Chiropractic Overview and Adolescent Spine Injuries in Sports

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Forte Sports Medicine and Orthopedics

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No Financial Disclosures

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- ***Education***
- Doctorate of Chiropractic, Palmer College of Chiropractic, 2000
- B.A. Sports Science/Athletic Training, Loras College, 1996
- ***Experience***
- Clinic Director, Performance Chiropractic and Sports Rehabilitation (2000-2015)
- Merged private practice with Forte Sports Medicine (2015-Current)
- Chiropractic Consultant and Clinical Instructor for University of Indianapolis and Franklin College Athletic Programs. (2000-current)
- Indianapolis Indians (IBL Triple AAA) Chiropractic Consultant (2002-Current)
- Indiana Fever Chiropractic Consultant (2001-2003)

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CHIROPRACTIC is Your 1ST LINE OF DEFENSE Against PAIN

95% of past-year **chiropractic** users say it's **EFFECTIVE**.

89% of past-year **chiropractic** users **RECOMMEND** it to **family** and **friends**.

97% of past-year **chiropractic** users are likely to *see a chiropractor* if they have **neck/back pain**.

88% of past-year **chiropractic** users **AGREE** it's *a good value for the money*.

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www.palmer.edu

Sources: www.palmer.edu/gallup-report

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Five Questions About CHIROPRACTIC

Is it safe?

Know the Risks of Serious Side Effects/Death Associated with Common Treatments for Musculoskeletal Pain

Spine Surgery	Cervical-Spine (Neck) Surgery	Use of NSAIDS/Aspirin	Prescription Opioid Pain Medications	Chiropractic Adjustment
1,800 per 1 million	500 per 1 million	153 per 1 million	53.6 per 1 million	<1 per 1 million (about 1 in 5.85 million)

Does it work?

A majority of U.S. adults think CHIROPRACTORS are EFFECTIVE at treating NECK and BACK PAIN

Are chiropractors real doctors?

Degree Requirements Comparison

- Medical Doctor **4,800** total educational hours
- Doctor of Osteopathy **4,665** total educational hours
- Doctor of Chiropractic **4,620** total educational hours
- Doctor of Physical Therapy **3,870** total educational hours

Who goes to chiropractors?

Over 1/2 of all U.S. adults have seen a chiropractor, and over 1/4 would choose chiropractic care 1st for back or neck pain.

Can chiropractic help my neck and back pain?

Given a choice among five types of practitioners, 29% of Americans would most like to see a CHIROPRACTOR FIRST for neck or back pain.

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Sources available at www.palmer.edu/gallup-report/so

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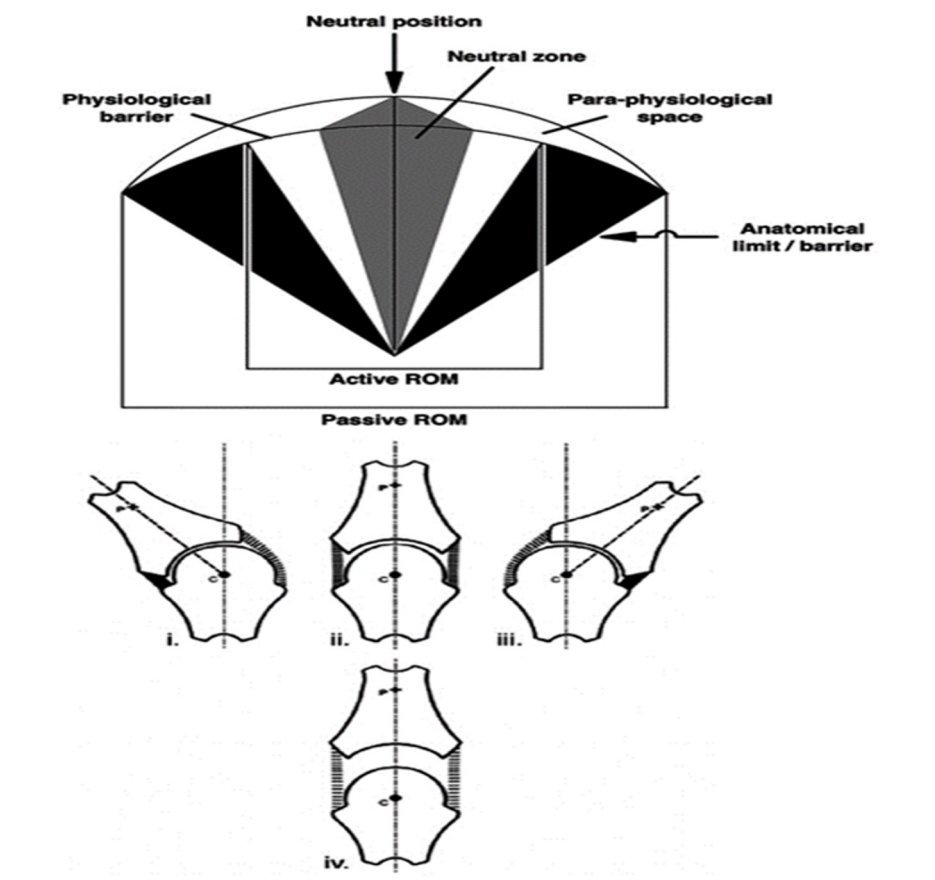
- ***Manipulation*** - Separation (gapping) of opposing articular surfaces of a synovial joint, caused by a force applied perpendicularly to those articular surfaces, that results in cavitation within the synovial fluid of that joint.



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Benefits of Spinal Manipulation

Restore normal joint motion
Reduce muscle spasm
Release of endorphins
Reduce articular adhesions
Improved neuromuscular feedback

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Abraham Maslow said in 1966, "I suppose it is tempting, if the only tool you have is a hammer, to treat everything as if it were a nail."

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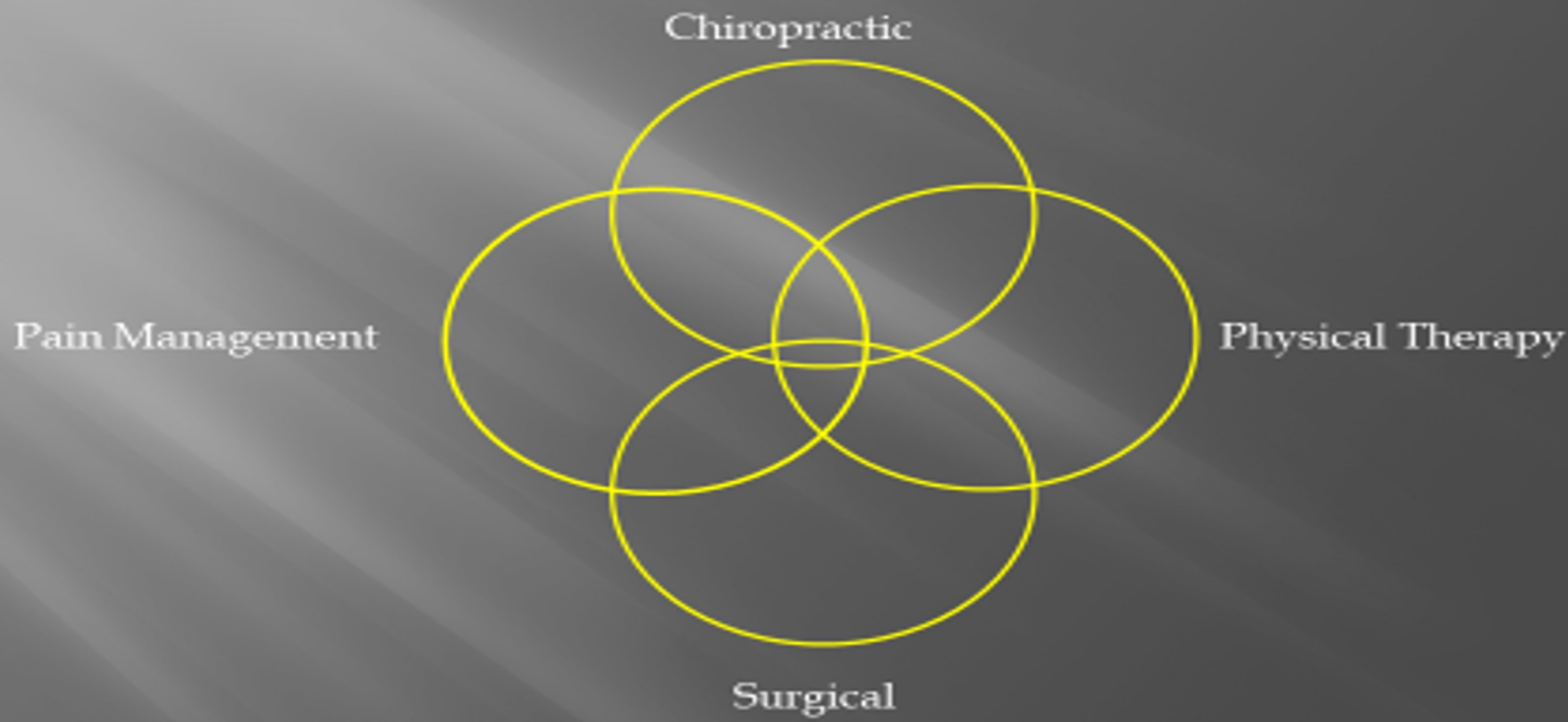
Different Worlds of Spine Care



