, 1.90]</td>
</tr>
<tr>
<td>Seymour 2010</td>
<td>2 30</td>
<td>10 30</td>
<td>9.9%</td>
<td>0.14 [0.03, 0.72]</td>
</tr>
</tbody>
</table>

Total (95% CI): 413 / 397 100.0% 0.44 [0.21, 0.91] 0.0002

Total events: 188 / 211

Heterogeneity: Tau² = 0.74; Chi² = 29.80, df = 7 (P = 0.0001); I² = 77%

Test for overall effect: Z = 2.20 (P = 0.03)

Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding (performance bias and detection bias): Hospital admission
(D) Incomplete outcome data (attrition bias)
(E) Selective reporting (reporting bias)
(F) Other bias
Systematic Review– Pulmonary Rehabilitation in AECOPD

Conclusion:
• Evidence shows that PR is effective for patients with AECOPD
  ○ Improves HRQoL and exercise capacity (high quality evidence)
  ○ Reduced hospital readmissions (moderate quality, high heterogeneity)
  ○ No effect on mortality (low quality, high heterogeneity)
Self-Management Systematic Reviews

1. Self management for patients with COPD

2. Computer and mobile technology interventions for self-management in COPD

3. Self-management interventions including action plans for exacerbations versus usual care in patients with COPD
Objective:
• To examine whether self-management interventions lead to improved health outcomes and reduce healthcare utilization.

Characteristics of Studies:
• A combination of RCTs and non-randomized controlled trials
• Number of participants: 14-659
• Intervention methods varied
  o Individual sessions
  o Group Sessions
  o Phone Sessions
  o Lifestyle goals, etc.
• Intervention duration varied
  o Longest trial duration was 24 months
Systematic Review – Self-Management in COPD

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Self-management N</th>
<th>Control N</th>
<th>Mean Difference (SE)</th>
<th>Weight</th>
<th>Mean Difference IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bourbeau 2003</td>
<td>61</td>
<td>76</td>
<td>-2 (-1.9826)</td>
<td>12.5%</td>
<td>-2.00 [-5.00, 1.00]</td>
</tr>
<tr>
<td>Coulis 2005a</td>
<td>49</td>
<td>26</td>
<td>-2.9 (3.5205)</td>
<td>4.4%</td>
<td>-2.90 [-9.50, 4.00]</td>
</tr>
<tr>
<td>Coulis 2005b</td>
<td>61</td>
<td>26</td>
<td>-2.9 (3.3877)</td>
<td>4.2%</td>
<td>-2.90 [-3.85, 4.45]</td>
</tr>
<tr>
<td>Khour 2009</td>
<td>71</td>
<td>72</td>
<td>-2.9 (2.9056)</td>
<td>5.5%</td>
<td>-2.90 [-7.62, 2.02]</td>
</tr>
<tr>
<td>Kuff 2009</td>
<td>19</td>
<td>19</td>
<td>-9.7 (4.4275)</td>
<td>2.5%</td>
<td>-9.70 [-18.38, -1.02]</td>
</tr>
<tr>
<td>Manninenkot 2003</td>
<td>122</td>
<td>113</td>
<td>-0.6 (1.1225)</td>
<td>30.7%</td>
<td>-0.60 [-2.80, 1.60]</td>
</tr>
<tr>
<td>Nino 2011</td>
<td>20</td>
<td>16</td>
<td>-2.9 (4.6724)</td>
<td>2.5%</td>
<td>-2.90 [-12.45, 5.05]</td>
</tr>
<tr>
<td>Rie 2010</td>
<td>233</td>
<td>204</td>
<td>-5.1 (1.28)</td>
<td>25.5%</td>
<td>-5.10 [-7.61, -2.59]</td>
</tr>
<tr>
<td>Watanayashi 2011</td>
<td>52</td>
<td>50</td>
<td>-0.8 (2.07)</td>
<td>8.1%</td>
<td>-0.80 [-8.82, 5.32]</td>
</tr>
</tbody>
</table>

