

ANATOMIE



29.09.2023

Dr. med. Philemon Grimm
Oberarzt
Schulter- / Ellbogenchirurgie

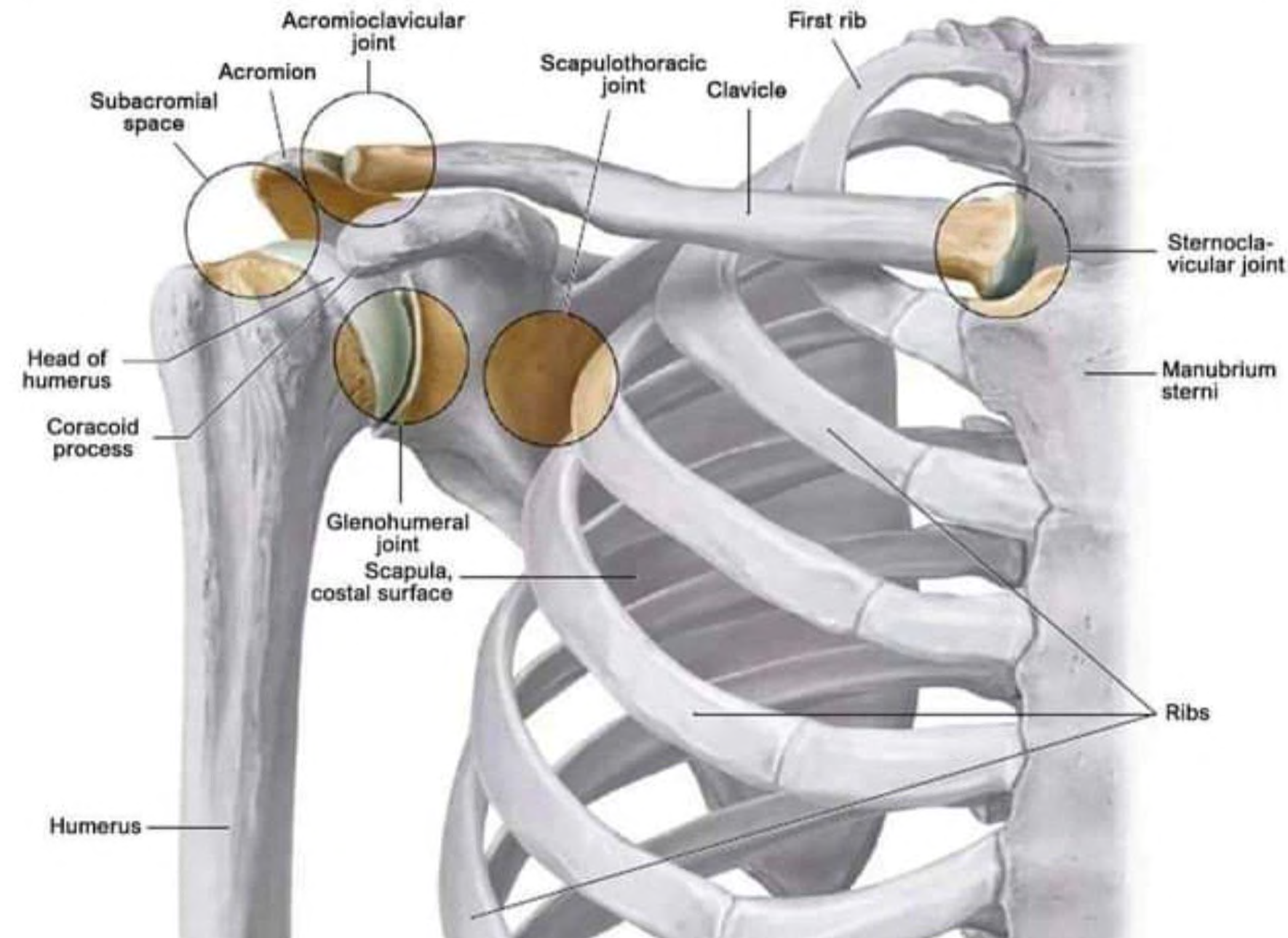


Funktionelle Anatomie

Gelenke des Schultergürtels

- Glenohumeralgelenk
- Acromioclaviculargelenk
- Sternoclaviculargelenk
- Skapulothorakales Gleitlager
- Subacromiales Gleitlager

