How to Solve Non-Specific Chronic Low Back Pain: The Wheelhouse Protocol℠
The Positional Release Therapy Institute is a company that provides continuing education and certification in Positional Release Therapy. Online courses and instructional videos are also associated with the instruction provided by the Institute.
OBJECTIVES

After this session, participants will:

1. be able to identify 3 causative factors of chronic non-specific low back pain (LBP)
2. be able to identify the proposed primary condition causing chronic non-specific low back pain and;
3. be able to articulate how the The Wheelhouse Protocol℠ may be effective in the treatment of chronic non-specific LBP
NON-SPECIFIC CHRONIC LOW BACK PAIN?

- 90% of all low back pain cases- no known cause\(^1\)
- Chronic LBP = > clinical, social, economic and public health burden\(^2\)
  - ~ $100-200 Billion\(^3\)
  - Worldwide greatest cause of disability\(^4\)
  - 61% of Opioid deaths linked to chronic pain\(^5\)
    - 59.3% in chronic pain group diagnosed with LBP
- Who is most affected?\(^6\)
  - 28.1% Adults reported LBP in last 3 months
  - Women (30.1%) more than men (26%)
  - Less educated (34.8%) and poor (37.8%)
  - Athletes (~30-50%)\(^7\)
LBP RISK FACTORS

Non-Modifiable
• Old Age
• Female
• Poverty
• Lower Education Level

Modifiable
• BMI (Obesity)
• Smoking
• Lower Health Status
• Physical Activity
• Repetitive Tasks (bending, lifting, twisting, etc…)
• Job Dissatisfaction
• Depression

Greatest Contributors = Mechanical Stress and age-related degeneration
WHAT ELSE?

• Imaging-degenerative changes, disk abnormalities, spinal anomalies [correlation to LBP Prediction]

• Psychosocial factors?
  • Negative beliefs pain is harmful/disabling
  • Fear avoidance behaviors
  • Poor or maladaptive coping strategies
  • Passive treatment expectation
  • Focus on pain
  • High distress levels
  • Depressive mood
  • Resistance to change
  • Low self-efficacy
  • Family reinforcement of illness
  • Social/financial problems
  • Troubled childhood
WHY DO ATHLETES HAVE CHRONIC LBP?

Let's take a poll:

A. Disc Bulge / Herniation
B. Sacroiliac Joint Dysfunction
C. Strains / Sprains
D. Spondys’
E. Psychosocial Factors
Sacroiliac Joint Dysfunction (SIJD)

- The SI Joint is a common source of LBP in the general population as well as athletes.\textsuperscript{10-14}
- Asymmetrical (e.g., single stance phase) or repetitive loads (e.g., rowing) = \textsuperscript{\uparrow risk}\textsuperscript{12,14}
- Athletes \textasciitilde 30\%-80\% non-specific LBP\textsuperscript{15,16}
- SIJD = pain arising as result of altered kinematics\textsuperscript{11}
- Is it even possible? I heard that the joint does not even move—well....
THE SACROILIAC JOINT

• Diarthrodial Joint\textsuperscript{10}
  • largest axial joint in the body
  • Anterior 1/3 synovial, posterior ligamentous/fascial/muscular

• Provides load transfer\textsuperscript{15}

• 2-7 degrees—clearly established now\textsuperscript{10,12,15}

• Multiple axes\textsuperscript{15}
  • Left and Right Oblique
  • Vertical and anteroposterior (AP)
  • Vertical and sagittal
  • Horizontal- #3
DYSFUNCTIONS OF THE SI JOINT

• Hypomobility or Hypermobility\textsuperscript{12}
  • Age impact
  • Each can produce somatic dysfunction
    • Innominate Shears (Superior / Inferior)
    • Innominate Rotations (Anterior / Posterior)
    • Innominate Flares (Out / In)
    • Sacral Torsions (Flexion / Extension)

• Role of Closure\textsuperscript{12,17}
  • Form = chock stone fit
  • Force = external compression
ANTERIOR INNOMINATE ROTATION

