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1 The Shoulder Joint

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The Shoulder Joint

Shoulder joint is attached to axial skeleton via the clavicle at SC joint ; Scapula movement usually occurs with movement of humerus

Wide range of motion of the shoulder joint in many different planes requires a significant amount of laxity
Common to have instability problems

- Rotator cuff impingement
- Subluxations & dislocations

The price of mobility is reduced stability ; The more mobile a joint is, the less stable it is & the more stable it is, the less mobile

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Bones

Scapula, clavicle and humerus serve as attachments for shoulder joint muscles

Humeral landmarks

- Head
- Greater tubercle
- Lesser tubercle
- Intertubercular groove
- Deltoid tuberosity

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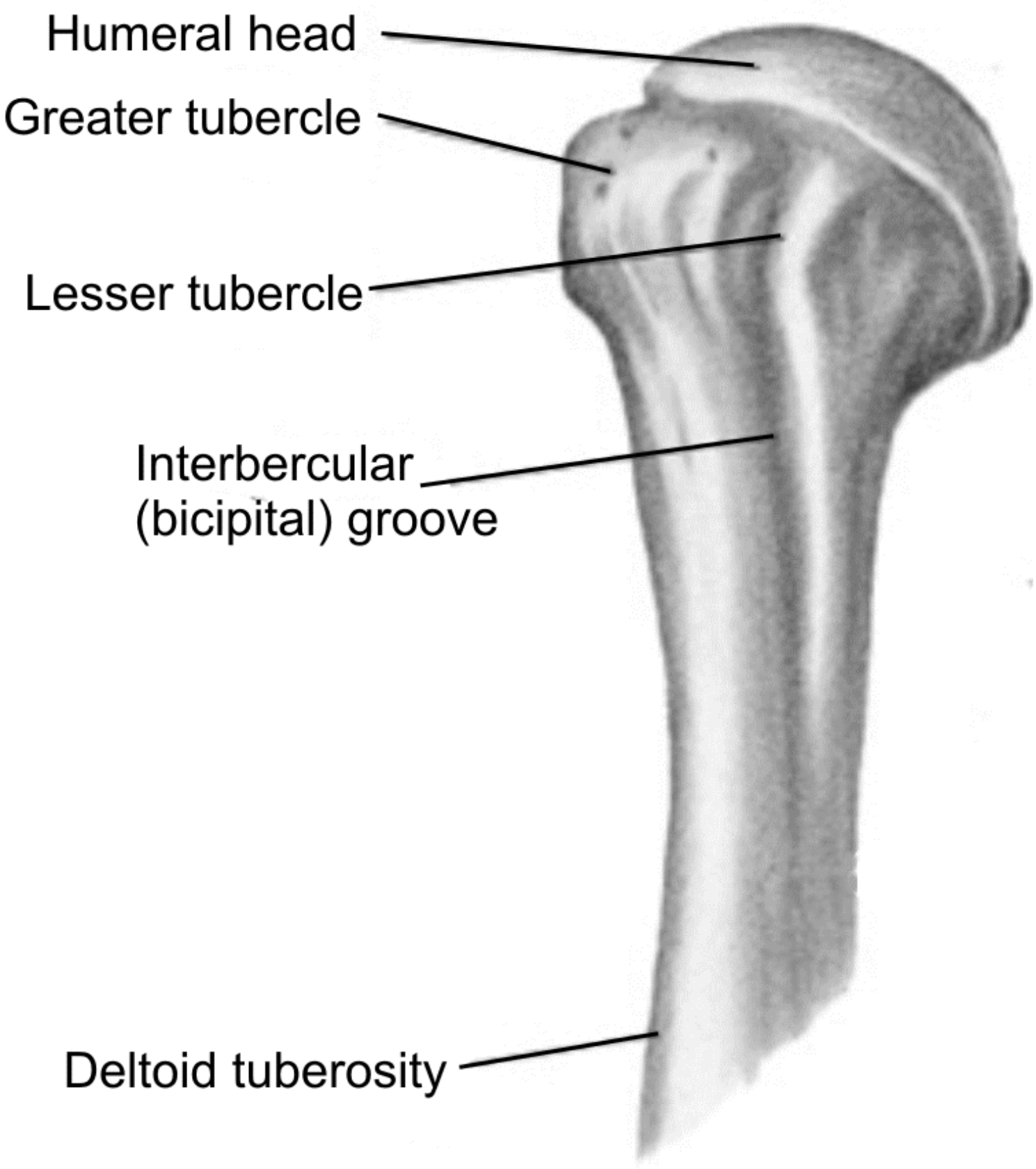
Humeral head
Greater tubercle
Lesser tubercle
Interbercular
(bicipital) groove
Deltoid tuberosity

Glenohumeral Joint

multiaxial ball-&-socket ; enarthrodial

Ligaments are quite lax until extreme ranges of motion reached due to wide range of motion involved ; Stability is sacrificed to gain mobility

Glenoid labrum slightly enhances stability

Glenohumeral ligaments provide stability

Frequently injured due to anatomical design

shallowness of glenoid fossa
laxity of ligamentous structures
lack of strength & endurance in muscles
anterior or anteroinferior glenohumeral subluxations & dislocations – common
posterior dislocations – rare
posterior instability problems somewhat common

