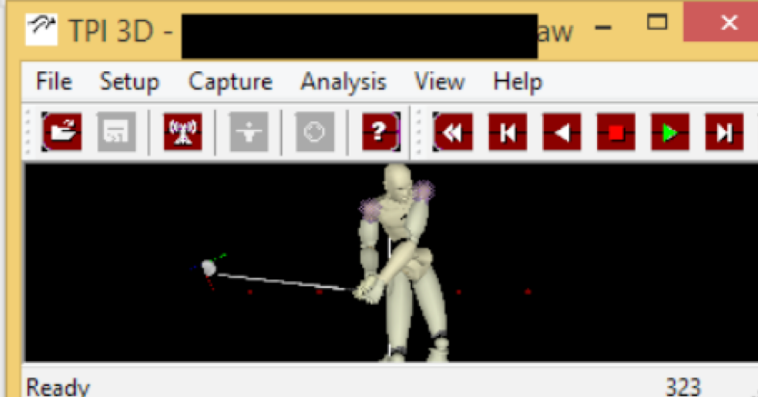
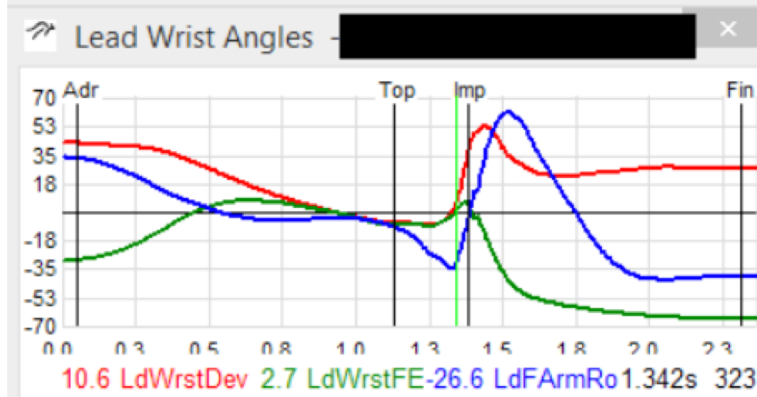
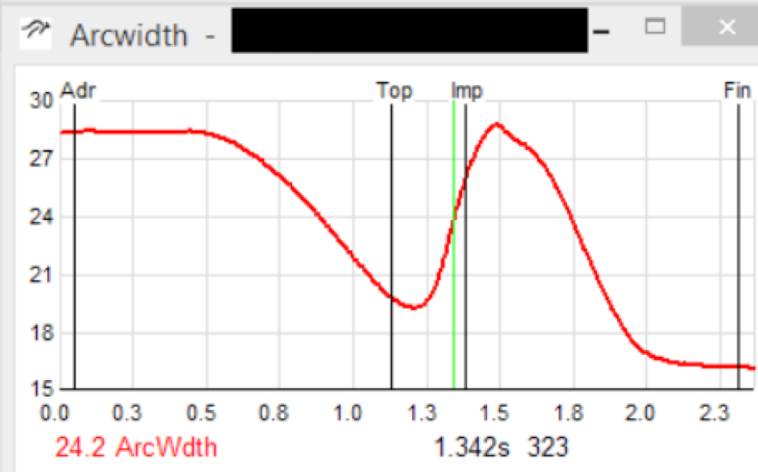
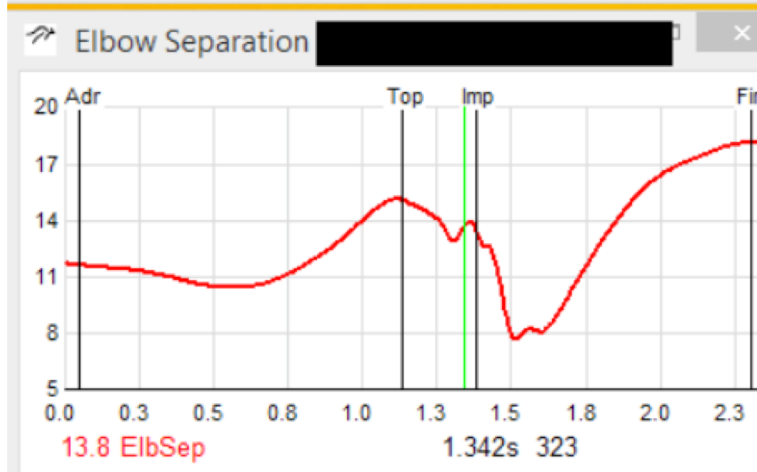
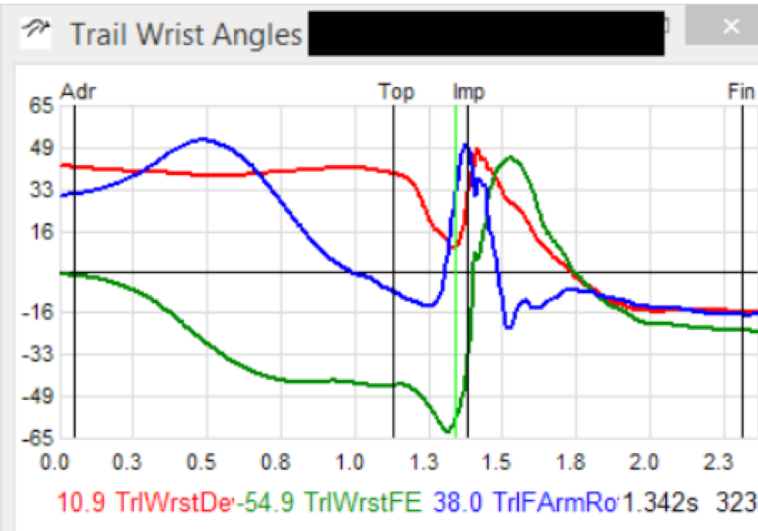
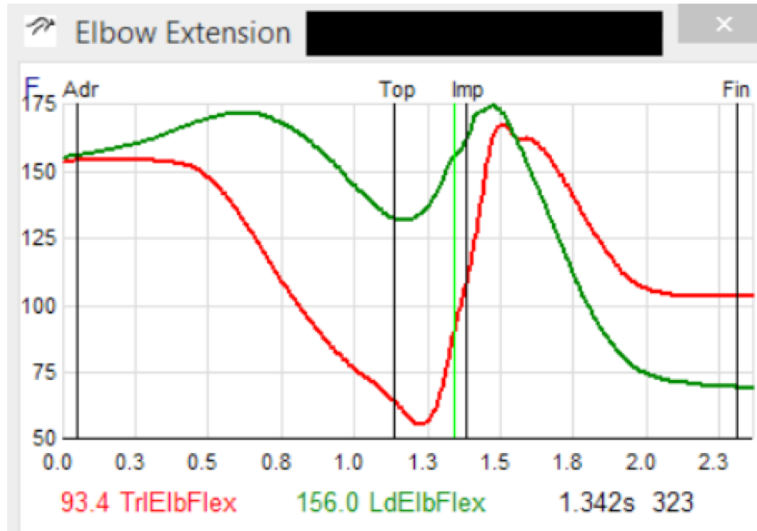
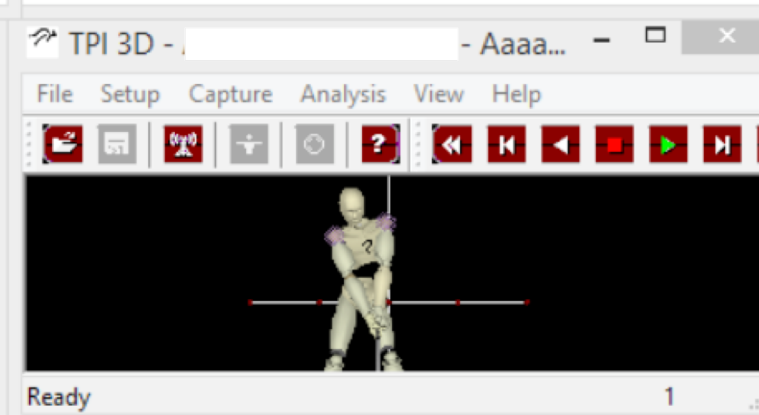
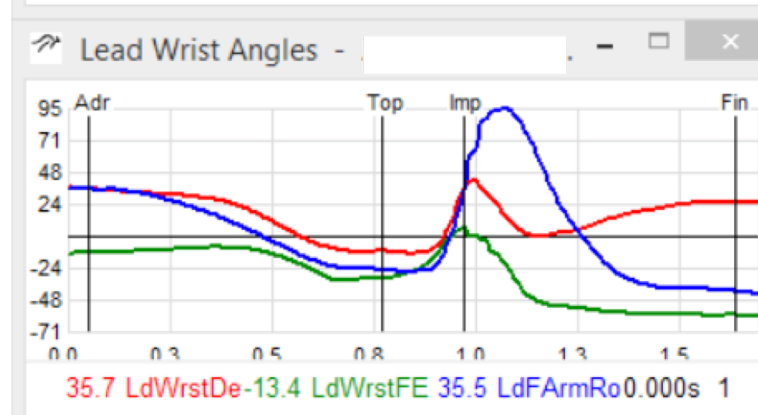
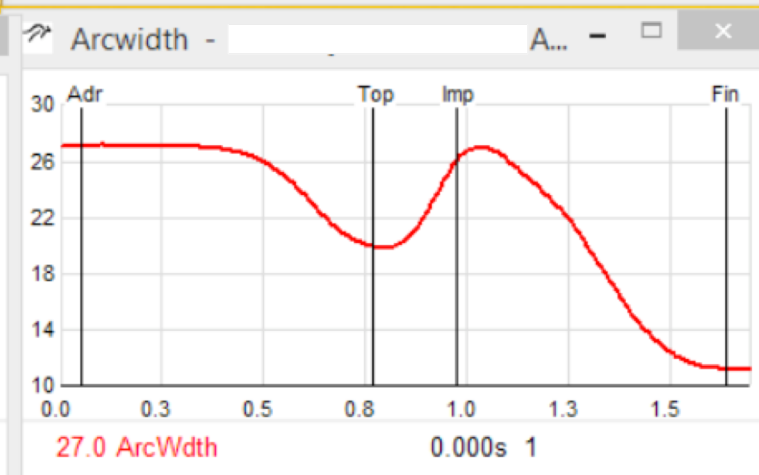
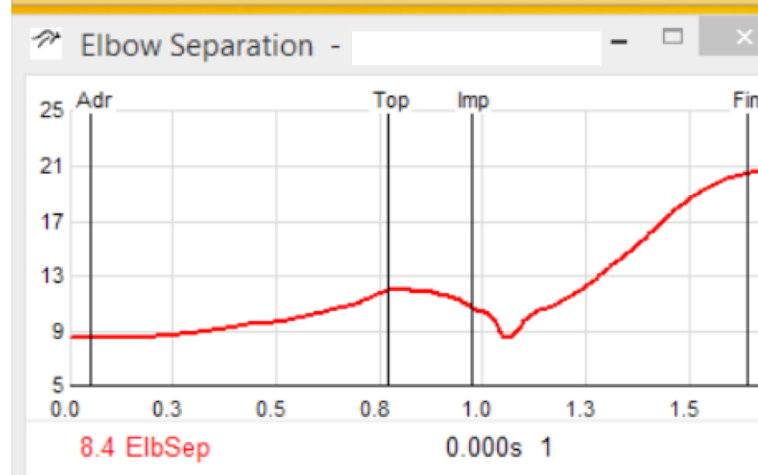
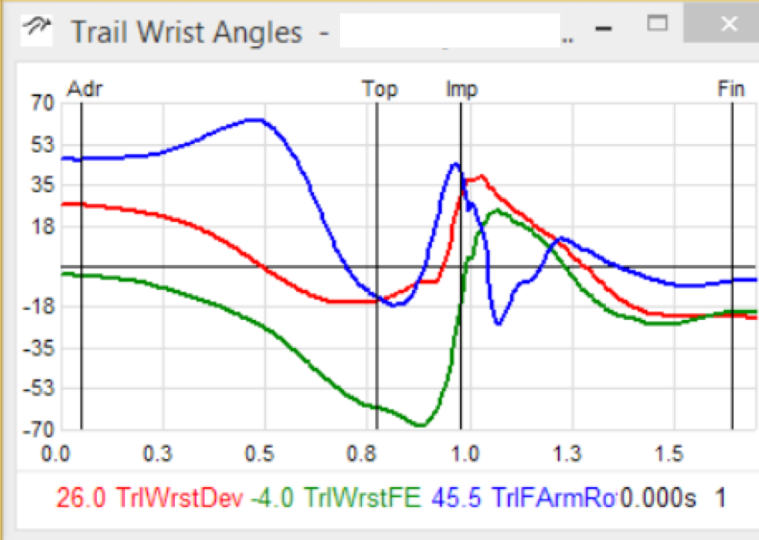
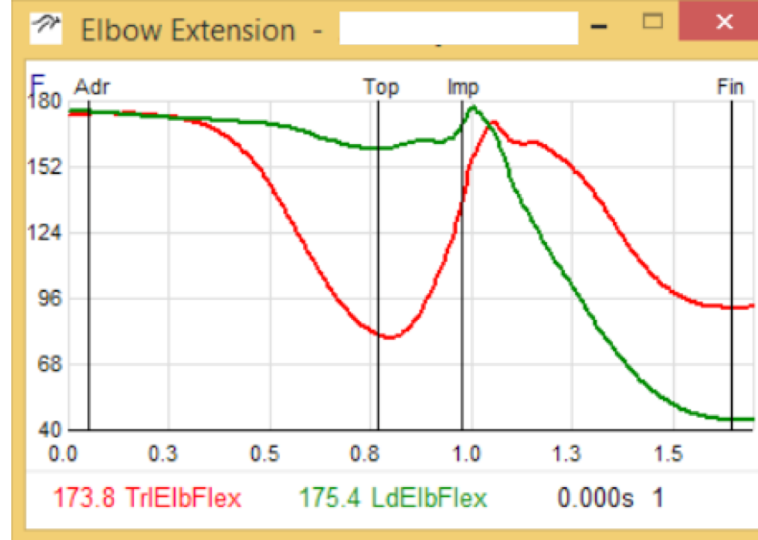
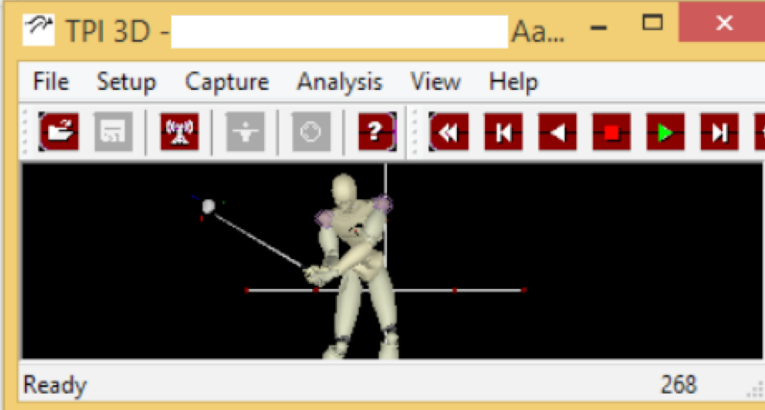
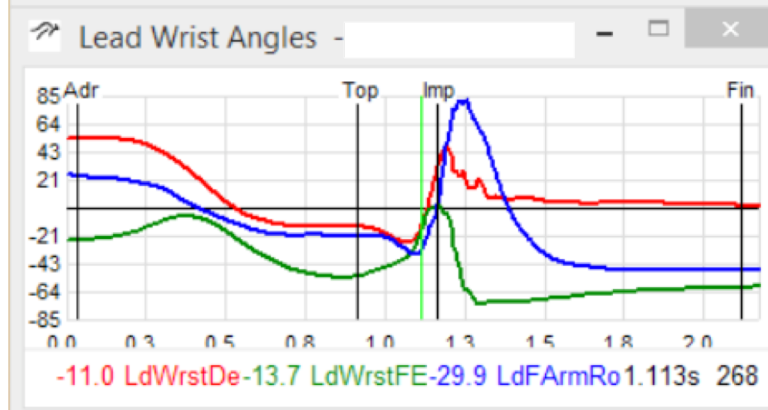
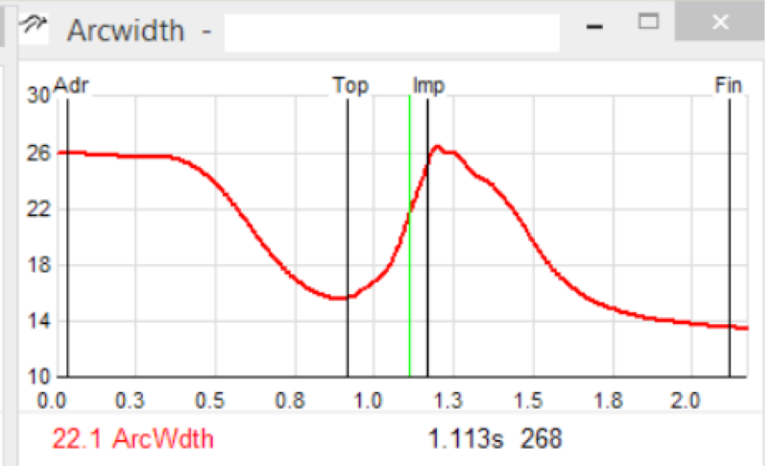
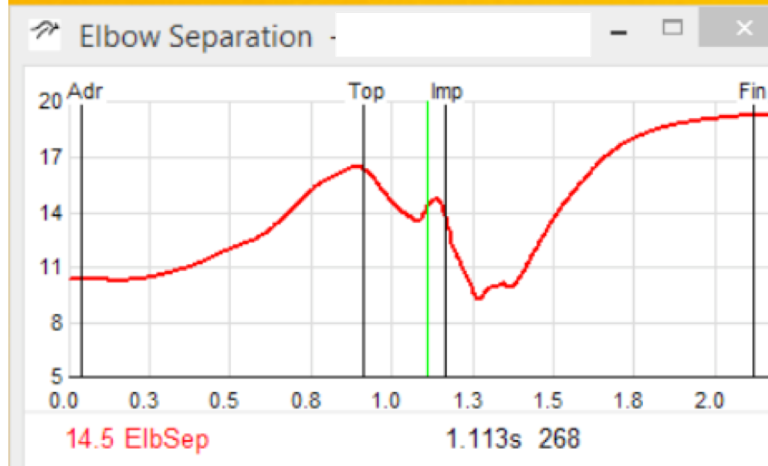
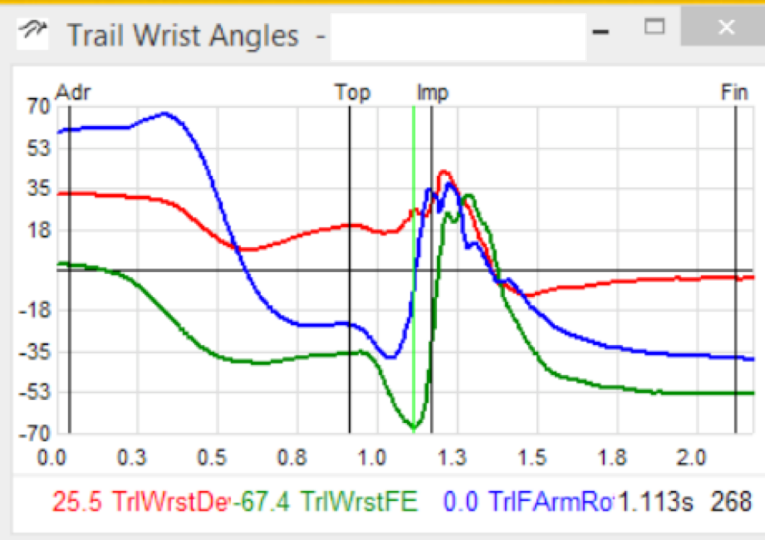
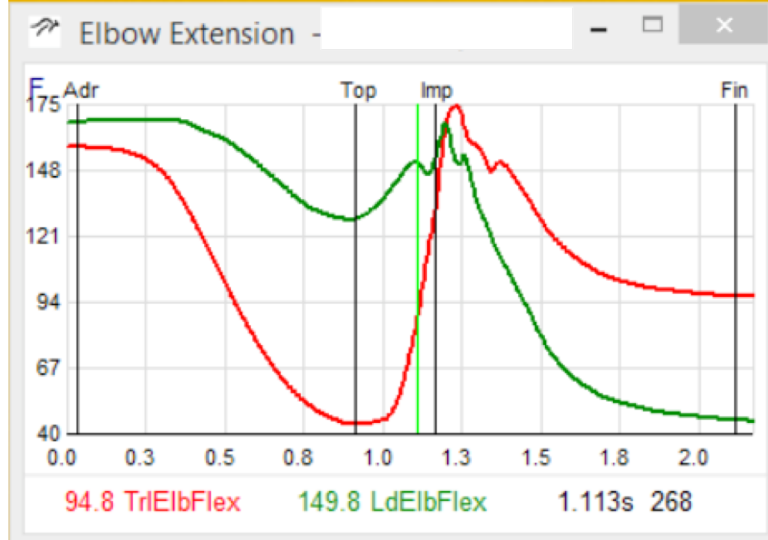


