Management of Low Back Pain in Physiotherapy

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Disclosure statement

No disclosure
Epidemiology

- Physiotherapists are one of the healthcare workers most frequently involved in the treatment of low back pain (Cote et al., 2009)

- Represents 25-45% of a physiotherapist’s caseload (Kent et al., 2005)
Physiotherapy assessment

Comic:
- Man: I keep getting a sharp pain in my back.
- Doctor: You gotta expect a few aches and pains at your age... are you eating plenty of fibre?
- Man: Every day.
- Man: I shouldn’t worry about it.
- Doctor: Take a couple of these for a few days.
- Man: Thanks, doc.
Case

- A 45 year old customer service agent presents to your office with a 1 week history of low back pain. This began the day after raking leaves at home. He has tried acetaminophen but remains symptomatic.
What treatments are available in Physiotherapy?

• Surveys on types of therapies most often provided by physiotherapists
  ...some with strong evidence to support them and others not.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>NR</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal mobilization</td>
<td>65%</td>
<td>63%</td>
</tr>
<tr>
<td>Soft-tissue mobilization / massage</td>
<td>59.7%</td>
<td>50.8%</td>
</tr>
<tr>
<td>Manual traction</td>
<td>46.3%</td>
<td>54.9%</td>
</tr>
<tr>
<td>McKenzie approach</td>
<td>43.2%</td>
<td>45.6%</td>
</tr>
</tbody>
</table>
Treatment choices
Quebec physiotherapists

- Education
- Exercise (lumbar stabilization, strengthening exercise, ROM, stretches, aerobic conditioning)
- Spinal manipulation
- Postural correction
- Ultrasound
- IFC
- TENS
- Heat/Cold

(Poitras et al., 2005; Mikhail et al., 2005)
Manual Therapy
(spinal manipulation and mobilization)

“A comprehensive system of diagnosing and treating neuromusculoskeletal disorders involving specific skills, including assessment, mobilization, manipulation and education, including exercise, to restore optimal motion, function and/or reduce pain” (Harman et al., 2009)
Manual Therapy

• Entails the use of the therapist’s hands on the spine

• Considered a core skill for physiotherapists
## Manual Therapy

### Table 1
Categorization of MT techniques.

<table>
<thead>
<tr>
<th>MT technique</th>
<th>Definition</th>
<th>Desired outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Joint biased</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manipulation</td>
<td>Passive movement of a joint beyond the normal range of motion</td>
<td>Improved range of motion</td>
</tr>
<tr>
<td>Mobilization</td>
<td>Passive movement of a joint within its normal range of motion</td>
<td>Decrease muscle spasm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decreased pain</td>
</tr>
<tr>
<td><strong>Soft tissue biased</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swedish massage</td>
<td>Stroking and kneading of the skin and underlying soft tissue</td>
<td>Improve circulation</td>
</tr>
<tr>
<td>Deep tissue massage</td>
<td>Deep stroking and pressure across the muscles and soft tissue</td>
<td>Decrease muscle spasm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relaxation</td>
</tr>
<tr>
<td>Trigger point massage</td>
<td>Deep pressure to areas of local tenderness</td>
<td>Re-align soft tissue</td>
</tr>
<tr>
<td>Shiatsu massage</td>
<td>Varying, rhythmic pressure from the fingers</td>
<td>Break adhesions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase range of motion</td>
</tr>
<tr>
<td>Nerve biased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neural dynamics</td>
<td>Passive, combined movement of the spine and extremities, within their normal range of motion, in ways to elongate or tension specific nerves.</td>
<td>Improve range of motion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decrease pain</td>
</tr>
</tbody>
</table>

Classification of MT techniques referenced in manuscript along with specific examples of each. Proposed model is general and accounts for all techniques regardless of their theorized anatomical emphasis. Adapted from NCCAM website (http:nccam.nih.gov/, 2007).

