



Current Concepts of Low Back Pain

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Low Back Pain

- 28% population reports LBP in past 3 months (CDC 2010)
- 60% recurrence rate (Turner et al, 1992)



Low Back Pain

- In **most cases**, low back pain is mild and disappears on its own
 - Within 6 weeks 90% of episodes will resolve

Low Back Pain

- Acute (< 2 weeks)
 - Stay active (avoid bedrest)
 - Medications
 - Follow up with health care professional
- 2 Weeks: seek care
- 6 Weeks: multidisciplinary approach
 - Avoid disability

Psychosocial Education

- Brief psychosocial education reduces incidence of LBP (George et al, 2011)
 - Understand anatomical causes
 - Favorable natural history
 - Decrease fear-avoidance

Medical Emergency

- Low back pain
 - Loss of bowel or bladder control
 - Numbness in the groin or inner thigh



Types of Low Back Pain

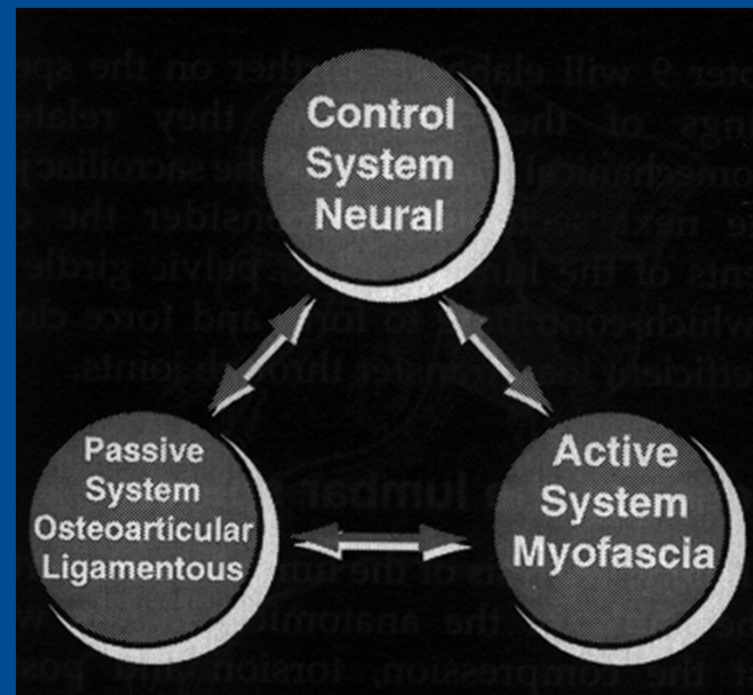
- Acute
- Recurrent
- Chronic

Causes

- Overuse
- Strain
- Repetitive motion
- Prolonged sitting
- Stress/Emotion
- Inability of muscles, ligaments, and joints to work as they should