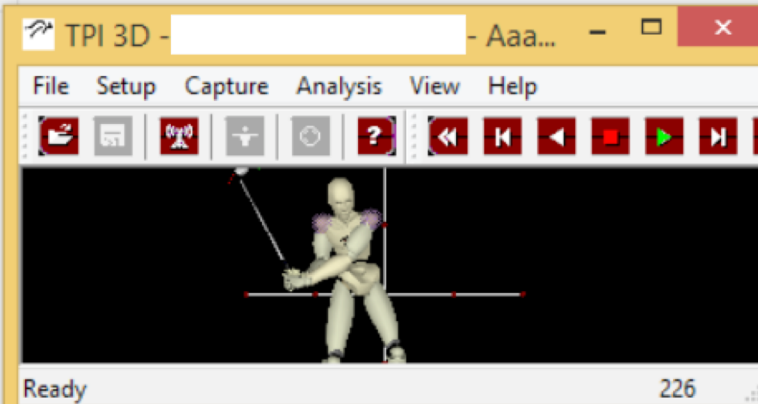
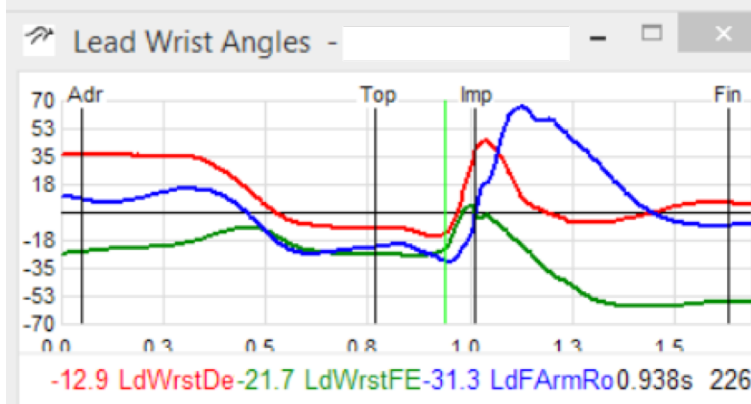
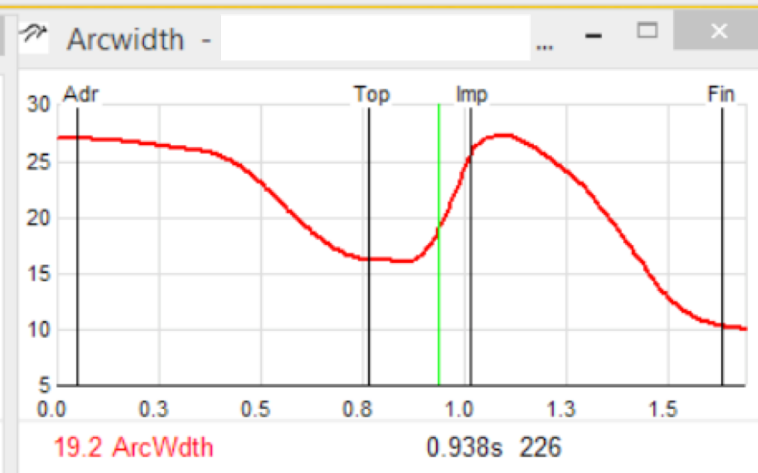
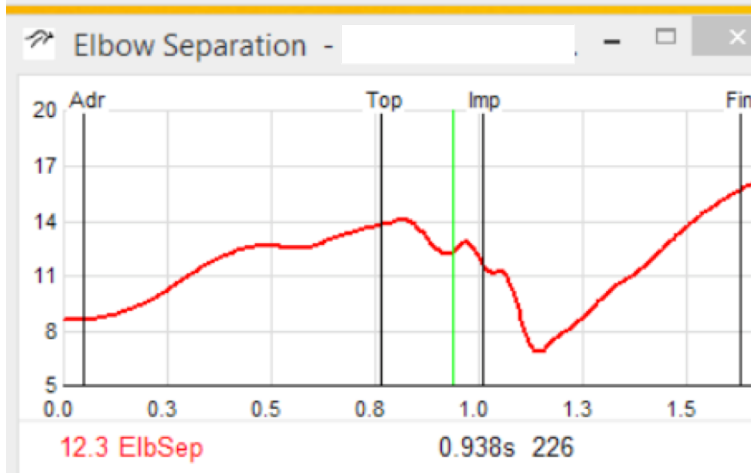
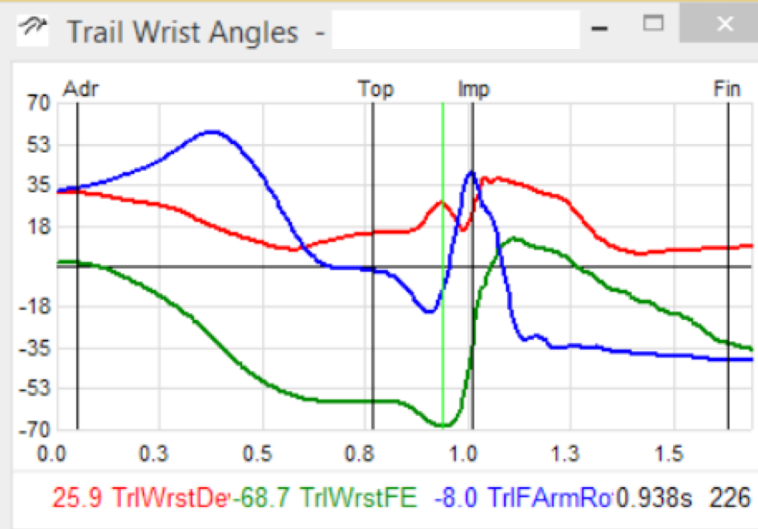
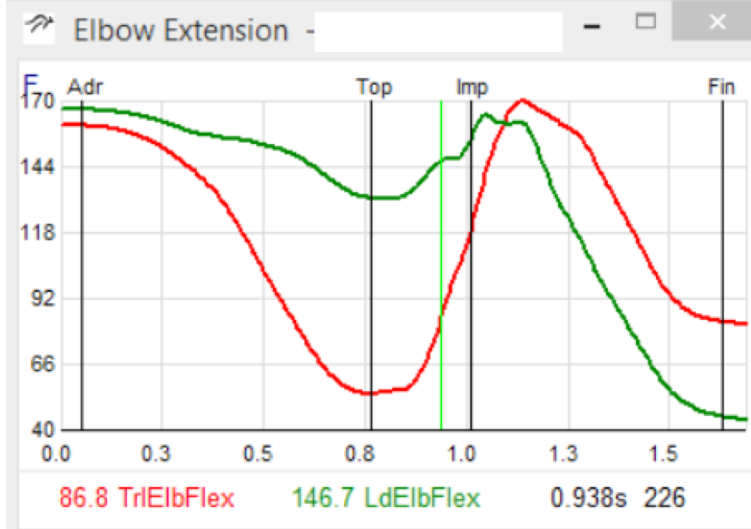
Topics

