



CENTRAL VALLEY  
PHYSICAL THERAPY  
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## Low Back Pain

Integrating Research into Practice:  
Delta Physical Therapy's Approach to Evidence Based Practice

### **PROBLEM:**

#### **Low Back Pain (LBP)**

**90%:** The number of individuals who will experience low-back pain (LBP) in their lifetime.

**0 – 2%:** The percentage of individuals returning to work after being off work for > 6 months.<sup>1</sup>

**\$ Billions:** The cost to the healthcare system in caring for these individuals.<sup>1</sup>

**Diagnosis:** Specific pathoanatomic diagnoses can rarely be made.<sup>2</sup> Imaging studies are typically not helpful early on unless serious pathology is suspected.<sup>3</sup>

### **INTERVENTION:**

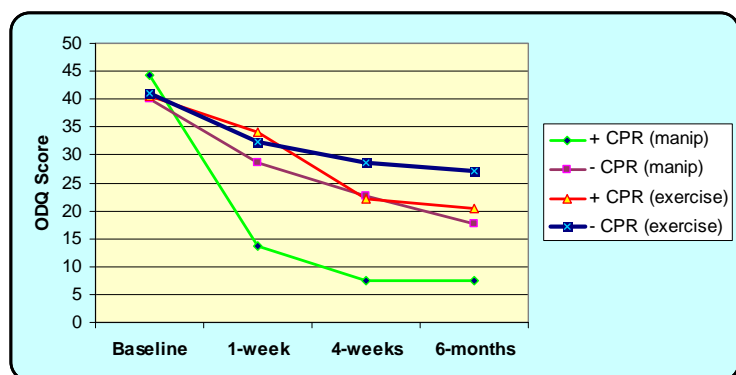
**Classification:** An evidence-based approach that identifies subgroups of patients based on response to a specific intervention rather than labeling based on pathoanatomic findings.<sup>4</sup>

- **Manual Physical Therapy & Exercise**
- **Directional Preference Exercise**
- **Neuromuscular Re-education & Stabilization Exercise**
- **Aerobic Exercise**

### **EVIDENCE:**

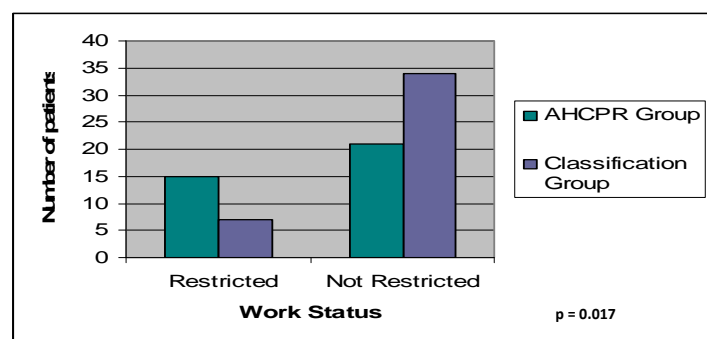
#### **Oxford Evidence Grade= A (level= 1a studies)**

Patients managed with this treatment-based classification system experience significant decreases in pain, disability, and work restrictions compared to traditional care.<sup>4</sup> Therapists can use predictive clinical examination findings to match a patient to a specific treatment. This may include: manual physical therapy and exercise,<sup>5-6</sup> specific exercises in a particular direction,<sup>7-9</sup> core stabilization exercise,<sup>10-12</sup> and traction.<sup>4</sup>



### Change in Oswestry Disability Scores

Childs JD, Fritz JM, Flynn TF, et al. Which patients with low-back pain benefit from spinal manipulation? Validation of a clinical prediction rule. *Ann Int Med.* 2004; 141:920-928



### Return to Work Status at 4 weeks

Fritz, JM, Delitto A, Erhard RE. Comparison of classification-based physical therapy with therapy based on clinical practice guidelines for patients with acute low back pain: a randomized clinical trial. *Spine* 2003; 28(13):1363-1371.

