Exercise considerations and precautions during cancer treatment

Considerations

• Have vital signs monitored regularly
• Exercise with a partner
• Avoid public facilities with increased risk of viral and/or bacterial infection (swimming)
• Stop exercise if sudden:
  – dizziness, blurred vision or fainting
  – nausea, vomiting
  – unusual shortness of breath
  – palpitations, chest pain
  – Leg/calf, bone, or unusual pain

Precautions

• Anaemia (“low”) – scale back or avoid
• Neutropenia (>100°F / 38°C) - avoid
• Thrombocytopenia (“low”) - avoid contact sports or activities with high risk of injury
• Catheter / line – avoid exposure to infection or exercises that may disrupt or dislodge
Interventions for cachectic patients: a rehabilitation perspective

Matthew Maddocks MSCP PhD
Specialist Physiotherapist
Lecturer in Health Services Research
Outline

A physiotherapist’s view on:

• symptoms as a threat to function
• disability and dependence
• goal setting as a rehabilitation intervention
What matters to patients with advanced disease?

Adequate symptom control +

- A sense of control
- Relieving burden
- Strengthening relationships with loved ones
- Usual routines
- Continuing with important roles
- No longer feeling ‘who I once was’
- Being able to perform daily activities
- Maintaining dignity
- Maintaining a sense of humour
- Sharing time with friends and family
- Not being a burden

Symptom control is not an end in itself...

What is symptom control?

Symptoms are complex and multidimensional:
• **Sensory-perceptive or** how intense or bad is your symptom?
• **Affective distress or** how distressing is your symptom?
• **Symptom impact and burden or** how does your symptom affect your function?

If a symptom is chronic and/or difficult to treat what is the best domain to target?

A rehabilitation approach often focuses on the symptom impact or burden:
• arguably more treatable
• directly addresses patient priorities
• but often hard to measure
Disability involves dysfunction at one or more levels

Symptoms can cause impairments, limitations, and restrictions
Trajectories of functional decline

Gill et al. NEJM 2010;362:1173-80
Activities of Daily Living

*Essential activities that an individual needs to perform to live independently*

**Basic Activities of Daily Living (BADLs)**
- Feeding/eating
- Dressing
- Bathing/showering
- Toileting
- Transfers e.g. bed/chair
- Ambulation

**Instrumental Activities of Daily Living (IADLs)**
- Preparing food
- Housekeeping
- Shopping
- Doing laundry
- Using transportation/drive
- Handling medications
- Handling finances

**Activities of Daily Living (ADLs)**
ADL disability in cancer

Maddocks et al. Unpublished
Specific ADL disability in cancer

Can be used to help direct rehabilitation screening, referral and input
Goal setting

• A core part of rehabilitation practice, which can:

• help understand what your patients want to achieve *
• direct practice in a manner that values patient priorities
• support interdisciplinary working.

• Tell me what matters to you...

* or strive towards
Playford, 2000, 2009, Levack et al. 2011
Effectiveness of goal setting

- Patient satisfaction

SMD 0.33 (95% CI 0.10 to 0.56)

Levack et al. Cochrane Systematic Review 2015;CD009727
Effectiveness of goal setting

- Motivation, adherence, and engagement

SMD 0.30 (95% CI -0.07 to 0.66)

Levack et al. Cochrane Systematic Review 2015;CD009727
Effectiveness of goal setting

• Self-efficacy (belief in one’s ability)