- Anterior rotation of R innominate
- Sacral rotation around L oblique axis
- Rotation around symphysis pubis with step deformity
- Sacralization of L5 transverse process
- Posterior rotation of L innominate and sacrum
THE FALL OUT

Knee moves inward
Leg internally rotates
Overpronation of the foot

Pelvis tilts forward
Hip Internally Rotates
Leg internally rotates
THE FALLOUT CONTINUED

- Sacral Torsion
  - The “Floating Boat”
- Subtalar Joint Dysfunction = Eversion
- Functional Scoliosis = Disc Compression and Neural / Tissue Tension
- Neural Shutdown / Inhibition (we need the hip!)
- Central Sensitization Syndrome
- Altered Biomechanics
  - Non-contact ACL mechanism?
- Altered tendon-muscle length / function
COMMON PAIN REFERRAL PATTERNS & ALIGNMENT

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THE WHEELHOUSE PROTOCOL℠

• Evaluation
  • History
    • Causative Factors
  • Postural Exam (TART)
  • One-Minute Wheelhouse Screening©
    • Special Tests (Combined)

• The Wheelhouse Protocol℠
  • PRT (Positional Release Therapy)
  • Thermal Ultrasound
  • Joint Mobilization (Maitland-Ⅱ)
  • Muscle Energy (MET)
  • HVLA (The Speicher Whip©)
EVALUATION

• Integrative & Summative Evaluation Approach Required
  • Diagnosis based on multiple findings

• History*
  • Primarily one-sided on involved side
  • Pain Pattern
    • Youth / Children vs. Adults

• TART Exam
  • Observation
    • Folds
    • Contralateral Hyperextended leg
    • Spinal & Pelvic Alignment
    • Unilateral Femoral External Rotation (Supine)
  • Special Tests for Motion
    • Gillet (March) – Speicher Modification
  • Long Sit Test  (aka: Supine to Sit Test)
WHAT IS GOING ON HERE?

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WHY ARE THEY NOT LINING UP?
SPECIAL TESTS FOR SI JOINT DYSFUNCTION

Motion

• Sensitivity, Reliability, Validity, Predictive Values LOW

  • Assessed individually\(^{14,16-20}\)
    • 8-44\%\(^{16}\)
    • Gillet only test found to have (+) association w/ LBP\(^{16}\)
    • Combined (3 or >) = (.82 - .94)\(^{15,21}\)

  • Which to combine? That is the grand question
  • Most based on landmark assessment

    • Gillet (Looking for "fixation")
      • Looking for Fire-Hydrant Sign ©)
    • Supine to Sit Test (Long-Sit)
      • Place Fingers BELOW malleoli

Provocation

• Similar findings as with SI Motion Tests Above
  • FABER, FADIR, SLR
A CASE-SERIES DESIGN OF PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN

Objective: To determine the effectiveness of the Wheelhouse Protocol™ for treatment of chronic non-specific low-back pain in a general population.

Methods:

• Case-Series Design (Pre-Post Test)
• N= 10 (21-68 yrs)
• TX: 1x/wk for 3 wks with a 6 month Follow-Up
• Outcome Measures:
  • DPA Scale (Disablement in the Physically Active Scale)
  • Oswestry Low Back Pain Disability Index
  • Global Pain Rating
  • Range of Motion (Trunk Flexion, Extension, SLR)
  • Provocation Tests (FABER, FADIR, SLR)
  • Special Tests (March, Long Sit)
  • Pressure Sensitivity
## DEMOGRAPHICS

<table>
<thead>
<tr>
<th>Gender</th>
<th>Race</th>
<th>Age</th>
<th>Months w/LBP</th>
<th>Location of LBP</th>
</tr>
</thead>
<tbody>
<tr>
<td>M = 4, F = 6</td>
<td>Caucasian</td>
<td>21-68</td>
<td>3 - 600</td>
<td>R = 8, L = 2</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>43</td>
<td>86.50</td>
<td></td>
</tr>
<tr>
<td>Std. Dev</td>
<td></td>
<td>15.902</td>
<td>181.51</td>
<td></td>
</tr>
</tbody>
</table>

