MASTERING THE DISC

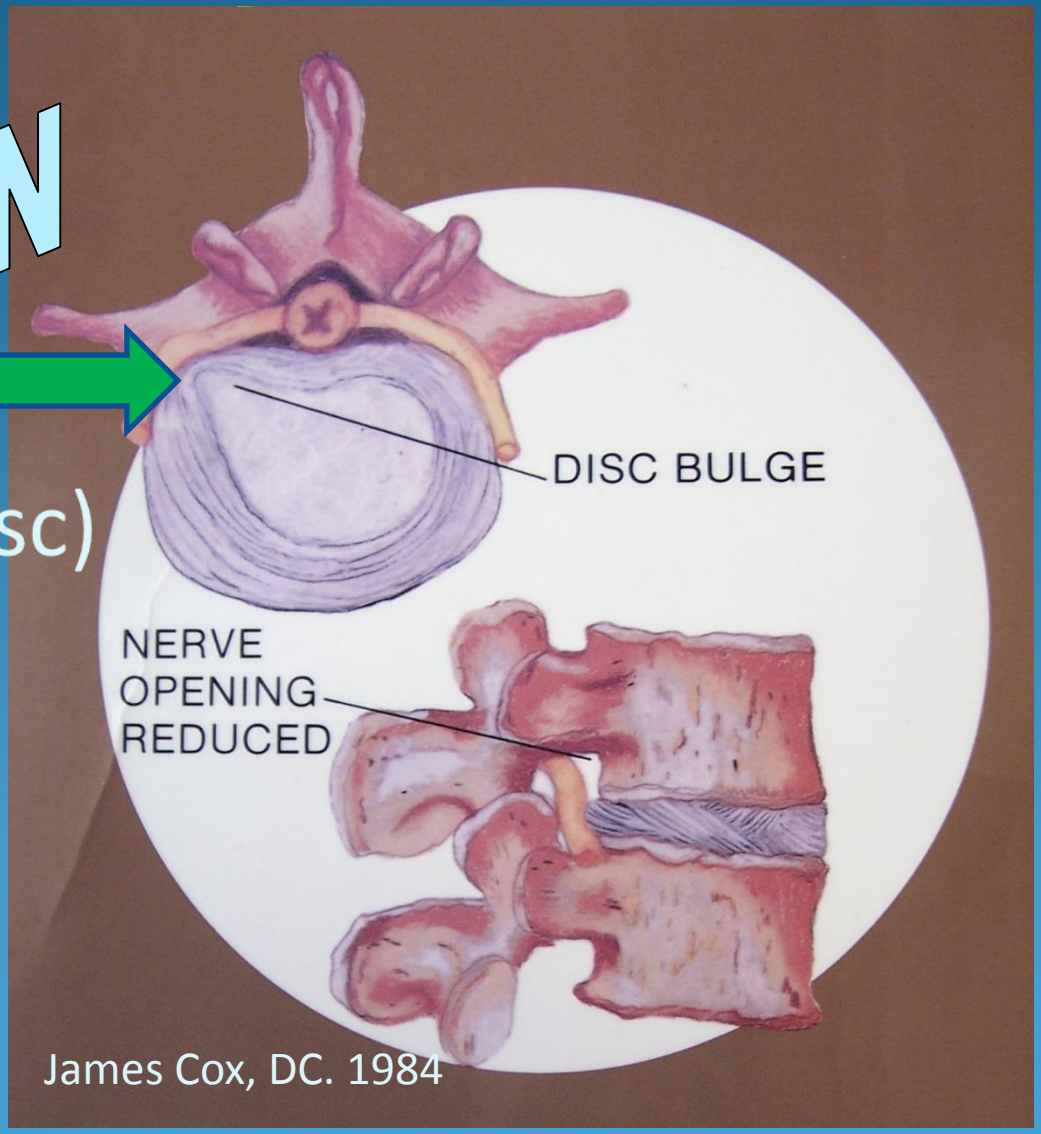
Mechanical Assessment of the Spine & Cervicogenic Headaches

Jonathan M Lesch, D.C., Cert. MDT, CMP

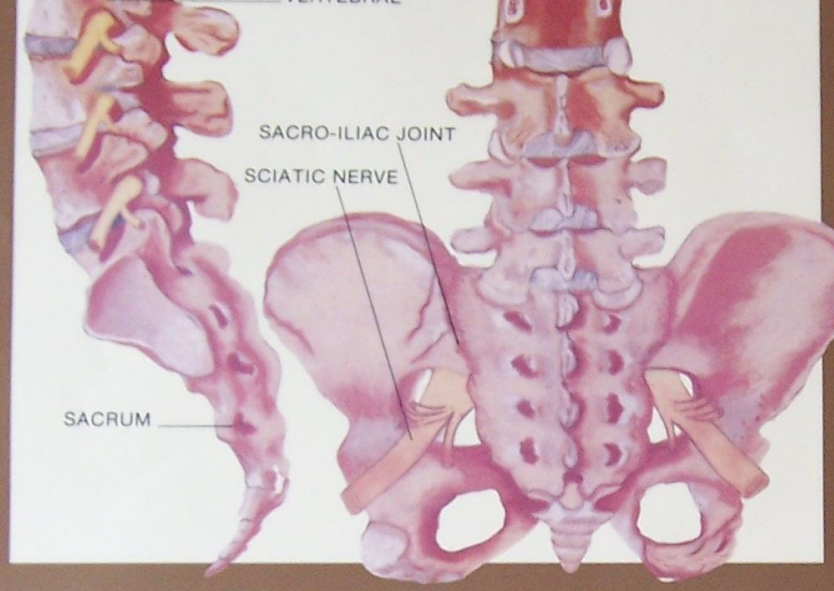
What if it truly is this simple?

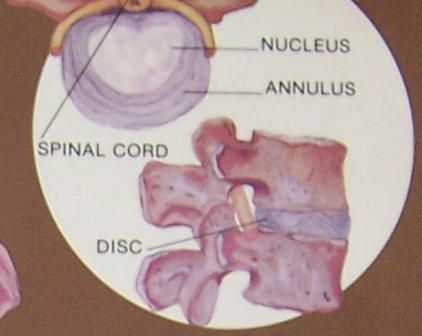
SPRAIN

(to the disc)

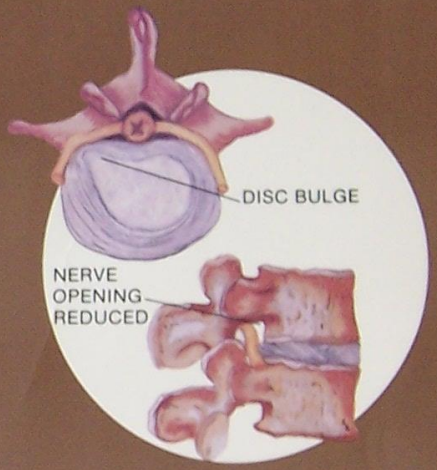


James Cox, DC. 1984

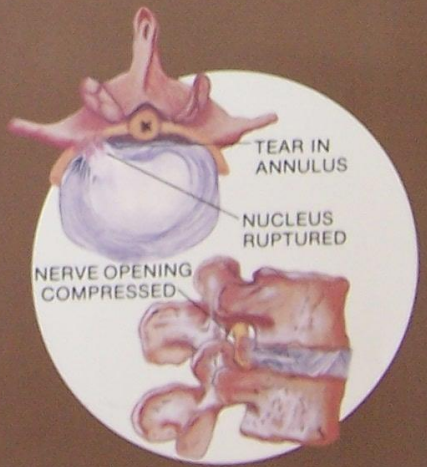




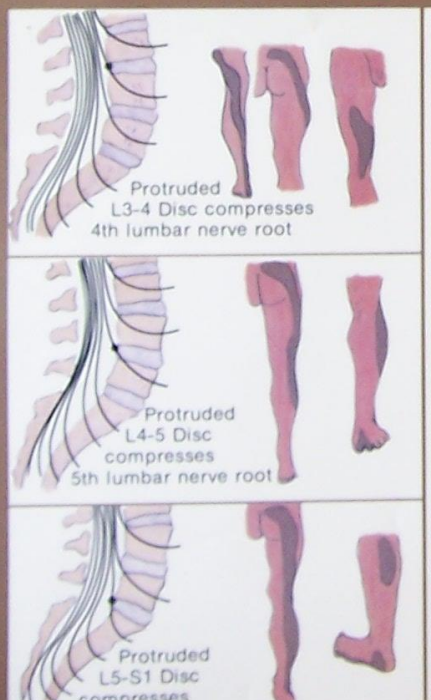
NORMAL

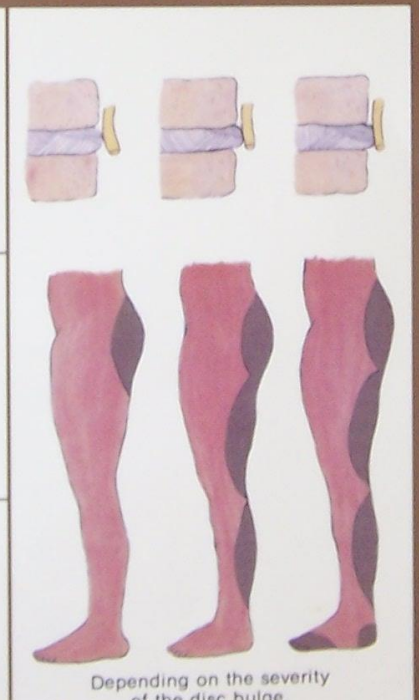


PROTRUSION



LEG PAIN DISTRIBUTION





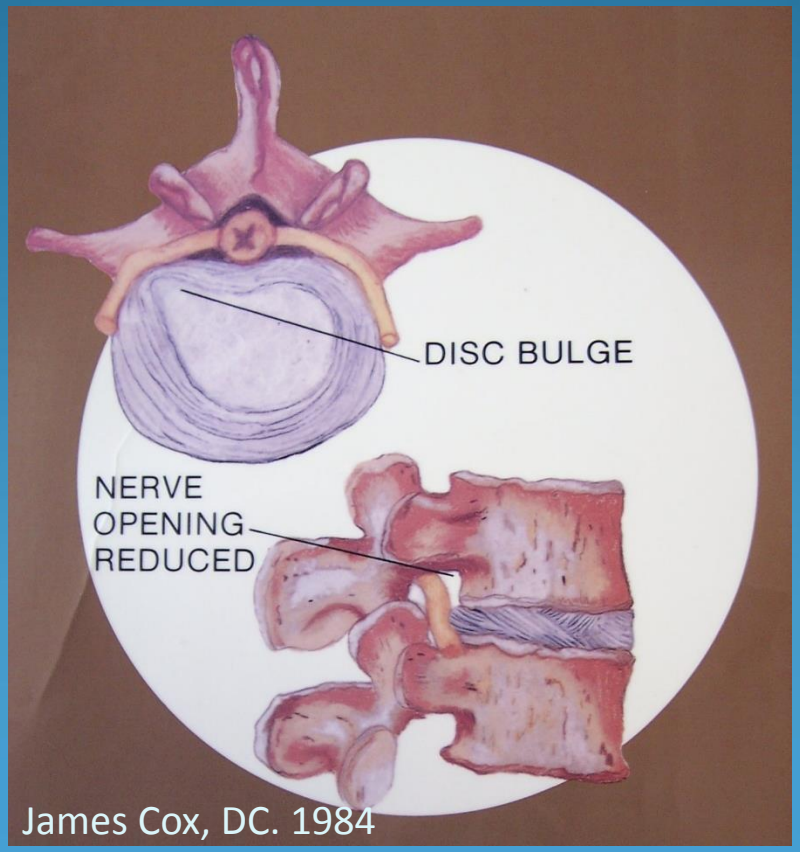
Disc Derangement

- Occurs when the internal contents of the disc are disrupted or altered due to *injury or weakness to the annular wall* **(SPRAIN)**, resulting in limited or abnormal movement and possible pain.

McKenzie RA (1990) The Lumbar Spine: Mechanical Diagnosis and Therapy. Spinal Publications (N.Z.) LTD.

(BULGE)

Identify and treat the *Sprain!*



James Cox, DC. 1984

Much of the healthcare profession is giving exercises in the same direction of movement that led to the injury in the first place !

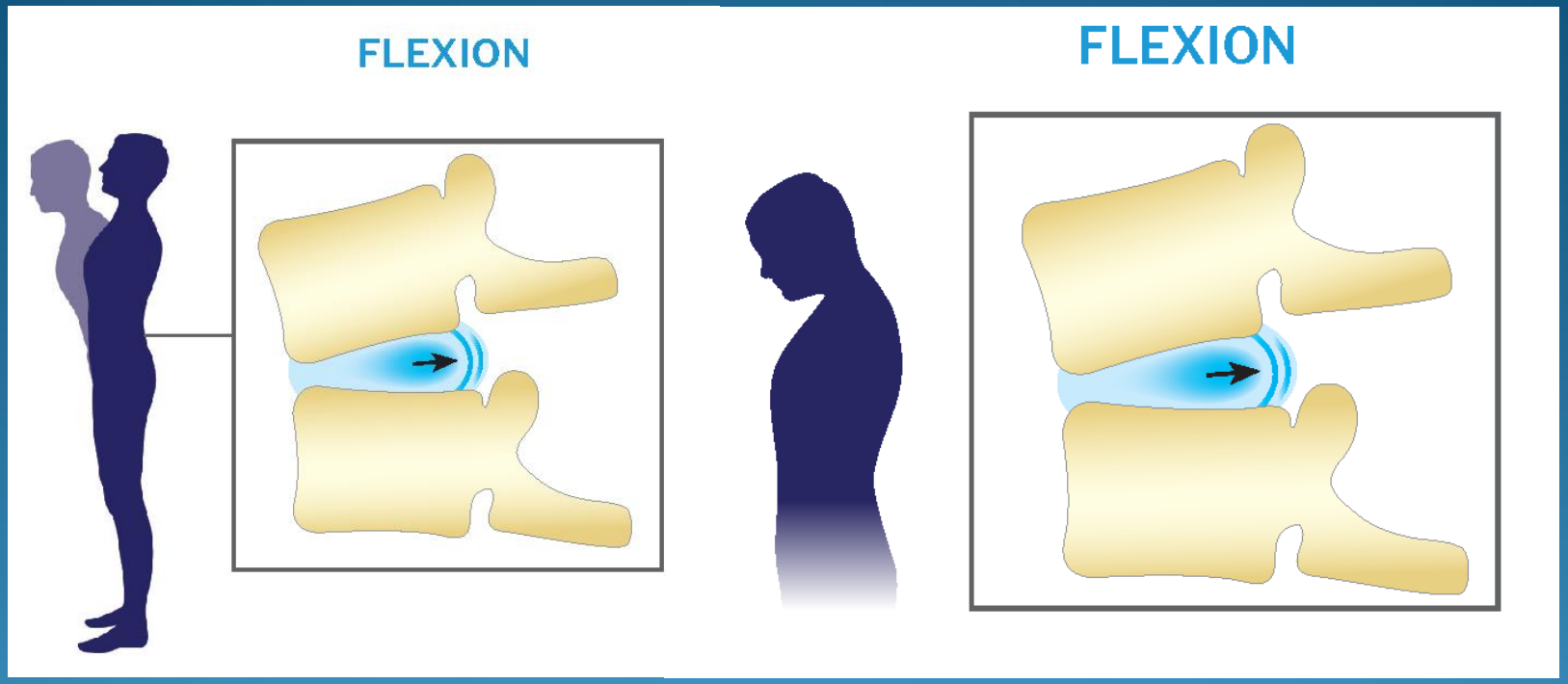
Adams and Hutton 1982; King 1993; Gordon et al 1991; Wilder, Pope, and Frymoyer, 1988; Callaghan and Mcgill 2001

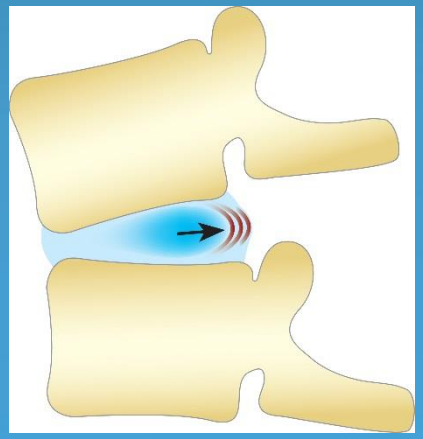
Repeated or sustained flexion is necessary to cause herniation

"In fact, herniation of the disc seems impossible without full flexion"