Rotator cuff is frequently injured

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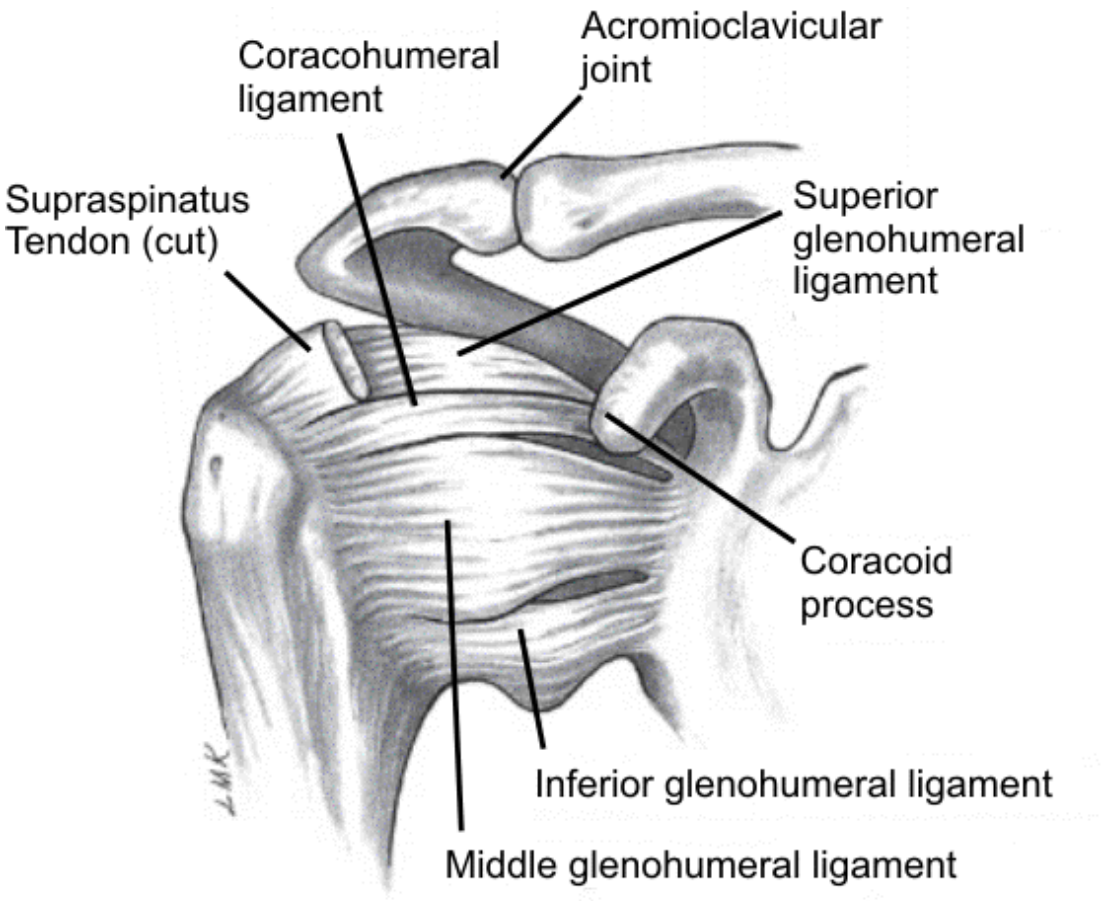

