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
Function

• Coordinated, properly sequenced muscle activity increases spine stiffness/rigidity
  – Trunk Muscles: Spine
  – Rigging: Ship Mast
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 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/asset.axd?id=7531c13f-9696-419a-9c72-6eddb3bea462