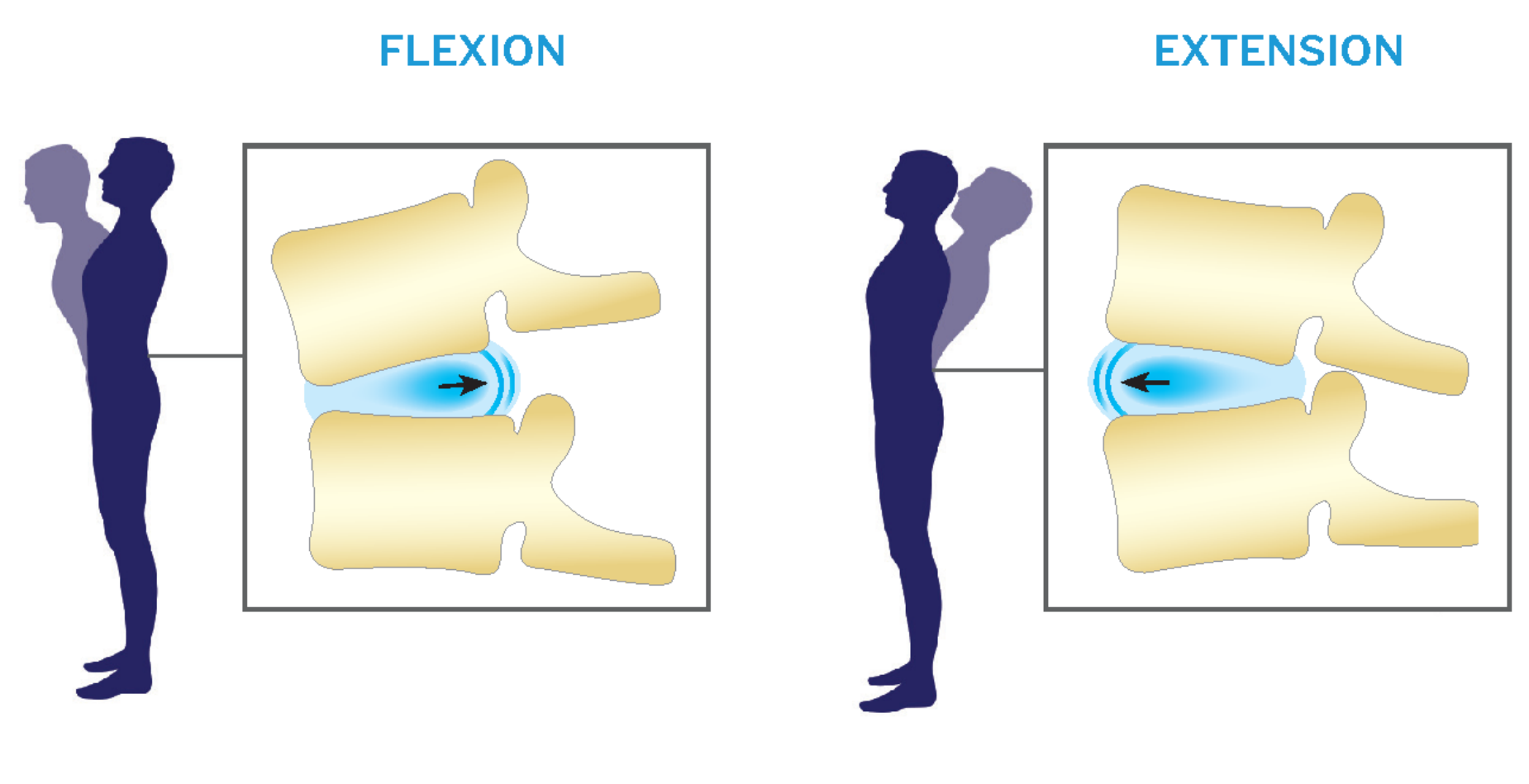
Stuart McGill

Forward Flexion





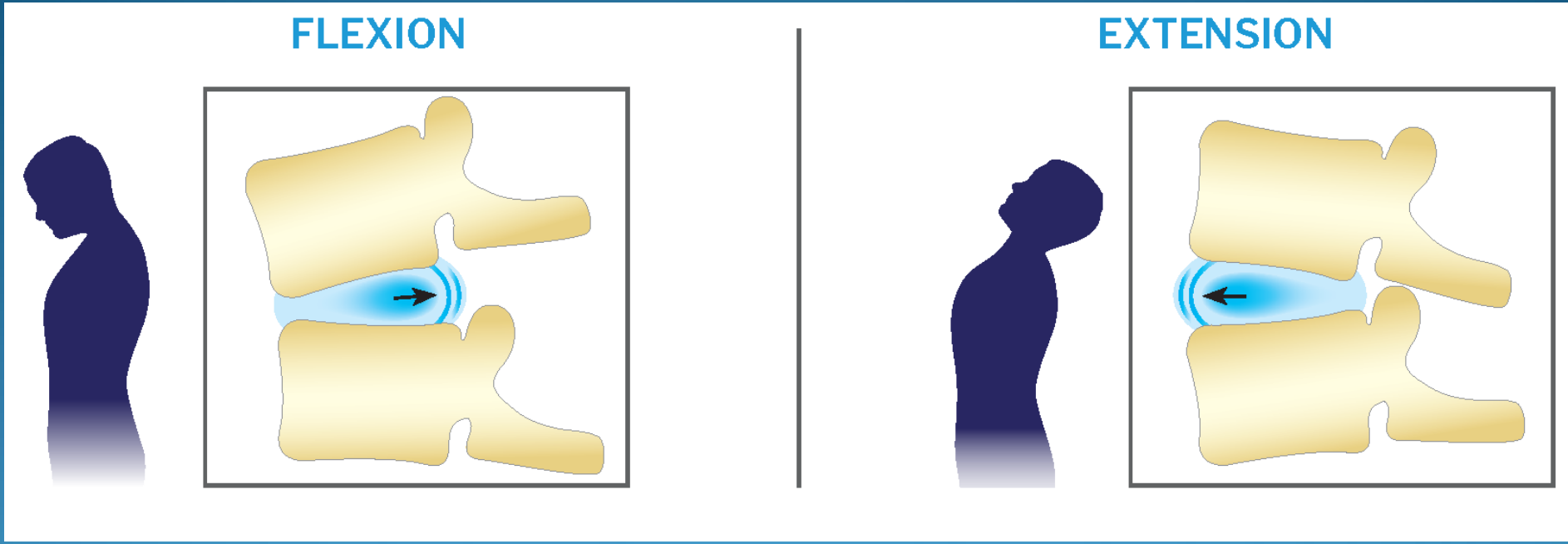
Lumbar Spine



Skrzypiec D, et al. The internal mechanical properties of cervical intervertebral discs as revealed by stress profilometry. Eur Spine J 2007. 16(10):1701-1709.

Cervical discs function in parallel with lumbar discs

Cervical Spine



Aultman CD, Scannell J, and McGill SM. Predicting the direction of nucleus tracking in bovine spine motion segments subjected to repetitive flexion and simultaneous lateral bend. Clinical Biomechanics (2005) 20: 126-129.

**The direction of bending will determine the location of annulus damage*

(i.e. Forward flexion to the right will likely lead to posterior lateral bulge to the left.)

Rohlmann A, Consmu¨ller T, Dreischarf M, Bashkue M, Disch A, Pries E, Duda G, Schmidt K, Measurement of the number of lumbar spinal movements in the sagittal plane in a 24-hour period, Eur Spine J, 23,2375-2384, 2013.

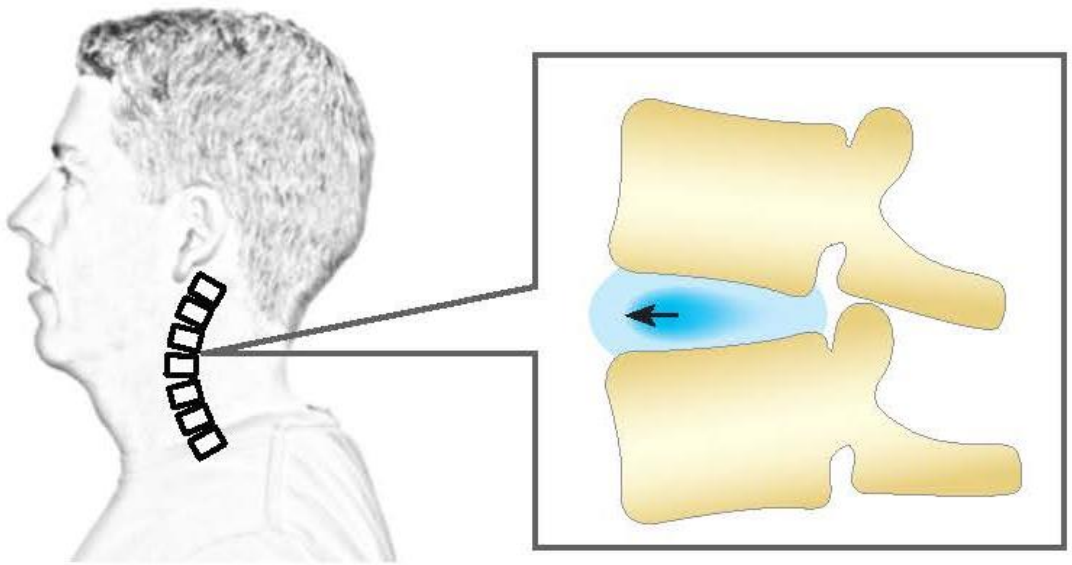
FLEXION BIASED WORLD

This study used *sensor strips* on 208 non-symptomatic volunteers during daily living to measure sagittal spinal movements over 24 hrs. Volunteers spent much more time in flexion than extension, *reaching full flexion 50 times and zero times reaching full extension.* This study substantiates the previous data suggestions a great predominance of flexion in everyday life.

Posterior Disc Derangements

Patients must reduce the derangement frequently with exercise, hold it in with good posture (must maintain lordosis – ***band-aid***) and limit their sitting and bending, for the *sprained/weakened* posterior annular wall to tighten up and heal

GOOD POSTURE IS YOUR BAND AID



Good posture tilts the backs of the vertebrae together to maintain disc pressure forward.

Posterior Disc Bulge Reducing Exercises

Standing extension

Press-up

Press-up painful side leg off

Prone lying pillow(s)

Prone lying pillow(s) on elbows

Side bends

Rotations

Posterior Disc Bulge Reducing Exercises

Retraction

TRACTION

Extension with self-traction

Rotation with self-traction

Side-bending

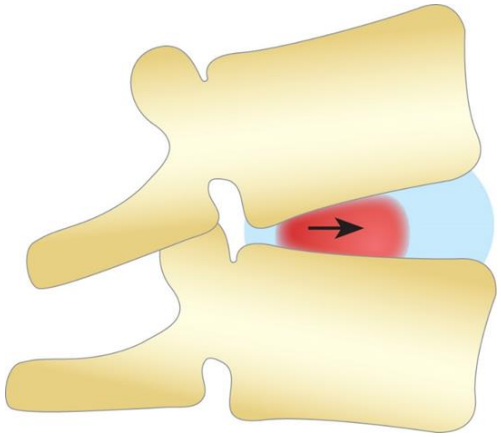
Doctor Assisted Traction

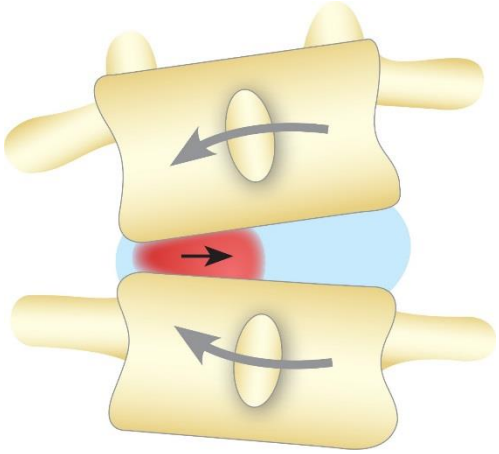
Directional Preference

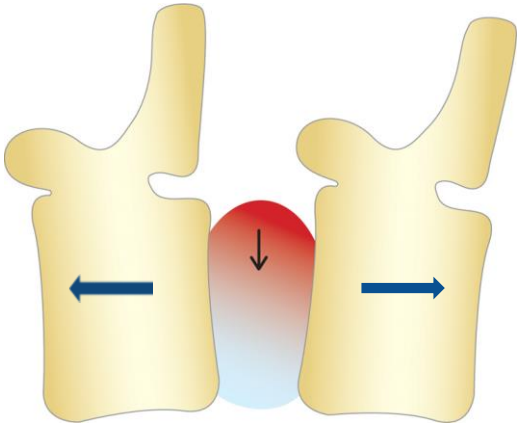
- *The direction of repeated movements or sustained postures that reduces the derangement (<u>not just extension!</u>)*
- Marked by <u>centralization</u> and/or an <u>increase in R.O.M.</u>
- Often the opposite motion of excessive mechanical stress

*offers a green light in terms of management strategy and direction of force with manipulation

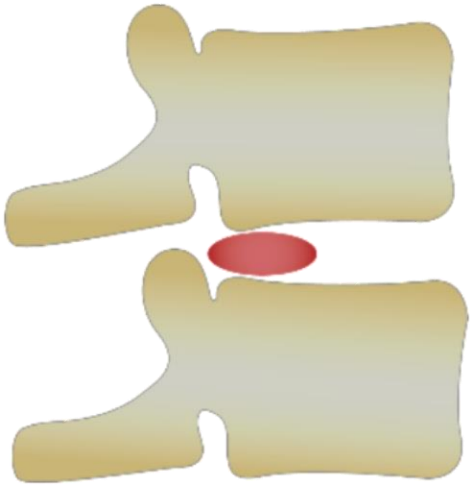
McKenzie RA (1990) The Lumbar Spine: Mechanical Diagnosis and Therapy. Spinal Publications (N.Z.) LTD.