Total (95% CI): 719 [645, 791]  
Heterogeneity: Test: $\chi^2 = 30.05, df = 9, P = 0.001$; I² = 50%  
Test for overall effect: Z = 3.34 (P = 0.0003)  
Test for subgroup differences: Not applicable  

Favours self-management  
Favours control

McMaster University  
UNIVERSITY OF TORONTO  
West Park Healthcare Centre  
get your life back
Systematic Review– Self-Management in COPD

**Conclusions:**

- Improves HRQoL (SGRQ)
- Reduces respiratory-related (OR=0.57) and all cause hospitalizations (OR=0.60)
- Improves dyspnoea (mMRC)
- No effect on mortality or exercise capacity (6MWD)
Objective:

• To compare the effectiveness between digital interventions vs. a more personal approach involving direct in-person interventions/printed information

• Studies focused on increasing
  ○ health benefits
  ○ self-management of COPD

Characteristics of Studies:

• 3 RCTS
• Performed in homes of participants
• Participants: 30-1325
• Interventions were done using a variety of different methods
  ○ Pedometers
  ○ Apps
  ○ Websites
• Each study tracked activity levels and health benefits
Systematic Review – Self-Management - role of technology

**Outcome:** Health related quality of life (CCQ and SGRQ) up to six months.
Systematic Review – Self-Management - role of technology

Conclusions:
• Studies showed that technological interventions are more effective in improving
  o HRQoL (n=3)
  o Number of daily steps taken by patients (n=2)

• This is true after four weeks, four months and six months but not 12 months
Systematic Review—Self-Management in AECOPD

Objectives:
• Compare self-management action plans post-AECOPD with usual care
• Determine impact on:
  • HRQoL, respiratory-related hospital admissions

Characteristics of Studies:
• 22 RCTs were reviewed
• 12-659 participants completed the studies in this review
• Intervention methods varied
  o Group Sessions
  o Phone sessions
  o “Living with COPD” educational booklets
• severity varied and was based on different grading systems

Self-management interventions including action plans for exacerbations versus usual care in patients with chronic obstructive pulmonary disease (Review)


2017
Systematic Review – Self-Management in AECOPD

**Outcome:** HRQoL: adjusted SGRQ total score after 12 months of follow-up
Systematic Review—Self-Management in AECOPD

Conclusions:

• SM (with action plan) are associated with improvements in HRQoL and lower probability of respiratory-related hospital admissions.

• No excess all-cause mortality risk was observed BUT
  • a small, but significantly higher respiratory-related mortality rate for self-management compared to usual care.
Adjuncts to Exercise Systematic Reviews

1. Upper Limb Exercise Training for chronic obstructive pulmonary disease

2. Active mind-body movement therapies as an adjunct to or in comparison with pulmonary rehabilitation for people with COPD
**Systematic Review– Upper Limb Training**

**Upper limb exercise training for COPD (Review)**

McKeough ZJ, Velloso M, Lima VP, Alison JA  
2016

**Objective:**
- Determining the effects of upper limb training on dyspnoea symptoms and HRQoL

**Characteristics of Studies:**
- 15 RCTS with duration ≥ 4 weeks
- Number of participants: 14-43
- Compared:
  - UL vs. no training or sham
  - Combined UL and LL vs. LL alone
Systematic Review – Upper Limb Training

