

S U M M E R 2 0 1 6

# LOW BACK PAIN

## Population Impact

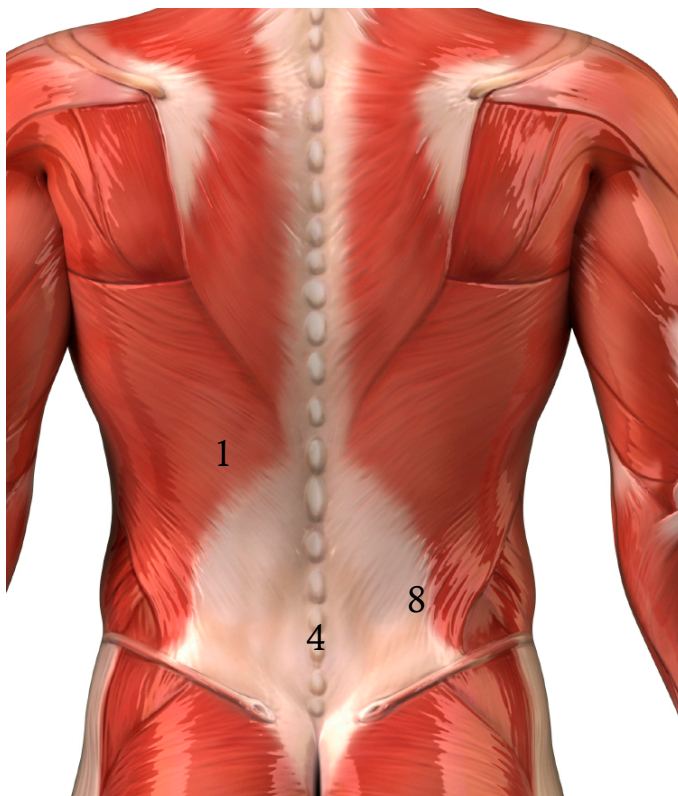
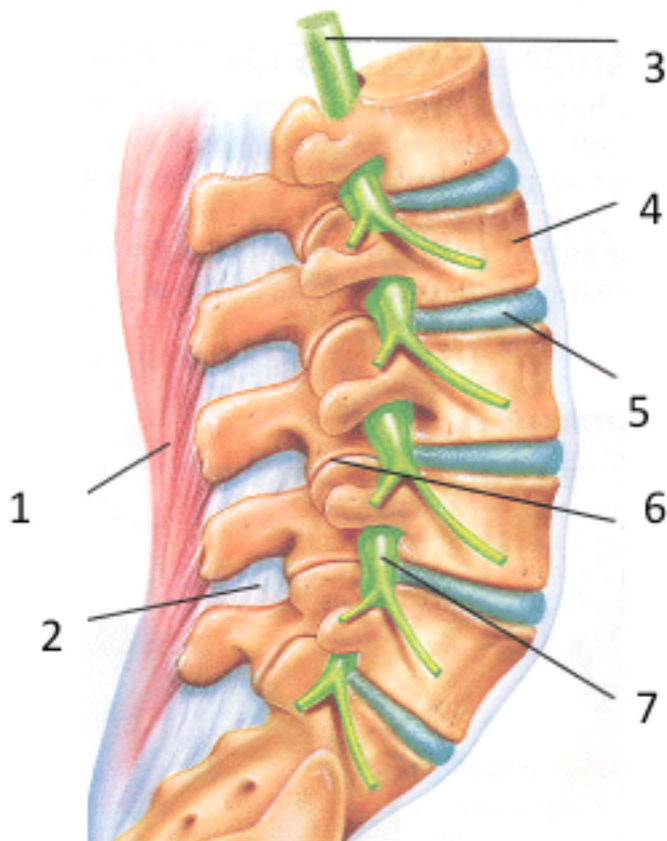
- 60-70% of adults will experience back pain in their lifetime
- Back pain peaks between ages 35-55
- Low back pain is the leading cause of work absence in the industrialized world
- Low back pain is the most common cause of disability in young adults
- Low back pain worsens as the spine ages
- 100-200 billion US dollars are lost each year due to lost wages and reduced productivity because of low back pain