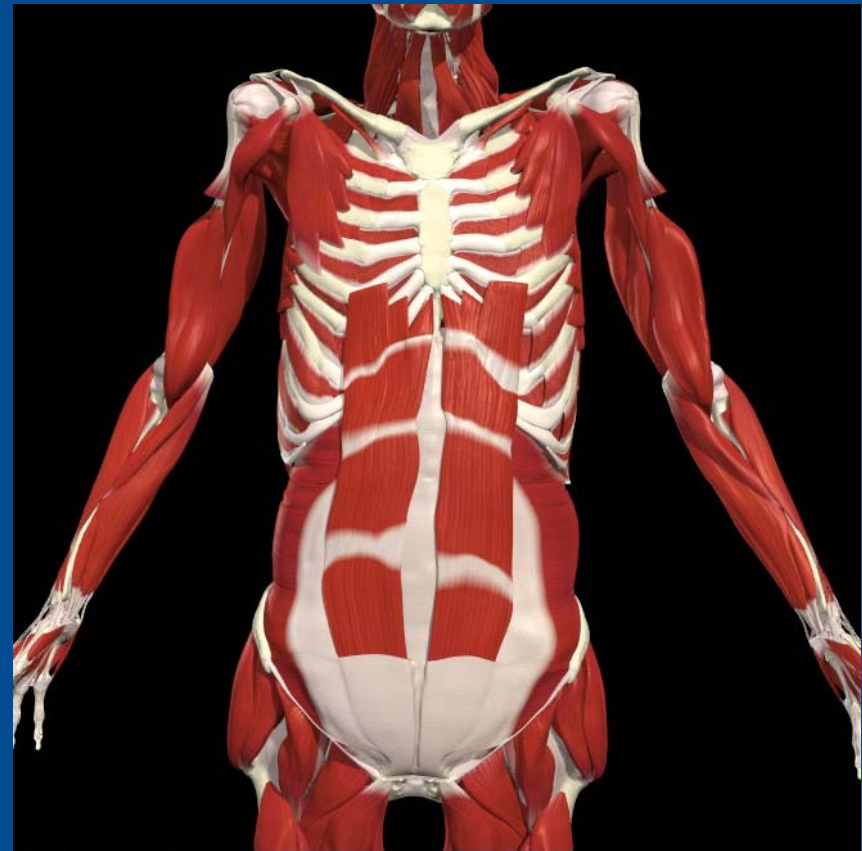
Strength

- The lumbar spine is very unstable without muscular control (Panjabi, 1992)



Core Defined

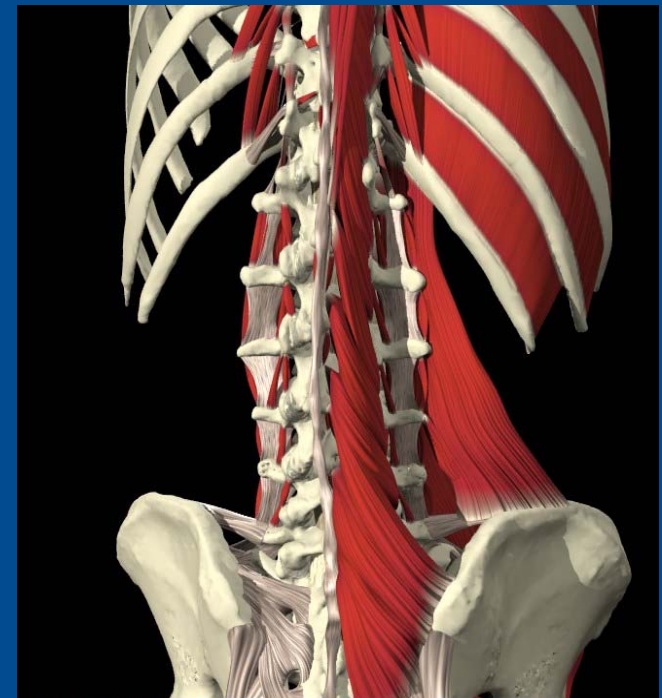
- Area between the sternum and the knees
 - Abdomen
 - Lumbar Spine
 - Pelvis
 - Hips