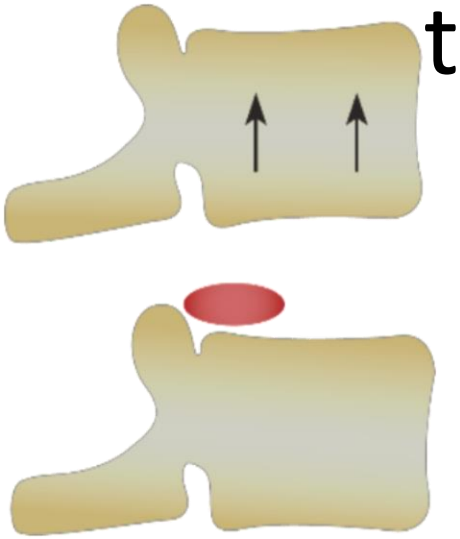


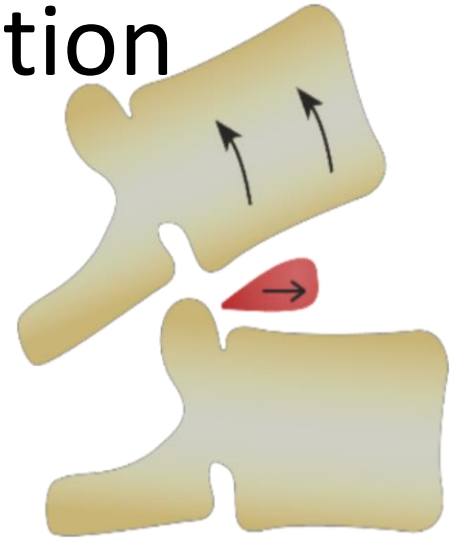




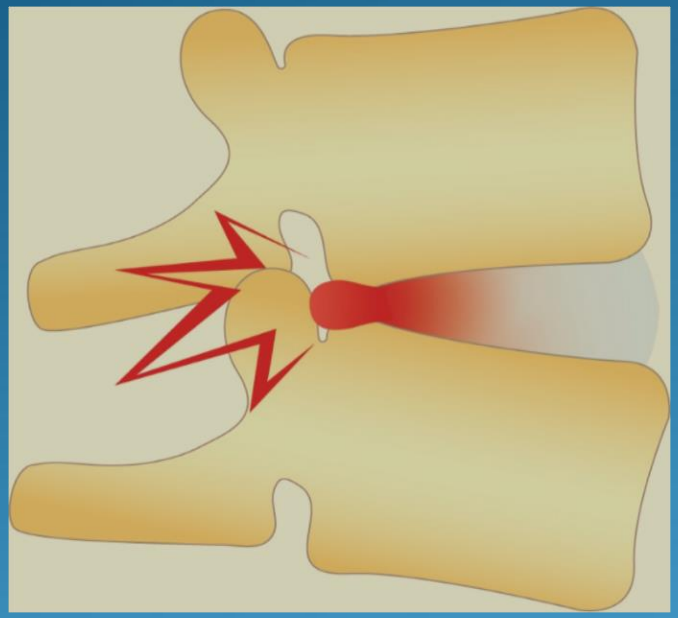
traction

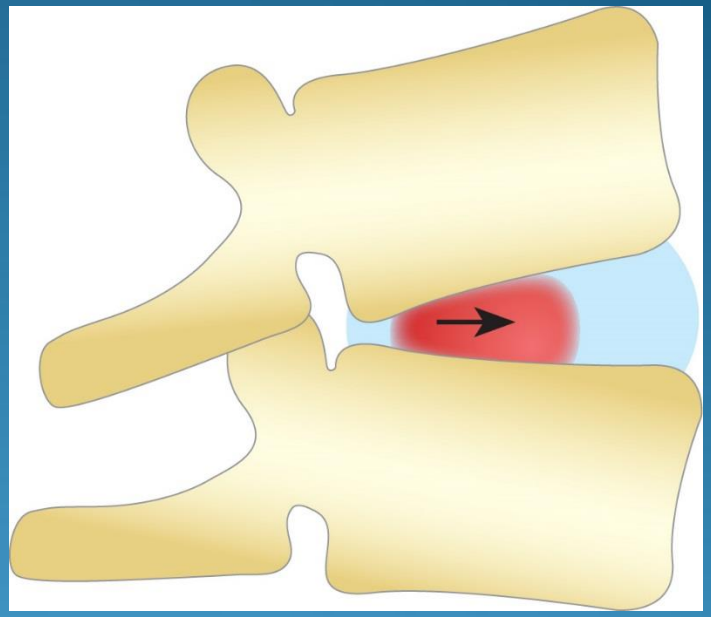






Goal

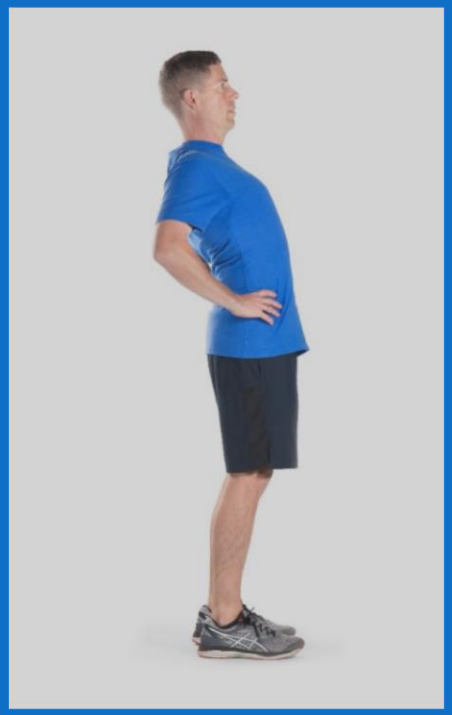


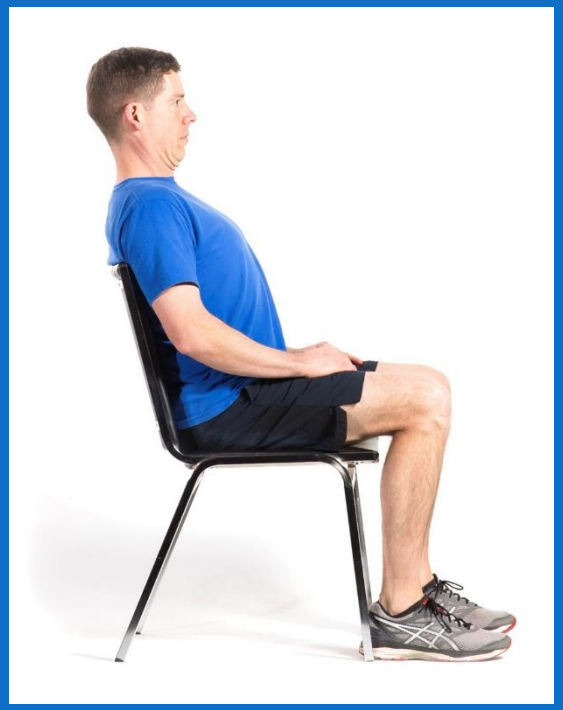


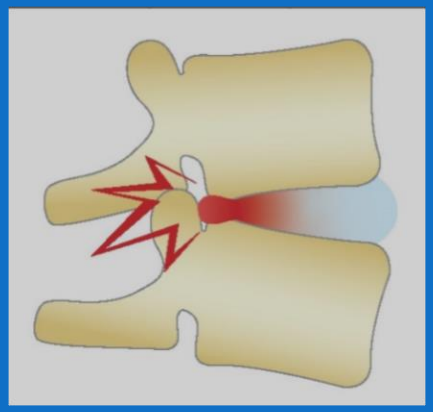
Restore full and pain-free extension

(Fully reduce the derangement – including excessive “stiffness”)

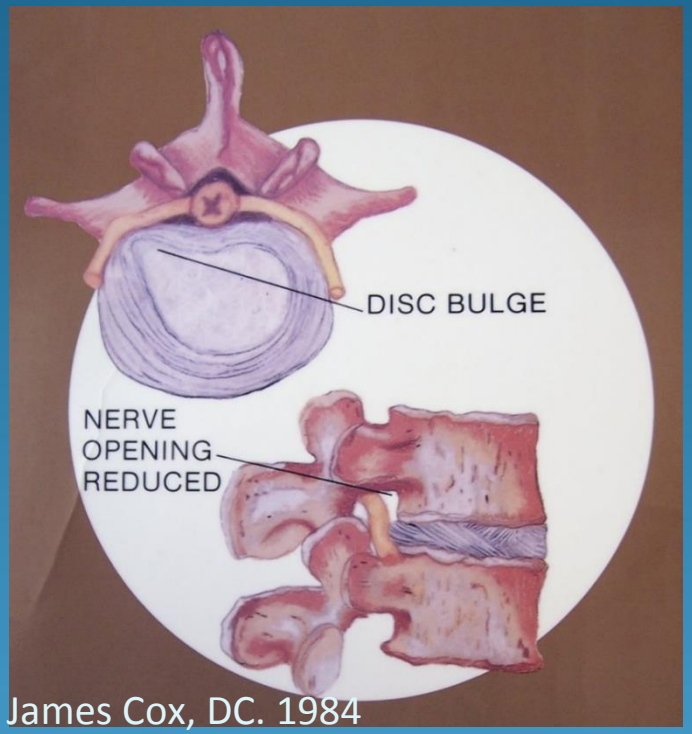
McKenzie's Famous (extension) Exercises







How can I get around these bulges?



James Cox, DC. 1984

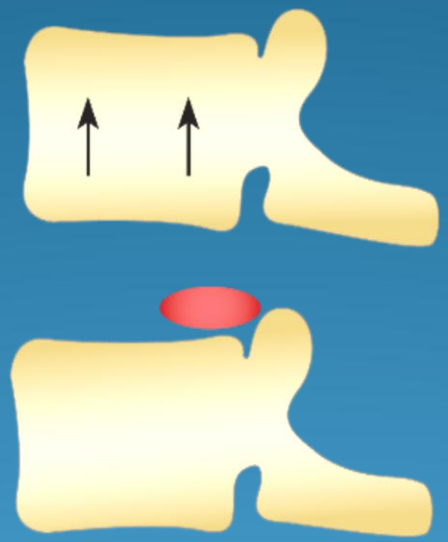
Create More Space Through:

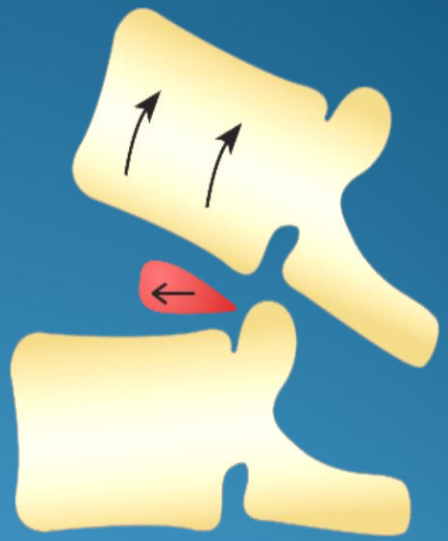
Traction, Some Initial Flexion, Distraction

Cervical Spine

TRACTION

(*or even some initial flexion)



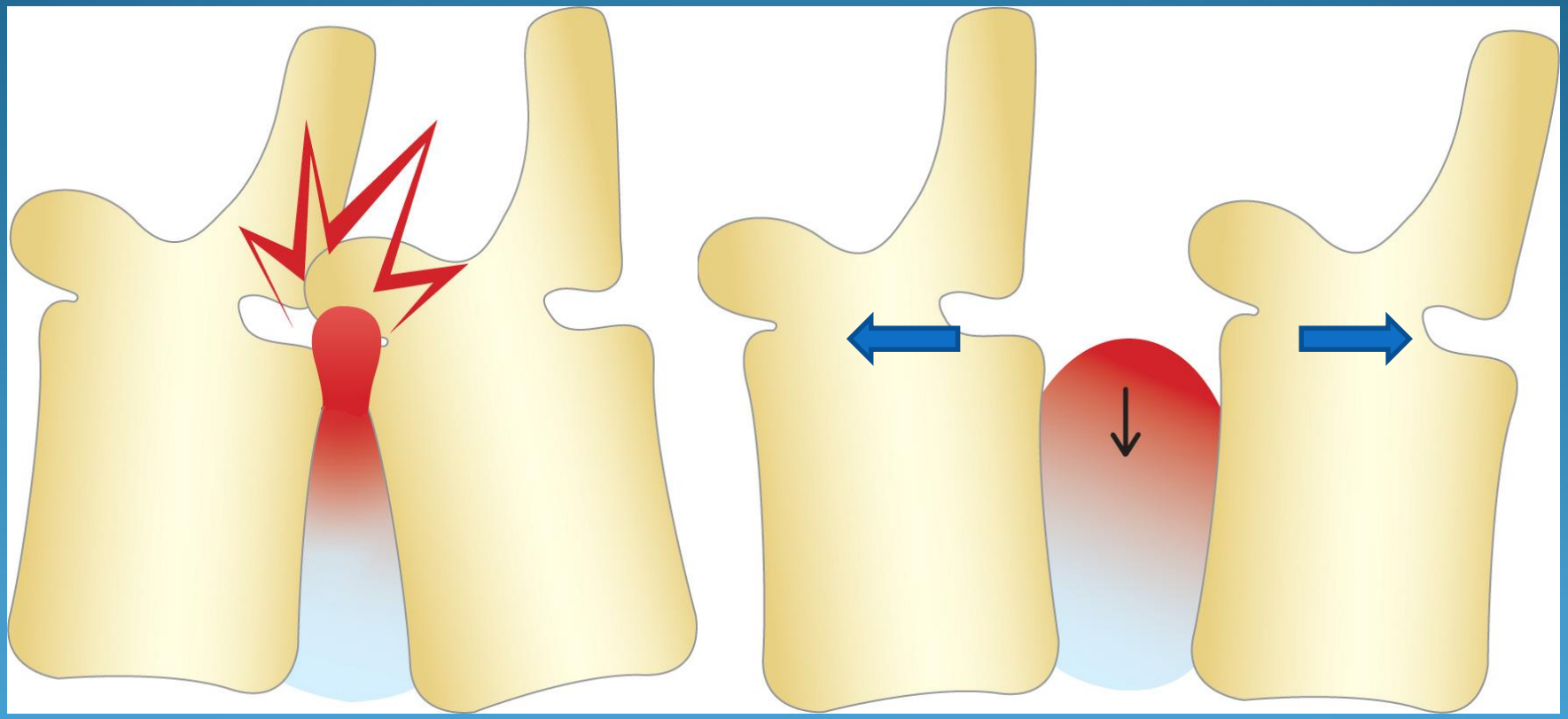


*Without traction

Lumbar Spine

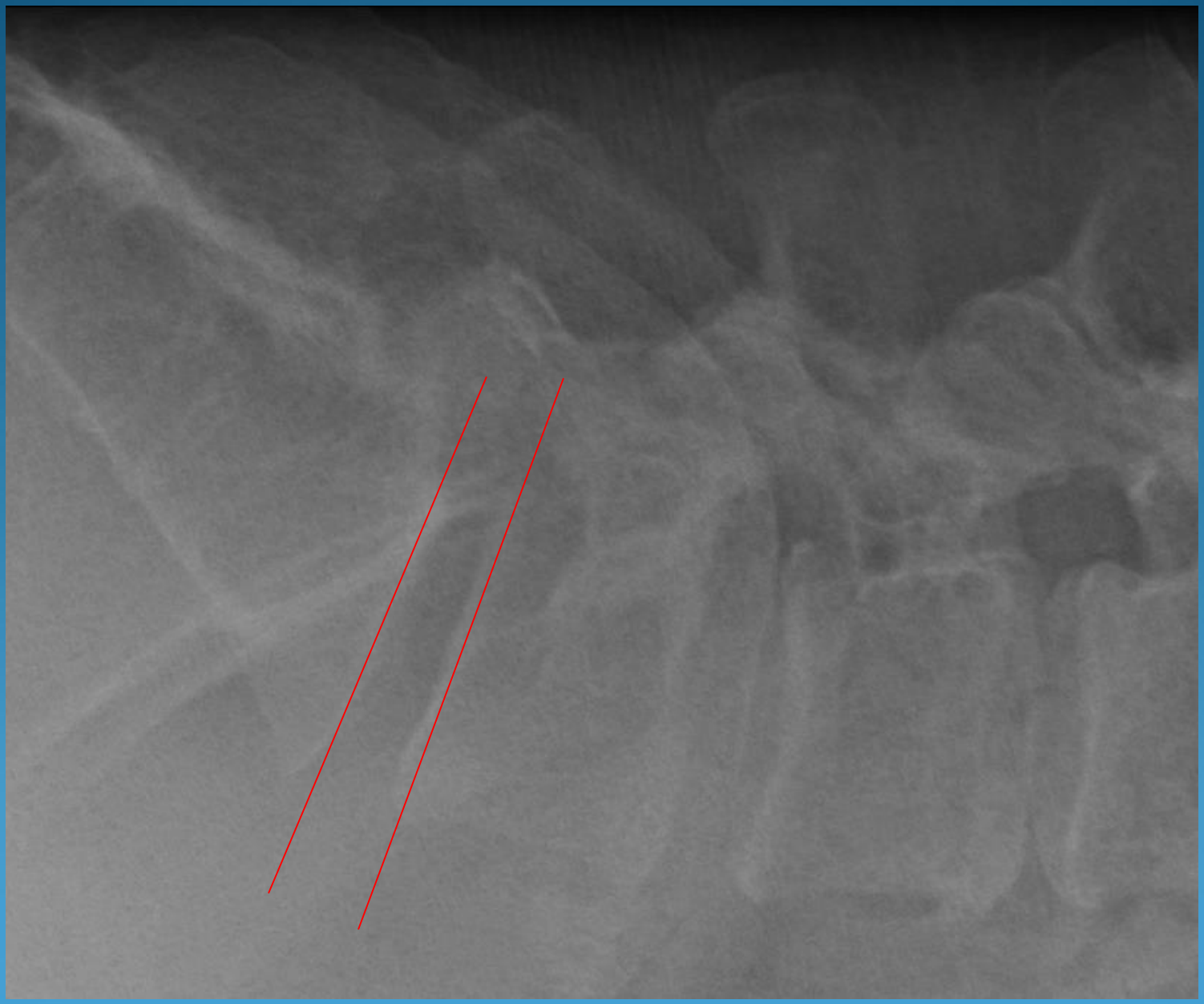
PRONE PILLOW EXERCISES

(Traction / Distraction)