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# Lumbar Spine Anatomy



1. Muscles--support the spine and its movement.
2. Ligaments--hold the vertebrae in alignment and provide support.
3. Spinal cord---nerve pathway for electrical signals from the brain through the spine.
4. Vertebra—bony structure that protects the spinal cord, shapes the spine, allows flexion and weight bearing.
5. Intervertebral Disc- cartilaginous tissue that cushions and provides shock absorption between vertebrae.
6. Facet joints—connect vertebrae at points to allow a range of movements.
7. Spinal nerve—provides transit of electrical impulses to muscles for movement and contraction.
8. Fascia- connective tissue interwoven into muscle, nerves to provide structural support

# Causes of Back Pain

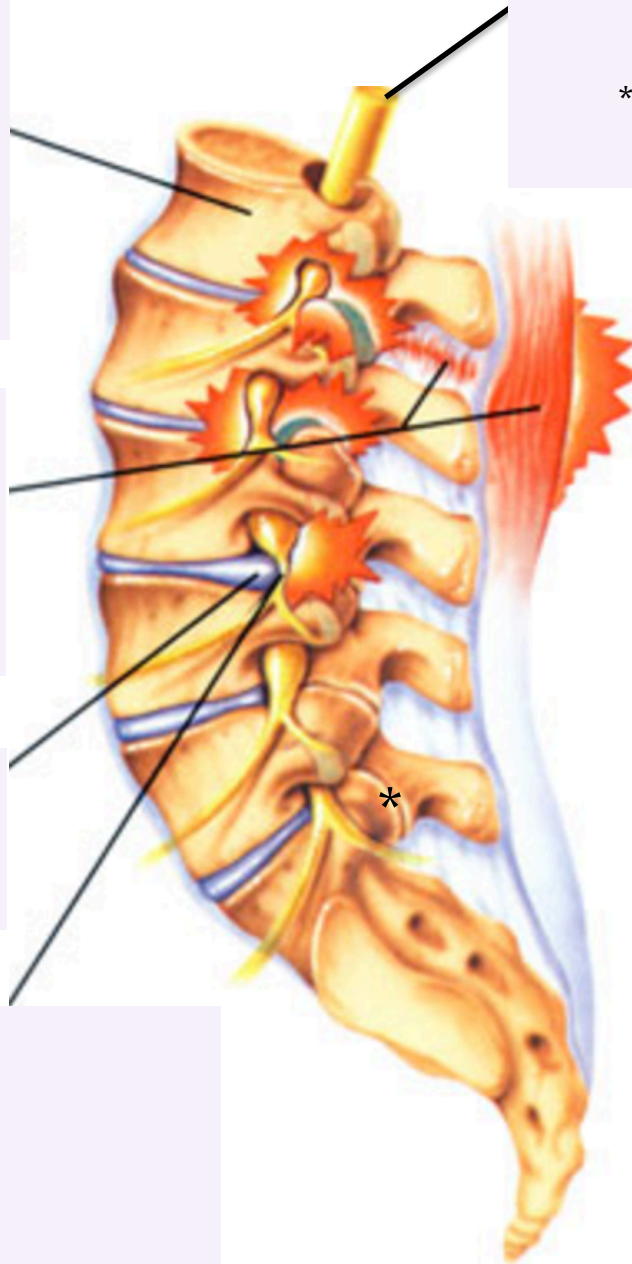
**Vertebra**  
Osteoporosis  
Poor posture  
Bony fractures  
\*Facet disease  
Osteophyte formation

