



## Guide for Cox® Technic Certification Examination

*Doctor: In preparation of our Part I and II and/or Part II alone lumbar certification course in Cox® Flexion Distraction and Decompression Technic, I ask you to look over the following recommended readings as well as the abbreviated PROTOCOLS FOR COX® TECHNIC guide. They will be enhanced in didactic lecture. Based on your preliminary study and the enhanced lecture, following the course, you will know where in the text to find answers to clinical questions for guiding your patient care. For the certification course, I suggest you read and acquaint yourself with the following chapter material mentioned below, especially Chapters 2, 3, 4, 7, 8, 9 – Low Back Pain: Mechanism, Diagnosis, Treatment, 7<sup>th</sup> ed., 2011.  
James M. Cox, DC, DACBR*

### 1. Chapter 2:

pages 30-111: Nerve supply of the intervertebral disc, dermatome patterns, discogenic pain production, contained and non-contained disc herniation and fragmentation with clinical signs and symptoms, sciatic scoliosis, intradiscal pressure changes by maneuver and posture, flexion and extension effects on spinal area and stenosis, apophyseal anatomy and pain sensitivity, nucleus pulposus motion within the annulus on motions of flexion and extension, instability defined and demonstrated, tropism and Cyron and Hutton studies, Fardon classification of disc degeneration, finite element analysis of disc mechanics on motion, positive and negative factors of spinal exercise, pudendal plexus signs and symptoms, piriformis and gemelli obturator internus syndrome, leg length inequality. A total of 428 references will be covered.

### 2. Chapter 3:

pages 112 – 155. 337 References given: Study the dorsal root ganglion size, DRG position within the osseoligamentous canal, neovascularization, Complex regional pain syndrome of chronic nerve compression, Pfirrmann and Griffith classification of disc degeneration on pages 131-132, Kobayashi chemical inflammation of the nerve supply of the nerve on pages 129 to 137 covering the immunohistochemical inflammation by adrenergic and cholinergic fibers which are vasodilators versus peptidergic nerve fiber inflammation which are vasoconstrictors. Study carefully the production of neuropathic pain by chemical inflammation of the disc and dorsal root ganglion via nuclear material on page 136. Note on page 132 that painful distraction of the rat facet joint causes higher production of substance P in the DRG than non-painful distraction. This is a concept supporting our application of force so as not to cause painful inflammation that increases patient pain. Study mechanical compression of the nerve and DRG in the production of clinical signs and symptoms. Haefeli classification of disc degeneration on page 141-143 and its correlation with radiographic findings is important for the clinician.

### 3. Chapter 4: Spinal Stenosis

pages 156 – 184 Know Eisenstein measurement for stenosis on pages 168-172. Understand stenosis' clinical presentation.

4. Chapter 5: Sacroiliac joint. Understand how we adjust and align the sacroiliac joint with Cox® procedures.

5. Chapter 6: Biomechanics research of Flexion Distraction and Decompression spinal manipulation in this chapter is written Ram Gudavalli, PhD. Know the intradiscal pressure changes occurring with this form of manipulation. Dr. Cox will cover this thoroughly for you in lecture.

6. Chapter 7: Diagnosis of low back and sciatica. Study the chart on page 228 for sciatica etiology. Know the Dallas Discogram Description of disc degeneration. Dr. Cox will discuss MRI of the spine with you. Look over the examination forms and examination of the low back and sciatic patient starting on page 261 to 288. This form will be described and discussed in lecture with you. Note varying differential diagnosis of low back and leg pain to include avascular necrosis, congenital defects, sacral fracture, multiple myeloma, disc herniation, spinal stenosis, ligamentum flavum hypertrophy, synovial cyst, sequestration of the disc, eosinophilic granuloma, metastatic



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disease, pancreatitis, diastematomyelia, fracture, degenerative spondylolisthesis, DISH, scoliosis, and other pathologies seen in clinical chiropractic practice.