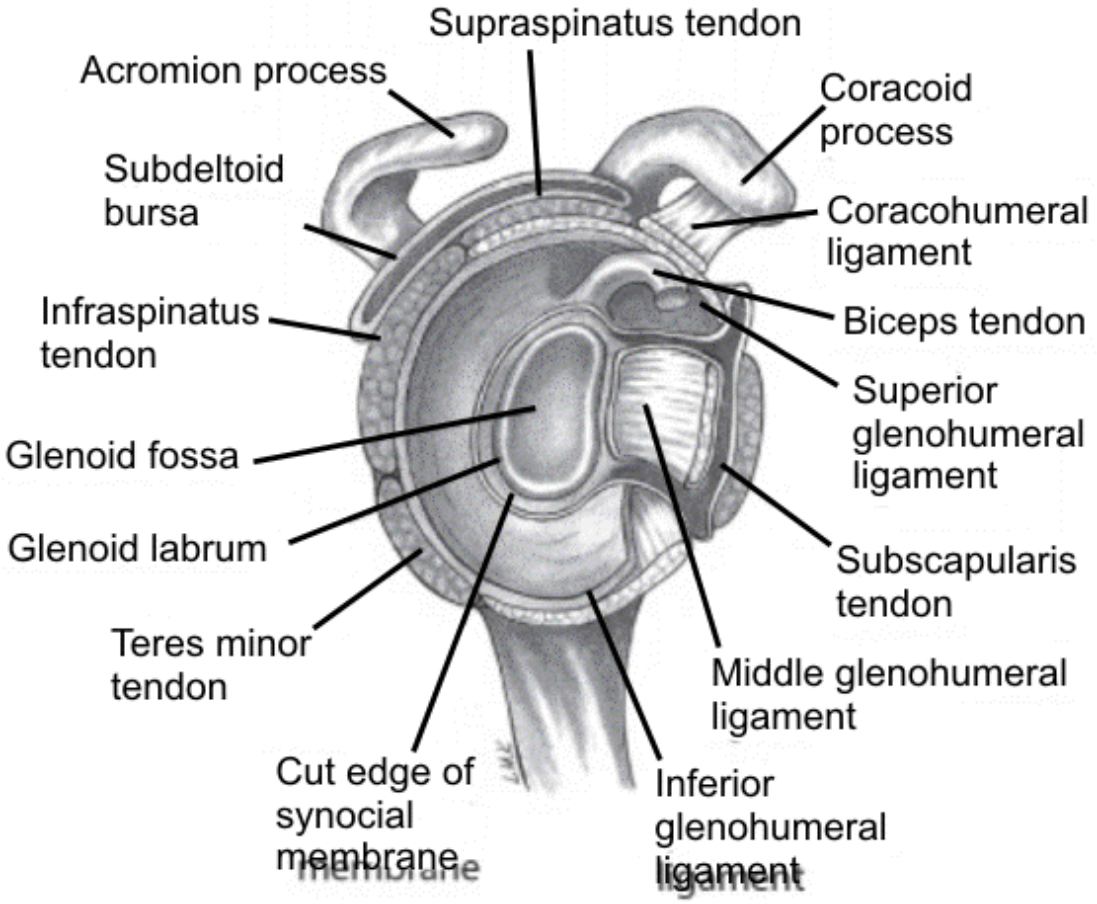

Pairing of shoulder girdle and shoulder joint movements

Shoulder joint	Shoulder girdle
Abduction	Upward rotation
Adduction	Downward rotation
Flexion	Elevation/upward rotation
Extension	Depression/downward rotation
Internal rotation	Abduction (protraction)
External rotation	Adduction (retraction)
Horizontal abduction	Adduction (retraction)
Horizontal adduction	Abduction (protraction)

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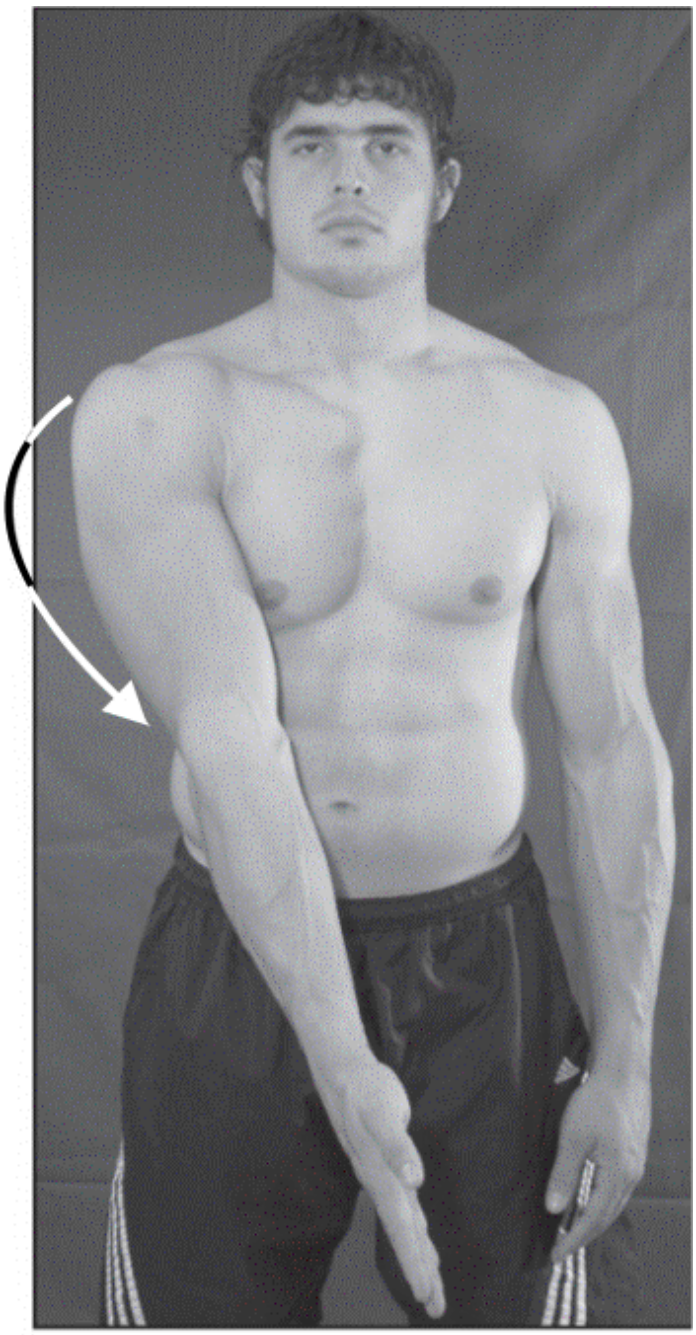
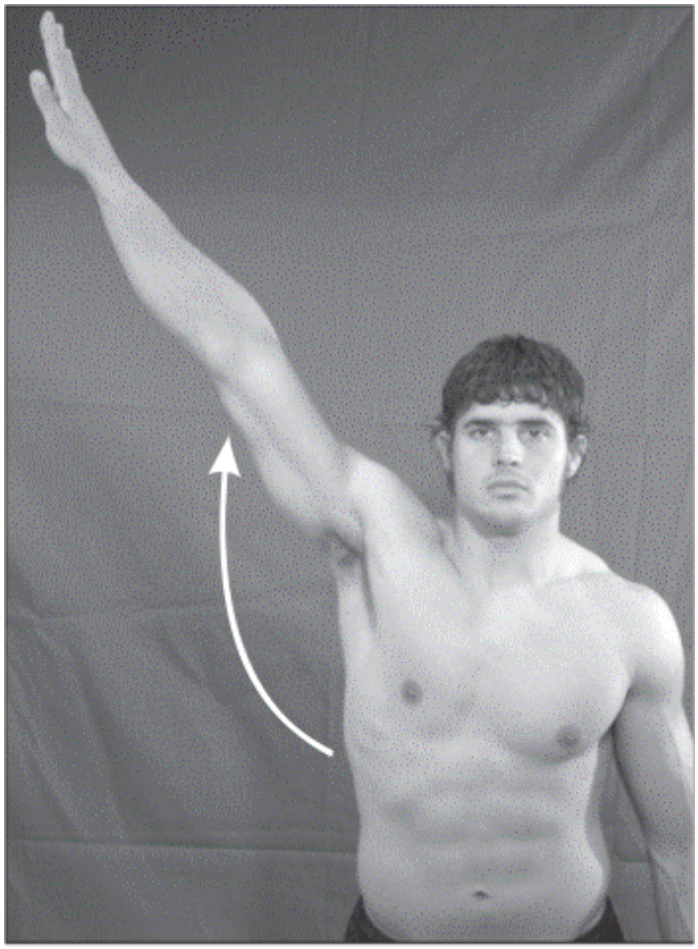
Movements