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Goal setting</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>No goal setting</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Std. Mean Difference</th>
<th>IV, Fixed, 95% Cl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coppack 2012</td>
<td></td>
<td>25.81</td>
<td>2.23</td>
<td>16</td>
<td>22.54</td>
<td>3.49</td>
<td>32</td>
<td>44.7%</td>
<td>1.03</td>
<td>[0.39, 1.66]</td>
<td></td>
</tr>
<tr>
<td>Evans 2002</td>
<td></td>
<td>25.54</td>
<td>2.73</td>
<td>13</td>
<td>20.62</td>
<td>3.9</td>
<td>26</td>
<td>33.4%</td>
<td>1.35</td>
<td>[0.62, 2.09]</td>
<td></td>
</tr>
<tr>
<td>O'Brien 2013</td>
<td></td>
<td>3.6</td>
<td>0.34</td>
<td>13</td>
<td>3.27</td>
<td>0.59</td>
<td>8</td>
<td>21.8%</td>
<td>0.71</td>
<td>[0.21, 1.62]</td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td></td>
<td>42</td>
<td>66</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.07</td>
<td>[0.64, 1.49]</td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Chi² = 1.19, df = 2 (P = 0.55); I² = 0%
Test for overall effect: Z = 4.90 (P < 0.00001)

SMD 1.07 (95% CI 0.64 to 1.49)
Effectiveness of goal setting

- Health-related quality of life and emotional well being

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Goal setting Mean</th>
<th>SD Total</th>
<th>No goal setting Mean</th>
<th>SD Total</th>
<th>Weight</th>
<th>IV, Random, 95% CI</th>
<th>Std. Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blair 1991</td>
<td>-1.377</td>
<td>0.924</td>
<td>53</td>
<td>-1.855</td>
<td>0.766</td>
<td>26</td>
<td>14.7%</td>
</tr>
<tr>
<td>Coole 2012</td>
<td>-22.2</td>
<td>13.3</td>
<td>26</td>
<td>-32.5</td>
<td>11.9</td>
<td>29</td>
<td>13.7%</td>
</tr>
<tr>
<td>Dunstan 2003</td>
<td>-25.4</td>
<td>21.6</td>
<td>7</td>
<td>-33.5</td>
<td>22.6</td>
<td>7</td>
<td>7.2%</td>
</tr>
<tr>
<td>Evans 2002</td>
<td>14.48</td>
<td>2.73</td>
<td>13</td>
<td>11.7</td>
<td>2.29</td>
<td>26</td>
<td>11.0%</td>
</tr>
<tr>
<td>Fredericburgh 1993</td>
<td>12.08</td>
<td>26.1</td>
<td>15</td>
<td>4.79</td>
<td>20.63</td>
<td>15</td>
<td>10.9%</td>
</tr>
<tr>
<td>Harwood 2012</td>
<td>44.8</td>
<td>10.4</td>
<td>38</td>
<td>35.9</td>
<td>10.1</td>
<td>31</td>
<td>14.4%</td>
</tr>
<tr>
<td>Scott 2004</td>
<td>25.02</td>
<td>3.63</td>
<td>15</td>
<td>26.79</td>
<td>4.78</td>
<td>24</td>
<td>11.5%</td>
</tr>
<tr>
<td>Sewell 2005</td>
<td>0.62</td>
<td>1.41</td>
<td>63</td>
<td>0.89</td>
<td>1.29</td>
<td>58</td>
<td>16.6%</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>230</td>
<td>216</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.16, Chi² = 23.74, df = 7 (P = 0.004); I² = 68%
Test for overall effect: Z = 2.91 (P = 0.004)

**SMD 0.53 (95% CI 0.17 to 0.88)**

*Levack et al. Cochrane Systematic Review 2015;CD009727*
How might goal setting work?

• Goal setting creates drive and influences behaviour

• Goals do not have to be achievable or even realistic to have this effect
• Goals do not have to be set by the patient to have this effect
• The influence of goals on drive is moderated a number of variables
• Not all goals have this effect
Locke and Latham’s GST

Moderators:
- Goal commitment
- Self-efficacy
- Task complexity
- Feedback
- etc...