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Function

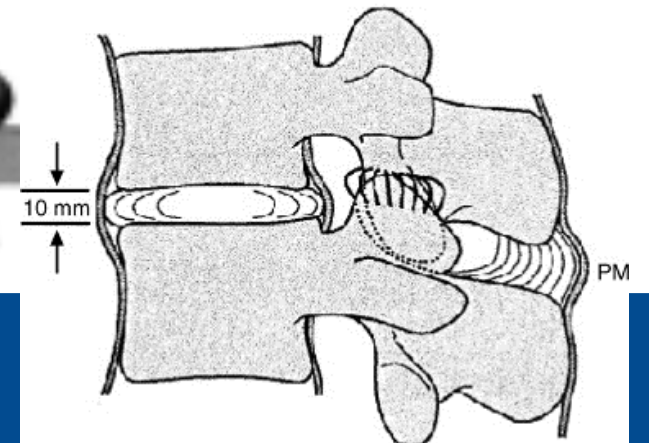
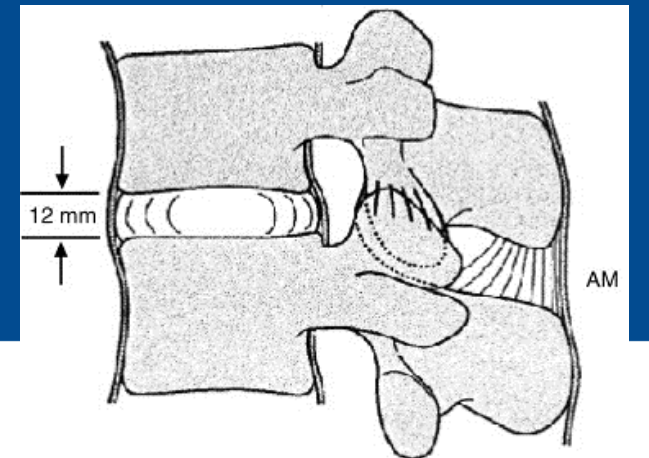
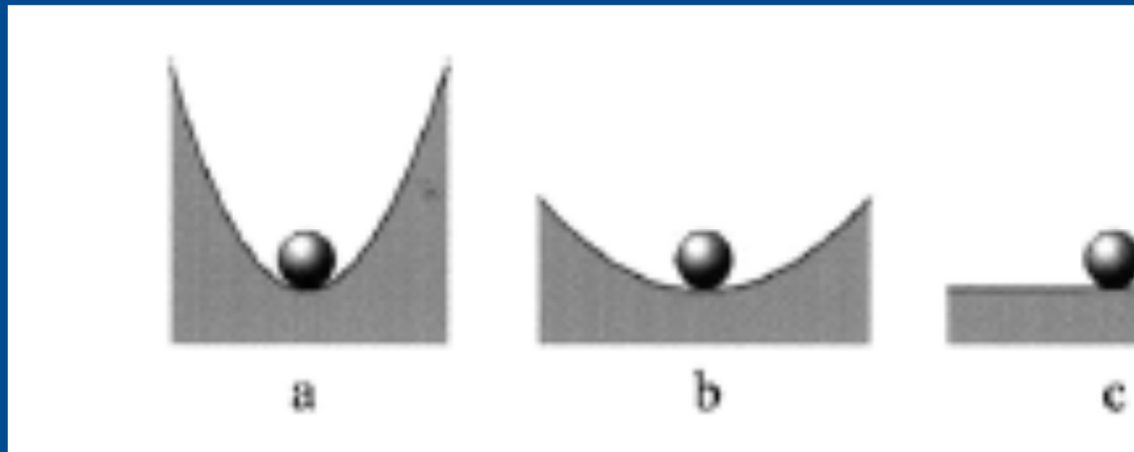
- Coordinated, properly sequenced muscle activity increases spine stiffness/rigidity
 - Trunk Muscles: Spine
 - Rigging: Ship Mast



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Low Back Pain

- Lumbar Segmental Instability



Common Conditions

- Degenerative disk disease
- Lumbar spinal stenosis
- Fractures
- Herniated disk
- Osteoarthritis
- Osteoporosis
- Tumors of the spine
- **Often not able to identify specific cause of pain**

Low Back Pain

- Not all low back pain is the same
 - Treatment should be tailored to address specific symptoms and condition
- Identify contributing factors
- Design treatment plan

Low Back Pain

- Difficult to identifying the involved anatomical structure (Abenhaim et al, 1995)
 - 90% of patients do not have precise diagnosis
- Treatment classifications
 - Cluster of common signs and symptoms (Delitto et al, 1995; George and Delitto, 2005)
 - Matched to treatment strategy

Long Term Effects

- Patients who received specific exercises experienced fewer recurrences of LBP than controls (Hides et al, 2001)
 - Exercises focused on multifidus
- Recurrence Rates
 - Year 1: 30% vs 84%
 - Year 2: 35% vs 75%

Management

- Mobility of joints and soft tissues
 - Manual therapy, manipulation, flexibility
- Strengthening and endurance
 - Aerobic exercise
- Education
- Ergonomics
 - Lifting, bending, sitting, and sleeping
- Pain relief
 - Ice, heat, electrical stimulation
 - Medications