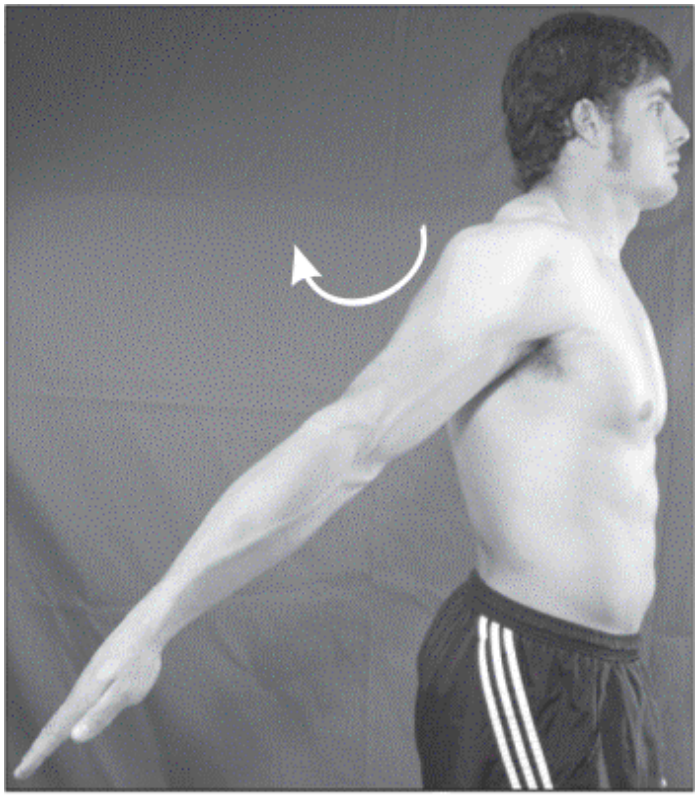
Adduction

Movements



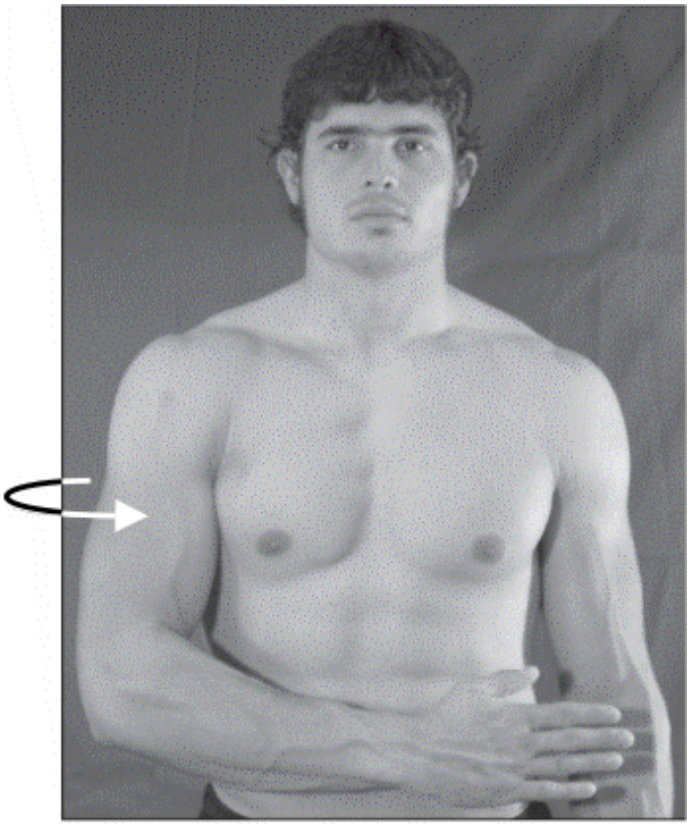
Abduction

Movements



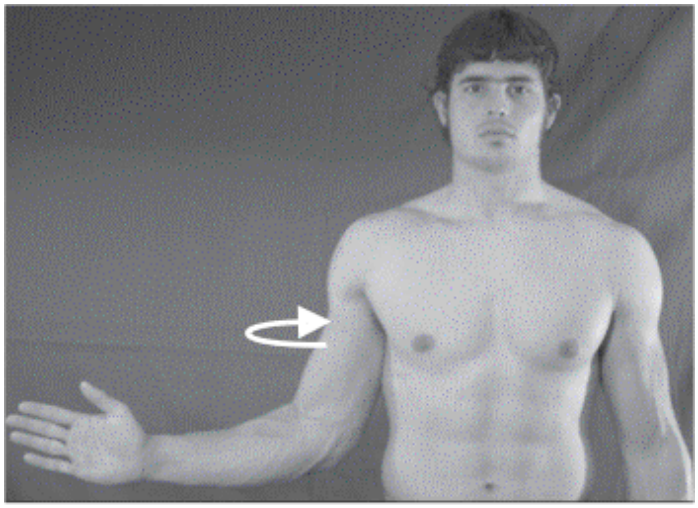
Extension

Movements



Internal rotation

Movements



External rotation

Glenohumeral Muscles

Intrinsic glenohumeral muscles

Originate on scapula and clavicle

Deltoid, Coracobrachialis, Teres major

Rotator cuff group : subscapularis, supraspinatus, infraspinatus, & teres minor

Extrinsic glenohumeral muscles

Latissimus dorsi and pectoralis major

Anterior

Pectoralis major
Coracobrachialis
Subscapularis
Superior
Deltoid
Supraspinatus

Superior

Deltoid
Supraspinatus
Posterior
Latissimus dorsi
Teres major
Infraspinatus
Teres minor