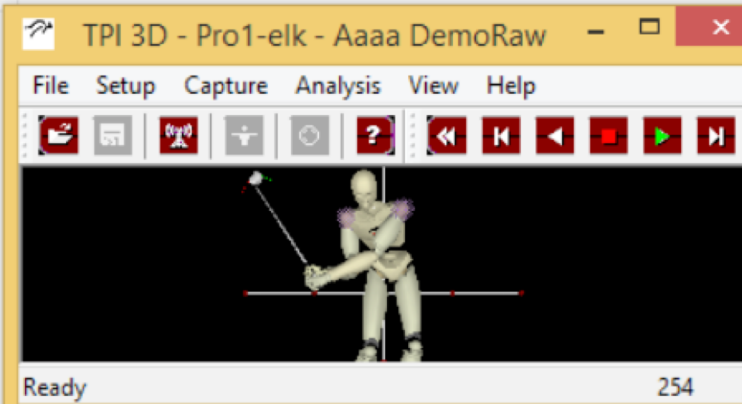
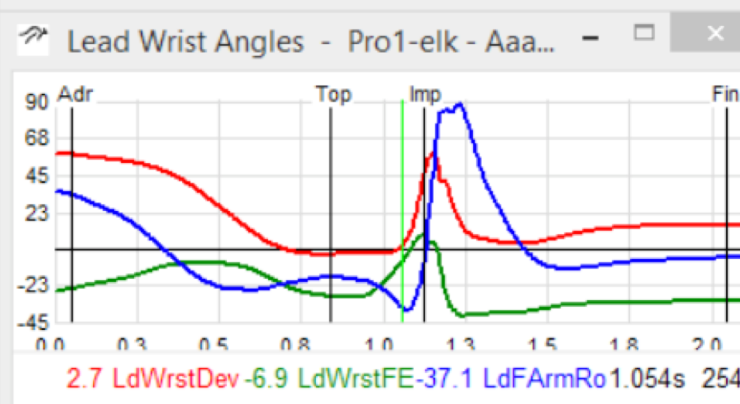
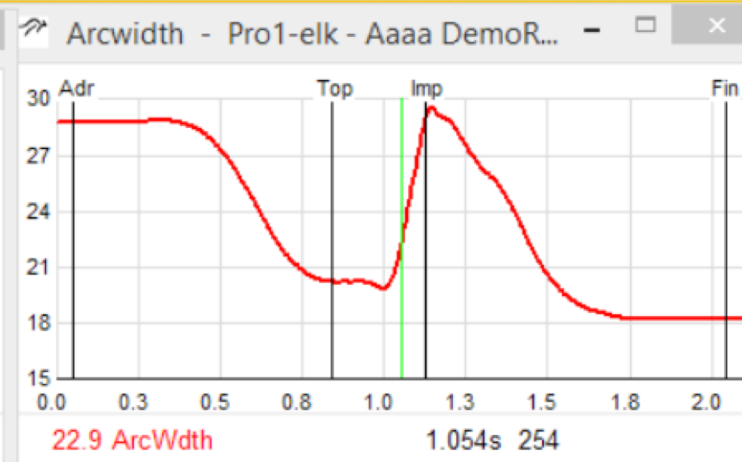
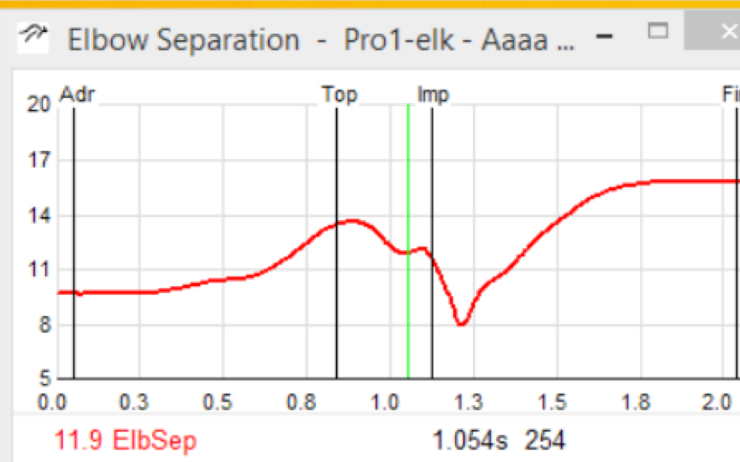
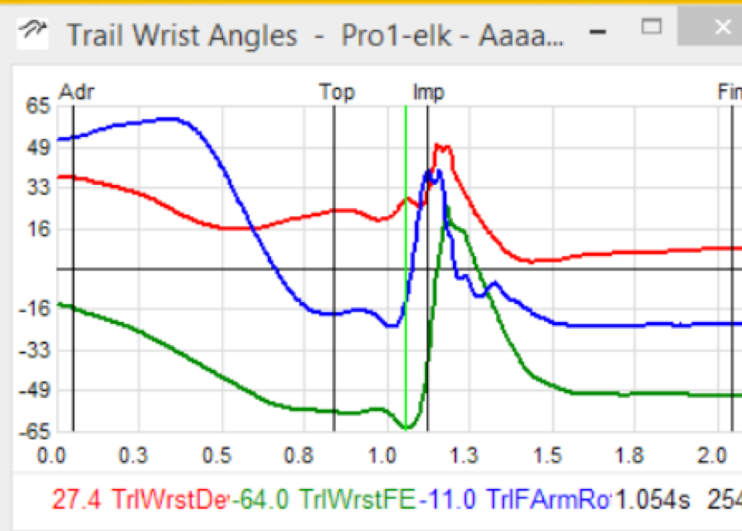
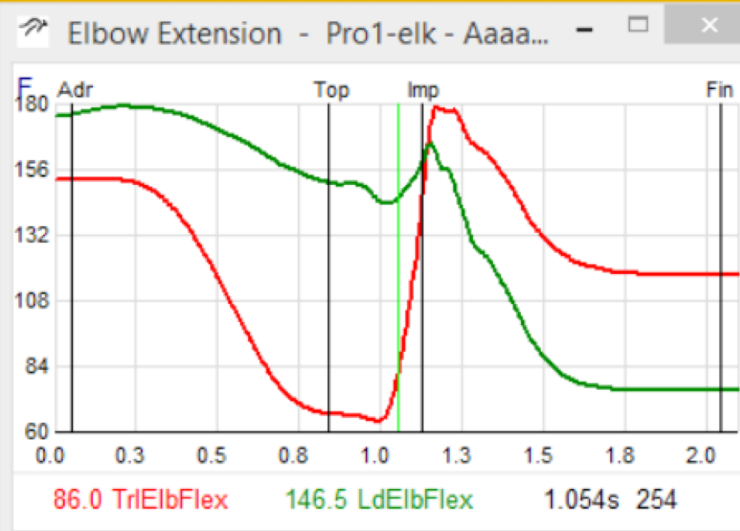
- Wipe – How to see it in 3D? Discussion of key components
- John Dunigan Putting Book – HOLE IT!
- Shoulder Anatomy
- Coaches Questions/Swing Discussions

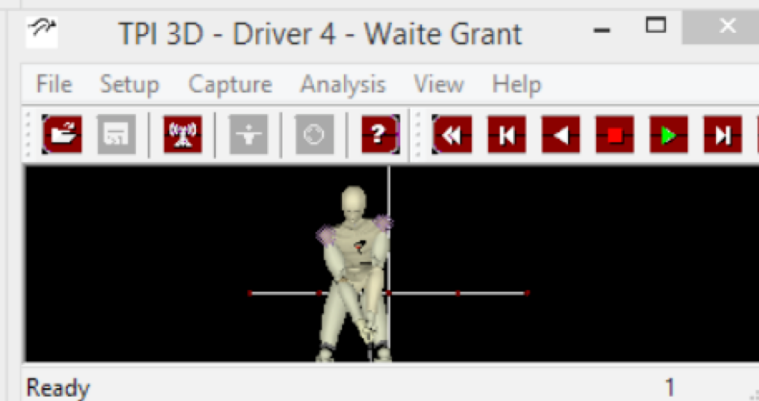
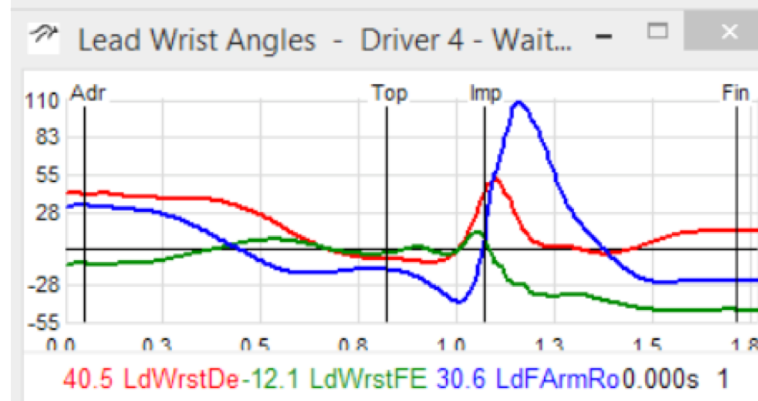
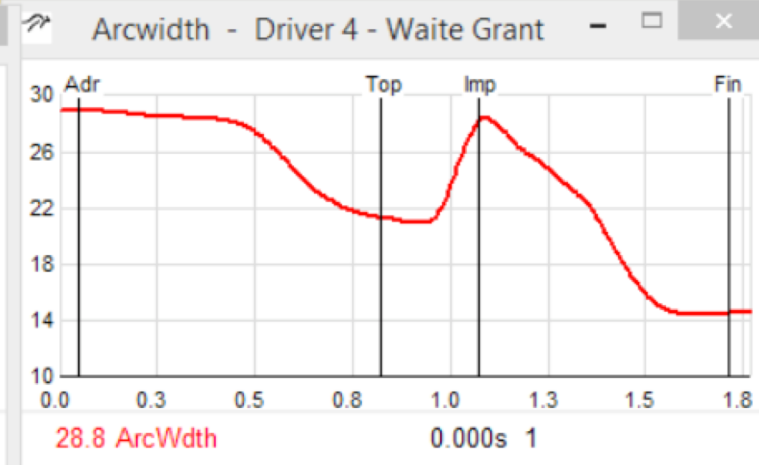
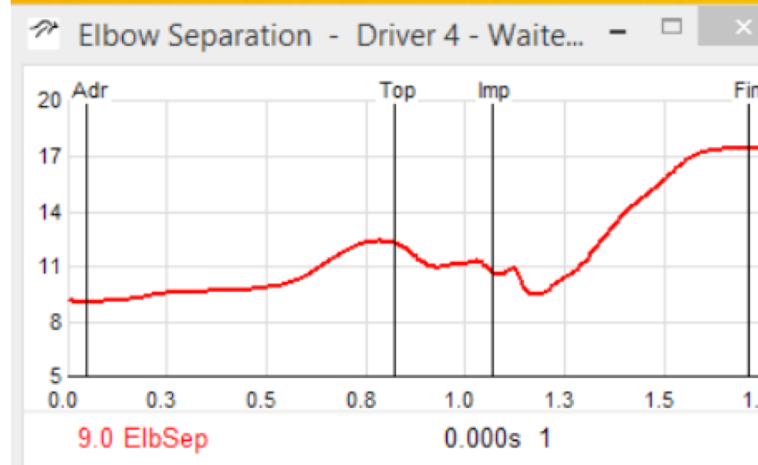
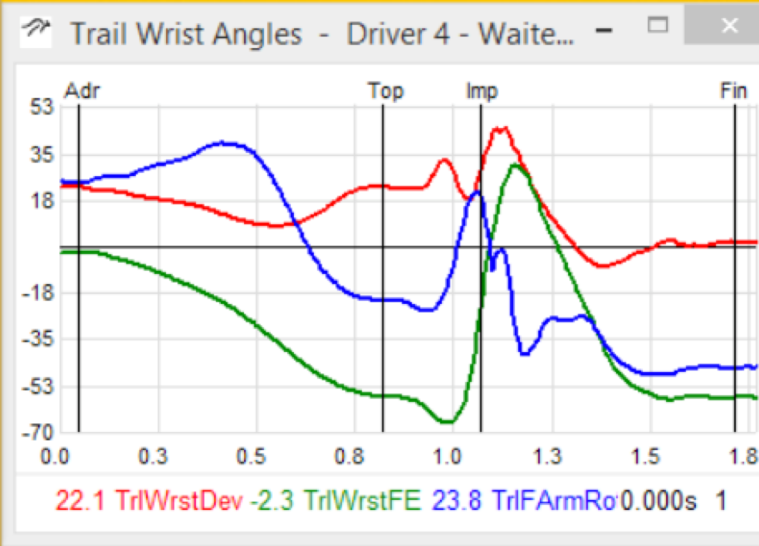
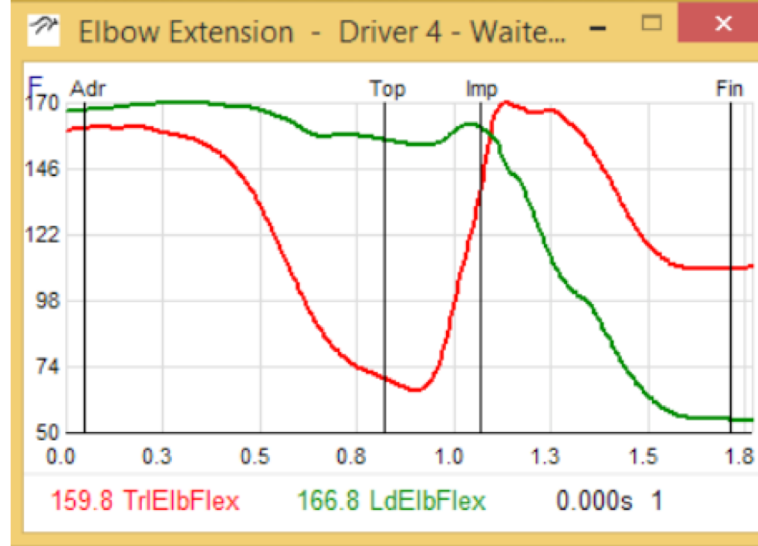


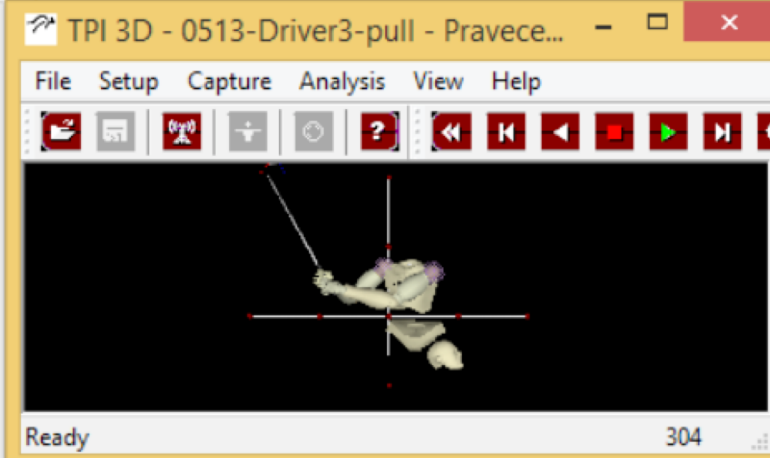
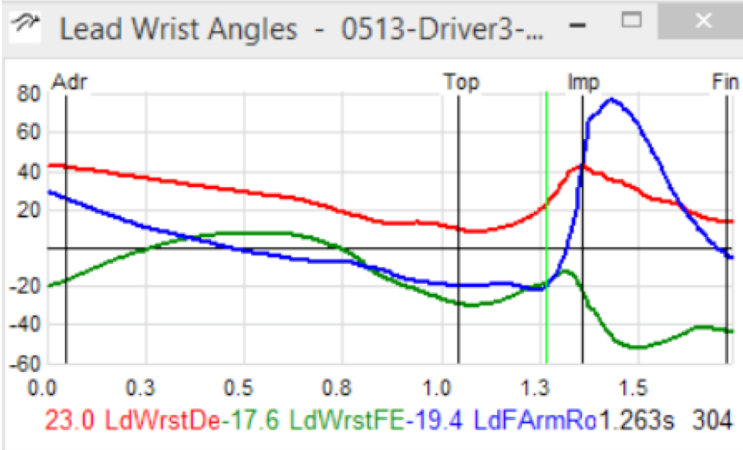
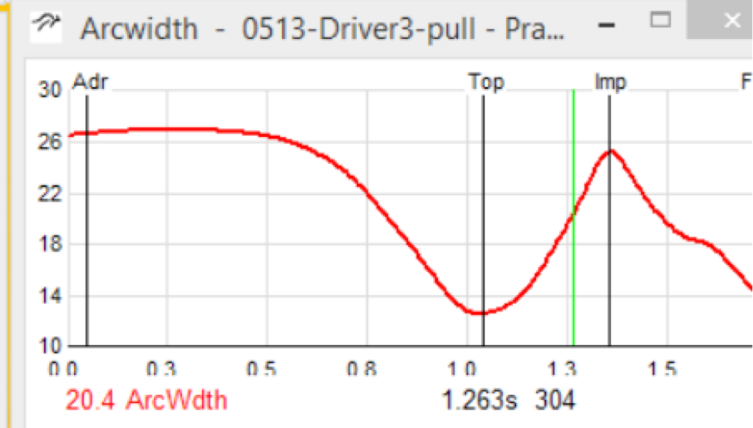
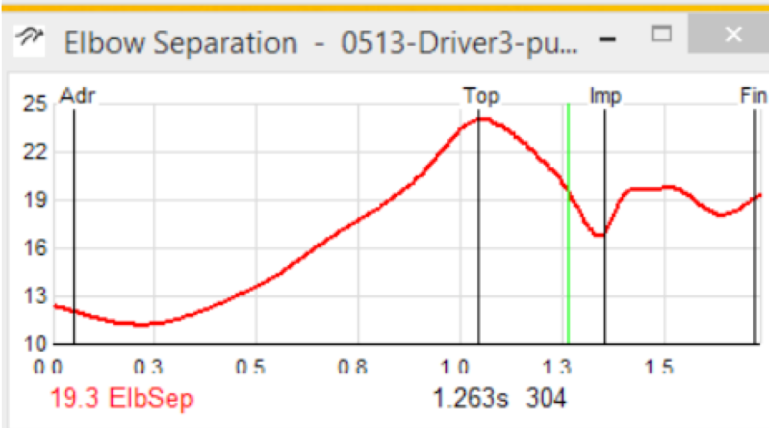
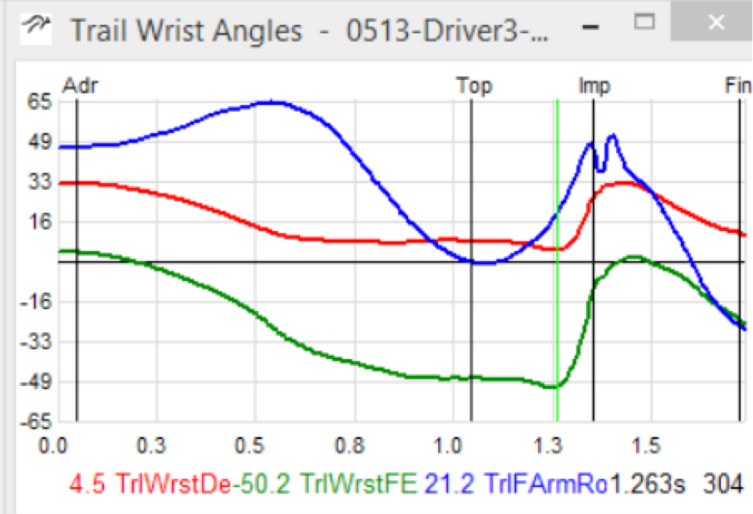
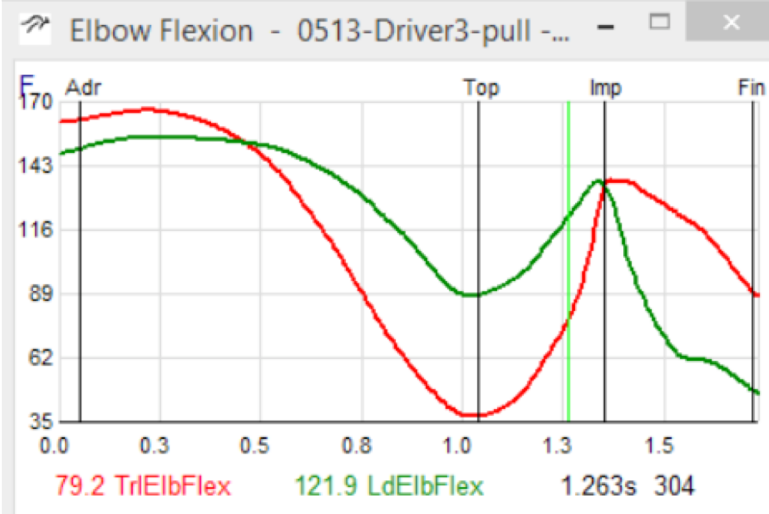


