Introduction

• The goal of this lecture is to provide practical information regarding neck and shoulder pain including simple treatment strategies and when to seek medical attention

• In order to accomplish these goals, we will review the function of the spine and shoulder as well as the relevant anatomy, and common pathologies

• We will also discuss how to treat and prevent pain and injury through the use of therapeutic exercise
Functions of the Spine and Shoulder

• Functions of the Spine:
  • Establish our posture
  • Provides an attachment site for many muscles
  • Transmit force
  • Protect the spinal cord

• Functions of the Shoulder:
  • Provide extensive range of motion to the upper extremity
  • Increase our ability to manipulate objects
The Spine

- **33 Vertebrae (Approximately)**
  - 7 Cervical
  - 12 Thoracic
  - 5 Lumbar
  - 5 Sacral (fused)
  - 4 Coccygeal (fused)
The Normal Spine

- 7 Cervical vertebrae
- 12 Thoracic vertebrae
- 5 Lumbar vertebrae
- Sacrum
- Coccyx
The Vertebrae

- Posterior view
- Superior articular process
- Transverse process
- Lamina
- Vertebrae foramen
- Pedicle
- Anterior
- Body (centrum)
- Spinal process
- Vertebrae arch

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The Intervertebral Disc
The Shoulder Complex

- Clavicle
- Coracoid process
- Acromion
- Glenoid cavity
- Scapula
- Humerus
The Rotator Cuff

Muscles of the Rotator Cuff

Front View

Subscapularis
Supraspinatus
Infraspinatus

Back View

Supraspinatus
Teres Minor

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Common Neck and Shoulder Pathologies

**Neck Pathologies:**
- Spinal Stenosis
- Spondylosis
- Spondylolysis and Spondylolisthesis
- Intervertebral Disc Disorders

**Shoulder Pathologies:**
- Impingement Syndrome
- Rotator Cuff Tear
- Labral Tear
- Osteoarthritis
Spinal Stenosis
Cervical Spondylosis

Figure 2. X-ray of the neck (side view) showing cervical spondylosis
Cervical Spondylolisthesis
Cervical Herniated Disc
Subacromial Impingement

- Impingement accounts for 90% of all RC tears!
Incidence of RC Tears

- 20% of individuals over 50
- 50% of dominant shoulders by age 70
- 80% by age 80
Glenoid Labrum Tear
Shoulder Osteoarthritis
When to Seek Help?

- Sensory changes such as numbness or tingling in the hand or fingers
- Weakness in your shoulder, elbow, wrist or hand
- Gross loss of range of motion
- Systemic symptoms such as headaches, dizziness, or nausea that are associated with changes in head and neck position
Where Do We Go From Here?
Stretch What’s Tight, Strengthen What’s Weak

- **Try performing these simple exercises periodically throughout the day:**
  - Chin Tuck
  - Crossover Shoulder Stretch
  - Doorway Pec Stretch
  - Wall Slide
  - Cat/Camel Spine Stretch
  - Side-Lying Trunk Rotation
  - Side-Lying Shoulder External Rotation
Chin Tuck

- Stretches posterior neck musculature while also strengthening the deep neck flexors
- Perform 10 repetitions with a 5 second hold
Crossover Shoulder Stretch

- Stretches the posterior shoulder musculature
- Perform 2-3 rounds of 30 seconds
Doorway Pec Stretch

- Stretches the anterior shoulder musculature
- Perform 2-3 rounds of 30 seconds
Wall Slide

- Stretches and strengthens the upper back musculature while also strengthening the abdominals
- Perform 10 repetitions periodically throughout the day
Cat/Camel

- Stretches the cervical, thoracic, and lumbar spine
- Perform 1-2 rounds 10 repetitions in a slow and controlled manner
Side-Lying Trunk Rotation

- Stretches the anterior shoulder musculature and thoracic spine
- Perform 1-2 rounds of 10-15 repetitions per side in a slow and controlled manner
Side-Lying Shoulder External Rotation

• Strengthens the posterior rotator cuff musculature
• Perform 2-3 rounds of 10-15 repetitions in a slow and controlled manner
REMEMBER!

- If any of the previously recommended exercises or stretches causes you acute pain, **DO NOT DO THEM!**
Conclusions

• Neck and shoulder pathology is something that is extremely common across a variety of populations.

• Understanding some of the underlying pathologies, when to seek treatment, and how to address your pain and dysfunction through exercise can help you manage your symptoms and ultimately assist you in achieving a full recovery.