Movement Diagrams and Documentation

Maitland’s Approach to representing pain and stiffness in the spinal column

Documentation and Notation

- Symbols and abbreviations used
- Recording range and pain – the ✓ ✓ system
- Recording of each treatment and each result of treatment
- Develop a habit of always doing notation the same way

Abbreviations

- Numbers to indicate time
  - 1/365 – yesterday; 1 day earlier
  - 5/365 – 5 days ago
  - 1/12 – 1 month ago
  - 3/12 – 3 months ago
  - 1/52 – 1 week ago
  - 7/52 – 7 weeks ago
Abbreviations

SQ - Special questions
GH - General health
Meds – Medications
AC – anti-coagulant
St – Steroids
Cd – Cord signs
CE – Cauda equina
WL – Weight loss

Dz – Dizziness
VA – Vertebral Artery
OOP – out of position
NT – not tested
ISQ – no change
St+, P+ - amount of stiffness or pain

Record Each Session

C/O – Subjective Assessment – the patient’s perspective
O/E – Objective Assessment – PT’s perspective
PP – Present pain before hitting Resistance (R)
Rx – Treatment – technique used, grade used, level treated, number of repetitions, the EFFECT of treatment
Plan – state reason for Rx changes

The Dynamic Map

Movement diagrams are dynamic maps representing the QUALITY and the QUANTITY of passive movement perceived by the PT
This includes the presence of pain, stiffness or spasm
Movement diagrams are essential to the understanding of relationship that the various grades of movement have to abnormal signs
Who needs a map anyway?

- Movement diagrams help educate both patients and other PT’s in what the problem is.
- Movement diagrams do not make a good manipulator but help the manipulator further understand what they are facing.
- While not essential, they are helpful, just like having a map of an unknown journey.

Components of Movement Diagrams

- Pain
- Protective involuntary muscle spasm
- Spasm-free resistance - Stiffness

What are the Basics?

- The PT passively moves an individual vertebral segment through its full available range.
- The PT notes how much motion there is and how that motion ‘feels’.
- There is a ‘normal’ range of motion that each motion is compared to (in the PT’s head).
- Limitations or excesses in motion are identified.
**Range of Motion**

- Baseline AB represents range of motion.
- The amount of motion is irrelevant.
- A – starting position for the movement.
- B – End of available passive range (a moveable point) depending on symptoms.

**Nature of Symptoms**

- Line AC represents the quality or intensity of symptoms.
- A – complete absence of symptoms.
- C – maximum intensity of symptoms.

**Irritability**

- The PT will stop testing when they determine that, although pain is not severe, to continue testing may exacerbate symptoms for that patient for a prolonged period.
When pain is noted by the PT, and further movement causes that pain to increase, the PT may stop movement at a pre-determined point. If buttock pain is elicited, the PT may continue the movement until the pain reaches the hamstrings but then stop.

The diagram is completed by including the 4th point (D) and completing the rectangle. Point D is the end of available range with maximum symptoms.

Is there any pain present? The joint is moved slowly and the patient asked to report the onset of pain. Perform small oscillations in the pain-free range moving to the position of pain onset. The onset of pain is recorded as P₁ on the AB line of the movement diagram.
Once P₁ has been identified, the PT will slowly move further into the range to locate the limit (L) of the movement.

This point is also marked on the AB line with an ‘L’.

Having decided to stop movement at L because of P₂, the PT must qualify what P₂ actually represents.

If P₂ is deemed to be the reason for stopping movement then it should be qualified as P₂ (intensity).

If the PT feels there may be some latent effect if the joint was moved further even though pain is not severe then it should be qualified as P₂ (latent).
Linking $P_1$ and $P_2$

- The path between $P_1$ and $P_2$ is not always a straight line.
- Pain may be felt at $\frac{1}{4}$ range initially and then change quickly to end at $\frac{3}{4}$ range with $P_2$.
- Alternatively, the end of range may be reached and not limited by pain. This is identified by continuing to use $P_1$.

Movement Diagram Examples

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<thead>
<tr>
<th>Nature</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>A</td>
<td>$P_1$</td>
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Pain at Rest

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Pain not limiting
Resistance – free of spasm

Resistance felt in the range could be due to adaptive shortening of:
- muscles,
- ligaments,
- joint capsule,
- scar tissue,
- arthritic joint changes
- other non-muscle spasm situations

Normal Joint Play

A normal pain-free joint has the feel of being well oiled and friction free.
The motion should be free and fluid.
The PT should be able to determine the ‘type’ motion that is occurring.
As end range approaches the surrounding structures will tighten and the resistance to movement will increase.

Assessing Resistance (R₁)

The best way to feel resistance is to hold one segment stationary and use small oscillations to assess the resistance.
With experience the PT will be able to determine differences between individual segments and individual patients.
Once R₁ is established, it is marked on line AB.
Limitations – where and what

- In the absence of pain, the joint is taken to its end range
- If resistance is the limiting factor then an L is marked on AB
- \( R_2 \) is drawn on CD vertically above this Limit
- This limit represents the strength of the resistance beyond which the PT is not prepared to push.

Muscle Spasm

- Two types of limiting spasm exist
  - One that always limits motion
  - One that is brought on as a quick contraction and thereby limits motion

Assessing Spasm Limitations

- Use small oscillating movements to work through range
- Perform oscillations at different speeds and assess changes
- If spasm is encountered prior to the end of range and stops motion then spasm (\( S_1 \)) is deemed to be the limiting factor
Behavior of Spasm (limiting)

- Spasm is noted in the same way as resistance or pain – using S₁ and S₂.
- If spasm limits range it usually reaches maximum quickly as is normally depicted as a vertical line.
- In joint with less severe disorders there may be spasm which increases slightly but does not stop movement.

Behavior of Spasm (contractile)

- When spasm is elicited by a pain response it may be brought on at different parts of the range.
- Usually occurs when a very painful joint is moved without due care and attention.
- This reflex contraction may be avoided if the joint is supported and relaxed prior to testing.
- This type of spasm is represented by a near vertical line beginning above the AB line.
- Its position and height suggest its intensity.

Steps in Compiling Diagrams

- Pain – where does it begin
- Limit of movement – where and what
- Quality and quantity of pain
- Behavior of pain
- Resistance – presence or absence
- Behavior of resistance
- Spasm – presence or absence