

**Protocol for Cox® Technic Hands-On Portions of Cox® Courses (9/1/12)**  
**step-by-step guide instructions for treating patients with**  
**Cox® Technic Flexion Distraction & Decompression Spinal Manipulation**  
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NOTE: This guide does not preclude hands-on training nor study of the full protocols presented in the textbook. Please see the textbook, *Low Back Pain: Mechanism, Diagnosis, Treatment, 7<sup>th</sup> edition*, published by Lippincott, Williams & Wilkins, 2011, for the full explanation and rationale for Cox® Technic Flexion Distraction & Decompression Spinal Manipulation and the diagnostic workup leading to a treatment plan for each patient you treat. This set of notes serves as a simple guide of the protocols for training.

## I. LUMBAR SPINE - Protocol I and II Instructions

### 1. Patient Positioning Sequence

- Check that locks are secure.
- Assist patient onto table:
  - tighten abdomen and buttocks
  - assist patient onto table
  - have arms rest on arm rests
- Check patient Placement
  - ASIS 2" forward on thoracic piece
  - adjust ankle rest
- Set spring tension / power balance for caudal section

### 2. Tolerance Testing (to determine the appropriate means to induce distraction decompression and secure the patient during adjustment)\*

\*NOTE: Start at L1 and work down the lumbar spine to avoid engaging a level below a disc herniation.

- Release Flexion-Extension Lock
- Central Distraction Testing – *by means of tiller bar only*
  - *IF PAIN LATERALIZES, ice, acupuncture, etc., only for a day or two.*
  - spinous process contact
  - downward table movement till occiput extends or 2"
  - hold for 4 seconds
  - test L1 level and test caudally one level at a time to the lowest lumbar segment
- Lateral Distraction Testing – *by means of holding each ankle only*
  - *IF PAIN LATERALIZES WITH HOLDING ANKLES, then only move the table with the tiller bar as in central testing.*
  - spinous process contact
  - hold ankle (first uninvolved, then involved)
  - downward table movement till occiput extends or 2"
  - hold 4 seconds
  - test L1 level and test caudally one level at a time to the lowest lumbar segment
- Test with cuff on—*by means of ankle cuffs*
  - *IF PAIN LATERALIZES WITH THE CUFF ON, then only move the table and control the patient by holding the ankles as in lateral testing.*
  - spinous process contact
  - hold ankle (first uninvolved, then involved)
  - downward table movement till occiput extends or 2"
  - hold 4 seconds
  - test L1 level and test caudally one level at a time to the lowest lumbar segment

NOTE: Muscle resistance in the form of spasm is palpated for. If any such sign is present, do not use Cox® Technic flexion-distraction. If the patient reports pain on tolerance testing with the cuffs on, adjust without the cuffs. If the patient reports pain on tolerance testing while the ankle is held, adjust without holding the ankle which allows just the weight of the legs to be the tractive force. If the patient reports pain on tolerance testing with no tractive force (no ankle holding or cuffs), ice alone, trigger point, acupuncture, alternating hot/cold and massage may be called for until local irritation reduces to allow distraction with no signs of discomfort.

### 3. Palpatory Contact for Increasing Local Soft Tissue and Interspinous Tension

- Place third digit at the interspinous space to be manipulated.
- The second and fourth digits contact adjacent muscles.
- Distract the table until the interspinous space feels taut under your fingertip.
- At this taut point the doctor will contact the spinous process with the thenar or thumb-index contact. **It is this taut point that is the starting position for all further table movement for distraction and range of motion of the intervertebral disc and facet joints.**

- Align the doctor hand contact parallel with the spine in a cephalward direction. Do not contact the spinous with a perpendicular pressure with the contact hand; it is a cephalward pressure.
- Apply distraction with or without the ankle cuff depending upon patient tolerance results.
- The end point of distraction is the interspinous process space feeling elastic resistance.
- When releasing distraction, return to the taut point only.

#### **4. PROTOCOL I: Treatment of Sciatic Patients / pain extends below the knee**

- **Prepare the patient as follows:**
  - Patient Positioning
  - Tolerance Testing
  - Cuff on (or off if patient experiences pain with cuff on or as tolerance testing directs)
  - Move ankle rest caudally until taut, and lock it in place.
  - Disengage flexion-extension lever.
  - Apply palpatory contact to set **treatment start point**.
- **Apply 3 twenty-second distraction sets.**
  - **5 pumps of 4 seconds each with F/D or long-y-axis**
  - Depth of caudal distraction = occiput extension or 2"
- **Trigger Point Application:** Between each 20-second session, treat appropriate trigger point(s) of the affected dermatome (ex: L5 sciatic nerve in gluteus, back of thigh, popliteal fossa, leg, ankle and foot).