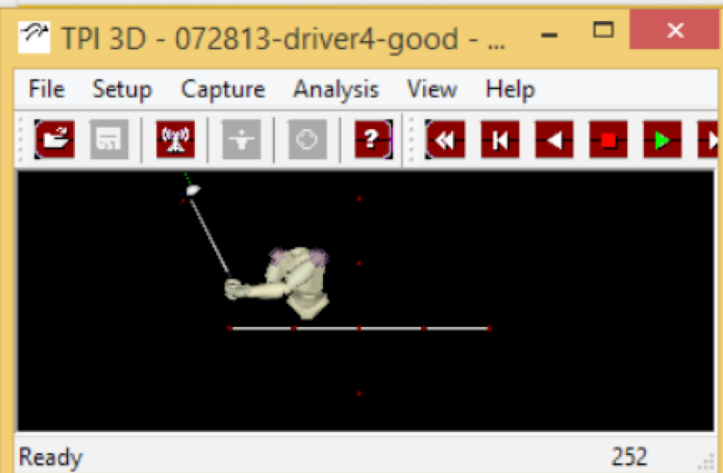
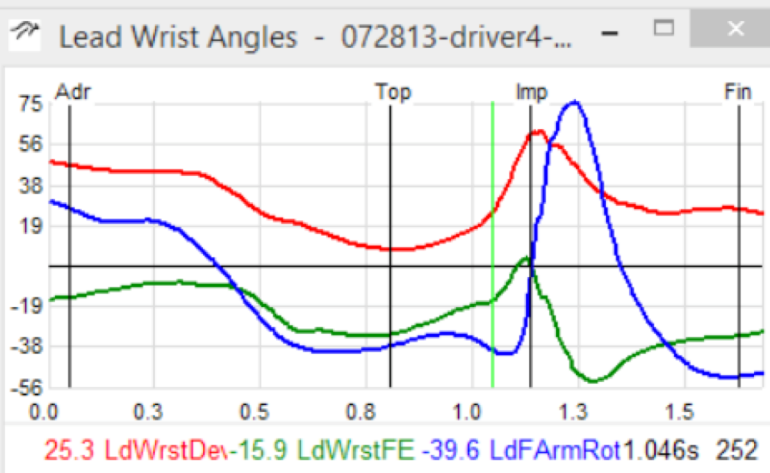
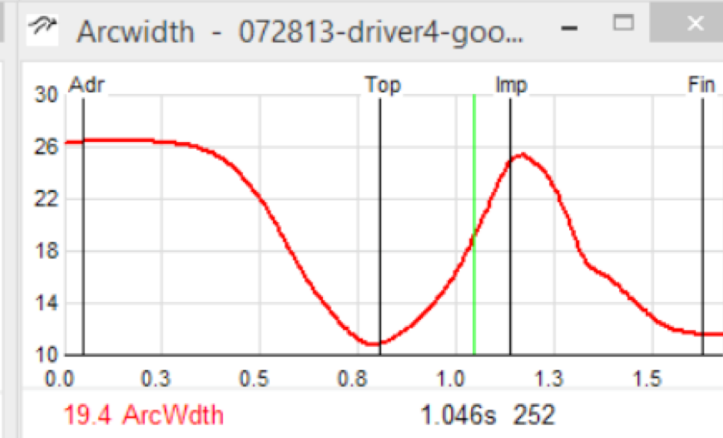
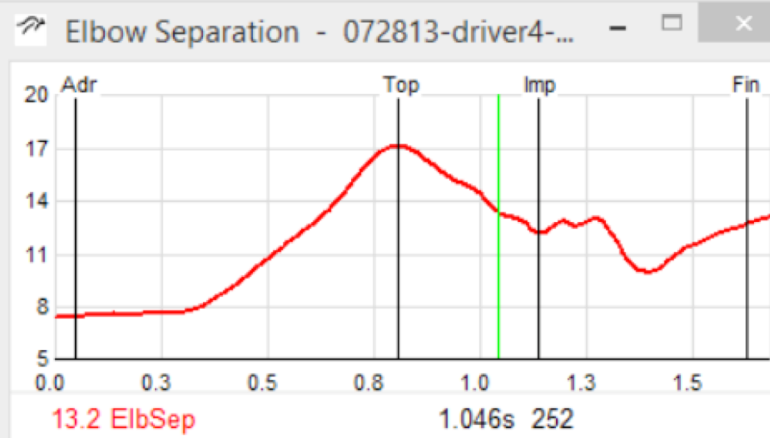
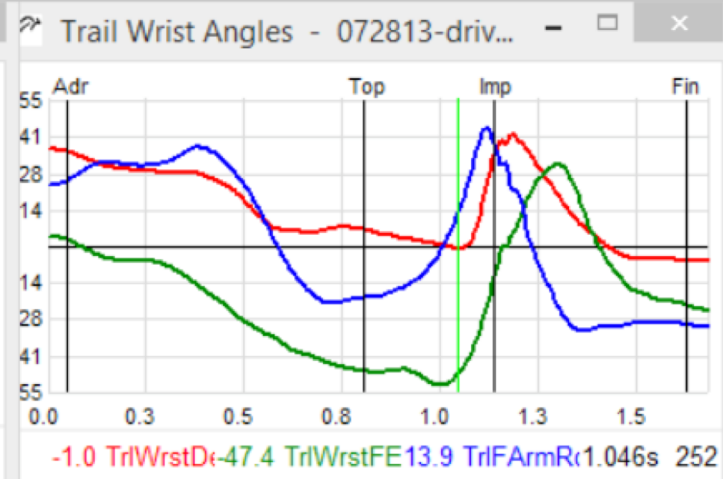
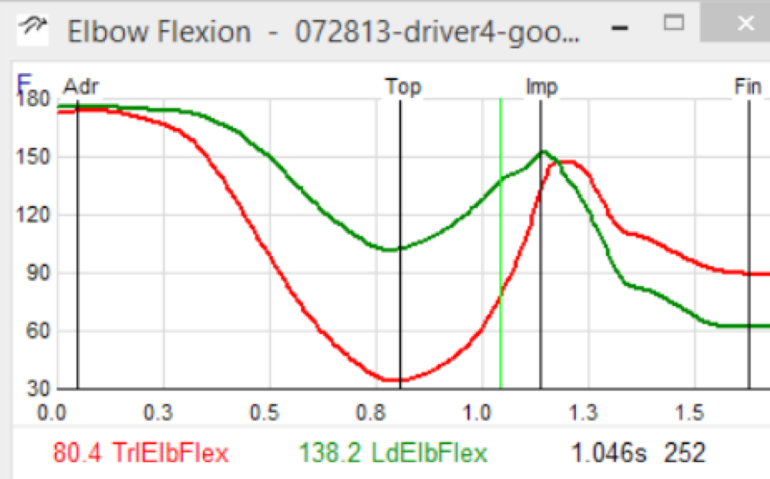


