

Chapter 2

Shoulder & Arm

Bones

Starter Questions

- What three bones comprise the shoulder complex? (*scapula, humerus, clavicle*)
- Which joint is the single attachment site between the upper appendicular and axial skeletons? (*sternoclavicular joint*)
- By the way, how many people in class have broken their clavicle?

Two Cents

The following list includes the bony landmarks and structures that are not introduced in *Trail Guide's* Shoulder & Arm chapter, but are mentioned in the origin and insertion information for some of the shoulder and arm muscles. It might be worthwhile to briefly introduce the names and locations of these structures beforehand.

- external occipital protuberance (trapezius)
- superior nuchal line (trapezius)
- ligamentum nuchae (trapezius)
- spinous processes of vertebrae (trapezius and others)
- thoracolumbar fascia (latissimus dorsi)
- transverse processes of cervical vertebrae (levator scapula)
- tuberosity of radius (biceps brachii)
- olecranon process (triceps brachii)



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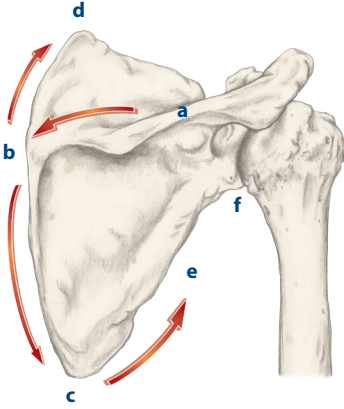


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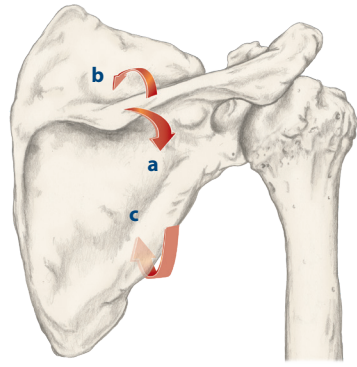
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Bony Landmark Trails



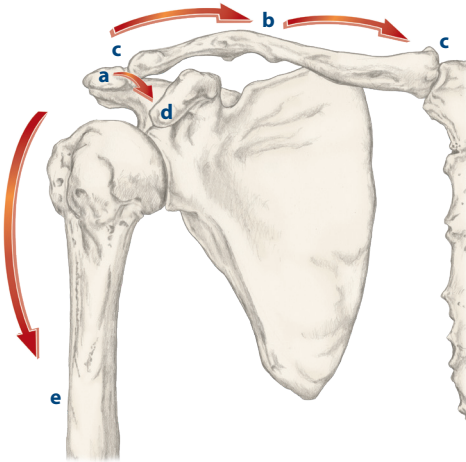
Trail 1 Along the Edges explores the sides and corners of the posterior scapula.

- a** Spine of the scapula
- b** Medial border
- c** Inferior angle
- d** Superior angle
- e** Lateral border
- f** Infraglenoid tubercle



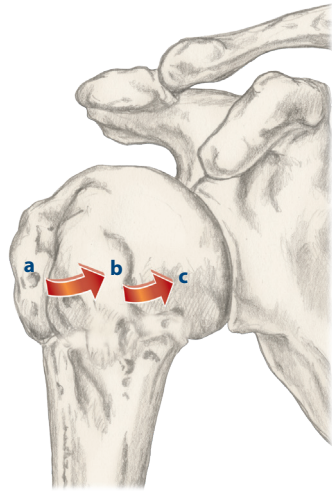
Trail 2 In the Trenches leaps off the spine of the scapula and sinks into the three basins of the scapula.

- a** Infraspinous fossa
- b** Supraspinous fossa
- c** Subscapular fossa



Trail 3 Springboard Ledge leads around to the anterior shoulder, using the scapula's acromion as a jumping-off point.

- a** Acromion
- b** Clavicle
- c** Acromioclavicular and sternoclavicular joints
- d** Coracoid process
- e** Deltoid tuberosity



Trail 4 Two Hills and a Valley focuses on the three landmarks located along the anterior, proximal humerus.

- a** Greater tubercle
- b** Intertubercular groove
- c** Lesser tubercle

Bony Landmark Trails



Starter Questions

- As the spine of the scapula progresses laterally to the top of the shoulder, it becomes which bony landmark? (*acromion*)
- The names of the three scapular fossae give a big hint to what muscles lie in each of the basins. Can you name the muscles? (*suprascapularis, infraspinatus, subscapularis*)
- What three bony landmarks surround the infraspinous fossa? (*medial and lateral borders, spine of the scapula*)

Two Cents

- If you get lost while palpating, return to the spine of the scapula for a fresh start.
- Consider a pre-palpation demo before sending students off to explore their partners' subscapular fossae.



