

## Movement Diagrams and Documentation

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

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## 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

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## 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

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## 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
- ✦ P1, P2 - area of pain
- ✦ St+, P+ - amount of stiffness or pain

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## 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

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## 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

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## 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

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## Components of Movement Diagrams

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

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## 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

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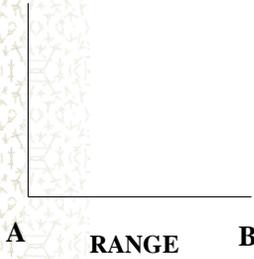
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## Range of Motion



- ✦ 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

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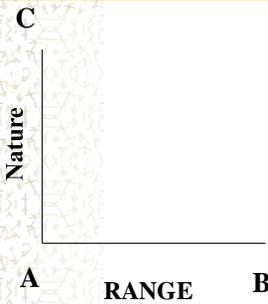
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## Nature of Symptoms



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

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## 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.

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## Nature

- ✦ 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.

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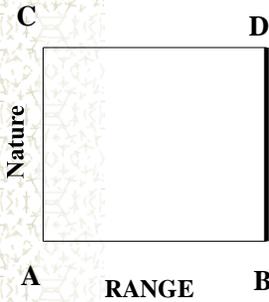
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## Completion of the Diagram



- ✦ The diagram is completed by including the 4<sup>th</sup> point (D) and completing the rectangle
- ✦ Point D is the end of available range with maximum symptoms

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## Pain

- ✦ 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 P<sub>1</sub> on the AB line of the movement diagram

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### Limit of Movement - where

- ✦ Once  $P_1$  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'

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### Limit of Movement - what

- ✦ Need to identify what component prevents or stops further motion
- ✦ If pain is determined to be the limiting cause then a  $P_2$  is marked above the limit of motion on the upper line (CD)
- ✦ This pain ( $P_2$ ) is the limit of pain that the PT is willing to elicit in their patient

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### Limit of Movement - qualify

- ✦ Having decided to stop movement at L because of  $P_2$  the PT must qualify what  $P_2$  actually represents
- ✦ If  $P_2$  is deemed to be the reason for stopping movement then it should be qualified as  $P_2$  (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  $P_2$  (latent)

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## Linking P<sub>1</sub> and P<sub>2</sub>

- ✦ The path between P<sub>1</sub> and P<sub>2</sub> is not always a straight line.
- ✦ Pain may be felt at ¼ range initially and then change quickly to end at ¾ range with P<sub>2</sub>
- ✦ Alternatively the end of range may be reached and not limited by pain. This is identified by continuing to use P<sub>1</sub>

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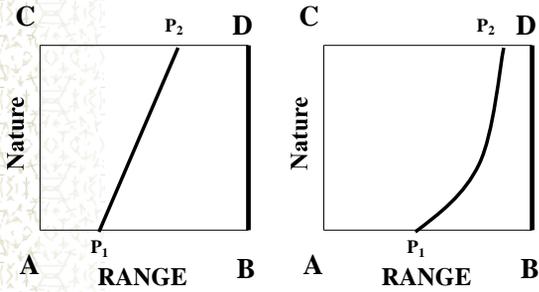
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## Movement Diagram Examples




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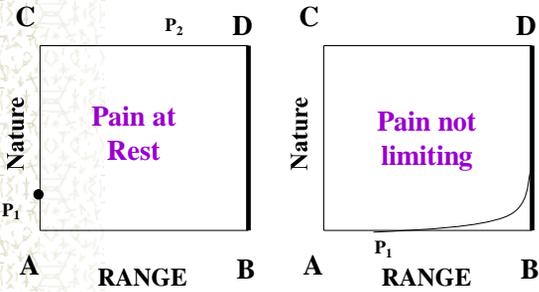
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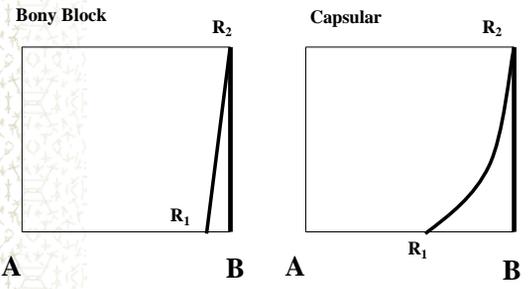
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### Movement Diagram - End Feels



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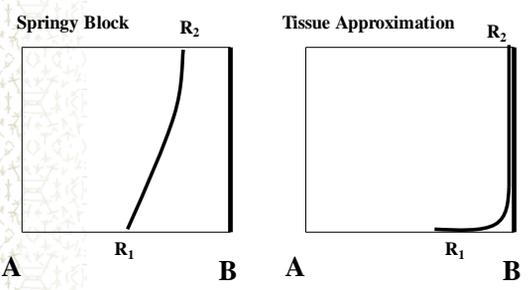
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### Movement Diagram - End Feels



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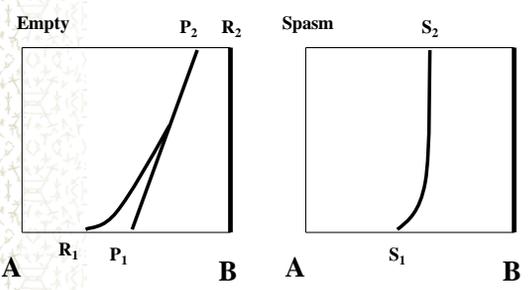
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### Movement Diagram - End Feels



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## 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

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## 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

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## Assessing Resistance ( $R_1$ )

- ✦ 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  $R_1$  is established, it is marked on line AB

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## 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.

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## 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

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## 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

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### Behavior of Spasm (limiting)

- ✦ Spasm is noted in the same way as resistance or pain – using  $S_1$  and  $S_2$
- ✦ 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

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### 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
- ✦ It's position and height suggest its intensity

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### 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

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Any Questions?

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