(Bialosky et al., 2009)
Manual therapy
Spinal manipulation

• High-velocity, low-amplitude thrust taking the joint beyond its available range of movement

• Used by specialist physiotherapists, chiropractors and osteopaths

• <10% of back pain patients are manipulated
  (Mikhail et al., 2005; Gracey et al., 2002; Li et al., 2001)

• Requires advanced level of manual therapy training
OK, YOU MAY HEAR A CRACK...
Manual therapy
Spinal Mobilizations

• Gentler and more conservative technique

• Therapist delivered low-velocity, passive movements within or at the limit of joint range

• Frequently used by physiotherapists for treatment of back pain
Manual therapy
Traction

• The use of externally applied force to stretch and mobilise the spine

- Manual
- Mechanical
McKenzie approach

• Mechanical Diagnosis and Therapy

• Classification system of assessment, treatment and prevention for mechanical spine disorders

• Places a specific emphasis on patient education and self-management of the spinal disorder
McKenzie Mechanical Diagnosis & Therapy

• Therapists using the McKenzie approach use positions and repeated movements to influence symptom behaviour
Directional preference

A single direction of posture or movement that decreases, centralizes, or abolishes symptoms and typically eliminates prior limitation of movement.

(McKenzie, 2003)
Centralization

The abolition of local or distal pain emanating from the spine in response to repeated movements or sustained postures.
Centralization

Patients who centralize have better outcomes

Broetz et al., 2010
Werneke et al., 2009
Christiansen et al., 2009
Long et al., 2008
Skytte et al., 2005
Werneke et al., 2005
Aina et al., 2004
Werneke et al., 2001
Karas et al., 1997
Donelson et al., 1990
Centralization and Directional Preference

closely allied not synonymous
### Table 2.3.1 Therapeutic interventions for acute LBP (0-4 weeks)

<table>
<thead>
<tr>
<th>Grade of scientific evidence</th>
<th>High</th>
<th>Moderate</th>
<th>Low</th>
<th>Absence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NSAIDs</strong></td>
<td>- Efficacy to pain = acetaminophen for all NSAIDs (Van Tulder 2005&lt;sup&gt;4&lt;/sup&gt;; Jackson 2004&lt;sup&gt;4&lt;/sup&gt;; Bogduk 2004&lt;sup&gt;4&lt;/sup&gt;; Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Vertebral manipulations - Efficacy &gt; placebo (Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Steroid epidural infiltration for radicular pain - Efficacy &gt; placebo or bed rest (Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Physical agents (ice, heat, diathermy, ultrasounds) (Nadler 2004&lt;sup&gt;4&lt;/sup&gt;; Van Tulder 2004&lt;sup&gt;4&lt;/sup&gt;)</td>
</tr>
<tr>
<td>Muscle relaxants</td>
<td>- Efficacy of non-benzodiazepines &gt; benzodiazepines; both with potential harm (Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;; Van Tulder 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>- Efficacy = conservative treatment (Assendelft 2003&lt;sup&gt;4&lt;/sup&gt;; Cherkin 2003&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Analgesics - Non-opioids as efficacious as NSAIDs for pain relief</td>
<td>Antidepressants (Bogduk 2004&lt;sup&gt;4&lt;/sup&gt;; Schnitzer 2004&lt;sup&gt;4&lt;/sup&gt;; Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;)</td>
</tr>
<tr>
<td>Combination relaxants + NSAIDs or analgesics</td>
<td>- Efficacy &gt; placebo (Van Tulder 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Exercises for disc herniation - Efficacy of extension &gt; flexion (Hayden 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Lumbar support - Weak efficacy compared to no treatment</td>
<td>Facet infiltrations (Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;)</td>
</tr>
<tr>
<td>Advice to remain active</td>
<td>- Efficacy &gt; conventional medical treatment (Hilde G. et al. 2005&lt;sup&gt;4&lt;/sup&gt;; Van Tulder 2004&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Exercises in flexion (Hayden 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Acupuncture - Weak efficacy (Furlan 2005&lt;sup&gt;4&lt;/sup&gt;; Manheimer 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Steroid epidural infiltration for non-radicular pain (Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;)</td>
</tr>
<tr>
<td>Bed rest</td>
<td>(Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;; Hagen 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td></td>
<td>McKenzie approach (Clare 2004&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Back schools (Heymans 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
</tr>
<tr>
<td>Strengthening exercises</td>
<td>(Hayden 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td></td>
<td>Steroid drugs (Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Massage (Furlan 2005&lt;sup&gt;4&lt;/sup&gt;; Cherkin 2003&lt;sup&gt;4&lt;/sup&gt;)</td>
</tr>
<tr>
<td>Specific exercises</td>
<td>(Hayden 2005&lt;sup&gt;4&lt;/sup&gt;)</td>
<td></td>
<td>TENS - Weak efficacy compared to other treatments</td>
<td></td>
</tr>
<tr>
<td>Mechanical tractions</td>
<td>(Philadelphia 2001&lt;sup&gt;4&lt;/sup&gt;; Nadler 2004&lt;sup&gt;4&lt;/sup&gt;; Harte 2003&lt;sup&gt;4&lt;/sup&gt;)</td>
<td></td>
<td>No efficacy in meta-analysis (Nadler 2004&lt;sup&gt;4&lt;/sup&gt;; Van Tulder 2000&lt;sup&gt;4&lt;/sup&gt;; Philadelphia 2001&lt;sup&gt;4&lt;/sup&gt;)</td>
<td>Insufficient information to recommend or not</td>
</tr>
</tbody>
</table>
### Table 2.3.2 Therapeutic interventions for subacute LBP (4-12 weeks)