THE 5 JOINTS OF THE SHOULDER

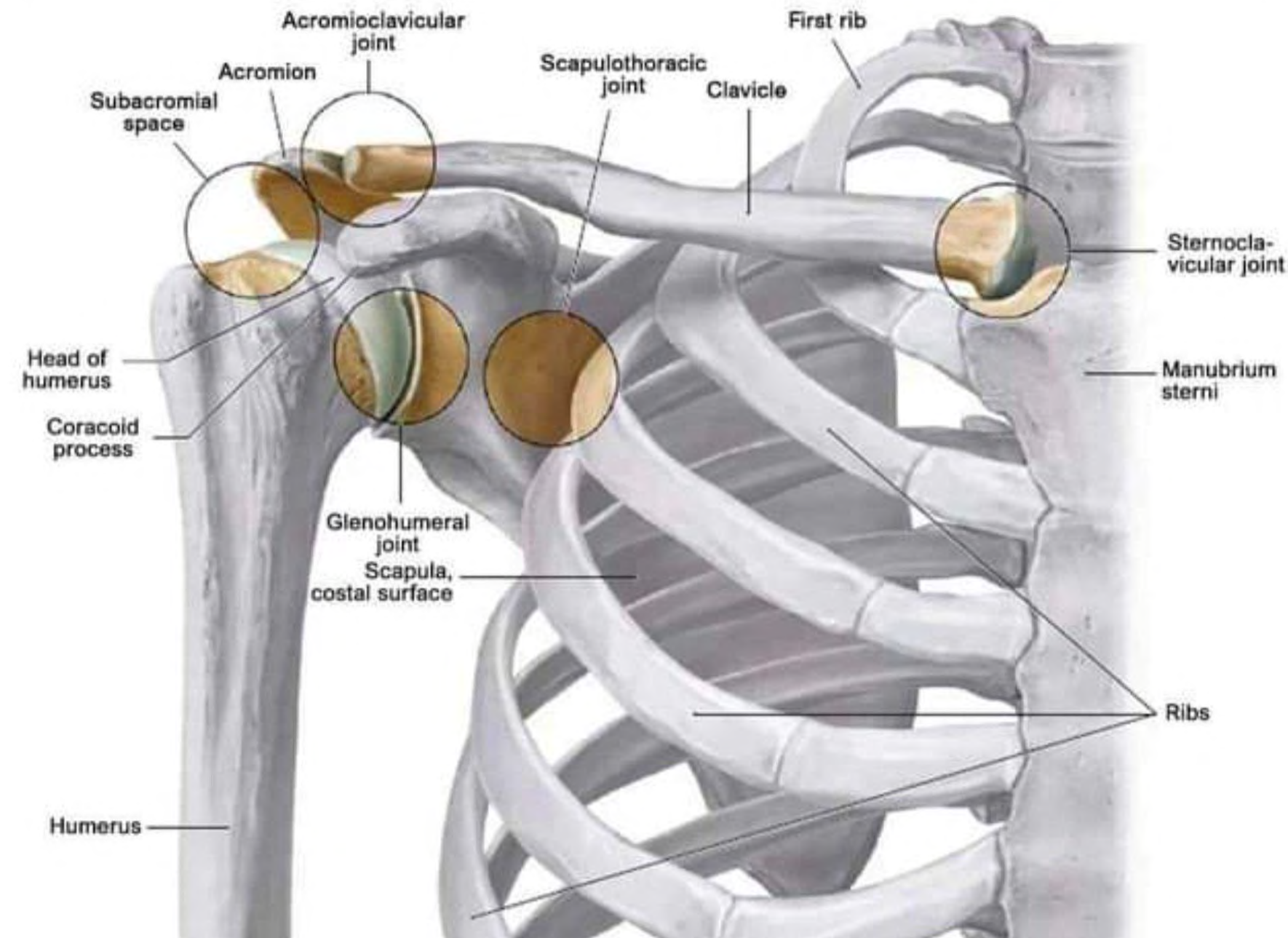


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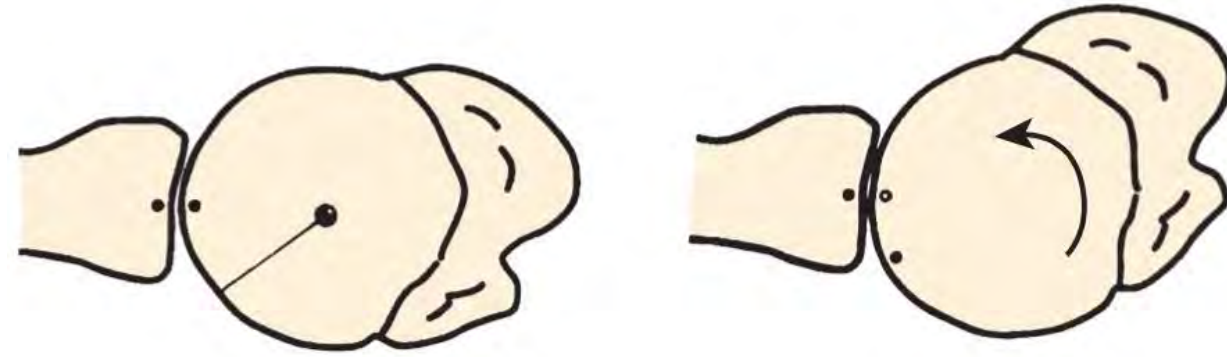
THE 5 JOINTS OF THE SHOULDER