**Spinal Stenosis**  
Pinching of the spinal cord  
due to:  
Disc disease  
Bone injury  
\*Facet disease

**Muscles & Ligaments**  
strain, stretch and tears due to:  
injury  
weakness  
misalignment

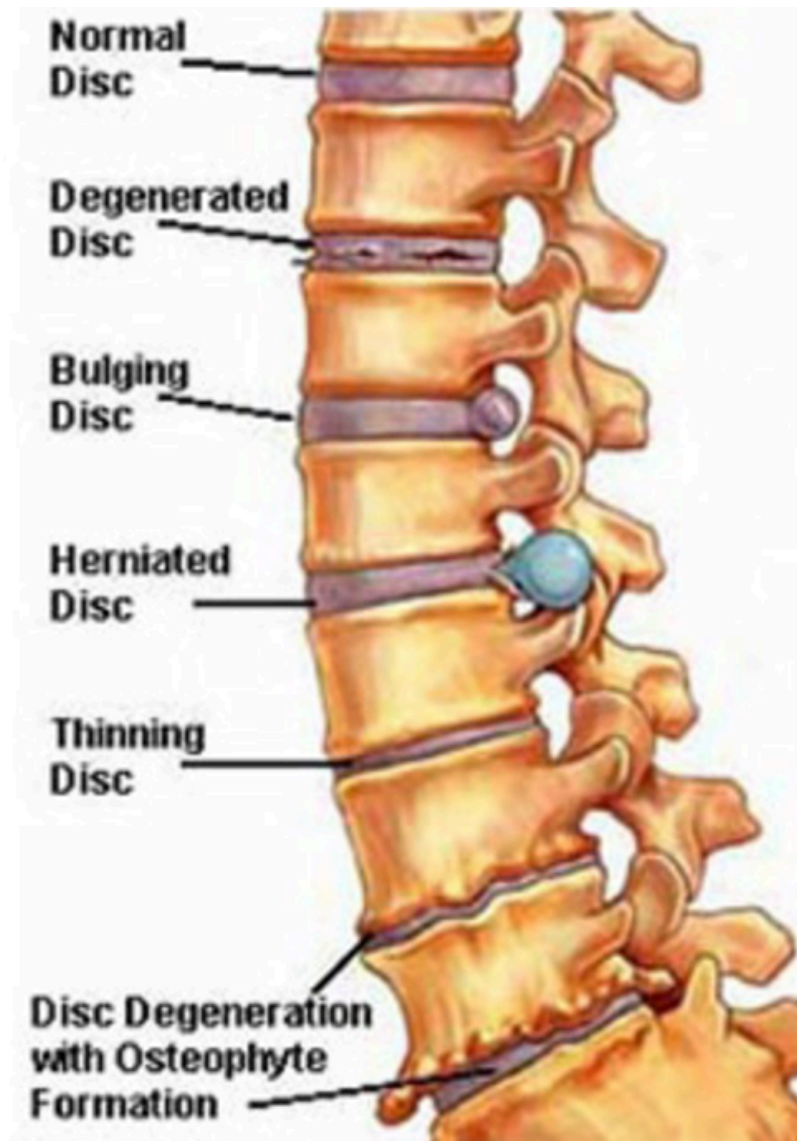
**Disc Disease**  
(see below)

**Nerve Injury**  
Inflamed  
Irritated  
Stretched  
Pinched  
Due to:  
Disc disease  
Bony injury  
\*Facet disease



# Causes of Back Pain

## Disc Disease



Discs can bulge, rupture and degenerate with age or excessive wear and tear. With degeneration, bones rub together to form bony protrusions called osteophytes. Abnormal discs and osteophytes can push on nearby structures (nerves and spinal cord) to cause more pain.

# Causes of Back Pain

## Muscle Strain or Sprain

The most common injury to the back in 20-50 yr olds  
 90% of population affected during lifetime

- Achy, dull, tight, stiff, spasm, pain with movement, rarely radiates
- Can happen after a twist/pull/heavy lifting
- Usually lasts 2-3 weeks, but may become chronic.



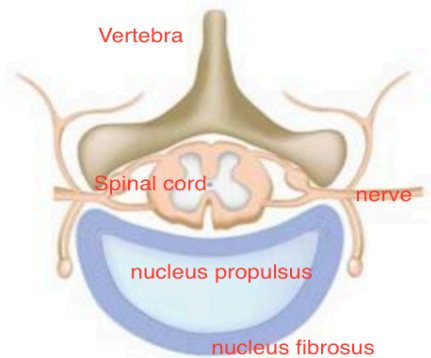
## Lumbar Radiculopathy or Radiculitis



Fairly common, affects 1% of population  
 Caused by inflammation or compression of the spinal nerve from disc disease or bony protrusion (osteophytes).

- dull back pain
- shooting electric pain that radiates from the back into the buttocks and/or knee leg
- May have loss of strength, sensation and reflexes

## Disc Disease



Discs are round cushiony structures consisting of an inner fluid region (nucleus propulsus) and outer ring of small nerve fibers (nucleus fibrosus). This fibrous portion can tear and release chemicals that cause irritation and pain, or rupture and herniate.