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Adolescent Back Pain

- Back Pain prevalence ranges 37%-66%
- Lumbar Spine most common
- Prevalence is equal among gender
- Athletes have a much higher risk than non-athletes
- Growth Spurts

Vij N , Naron I, Tolsen H, et al, Back Pain in adolescent athletes: a narrative review. Orthopedic Reviews, Vol. 14, Issue3 2022

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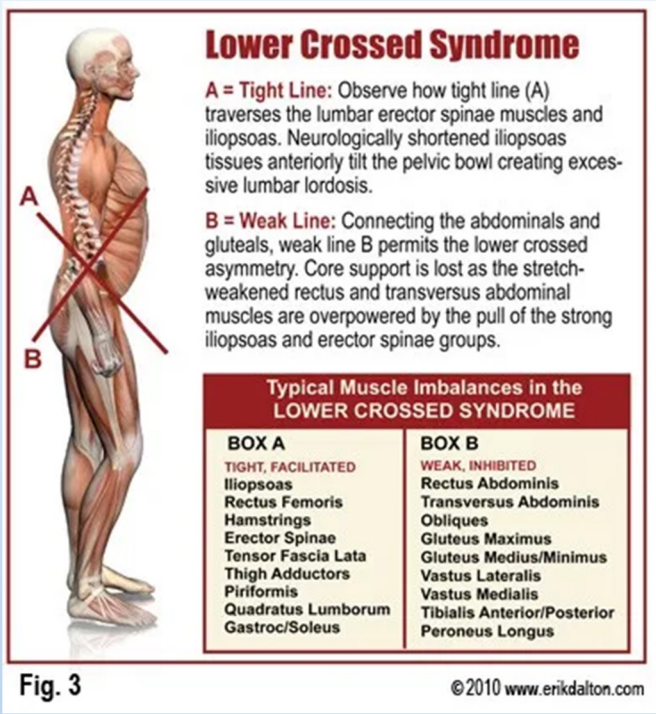
Adolescent Back Pain Risk Factors

- Increase lumbar lordosis
- Abdominal Weakness
- Hip Flexor tightness
- Thoracolumbar fascia tightness
- Femoral Anteversion
- Thoracic Kyphosis
- BMI
- Prior Back Pain
- Athletic Level of Play
- Growth spurts



Vij N , Naron I, Tolsen H, et al, Back Pain in adolescent athletes: a narrative review. Orthopedic Reviews, Vol. 14, Issue3 2022

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Acute Sprain/Strain Injuries
Stress Fractures
Spondylolysis
Spondylolisthesis
Intervertebral Disc
Herniations
Fractures
Tumors

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- General adolescent population – 3-10% incidence of lysis
- Athletic Adolescent population under 19 years – 30% to 39.7% incidence of lysis
- Unilateral pars fractures typically heal normally
- Bilateral and/or Chronic pars fractures progress to Spondylolisthesis with rates as high as 43-74%
- 92% who were treated conservatively were able to return to athletic competition
- Weight training and collision sports have higher incidence
- MRI is 80-83% sensitive in detecting stress injuries/spondololysis

Goetzinger S., Courtney S., Spondylolysis In Young Athletes: An Overview of Nonoperative Management, Journal Of Sports Medicine, Volume 2020

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- Commonly seen L4 (21%) and L5 (75%) levels
- Extremely Rare to see an isolated incident of trauma
- Considered to be a repetitive mechanical stress and micro-trauma to a congenitally weak portion of the bone
- Onset of symptoms correlates with growth spurts (age 10-15)
- 98% return to athletic activity following the treatment recommendation of 3 months cessation of athletic involvement, bracing/orthosis and bone stimulator.

Choi, J. MD, Ochoa, J. Md et. al, Management of lumbar spondylolysis in adolescent athlete: a review of over 200 cases, The Spine Journal 2022 pgs. 1628-1633

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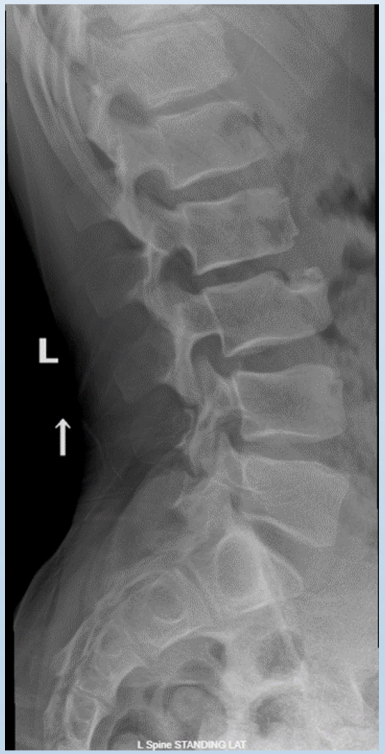
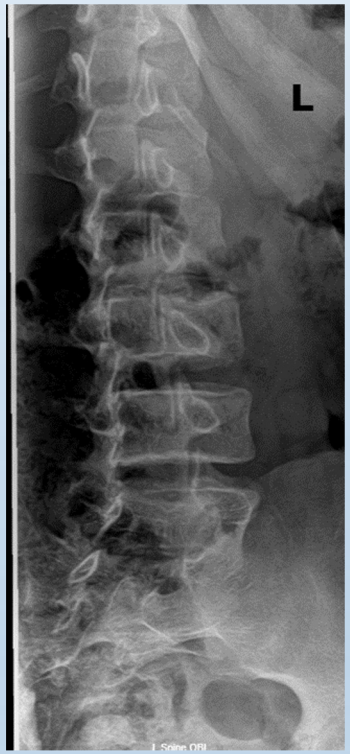
13 YOA Male Stress Fracture





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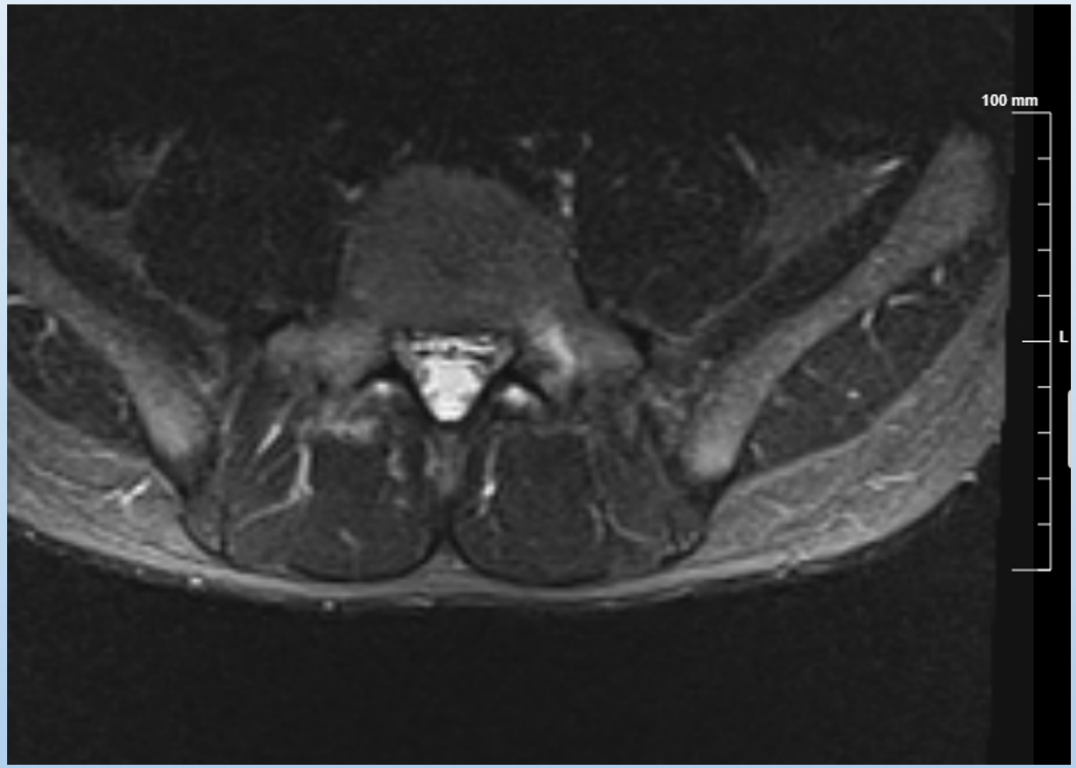