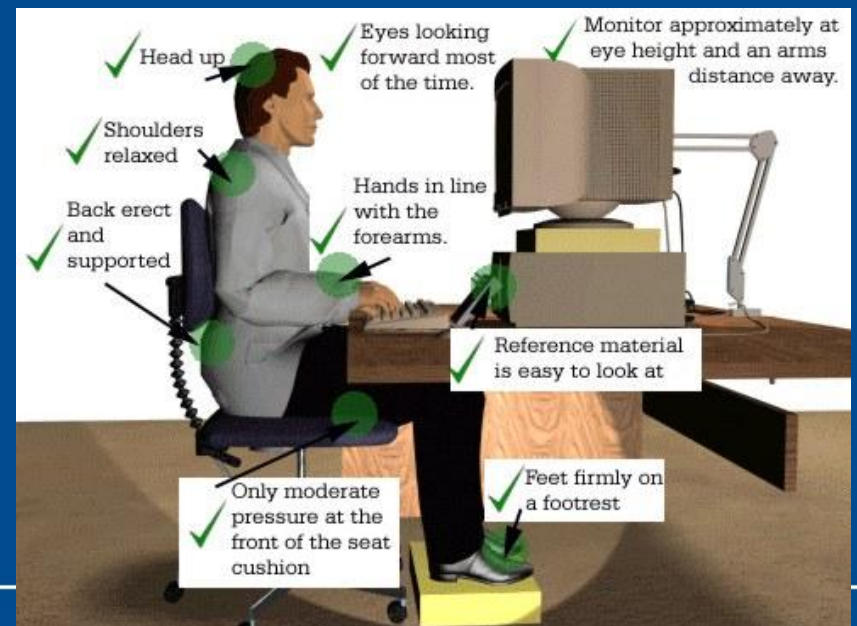
Education and Prevention

- Avoid
 - End ranges of motion
 - Spine overload
 - Exacerbating activities
 - Prolonged sitting
- Promote
 - Proper posture
 - Muscle endurance
 - Physical activity
 - Safe exercises and healthy alternatives
 - Proper lifting techniques



Desk Ergonomics

- Use upright chair with good support
 - Feet on floor
- Screen eye level
- Mouse close to body
- Take breaks





EXERCISE

Exercise Evidence

- Recent systematic review regarding exercise (Colle et al, 2002)
 - Chronic > Acute



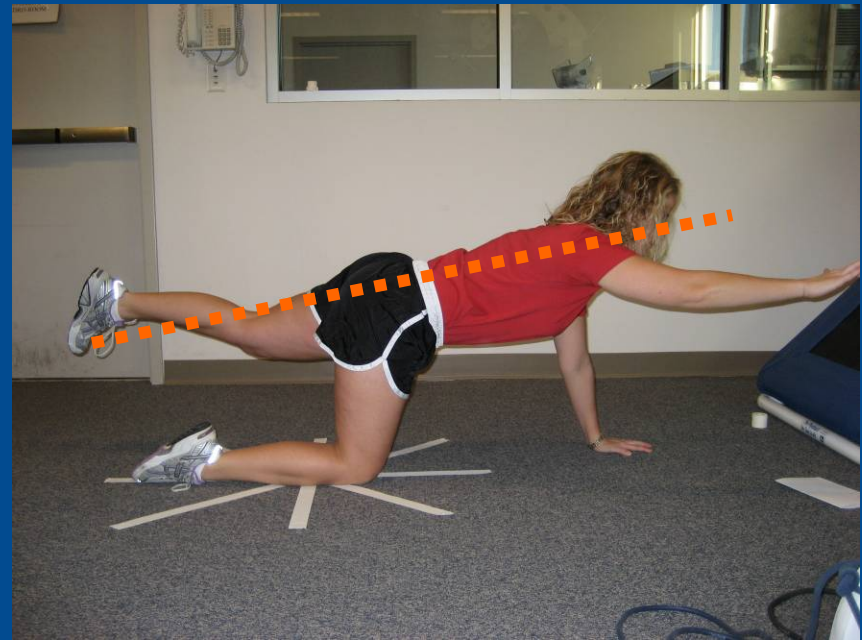
The Best Exercise?

- Walking (Nutter, 1988)
 - Produces low levels of passive tissue loading and prolonged activation of supporting musculature
 - Fast walking with arm swing