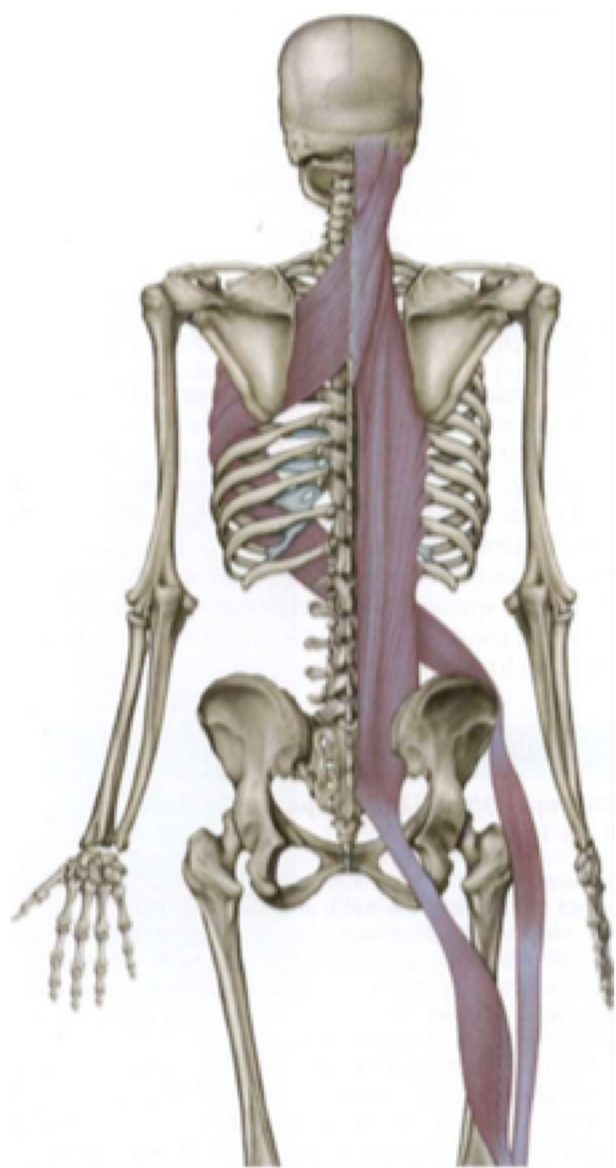






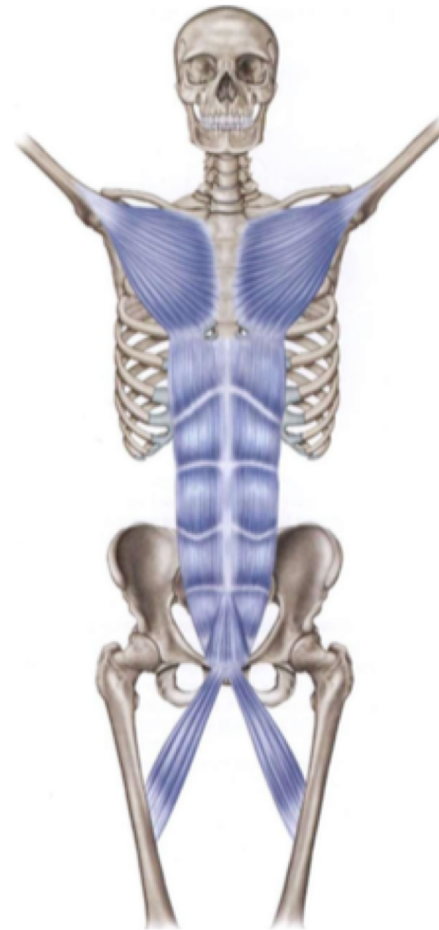




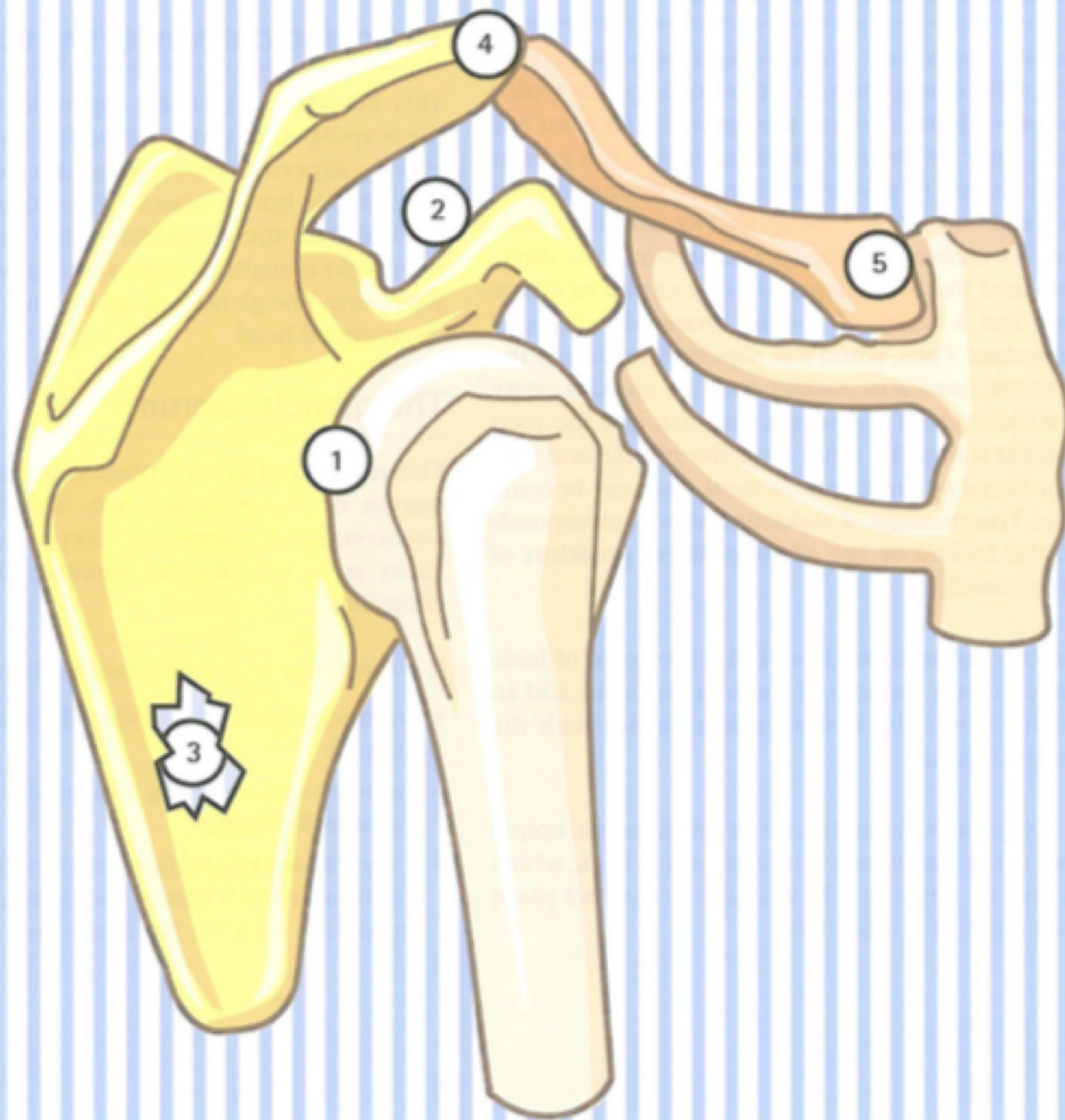


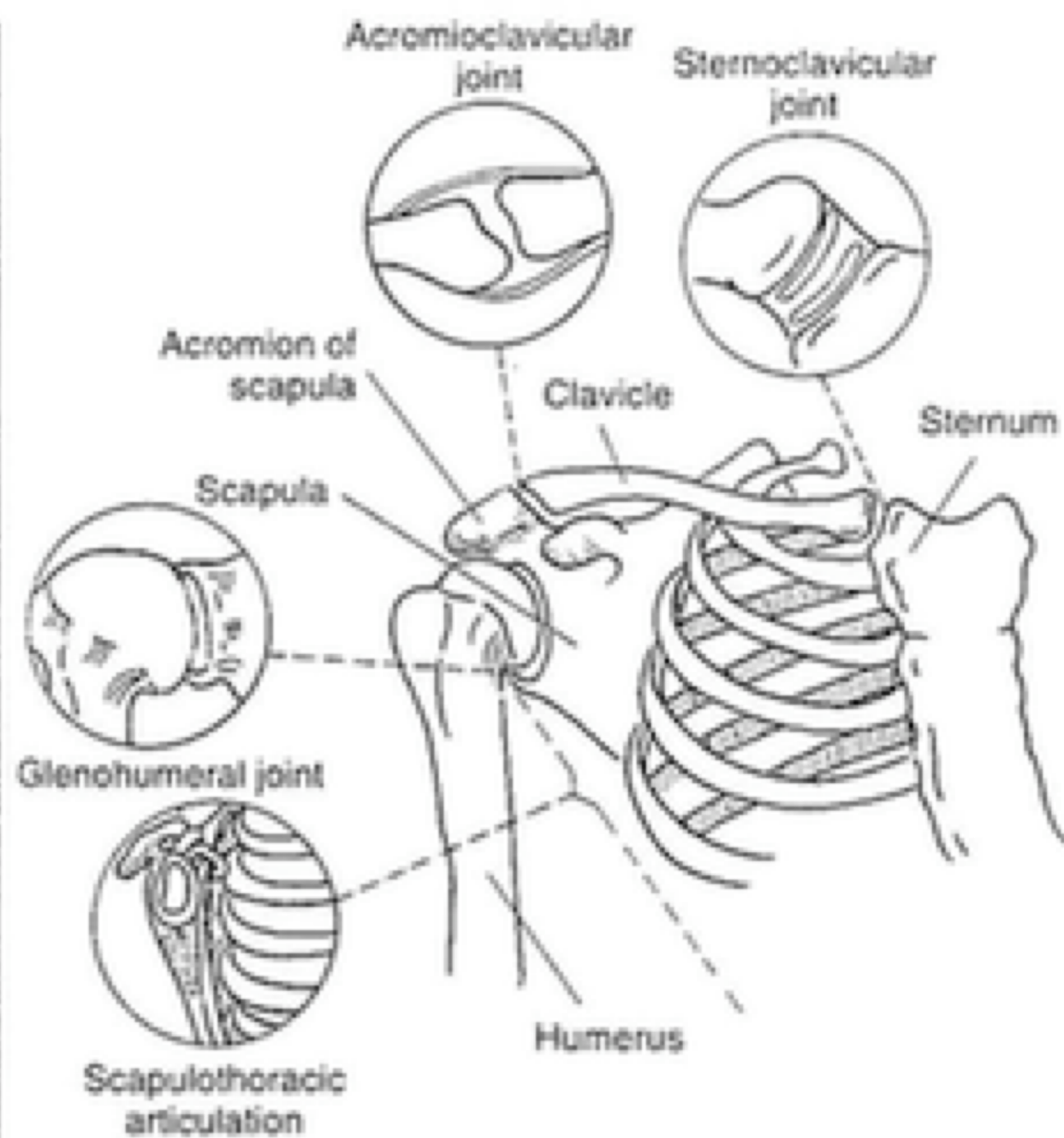


A

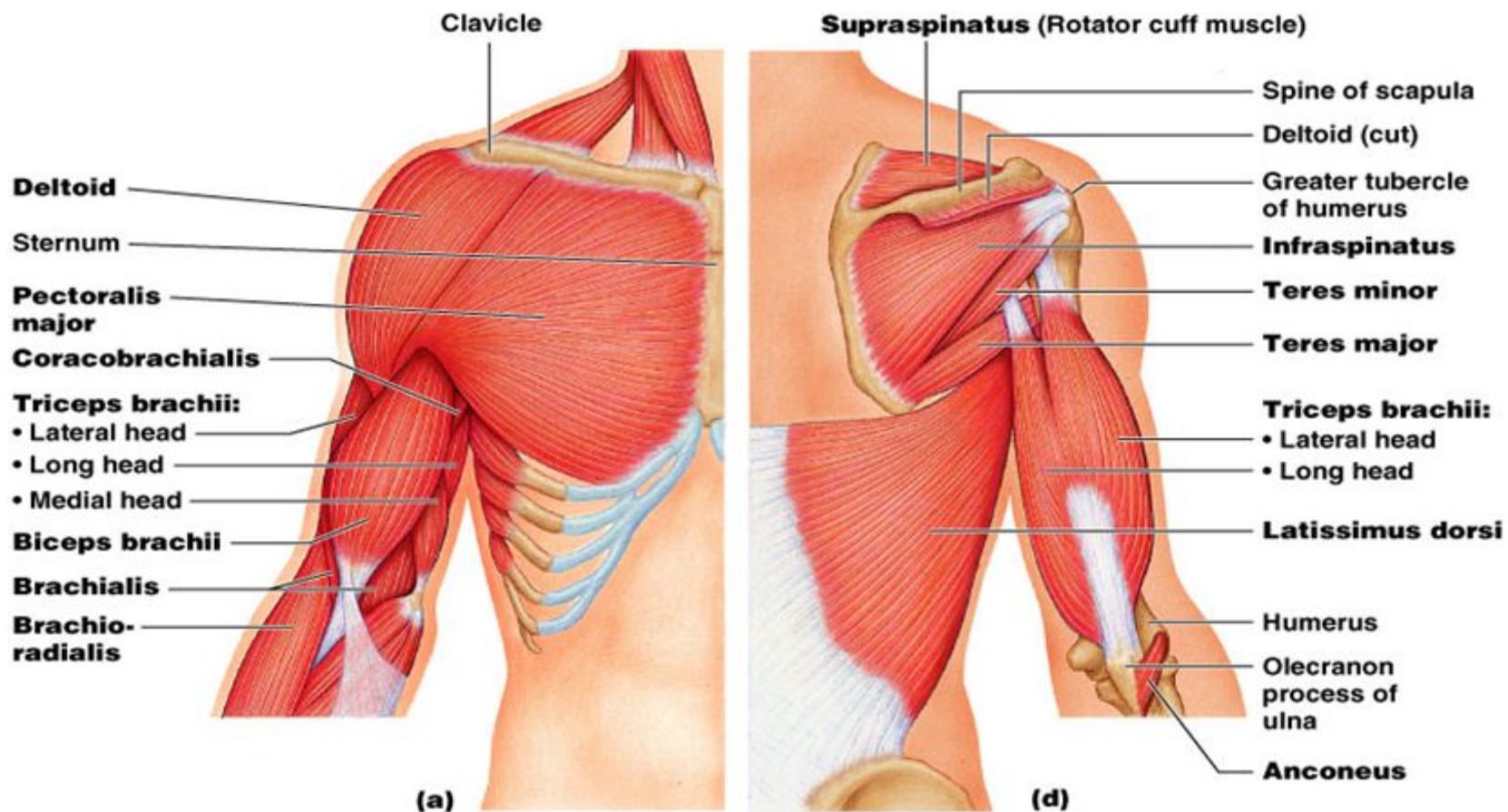


B





SHOULDER MUSCLES



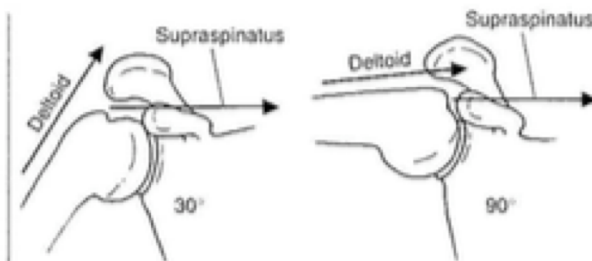


FIG. 12-20

As the arm is abducted to 90°, the direction of pull of the deltoid approximates that of the supraspinatus. Therefore, patients with a large tear of the rotator cuff often can actively maintain the arm abducted to 90° but may not be capable of actively abducting to 90°. Reprinted with permission from Simon, S.R. (Ed). (1994). *Orthopaedic Basic Science* (p. 527). Rosemont, IL: AAOS.

and the resultant supraspinatus paralysis induced has a similar effect. However, a block of both nerves results in a loss of arm elevation (Colachis, & Strohm, 1971; Howell et al., 1986) (Case Study 12-2).

When pure abduction is compared with pure forward elevation, the same basic relationships are seen with the rotator cuff acting to stabilize the glenohumeral joint while the deltoid provides the necessary torque. Forward flexion results in activation of the anterior and middle deltoid (73 and 62% activity, respectively) with stability provided mainly by the supraspinatus, infraspinatus, and latissimus dorsi, the latter being particularly active (25% activation) with forward flexion beyond 90°. Pure abduction requires similar muscular activity; however, the subscapularis shows increased activation as it acts as the prime stabilizer via eccentric contraction.

External Rotation

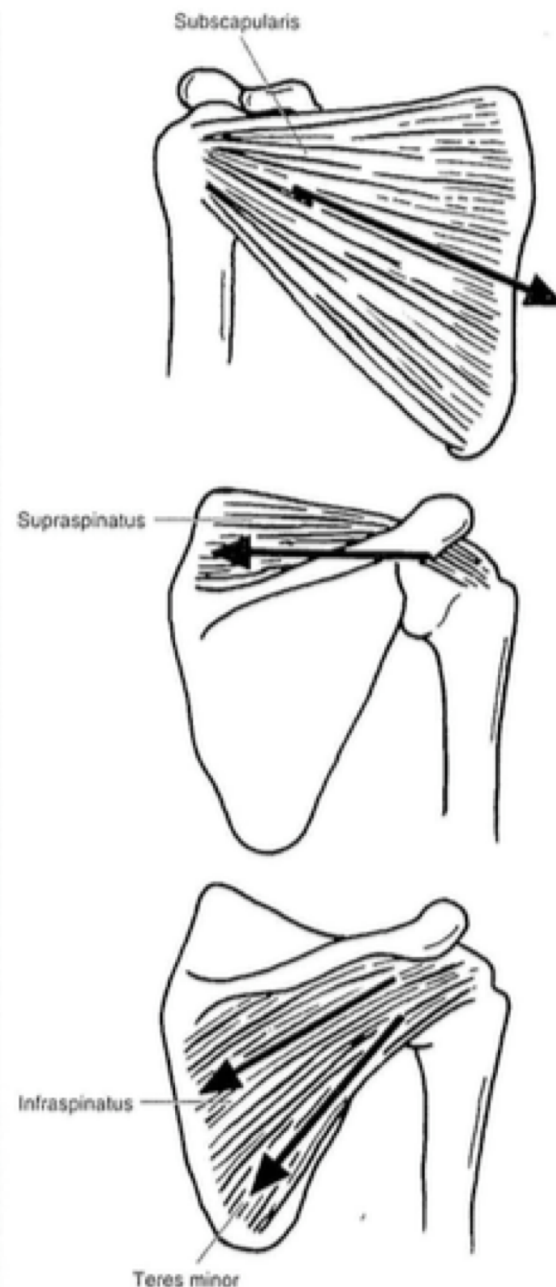
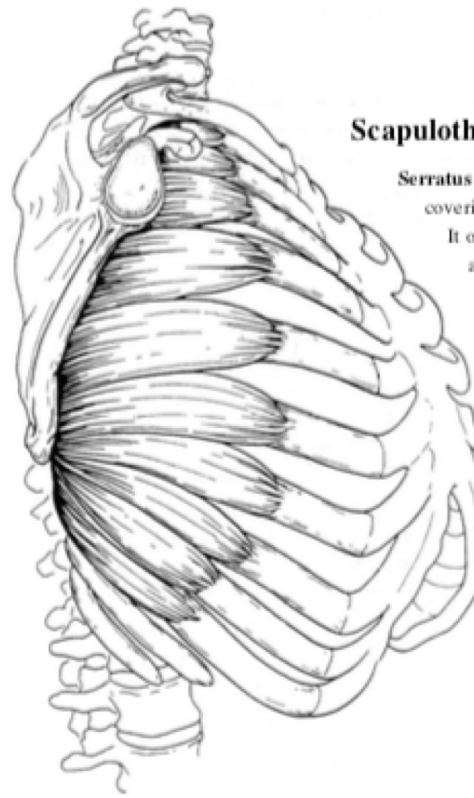


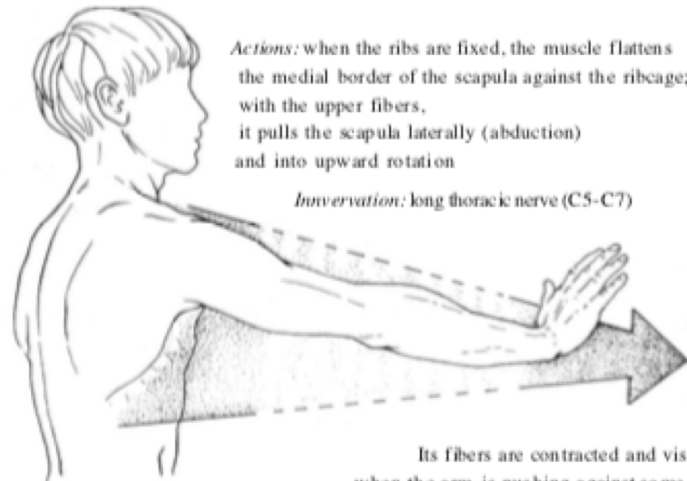
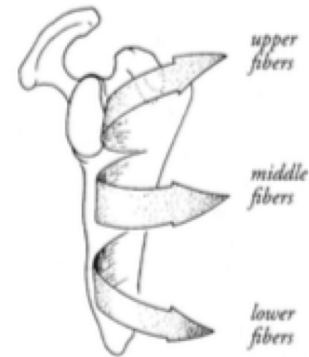
FIG. 12-21



Scapulothoracic muscles

Serratus anterior is a broad, thin muscle covering the lateral ribcage.