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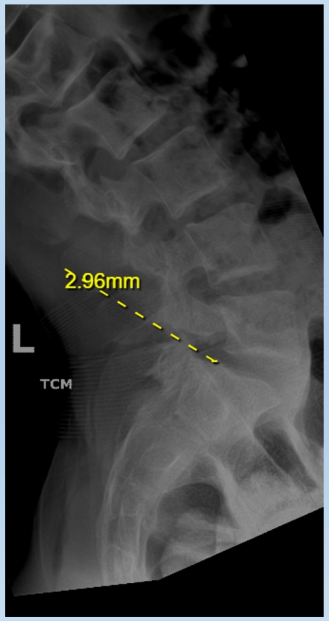
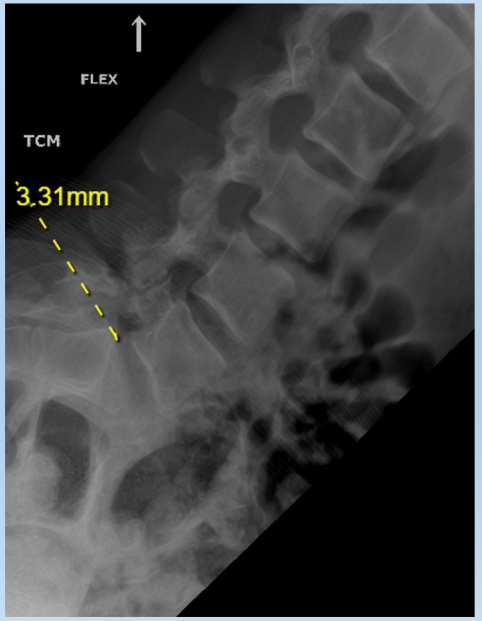

2.96mm
L
TCM


FLEX
TCM
3.31mm

Knechtle, D, Jastrzebski, et. Al. Vitamin D and Stress Fractures in Sport: Preventative and Therapeutic Measures – Narrative Review. Medicina March 2021

Table 1: Serum 25-Hydroxyvitamin D [25(OH)D] Concentrations and Health [1]

nmol/L*	ng/mL*	Health status
<30	<12	Associated with vitamin D deficiency, which can lead to rickets in infants and children and osteomalacia in adults
30 to <50	12 to <20	Generally considered inadequate for bone and overall health in healthy individuals
≥50	≥20	Generally considered adequate for bone and overall health in healthy individuals
>125	>50	Linked to potential adverse effects, particularly at >150 nmol/L (>60 ng/mL)

- Prolonged lack of Vitamin D (25(OH)D) can lead to stress fractures
- A 25(OH)D insufficiency of <75.8nmol/L is a risk factor for stress fracture
- Prevalence of Stress Fractures decreased when athletes are supplemented daily with 800 IU 25(OH)D and 2000 mg Calcium
- Recommendation of intake may go up to 2000 IU of 25 (OH)D per day

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General treatment guidelines

- Minimum of 12 week activity restriction, Vitamin D testing, Refrain from NSAID usage
- Unilateral injury - (Warm/Form) Brace 23 hours/day
- Bilateral injury - Boston Brace 23 hours/day
- Physical Therapy (focus on basic stretching/core stability) 1x/every 2weeks (6 visits over 12 weeks) Lower cross syndrome
- Chiropractic Manipulation (above and below involved segment)1x/month --
- CT scan at 12 weeks to verify healing
- Healed - increase Physical Therapy intensity to sport specific activity, Functional progression to full activity, Chiropractic Manipulation 2x/week for 2-4 weeks.
- Not healed asymptomatic - progress with activity as tolerated, follow up x-rays to evaluate for progression of slippage at one year
- Rarely use bone stimulator

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When can I play sports again?

Every case is different but a majority of athletes can return to their sport full time in **3 months**

Time	Dates	Details	Next Steps
Weeks 1-4		**REST** No athletic activities or working out.	
Weeks 4-6		**Begin basic physical therapy** Can schedule on same day as clinical appointment  Therapy	If no pain on physical exam, have been following protocol, can progress
Weeks 6-8		**Begin dynamic physical therapy** Progressing to more sport specific movements. 	If no pain on physical exam, have been following protocol, can progress
Weeks 8+		**Continue to progress back to full time sports:** • Non-contact individual drills • Non-contact team drills • Full contact practice • Portion of a game Half game • Full games  **Sport Specific Drills**	Sports specific progression is multifactorial and depends on the athletes, type of sports, time in trainning

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Disc herniations

- Prevalence of adolescent Lumbar DDD 2%
- Prevalence of adolescent disc herniations 5.8%
- Steady rise in adolescent disc disease
- Biggest risk factors are attributed to Obesity/Poor Diet and Poor Weight Training Techniques
- Mechanism is typically flexion based injury and/or axial load
- Genetics

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Deadlifting and/or Powerclean Injuries

Image courtesy of Wikimedia commons.

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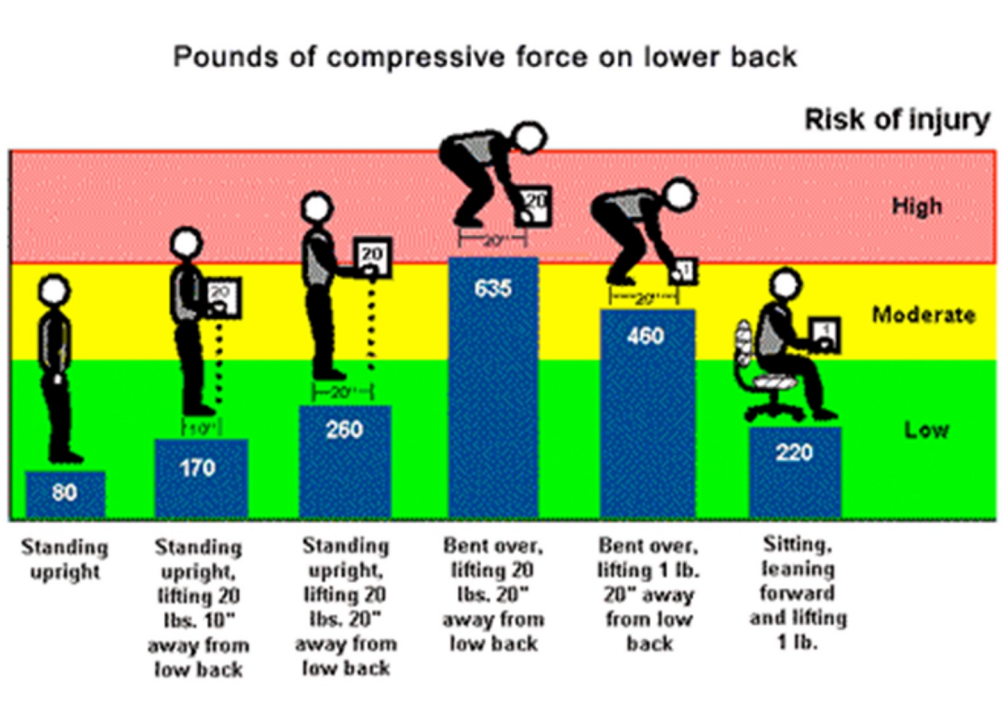

