Providing Objective Feedback Regarding Palpation
Eric Snider, DO

Forum: Innovations in Education,
How our Students are Learning
15 March 2019
Objective Feedback

• Humility
  – To recognize the limits of our own understanding

• Feedback
  – Self & Others
    • Faculty, Residents, Teaching Fellows, other students

• Practical Exams
  – Process : Accuracy ratio

• Objective
  – T.A.R.T., Ergonomics
Why Use Models

• The model is not reality
• Palpation is complex
• Model is useful
  – Can bring a salient feature to the foreground of the student’s experience
Asymmetry

• Landmark localization
• Assessment of position of palpating digits
• Ergonomics
  – Position of hands, wrists, elbows, shoulders, trunk
  – Dominant eye
Lumbar Spine Models
Palpation Thresholds with These Models

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Assessment</th>
<th>Threshold (mm) with Probability:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.80</td>
</tr>
<tr>
<td>Block Transverse Process</td>
<td>Uncovered</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Covered</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Lumbar Spine</td>
<td>Uncovered</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Covered</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

* Probabilities for 5-6 mm asymmetries were less than .90.
** Probability for 6 mm asymmetry was less than .80.
Localization & Asymmetry Perception

## Localization & Asymmetry Perception

### Table 3.
Truth Table and Respective Probability of Third-Year Osteopathic Medical Students: Landmark Localization and Digit Asymmetry Perception

<table>
<thead>
<tr>
<th>Transverse Process Localization</th>
<th>Digit Asymmetry Perception</th>
<th>Identify Direction of Transverse Process Asymmetry</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate</td>
<td>Accurate</td>
<td>Yes</td>
<td>0.74</td>
</tr>
<tr>
<td>Accurate</td>
<td>Inaccurate</td>
<td>No</td>
<td>0.09</td>
</tr>
<tr>
<td>Inaccurate</td>
<td>Accurate</td>
<td>No</td>
<td>0.15</td>
</tr>
<tr>
<td>Inaccurate</td>
<td>Inaccurate</td>
<td>No</td>
<td>0.02</td>
</tr>
</tbody>
</table>

a Group A (marked model): $Pr(P | L) = 0.89$. Group B (unmarked model): $Pr(P \cap L) = 0.74$. 
Anatomic Pelvic Models

Anterior
- Can adjust shear
- Can adjust rotation
- Calibrated with 3D camera system
- IC, ASIS, and Pubic Tubercles

Posterior
- Can adjust shear
- Can adjust rotation
- Calibrated with 3D camera system
- IC, PSIS and Ischial Tuberosities
Pelvis Models: ASIS

A

ASIS

B

ASIS

Proportion of Questions
- Right Inferior
- Right Superior

Asymmetry (mm)
Pelvic Models: PSIS

A

PSIS

B

PSIS

Probability

Asymmetry (mm)

Proportion of Questions

Right Inferior  Right Superior
Digital Camera Measurement:
Overlay images for objective feedback, intra-examiner & inter-examiner reliability
Restriction of Motion

• Landmark localization
• Symmetric force/pressure
• Assessment of displacement/tension
  – Motion permitted
  – Motion present
• Ergonomics
Measuring Force
Generation of Symmetric Force of each Hand
Feasibility

• Entire class of students
  – Trial run with a small group elective
• Reasonable amount of time
• Reasonable amount of staff
• Potentially more intense use of resources to remediate some students
Contact Information

• Lisa Norman, BS, PMP, Project Manager, A.T. Still University, lnorman@atsu.edu, Telephone: 660-626-2443

• Brian F. Degenhardt, D.O., Director, A.T. Still Research Institute, A.T. Still University, Associate Professor, Dept. of Osteopathic Manipulative Medicine, Kirksville College of Osteopathic Medicine, Phone (Research): 660-626-2102, bdegenhardt@atsu.edu

• Eric Snider, DO, Associate Professor & Chair Department of Osteopathic Manipulative Medicine, Kirksville College of Osteopathic Medicine, A. T. Still University of Health Sciences, esnider@atsu.edu
References