7. Chapter 8: Understand the biomechanical changes in the intervertebral disc and space with flexion and extension motion of the spine. PAGES 363-365 IS THE PUBLISHED STANDARDS OF CARE FOR COX® FLEXION DISTRACTION AND DECOMPRESSION SPINAL MANIPULATION. KNOW THEM. Read pages 362 to 444 to know Protocol I and Protocol II principles and application of spinal manipulation. IN THIS CHAPTER YOU WILL HAVE A REFERENCE FOR TREATING PROTOCOLS WITH THE COX® TECHNIC AS WELL AS SPECIFIC CONDITION TREATMENT. USE THIS FOR REFERENCE IN DAILY PRACTICE WHEN CONFRONTED WITH A QUESTION OF CARE. THIS WILL BE COVERED IN DIDACTIC LECTURE VERY THOROUGHLY. On page 384 are clinical trial outcomes for various low back conditions treated with Cox® Technic protocols. Such conditions as disc degeneration, disc protrusion and prolapse, transitional segment, sprain/strain, facet syndrome, spondylolisthesis, etc., are given with the number of days and treatment number to acquire maximum relief of pain. Comparison of Cox® Technic with medical care is included. Electrical stimulation, acupuncture, nutrition, bracing, exercise, back school, return to work principles, ergonomic training, failed back surgical syndrome patient care with Cox® Technic, patient report of findings and treatment plan with goal setting are described.

8. Chapter 9: pages 445 – 515.

Specific intervertebral disc herniation and spinal stenosis patient care is detailed. Study the algorithms of treatment for sciatic patients on pages 453-454. Failed back surgical cases are given on pages 465-483. Many case reports are given to lead you in clinical treatment of difficult cases.

9. Chapter 10: Facet Syndrome. It is important to understand stable versus unstable facet syndrome via the work of Van Akkerveeken, its clinical features, and treatment. This chapter will be covered in detail in lecture due to its chiropractic importance.

10. Chapter 11: Spondylolisthesis. Degenerative and true spondylolisthesis is classified, pain generators given, Friberg's study of instability of spondylolisthesis, research clinical outcomes under Cox technic, and treatment will be covered in detail in lecture.

11. Chapter 12: Transitional segment. This will be covered in lecture so that any future question you may have in your clinical practice will be at your fingertips in this chapter.

12. Chapter 13: Osteoporosis and Disc Nutrition is covered in this chapter and will be covered in lecture.

13. Chapter 14: Rehabilitation of the low back pain patient. This is the work of Drs. Scott Chapman and Carol DeFranca and is specialized study for your clinical inclusion.

14. Chapter 15: Fibromyalgia: Study according to your personal need, and it will be covered in lecture.

15. Chapter 16: Ralph Kruse, DC, DABCO, covers the treatment of the pregnant female, such a great addition to the technique. It is side-lying technic that is covered in lecture, but this chapter is good for patient education and clinical application.



## Study Guide - Certification Examinations

**FOLLOWING ARE SECTIONS OF TWO TEXTBOOKS FELT TO BE MOST IMPORTANT AND HELPFUL FOR THE CLINICIAN STUDYING COX® SPINAL MANIPULATION PROCEDURES. PLEASE STUDY THEM PRIOR TO ATTENDING THE COURSE WORK AS THEY AID UNDERSTANDING AND IMPLEMENTATION --- James M. Cox, DC, DACBR**

**OUTLINE OF *LOW BACK PAIN: MECHANISM, DIAGNOSIS, TREATMENT* (7<sup>th</sup> ed) TEXT FOR INTERESTING PARTS:**

GOIC PAGE 95-8

Pre and Post MRI of HNP 120

Pfarrmann -130

Griffith – 131

Blood vessel autonomic nerve supply – 129

Exam form – 263

LESS FOR SCOLIOSIS 335

Panjabi from JBJS and disc bulge – 353

Onel - 356-7

Standard of Care – 363-5

Cox Technic chpt 8 – page 348

Long Y axis 379

1000 case study – 383

E Stim use – 403

Bracing 410

LBWS – 412

Exercises 420

LB patient book 424

CHPT 9 IVD AND STENOSIS TREATMENT – PAGE 445

Burton 447

Finneson 448

FBSS 465

FACET SYNDROME CHPT – 516- 24

Eisenstein

Dwyer Bogduk, Aprill – 528

SPONDYLOLISTHESIS – 533 and Treatment 541

TRANSITIONAL SEGMENT – 578

NUTRITION CHPT 13 – 589

Disc regeneration – 801

Guehring – 609

REHAB CHPT 14 – 621

CHPT 15 - FIBROMYALGIA – 645

CHPT 16 – PREGNANCY

LITERATURE UPDATE - 665

**OUTLINE OF Neck, Shoulder, Arm Pain: MECHANISM, DIAGNOSIS, TREATMENT (4th) TEXT:**

It's a short read with lots of content. Do note these topics:

- Algorithms on pages 105-106
- Protocols in chapter 7
- Research into protocols pages 57-64
- Dermatomes pages 92-94

**Protocol for Cox® Technic Hands-On Portions of Cox® Courses (10/1/17)**  
**step-by-step guide instructions for treating patients with**  
**Cox® Technic Flexion Distraction & Decompression Spinal Manipulation**  
**prepared by James M. Cox, DC, DACBR, FICC, Hon.D.Litt, FACO(H)**

*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 treatment contact mode – side-lying, central, lateral, cuff- 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 if sciatica is present. You may tolerance test starting at L5-S1 and move cephalward if no sciatica is present.