Glenohumeralgelenk

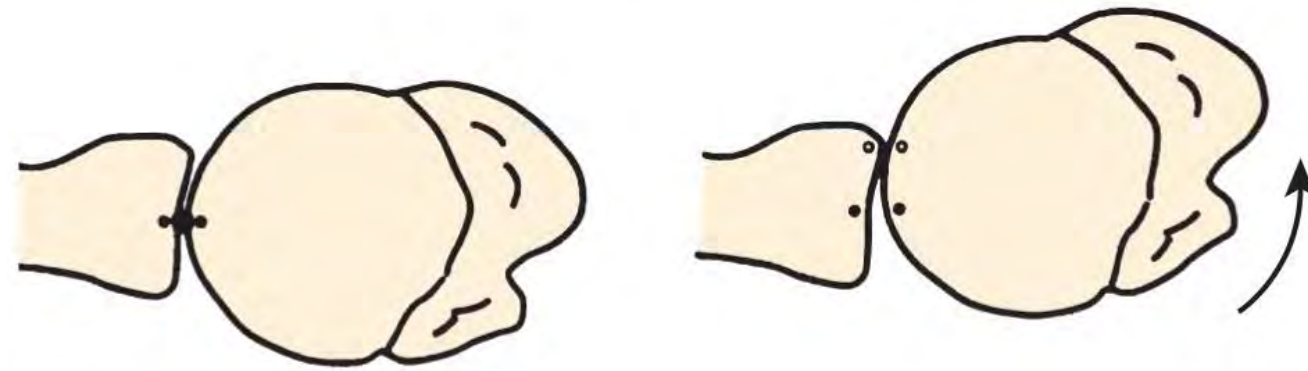
Kugel auf der Pfanne

- Rotation



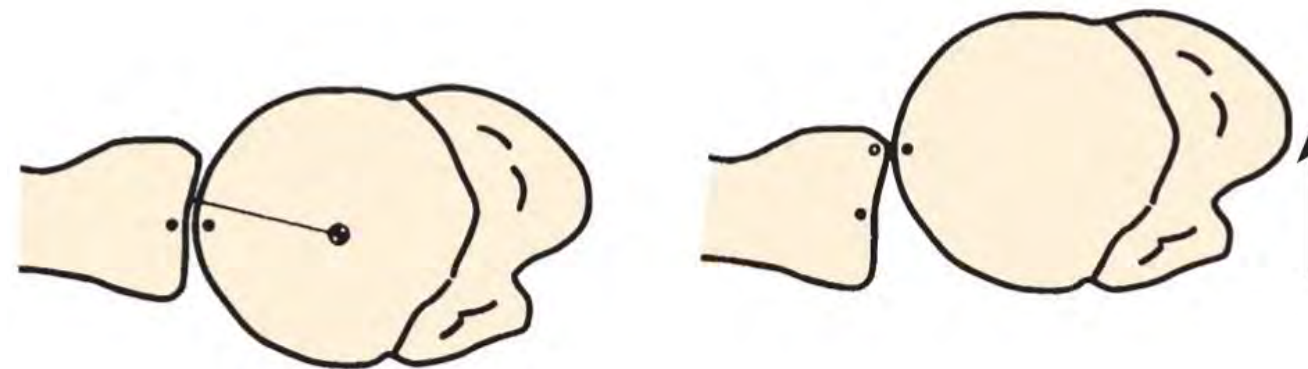
Spinning

- Rollen