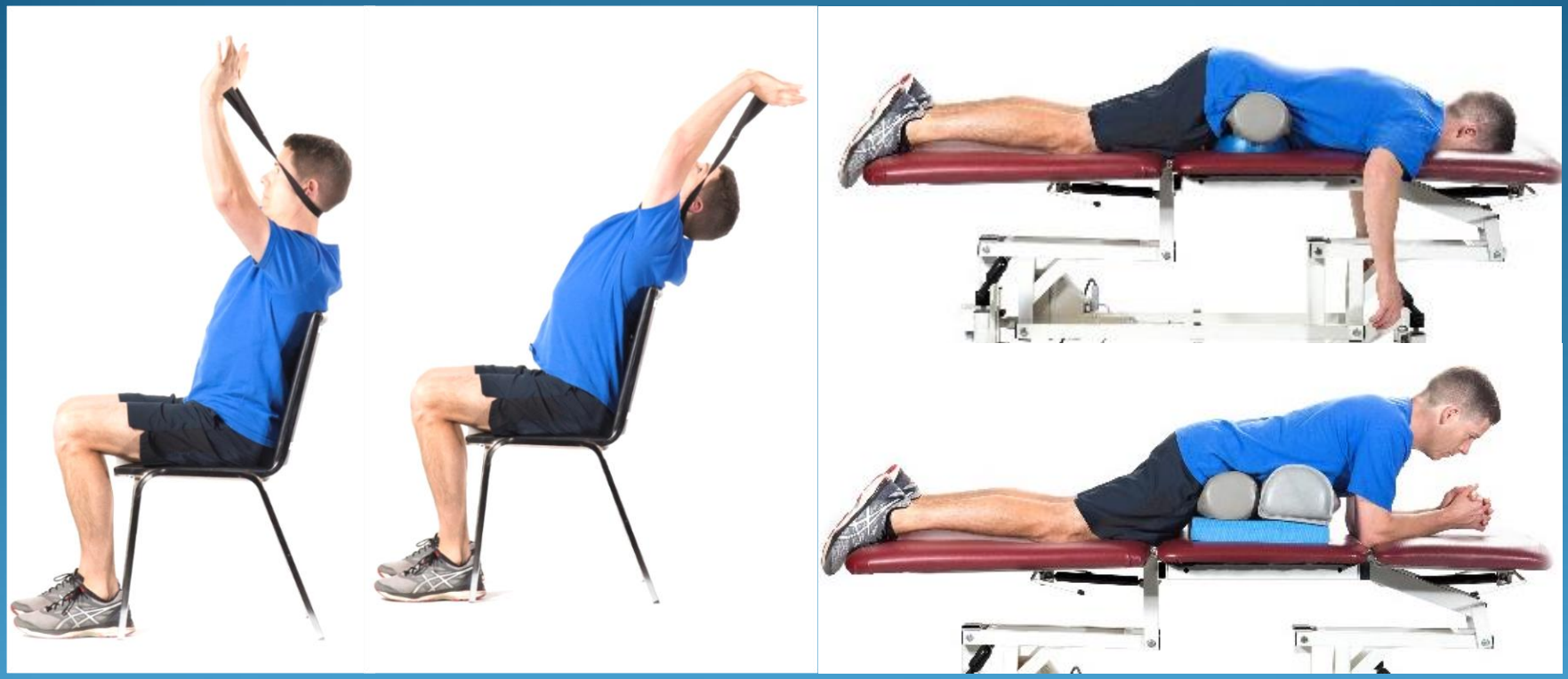


STANDING EXTENSION

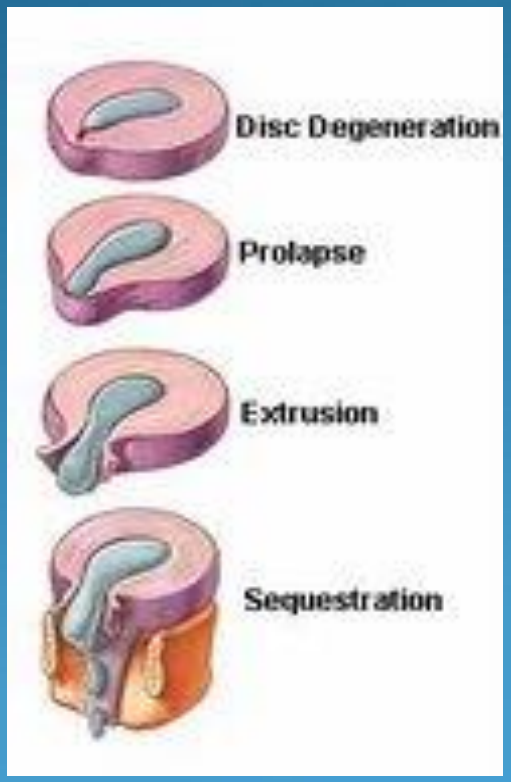
PRONE LYING PILLOW ON ELBOWS

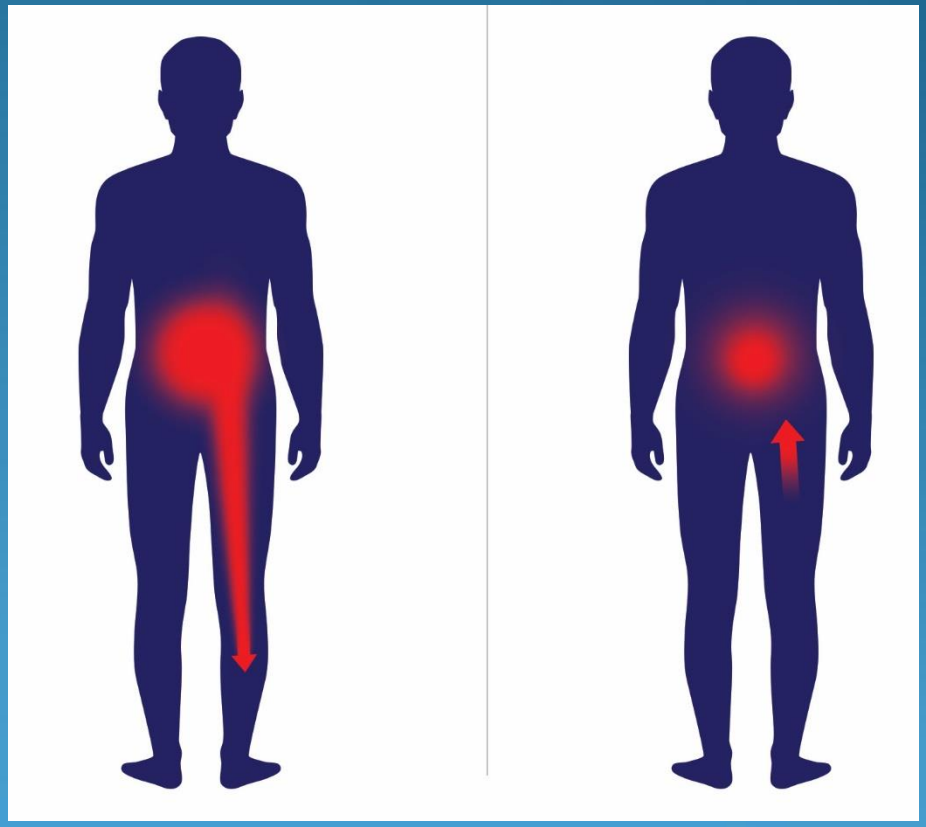


Great Disc Bulge Reducing Exercises



PAIN PATTERNS
(Centralization vs. Peripheralization)





Centralization

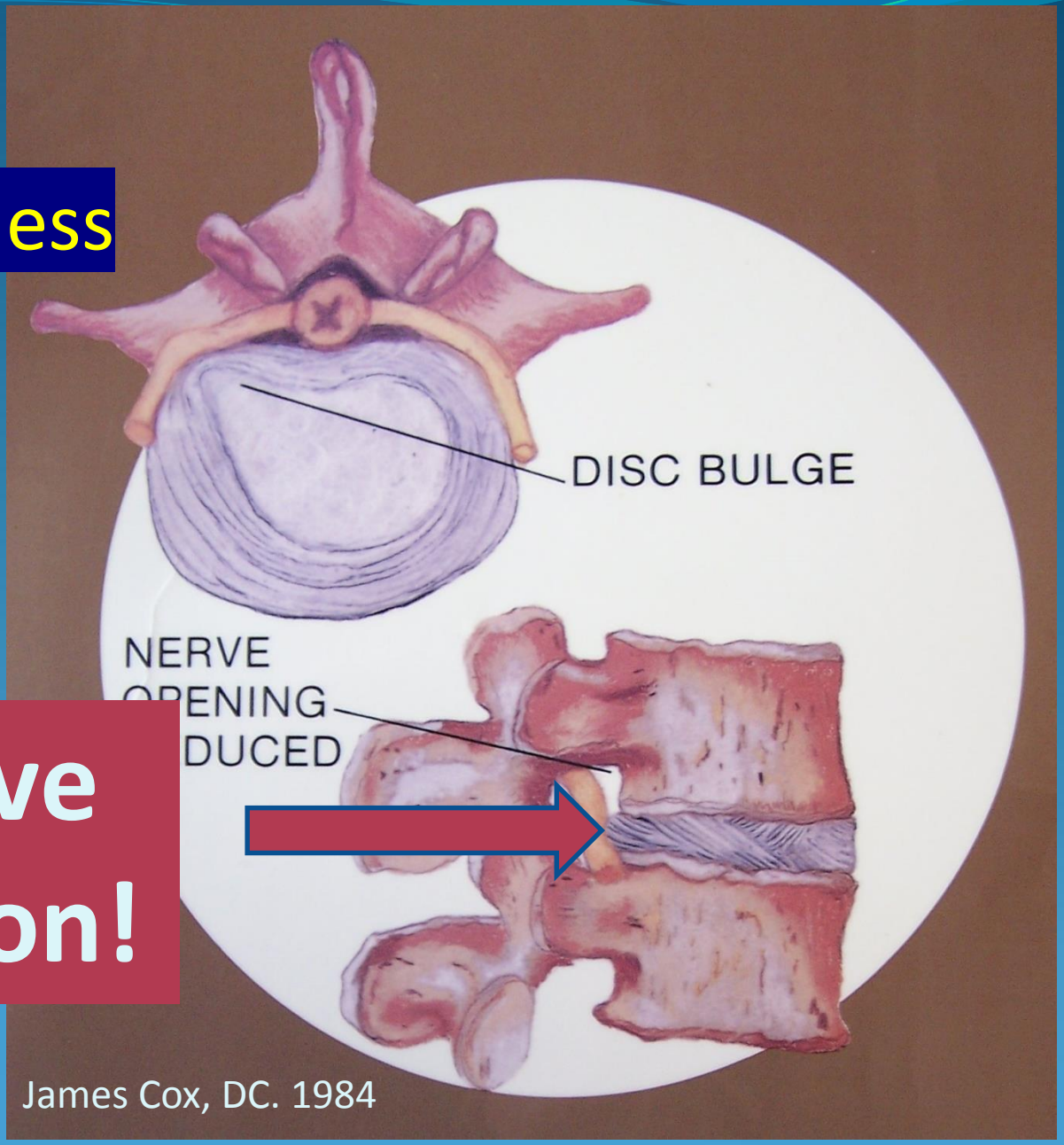
- Centralization occurs when symptoms lessen at there present location, or travel closer to the midline of the spine with certain movements or postures by the patient. A transient increased in central discomfort may be associated with centralization.

- Centralization is often accompanied by an ***increase in range of motion due to a reduction in the derangement.***

- Well established phenomenon in which symptoms originating from the spine, but not necessarily felt there, are abolished distally to proximally, in response to therapeutic loading strategies.

McKenzie RA (1990) The Lumbar Spine: Mechanical Diagnosis and Therapy. Spinal Publications (N.Z.) LTD.

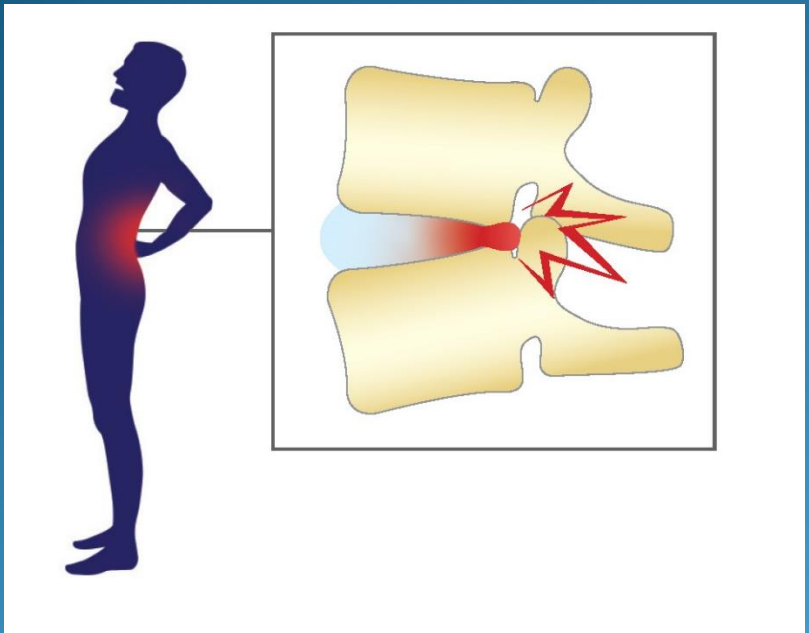
Sprain/ Weakness

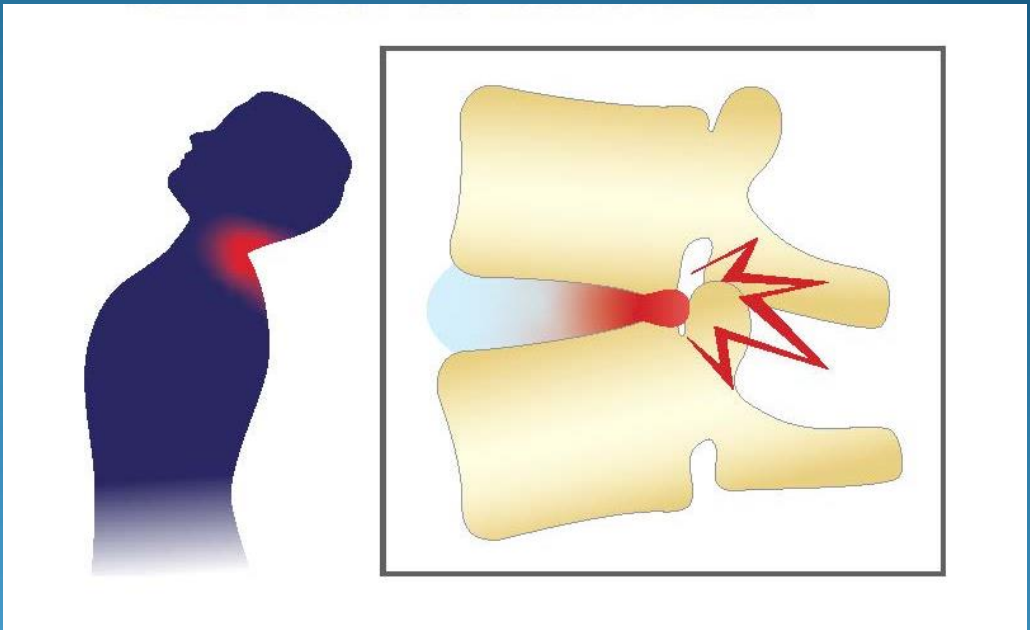


James Cox, DC. 1984

Obstructive Type Lesion!

Painful / Obstructed Extension





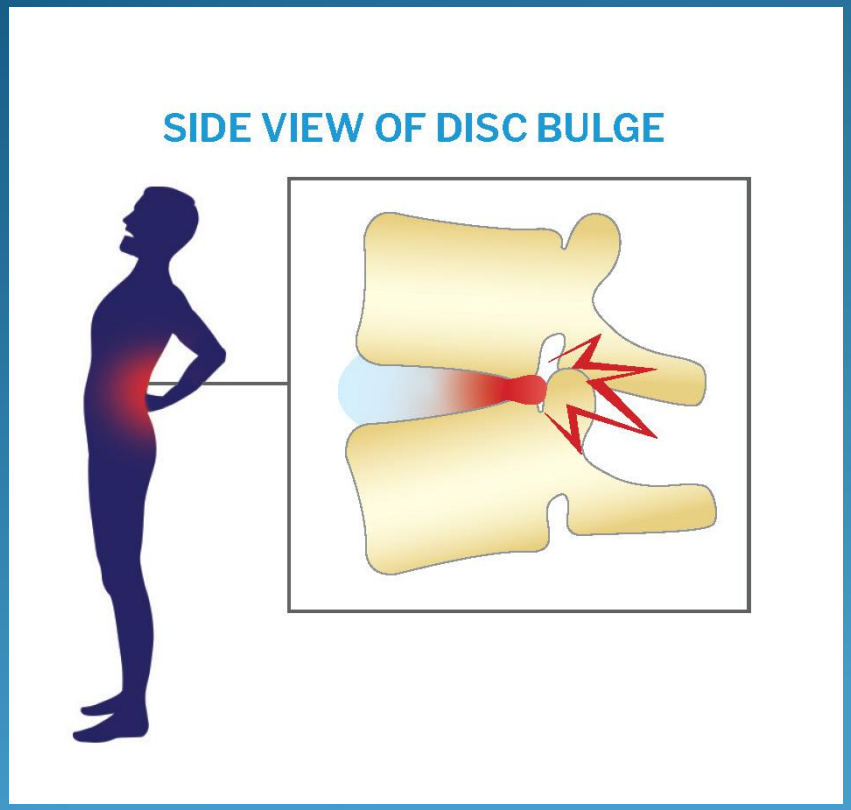
Obstructive Lesion

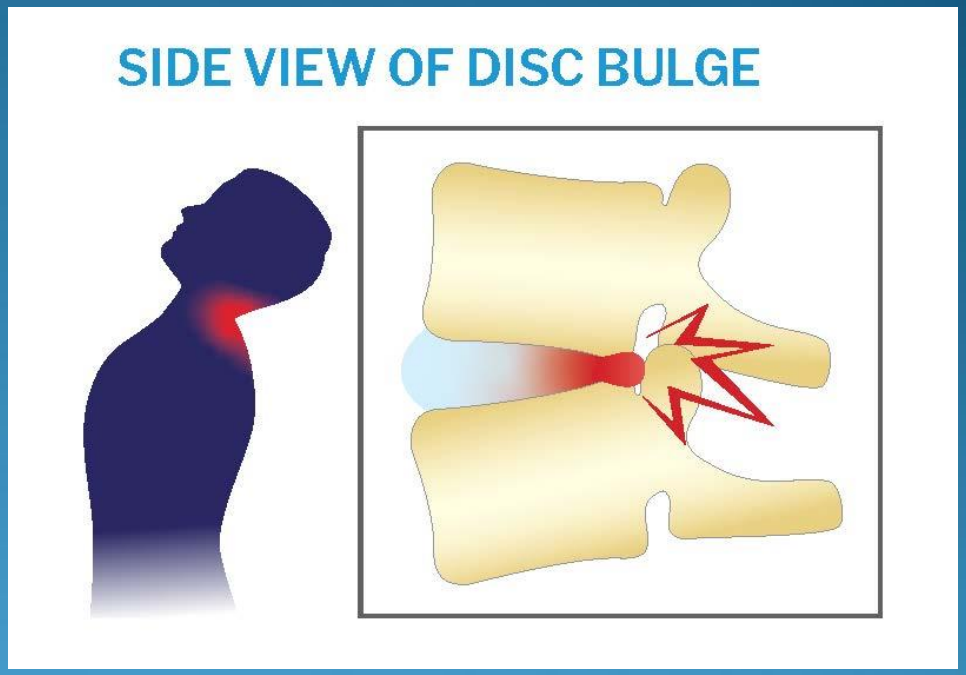
***Pain in extension** rules out the muscles

Extension Baseline

- In a sense, when a patient leans back, that's frequently the disc bulge they are feeling.
- Extension provides critical information as to the *size*, *location* and overall *irritability* of the disc at any moment in time. It's like taking a snapshot of the disc.
- There's no better baseline than extension to assess for changes in the disc!