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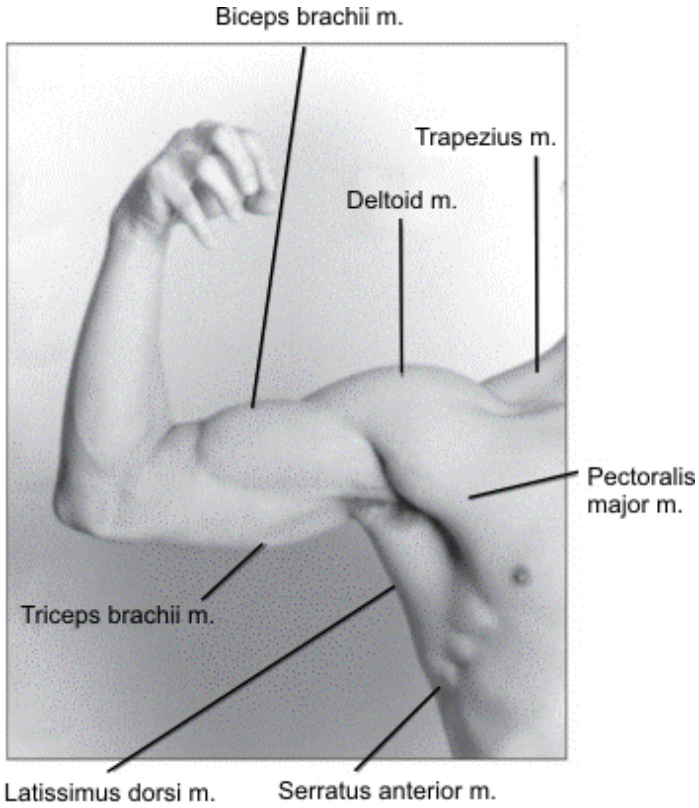