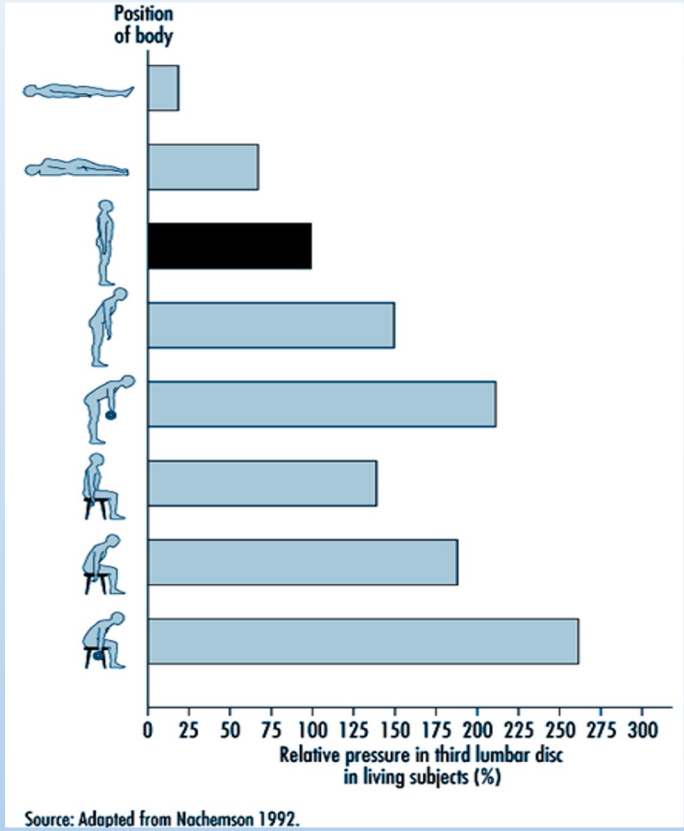

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Dead lift Injury – 15 year old Male

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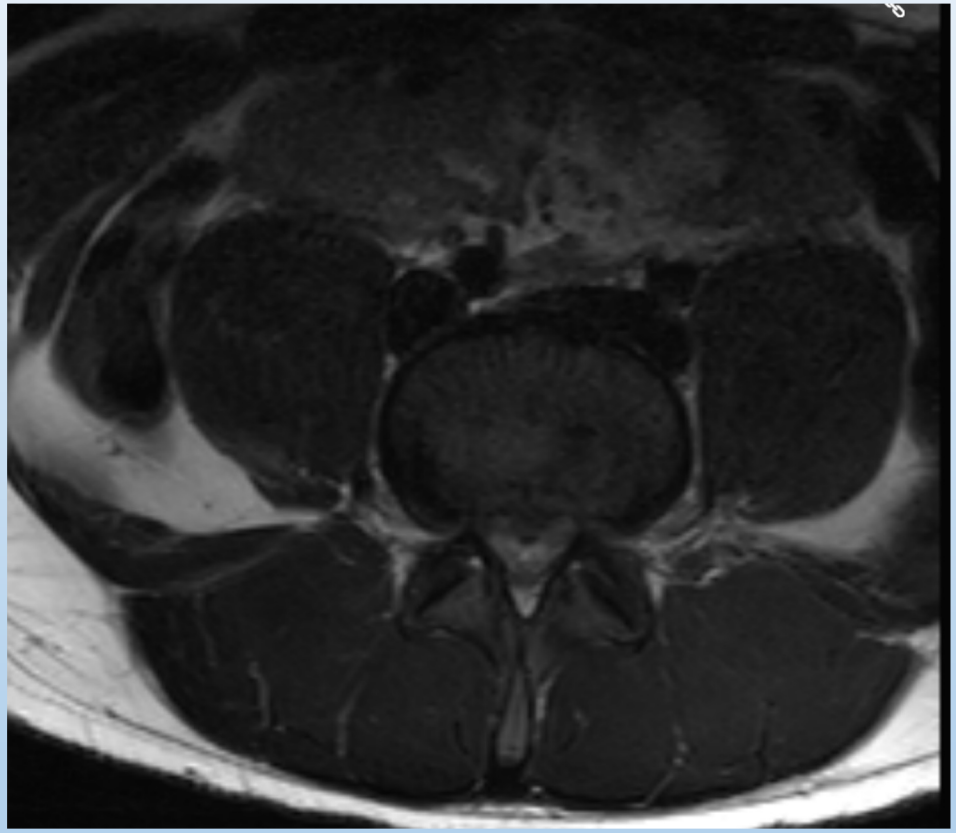
15 year old Wrestler/Football Player
Heard an Pop and immediate back pain while Deadlifting,
Progressive Motor Deficits over 14 days



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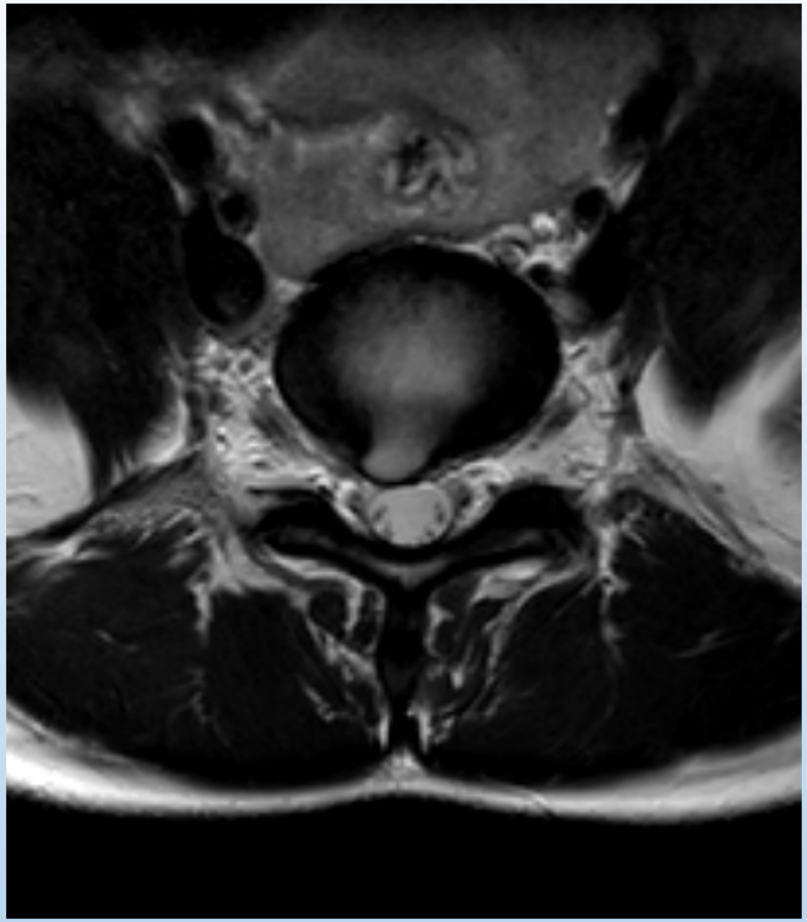

Chiropractic Manipulation 2-3x/week for 3-4 weeks,
Physical Therapy 1-2x week for 4 weeks
NSAIDS as tolerated,
Limited Referral for Steroids/Epidurals.
Cessation of all Olympic Lifting for 10-12 months