### Number Needed to Treat (NNT):

**2** - When 4 of 5 clinical criteria are met, the NNT with manual physical therapy and exercise to achieve one additional successful outcome (50% reduction in disability after 1 and 4 weeks) -- an outcome that would not have occurred if the patient had been treated with the standard treatment group (in this case exercise without spinal manual physical therapy).<sup>6</sup> This means that only 2 patients with LBP who are positive on the rule need to be treated with spinal manual physical therapy before realizing benefits above and beyond that compared to the standard treatment group. Would further clarification be helpful? Let's consider 2 hypothetical patients with LBP, both of whom are positive on the rule. If both patients received exercise without spinal manual physical therapy, one of them would not achieve a successful outcome. However, treating both of them with manual physical therapy would result in both patients achieving a successful outcome. Low numbers needed to treat imply that the benefits of decision-making based on the rule can be virtually realized almost every time you see a patient with non-specific LBP.

### Relative Risk (RR):

**3 and 4** - The RR of a patient experiencing a worsening in disability at 1 and 6 months, respectively, when manual physical therapy and exercise is indicated but NOT received.<sup>6</sup>

### REFER:

Acute LBP: Patients with the following findings are likely to experience a 50% reduction in disability and pain within 1 week 90% of the time when treated with manual physical therapy and exercise<sup>5,6</sup>

- Current episode of symptoms is < 2-3 weeks;
- Symptoms don't extend below the knee.

**Chronic LBP:** Patients who have 3 or more of the following findings can achieve a 50% reduction in disability within 8 weeks 67% of the time when treated with a core stabilization and neuromuscular re-education program.<sup>10</sup> Manual physical therapy may confer an added benefit.<sup>12</sup>

- Average Straight Leg Raise test >91°;
- Aberrant movements during lumbar flexion;
- Positive prone instability test;
- Age < 40 years

Patients who demonstrate a directional preference (i.e. symptoms centralize and/or reduce) on movement examination are more likely to have a significant reduction in pain, disability, and medication use (50% less) and have less pain and disability.<sup>8,9</sup> We can help determine if your patient has a directional preference.

Patients with early access to physical therapy return to work sooner than when referral is delayed.<sup>4,13</sup>

A large study in the United Kingdom (UK) demonstrated that those patients who received manual physical therapy and exercise for LBP had superior improvement in disability, pain, and fear avoidance beliefs at 3 and 12 months than those who received advice and a back care booklet.<sup>14</sup> The UK National Health service now recommends manual physical therapy as a cost-effective method of treatment for LBP.<sup>15</sup>

Based on evidence from high quality clinical trials, our manual physical therapy and exercise approach will benefit many of your patients with LBP. However, if you are unsure, please give us the privilege of consulting with you (just give us a call) or simply refer your patient with a request for physical therapy evaluation and treatment. We look forward to the opportunity to partner with you in an effort to improve the health of your patients and enable their return to optimal function during work and leisure activities. The best way is to send a consult with the "Evaluate and Treat" option checked. You will receive a copy of your patient's initial note as well as a copy of the discharge note summarizing their outcome.

## **CONTRAINDICATIONS:**

Patients with rapidly progressing neurologic findings, cauda equina syndrome, spinal infection, cancer, and fracture are obvious contraindications. Patients who have a previous history of cancer, significant night pain, and unexplained weight-loss should be assessed carefully, and if referred we will monitor their status closely.<sup>2</sup>

## **MINIMALLY EFFECTIVE OR UNSUPPORTED INTERVENTIONS:**

Traditional passive interventions and modalities have not been shown to be effective for significantly reducing LBP symptoms and disability. NSAIDs and muscle relaxants have a short term effect for reducing pain in acute LBP, but their effectiveness in chronic LBP is unclear.<sup>16,17</sup>

