

# Section 3—Bones & Muscles

## Shoulder & Arm

### Topography

TGB, 5th p. 46	Workbook p. 25
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### Skin & Fascia

TGB, 5th p. 47
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### Bones

TGB, 5th p. 48-50	Workbook p. 26-29
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### 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*)  
ligamentum nuchae (*trapezius*)  
thoracolumbar aponeurosis (*latissimus dorsi*)  
tuberosity of radius (*biceps brachii*)

superior nuchal line (*trapezius*)  
spinous processes of vertebrae (*trapezius and others*)  
transverse processes of cervical vertebrae (*levator scapula*)  
olecranon process (*triceps brachii*)

## Bony Landmark Trails

TGB, 5th p. 51-60
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### 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? (*supraspinatus, 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.

## Muscles of the Shoulder & Arm

### 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?

TGB, 5th p. 61-66	Flashcards Shoulder & Arm	Workbook p. 30-38	DVD Shoulder & Arm
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# Deltoid

## Starter Questions

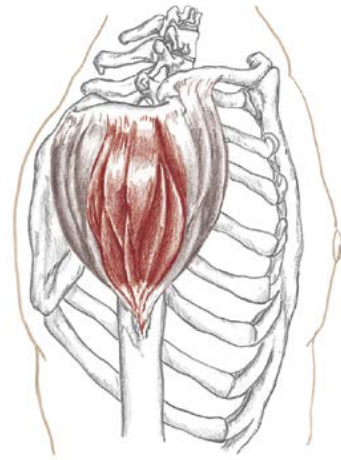
- (While showing image of deltoid) What information about the deltoid can you gather from looking at this image? (*convergent, attaches all three bones of shoulder together, has a wide variety of movement, is superficial*)
- What bony landmarks could help you isolate the deltoid? (*shaft of clavicle,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

## 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*



- 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

TGB, 5th p. 67-68	Flashcards Shoulder & Arm	Workbook p. 39-40	DVD Shoulder & Arm
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# 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% superficial and literally right below their fingers.

## When Do You Use Your Trapezius?

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

- 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 (scapulohoracic 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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