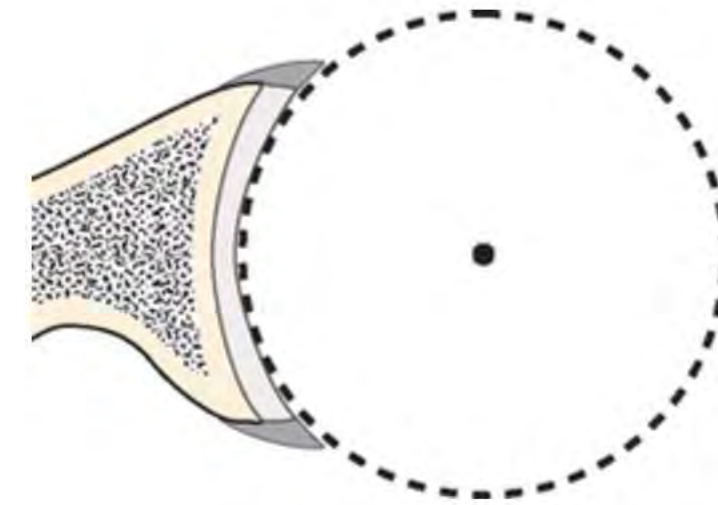
Rolling

- Translation



Sliding

1 : 4









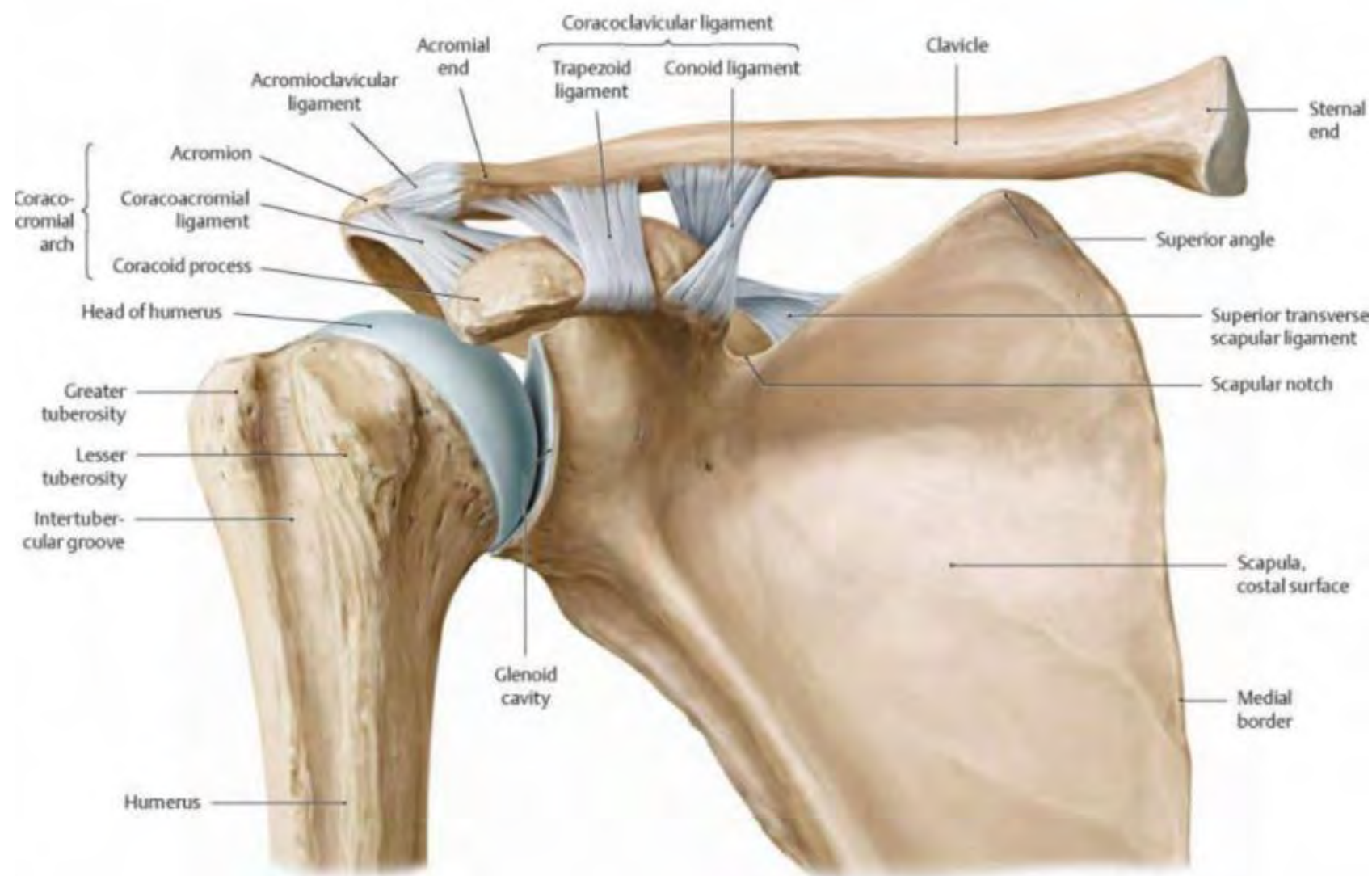


Glenohumeralgelenk

