

The Athlete's Thoracolumbar Spine: Common Issues



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Speaker Background

- Spine surgeon, The San Antonio Orthopaedic Group
- Disclosure:
 - Investor: Allez Spine
 - Consultant: Biomet Spine
 - Clinical Investigator:
 - Coflex (Paradigm Spine)
 - Advent (Blackstone) (PI)



Content / Objectives

- On-field screening 'red flags', acute injury management
- Differential diagnosis for low back pain (LBP) in the athlete seen in the office w. subacute / chronic sx
- Spinous process / transverse process fractures
- Decision-making in treating spondylolysis (pars fractures)
- Dealing with back pain: putting it in perspective



Elite athletes and LBP

- Trend/suggestion of higher risk of LBP ¹⁻⁴
- Significant lost time from participation ⁵⁻⁷
- Athlete with spondylolysis more likely to have LBP than matched control ⁸



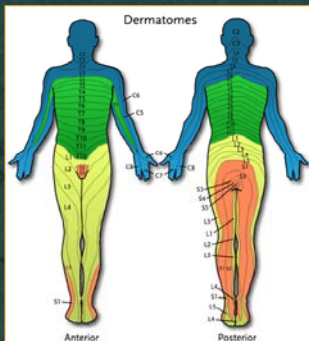
Acute (Fall, Collision)

- Look for 'Red Flags':
 - Weakness, incontinence, cannot stand or jog, impaired flexibility
 - (Concussion, upper extremity weakness, all part of head/neck/spine broader trauma considerations)
 - Immediate medical / spine evaluation



Neurologic Testing

- L2 Hip flexors (iliopsoas)
- L3 Knee extensors (quadriceps)
- L4 Ankle dorsiflexors (tibialis anterior)
- L5 Long toe extensor (extensor hallucis longus)
- S1 Ankle plantiflexors (gastrosoleus)
- Grading Strength 0-5



Acute Injury: Algorithm

- Red Flag finding = Assume structural problem (fracture C-T-L5 spine)
- Expedite ER / spinal evaluation, with:
 - Spinal precautions (head-neck immobilization and spine board)



LBP Contributing factors

Acute LBP:

- Growth spurt
- Abrupt increases in training intensity or frequency
- Improper technique
- Unsuitable sports equipment
- Leg-length inequality

Chronic LBP:

- Poor core strength
- Structural issues
- Tight hamstrings



Subacute or Chronic LBP

- | | |
|--|---|
| Muscle strain/ligament sprain | Intrapelvic, gynecologic conditions (e.g., ovarian cysts) |
| Degenerative disc disease | Renal disease |
| Isthmic spondylolysis (no slip) | Sacroiliac joint dysfunction |
| Isthmic spondylolisthesis | |
| Facet syndrome | |
| Ring apophyseal injury (adolescents) | |
| Sacral stress fracture | |
| Central disc herniation (without radiculopathy) | |
| Sacralization of L5/transverse process impingement | |
| Facet stress fracture | |
| Lumbar vertebral body fracture | |
| Discitis/osteomyelitis | |
| Neoplasm | |



Subacute or Chronic LBP

Muscle strain/ligament sprain
Degenerative disc disease

→ **Isthmic spondylolysis (no slip)**

Isthmic spondylolisthesis
Facet syndrome
Ring apophyseal injury (adolescents)
Sacral stress fracture
Central disc herniation (without radiculopathy)
Sacralization of L5/transverse process impingement
Facet stress fracture

→ **Acute traumatic lumbar fractures**

Discitis/osteomyelitis
Neoplasm

Intrapelvic, gynecologic conditions (e.g., ovarian cysts)
Renal disease
Sacroiliac joint dysfunction



Spinous / transverse process injuries

- Typically not unstable
- Due to muscle pulling or direct contact
- Treat symptomatically
 - Brace, meds, PT
- Specialist to clear athlete as symptoms subside
- Flexion-extension x-rays on occasion



Spondylolysis

- 3-6% prevalence⁹
- Non-athletic population:
 - Often asymptomatic
 - Often incidental
 - Risk of slip: 25-50%
- May develop as stress fracture in athletics
- Adolescent athletes:
 - 38% with slip progression (avg. 10%)
 - 8% with slip decrease¹⁰

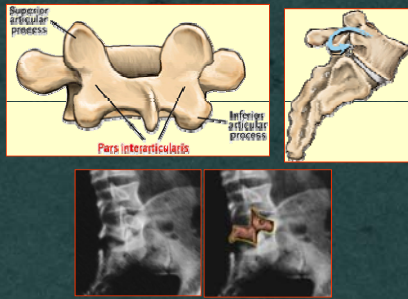


Spondylolysis – Risks

- Twisting, hyperextension
- Offensively linemen, gymnasts, soccer, baseball, volleyball, weightlifting, rowing, wrestlers...



Spondylolysis



Exam

- Tight hamstrings
- Pain with lumbar hyperextension
- Restricted range of motion

Diagnosis - Imaging

- Oblique films not useful; extra radiation
- Rely on SPECT bone scan + CT
- MRI useful for excluding other processes (disk degeneration, herniation)



Spondylolysis Scenarios

- Spondylolysis ('crack', 'stress fracture')
- Developing spondylolysis = 'stress reaction' (no crack)
- Treatment of these two situations



Back Pain – R/O Spondylolysis

- Bone Scan +

-
CT
+

<p>NSAIDS, *PT* (core) Possible injections</p>	<p>NSAIDS, Rest, PT Maybe bracing ? Play with a brace ¹¹ Clinical and imaging recheck at 3 months 'Stress reaction'</p>
<p>Incidental finding?¹² No more healing potential PT (core), also consider pars injections If response to injections: Trial of bracing, electrical stimulation, rest Surgery for persistent pain from pars</p>	<p>NSAIDS, Rest, PT, bracing Complete crack, with healing potential Varying data on bracing ^{13,14} 6-12 months frequently Gradual reentry into sports in brace, with PT ¹¹</p>



Finally...

- Persistent pain, no structural basis
 - Not uncommon, challenging situation
- Team approach to care
- Realistic goals for athletes
 - Limitations: It is what it is



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Dr. Jesse DeLee
Dr. Drew Dossett
Dr. Gerry Greenfield
Dr. Frank Kuwamura
Dr. Pablo Vazquez



Thank you!!



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