#### **5. PROTOCOL II: Treatment of Non-Sciatica Patient (or sciatic patients who have 50% relief) / no pain below elbow - Full Facet ROM**

- **Prepare the patient as follows:**
  - Patient Positioning
  - Tolerance Testing
  - Cuff On (or off if patient experiences pain with cuff on or as tolerance testing directs)
  - Move ankle rest caudally until taut, and lock it in place.

##### **a. Flexion**

- Disengage flexion-extension lever.
- Apply palpatory contact to set new taut treatment start point.
- Make spinous process contact with thenar or finger/thumb. (*Hand contact applied in a cephalward direction.*)
- Lift spinous process cephalad as table flexes.
- Apply one second velocity flexion movements.
- Amplitude and dosage are applied to patient pain and tolerance levels.
- Stop caudal table flexion as occiput extends or 2" of downward table movement.
- Movement is smooth, rhythmical, oscillatory motion.
- Return table to neutral position and secure locks OR leave unlocked for lateral flexion.

##### **b. Lateral Flexion**

- Perform under distraction using flexion (or long-y-axis as appropriate and/or comfortable).
- Disengage levers for flexion and lateral flexion.
- Apply palpatory contact to set taut new treatment start point in flexion. (*Hand contact applied in a cephalward direction.*)
- Apply flexion to occiput extension or 2" of downward table movement.
- Hold spinous process between index finger and thumb or use thenar contact.
- Apply 1 second velocity lateral flexion movements to each side (right and left).
- Amplitude and dosage applied to patient pain and tolerance levels.
- Resist spinous process with thumb or index finger.
- Movement is smooth, rhythmical, oscillatory.
- Return table to neutral position and secure locks OR leave unlocked for circumduction.

##### **c. Circumduction**

- **Perform from neutral starting position** (no taut starting position set).
- This motion couples flexion/distraction and lateral bending, and it may even combine with long-y-axis as appropriate or comfortable.
- Grasp spinous process between thumb and index finger or use palmar thenar contact. (*Hand contact applied in a cephalward direction.*)
- Apply 2 second movements to right and then to left.
- Amplitude and dosage applied to patient pain and tolerance levels.
- Movement is a smooth, rhythmical, oscillatory motion.
- Return the table to neutral position, and secure all locks.

#### d. Extension

- Release flexion-extension lever.
- Contact SP between index-thumb or palmar contact.
- Apply anterior pressure as table comes into extension.
- Apply one second repetitions (10 for test).
- Amplitude and dosage applied to patient pain and tolerance levels.
- Movement is a smooth, rhythmical, oscillatory motion.
- Return table to neutral position, and secure all locks.

#### 6. Getting Patient off Table / Ending Adjustment session

- Return table to horizontal/neutral position.
- Check that all locks are secure.
- Remove ankle cuffs, if used.
- Assist patient off the table (instruct patient to push up off of the arm rests). This step also allows you to share tips on how to get out of bed at home and such.

## II. CERVICAL SPINE - Protocol I and II Instructions

The addition of long y axis for cervical spine distraction adjusting offers a more controlled, safer application.

#### IMPORTANT NOTES:

- Cervical spine adjusting is performed without the occipital restraint system.
- All ranges of motion are done in conjunction with long y axis distraction.
- The contact hand on the spine moves parallel with the instrument's cervical axial distraction with the same force and velocity.
- Each movement is performed to the barrier of elastic resistance as determined by the doctor's tissue tension sense and taken then slightly beyond that barrier. *Patient tolerance is monitored at all times.*

#### 1. Patient Positioning Sequence

- Have the patient lie with the specific area to be treated over the division between the cervical and thoracic pieces.
- The eyes may rest in the eye-cutouts.
- If there is need for more length of the headpiece, unlock the headpiece long-y-axis feature, position the head, then lock it.

#### 2. Tolerance Testing

\*NOTE: Start at C1 and tolerance test each level of the cervical spine to C7.

- Contact cervical spinous process-transverse process with one hand while long-y-axis traction with the cervical headpiece is applied with the other hand on the traction handle at the head of the table. The headpiece and your hand contact move in parallel.  
*(Alternative Plan if the patient expresses lateralization of pain: Use the patient's headweight as the traction force only so that very gentle distraction is given if the hand contact causes pain.)*
- Repeat with each cervical spine level, holding each spinous process-transverse process segment for 4 seconds.
- Ask patient if he/she feels any pain in the neck shoulder, arm or thoracic spine.  
*NOTE: Muscle resistance in the form of spasm is palpated for. If any such sign is present, do not use distraction. Instead use trigger point, acupressure, alternating hot/cold and massage until local irritation reduces to allow distraction with no signs of discomfort.*
- Test the next level moving caudad.

