Common Back Problems in Mature Athletes

Rob Johnson, MD, FACSM, CAQ
Professor, Department of Family Medicine and Community Health, University of Minnesota
Team Physician, University of Minnesota Athletics
Director Emeritus, Sports Medicine Fellowship
Minneapolis, MN
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Objectives

• Identify common back problems of the “mature” athlete
• Review common clinical presentations of these conditions
• Summarize treatment options
• Outline “return to activity” strategies
Incidence of back conditions

• 65% lifetime incidence of “low back pain”

• 26% US occurrence in last 3 months

• Direct and indirect costs $1,000,000,000 per year
The Aging Spine

• Development of degenerative discogenic changes

• Bone mass reduction
Does sports activity matter?


N=134 former top athletes (wrestling, gym, soccer, tennis) compared to 28 non-athlete controls

Results:

Significantly more x-ray abnormalities among athletes

Frequency of back pain same as control
Does sports activity matter?


Subjects: Athlete from various track and field disciplines

Results:
- Shot putters, discus throwers, and javelin throwers had more osteophytes, radiographically, than runners

No differences in limitation of daily activities
Does sports activity matter


Studied long-term effects of physical activity on back pain in former athletes

Results:

Odds ratios for back pain lower in athletes than control subjects

MRI comparisons

Weight lifting associated with greater degeneration throughout entire lumbar spine

Soccer associated with degeneration in lower lumbar region

Runners showed no signs of accelerated disc degeneration
Does sports activity matter?

No studies comparing rates of symptomatic stenosis in athletic population to nonathletic group

However...


15% incidence of degenerative changes of cervical and lumbar spine in asymptomatic high-level triathletes and handball players


15% incidence of similar degenerative changes in asymptomatic elderly population
Imaging – Beware the consequences...

- 98 subjects (50 men, 48 women), ages 20-80; all asymptomatic
  - 52% had at least single disk bulge
  - 27% had protrusion
  - 1% had extrusion
  - 38% had abnormalities > 1 level

Age and the Spine

- > age 50, 67% had more than one abnormality
- < age 50, 27% had more than one abnormality

The Spine and Exercise

• 16% of those who exercised regularly had disk protrusions at L5-S1

• Sedentary had 4% prevalence of disk protrusions at L5-S1

Other MRI findings in the Asymptomatic Spine

- Schmorl’s nodes 19%
- Annular defects 14%
- Facet arthropathy 8%
- Spondylolysis 7%
- Spondylolisthesis 7%
- Central canal stenosis 7%
- Foraminal stenosis 7%

More Spine...

- N=67 who *never* had low back pain
  - <60 years old:
    - 20% had a disc herniation
    - One had spinal stenosis
  - >60 years old:
    - 36% had a disc herniation
    - 21% had spinal stenosis
    - All but one person had disc degeneration or disc bulging

And even more spine...

- N=60 asymptomatic subjects 20-50 years old
  - 62-67% had disc bulges or protrusions
  - 32-33% had annular tears (high-signal-intensity zones)
  - 18% had disc extrusions
  - Zero disc sequestrations
  - One subject had nerve root compression
  - End-plate abnormalities were found in 3-10%
  - Zero severe osteoarthritis

Cervical and Lumbar Spine  
(asymptomatic active male population)

- **N=19** active male athletes age 41-69 (ave.=53)
  - 3 lumbar MRI’s normal
    - 11 central protrusions (1 had 4 levels involved)
    - 4 posterolateral disk herniations
    - 1 severe spinal stenosis
  - 4 cervical MRI’s normal
    - 11 cervical foraminal stenosis
    - 7 protruding osteophyte/disk complexes

Degenerative Disc Disease

• Lumbar disc herniation in athletes
  – Associated with activities that combine flexion, rotation, compression
  – Representative activities – football, wrestling, hockey, dance, gymnastics, tennis, golf

• General population
  – Multifactorial
Disc Disease

- **Axial Pain**
  - Commonly presents as acute onset pain, muscle spasm resulting in time lost from work and sport

- **Radicular Pain**
  - Characterized by common dermatomal distribution of sensory and/or motor deficits

- **Axial and Radicular Pain**
Disc Disease

• History
  – Familiar signs and sx
  – “Red flag” signs (fever, weight loss, cancer hx)

• Exam
  – Nerve tension signs
    • + SLR
    • + Crossed SLR
    • + Slump test
Disc Disease

Treatment

- Activity modification
- Pain management
  - Acetaminophen
  - NSAIDs, oral corticosteroids
  - Opiates
  - Gabapentin, pregabalin
  - Epidural corticosteroids
- Physical Therapy
- Return to activity?

Unfortunately, none of these interventions alters the outcome!
Facet arthropathy

• Factors affecting the facet joint
  – Activities involving
    • Extension
    • Rotation
Facet arthropathy

• Clinical presentation
  – Pain may worsen with back extension and rotation
  – Impaired motion from pain avoidance behavior
  – ± point tenderness
  – Sx variable
Facet Arthropathy
Management

• Physical therapy to maintain neutral spine
• Facet joint injections (corticosteroids)
  – Mixed results (similar to normal saline)
  – Radiofrequency ablation of medial branch nerves
  – No conclusive evidence for regenerative therapy injections
• Surgery?
• Return to activity?
Lumbar spinal stenosis

- Incidence increases with age
- Foraminal stenosis due to disc space narrowing and osteophyte formation
Lumbar spinal stenosis

• Common symptoms
  – Dermatomal/myotomol distribution of numbness, tingling, pain (foraminal)
  – Vague sx, polyradiculopathy (central stenosis)
  – 90% report unilateral or bilateral radicular sx
  – Usually exacerbated by lumbar extension; improved with flexion
  – Neurogenic claudication
Lumbar spinal stenosis

Evaluation

• X-rays
  – AP, lateral, flexion and extension views

• MRI
Lumbar spinal stenosis

Treatment

• Medications
  – Analgesics
  – Neurogenic acting agents (gabapentin, pregabalin)

• Aerobic conditioning

• Spinal stabilization, strengthening exercise

• Epidural corticosteroid injections

• Surgery (laminotomy, foraminotomy)

• Return to activity?
Osteoporosis/Compression Fracture

• Weight bearing activity vs. non WB activity

• Hormonal influences

• Genetic influences

• Other lifestyle issues
Osteoporosis/Compression Fracture

• Osteoporosis can cause vague LBP (uncertain “pain generator”)
• Usual mechanism of compression fracture is susceptible individual bending forward or result of injury
Osteoporosis/Compression Fracture Treatment

- Analgesia
- Bracing
- PT

For persistent pain or further vertebral collapse
  - Vertebroplasty
  - Kyphoplasty

• Return to activity?
Summary

- Disc disease
- Facet arthropathy
- Spinal stenosis
- Osteoporosis/Compression fracture