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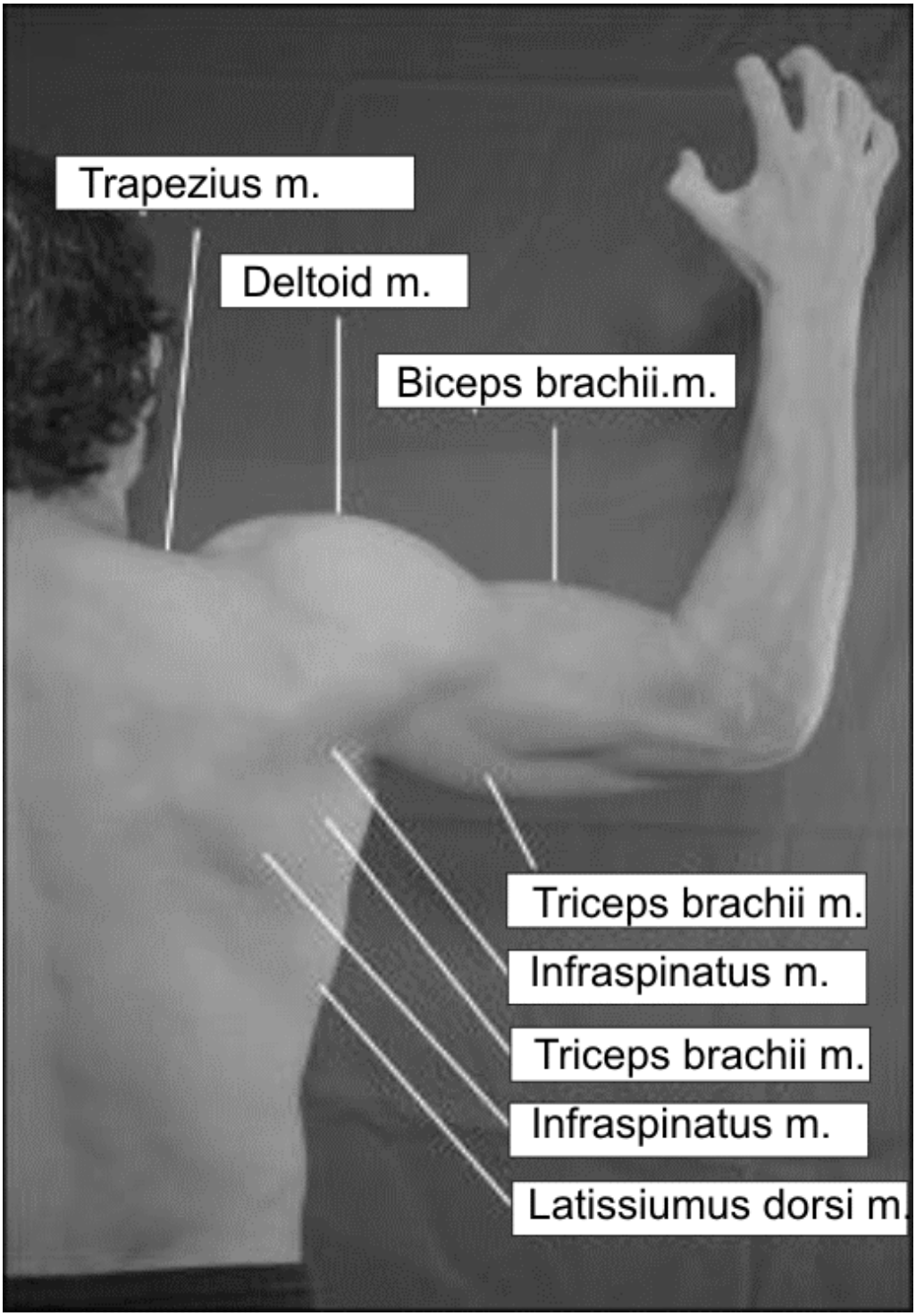
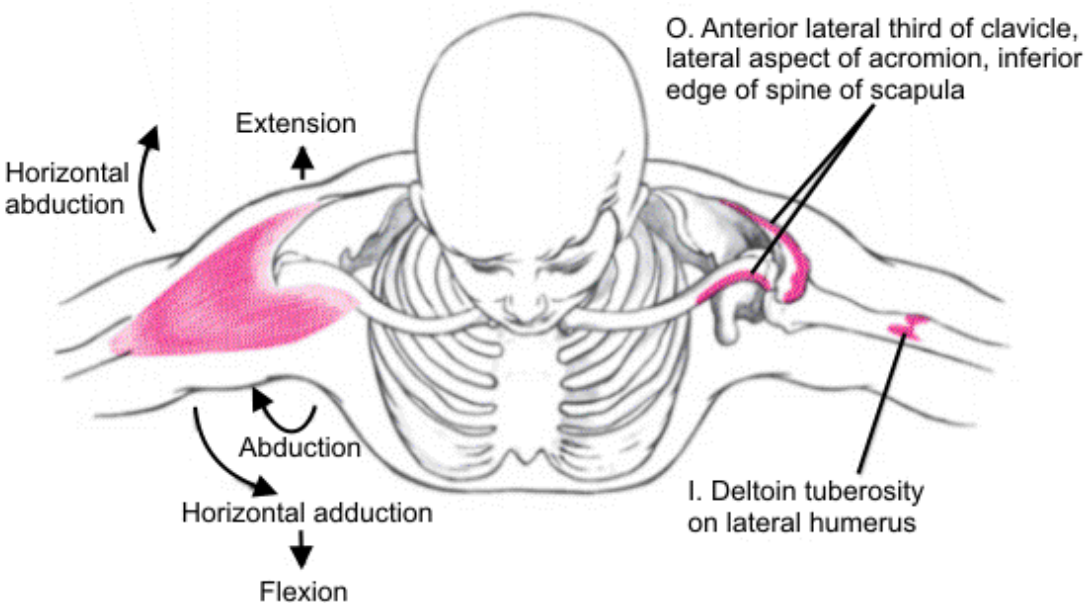
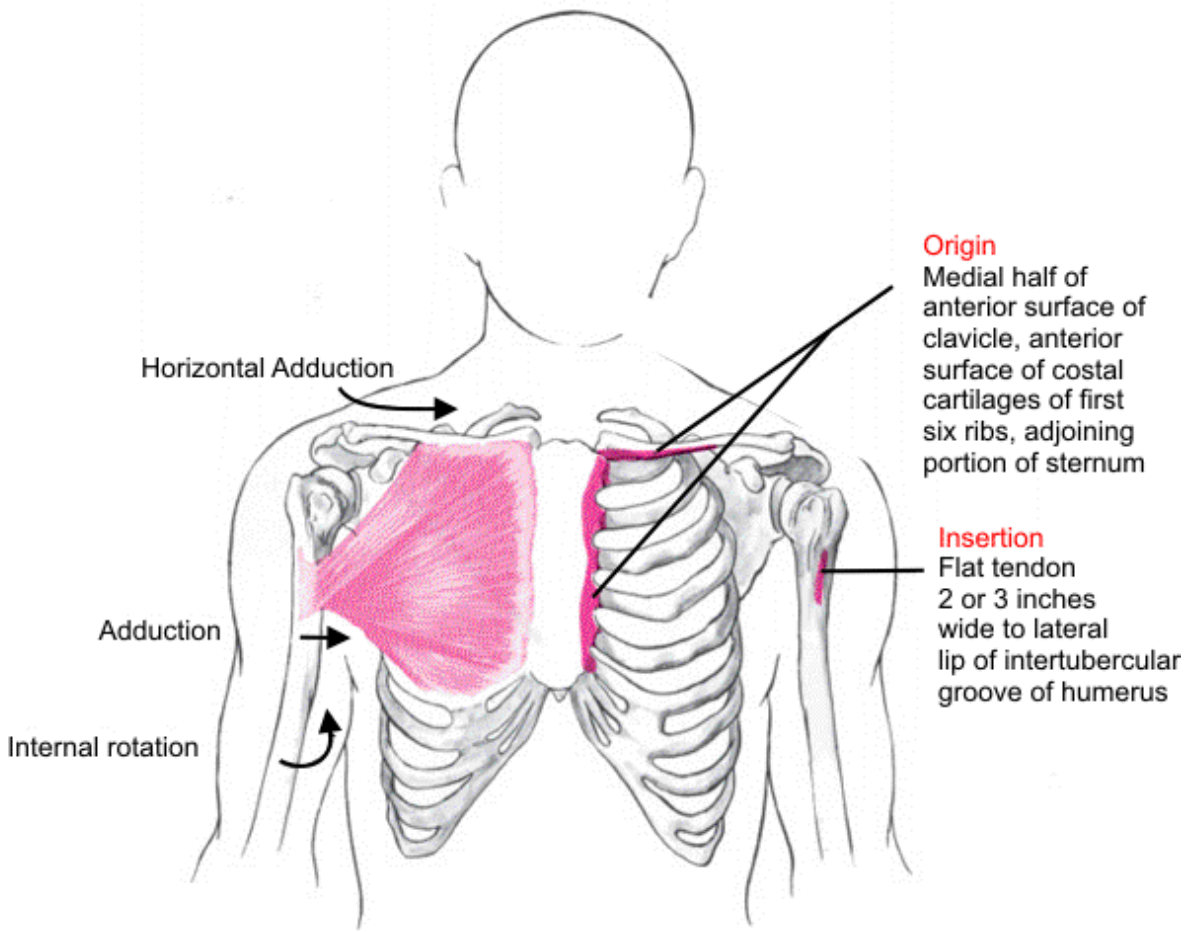