- Release Flexion-Extension Lock
- Central Distraction Testing – *by means of tiller bar only*
  - *IF PAIN LATERALIZES, ice, acupressure, etc., only for a day or two OR choose to apply side-lying.*
  - spinous process contact (mammillary contact option)
  - downward table movement till occiput extends or 2"
  - hold for 4 seconds (mimic application – 2 seconds down, 2 seconds up)
  - 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 (mammillary contact option)
  - hold ankle (first uninvolved, then involved)
  - downward table movement till occiput extends or 2"
  - hold 4 seconds (mimic application – 2 seconds down, 2 seconds up)
  - 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 (mammillary contact option)
  - hold ankle (first uninvolved, then involved)
  - downward table movement till occiput extends or 2"
  - hold 4 seconds (mimic application – 2 seconds down, 2 seconds up)
  - 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 and just hold the tiller bar 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, acupressure, alternating hot/cold and massage may be called for until local irritation reduces to allow distraction with no signs of discomfort. Side-lying application of forces may be chosen.*

### **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 knee 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**

- *Recommended textbook for cervical spine mechanism, diagnosis and treatment is Neck, Shoulder, Arm Pain: Mechanism, Diagnosis, Treatment, 4th ed. (2014) by James M. Cox, DC, DACBR.*
- IMPORTANT NOTES:
- Cervical spine flexion distraction and decompression spinal adjusting is performed by two methods:
  - By doctor hand contact of the vertebral arch of the segment to be distracted
  - Occipital restraint system.
    - Both methods produce long-y axis distraction to the individual motion segment or the entire cervical spine as a column.
- Protocol I system of distraction manipulation is for treating spinal stenosis with radicular pain. It utilizes only long y axis distraction. When radicular pain is reduced in severity by 50%, Protocol II is begun as the new treatment process.
- Protocol II is application of physiological range of motion spinal manipulation for non radicular patients and is carried out with the cervical and/or cervico-thoracic spine in long y axis distraction decompression. It is Protocol I application with the addition of joint mobilization. Long y axis distraction increases the disc space height, drops intradiscal pressures and increases foraminal area; this results in greatly reduced possibility of introducing spinal stenosis within the osseoligamentous canal (intervertebral foramen) as facet joints are manipulated into their physiological ranges of motion.
- The doctor contacts with one hand on the spine and the other on the tiller bar. Both tiller bar and spine contact place equal cephalward force on the spine. One is not applied with greater force than the other.
- In applying long y axis distraction to the cervical segments, the spine is distracted cephalward to the barrier of elastic resistance which is the taut point where the spinal tissues have no further motion. Distraction is then

applied beyond the taut point. Protocol I is given for the radiculopathy patient which is long y axis distraction only. Protocol II has the doctor distract the spine as in Protocol I followed by manipulating the joints of the cervical and cervico-thoracic spines beyond that barrier of elastic resistance into the physiological range of motion of the spinal joints. *Patient tolerance is monitored at all times for discomfort.*

- 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.*
- Combining flexion of the headpiece while long-y axis distraction is executed is a strong force and is to be administered with reduced distraction force. If the treating physician chooses to do this, s/he must carefully monitor patient tolerance during this procedure. The preferred method is to use only long-y axis distraction without flexion added; however, some doctors find the combined application beneficial.
- In treating ulnar radiculopathy with C8 nerve root compression or chemical inflammation, caution is needed so as to not apply posterior to anterior pressure on the T1 spinous process during long-y axis distraction as this increases intradiscal pressure. Occipital restraint distraction is a good procedure to avoid increasing intradiscal pressure. Place the occipital restraint on the patient's occiput, contact at the T5 level as cephalward distraction is applied on the tiller bar.

### **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. Be sure to not produce a posterior to anterior force on the C7-T1 segments as this increases intradiscal pressure at this level. Always lift the spinous process and vertebral arch as long y axis distraction is applied at the C7-T1 segment. Do not press downward on C7-T1 in tolerance testing and/or spinal manipulation.

