

MSK INTERVENTIONS- SHOULDER MECHANICS APPLICATION QUESTIONS

1. Rob has weak abduction. How would you distinguish between weakness in the deltoid and weakness in the trapezius?

Force couple indicates that the lower trapezius is an upward rotator during the shoulder motion. You can look at the scapular motion and stability during movement, to make sure the trapezius is working properly. You can palpate the scapulae or visually monitor the motion.

If you provide resistance to the abduction movement and the arm is unable to hold the position, then it means that the problem is the Deltoids. Shrugging on shoulder only tests for upper trap.

2. Jody's right shoulder has been immobilized for 4 weeks.

- Describe the normal attachments of the capsule of the shoulder joint.

Review Anatomy

The capsule attaches along the rim of the glenoid fossa and extends to the anatomic neck of the humerus. The fibrous capsule of the GH joint is relatively thin and is reinforced by thicker external ligaments. By crossing superiorly over the humeral head, the long head of the biceps also contributes to GH stability.



- Due to immobilization, which portions of the capsule would be tight?

Inferior part (sometimes Axillary pouch) and anterior part

- Would this limit ROM at the shoulder joint? How?

Abduction, External Rotation, Flexion and extension.

On examination, Nancy shows limited anterior glide of the humeral head.

- Based on your knowledge of arthrokinematics of the shoulder which movements of the shoulder complex do you expect will be affected?

External Rotation, Extension, Horizontal abduction

3. Barbara, 24/female, works as a medical transcriptionist. She sits at her workstation for 8-10 hours/day and is allowed 3 breaks. On observing her posture, you notice that she has a slouched/rounded shoulders posture.

- Based on your understanding of anatomy and kinesiology, discuss what changes you would expect in her shoulder girdle and anterior muscles (pectoralis minor) and how these changes would, in turn, affect shoulder motion.

There will be adaptive shortening of thoracic muscles and extended stretching of extended muscles.

Shoulder capsule will be tight. Excessive forward tilt and rotation of scapulae, limited shoulder abduction, external rotation, and extension.

Upper cross syndrome

- Compare the change in length of the pectoralis minor muscle moving from normal (good) posture to slouched/rounded shoulder posture. Would it be possible to use this measure to track progress of a patient?

Length of pectoralis minor would change (shorter). This measure can be used to track progress of a patient (see related article: Measurement of Pectoralis minor muscle length from JOSPT

<http://www.jospt.org/doi/pdf/10.2519/jospt.2008.2723>)

Keep in mind the 2 finger rule for pect minor in supine position.

4. Peter lacks full abduction by about 30 degrees due to limitation in movement of the scapulae. What would you look for in your effort to diagnose the problem? Name the structures that could account for each of the limitation identified.

-Weakness of Deltoids.

-External Rotation of Humerus

-Shortening of thoracic muscles

Also consider checking

-Acromioclavicular joint

-Sternoclavicular joint

5. Which activities require the serratus anterior to stabilize the scapulae?

- Which two activities will challenge the serratus – focus on the movement of the scapula.

Punching or boxing. Serratus anterior is called boxer's muscle. Push up

- Imagine a person who is performing an activity that fatigued their non-dominant serratus anterior. What will be the difference in scapular motion after the muscle is fatigued?

Winging of the scapulae- long thoracic nerve

More winging of scapulae on the fatigue side

Quick Review from Lecture

Complete the following table using the concave convex rule covered in first class.

Glenohumeral joint motion	Roll	Slide
Flexion	Anterior	Posterior
Extension	Posterior	Anterior
Abduction	Superior	Inferior
Adduction	Inferior	Superior
Internal Rotation	Anterior	Posterior
External Rotation	Posterior	Anterior