Deltoid Muscle



Petoralis Major



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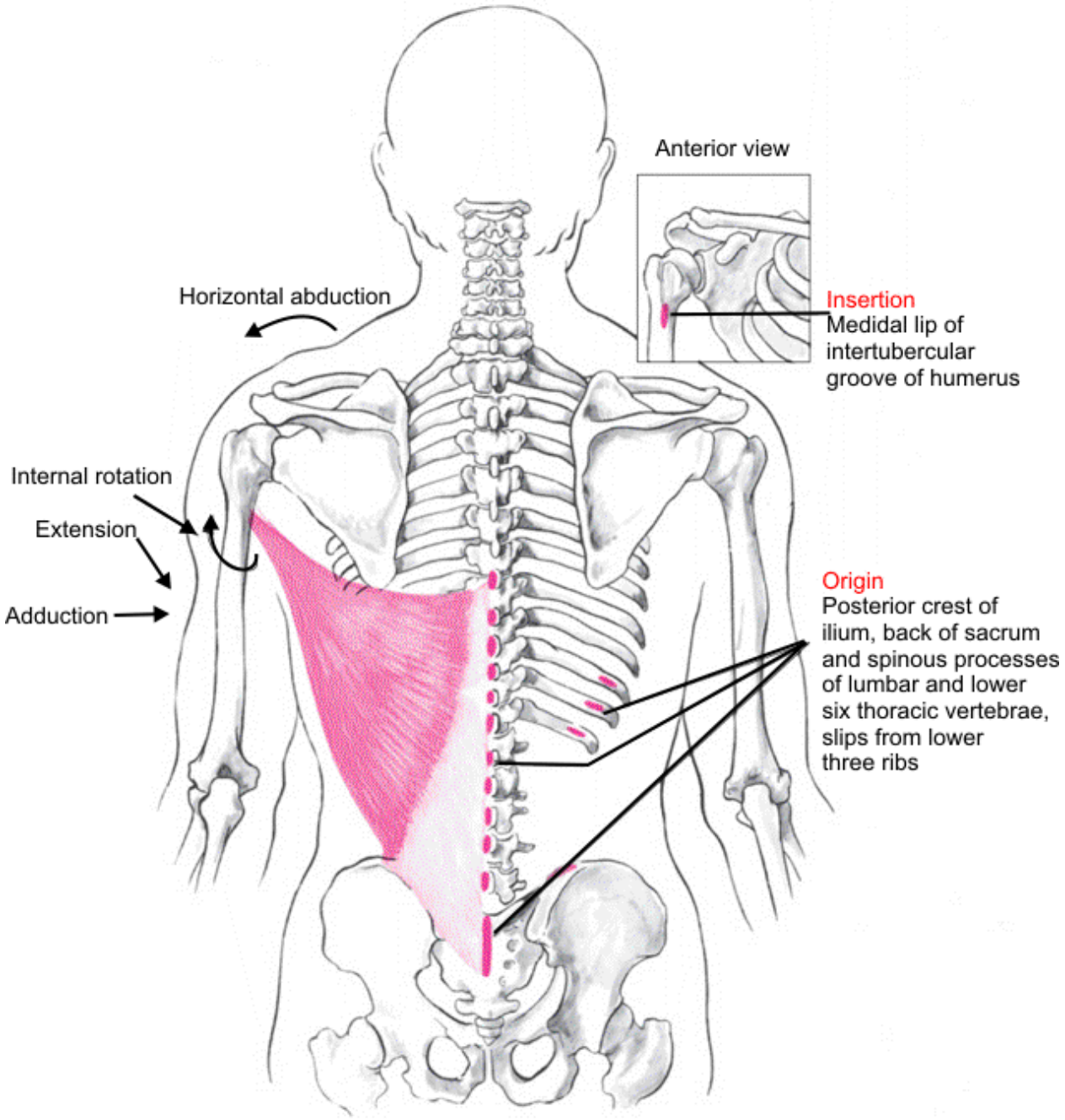
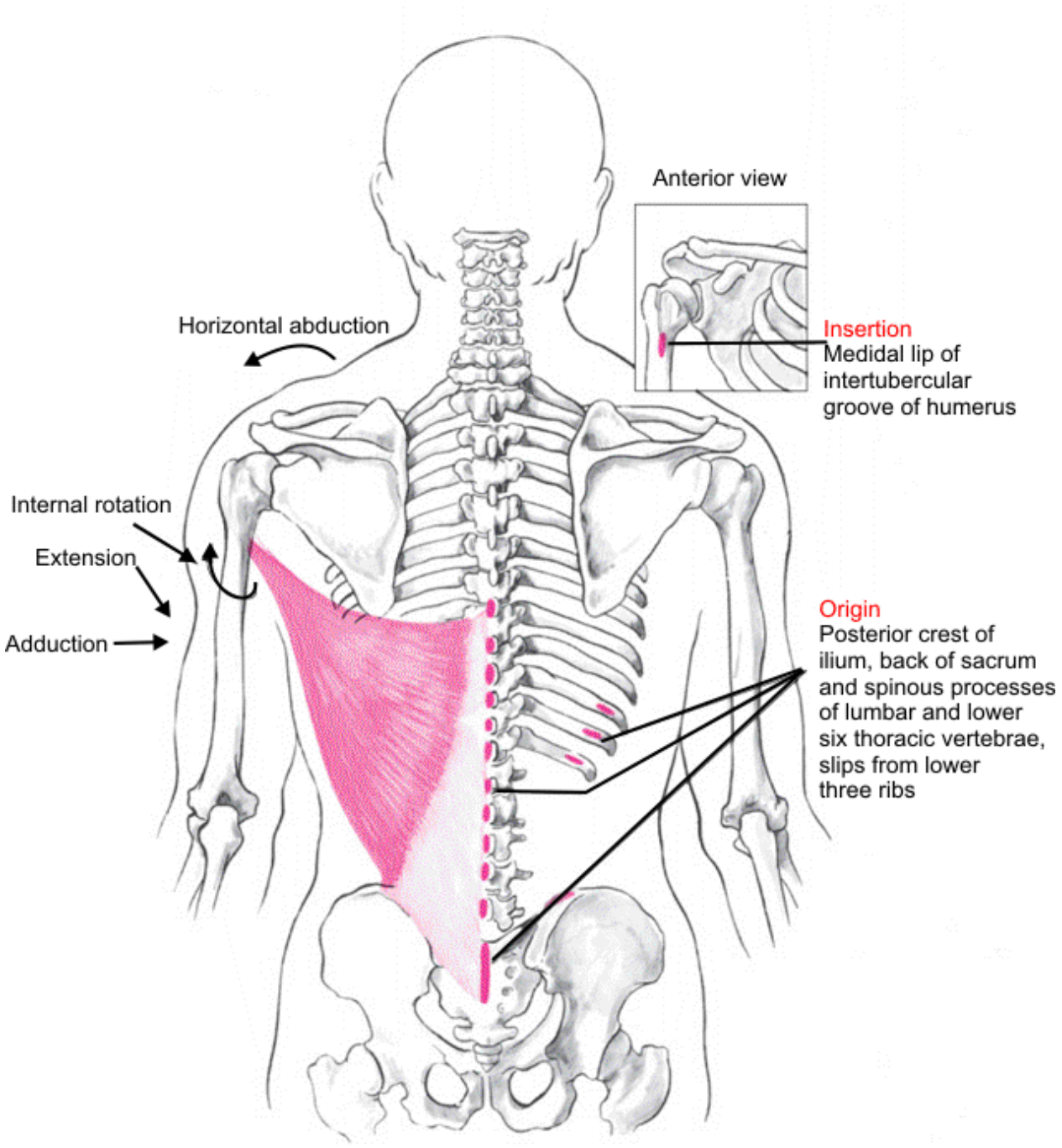
Latissimus Dorsi