Outcome: Dyspnea

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Upper Limb Training</th>
<th>Control</th>
<th>Mean Difference</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Total</td>
<td>Mean</td>
</tr>
<tr>
<td>1.1.1 Endurance Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holland 2004</td>
<td>4.724</td>
<td>1.366</td>
<td>22</td>
<td>4.078</td>
</tr>
<tr>
<td>Subin 2010</td>
<td>3.62</td>
<td>0.8</td>
<td>9</td>
<td>3.6</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>31</td>
<td>24</td>
<td>41.3%</td>
<td>0.41 [-0.13, 0.95]</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau^2 = 0.00; Chi^2 = 0.59, df = 1 (P = 0.44); I^2 = 0%</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 1.49 (P = 0.14)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1.1.2 Resistance Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cowey 2012 (1)</td>
<td>4.6</td>
<td>1.2</td>
<td>22</td>
<td>4.2</td>
</tr>
<tr>
<td>Janaudia Ferreira 2011</td>
<td>5.3</td>
<td>0.9</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>35</td>
<td>39</td>
<td>58.7%</td>
<td>0.34 [-0.11, 0.80]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau^2 = 0.00; Chi^2 = 0.05, df = 1 (P = 0.83); I^2 = 0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 1.49 (P = 0.14)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>66</td>
<td>63</td>
<td>100.0%</td>
<td>0.37 [0.02, 0.72]</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau^2 = 0.00; Chi^2 = 0.67, df = 3 (P = 0.88); I^2 = 0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 2.10 (P = 0.04)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Test for subgroup differences: Chi^2 = 0.04, df = 1 (P = 0.85), I^2 = 0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Footnotes

(1) Numbers in the Upper Limb Training Group reflect the participants from the upper body resistance training and health education group in this paper.
Conclusions:

- Some form of upper limb exercise training when compared to no upper limb training or a sham intervention improves dyspnoea but not HRQoL in people with COPD.

- Optimal upper limb training programme for people with COPD unknown.
Active mind-body movement therapies as an adjunct to or in comparison with pulmonary rehabilitation for people with chronic obstructive pulmonary disease (Review)

Gendron LM, Nyberg A, Saey D, Maltais F, Lacasse Y 2018

Objective:
• Comparing the effects of AMBMT to PR
  • Controlled breathing or focused meditation with active movement of joints/muscles
  • including but not limited to yoga, tai chi, and qigong

Characteristics of Studies:
• RCTs
• Participants: adults diagnosed with COPD
• Included in meta-analysis (n=10)
• Two intervention types:
  ○ Comparing AMBMT to PR
  ○ Comparing AMBMT + PR to PR
• Number of participants: 40-206
Systematic Review – AMBMT

Outcome: SGRQ  Note: “PR” mainly consisted of unsupervised walking programs

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>AMBMT Mean</th>
<th>SD</th>
<th>Total</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Mean Difference IV, Random, 95% CI</th>
<th>Mean Difference IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chan 2010</td>
<td>-0.92</td>
<td>15.18</td>
<td>70</td>
<td>3.42</td>
<td>16.1</td>
<td>69</td>
<td>31.4%</td>
<td>-4.34 [-9.54, 0.96]</td>
<td></td>
</tr>
<tr>
<td>Du 2013</td>
<td>-11.26</td>
<td>9.02</td>
<td>36</td>
<td>-4.85</td>
<td>7.42</td>
<td>38</td>
<td>59.7%</td>
<td>-6.47 [-10.18, -2.64]</td>
<td></td>
</tr>
<tr>
<td>Yang 2009</td>
<td>-11.61</td>
<td>12.1</td>
<td>19</td>
<td>-4.34</td>
<td>17.5</td>
<td>18</td>
<td>8.9%</td>
<td>-7.27 [17.10, 2.56]</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>124</strong></td>
<td></td>
<td></td>
<td><strong>125</strong></td>
<td></td>
<td></td>
<td>100.0%</td>
<td><strong>-5.93 [-8.75, -2.92]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau^2 = 0.00; Chi^2 = 0.49, df = 2 (P = 0.78); I^2 = 0%
Test for overall effect: Z = 3.92 (P < 0.0001)