# INTERVENTION

## Typical care episode

Acute problems: 1 - 2 visits weekly for 1-3 weeks (total of 4-6 sessions)

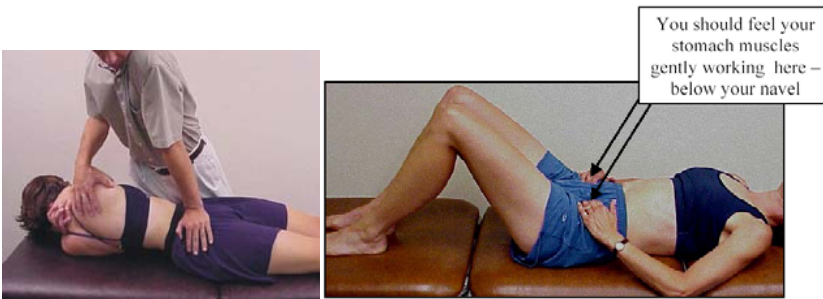
Chronic problems: 2 – 3 visits weekly for 3-4 weeks (8-12 visits)

### Content:

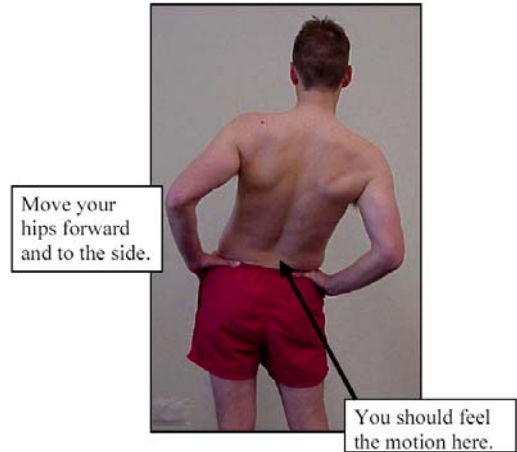
1. Evidence-based examination of lumbar spine and lower quarter.<sup>18</sup>

2. Classification-based treatment approach consisting of the following 4 classifications examples:<sup>4</sup>

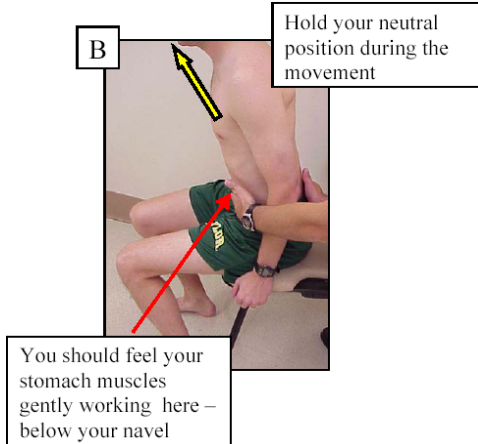
#### A. Manual Physical Therapy + Exercise



#### B. Directional Exercise



#### C. Core Stabilization



#### D. Traction



3. Education and advice based on a biopsychosocial model emphasizing a stay-active and self-responsibility philosophy.<sup>19,20</sup>