statische vs dynamische Stabilisatoren

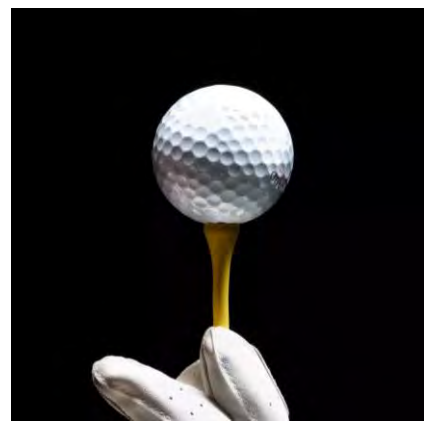
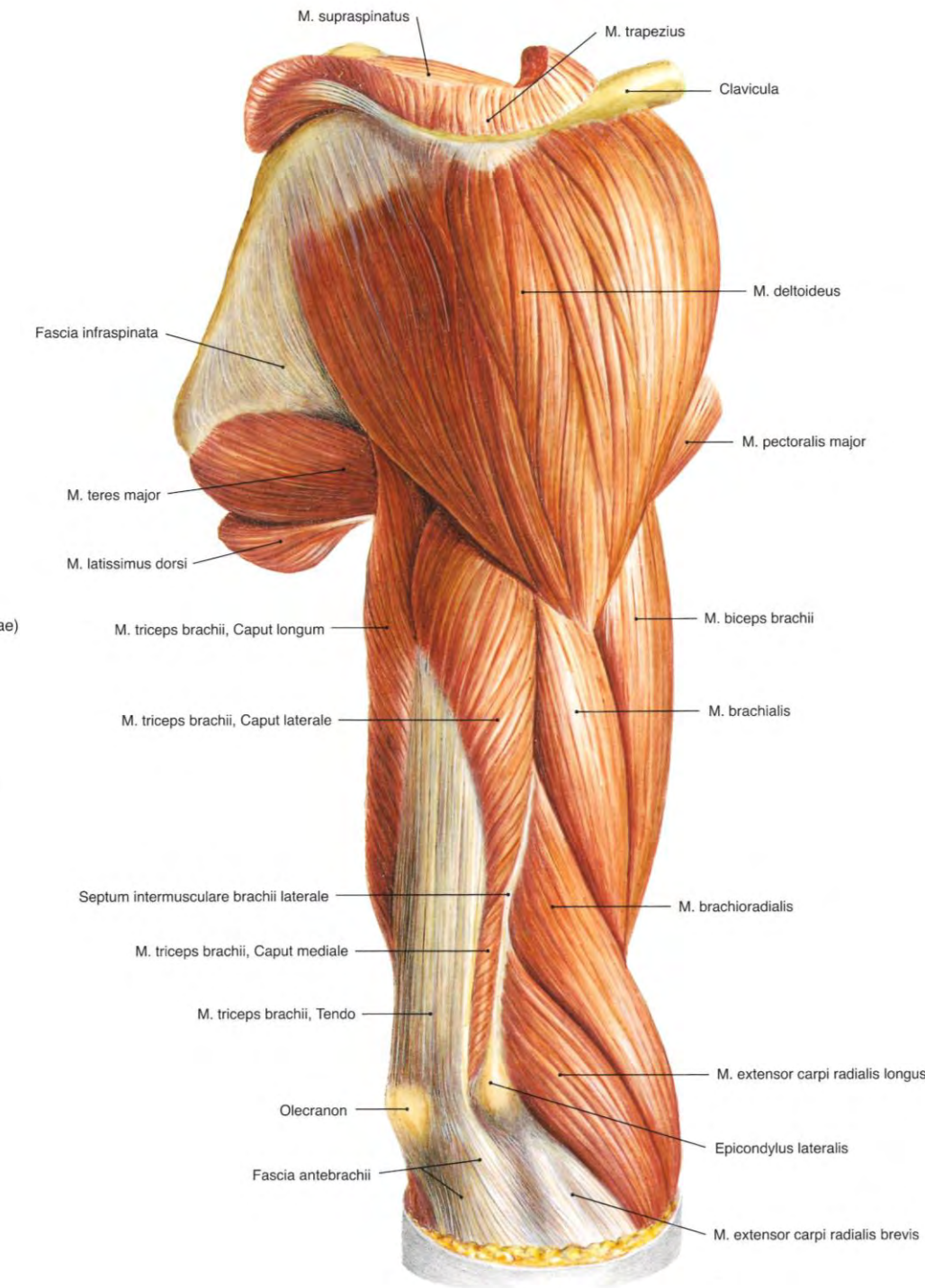
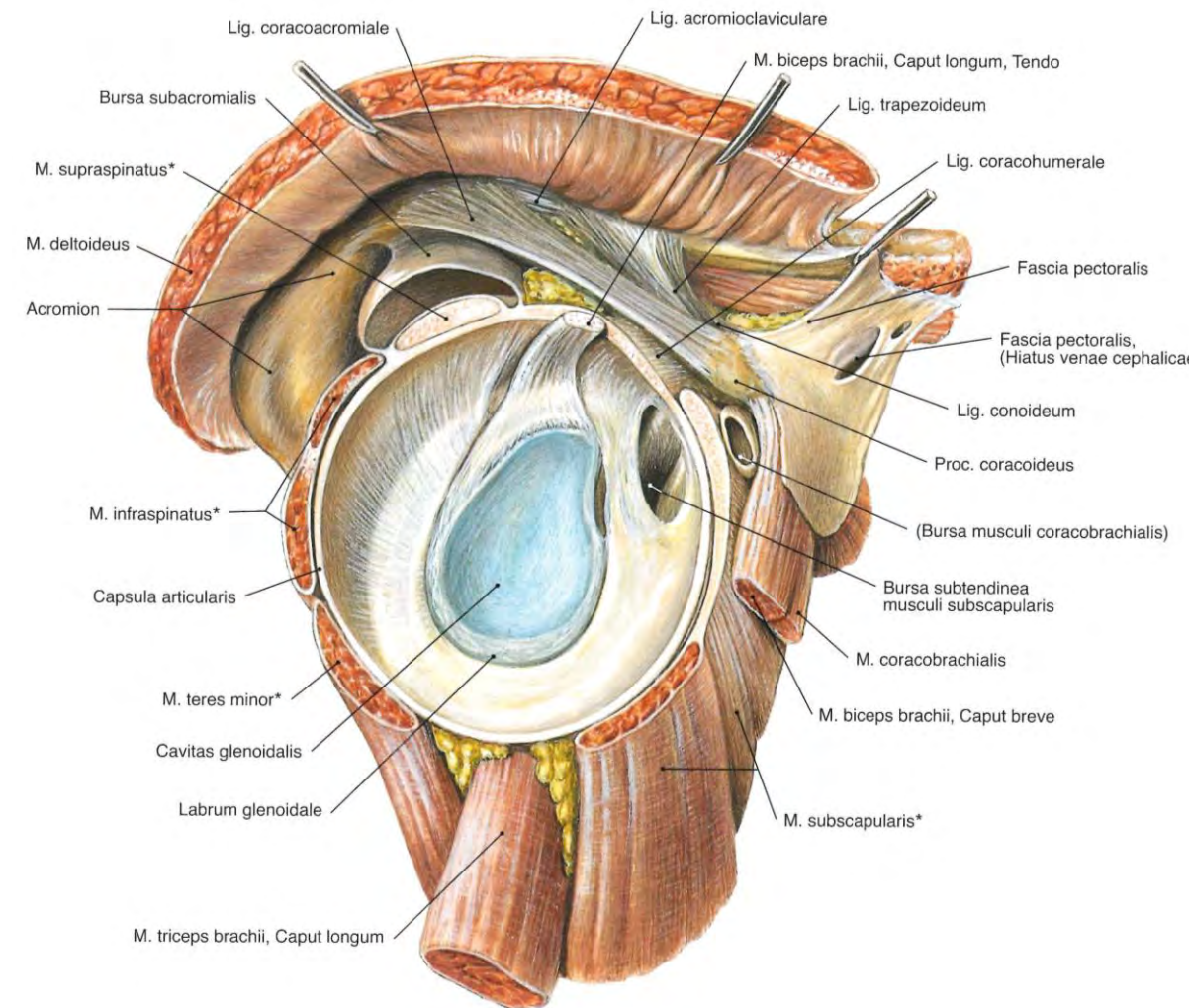
Statisch