Extension Baseline





Extension Baseline

- An ***extension baseline*** is a valuable tool that can be used before and after each test or exercise to quickly determine the effect a particular movement had on the contents of the disc — ***especially the size of the bulge.***

3 key findings:

- 1) The intensity of symptoms.
- 2) The location of symptoms (especially the most distal location)
- 3) ****The R.O.M. at which symptoms are experienced.***

Step 1: Initial Extension Baseline

To assess disc & effectiveness of exercises

1. Perform ***Initial Extension Baseline(s)***
   - Standing Extension and/or Press-up (Kemp's)

2. Note: ***3 key findings***
   1. Location of symptoms (especially most distal)
   2. Intensity of symptoms (***including*** stiffness, pressure, "feel good pain", etc.)
   3. ***R.O.M.*** at which symptoms are experienced

Get an Extension Baseline!

Seated Extension

Seated Rotation

Press-up

Standing Extension

Standing Kemps

Stiffness/pressure/rigidness and “feel good pain” with extension can be assessed and may be the only sign/symptom for some derangements

Point out normal

Change matters; not intensity

Step 2: Perform Disc Bulge Reducing Exercise (assess for signs of centralization and improved extension during the exercise)

Step 3: Follow-up Extension Baseline (compare to initial extension baseline for signs of centralization and improved extension)

Signs of an effective disc bulge reducing exercise

1. ***Centralization*** or painless while performing the exercise

And

2. ******Better in Extension after******

When applying patient or doctor generated forces (overpressure, mobilization with movement, traction), the exercise, movement or mobilization that was previously painful must now be absolutely ***PAINLESS!***

*The purpose, in terms of disc derangements, is to apply traction to create a little more starting room in order to get around the disc.

Disc Derangement

- The repetition of test movements or sustained postures can have a ***rapid*** effect on this condition and the patient may improve or worsen in a matter of seconds/minutes, depending on the direction of movement and posture. (rapidly reversible)

- Associated with ***centralization phenomenon***, ***directional preference and obstruction to extension***

McKenzie RA (1990) The Lumbar Spine: Mechanical Diagnosis and Therapy. Spinal Publications (N.Z.) LTD.

Otero J, Bonnet F, Low back pain: prevalence of McKenzie's syndromes and directional preference., *Kinesither Rev, 14:36-44,* 2014

- 349 patients with back pain.
- At baseline 92% were classified with Derangement
- ***Directional preference was as follows:*** extension 79.5%, lateral 12.6%, and flexion 4.3%.

Otero J, Bonnet, F, Neck pain: Prevalence of McKenzie's Syndrome and Directional Preference, *Kinesither Rev, in press,* 2015

- 297 patients
- *92%* were classified as Derangement
- **Extension** was found to be the directional preference in **84%** of these.

May S, Rosedale R, An international survey of the comprehensiveness of the McKenzie classification system and the proportions of classifications and directional preferences in patients with spinal pain, *Musculoskel Sci and Pract, 39:10-15,* 2018

- This study analyzed a large amount of patient data from over 50 clinicians in a variety of patient settings across 15 countries. It confirms previous studies' results in classifying patients with a Derangement about 75% of the time, and establishes that the majority are **extension responders (82.5%) (12.9% lateral responders)**

Exhaust Extension First

Even if symptoms are more or all to one side and lateral flexion and/or rotation help to reduce derangement

(remember, extension was shown to be the directional preference in 84% of cervical derangements)

May S. Review of Studies. International Journal of Mechanical Diagnosis and Therapy 2008, Vol. 3 (2): 19-20.

From a range of study designs involving well over 2000 patients, the figures are very consistent – *70-80%* of back *and neck pain* demonstrate directional preference, centralization phenomenon, and ***derangement classification***.

70 – 80% rapidly reversible

“It is my belief that in the lumbar spine, if in no other area, the disturbance of the intervertebral disc mechanism is responsible for the production of symptoms in as many as 95% of our patients”

Robin McKenzie

Key Points

- The ***DISC*** degenerates 1st – before arthritis (facets)
- About 70 - 80% of LBP sufferers have characteristics of *directional preference* and *centralization* at the initial visit, and are classified as ***DISC*** derangements
  - Another 60% go on to centralize after the initial visit
- 50% of healthy young males have at least one level of lumbar ***DISC*** degeneration / bulging and 75% of asymptomatic females in their 20s had cervical disc bulges –*No signs of muscle strain*
- Injuries often occur in A.M. and involve flexion
- 9 out of 10 work injuries involve flexion/rotation
- Neck and LBP often an obstructive type lesion (positive kemps, cerv. compression tests, pain with press-up)

Iatriditis JC, Weidenbaum M, Setton LA, Mow VC. Is the nucleus pulposis a solid or a fluid? Mechanical behaviors of the nucleus pulposis of the human intervertebral disc. Spine (Phila Pa 1976). 1996 May 15;21(10):1174-84.

In response to shear deformations, the nucleus pulposis exhibited significant viscoelastic effects, characteristic of a fluid and a solid.

Common Exam Findings

1. ***Pain or Obstruction in Extension*** (ROM findings, + Kemps, + cervical compression test)

2. ***Worse after Flexion*** (stiffness upon rising)

*Minor's Sign

1. ***Mechanism of Injury*** - FLEXION

HISTORY LMNOPQRST

- ***pain/stiffness/forward flexed with rising** (worse after flexion)
- ***Painful/obstructed Extension*
- Mechanism of injury – *Flexion*
- Worse in the a.m.
- Time of injury (A.M.)
- radicular pain
- forward flexed antalgia, lateral shift
- Alternating pain

*Often better with standing and walking

Causes of Posterior Disc Derangements

(Posterior Annular Wall Sprain)

1. * ***Poor Posture*** (*Slouched sitting* for long periods)

2. ****Poor Body Mechanics*** (lifting/bending/exercise, etc. without maintaining lordosis)

3. Trauma

4. *Regional Interdependence (tightness/instability)

5. *Lifestyle (diet, smoking, overweight, etc.)

FLEXION

***Cumulative Trauma (forward flexion & rounded lower backs)**

If the History sounds like a disc and the patient has ***symptoms*** (pain, restricted ROM, stiffness, radiation) ***in extension***…

Treat it like a ***DISC!***

(try the disc bulge reducing exercises and see if they lead to centralization and improved extension)

**it saves time and you'll be right over 80% of the time!*

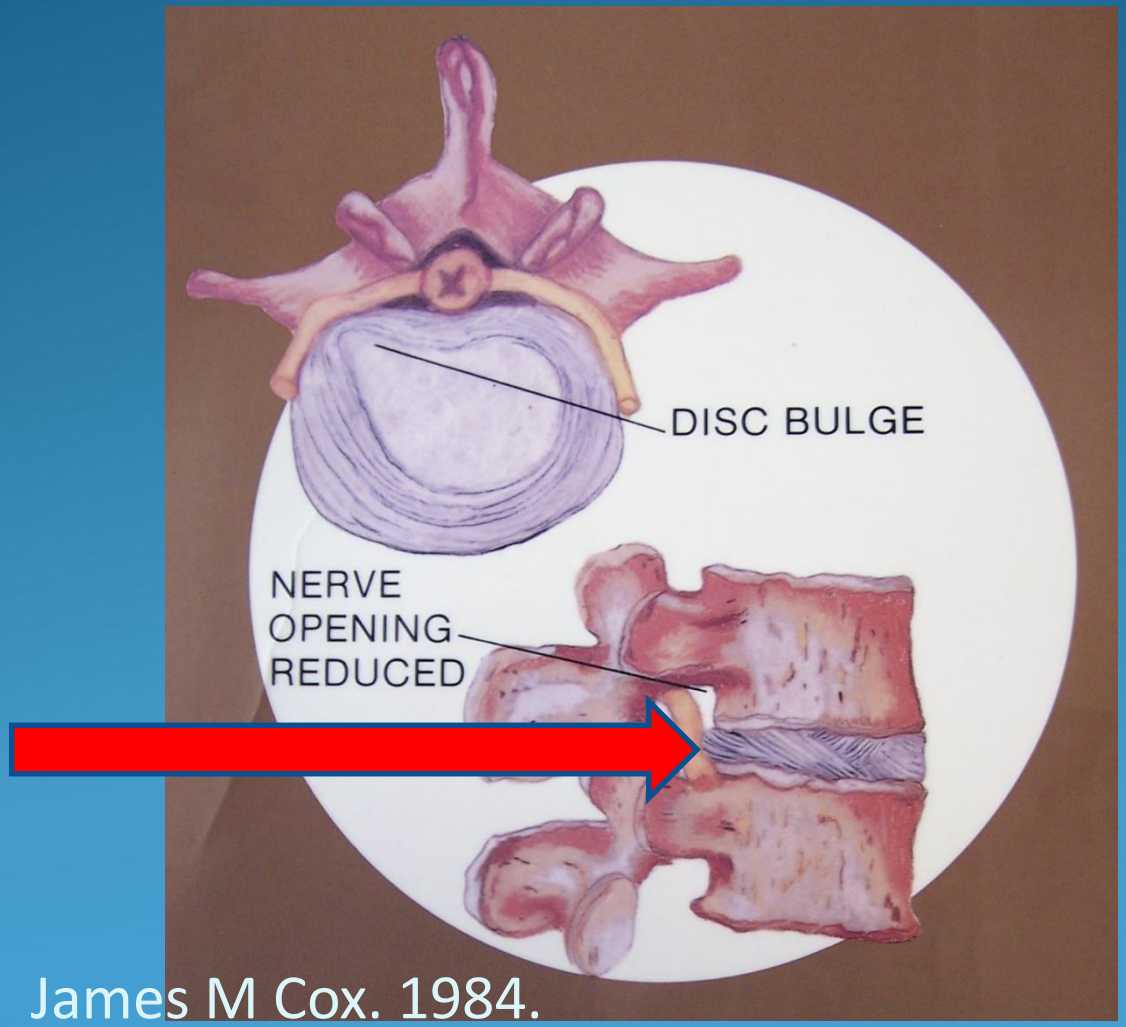
Confirm Disc Dx afterword by Making it Worse

Flexion Testing

- Load/Stress the back wall of the disc with repeated or sustained flexion (forward bends or slouched sitting)
- If weak, the wall will give out and there will be signs of ***peripheralization*** and/or ***loss of extension*** during and/or after testing

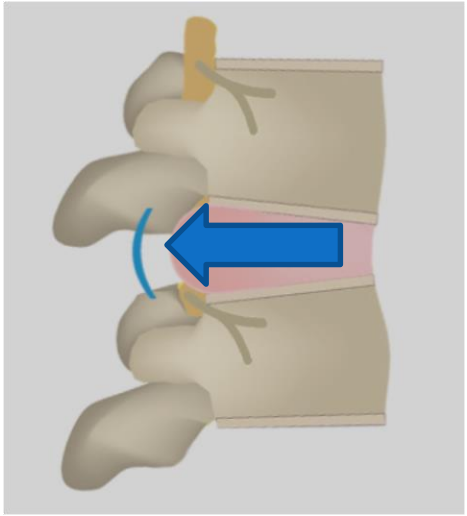
*Much easier to make the bulge worse after first partially or fully reduced

LOOK FOR WEAKNESS



James M Cox. 1984.

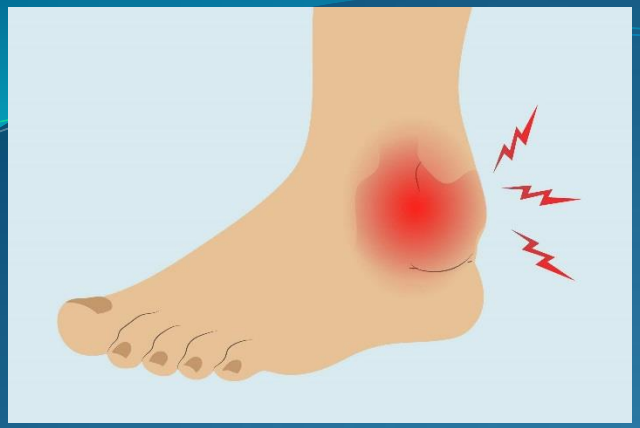
Flexion Testing



Testing the Integrity of the Posterior Annular Wall

Positive Findings for Posterior Wall Weakness

- Peripheralization during testing (***including increased difficulty with rising***)
- Peripheralization or Loss of Extension with **follow-up extension baseline** (*especially reduced R.O.M. in extension*)



Prior to Testing/Treatment, Look for Inflammation

To successfully ***evaluate & treat*** LBP, or joint pain anywhere, you must first identify & resolve the issues of inflammation.

Inflammation will skew the examination findings (false negatives/false positives) and undermine the effectiveness of manipulation, mobilization, exercise and other active care.

Mechanical vs. Chemical Pain

Recommendations

- Disc reducing exercises 3 to 6 times per day (1 to 2 sets of 8 to 10 reps) (5- 15 minutes for time dependent exercises)
- Limit sitting to 20 minutes at a time; when home – stand, walk or lay down on less painful side down
- Maintain lordosis at all times (no lying propped up in bed or in recliner with feet up, no back bending)
- Perform core strengthening exercises 1 to 2x/day – must be painless and never worse in extension afterward
- Can return to forward bending after about 7 to 10 days of no pain with extension (after posterior wall tests strong)

Trouble Shooting

1. Posture. What does that patient do when they leave your office?
2. Body Mechanics / Ergonomics
3. Frequency of exercises, compliance
4. Bed/sleeping postures (will be like starting all over again each morning if not corrected)
5. Weak core muscles
6. Recovery of function/ flexion
7. Patient Education (leads to better compliance)

***** ***Is it inflamed?***

Lifting & Bending

Wide stance

Tip the load

Tripod

Bracing

Golfer's bend

Bridging

Core Strengthening

Quad. opp. arm & leg

Standing kick/punch

Planks

Prone opp. arm & leg

One leg deadlift

Hip in & outs

Squat pose

Door swings

Deadbug

Bridges

Reverse lunges

Neck Stabilization Exercises

Head Lifts

Prone Opposite Arm & Leg

Prone Lift Ups

Neck Pain Mobility Screen

Regional Interdependence

Thoracic rotation

Thoracic extension

Shoulder external rotation

Shoulder internal rotation

Neck Extension

Low Back Pain Mobility Screen

Regional Interdependence

Thoracic rotation

Thoracic extension

Ankle dorsiflexion

Hip internal & external rotation

Hip flexion

Lumbar extension

Hip flexors (Thomas Test)

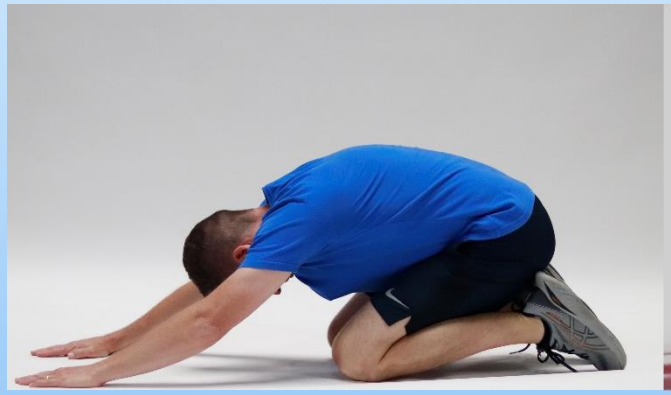
Hamstrings

Test for Return to Flexion

1. Test after 10-14 days of pain-free extension, and no stiffness with rising

2. 10 bent knee toe touches and 10 knee to chest stretches (hold 1-2 sec.)