<table>
<thead>
<tr>
<th>Grade of scientific evidence</th>
<th>High</th>
<th>Moderate</th>
<th>Low</th>
<th>Absence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advice to remain active</strong></td>
<td>McKenzie approach (Clare 2004)</td>
<td></td>
<td>Acupuncture (Furlan 2005)</td>
<td>Lumbar support (Jellima 2001; Van Tulder 2004)</td>
</tr>
<tr>
<td>+ Graded activity</td>
<td>Multidisciplinary program (Karakalainen 2005; Van Tulder 2004)</td>
<td></td>
<td>Vertebral manipulations (Van Tulder 2000)</td>
<td>TENS (Philadelphia 2001)</td>
</tr>
<tr>
<td>= absence from work and ↓ risk of chronicity (Hilde 2005; Hagen 2005; Van Tulder 2000a)</td>
<td></td>
<td></td>
<td>As efficacious as other conservative treatments (Assendelft 2003; Cherkin 2003)</td>
<td>Radiofrequency denervation (Niemesto 2003)</td>
</tr>
<tr>
<td><strong>Exercises</strong></td>
<td></td>
<td></td>
<td></td>
<td>Physical agents (ice, heat, diathermy, ultrasounds) (Van Tulder 2000)</td>
</tr>
<tr>
<td>No superiority of one type compared to another (Hayden 2005; Philadelphia 2001a)</td>
<td></td>
<td></td>
<td></td>
<td>Steroid epidural infiltration (Van Tulder 2000)</td>
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<td></td>
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<td></td>
<td>Infiltration of trigger points (muscles or ligaments) (Nelemans 2001; Van Tulder 2000)</td>
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<tr>
<td><strong>Massage</strong></td>
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<tr>
<td>Efficacy &gt; no treatment</td>
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<tr>
<td>Better efficacy if combined to exercises and education (Furlan 2005a)</td>
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<tr>
<td><strong>Behavioral therapy</strong></td>
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<tr>
<td>Efficacy on pain and functional limitations &gt; traditional care (Van Tulder 2004a)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>NSAIDs</strong></td>
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<tr>
<td>Efficacy to ↓ pain = acetaminophen for all NSAIDs (van Tulder 2005)</td>
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<tr>
<td><strong>Analgesics</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Non-opioid as efficacious as NSAIDs for pain relief</td>
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<td></td>
</tr>
<tr>
<td>Opioids: weak evidence of superiority to non-opioids (Van Tulder 2000; Jackson 2004; Bogduk 2004)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bed rest</strong> (Hagen 2005a)</td>
<td></td>
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<tr>
<td><strong>Mechanical traction</strong> (Harte 2003; Philadelphia 2001a)</td>
<td></td>
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</tr>
</tbody>
</table>

- Yes, can be recommended in the specified context
- NO, cannot be recommended in the specified context
- Insufficient information to recommend or not
When to Stop Physiotherapy

- Painfree
- Patient able to manage their symptoms and return to normal activity
- Unchanging condition
- Worsening condition
How to find a therapist

- Ordre professionnel de la physiothérapie du Québec: oppq.qc.ca/chercher-professionnel
- Canadian Academy of Manipulative Therapy: manippt.org/patients.php
- McKenzie Institute Canada: www.mckenzieinstitute.ca/Quebec.htm
Thank you
References

References