- ossäre Anatomie
- Labrum
- Gelenkkapsel & Ligamente



Dynamisch

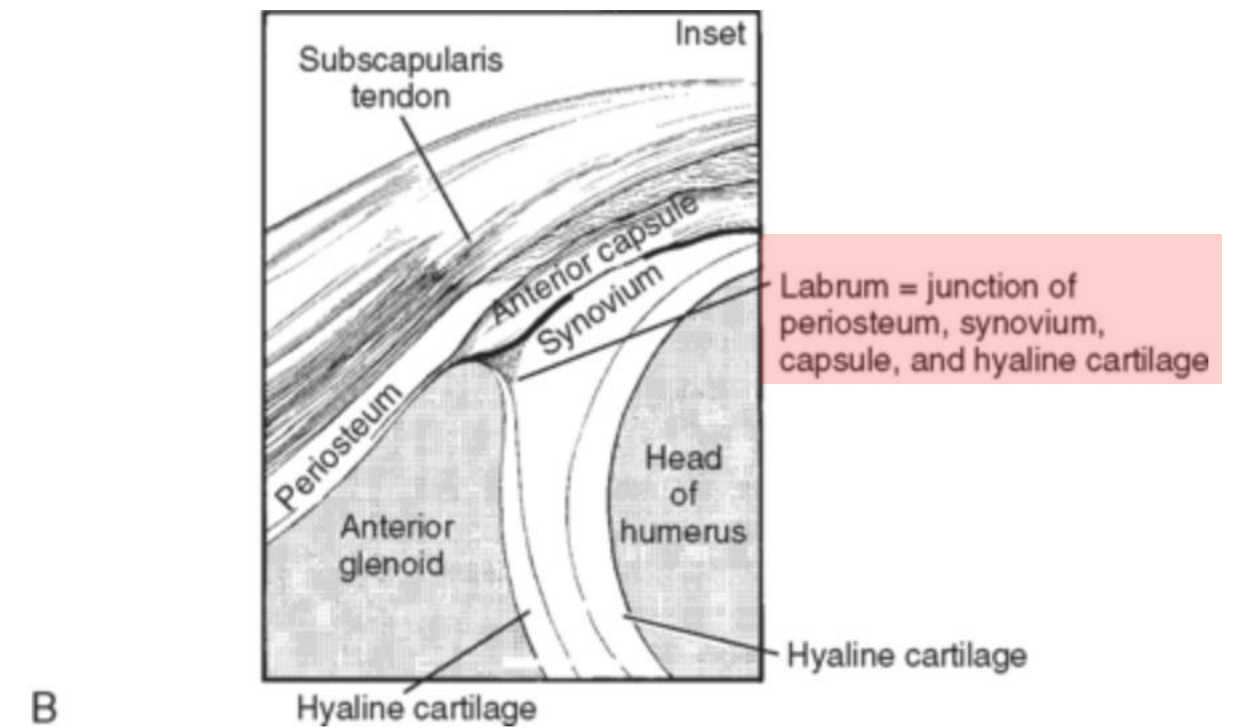
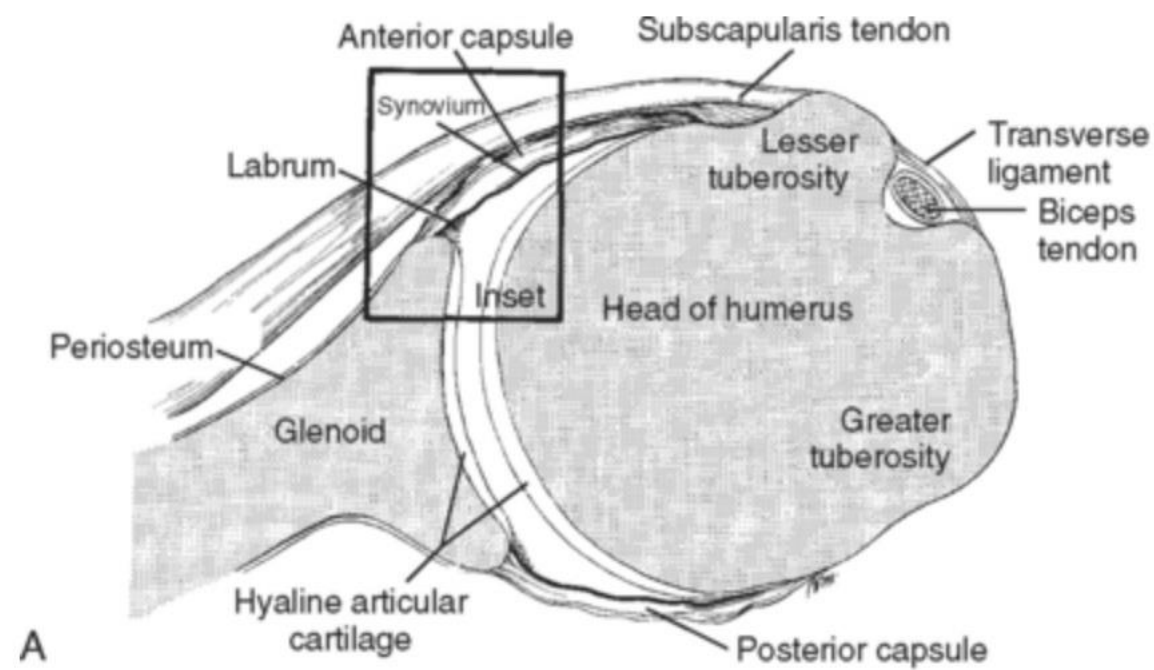
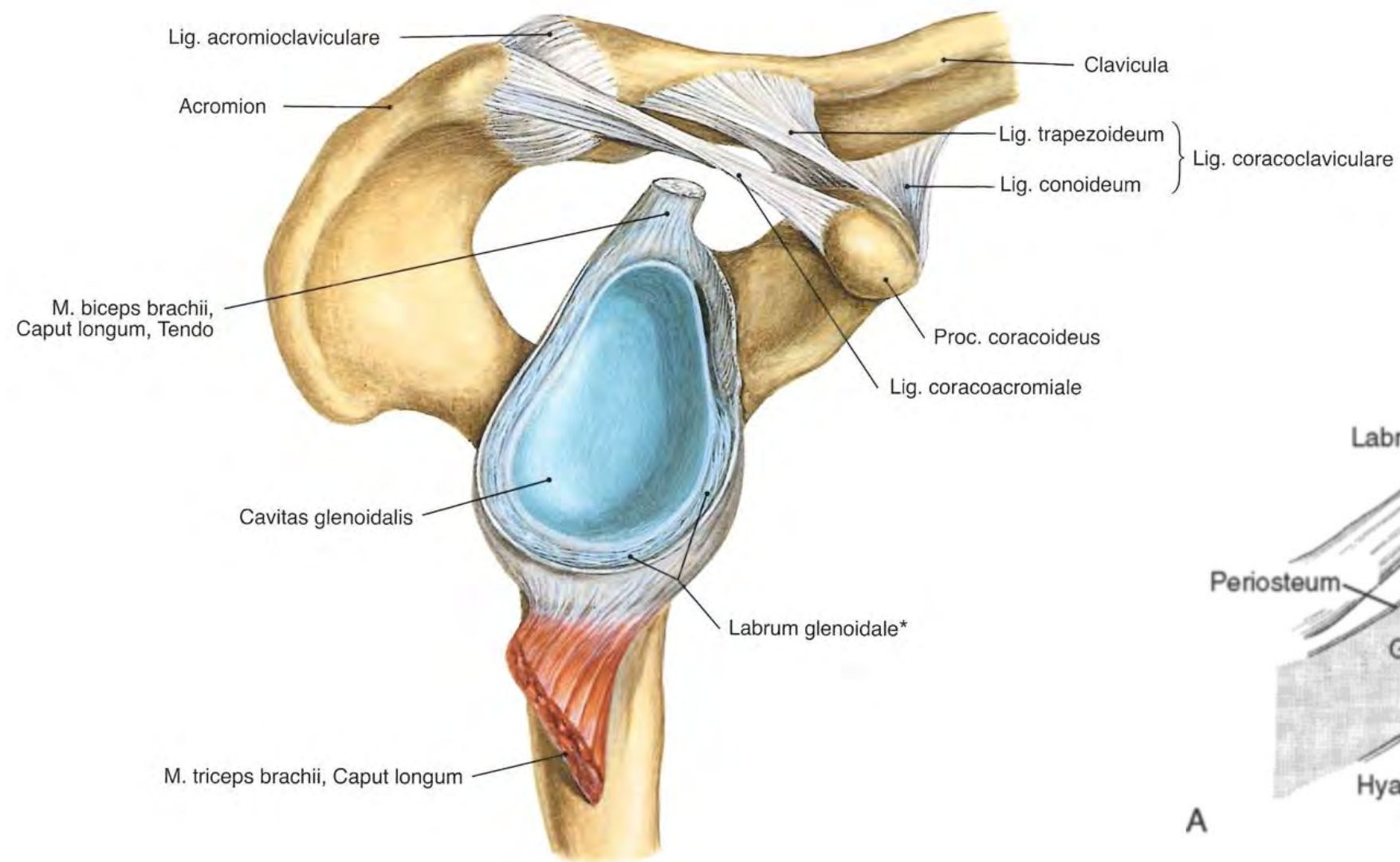
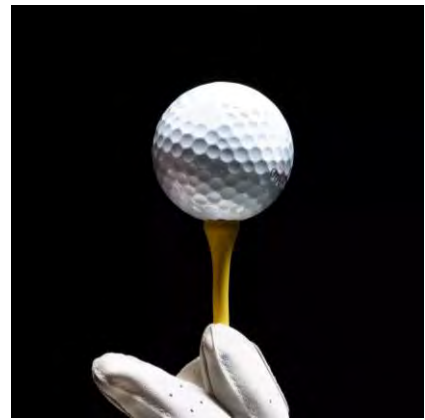
- Rotatorenmanschette
- Deltoideus
- Bizeps