Cat-Cow & Striking Cobra

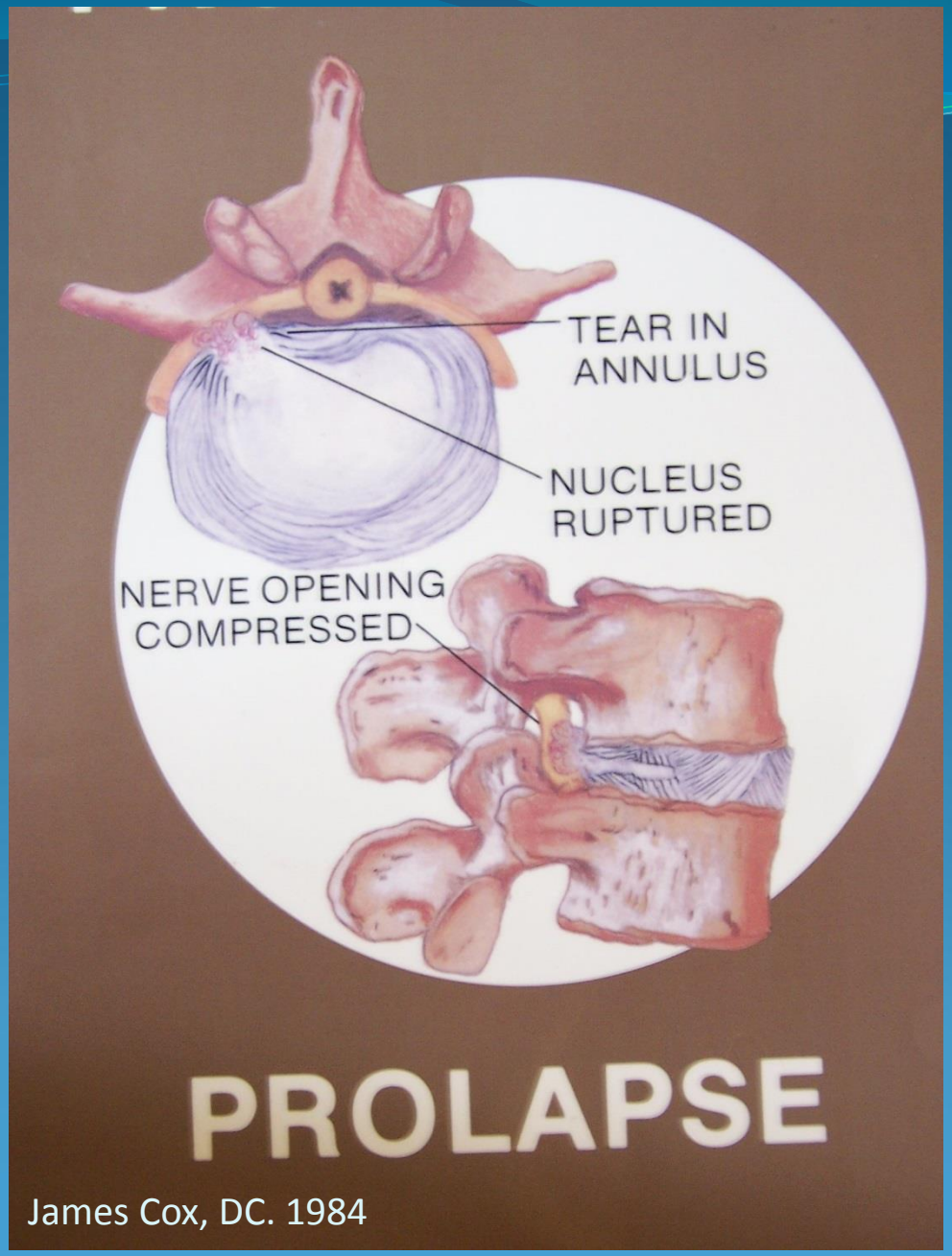


Instructions on Future Self-Care

1. **1 – 2** sets of press-ups every morning & evening
2. Good posture and body mechanics
3. Limit sitting to an hour at a time (micro-breaks)
4. Counteract prolonged sitting and repetitive bending with a set of standing extension or press-up exercises.
5. Continue Core Strengthening & Stretching routine
6. Flare-up: Identify/Address any inflammatory component, then return to disc bulge reducing exercises 4 to 6 times per day and limit all sitting and forward bending

Irreducible Disc Derangement

- In response to movement testing, the symptoms will remain the same or increase peripherally and there will be no centralization
- You can make them worse, but you can't make them better
- Often involves incompetent or ruptured annular wall (inflammation can make it appear worse)
- *TIME* & Monitor neurological symptoms (2,6,12)



James Cox, DC. 1984

Common Mistakes

- Ignoring baselines and instructing patients to perform exercises just because in theory they should work (i.e. extension for central pain, wall glides for pain to one side)
- Giving up after standing extension and press-ups (won't work initially in over 50% of cases)
- Giving additional knee to chest stretches or posterior pelvic tilts, when extension was found to be the directional preference (to stretch in both directions)
- Not recognizing and addressing inflammation first

Mechanical Assessment and Treatment of Thoracic Disc Lesions

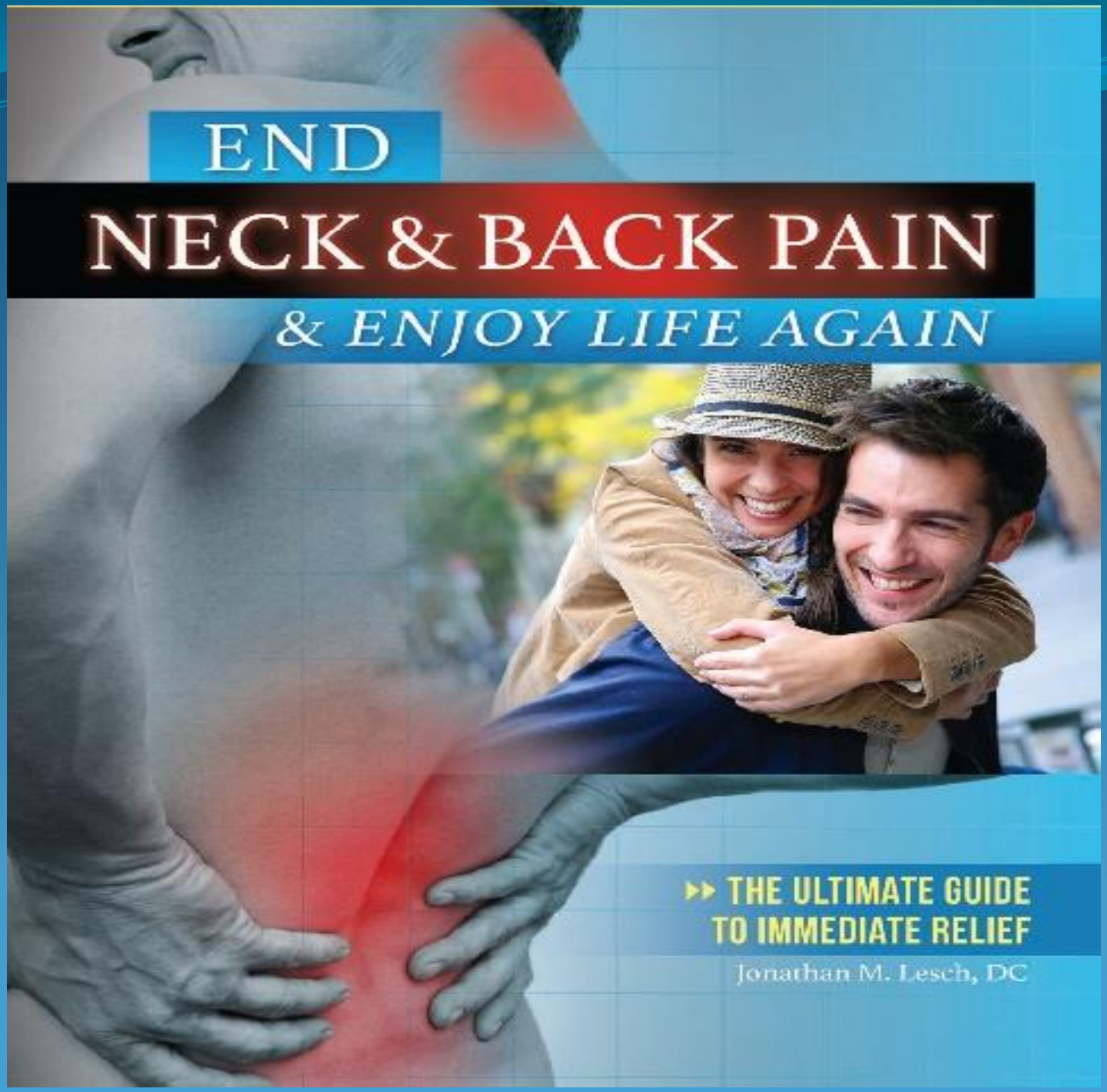
Baselines: deep breath, rotation, ask what hurts?

Review

Assume posterior disc derangement until proven otherwise

1. Determine if inflammation is present
2. Identify and correct the disc lesion (sprain) *1st* – [look for the *direction and exercise that reduces disc bulge]* *(centralization and improved ext.)*
3. Good posture and body mechanics
4. Cervical & Scapula Stabilization Exercises
5. PATIENT EDUCATION!

Check extension and clear it!


END
NECK & BACK PAIN
& ENJOY LIFE AGAIN
THE ULTIMATE GUIDE
TO IMMEDIATE RELIEF
Jonathan M. Lesch, DC

Cervicogenic Headaches

Practical Evaluation & Treatment Methods

Common *Mechanical* Findings in Headache Sufferers

1. ***Disc Bulges***
   - Most Common Source of Neck pain (pain inhibits deep neck flexors and leads to poor motor control)
2. ***Upper Crossed Syndrome (UCS) / Text Neck***
   - Forward Head Posture (Faulty Head & Neck Flexion)
     - Overactive/tight suboccipitals, upper traps, etc.
     - Weak/inhibited deep neck flexors, middle and lower traps
   - Flattening of the Cervical Curve
3. ***Reduced Cervical Curve***
   - Increased stress to the discs, muscles, facet joints and neural tissues
   - Causes: Past Whiplash Type Injuries & Increased Sedentary Lifestyle (Posture)

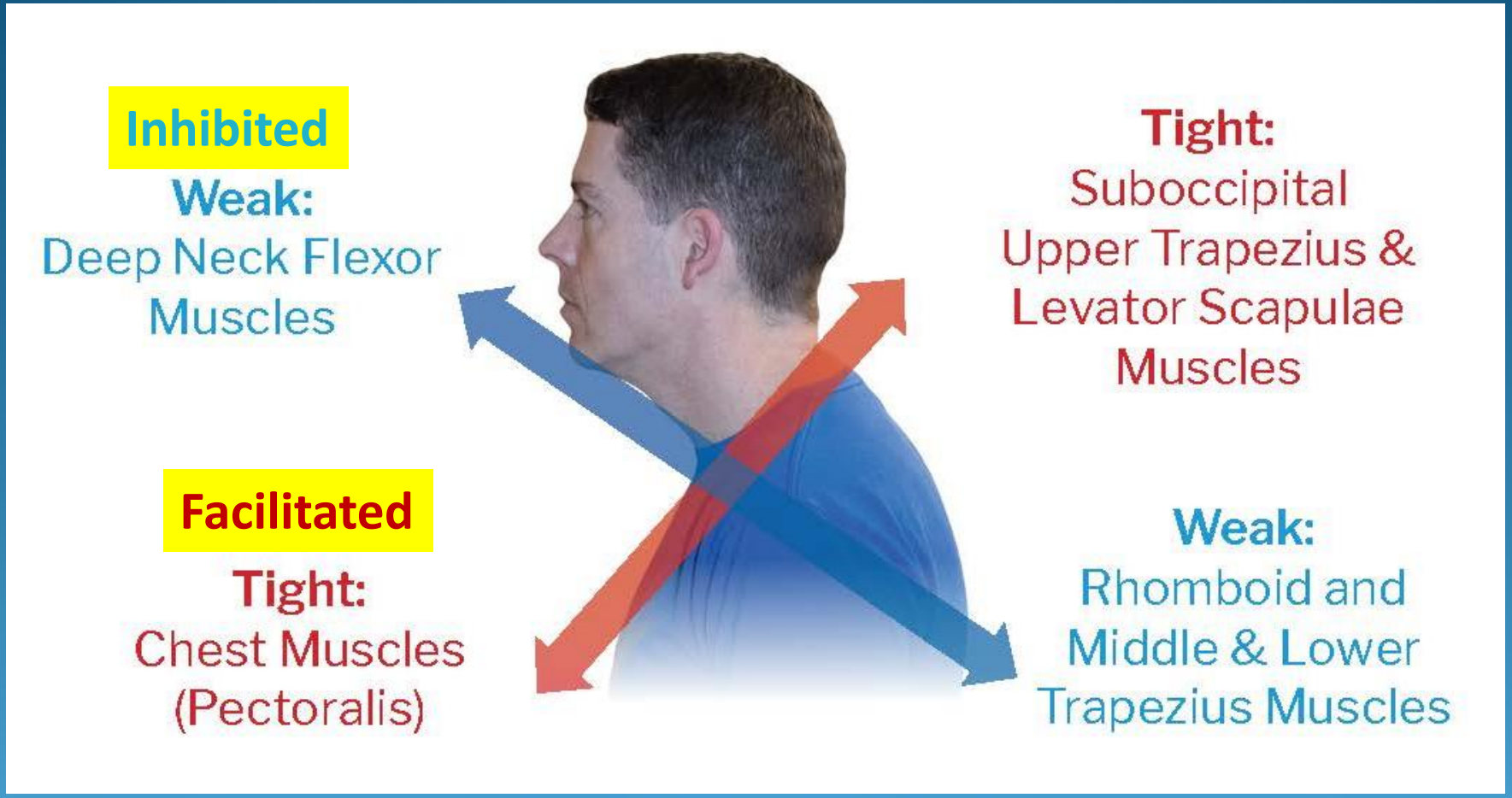
Neck Pain (Disc Bulges)

Well over 80% of neck conditions are disc derangements (bulges)

- Neck pain inhibits deep neck flexors
- Weak deep neck flexors are associated with neck pain and headaches

REDUCE THE BULGE!

Upper Crossed Syndrome (UCS) (Tech / Text Neck)



Janda V. Muscles and motor control in cervicogenic disorders.. Physical therapy of the cervical and thoracic spine. Grant 1994. Churchill Livingstone: Edinburgh: 195-215.

Upper Crossed Syndrome

- Forward Head Posture
- Weak/Inhibited Deep Neck Flexors (tight/facilitated suboccipital muscles)

↓

Faulty Head & Neck Flexion

- Loss of Curve
- Pain

Fernández-de-las-Peñas C, Falla D, Arendt-Nielsen L, Farina D. Cervical muscle co-activation in isometric contractions is enhanced in chronic tension type headache. Cephalalgia. 2008;28:744–51.

- In conclusion, women with Chronic Tension-Type Headache (CTTH) demonstrated greater co-activation of antagonist musculature during cervical extension and flexion contractions compared with healthy women. Increased co-activation of antagonist musculature may reflect reorganization of the motor control strategy in CTTH patients, potentially leading to ***muscle overload*** and increased nociception.

Muscles won't turn off!

Neck Flexion Test

Supine Neck Flexion Test
(Lesch Method)

Place patient's head in position. Look down.

Where do you feel muscle tension?
What percentage front vs. back?

*Screening test for *faulty head and neck flexion*
(Upper Crossed Syndrome)

*The goal will be to restore 100% firing to the front!