4. Home exercise and aerobic conditioning program.<sup>21</sup>

## References

1. Stewart WF, Ricci JC, Chee E, Morganstein D. Lost productive time and cost due to common pain conditions in the US workforce. *JAMA* 2003;290(18):2443-54.
2. Deyo RA, Phillips WR. Low back pain: A primary care challenge. *Spine* 1996;21(24):2826-32.
3. Burton AK, Waddell G. Clinical guidelines in the management of low back pain. *Clin Rheumatol* 1998;12(1):17-35.
4. Fritz J, Delitto A, Erhard RE. Comparison of classification-based physical therapy with therapy based on clinical practice guidelines for patients with acute low back pain: a randomized clinical trial. *Spine* 2003;28(13):1363-71.
5. Flynn T, Fritz J, Whitman J, et al. A clinical prediction rule for classifying patients with low back pain who demonstrate short-term improvement with spinal manipulation. *Spine* 2002;27(24):2835-43.
6. Childs JD, Fritz JM, Flynn T, Irrgang JJ, Delitto A, Johnson KK. Validation of a clinical prediction rule to identify patients with low back pain likely to benefit from spinal manipulation: A validation study. *Ann Intern Med* 2004;141(12):920-8.
7. Whitman JM, Flynn T, Fritz JM. Nonsurgical management of patients with lumbar spinal stenosis: a literature review and a case series of three patients managed with physical therapy. *Phys Med Rehabil Clin N Am* 2003;15(1):77-vii.
8. Werneke M, Hart DL. Centralization phenomenon as a prognostic factor for chronic low back pain and disability. *Spine* 2001;26(7):758-64.
9. Long A, Donelson R, Fung T. Does it Matter Which Exercise? A Randomized Control Trial of Exercise for Low Back Pain. *Spine* 2004;29(23):2593-602.
10. Hicks GE, Fritz JM, Delitto A, McGill SM. Preliminary development of a clinical prediction rule for determining which patients with low back pain will respond to a stabilization program. *Spine* 2005;86:1753-62.
11. OSullivan PB, Twomey LT, Allison GT. Evaluation of specific stabilizing exercise in the treatment of chronic low back pain with radiologic diagnosis of spondylolysis or spondylolisthesis. *Spine* 1997;22:2959-67.
12. Niemisto L, Lahtinen-Suopanki T, Rissanen P, Lindgren KA, Sarna S, Hurri H. A randomized trial of combined manipulation, stabilizing exercises, and physician consultation compared to physician consultation alone for chronic low back pain. *Spine* 2003;28(19):2185-91.
13. Ehrmann-Feldman D, Rossignol M, Abenhaim L, Gobeille D. Physician referral to physical therapy in a cohort of workers compensated for low back pain. *Phys Ther* 1996;76(2):150-6; discussion 6-7.
14. UK BEAM T. United Kingdom back exercise and manipulation (UK BEAM) randomized trial: effectiveness of physical treatments for back pain in primary care. *BMJ Online First* 2004;BMJ, doi: 10.1136/bmj.38282.669225.AE.
15. UK BEAM T. United Kingdom back exercise and manipulation (UK BEAM) randomized trial: cost effectiveness of physical treatments for back pain in primary care. *BMJ* 2004;BMJ, doi: 10.1136/bmj.38282.607859.AE.
16. van Tulder MW, Scholten RJ, Koes BW, Deyo RA. Nonsteroidal anti-inflammatory drugs for low back pain: a systematic review within the framework of the Cochrane Collaboration Back Review Group. *Spine* 2000;25(19):2501-13.
17. van Tulder MW, Touray T, Furlan AD, Solway S, Bouter LM. Muscle relaxants for nonspecific low back pain: a systematic review within the framework of the cochrane collaboration. *Spine* 2003;28(17):1978-92.
18. Whitman J, Flynn T, Wainner RS, Magel J. *Orthopaedic Manual Physical Therapy Management of the Lumbar Spine, Pelvis, and Hip Region*. San Antonio, TX: Manipulations, Inc.; 2002.
19. Burton AK, Waddell G, Tillotson KM, Summerton N. Information and advice to patients with back pain can have a positive effect. A randomized controlled trial of a novel educational booklet in primary care. *Spine* 1999;24(23):2484-91.
20. George SZ, Fritz JM, Bialosky JE, Donald DA. The effect of a fear-avoidance-based physical therapy intervention for patients with acute low back pain: results of a randomized clinical trial. *Spine* 2003;28(23):2551-60.
21. Mannion AF, Muntener M, Taimela S, Dvorak J. A randomized clinical trial of three active therapies for chronic low back pain. *Spine* 1999;24(23):2435-48.