Glenohumeralgelenk

Statische Stabilisatoren

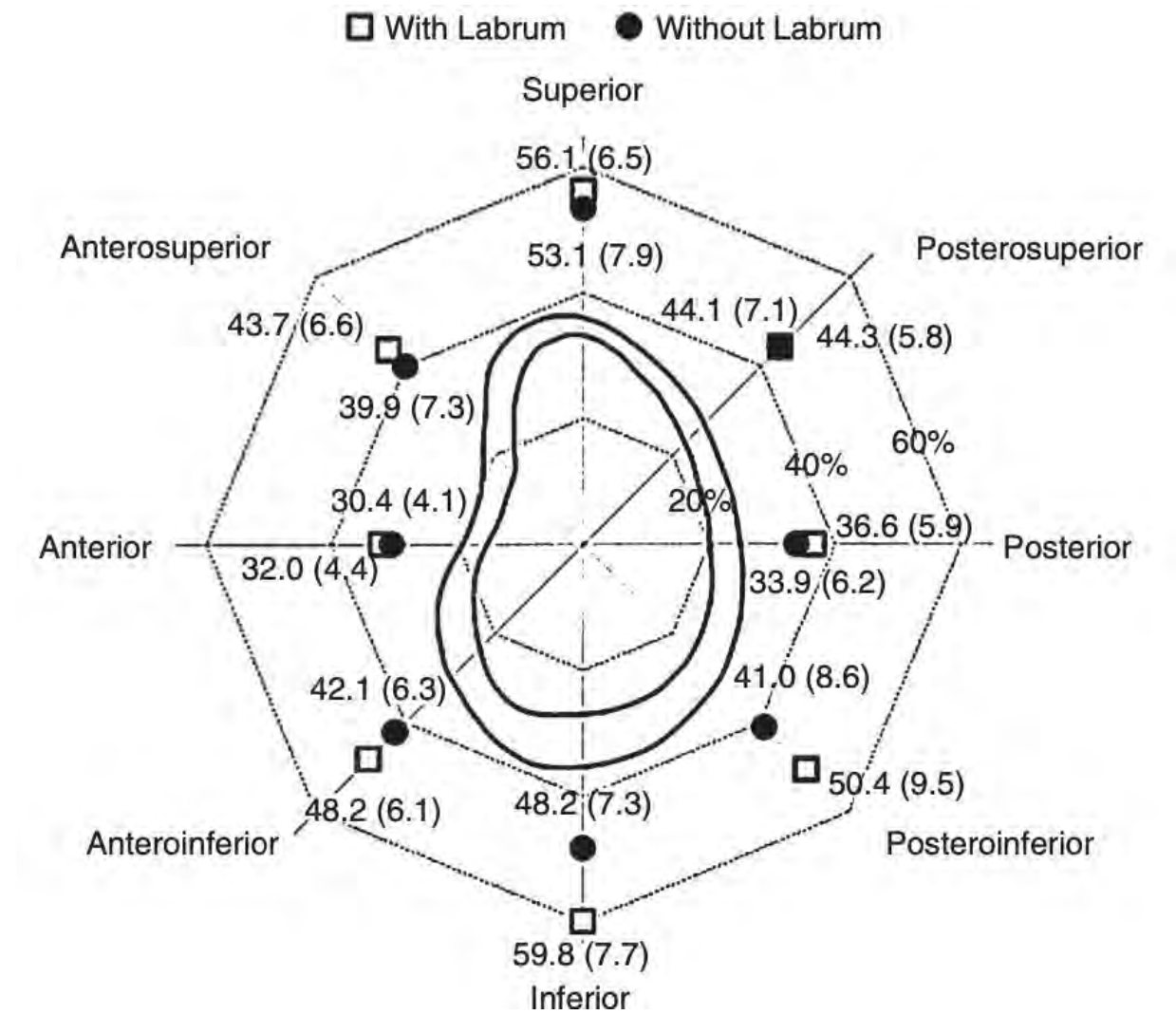
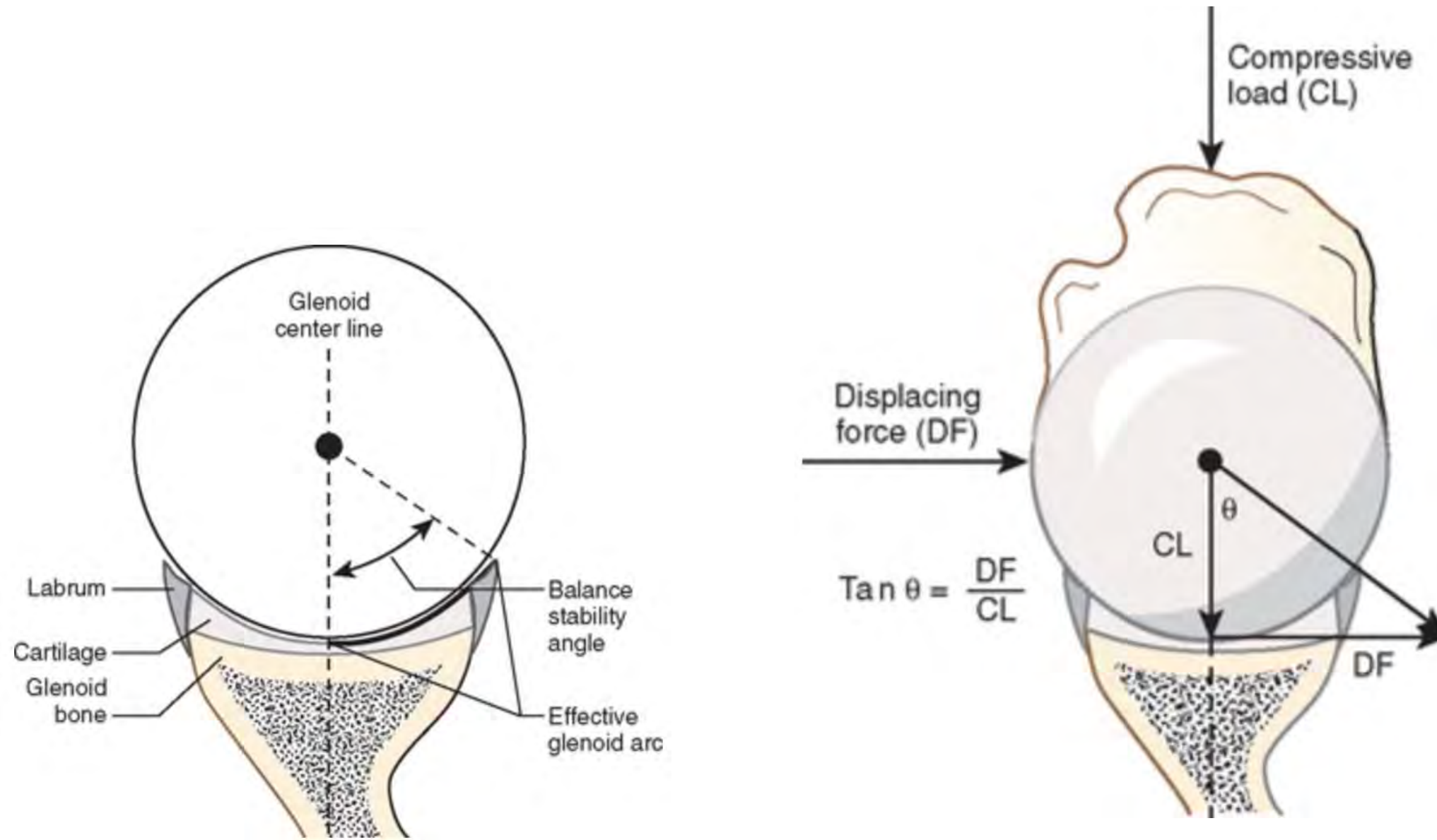
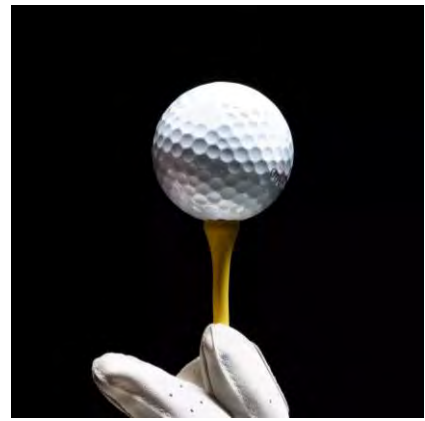
Labrum