Correcting Faulty Head & Neck Flexion

*Re-boot the neuromusculoskeletal system

Exercises to Correct Faulty Head & Neck Flexion

Wall Angels

Resisted Chin Downs

Wall Ball Exercise

Head Weighting

Kristjansson E.Treleaven J., Sensorimotor function and dizziness in neck pain: implications for assessment and management. *J Orthop Sports Phys Ther*, 2009. 39(5): p. 364–77.

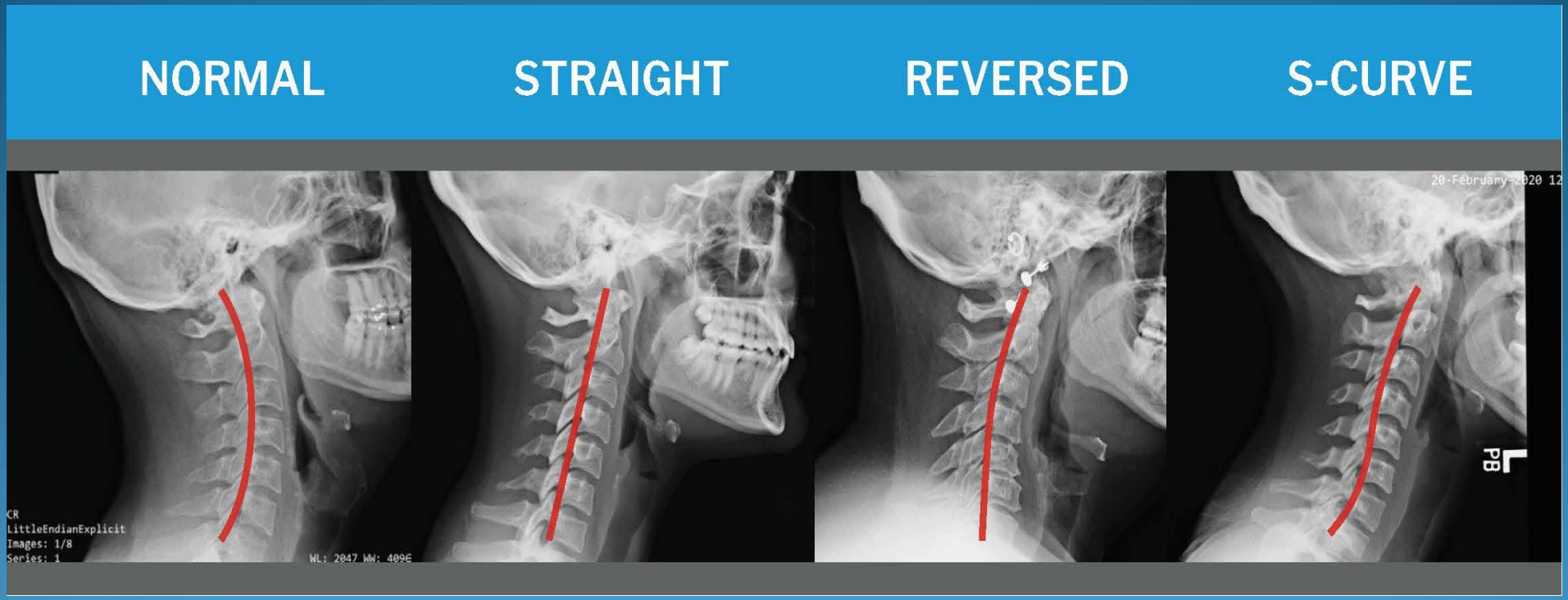
Neck Stabilization Exercises

Head Lifts

Prone Opposite Arm & Leg

Prone Lift Ups

Reduced Cervical Curve



Braaf MM, Rosner S. Trauma of the cervical spine as a cause of chronic headache. J Trauma 1975;15:441-446.

Survey of over 6000 cases of chronic headache sufferers.

- Trauma is one of the most important factors. "Trauma may be so slight or so far in the past that its causal relationship is either forgotten or thought by the patient to be of no importance"… "***It is not unusual for the headache to be delayed for days, months, or years after injury.***"

- "Complete or segmental loss or reversal of the normal lordotic curve of the cervical spine is the most consistent characteristic feature and very often the only abnormality found."

Good reason to X-ray all headache patients.

Shujuan Z, Songshan L, Kai X, et al. Clinical analysis of changes of cervical vertebral physiological curvature in adolescents of different ages. Henan Trad Chin Med 2017;1398-401.

Increasing sedentary lifestyle of students and office workers spending more time in front of computers is leading to loss of cervical lordosis

1,572 Chinese Teenagers / Young Adults with Neck Pain

Loss of Curve in:

- 62% of 6 to 15 yr. olds
- 72% of 16 to 25 yr. olds
- 76% of 26 to 35 yr. olds

Correlation between cervical lordosis and cervical disc herniation in young patients with neck pain Kun Gao, MDa , Jiliang Zhang, MSb , Jinquan Lai, MSb , Weidong Liu, MSa , Hanqing Lyu, MSa , Yihong Wu, MSb , Zhanpeng Lin, MSb , Yafei Cao, Mda. Medicine (2019) 98:31(e16545)

- "In conclusion, our study is the first to show that the degree of disc herniation and cervical spinal cord compression are inversely correlated to cervical lordosis in young neck pain patients, ***AND*** <u>the degree of disc herniation and height of disc space can recover with the recovery of cervical curvature.</u> These findings provide new insights into the relationship between cervical curvature and spinal degeneration and can improve the clinical management of chronic neck pain."

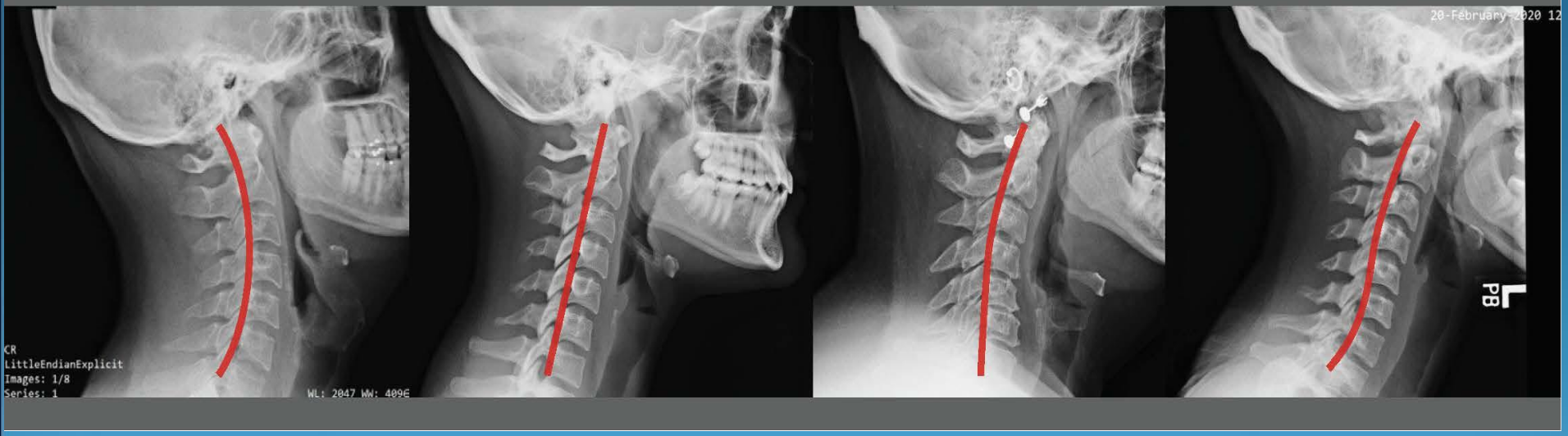
Kun Gao, Jiliang Zhang, Jinquan Lai, et al. Correlation between cervial lordosis and cervical disc herniation in young patients with neck pain. Medicine (Baltimore). 2019 Aug;98(31):e16545. doi: 10.1097/MD.0000000000016545.

- Degree of disc herniation and height of disc space can recover with recovery of cervical lordotic curvature,
- Increased spinal cord compression associated with loss of lordosis. Can improve with recovery of cervical lordosis
- Degree/size of disc herniation was higher in straight and kyphotic groups
- Between 30% to 77% of those (asymptomatic) age 6 to 35 demonstrated abnormal cervical curvatures

"restoring the cervical curvature is vital for improving cervical disc herniation"

Structural Rehabilitation

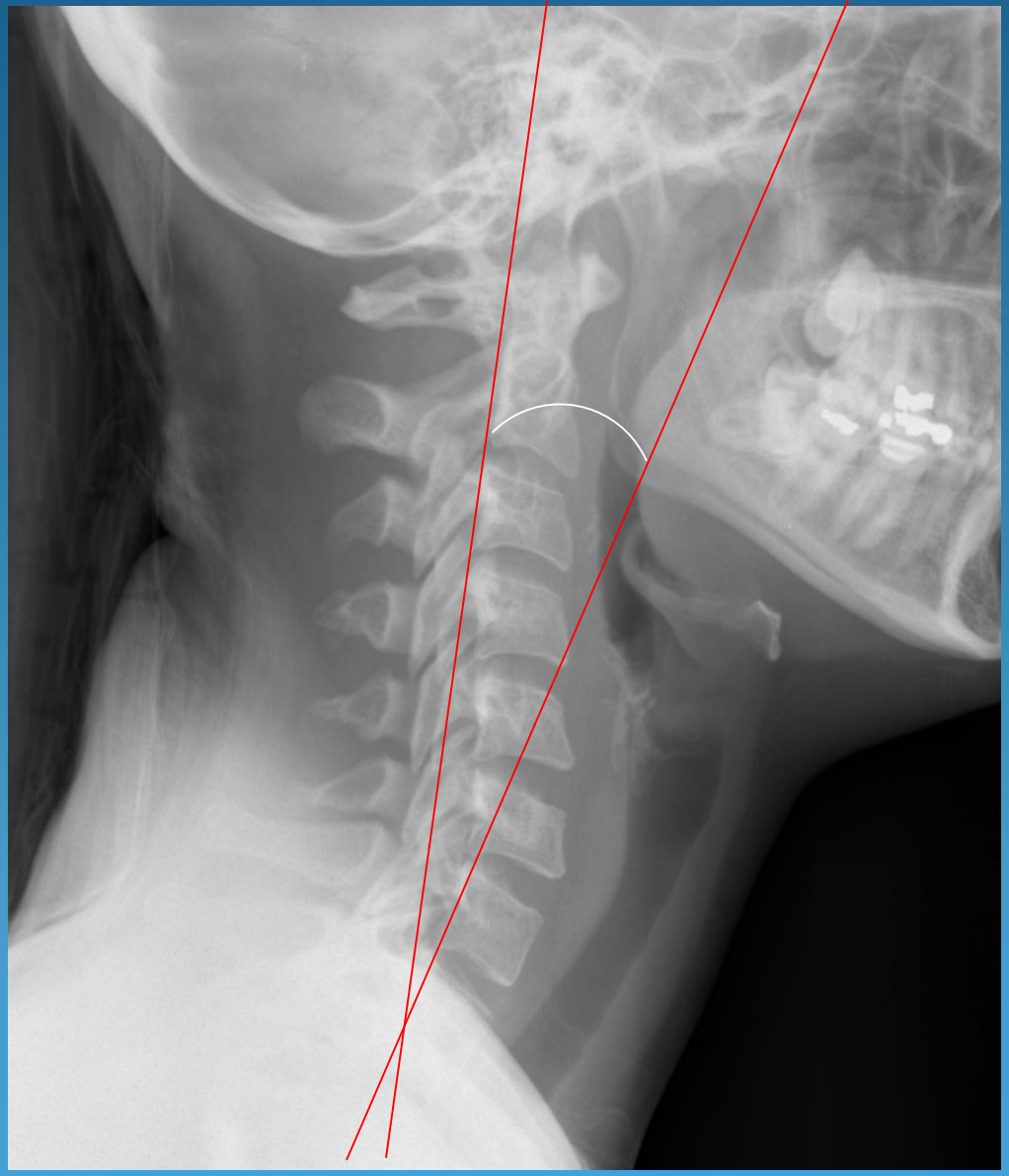
NORMAL STRAIGHT REVERSED S-CURVE



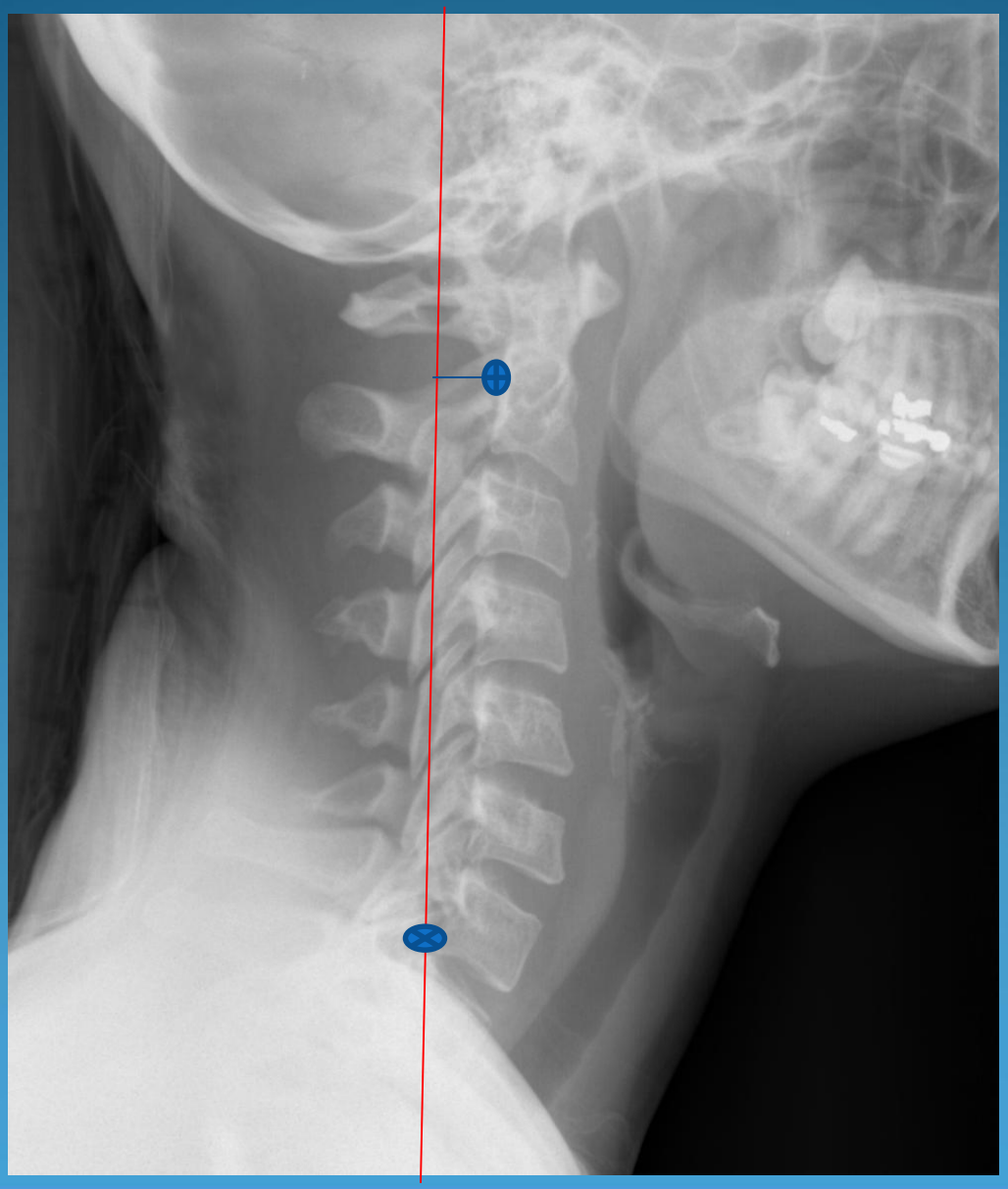
X-ray Evaluation

- ***Cervical Curve*** (Harrison's Posterior Tangent Method - posterior tangent lines at C2 and C7)
  - 35 - 40 degrees
- ***Forward Head Translation*** (inferior and posterior corner of Dens (C2) over inferior/posterior corner of C7)
- ***C7 Body Angle*** (20 – 25 degrees from vertical)
- ***Atlas Plane Line*** (7 – 20 degrees from horizontal)

