LOW BACK PAIN IN THE FEMALE ATHLETE: THROUGH THE AGES

Rachel Brakke, MD
Assistant Professor
University of Colorado School of Medicine- Dept of Physical Medicine and Rehabilitation
CU Sports Medicine and Performance Center
Pain Medicine Fellowship Director
Outline

• Anatomy review & epidemiology
• 3 different groups
  • Youth athlete (10 yo- 20 yo)
  • Young adult/ Middle age (20-50)
  • Older athlete (50++)
Are spine injuries common in athletes?

• #1 reason an athlete misses a game
• 20% of all sports injuries involve the spine
• Women are more likely to suffer a spine injury (collegiate level data)*
• #1 injury in volleyball, gymnastics
• #2 Soccer and #3 in basketball
What does the spine do?

- Protects spinal cord and nerve roots
- Transfers load between upper and lower bodies

What gives the spine strength?

- Muscles
- A cadaver spine with muscles removed (only bones and ligaments) collapses under 20 lbs of stress
Low back anatomy

Pedicle
Low back anatomy - Female differences

• Decrease cross sectional area of lumbar vertebrae

• Increase mechanical load controlled for other factors

• More dorsally inclined relative to male spines
  • Decreases rotational stability

• Pregnancy - more anterior load, increases lumbar lordosis

• Breasts - increases thoracic kyphosis and increases lumbar lordosis
Epidemiology- Elite athletes

• Lifetime prevalence of low back pain- 47-90%! Average-61%
• Prevalence of low back pain in adolescent athletes- 20-30%
• Sports with highest incidence of back pain
  • Rowing, dancing, fencing, gymnastics, track and field, figure skating, water polo, basketball, hockey

The Mystery is in the History
Youth athlete - 3 important causes of back pain

Acute/Chronic fractures (spondylolysis-pars/pedicle fractures)
- Risk factor: hypermobility, extension sports, repetitive stress

Soft tissue injury (muscle/ligament and fascia)
- Risk factor: hypermobility, less muscle mass

Scoliosis (congenital, neurogenic, *idiopathic (65%), degenerative)
- Risk factor: growth spurt
Pars/Pedicile fractures

• Anatomy review

• Female non-elite athletes- gymnastics, marching band, softball, volleyball, horse back riding, weight-lifting, rowing

• Treatment- depends on chronicity
Idiopathic scoliosis

- 1.3-3x more likely in girls vs boys
- More rapid growth spurt during puberty
- Bracing for girls who are still growing who have a curve of +/- 20
Knee alignment abnormalities

- Increase risk of low back pain by 3x 7 years later
- 166 out of 789 had misalignment
- 7 years later- those identified with misalignment were 3x more likely to have back pain
- Not just predictive of ACL tears!

Middle Aged female athletes 20-50

- Hemiated disc
- Soft tissue strain (muscle, ligament, fascia)
- SI joint pain

- Risk factors: depression/overweight
- Protective: exercising!

Herniated lumbar disc

- Pain with sitting, bending forward
- Axial and/or radiating
- Slump test
Soft tissue strain

- Can you push on it and reproduce the pain?
- Inter-spinous ligament strain
- Quadratus lumborum strain
SI joint pain

Intra-articular and extra-articular

Pain with transitions

Exam- fortin finger test, FABER, etc
Older athlete (50+)

- Lumbar facet arthropathy
- Herniated lumbar disc
- Lumbar spinal stenosis
• Lumbar facet arthropathy- extension pain, repetitive twisting motions (tennis)

• Lumbar spinal stenosis- Pain with standing/walking/running and radicular pain
General approach to spine care

• Conservative care → Intermediate care → Surgical care

• Conservative care - diagnose, evaluate technique, PT, modify, medications, identify risk factors that led to injuries
• Intermediate care - injections (epidural, facet, SI joint)
• Surgical care - rare but necessary in some cases: cauda equina syndrome, progressive neurologic deterioration, intractable pain
What should a lady/girl do?

- Saying in pediatrics- “Children aren’t just little adults”
- “Female athletes aren’t boy athletes with ponytails”
- Embrace our differences: decreased muscle mass, higher body fat, lighter bones, less neuromuscular control, wider pelvis, different hip and spine angles
- Pre-conditioning prior to sport/after pregnancy/etc

- WE CAN HELP WITH THAT!! Diagnosis, education and treatment-1 stop shop at CU Sports Medicine and Performance Center
Thank you!