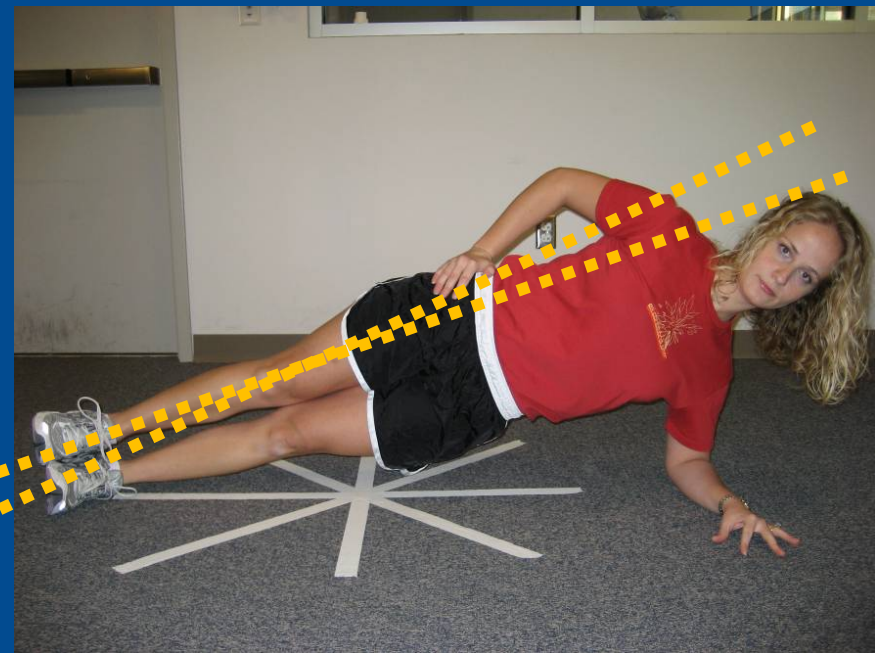
Quadruped Arm/Leg Extension

- ~27% MVC for spinal extensors
 - Load is over 3000N
- Maintain neutral spine
 - Do not let back curve or hyperextend
 - Dowel, ball, cup



Side Bridge

- Produces greatest muscle activity
 - 54% MVC
- Low compressive loads
 - 2500 N
- Knee, hip, shoulder in straight line



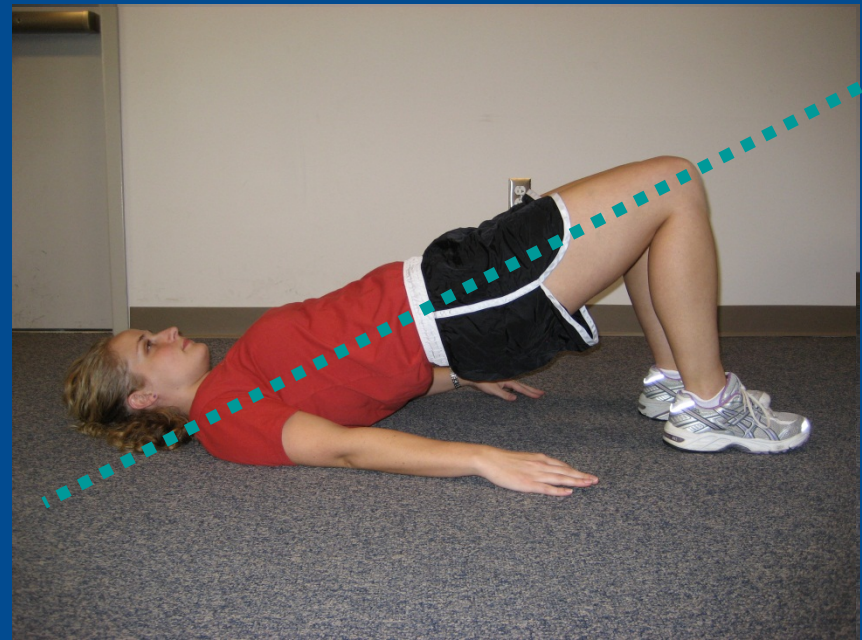
Trunk Curl

- Keep one leg straight and one bent
 - Helps maintain neutral curve of low back
 - Do not flatten low back to floor
- Lift shoulders from floor
- Rotate at rib cage
- Shoulders should not come up any more than six inches



Bridging

- Raise hips off of ground
- Maintain neutral spine
- Do not hyperextend back
- Keep knees, hips, and shoulder in straight line



Balance

- Single Limb Stance
 - Stand on one leg
 - Hold counter if needed
 - 30 seconds
 - Progress to eyes closed



General Exercise Progression

- Slow → Fast
- Stable → Unstable
- Eyes Open → Eyes Closed
- Normal Respiratory Rate → Elevated Respiratory Rate



Key Concepts

- The number one predictor of future injury is a previous injury
- Most core stabilizing muscles are slow twitch muscles
 - They respond better with pause of 3-5 sec at end range of exercise motion
 - Maintain slight (10-30% max) abdominal contraction (bracing) to provide optimal stability during all exercises

Key Concepts

- Exercises should be performed multiple times per week
- Emphasis should be placed on proper technique and development of endurance, not amount of weight lifted or strength gains

Resources

- Low Back Pain: Prevention and Management
 - <http://www.moveforwardpt.com/SymptomsConditionsDetail.aspx?cid=d0456c65-7906-4453-b334-d9780612bdd3>
 - <http://www.moveforwardpt.com/asset.axd?id=7531c13f-9696-419a-9c72-6eddb3bea462>