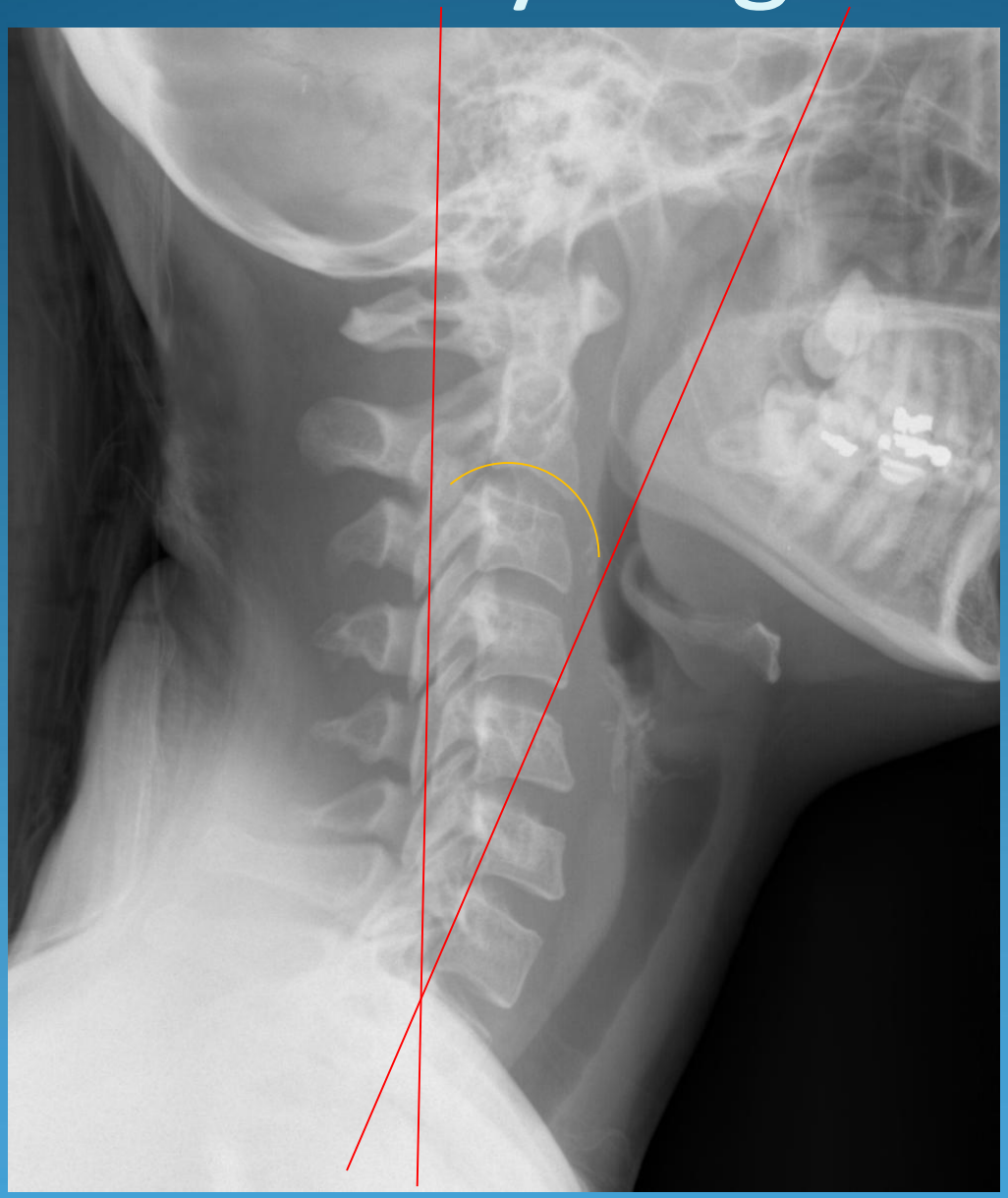
Harrison's Posterior Tangent Method



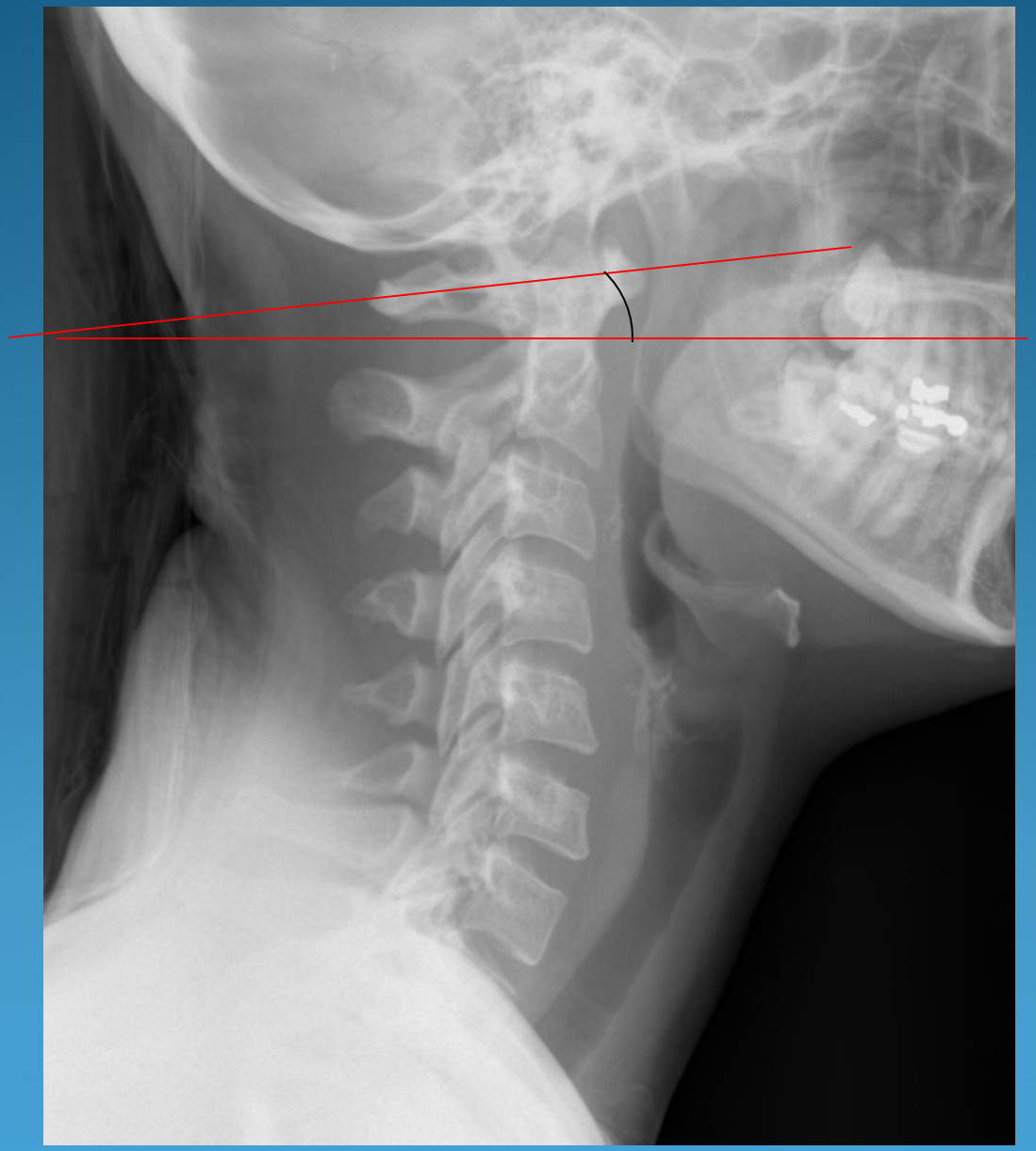
Forward Head Translation



C7 Body Angle



Atlas Plane Line

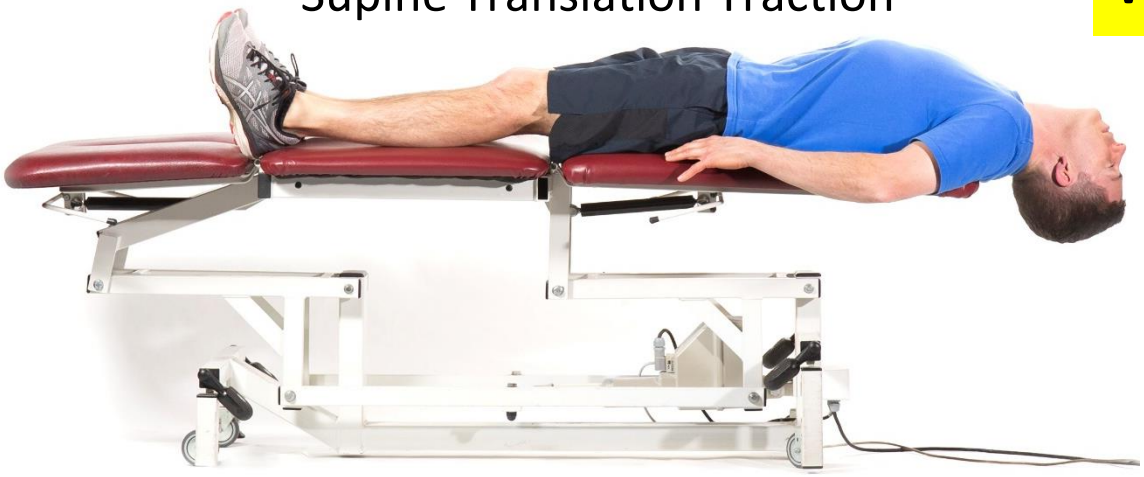


Structural Rehabilitation

Foam Roller

Apex Orthosis

Supine Translation Traction



Confirm correction & positioning with X-ray

Structural Rehabilitation

2-way extension traction

Dakota traction unit

Headache Screen

1. **Disc Derangement/Bulge**

   **Pain or obstruction in extension (+Extension Test)*

   - That lessens with disc bulge reducing exercises

2. **Upper Crossed Syndrome**

   **Faulty Head & Neck Flexion (+Supine Neck Flexion Test)*

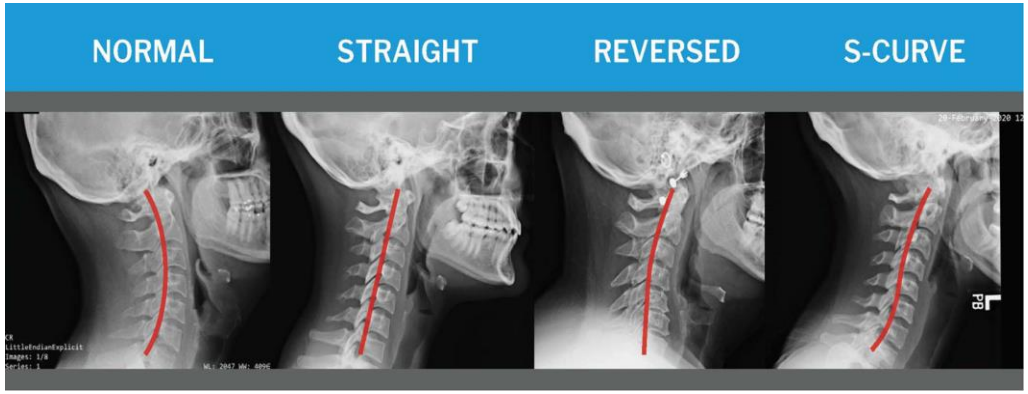
3. **Loss or Reversal of Cervical Curve**

   **Positive X-ray findings*

Headache Screen

Obstruction to extension

Reduced cervical curve



Faulty head and neck flexion

Treatment for Cervicogenic Headaches

Pain (Disc Bulge)

- Identify & Reduce the Disc bulge (turn off the pain)

Upper Crossed Syndrome

- Restore muscle balance and posture (- Supine Neck Flexion Test)
- Strengthen/ Activate Deep Neck Flexors and Scapula Stabilizers (quiet down suboccipitals, upper traps, etc.)

Reduced Cervical Curve

- Restore curve with structural rehabilitation

Review Headache Screen

1. Disc Derangement/Bulge

   **Pain or obstruction in extension*

   - Check extension and clear it with disc bulge reducing exercises (Abolish the pain!)

2. Upper Crossed Syndrome

   **Faulty Head & Neck Flexion (+ Supine Neck Flexion Test)*

   - Muscle Energy Techniques to activate Deep Neck Flexors, Rhomboids & Middle/Lower Traps ***AND*** to quiet down Suboccipitals, Upper Traps and Levator Scapulae muscles (Then strengthen deep neck flex.)

3. Loss or Reversal of Curve

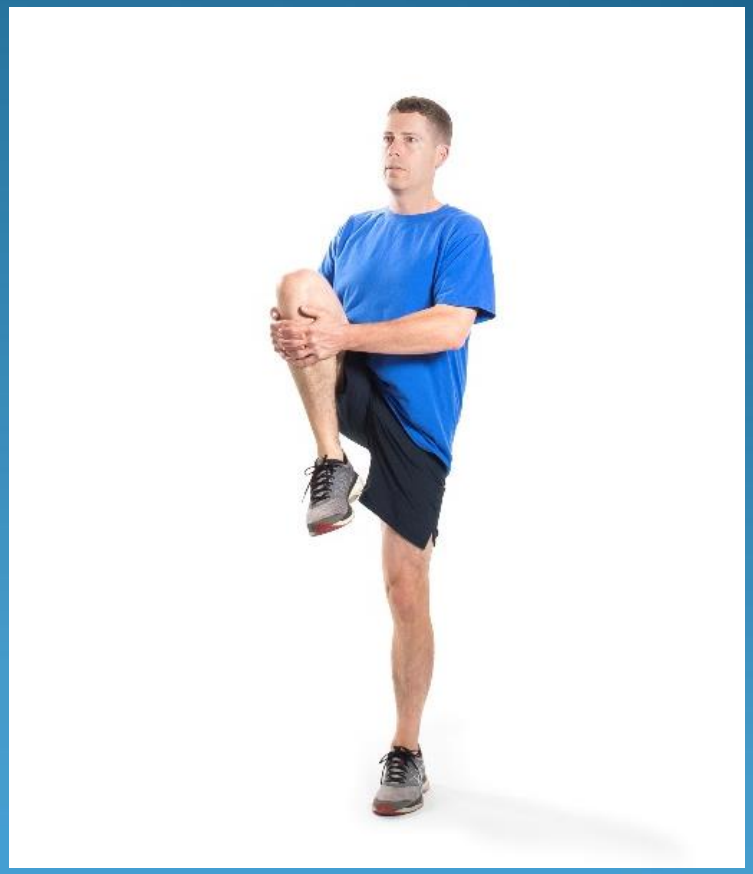
   **Positive X-ray findings*

   - Structural Rehab (Restore curve)

Sacroiliac Joint Derangements

S.I. Extension

S.I. Flexion



(No LBP, + Hop Test, Pain in Extension, + Kemps Test)

Extension with Self-Traction

add over-pressure

C - Extension Self–Traction Helpful Pointers

1. Lead with the hands.
2. Pull hard with your hands (about 60% of strength) but keep the neck and the rest of body relaxed – just fall over the chair. (<u>the key is for the neck to be relaxed so the traction can be used effectively to create the needed space to get around the bulge and reduce it</u>)
3. Hold the traction the entire time going back and returning.
4. Contact is usually base of the skull and line of drive is through the eyebrows – maintain that line of drive throughout entire exercise.
5. Look back with the eyes and reach back as far as you can.
6. Must be painless or make adjustments in contact level, angle, or patient positioning – can have patient slide butt forward and sit at a 30 to 40 degree angle.

Rotation with Dr. Assisted Traction

Line of drive is through the forearm (medal to lateral & inferior to superior)

L forearm during L rotation

R forearm during R rotation

(with overpressure by patient)

C-Rotation Traction Mob.

Re-enforced Thumb Contact

i.e. left neck pain/stiffness

1. Contact articular pillars/facet joints on opposite (R) side of pain
2. Big tissue pull toward ear (*along the plane of the facet joints)
3. The lift/traction comes from the legs
4. Maintain the line of drive (mob.) toward ear as the patient turns left

Fingers assist with gentle traction of neck and retraction of chin

Left Rotation with Self Traction

C-Rotation Self Traction Helpful Pointers

1. Sit against the back of a chair with good posture but relaxed
2. Lead with the hand and not the head
3. Maintain traction the entire time
4. Look with the eyes toward the side of pain/rotation, but keep the neck muscles relaxed
5. Pull up and over at about a 45 degree angle
6. Contact is usually between the articular pillars of the upper C-spine and bases of skull.
7. Even though the pull is up and over, don't look or tilt head up and over. Keep head level without any extension, lateral flexion or chin poking.
8. Must be painless.

Side Bends

(For left sided neck pain)

Partial chin tuck with 20-45 deg. forward flexion, then pull head toward painful side, slight rot. to the opposite side

Cervical lateral flexion pointers

- Begin with a partial chin tuck
- With the painful side hand, pull the painful side ear toward the front of the arm pit (this incorporates some flexion that will be necessary to get around the bulge, before using the sides of the vertebrae to squeeze it in)
- It should feel and look exactly like a stretch to the opposite side (painless side) upper trapezius muscle
- It must be painless and better in extension after or stop

Lateral Flexion (for L sided pain/bulging)

*Toward side of pain