#### 3. PROTOCOL I: Treatment of Radiculopathy Patients / pain extends below the elbow

*NOTE: Only long y axis distraction (with an optional slight degree of flexion set at a comfort level for the patient) is used to treat acute radiculopathy.*

- Prepare the patient for treatment, and perform tolerance testing.
- Apply long-y-axis distraction to set **treatment start point** which is the point of tautness of the interspinous space.
- **Apply 3 twenty-second distraction sets**
  - **5 pumps of 4 seconds each with F/D or long-y-axis**
- **Trigger Point Application:** Between each 20-second session, treat appropriate **trigger points** of the affected dermatome.

#### **4. PROTOCOL II: Treatment of Non-Radicular Patients (or radicular patients who have 50% relief) / no pain extends below the elbow**

- Prepare the patient for treatment, and perform tolerance testing.

##### **a. Long-Y-Axis Axial Distraction**

- Grasp the spinous-transverse process of the vertebra at the level of distraction motion desired. (ex: Grasp C5 to move the C5 segment.)
- Release the axial distraction lock.
- Standing at the side of the instrument, gently push the headpiece axially using the ball handle and the vertebra contracted with the doctor's hand until tissue tension sense notes the barrier of elastic resistance (the treatment start point).
- Go slightly beyond the barrier of elastic resistance, carefully monitoring patient tolerance.
- The contact hand and the instrument's motion guided by the cervical tiller bar move parallel.
- Gently bring back to neutral.
- Move to the next level, and repeat.

##### **b. Lateral Flexion**

- Grasp the spinous-transverse process of the vertebra at the level of lateral flexion motion desired.
- Unlock the lateral flexion lock.
- Move the headpiece into long y axis distraction.
- Laterally flex to the left first, then the right.
- Stabilize the transverse process away on the side of lateral headpiece flexion with the contact hand as the level to be laterally flexed is brought into lateral flexion by the headpiece motion.
- Laterally flex the headpiece until tissue tension sense notes normal physiological motion.
- Gently bring back to neutral.
- Move to the next level, and repeat.

##### **c. Circumduction (a combination of lateral flexion and flexion movement)**

- Grasp the spinous-transverse process of the vertebra at the level of circumduction motion desired.
- Unlock the flexion and lateral locks.
- Move the headpiece into long y axis distraction.
- Circumduct to the left, then to the right.
- Circumduct the headpiece until tissue tension sense notes normal physiological motion.
  - *(This is a strong movement and important to regain mobilization of the cervical facets.)*
- Gently bring back to neutral.
- Move to the next level, and repeat.

##### **d. Extension**

- Grasp the arch of the spinous-transverse process of the vertebra at the level of extension motion desired.
- Unlock the flexion-extension lock.
- Extend the headpiece until tissue tension sense notes normal physiological motion.
- Gently bring back to neutral.
- Repeat as necessary at each joint level. Move to the next level, and repeat.

##### **e. Rotation**

- Grasp the spinous-transverse process of the vertebra at the level of rotation motion desired.
- Unlock the rotation lock.
- Move the headpiece into long-y-axis distraction.
- Rotate to the left, then to the right.
- Rotate the headpiece until tissue tension sense notes normal physiological motion by holding the arch securely while the segment rotates.
- Gently bring back to neutral.
- Move to the next level, and repeat.

#### **5. Ending The Adjustment Session**

- Return table to neutral position.
- Check that all locks are secure.
- Remove occipital restraint, if used.
- Instruct patient to push up on the arm rests.
- Assist patient to upright position.

### III. THORACIC SPINE Protocols

#### **1. Using Lumbar Attended Automated Axial Distraction**

- Apply ankle cuffs, if appropriate.
- Allow the table to axially distract per your control during the distraction adjustment and open the joint space. Move up the thoracic spine, as appropriate.
  - Using the footswitch
    - Use a two-handed contact of the spinous at the appropriate level.
    - Tap the foot/tapeswitch to allow the table to move axially.
    - Release the foot/tapeswitch to allow the table to return to neutral.
  - Using the finger button
    - Use a one-handed contact of the spinous at the appropriate level.
    - With the free hand, tap the finger button on the tiller bar beneath the ball handle to allow the table to move axially.
    - Release the finger button to allow the table to return to neutral.
  - Using the control box
    - On the box on the side of the table,
      - Set the time for the table to run in auto mode.
      - Set the distance for distraction while you adjust the patient.
    - Use a two handed contact of the appropriate spinous at the appropriate level.

