Combining Manual with Movement Assessment and Treatment for Neck Patients

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- Localize rotational abnormalities
- Identify areas of increased / decreased cervical lordosis
- Find soft tissue contribution to impairment:
  - Muscle: Spasm, bulk, pain, passive mobility

DIAGNOSES

Movement Diagnoses
- Rotation
- Extension
- Flexion
- Rotation + Flexion / Extension

Ortho Neck Guidelines
- Cervicalgia or pain in the thoracic
- Headaches/cervicocranial syndrome
- Sprain and strain cervical spine
- Spondylosis or cervical disc disorder with radiculopathy
As you correct the patient’s motor control, you may see existing hypomobilities more clearly because the vertebral levels that were quickest to move will be better stabilized and may no longer produce pain.

Then, the existing motion limitations due to hypomobility are often more apparent.

**Clinical Pearl**

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**How do we Prioritize the Exam?**

- Determine the contribution of motor impairment by correcting it. This may;
  - Significantly improve range of motion (ROM) and symptoms (SX).
  - Somewhat improve ROM and SX.
  - Minimal to no change in ROM and SX.
- Assess Hypomobility that would be affecting the patients’ active range of motion deficits.
- Determine passive treatment options based on patient’s diagnosis.

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**Cervical Active range of motion:**

- Movement: Correct altered motion. If ‘somewhat improved ROM and SX, or ‘minimal to no change’…
- Manual: Check end-feel of active range (if appropriate) and compare with passive range of motion tests.

Test Active range of motion in SUPINE and compare to sitting: gravity, compression, motor control.
The ability to be segment specific has limitations. Seffinger 2004, Stochkendahl 2006, Tuttle 2008, Rey-Eriz 2010

Evidence on spinal motion palpation is sparse and difficult to pin down for a variety of reasons.
  - Difficult to measure.
  - Difficult to get a meaningful population.
  - Difficult to tell in what way this is meaningful.

You may use any method of passive facet mobility.

Physiological motion requires either facet gapping or facet approximation.

Sometimes described as Upslope or Downslope, respectively.

TEST:
  - Localize areas of pain.
  - Identify hypomobility in relation to vertebra above and below.
  - Identify rotational abnormality.
  - Assess excursion of vertebral units
  - Correlate with all other test results.
**PAIVMS**
Passive Accessory Intervertebral Movements

Treatment:
* Performed centrally on the spinous process mostly to increase extension range of motion.
* Performed unilaterally on the facets to improve rotation, facet opening or closing depending on angle of force and neck position.

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**PPIVMS**
Passive Physiological Intervertebral Movements

Review in Maitland 2005

TEST:
* Perform Flexion, Extension, Rotation, Sidebend
* Test one vertebral unit at a time.
* Take note of symptoms and muscle guarding: keep patient relaxed.
* Correlate with all other test results.

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**PPIVMS**
Passive Physiological Intervertebral Movements

Treatment:
* Performed in the direction of hypomobility.
* May be a combined motion: Rotation + Sidebending
**PAIVM and PPIVM TESTS**

* Look for limitation of passive motion in relation to the patients’ active motion limitations.
* Take note of onset of symptoms during passive testing:
  * Symptoms increase at the beginning of motion, long before end range?
  * Symptoms are through range before end range stiffness?
  * Symptoms are only at the end of range?
* You may find...

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**PAIVM and PPIVM TESTS**

1. Pain +/- spasm and limited motion: This could reflect many joint situations i.e. hyper-, hypo- or normal joint mechanics.
2. Pain with ‘Full’ passive motion: This could be normal joint motion or hypermobility.
3. Limitation of motion, then pain: this could be hypomobility.

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**Movement Diagnoses Coupled with Manual Techniques**
Cervical Extension Impairment

Assess:
* PPIVMS: Ability of the facets to move in flexion.
* PAIVMS: Depth of spinous process at location of pain.
  Don't push it farther into extension.
* Soft tissue extensibility into flexion at each cervical segment
* Perform assessments in a manner that doesn't increase anterior translation.
* Look for hypomobility above / below painful areas.

Manual Treatment Techniques:
* Stretch Posterior soft tissues of upper and lower cervical spine, avoiding anterior translation.
* Cervical Traction
* Thoracic mobilization / manipulation to encourage extension.
* Trigger point release, soft tissue massage, SCS, etc.

Cervical Rotation Impairment

Assess
* PPIVMS: Determine the direction of a Rotational hypomobility that coincides with the direction (left or right) of the movement diagnosis.
* PAIVMS: May find facets on one side more prominent posteriorly and on the other side more anterior (deep).
Cervical Rotation Impairment

Manual Treatment Techniques:

- PPIVMS: Determine the direction of a Rotational Hypomobility that coincides with the direction (left or right) of the movement diagnosis.
- PAIVMS: Perform Unilateral P-A's on the ipsilateral side of the rotation.
- MWM's

Cervical Flexion Impairment

Assess

- PPIVMS: Assess ability of vertebral units to extend.
- PAIVMS: Central and unilateral P-A'S to both sides.

Cervical Flexion Impairment

Manual Treatment Techniques:

- PAIVMS: Central and unilateral P-A'S to both sides encourages extension moment in vertebra.
- Thoracic Flexion Techniques.
- MWM's for Extension
There are many combinations of impairments possible considering hypomobility, excessive accessory motion, poor motor control, neural tissues, patient attitudes.

Use a sound series of tests and be diligent so that you develop your ability to find pattern recognition and effectively treat patients.