- Contact cervical spinous process-transverse process with one hand firmly with a thumb/index contact 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 with equal force.  
*(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. **DO NOT REST THE HAND PALM OR PISIFORM***

#### **CONTACT ON T1.**

- 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. Coupled Motion (a combination of rotation and lateral flexion)**

- Grasp the spinous-transverse process of the vertebra at the level of coupled motion desired.
- Unlock the rotation and lateral flexion locks.
- Move the headpiece into long y axis distraction.
- Tip the headpiece down on the side (right / left) into which you laterally flex.
- Move 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.



**f. Flexion (optional – Note that flexion is much stronger than long-y.)**

- Grasp the arch of the spinous-transverse process of the vertebra at the level of flexion motion desired.
- Unlock the flexion-extension lock.
- Flex 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.
- Again note that this author prefers long y axis distraction as applied in Protocol I to flexion distraction. If flexion distraction is applied, reduce the cephalward force with the headpiece and carefully monitor patient tolerance.

**5. Ending The Adjustment Session**

- Return table to neutral position.
- Check that all locks are secure. Lower the tiller bar.
- 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 process 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 process 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 process 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 process 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 process 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 process 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 process 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.

**Special Cox® F/D and distraction adjustment procedures demonstrated in lecture and video include**

- Side lying F/D and distraction adjusting for patients who cannot lie prone to include pregnancy
- scoliosis treated in the prone, supine, side lying postures for Cox procedures
- supine scoliosis (adolescent and degenerative)
- compression defects of osteoporosis
- hyperkyphosis of the thoracic and lumbar spine
- spondylolisthesis
- retrolisthesis
- osteoporosis
- DISH
- spinal stenosis
- aged spine conditions

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*, 4<sup>th</sup> ed, 2014, privately published, 1-800-441-5571.

Mechanisms of table descriptions per features on The Cox®8 Table® by Haven Innovation. [www.coxtable.com](http://www.coxtable.com)

## PROTOCOL III - COX® SPINAL DECOMPRESSION PRINCIPLES AND APPLICATION (as of July 13, 2016)

*Much discussion surrounds decompression of the spine. Since decompression is a foundation of Cox® spine manipulation procedures and often a stand-alone procedure, Protocol III is now specifically added to the Cox® procedures. This will bring needed research and force of delivery for decompression of the spine to the clinician in his or her clinical practice.*

### PRINCIPLES OF COX® AUTOMATED DISTRACTION DECOMPRESSION SPINE MANIPULATION:

1. Unattended long-y axis distraction decompression is utilized *after* the following procedures leading to its application:
  - A. Low back and radicular pain patients were tolerance tested for being able to accept the Cox® long-y axis decompression distraction (Protocol I) without pain.
    1. Following Protocol I manual Cox® long-y axis distraction, the radicular patient has been 50% relieved of lower extremity pain.
    2. At the 50% relief of pain, manually controlled automated long-y axis Cox® decompression distraction is tested for tolerance by the patient. Protocol I and II are administered under attended Cox® long-y axis distraction with tolerance test monitoring.
    3. Attended Cox® long-y axis decompression distraction is tested at each level of the spine to be treated AND ALSO the spine as a column of vertebrae is tested for pain tolerance.
    4. If tolerance testing each spine level and as a column of segments is not pain producing for the patient, unattended Cox® long-y axis distraction decompression (Protocol III) is given to the patient without the ankle cuffs in place.
    5. If no pain is present with unattended Cox® long-y axis decompression distraction without the cuffs, the cuffs are placed on the ankles and tolerance testing is repeated.
    6. If no pain is felt with cuffs in place as Cox® long-y axis distraction decompression is delivered, the thoracolumbar restraint belt is placed on the patient superior to the segments to be distracted and decompressed. Patient tolerance to the restraint is now tested.
    7. If any discomfort is reported by the patient, treat below the level of force at the onset of care and only use of the thoracolumbar belt or cuff as the patient tolerates. For example, if placing the thoracolumbar restraint on the spine caused discomfort for the patient, remove the restraint and repeat tolerance testing without it. If the patient is comfortable with no restraint, begin their care without the restraint. At subsequent visits the restraint can again be tested on the patient and when and if it is found to not cause pain, it can be administered. Tolerance testing always directs patient level of treatment.
    8. If the patient declares any form of discomfort as Cox® long-y axis distraction decompression is given, treat at lesser force. If all forms of Cox decompression are painful, do not deliver the treatment.
  - B. How to apply the proper force with Cox® long-y axis distraction decompression spinal manipulation in Protocol III:
    1. With or without the thoracolumbar restraint in place on the spine, palpate the interspinous process spaces and feel the tautening of the ligament and the slight opening of the interspinous space. Ask the patient if there is any discomfort. If any discomfort, treat with a lesser form of distraction decompression such as manual Protocol I or II.
    2. As the patient states their tolerance to the Cox® distraction decompression, begin with a small level of automated distraction with the Cox® instrument under unattended automated distraction. A one inch excursion of the caudal section of the Cox® instrumented is excellent for tolerance testing. Test with the thoracolumbar restraint on and off the patient's spine.
    3. With no complaint of discomfort from the patient, set the Cox® instrument to deliver long y axis distraction decompression without the restraint or with the restraint placed above the spine level from which distraction decompression of the inferior vertebrae is desired. The doctor will either use the thoracolumbar restraint or not depending upon patient comfort. Isolation of the decompression distraction force is best with the thoracolumbar restraint in place. Use the ankle cuffs as patient tolerance allows. Patients desire distraction

