Lumbar Back Pain in Young Athletes

- Learning Objectives
  - Epidemiology
  - Anatomy
  - History
  - Physical Exam
  - Imaging
  - Diagnosis
  - Treatment
  - Return to Play

Eric M. Kephart DO
Lumbar Back Pain in Young Athletes

• Lumbosacral Sprain
• Lumbar SomaKc DysfuncKon
• Lumbar Spondylolysis
• Lumbar Spondylolithesis
• Scoliosis
• Lumbar Scheuermann’s Disease
• Juvenile Rheumatoid ArthriKs
• Ankylosing SpondyliKs
• Malignancy
• Disk herniaKon
• Apophyseal Ring Fracture
• Congenital AbnormaliKes

Diagnosis

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DO
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Each year in the US over 30 million children and teenagers participate in organized sports. Sports are the leading cause of injury in adolescents. Chronic overuse injuries are increasing in young athletes. Incidence of back pain among young athletes participating in sports has been shown to be twice as high as in the general population of the same age.
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Bone – 5
Lumbar Vertebrae – Sacrum – Sacroiliac Joint – Facet Joints

Anatomy

L1
L5

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Lumbar
Spine
Pain
in
Young
Athletes


Anatomy
Lumbar Spine Pain in Young Athletes

- Supraspinous ligament
- Interspinous ligament
- Ligamentum flavum
- Posterior longitudinal ligament
- Anterior longitudinal ligament

Anatomy

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Posterior longitudinal ligament runs vertically and posterior to vertebral body providing structure and support.

Remember the posterior longitudinal ligament begins to narrow in the lumbar spine.

Incidence of lumbar spine hernias is greater for lower lumbar vertebrae.
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Anatomy

Intervertebral Disc

Vertebral Body

Facet Joints

Pedicle
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- Age & Sex
- Type of activity or sport
- Amount of training/participation per day/week/year
- Chronicity, timing, location, quality and severity of symptoms
- Any associated symptoms: fever, weight loss, night pain
- Activities that worsen or improve symptoms
- Limitations in participation
- Medical, Surgical, Family history

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• Visual inspection
• Palpation
• Range of motion
• Strength
• Neurologic assessment
• Vascular assessment
• Gait assessment
• Special Tests
  – Standing flexion test
  – Seated flexion test
  – Dural tension tests
  – Patrick test
  – Stork test
  – Thomas test
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SomaKc DysfuncKon

Osteopathic physicians can treat this condiKon simultaneously using both convenKonal primary care approaches and complimentary spinal manipulaKon.

OMT is safe and effecKve.

OMT is billable.

Diagnosis

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- Texture abnormality,
- Asymmetry,
- Restriction of motion,
- and Tenderness (TART)

3 most commonly used OMT techniques:
- soft tissue,
- HVLA,
- and muscle energy

Major motion of the lumbar spine is flexion/extension

Diagnosis

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- Psoas Syndrome (flexion contracture) - Presents as low back pain that radiates to groin - Associated with somatic dysfunction L1 or L2, sacral dysfunction - Counterintuitive effective for acute symptoms - Stretching an acute psoas spasm may exacerbate symptoms - Treat the higher lumbar SD with muscle energy or HVLA Somatic Dysfunction

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• Innominate SomaKc Dysfunction – Same side as positive standing flexion test – Rotation occurs about the inferior transverse axis – Muscle energy is effective SomaKc Dysfunction

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Sacral SomaKc DysfuncKon – Associated L5 somaKc dysfuncKon – Treat L5 somaKc dysfuncKon first – Muscle Energy and HVLA techniques are effecKve – PosiKve seated flexion test is opposite the sacral oblique axis – RotaKon of L5 and sacrum are opposite – L5 SB and sacral oblique axis will be same side.

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Case Study

- Exam – positive standing flexion test on right – Right ASIS inferior

- Diagnosis – Right anterior innominate

- Treatment – OMT Muscle Energy

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- 17 year old cross country runner

- CC: low back pain

- Pain is sharp does not radiate and began yesterday after 5 mile run
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Can you find the collar of the Scohy Dog?
Low Back Pain in Young Athletes

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Spondylolysis
• Pars interarticularis defect/stress fracture

Prognosis
» Unilateral Pars defects are more likely to have bone healing
» Fibrous union allows the majority of athletes to return to sport

Return To Play
» Varying frames in the literature

Consensus: 6 months return to sport

Diagnosis
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• 17 year old Junior HS football (defensive cornerback) and T&F (sprinter) athlete presents complaining of LBP.

• Pt. was seen by his pediatrician for left sided LBP after squatting with heavy weight in the spring, had "normal" x-rays, received PT/Rehab and improved.

• He presented with LBP complaint again in late summer after the first week of football two-a-days: chief complaint was right sided LBP.

• Exam: Neurologically -> no deficits, Musculoskeletal B/L hamstring contracture, excellent balance, pain with extension and positive Stork test B/L.
Case Study

- Lateral oblique X-ray: pars defect on the left without spondylolithesis.
- SPECT scan positive B/L L5 uptake.
- CT scan confirmed spondylolysis B/L L5 without spondylolithesis.

Management:
- Removed from contact sport, back brace (TLSO) and bone stimulator.
- We had long discussion that his football season was over for this year.
- Pt. was non-compliant with treatment plan.
- Repeat 3 month CT scan showed no change; B/L spondylolysis of L5 without spondylolithesis.

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- Spondylolisthesis
  - The anterior or posterior displacement of a vertebra in relation to the vertebra below
  - 5 types:
    - Dysplastic
    - Isthmic
    - Degenerative
    - Traumatic
    - Pathologic

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Lumbar Back Pain in Young Athletes

- Grade I
- Grade II
- Grade III
- Grade IV
- Grade V (Spondyloptosis)

Diagnosis

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Grade?

Grade?
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- Spondylolisthesis
  - Return to Play
    - Most in this age group are Grade I
    - Follows same guidelines as spondylolysis

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Scoliosis
- ClassicaKon
  - Congenital
  - Idiopathic
  - Infantile
  - Juvenile
  - Adolescent
- Neuromuscular

History
- Incidental finding on physical
- USPSTF does not recommend routine radiographic screening for scoliosis

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Cobb Angle
- A

Risser Stage
-
Cobb Angle

Risser stage
Scoliosis
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### Treatment

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### Return to Play

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