TGB, pp. 51–60

Muscles

Starter Questions

- Looking at the muscles of the shoulder and arm, can you identify an example of a convergent muscle? (*deltoid, trapezius, latissimus dorsi, pectoralis major, infraspinatus*)
- Which muscles appear to be virtually superficial? (*trapezius, deltoid, latissimus dorsi, pectoralis major*)
- Are there any tricks you can think of to remember the name of a muscle?



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Flashcards/App
Shoulder & Arm

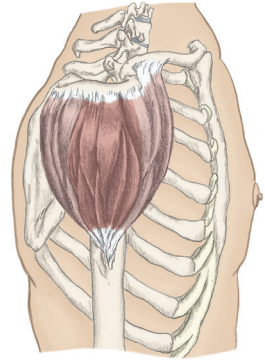


Online Palpation
Video

Deltoid

Starter Questions

- (While showing image of deltoid) What information about the deltoid can you gather from looking at this image? (*convergent, attaches all three bones of shoulder together, has a wide variety of movement, is superficial*)
- What bony landmarks could help you isolate the deltoid? (*shaft of clavicle, acromion, spine of scapula, deltoid tuberosity*)



Two Cents

Anyone can get their hands on the deltoid. That's easy. However, isolating its sides and tendinous ends can be challenging. Encourage students to “map out” the entire muscle with their fingers.

Chances are that students will be new to the concept of synergists and antagonists, and compounding this is the fact that the deltoid is an antagonist to itself. Before you explain it to students, consider asking them how the deltoid could possibly move the shoulder in so many different directions. If they're still not getting it, use the skeleton: “Imagine there's a little guy standing here on the clavicle. He throws a rope down and hooks it on to the deltoid tuberosity. As he starts pulling ...”

Deltoid

- A** **All fibers:**
Abduct the shoulder (glenohumeral joint)
Anterior fibers:
Flex the shoulder (G/H joint)
Medially rotate the shoulder (G/H joint)
Horizontally adduct the shoulder (G/H joint)
Posterior fibers:
Extend the shoulder (G/H joint)
Laterally rotate the shoulder (G/H joint)
Horizontally abduct the shoulder (G/H joint)

O Lateral one-third of clavicle, acromion, and spine of scapula

I Deltoid tuberosity

N Axillary C5, 6

When Do You Use Your Deltoid?

- Virtually all movements that involve the shoulder
- Slipping your arms into a jacket
- Raking, shoveling, sawing
- Rowing a dinghy



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Flashcards/App
Shoulder & Arm



Online Palpation
Video

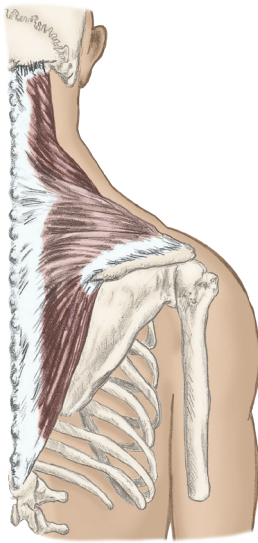
Trapezius

Starter Questions

- What do the trapezius and deltoid have in common regarding their attachments on the scapula? (*the trap's insertion is the same as the deltoid's origin*)
- Can you name another muscle that also adducts and elevates the scapula? (*rhomboids*)

Two Cents

Like the deltoid, the trapezius comes quickly into the hands. But that's only the upper/middle fibers that span the top of the neck. Students become less confident with the upper and lower portions. Reassure them that this muscle is 100 percent superficial and literally right below their fingers.



When Do You Use Your Trapezius?

- Okay, not you—but when a Tour de France cyclist extends his neck over the handlebars of his bike
- Holding a smartphone between your shoulder and ear
- Carrying articles strapped across the shoulder (luggage, backpack, purse)
- Pulling shoulders posteriorly in a military fashion

Trapezius

- A** **Upper fibers:**
Bilaterally:
Extend the head and neck
Unilaterally:
Laterally flex the head and neck to the same side
Rotate the head and neck to the opposite side
Elevate the scapula (scapulothoracic joint)
Upwardly rotate the scapula (S/T joint)
- Middle fibers:**
Adduct the scapula (S/T joint)
Stabilize the scapula (S/T joint)
- Lower fibers:**
Depress the scapula (S/T joint)
Upwardly rotate the scapula (S/T joint)

- O** External occipital protuberance, medial portion of superior nuchal line of the occiput, ligamentum nuchae, and spinous processes of C-7 through T-12

- I** Lateral one-third of clavicle, acromion, and spine of the scapula

- N** Spinal portion of cranial nerve XI (accessory) and ventral ramus C2, 3, 4



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pp. 68–70



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