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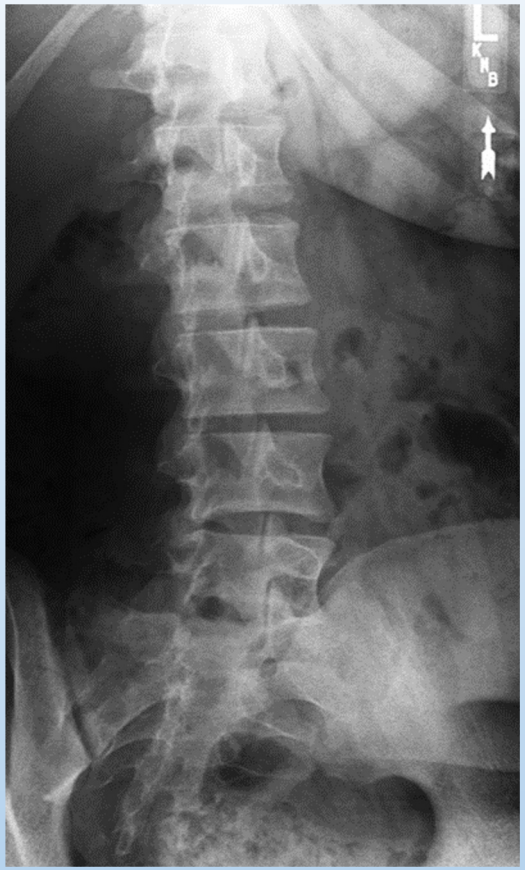
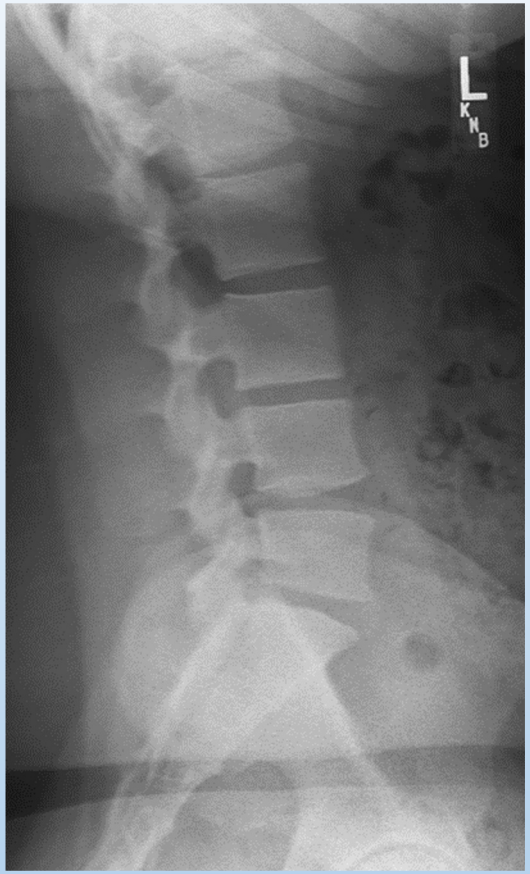
16 YOA Male > 1 year of back pain, treated chiropractic and home exercise





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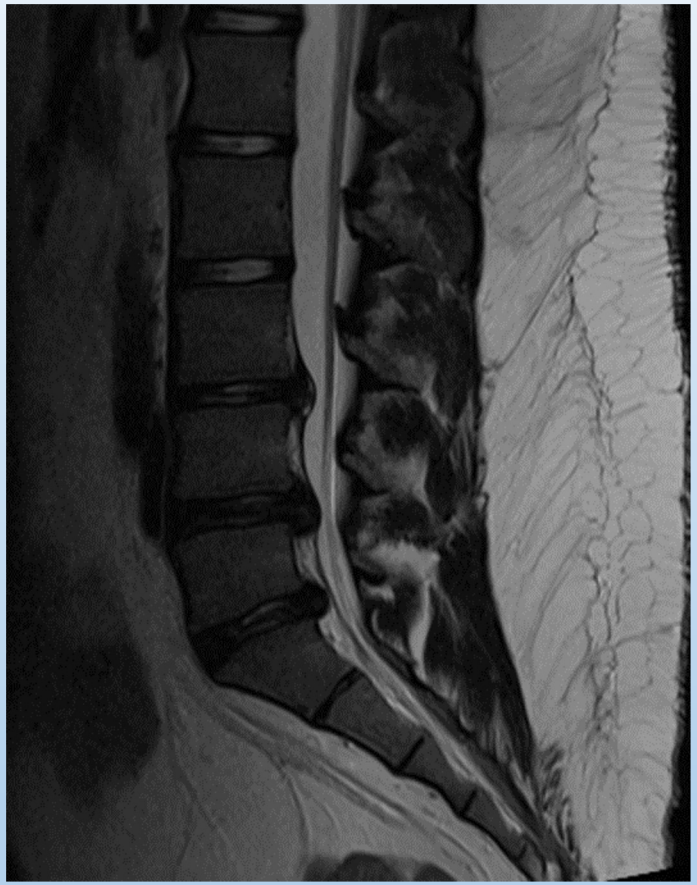

