Low Back Pain

What You Need to Know...
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What is the deal?

What We Will Talk About
- Facts and Fiction
- Anatomy/Kinetic Chain
- Causes of Back Pain
- Who is at Risk?
- When to Get Help
- Available Treatment

Fact or Fiction?
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- No, only a small percentage is due to disc problems

Fact or Fiction?
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  - No, only 2 to 5% of patients actually require surgery

Fact or Fiction?

- Since everyone has back pain, I should just live with it
  - No. Getting help and treatment early can prevent recurrence and further problems later on.

Fact or Fiction?

- Proper nutrition can reduce back pain
  - Yes, a good balanced diet including fruits and vegetables

Fact or Fiction?

- All patients with low back pain need to have an MRI
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- All patients with low back pain need to have an MRI
- No. Only in certain cases. Most back pain resolves on its own.

Anatomy

- The spine has three major components:
  - the spinal column (i.e., bones and discs)
  - neural elements (i.e., the spinal cord and nerve roots)
  - supporting structures (e.g., muscles and ligaments)

Anatomy

- 80% of weight is supported by the spinal vertebral bodies

Anatomy

- A cutaway drawing of the spine illustrates the location of the spinal cord and nerve roots

Anatomy

- These curves allow the head to position over the pelvis in a sitting and standing position, while allowing for load bearing and shock absorption in the spine
Anatomy

- Ligaments and muscles help to support the spine and prevent excessive movement that could lead to injury.

Kinetic Chain

- Weak hip extension ->
- Thoracolumbar fascia ->
- Base of the lower trapezius ->
- Scapular dyskinesis

Who is at Risk For Back Pain?

- 60-90% of people experience back pain
- Most is from the wrong kind of activity
- Most pain resolves without significant treatment
- Heavy lifting, twisting, smoking, poor posture and obesity all contribute to low back pain

ERGONOMICS

AGE FACTORS

- Increased degenerative joint disease
  - Decreased articular cartilage content
  - Decreased proteoglycans
  - Chondrocyte failure
  - Decreased blood supply
AGE FACTORS

- Loss of muscle mass
  - Decrease in Type II muscle fibers
  - Strength decreases 15%/decade ages 50-80
  - Muscles shorten
- Decreased collagen and loss of elasticity
  - Increased stiffness and overload failure

AGE FACTORS

- Degenerative disc disease
  - Boden et al
    - 20% < 60 years with Disc Herniation
    - 36% > 60 years with Disc Herniation
    - 21% > 60 years with spinal stenosis

Causes of Spine Pain

- Strains
- Disc herniations, tears
- Facet Joint Problems (arthritis, strains)
- Sacroiliac dysfunction
- Fractures
- Spinal stenosis
- Cancer/metastatic disease
- Post surgical
- Spinal infections
- Medical Illness
- Certain rheumatological conditions (ex. ankylosing spondylitis)

Sprains

- Ligaments and muscles are subject to stress overload causing tears, inflammation

Disc Herniations

Joint Structures
Spondylolisthesis

Spinal Stenosis
- Spinal stenosis is narrowing where the nerve structures live

Sacroiliac Joint

Piriformis Syndrome

When to See the Doctor
- Pain is getting significantly worse
- Severe symptoms
- Groin or leg weakness or numbness
- Arm or hand weakness, tingling, or numbness
- Loss of bowel or bladder control
- Night pain

Non Operative Treatment Options
- Education
- Medications
- Ice
- Bed Rest (2 days)
- Rehabilitation
- Psychological Treatment
- Interventional Pain Procedures
Treatment/Modalities

- Heat & Cold
  - Heat & cold both serve to reduce muscle spasms by decreasing sensitivity of the muscle spindle’s firing rate.
  - Cold is better for acute/inflammatory injuries, but can be used long-term based on pt’s preference for muscle tightness.
  - Should not be used in pt’s with Raynaud’s or PVD.
  - Heat/Ultrasound is best tolerated in subacute/chronic conditions, but is better for loosening collagen and stiff joints than cold.

Medications

- Herbals
- NSAIDS
- Muscle Relaxants
- Oral Steroids
- Narcotics
- TCAs
- Antiepileptics

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  - Surgery

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  - Occasionally, masking the problem is all we can hope for, but pain meds alone are rarely the only answer.
Rehabilitation

- ↓ Pain
- ↑ Flexibility
- ↑ Proper Posture
- ↑ Range of Motion
- ↑ Relaxation/Stress Relief
- ↑ Balance
- ↑ Coordination
- Education

Rehabilitation/PT

- Focus on muscle groups affecting spine:
  - Low back
  - Abdomen
  - Pelvis
  - Thighs
- Focus on proper alignment and distribution of forces across the back:
  - Limb length discrepancies
  - Flat feet
  - Scoliosis
  - Poor posture

Progressive Treatments

Nutrition

- Vit D, B12, B6, and essential fatty acid deficiencies can cause pain.
- Excess Omega-6 fatty acids without appropriate balance with Omega-3 fatty acids results in inflammatory mediators that are more reactive.

Herbal Supplements

- Inflammation:
  - Omega-3 supplementation
  - Fish Oil is best (need 2700mg of EPA & DHA)
  - SAMe 600mg 2x/day
  - Turmeric, Ginger, Bromelain
- Sleep dysfunction:
  - Melatonin, passionflower, casein, 5-HTP, Valerian root
- Nerve pain:
  - Alpha-lipoic acid up to 600mg/day in divided doses.

Options for Low Back Pain

- Acupuncture- Improves circulation and enhances the body's own ability to deal with low back pain without the side effects that can come with pain medication
- Craniosacral Therapy- Can increase relaxation and improve circulation with gentle distraction and correction
- Life Flow Energy Tai Yi- When stagnant energies are dissipated or removed, your health can be restored which can enhance your relaxed well-being
- Therapeutic Massage- Reduces swelling, improved circulation, increased range of motion and relieves muscular tension
- Yoga Therapy- Releases tension, lengthens the muscles and realigns the joints
Interventional Pain

- Goals are to reduce pain and inflammation
  - Epidurals
  - Facet Joint Injections
  - Radiofrequency Neurotomies
  - Sacroiliac Joint Injections
  - Intradiscal Procedures

Spine Pain Management

- Fluoroscopic techniques
  - Epidurals
  - Facet injections

Lumbar Medial Branch Rhizotomy

Spine Pain Management

- Selective nerve root blocks
- Lateral recess blocks

Discogenic pain:

- Provocative discography is required
- Then, consider:
  - spinal intervention
  - thermal annuloplasty
  - other percutaneous proc
Surgery

Prevention

- Sit and stand properly
- Exercise regularly
  - Daily aerobic exercise for 20 min with stretching and core strengthening
- Attain and maintain a healthy weight
- Manage stress
- Stop smoking
- Eat healthy (a well-balanced, low-fat diet rich in fruits and vegetables)
- Lift safely
- Wear a seat belt
- Use proper sports equipment

How to Lift Objects

- Stand close to the object, and if you'll be placing it on a high shelf, make sure you're also close enough to the shelf.
- Stand with your feet shoulder-width apart and bend your knees—instead of bending from the waist—to pick up the object.
- As you lift, draw on your core strength by tightening your stomach muscles.
- Your leg muscles (not your back muscles) should do most of the work, so do not lock your knees as you lift.
- To avoid twisting your body, especially while holding the object, point your toes in the direction you want to move and pivot in that direction.
- For especially heavy objects, get help.

Thank You!