with the cuff and thoracolumbar restraint in place and the most comfortable distance of distraction determined for best decompression.

4. Depending on the patient body habitus and tissue stretching ability, set the caudal section of the Cox instrument to distract the desired distance. Two inches of distraction is a very common amount of distraction distance. Time the delivery of the decompression force at the desired degree of distraction distance. The time is commonly 12 minutes and this is followed with Protocol II spinal manipulation.
5. Detente of the caudal section of the Cox® instrument as long y axis distraction decompression is capable of being set. Pressing the elevation button on the tiller bar will set the distraction to hold from ½ to 4 seconds. This distraction constant force allows hysteresis and stretching of the spinal muscles, ligaments, facet joints, intervertebral disc and tendons; this stimulates afferentation to the central nervous system and encourages circulation into the intervertebral disc.
6. As you start with Cox® unattended long-y axis distraction decompression at a low interval such as one inch, the distractive distance can be increased by ½ inch increments until the desired comfort level of distraction for the patient is attained.
7. Physiological therapeutic applications as electrical stimulation, acupuncture, heat, cold, etc. can be administered during unattended long-y axis Cox® distraction decompression.
8. The instrument is equipped with a stop switch that the patient can press to stop the table if any discomfort is felt. Other call devices can be used for patient attention gaining needs.

#### **WHAT ARE THE INDICATIONS FOR UNATTENDED LONG Y AXIS COX® DISTRACTION DECOMPRESSION SPINAL MANIPULATION – PROTOCOL III?**

- A. Disc degeneration and the accompanying arthritic disc and facet joint and ligament pathologies that accompany it.
- B. Spinal Stenosis. This may be due to disc herniation or degenerative spine disease such as ligamentum flavum hypertrophy, endplate hypertrophy, facet arthrosis, disc space narrowing, ligament calcification or most commonly the combination of all these factors.
- C. Scoliosis. Adolescent idiopathic scoliosis or degenerative scoliosis which usually is accompanied with the conditions noted in points A and B.
- D. Chronic low back pain. Patients often state it would feel good to have their spine pulled apart. Based on the research of Cox® Technic, five factors are in place and benefited with Cox® long-y axis distraction decompression spinal manipulation: 1. Increase disc space height 2. Decrease intradiscal pressure 3. Increase the intervertebral foraminal area by 28% 4. Restore physiological range of motion to the vertebral joints and 5. Afferentation of pain relieving nerve pathways to the central nervous system.
- E. Low back and lower extremity pain such as sciatica are treated with this procedure per the above instructions.

#### **WHAT ARE THE CONTRAINDICATIONS TO COX® LONG-Y AXIS DISTRACTION DECOMPRESSION SPINAL MANIPULATION?**

- A. Any patient complaining of spine or extremity pain when tolerance tested prior to using Cox® distraction decompression procedures
- B. Acute fracture, active malignant disease, cauda equine syndrome, progressive neurological disease

In didactic lecture and certification courses in Cox® long-y axis distraction decompression spinal manipulation, computer forces generated with the above procedures will be taught for further exactness and competence in delivering Cox® unattended automated long y axis distraction decompression to the spine.

Submitted for Protocol III by James M. Cox, DC, DACBR