*NOTE: A high-velocity, low-amplitude adjustment may be given during lumbar attended automated axial distraction as just described. This can be applied at any desired level of thoracic spine according to patient need and tolerance in a gentle, non-force manner.*

#### **2. Using Cervical Axial Distraction Section –**

- **OPTION 1 - Manually Applied**
  - Apply the occipital restraint system to stabilize the head.
  - Stand at the head of the table.
  - Use a palmar contact on the spinous below the thoracic segment to be distracted
  - Pull on the ball handle of the cervical headpiece to distract the segment to the point of elastic resistance. Move slightly beyond that point, minding at all times patient tolerance.
  - Gently return to neutral.
  - Move caudad to the next thoracic spinous, and repeat.
- **OPTION 2 - Applied in Conjunction with Automated Axial Distraction Caudally**
  - Apply the occipital restraint.
  - Allow the table to axially distract the caudal section. Adjust the thoracic spine while
    - Using the footswitch
      - Use a two-handed contact of the spinous at the appropriate level.
      - Tap the foot/tapeswitch to allow the table to move axially.
      - Release the foot/tapeswitch to allow the table to return to neutral.
    - Using the control box
      - On the box on the side of the table,
        - Set the time for the table to run in auto mode.
        - Set the distance for distraction while you adjust the patient.
      - Use a two handed contact of the appropriate spinous at the appropriate level.

*NOTE: A high-velocity, low-amplitude adjustment may be given during thoracic attended automated axial distraction as just described. This can be applied at any desired level of thoracic spine according to patient need and tolerance in a gentle, non-force manner.*

## IV – Automated Long-Y-Axis Distraction Applications

### **A. Lumbar Spine - Attended Automated Axial Distraction (non-sciatica patients only or a sciatica patient who has attained 50% relief of pain)**

- Prepare patient for treatment, and perform tolerance testing.
- Using the footswitch
  - *The “auto/manual” selector must be in the “MAN(ual)” mode on the caudal tiller bar.*
  - Apply ankle cuffs, if appropriate from tolerance testing.
  - Make the contact with the spinous at the level desired – with both hands or with one hand and rest the free hand on the ball handle.
  - Touch the foot/tapeswitch with your foot.
  - Allow the table to distract as far as necessary to open the joint space.
  - Release the foot/tapeswitch to allow table to come back to neutral.
  - Make the next contact with the spinous at the next level desired & repeat procedure.
- Using the finger button (on the caudal tiller bar at the back of the bar beneath the ball handle)
  - *The “auto/manual” selector on the tiller bar must be in the “MAN(ual)” mode on the caudal tiller bar.*
  - Apply ankle cuffs, if appropriate.
  - Make the contact with the spinous at the level desired with one hand.
  - Rest the other hand on the ball handle comfortably enough that the middle finger is in reach of the button.
  - Touch the button with your finger.
  - Allow the table to distract as far as necessary to open the joint space.
  - Release the button to allow the table to come back to neutral.
  - Make the next contact with the spinous at the next level desired & repeat procedure.
- Using the control box
  - *The “auto/manual” selector on the tiller bar must be in the “AUTO” mode on the caudal tiller bar.*
  - Apply ankle cuffs, if appropriate.
  - Set the control box on the side of the table,
    - Set the time for the table to run in auto mode.
    - Set the distance for distraction while you adjust the patient.
  - Push the “start” button on the front of the control box.
  - Starting at L5S1 and working up the lumbar spine, make a two-handed contact or one-handed contact (with the free hand resting on the ball handle) with the spinous at the appropriate level(s).
  - Once each level has been distracted, ranges of motion may be combined with axial distraction, per instructions as explained in Steps 5a, b, c, and d of the LUMBAR SPINE section (page 2), as appropriate for the patient and his/her condition. Always first distract the spinal segment, then go into the ROM desired.
    - Flexion
    - Extension
    - Lateral flexion
    - Circumduction

### **B. Unattended Automated Axial Distraction (non-sciatica patients only) – Full Spine Adjusting**

- *The “auto/manual” selector on the tiller bar must be in the “AUTO” mode on the caudal tiller bar.*
- Apply ankle cuffs, if appropriate, OR apply the occipital restraint, if appropriate (not both at one time).
- Set the control box on the side of the table:
  - Set the time for the table to run in auto mode.
  - Set the distance for distraction while you adjust the patient.
- Show the patient where the “patient emergency stop button” is under the right armrest. Explain that it can be pushed if the patient feels pain during the session.
- Allow the table to deliver an unattended traction therapy session as setup.
- Check in on the patient during the session.
- The thoracic restraint belt can be positioned and used to apply specific level unattended long-y-axis distraction.

#### REFERENCES:

Lumbar Spine and Thoracic Spine Techniques:

*Low Back Pain: Mechanism, Diagnosis, Treatment*, 7<sup>th</sup> ed, published by Lippincott Williams and Wilkins, 2011.

Cervical and Thoracic Spine Techniques:

*Neck, Shoulder, Arm Pain: Mechanism, Diagnosis, Treatment*, 3<sup>rd</sup> ed, 2005, privately published, 1-800-441-5571.

Mechanisms of table descriptions per features on The Cox®8 Table by Haven Innovation.