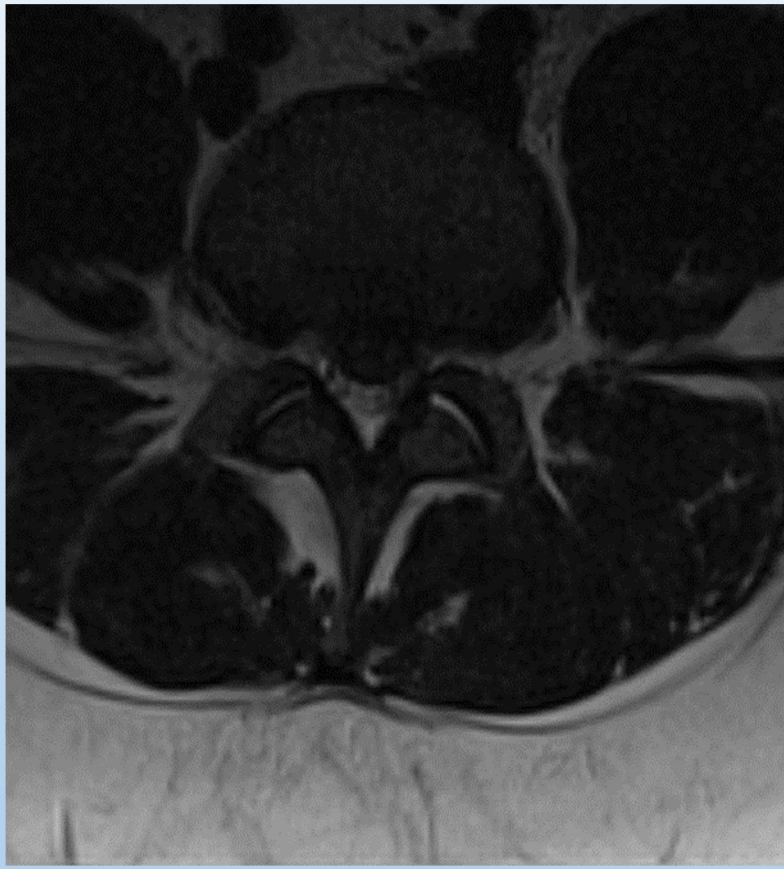

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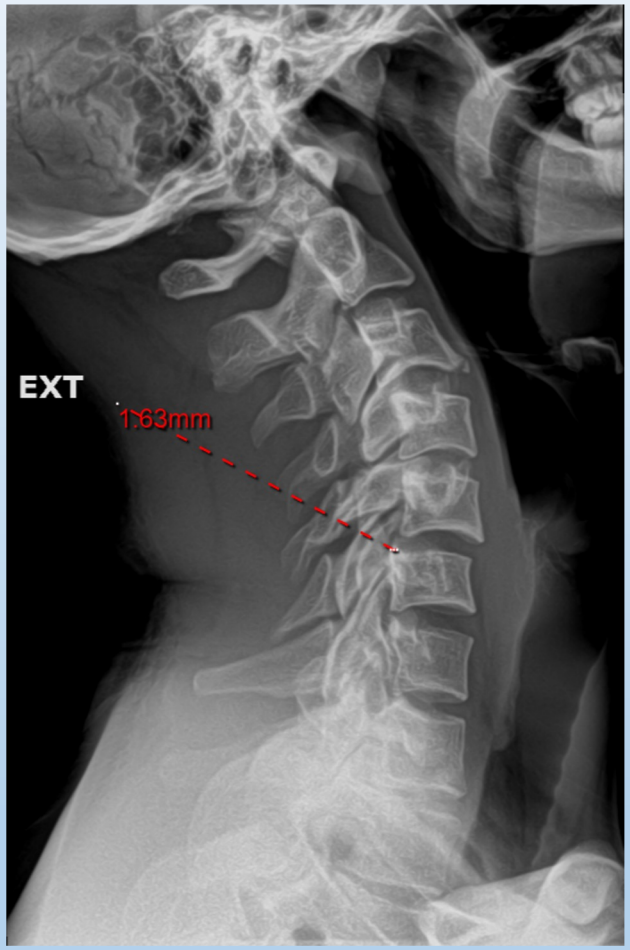
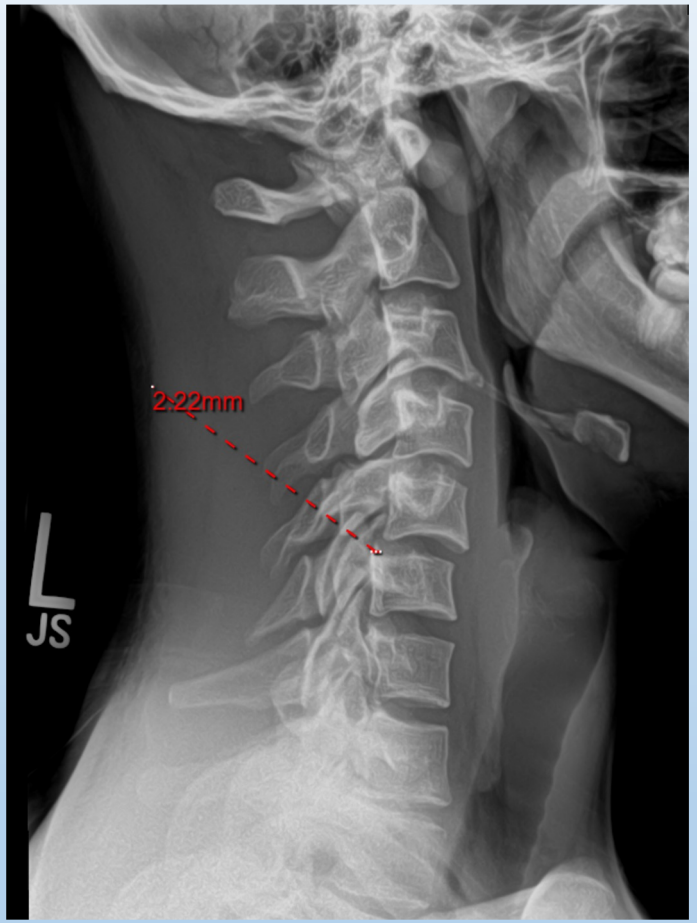
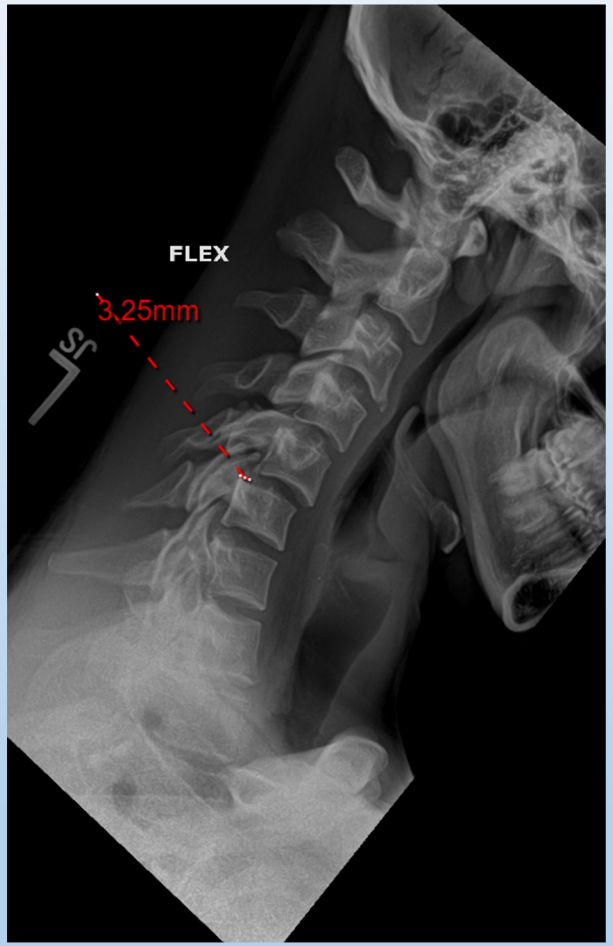
21 Male football Player
Cervical Flexion/Right Lateral Flexion during Tackling Drill (1/2 speed)
4/10 VAS scale, Pain was improving after 1 week of rest.
Noticed a Right Stinger Type pain during injury which had resolved.







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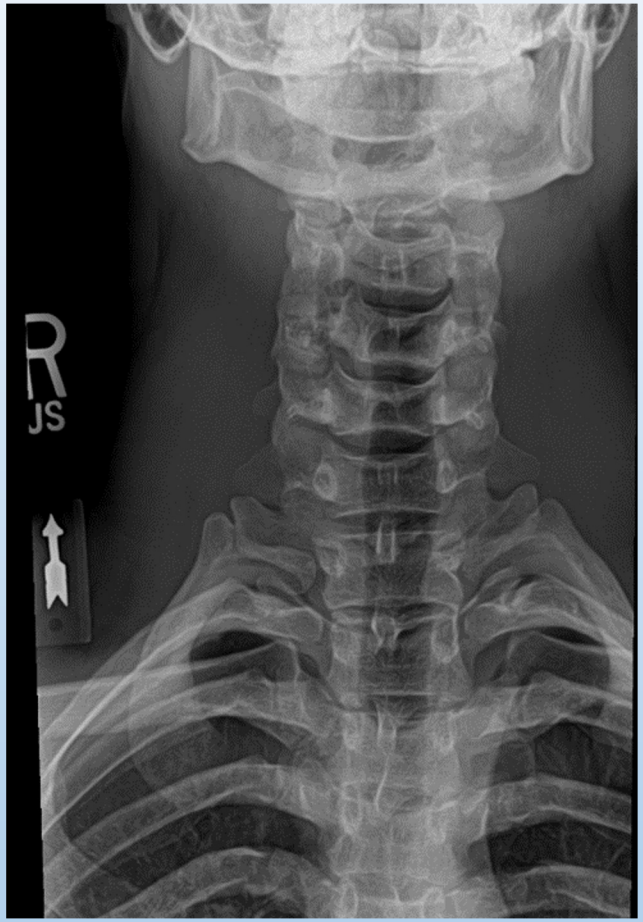