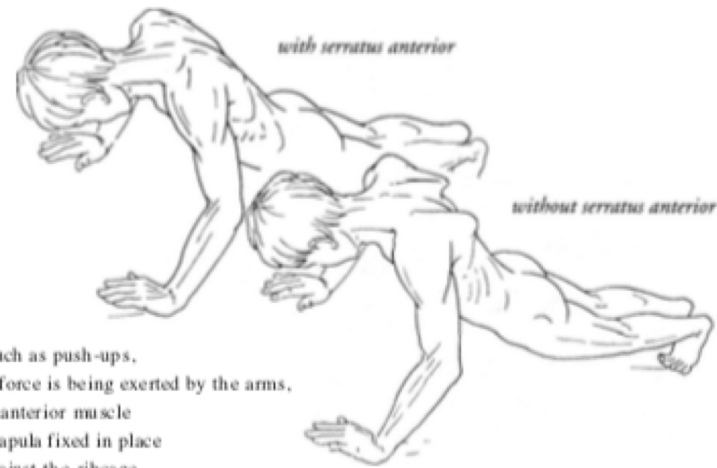
It originates from the upper ten ribs, and inserts along the entire medial border of the scapula.



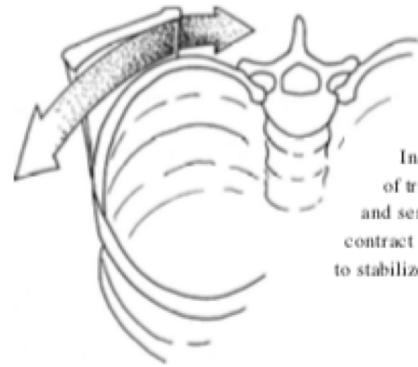
Actions: when the ribs are fixed, the muscle flattens the medial border of the scapula against the ribcage; with the upper fibers, it pulls the scapula laterally (abduction) and into upward rotation

Innervation: long thoracic nerve (C5-C7)

Its fibers are contracted and visible when the arm is pushing against some resistance.



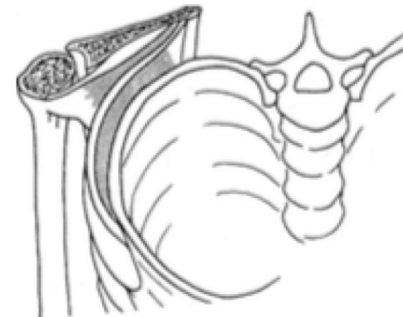
In actions such as push-ups, where great force is being exerted by the arms, the serratus anterior muscle keeps the scapula fixed in place and tight against the ribcage.



In such situations, the middle fibers of trapezius (an adductor) and serratus (an abductor) contract simultaneously to stabilize the scapula.

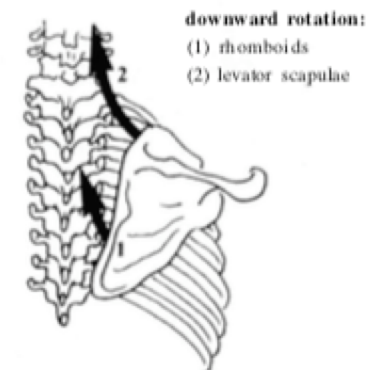
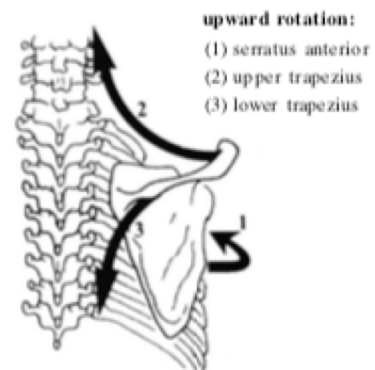
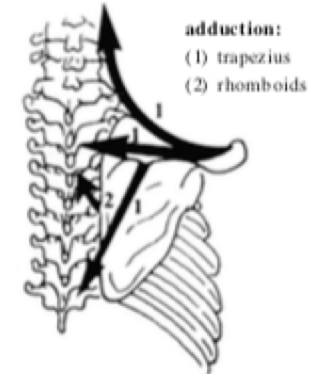
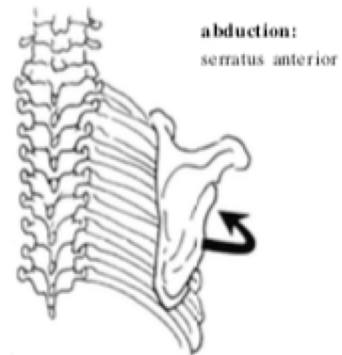
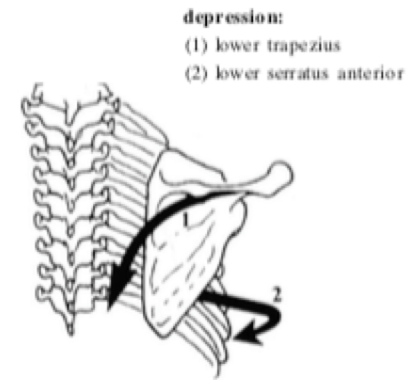
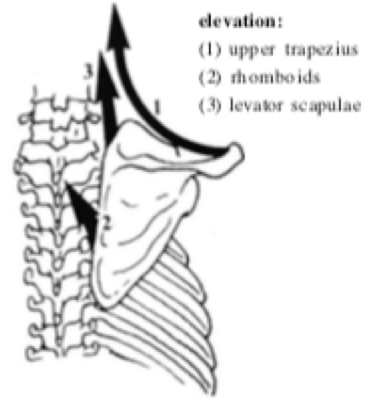
There are some fatty layers ('gliding planes') separating serratus from the ribcage and from the subscapularis muscle.

These increase the mobility of the scapula and are important in many complex movements of the shoulder.



If the scapula is fixed, the lower fibers of serratus anterior lift the middle ribs, acting as inspiratory muscles (not shown here).

Muscles involved in specific movements of the scapula

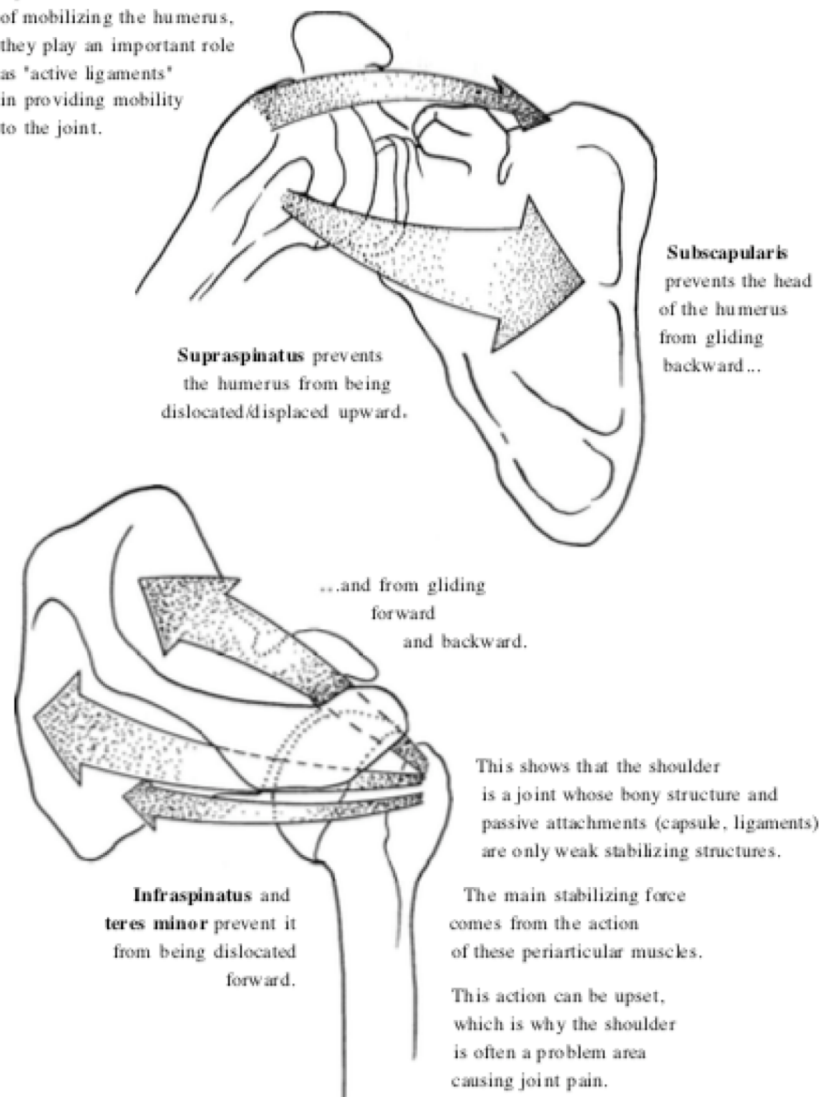


Rotator cuff muscles

Collectively, these four deep muscles—subscapularis, supraspinatus, infraspinatus, and teres minor—are called the rotator cuff muscles.

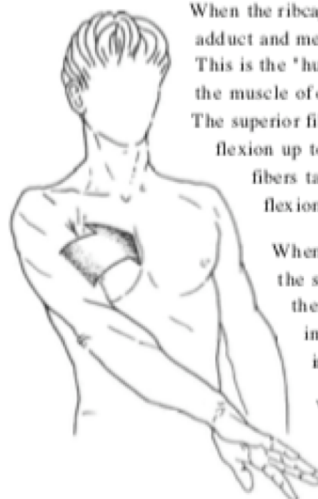
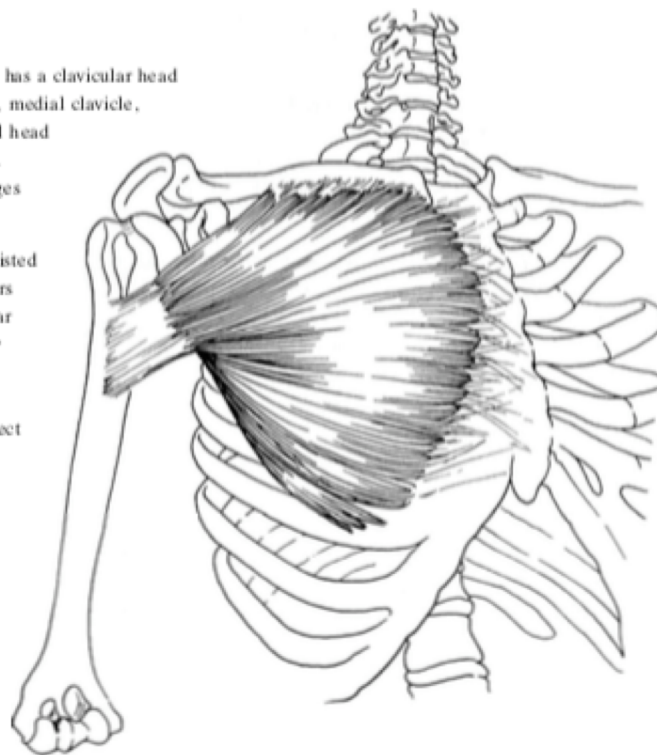
Their tendons surround and reinforce the shoulder-joint capsule on three sides.

Apart from their action of mobilizing the humerus, they play an important role as "active ligaments" in providing mobility to the joint.



Pectoralis major has a clavicular head from the anterior, medial clavicle, and a sternocostal head from the sternum and costal cartilages 1-6 and rib 7.

The tendon is twisted such that the fibers from the clavicular head insert below those from the sternocostal head on the lateral aspect of the bicipital groove.



When the ribcage is fixed, all the fibers adduct and medially rotate the arm. This is the 'hugging' muscle, the muscle of chest suspension. The superior fibers are involved in flexion up to 60°, then the inferior fibers take over and continue flexion up to 0° (see p. 135).

When the shoulder is fixed, the superior fibers lower the clavicle and the inferior fibers participate in inspiration.

When the shoulder is fixed while the arm is flexed, all the fibers are involved in inspiration



*stretching
of pectoralis
major*

Innervation: lateral and medial pectoral nerves (C5-T1)

Latissimus dorsi means "widest back muscle."

It originates from the sacral and iliac crests, thoracolumbar fascia, spinous processes of T7-T12, and posterior surfaces of the four lower ribs. The tendon wraps around the medial side of the humerus, makes a twist, and inserts on the bicipital groove.

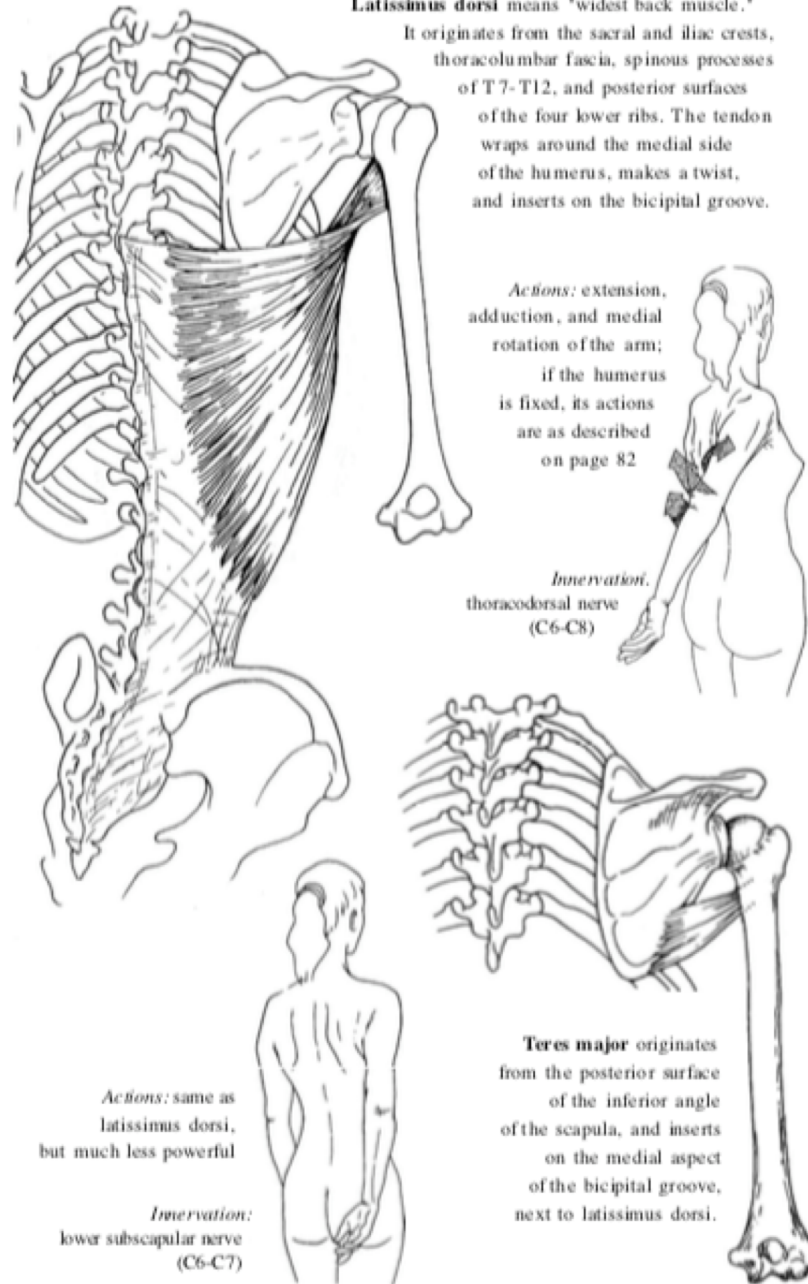
Actions: extension, adduction, and medial rotation of the arm; if the humerus is fixed, its actions are as described on page 82

Innervation: thoracodorsal nerve (C6-C8)

Actions: same as latissimus dorsi, but much less powerful

Innervation: lower subscapular nerve (C6-C7)

Teres major originates from the posterior surface of the inferior angle of the scapula, and inserts on the medial aspect of the bicipital groove, next to latissimus dorsi.