![Age (N=10) Pie Chart](chart1.png)

![Months_w_LBP Bar Chart](chart2.png)
## RESULTS SUMMARY

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Effect Size (d)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPA</td>
<td>15.1</td>
<td>13.601</td>
<td>***1.292</td>
<td>*.007</td>
</tr>
<tr>
<td>Oswestery</td>
<td>6.3</td>
<td>5.716</td>
<td>***1.555</td>
<td>*.007</td>
</tr>
<tr>
<td>Global Pain</td>
<td>5.8</td>
<td>2.044</td>
<td>***3.862</td>
<td>*.000</td>
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<tr>
<td>AROM-SLR (R)</td>
<td>9.4</td>
<td>11.306</td>
<td>**.670</td>
<td>*.027</td>
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<tr>
<td>AROM-SLR (L)</td>
<td>5.8</td>
<td>7.239</td>
<td>.396</td>
<td>*.032</td>
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<tr>
<td>PROM-SLR (R)</td>
<td>3.1</td>
<td>11.742</td>
<td>.102</td>
<td>.425</td>
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<tr>
<td>PROM-SLR (L)</td>
<td>1.7</td>
<td>8.166</td>
<td>.056</td>
<td>.527</td>
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<tr>
<td>Trunk Flexion</td>
<td>9.8</td>
<td>22.809</td>
<td>.299</td>
<td>1.990</td>
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<tr>
<td>Trunk Ext.</td>
<td>11.6</td>
<td>11.147</td>
<td>**.737</td>
<td>*.009</td>
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</table>

* = <.05 Priori Significance Level  
** = Moderate Effect Size (.50>)  
*** = Large Effect Size (.80>)
DPA RESULTS

<table>
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<tr>
<th>Paired Samples Test</th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Std. Error Mean</td>
<td>95% Confidence Interval of the Difference</td>
<td>t</td>
<td>df</td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair 1 DPA_Pre - DPA_Post</td>
<td>15.100</td>
<td>13.601</td>
<td>4.301</td>
<td>5.370</td>
<td>24.830</td>
<td>3.511</td>
<td>9</td>
<td>.007</td>
<td></td>
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</tbody>
</table>
OSWESTERY RESULTS

Paired Samples Test

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
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<tbody>
<tr>
<td>Pair 1: OSW_Pre - OSW_Post</td>
<td>6.300</td>
<td>5.716</td>
<td>1.808</td>
<td>2.211 - 10.389</td>
<td>3.485</td>
<td>9</td>
<td>.007</td>
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</table>
GLOBAL PAIN RATING

Paired Samples Test

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1 GPR_Pre – GPR_Post</td>
<td>5.800</td>
<td>2.044</td>
<td>.646</td>
<td>4.338 – 7.262</td>
<td>8.973</td>
<td>9</td>
<td>.000</td>
</tr>
</tbody>
</table>

Global Change in Mean Numerical Pain Rating Score
DISCUSSION

- Chronic LBP next to OA is one of the biggest problems clinicians face and that plagues our patients\textsuperscript{1,4,9}
- Chronic non-specific LBP may not be so non-specific
- Anterior Innominate Rotations (AIRs) may be a major player
- Assessment/DX is not difficult when using an integrated evaluation approach
- The Wheel House Protocol\textsuperscript{SM} shows early promise in treatment of chronic non-specific LBP

- **Limitations**
  1. More patient cases needed, specifically at 6 mo.
  2. Cross-sectional population sample needed
  3. Potential researcher bias w/case-series design
  4. Requires expertise in manual therapy / PRT
The Wheel House Protocol℠ may help to:

1. Reduce opiate use and opiate-related deaths
2. Reduce world-wide clinical, social, economic and public health burden
3. Reduce number of ankle related pathologies (e.g., ankle sprain)
4. Curb the ACL epidemic
5. Improve quality of life & Sport of patients with chronic LBP
6. Further the AT profession’s mission
REFERENCES


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