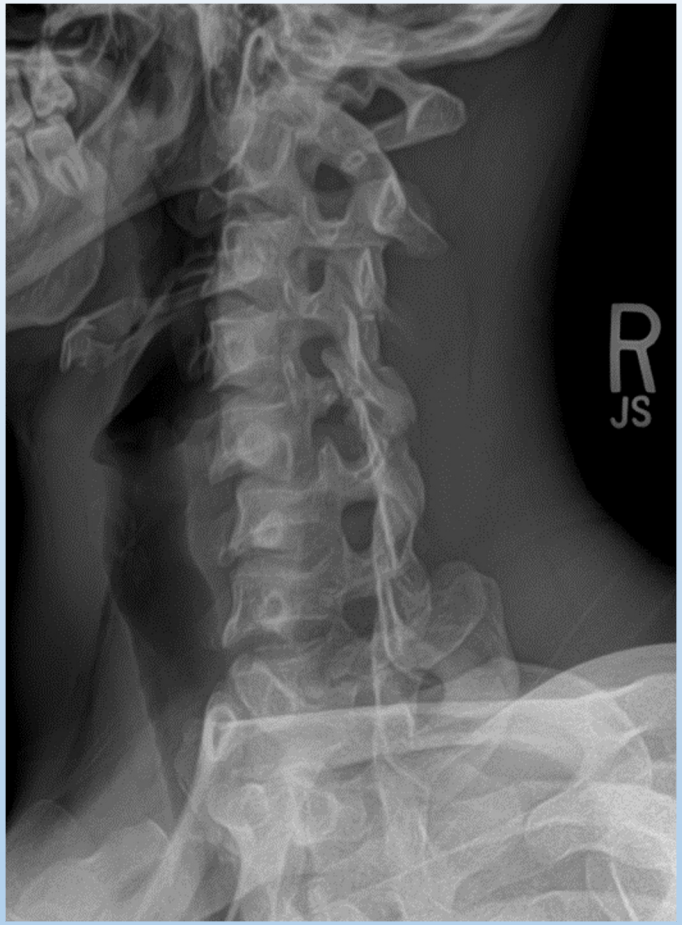

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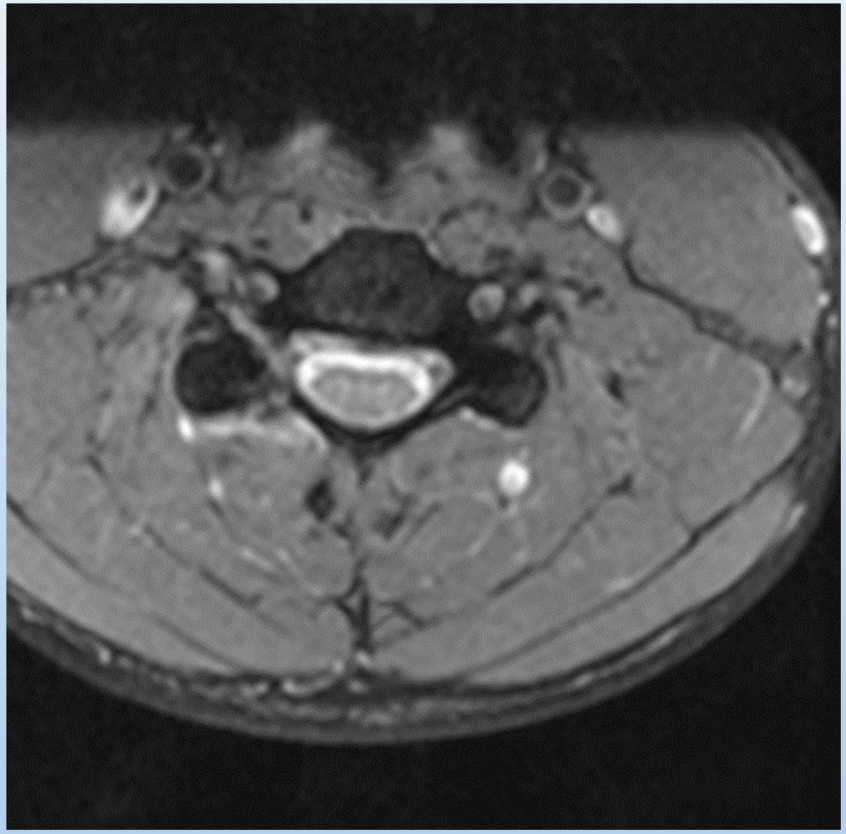

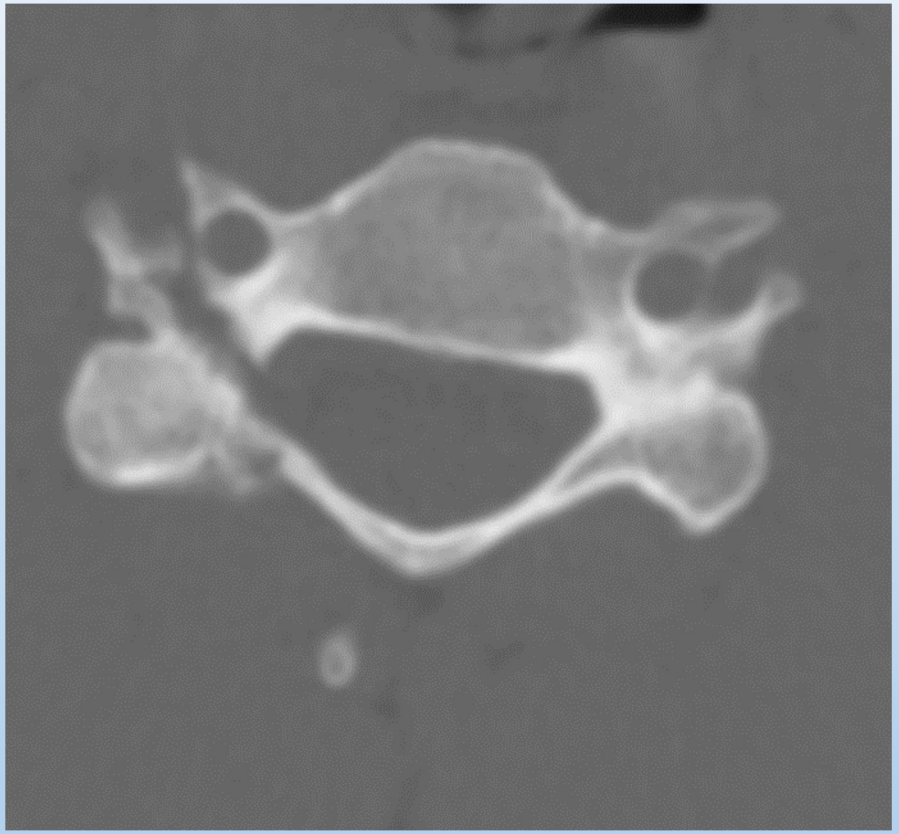

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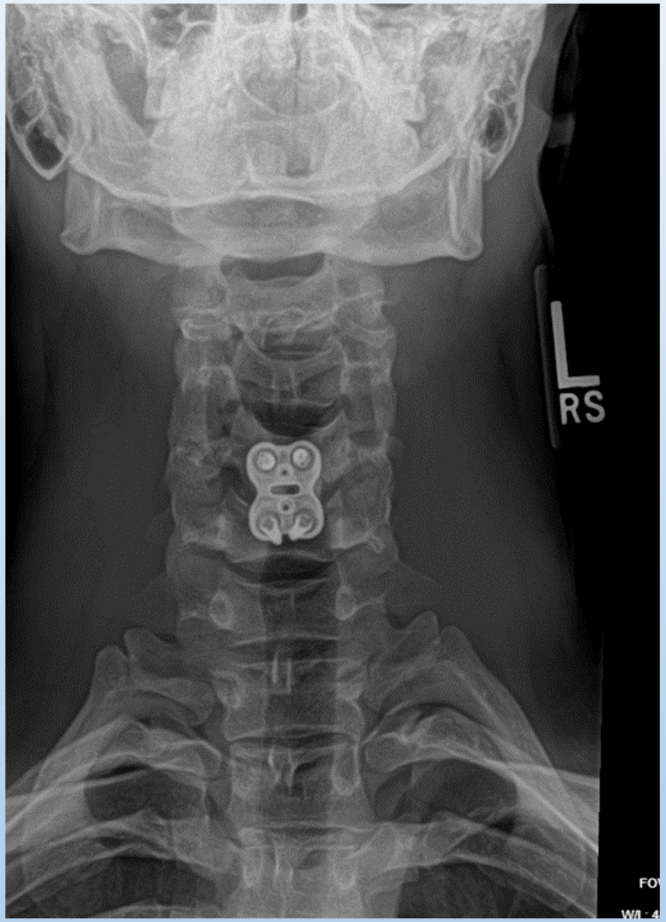

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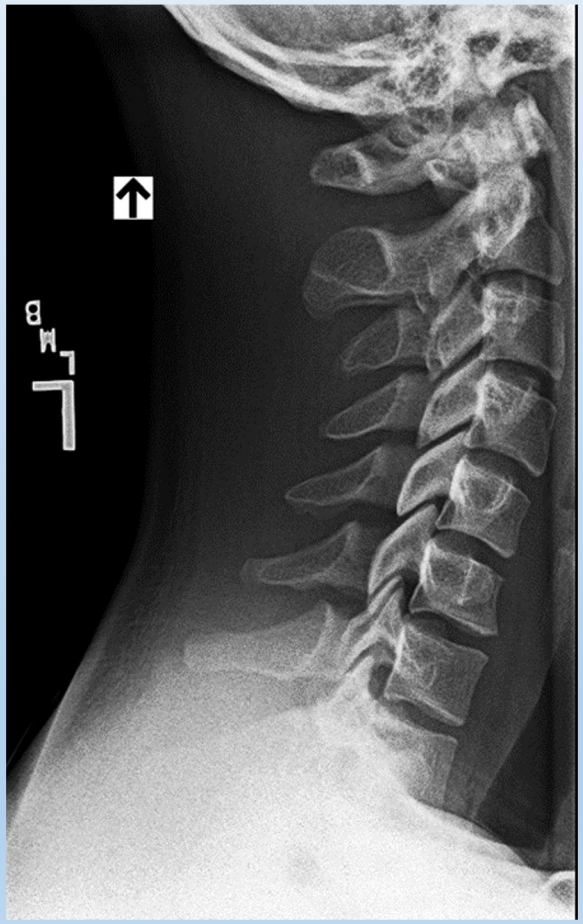
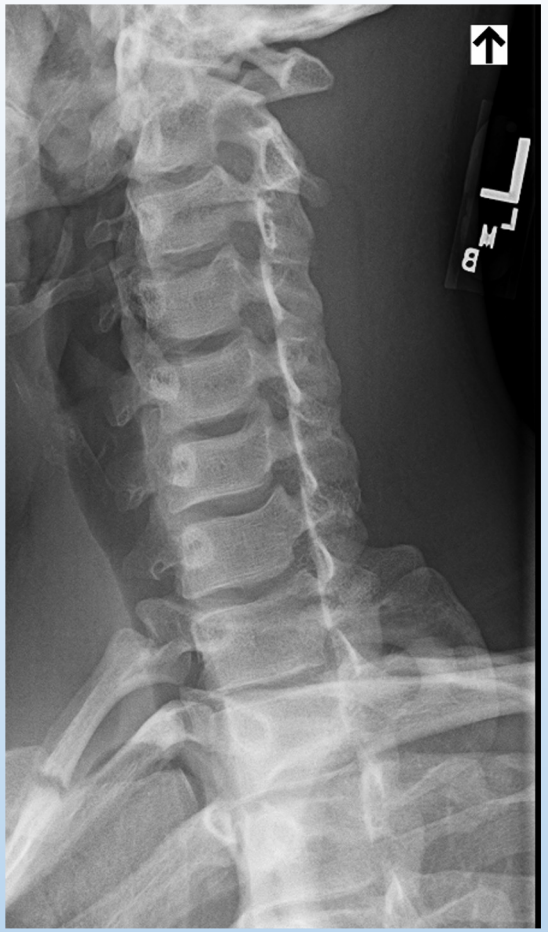
1st rib fracture Sophomore Linebacker