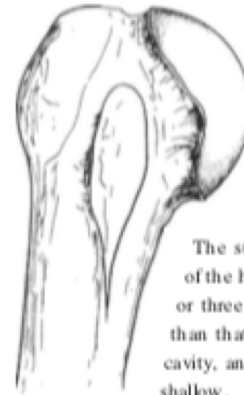




Glenohumeral joint

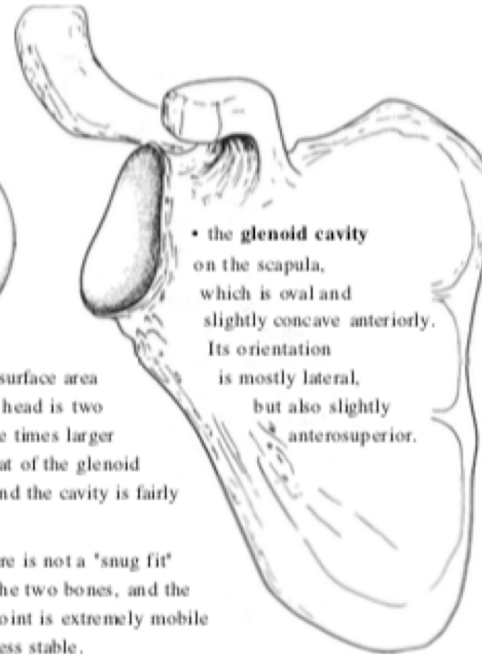
This is the primary joint of the shoulder, which unites the head of the humerus with the glenoid fossa of the scapula. The articular surfaces consist of:

- * the **head of the humerus**, whose orientation is mostly medial, but also slightly posterosuperior



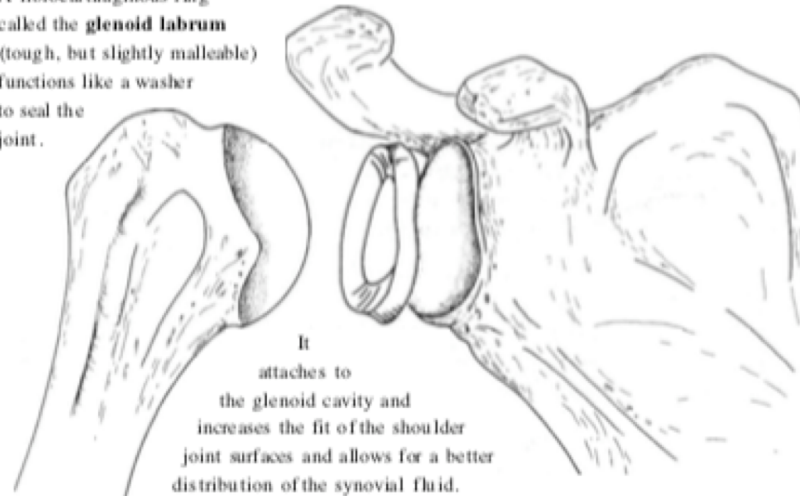
The surface area of the head is two or three times larger than that of the glenoid cavity, and the cavity is fairly shallow.

Thus, there is not a 'snug fit' between the two bones, and the shoulder joint is extremely mobile but much less stable.



- * the **glenoid cavity** on the scapula, which is oval and slightly concave anteriorly. Its orientation is mostly lateral, but also slightly anterosuperior.

A fibrocartilaginous ring called the **glenoid labrum** (tough, but slightly malleable) functions like a washer to seal the joint.

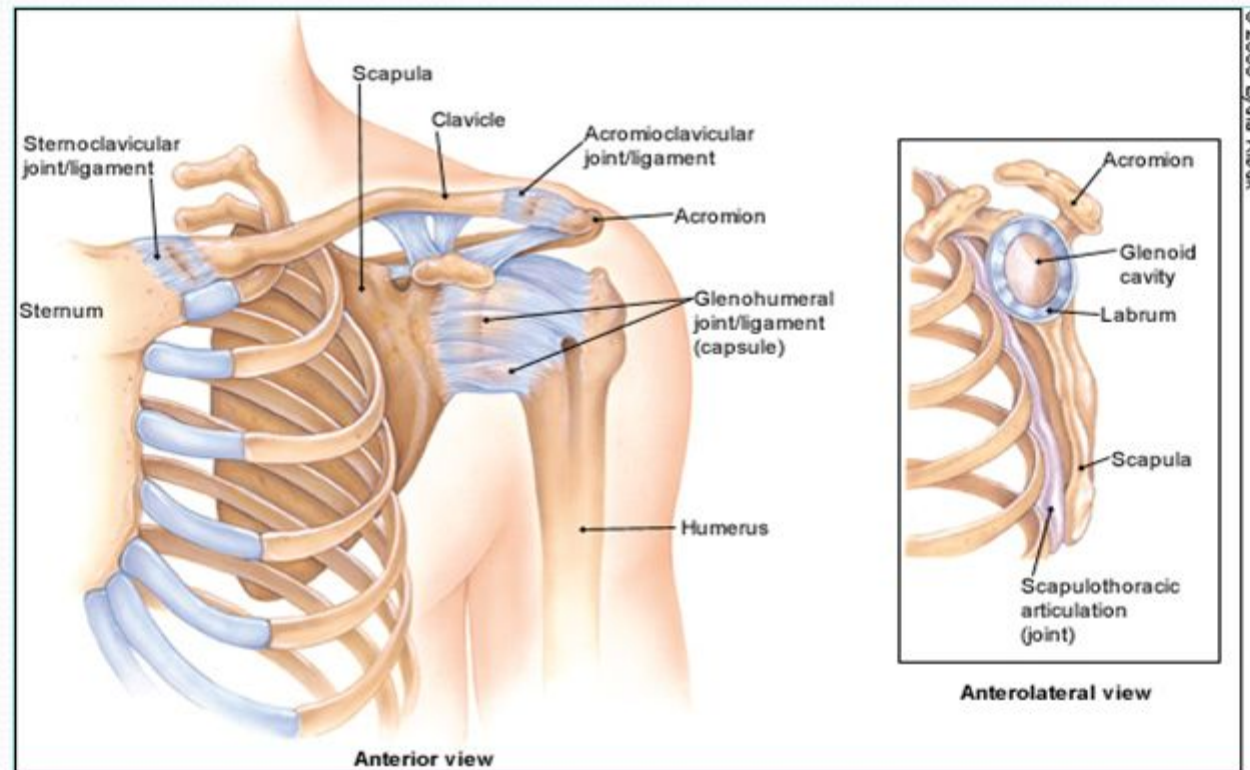


It attaches to the glenoid cavity and increases the fit of the shoulder joint surfaces and allows for a better distribution of the synovial fluid.

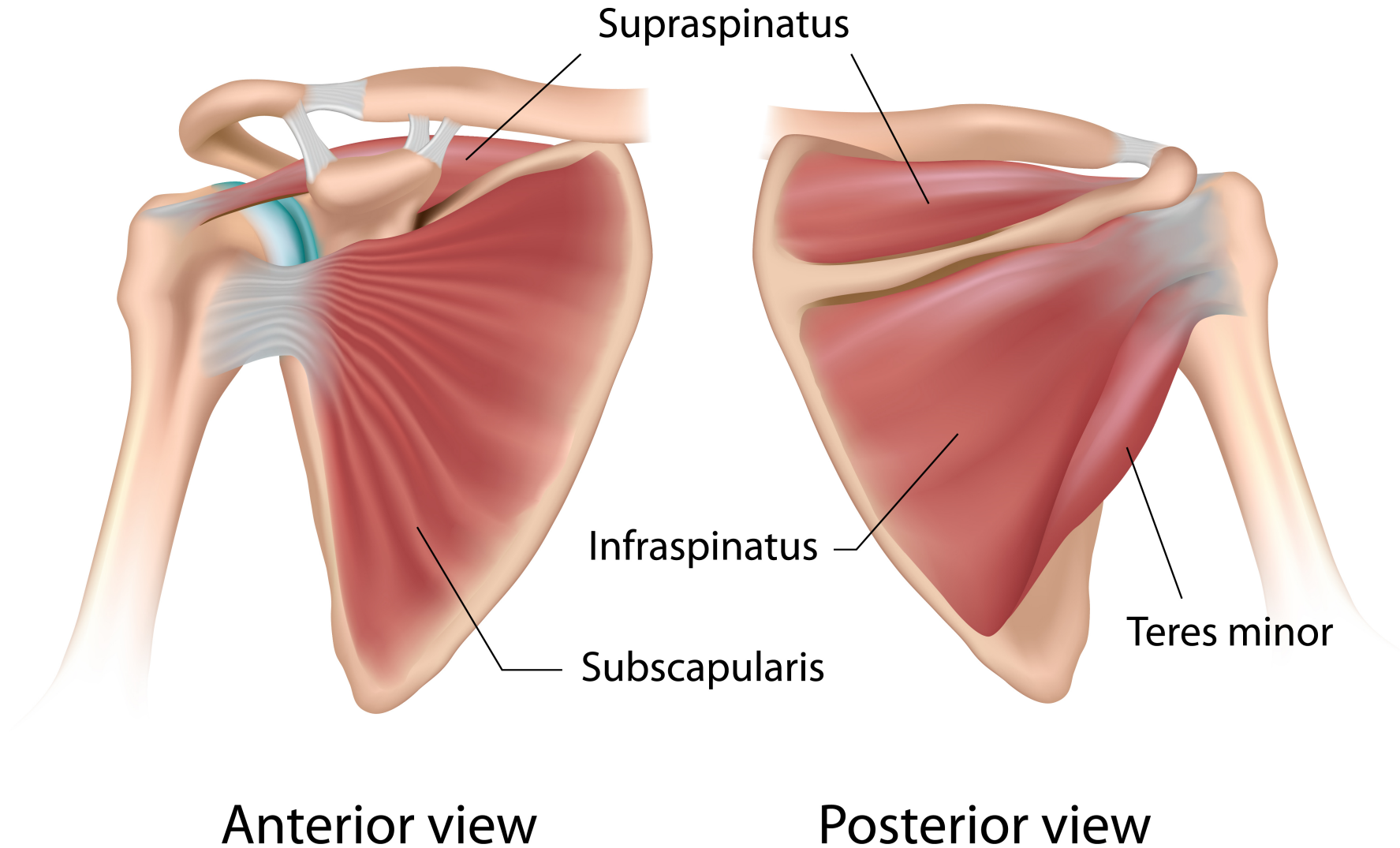
Shoulder Anatomy:

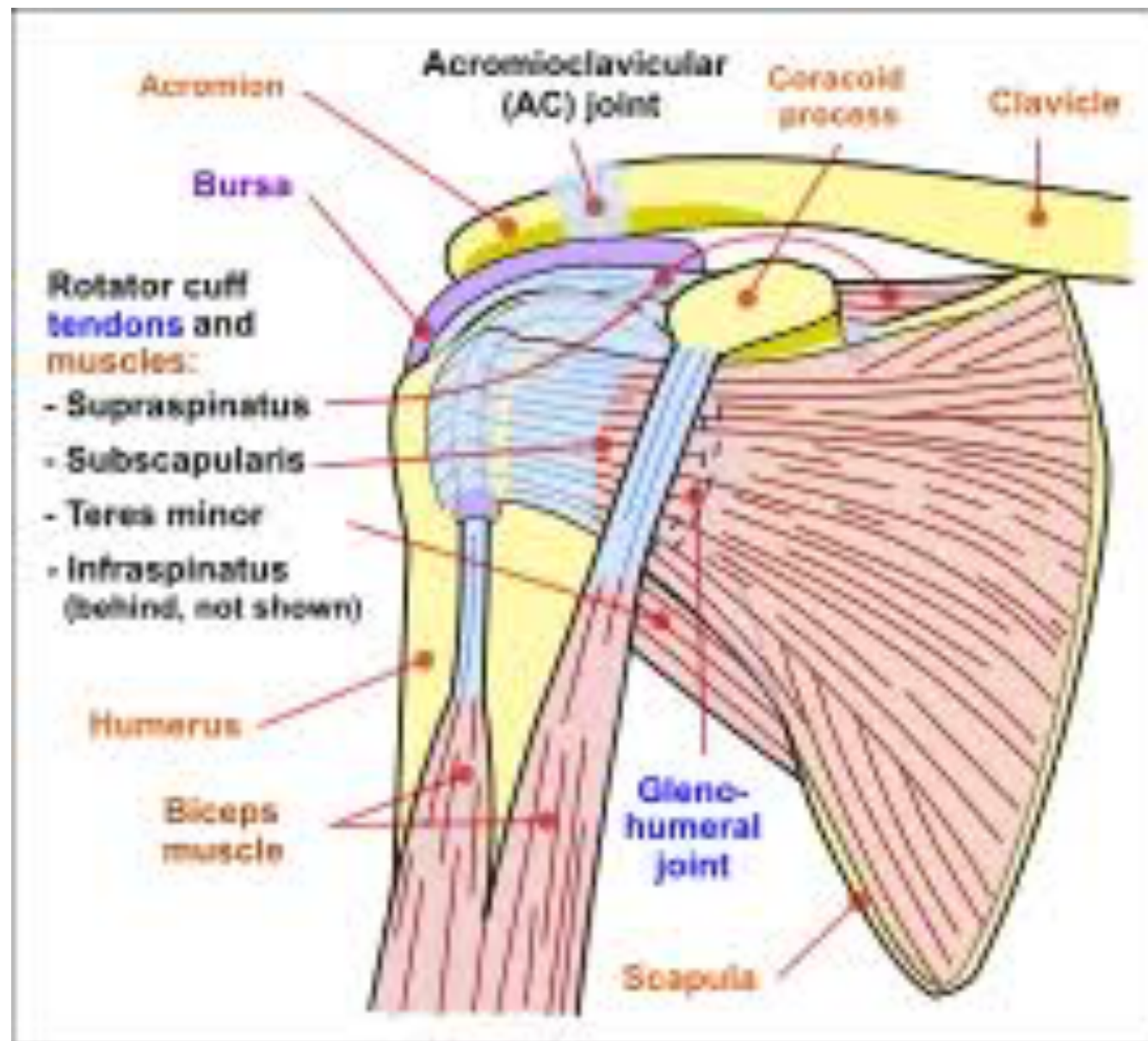
Joints

- Glenohumeral
- Acromioclavicular
- Sternoclavicular
- Scapulothoracic articulation