1.1.2 Activity

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>AMBMT Mean</th>
<th>SD</th>
<th>Total</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Mean Difference IV, Random, 95% CI</th>
<th>Mean Difference IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chan 2010</td>
<td>-1.62</td>
<td>19.5</td>
<td>70</td>
<td>6.48</td>
<td>22.11</td>
<td>69</td>
<td>34.5%</td>
<td>-8.10 [-15.03, -1.17]</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>106</strong></td>
<td></td>
<td></td>
<td><strong>107</strong></td>
<td></td>
<td></td>
<td>100.0%</td>
<td><strong>-8.96 [-13.04, -4.89]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau^2 = 0.00; Chi^2 = 0.09, df = 1 (P = 0.76); I^2 = 0%
Test for overall effect: Z = 4.31 (P < 0.0001)

1.1.3 Impact

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>AMBMT Mean</th>
<th>SD</th>
<th>Total</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Mean Difference IV, Random, 95% CI</th>
<th>Mean Difference IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chan 2010</td>
<td>0.3</td>
<td>17.34</td>
<td>70</td>
<td>3.12</td>
<td>17.05</td>
<td>69</td>
<td>26.7%</td>
<td>-2.82 [-0.67, 3.03]</td>
<td></td>
</tr>
<tr>
<td>Du 2013</td>
<td>-8.1</td>
<td>8.6</td>
<td>36</td>
<td>-4.01</td>
<td>6.74</td>
<td>38</td>
<td>73.3%</td>
<td>-4.09 [-7.62, -0.56]</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>106</strong></td>
<td></td>
<td></td>
<td><strong>107</strong></td>
<td></td>
<td></td>
<td>100.0%</td>
<td><strong>-3.75 [-6.78, -0.73]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau^2 = 0.00; Chi^2 = 0.13, df = 1 (P = 0.72); I^2 = 0%
Test for overall effect: Z = 2.43 (P = 0.02)

1.1.4 Symptoms

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>AMBMT Mean</th>
<th>SD</th>
<th>Total</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Mean Difference IV, Random, 95% CI</th>
<th>Mean Difference IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chan 2010</td>
<td>-3.57</td>
<td>19.03</td>
<td>70</td>
<td>-1.2</td>
<td>10.17</td>
<td>69</td>
<td>31.0%</td>
<td>-2.37 [-5.55, 3.81]</td>
<td></td>
</tr>
<tr>
<td>Du 2013</td>
<td>-14.08</td>
<td>8.36</td>
<td>36</td>
<td>-12.54</td>
<td>9.82</td>
<td>38</td>
<td>69.0%</td>
<td>-2.15 [-6.30, 2.00]</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>106</strong></td>
<td></td>
<td></td>
<td><strong>107</strong></td>
<td></td>
<td></td>
<td>100.0%</td>
<td><strong>-2.22 [-5.66, 1.23]</strong></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau^2 = 0.00; Chi^2 = 0.00, df = 1 (P = 0.95); I^2 = 0%
Test for overall effect: Z = 1.28 (P = 0.21)
Systematic Review – AMBMT

Conclusions:
• The effects of AMBMT versus PR or of AMBMT added to PR versus PR alone in people with stable COPD remain inconclusive.
• Evidence of moderate quality shows that AMBMT added to PR does not result in improved disease-specific QoL
Conclusions

● There are a number of interventions for COPD in the context of PR

● PR is effective and necessary in stable COPD and post-AECOPD
  ○ Future research should focus on ideal length, setting and essential components of PR

● Self-management strategies improve HRQoL and dyspnea, reduce hospitalizations
  ○ Technology may be of benefit, need for transparency in intervention techniques
Conclusions

- Upper limb training improves dyspnea & upper limb endurance but does not impact HRQoL

- Alternative forms of exercise include active mind-body movement therapies (yoga, Qigong or Tai Chi)
  - Evidence for AMBMT is of low quality and lacks a proper control group
Thank you

- Respiratory Rehabilitation Team at West Park
- Razanne Habash and Stacey Butler