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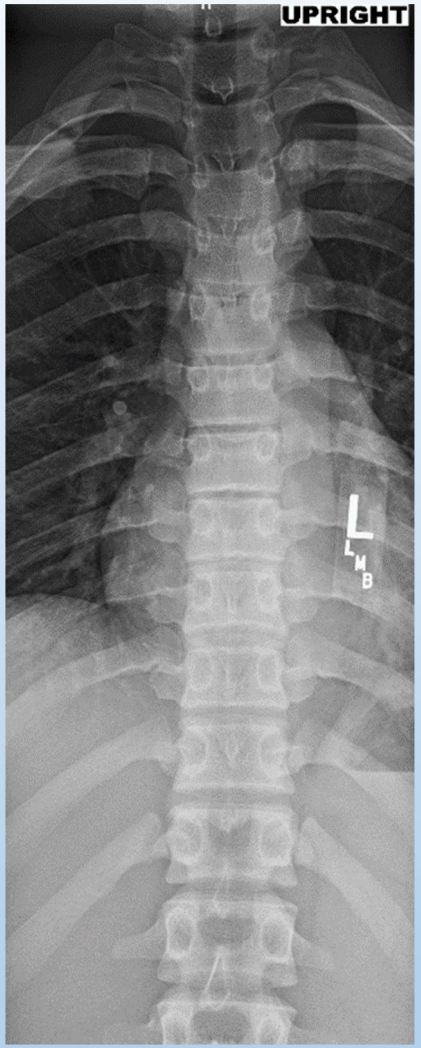

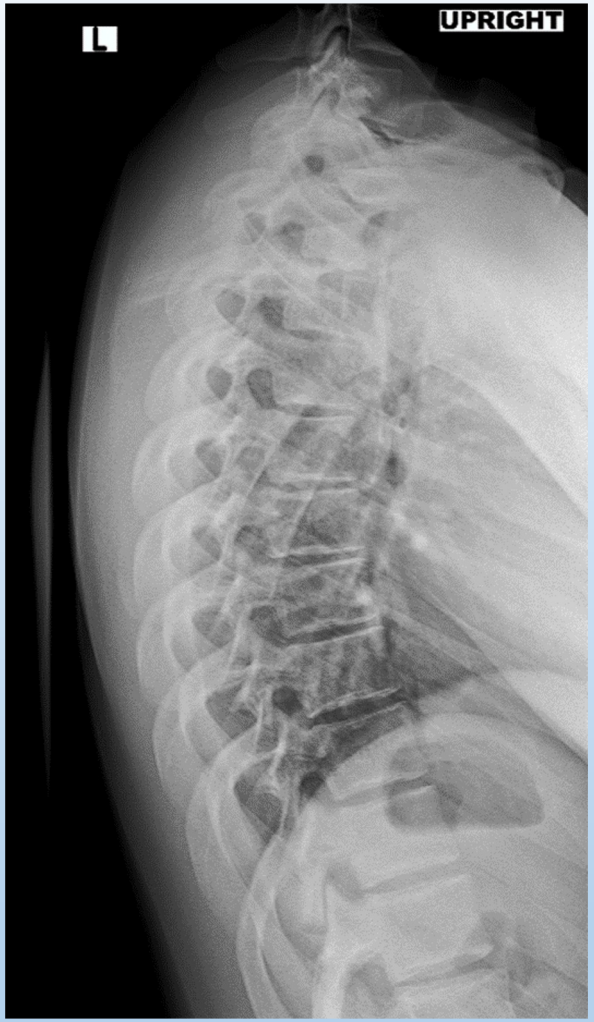

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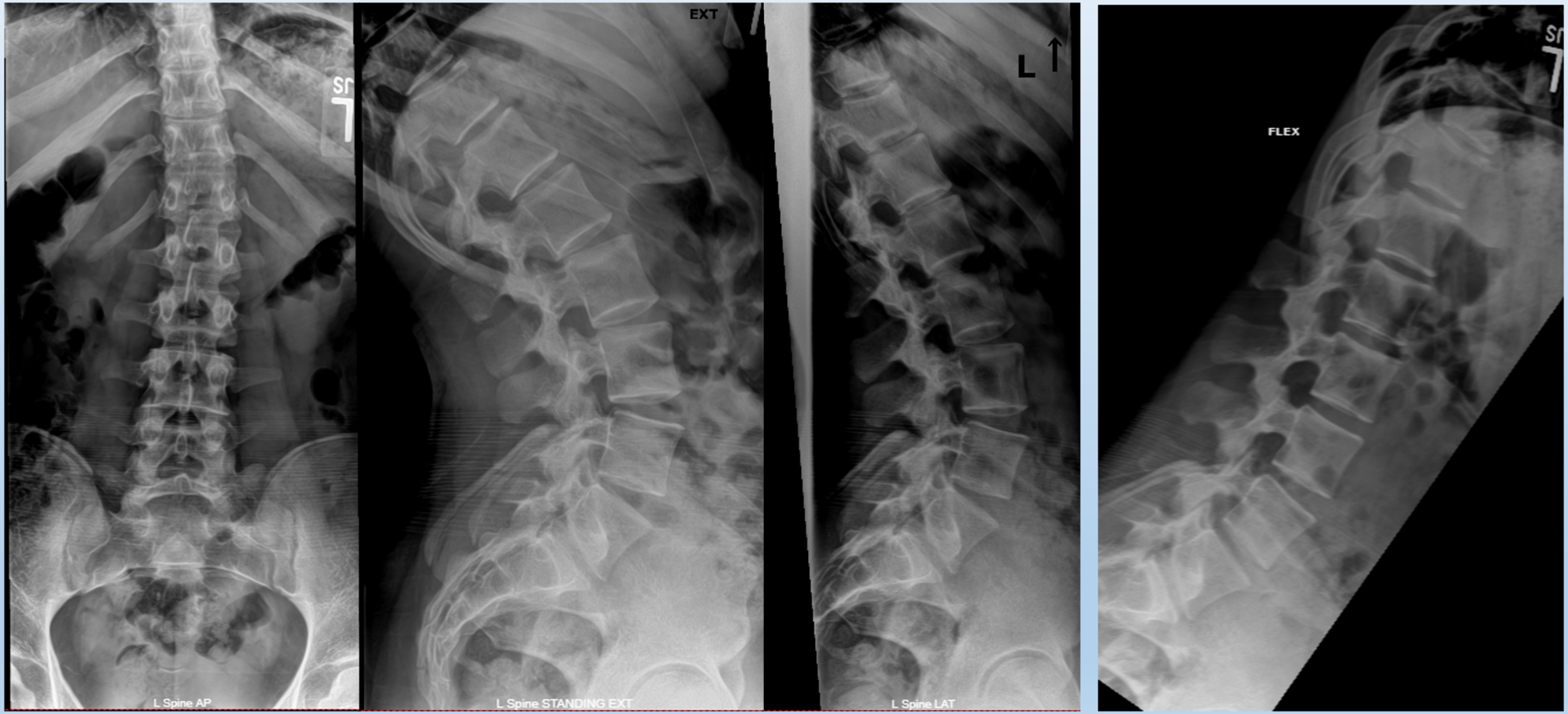
Compression Fracture 15yoa Female



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Active Schmorl's node vs. Chronic Pars Defect

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