Rotator Cuff Muscles

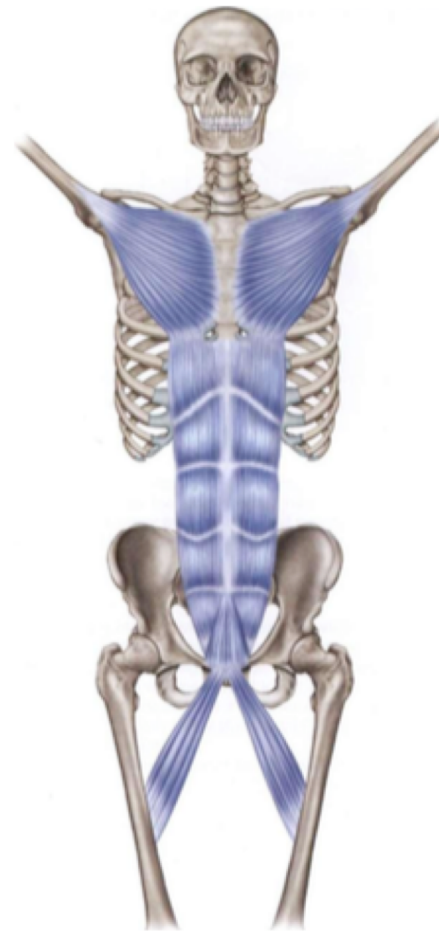








A



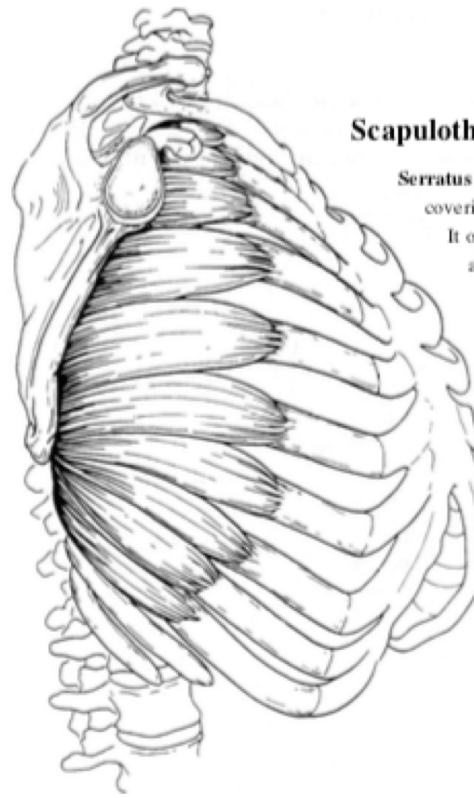
B



anterior oblique sling



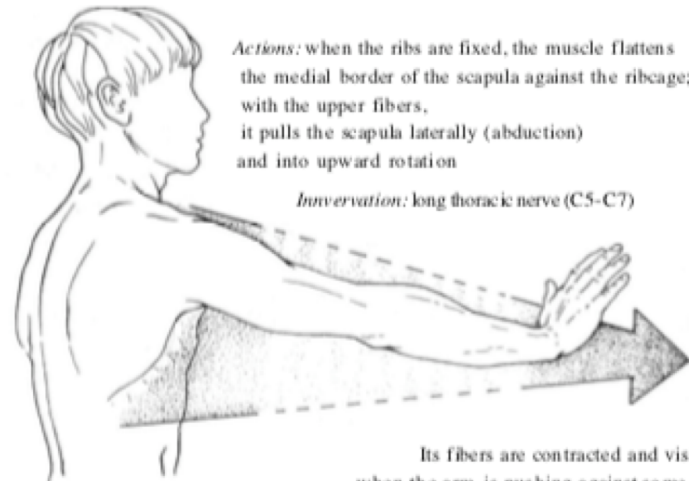
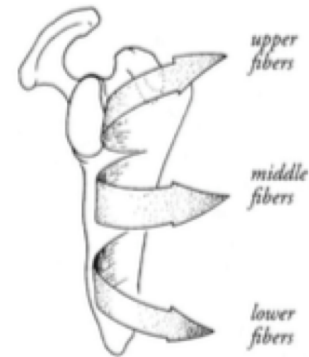
posterior oblique sling



Scapulothoracic muscles

Serratus anterior is a broad, thin muscle covering the lateral ribcage.

It originates from the upper ten ribs, and inserts along the entire medial border of the scapula.



Actions: when the ribs are fixed, the muscle flattens the medial border of the scapula against the ribcage; with the upper fibers, it pulls the scapula laterally (abduction) and into upward rotation

Innervation: long thoracic nerve (C5-C7)

Its fibers are contracted and visible when the arm is pushing against some resistance.

The **external oblique** is attached above to the outer surfaces of ribs 5-12 (where its fibers intertwine with those of the serratus anterior) and to the ilioinguinal ligament.

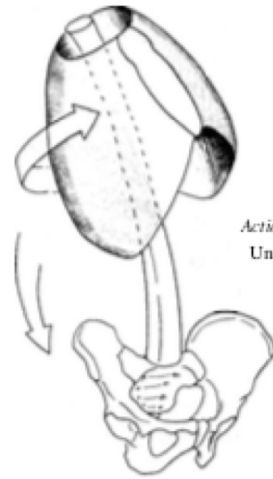
In front and below, it forms a broad aponeurosis ending at (and contributing to) the linea alba and inguinal ligament.

The average direction of the fibers is anteroinferior, i.e., perpendicular to those of the internal oblique.



Actions:

Unilateral contraction of the external oblique results in side-bending and contralateral rotation of the spine and ribcage.



Bilateral contraction causes flexion of the trunk.

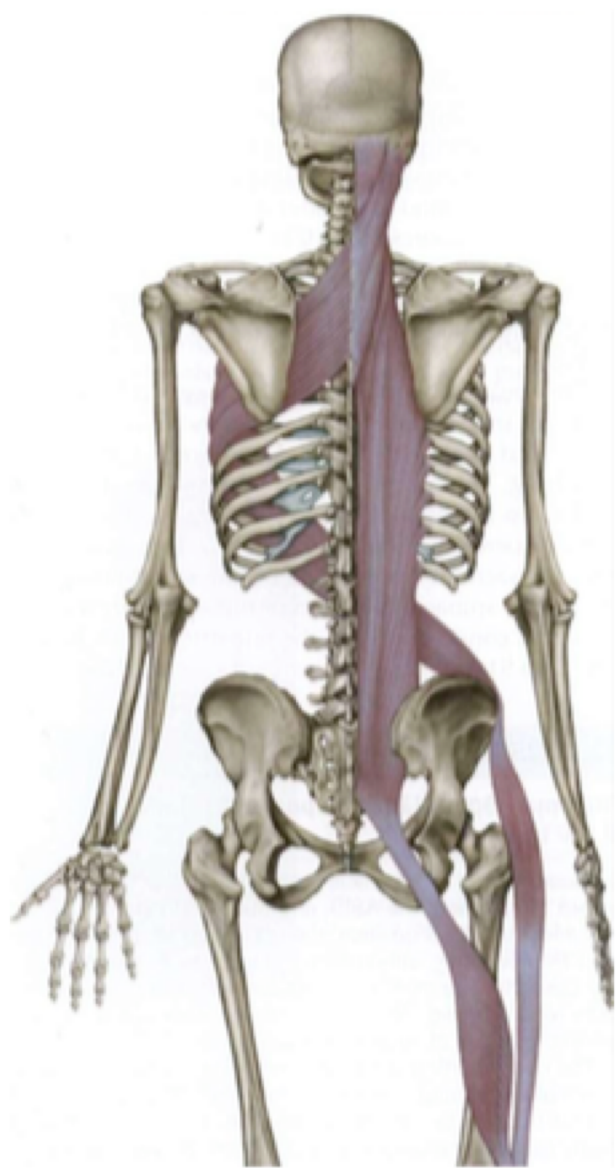
The oblique muscles work synergistically in rotation of the trunk.



For instance, rotation of the trunk to the left (combined with flexion) involves simultaneous contraction of the left internal oblique and right external oblique.

Innervation: intercostal nerves (T5-T12), ilioinguinal and iliohypogastric nerves (L1)

When the pelvis is fixed, it lowers the ribs; it is then an expiratory muscle (not shown here).



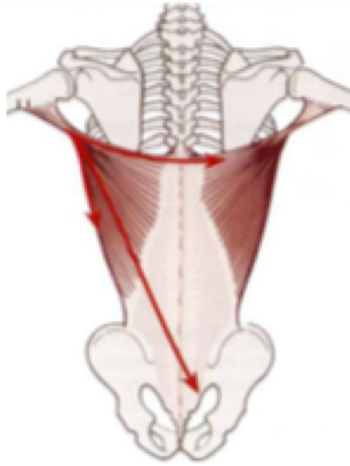


Fig. 8.6 A
backhand shot
could similarly join
the Superficial Back
Arm Line to its
opposite partner as
well as down the
torso to the pelvis
and beyond.

the pubic bone f
nal muscle, and
Depending o
he abducts his l
to leg might trav
more than likely
each leap. In thi
works through t
leg **(Fig. 8.8)**.

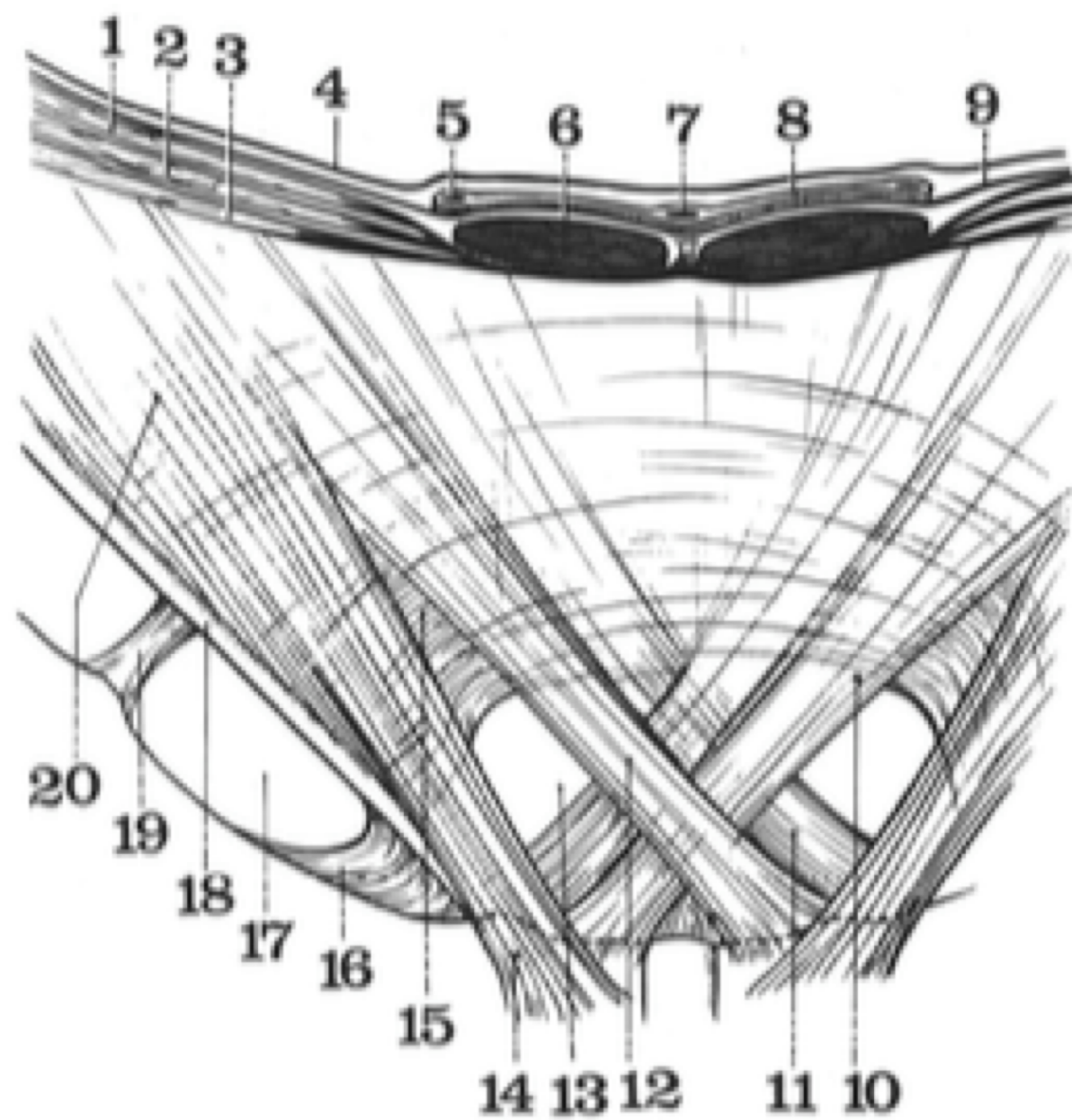
From this, w
the Functional L
moment-to-mom
multiplicity of c
and Lateral Line

Discussion

The Ipsilatera

The following lin
functional to leg
branch of the Fi





Q&A

- Question Large divots by a college player , very physically strong , can drive the ball 325 ? After reading your section in the book ,on the Como flat spot I now believe he is swinging too much inside out almost hitting a punch shot approach and never allowing the handle to work up and in . He also has a very aggressive lateral shift which probably adds to his hands getting too far forward . Am I on the right track ?

Q&A

- Next Webinar: you stated the Wipe and in the future, if you can cover some of the forces and motion stuff. I signed up for the online version but still confused on how to apply i.e. net force to correcting a "swing fault".

Q&A

- I haven't seen Jim Furyk's swing from behind to observe the wipe move but it would seem that he has a lot of elbow showing at the parallel club position. It looks like his right elbow/arm ride along the side as he clears his body through the swing. I know there are many ways to get it done but do you think he and some other players do that due to lack of right arm external rotation ability or some other reason? It works very well for him and some others. I ask this because I have a junior player that has terrible external rotation ability and the wipe move is not in his wheel house yet...

Q&A

- As for my thoughts, from a look perspective, I want to be lower to the ball at impact (with more side bend), I want the club straight and pointing at my chest at P9, I don't really like my high finish but do you think that affects ball flight?

My physical limitations:

Internal rotation limited on both hips (more so on the right side but both bad), T-spine rotation is 45 degrees turn right and 50-55 turn left, lat length test I can just pass after I warm up

- As for the webinar, I'm very excited for the next one and would love to get feedback on my swing pattern. I played today on course and a cut just comes natural to me so many times I play the cut. I really tried to force the draw today but I couldn't. especially with driver



MOTORCYCLE, LEAN LEFT
TITLE TEXT HERE



MOTORCYCLE, LEAN LEFT



FOCUSING ON EXTENSION BY MOTORCYCLE
AND RIGHT WRIST EXTENSION THROUGH
IMPACT



FOCUSING ON FOOTWORK, MORE LOWER
BODY



QUICKER BACKSWING, FOCUSING ON SWING
SPEED - 90-93 MPH 7 IRON

Q&A

- Application of Sasho Mackenzie force plane presentation from open forum 4
- Alpha wars Finney vs Jacobs - what's to gain from that discussion

Q&A

- What are the ground forces that cause shifting and rotation on the backswing and downswing?
 - What is the maximum amount of depth you would want for the hands and left arm in the backswing?
 - Can you explain why some people would teach zero shaft rotation through impact? Is that even possible.
 - How much power do the hands, arms and wrists provide in the swing?
 - When would you not change a steep downswing?



Q&A

- Attached below is a junior student of mine who tends to struggle with low point control. Often times hitting it fat and on the heel. He's a good athlete, swimmer, and has only been playing for a few months. Recently we've been working on getting more open (often look at the lead leg/foot as well as his neck) as well as his release mechanics (more wipe & LFA supination). Would love to hear your feedback.

Q&A

- My questions for the webinar are;
- 1. What are your thoughts on block practice? I feel like its been getting a bad wrap. If done properly and at the right times in a golfer's development I feel like it is crucial.
- 2. Been loving your handle to lead forearm drill for training ulnar deviation in the downswing. Has really helped a number of my students clean up their path issues. Any other go-to UD drills you'd like to share? I feel like it's an often overlooked aspect of the downswing that can solve quite a few other issues.