Goal
- Specificity
- Difficulty

Performance
- Productivity
- Cost improvement

Mechanisms:
- Attention
- Effort
- Persistence

Satisfaction
- with Performance
- and Rewards

Willingness to commit to change

(Locke and Latham, 2002)
Goals create drive

Relationship between goal difficulty & task performance

Increasing goal difficulty →

Task performance ↑

Limits of ability reached or commitment to goal lapsed

(Locke & Latham, 1990)
Goals create drive

Comparison of performance for different goal types

Effect size for high vs low goal difficulty:
SMD 0.52 to 0.82

Effect size for specific difficult goals vs ‘do your best’ instructions:
SMD 0.42 to 0.82

(Locke & Latham, 1990)
Practical implications

• When setting goals be specific and challenging
• Encourage patients to believe they can achieve their goals
• Ask and inform patients about their progress toward the goals, encouraging them to maintain their effort
• Evaluate outcome on the basis of actual achievements rather than on goal attainment
How might goal setting work?

• Goal setting creates drive and influences behaviour

• Self-efficacy directly influences behaviour when pursuing goals

• Self-efficacy can be modified by variables:
  – Mastery experiences
  – Social persuasion
  – Physiological and emotional states

(Bandura, 1997)
Locke and Latham’s GST

Moderators:
- Goal commitment
- Self-efficacy
- Task complexity
- Feedback
- etc...

Goal
- Specificity
- Difficulty

Performance
- Productivity
- Cost improvement

Satisfaction
- with Performance
- and Rewards

Mechanisms:
- Attention
- Effort
- Persistence

Willingness to commit to change

(Locke and Latham, 2002)
Discussing patient goals is worthwhile

• Goal setting can be a mechanism to increase self-efficacy
  → increased self management

• More explicit awareness of a patient’s goals and how they work towards them → increased success in directing behaviour

• More explicit awareness of the effect of environmental factors on choice, motivation and persistence towards goals
  → increased success in achieving goals

(Boekaerts et al., 2005)
(Jones and Riazi, 2011)
Practical implications

• Provide patients with low self-efficacy opportunities to achieve goal success
• Patients may need assistance to implement plans and acquire skills to achieve their goals
• Ensure reflection on goal achievement as well as the patient’s effort resulting in achievement
• Rehabilitation goals and patient goals should align to enhance motivation and engagement
Summary

• A rehabilitation perspective views symptoms as a threat to patient function

• ADLs disability represents an important outcome for patients, families, professionals and services

• Goal setting is a key feature of rehabilitation that can often enhance engagement in physical activity
Models of disability

- Differentiates disability and function
- Acknowledges socially defined roles and tasks
- Broad concept of disability as anything outside “normal range”
- Subsequently revised using disability as an umbrella term
- Common language similar to ICD-10
## Patient rehabilitation goals – UK hospice

<table>
<thead>
<tr>
<th>Rank</th>
<th>WHO-ICF code, domain</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>d4, Mobility</td>
<td>79 (30)</td>
</tr>
<tr>
<td>2</td>
<td>b1, Mental functions</td>
<td>40 (15)</td>
</tr>
<tr>
<td>3</td>
<td>d2, General tasks and demands</td>
<td>37 (14)</td>
</tr>
<tr>
<td>4</td>
<td>d9, Community, social and civic life</td>
<td>33 (12)</td>
</tr>
<tr>
<td>5</td>
<td>b4, Functions of the cardiovascular, haematological, immunological and respiratory systems</td>
<td>20 (8)</td>
</tr>
<tr>
<td>6</td>
<td>d5, Self-care</td>
<td>18 (7)</td>
</tr>
<tr>
<td>7</td>
<td>d6, Domestic life</td>
<td>12 (5)</td>
</tr>
<tr>
<td>8</td>
<td>b2, Sensory Functions and pain</td>
<td>10 (4)</td>
</tr>
<tr>
<td>9</td>
<td>b7, Neuromusculoskeletal and movement related functions</td>
<td>8 (3)</td>
</tr>
<tr>
<td>10</td>
<td>d7, Interpersonal interactions and relationships</td>
<td>3 (1)</td>
</tr>
</tbody>
</table>