Corachobrachialus



Rotator Cuff Muscles

Not very large

Must possess strength and muscular endurance

Conducting repetitious overhead activities (throwing, swimming, and pitching) with poor technique, muscle fatigue, or inadequate warm-up & conditioning leads to failure of rotator cuff muscle group in dynamically stabilizing humeral head in glenoid cavity

Leads to further rotator cuff problems such as tendonitis and rotator cuff impingement within subacromial space

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Subscapularis Muscle

Internal Rotation

Adduction

Extension

Stabilization of humeral head in glenoid fossa

Supraspinatus Muscle

Abduction

Stabilization of humeral head in glenoid fossa

Infraspinatus Muscle

External Rotation

Horizontal Abduction

Extension

Stabilization of humeral head in glenoid fossa

Terres Minor Muscle

External Rotation

Horizontal Abduction

Extension

Stabilization of humeral head in glenoid fossa

Terres Major Muscle

Extension, particularly from the flexed position to the posteriorly extended position

Internal Rotation

Adduction, particularly from the abducted position down to the side & toward midline of body

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Glenohumeral Movements

Flexion

Agonists

- Anterior Deltoid
- Upper Pectoralis Major

Extension

Agonists

- Teres Major
- Latissimus Dorsi
- Lower Pectoralis Major

Abduction

Agonists

- Deltoid
- Supraspinatus
- Upper Pectoralis Major

Adduction

Agonists

- Latissimus Dorsi
- Teres Major
- Lower Pectoralis Major

Internal Rotation

Agonists

- Latissimus Dorsi
- Teres Major
- Subscapularis
- Pectoralis Major

All attach anteromedially on humerus

External Rotation

Agonists

- Infraspinatus
- Teres Minor

Both attach posteriorly on greater tubercle

Horizontal Abduction

Agonists

- Posterior Deltoid
- Middle Deltoid
- Infraspinatus
- Teres Minor

Horizontal Adduction

Agonists

- Anterior Deltoid
- Pectoralis Major
- Coracobrachialis

Diagonal Abduction

Agonists

- Posterior Deltoid
- Infraspinatus
- Teres Minor
- Triceps Brachii (Long Head)

Diagonal Adduction

Agonists (both high and low)

- Anterior Deltoid
- Coracobrachialis
- Biceps Brachii (short head)
- Pectoralis Major - Upper & Lower

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