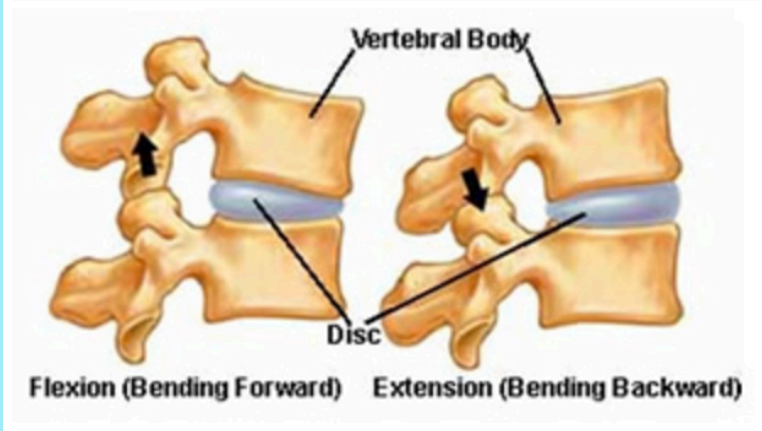
Discogenic back pain is the #1 cause of chronic (>3months) back pain in young people (about 40%) and in the older population (>50 yrs).

# Symptoms of Back Pain

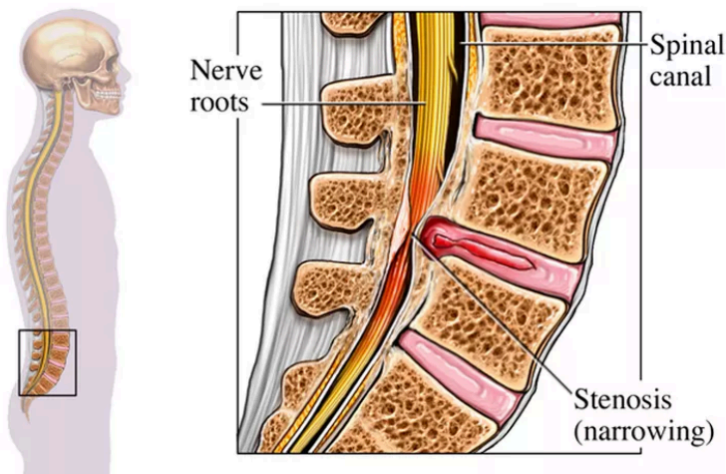
## Facet Joints

Facets are synovial joints of the vertebrae that become injured and/or degenerate. They assist flexion and extension and resist twisting and forward sliding.

- The second most common cause of chronic low back pain.
- Accounts for 40% of back pain in persons greater than 50yrs.
- Deep and aching pain is worse with prolonged standing/walking, may radiate toward knee, but rarely lower.
- Improved pain with sitting or bending forward.
- Pain comes on gradually over time.



## Spinal Stenosis



Caused by narrowing of spaces where nerves exit, resulting in increased pressure on nerves.

- Low back pain that radiates to the buttocks and leg
- Pain is worse with walking and standing
- Leaning forward relieves pain

# Back Pain

## Acute

vs

## Chronic

- Usually immediate in onset
- Related to a specific injury
- Improves with rest, ice (first 48-72 hrs), stretching, warm compress after 72 hrs, NSAIDS, compression (corset), massage
- Amenable to exercise and postural training
- Can become chronic with repeated injury and poor rehabilitation

- Usually lasts more than 3 months
- No clear identifiable injury
- Dull, achy, spasms, sharp pain with some movements
- Reduces back range or motion
- Source of moderate disability
- May need steroid injections, facet blocks, radiofrequency ablation
- May need surgery based on the cause
- Can improve with vigorous, dedicated rehab program

# REDUCE YOUR BACK PAIN

- > SEE YOUR DOCTOR TO GUIDE YOUR REHABILITATION PROGRAM
- > START PHYSICAL THERAPY AS DIRECTED
- > REDUCE STRESS/IMPROVE POSTURE
- > USE NEUROREHAB COACH TO FURTHER YOUR HOME EXERCISE REGIMEN



## SOURCES

- National Institute of Arthritis and musculoskeletal and skin diseases
- [www.niams.nih.gov/Health\\_Info/Back\\_Pain](http://www.niams.nih.gov/Health_Info/Back_Pain)
- World Health Organization 6.24 Low back pain