Glenohumeralgelenk

Statische Stabilisatoren

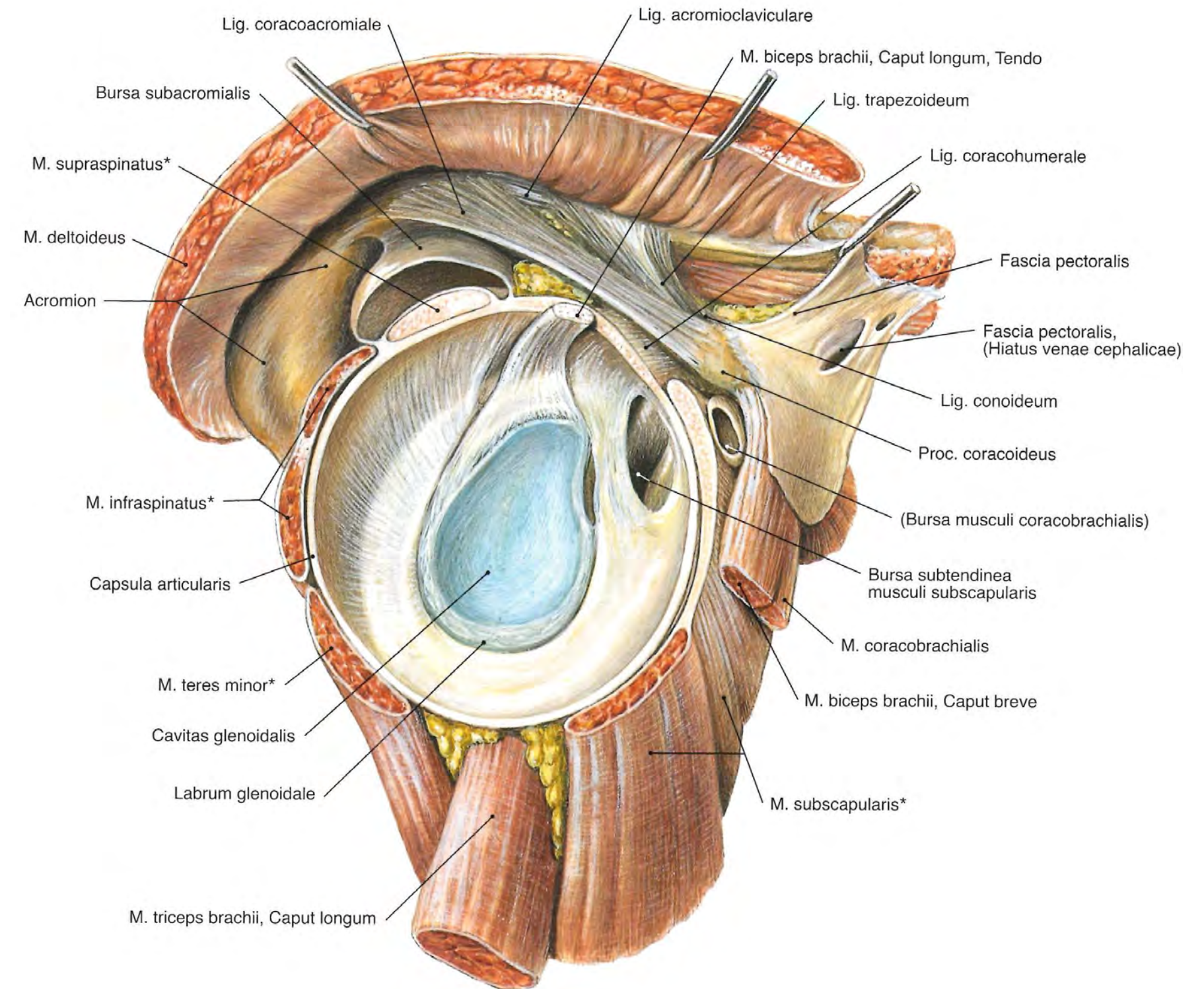
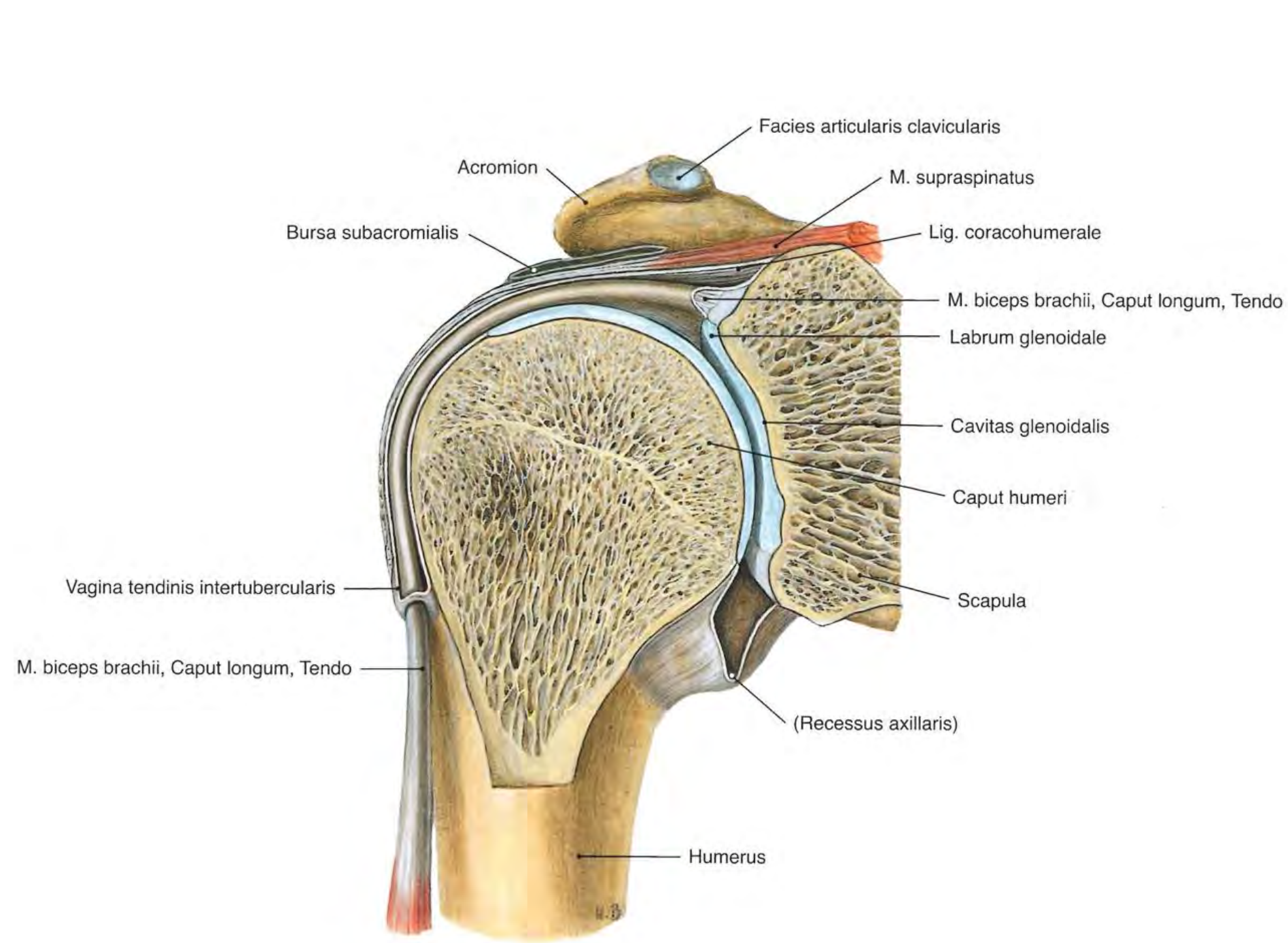
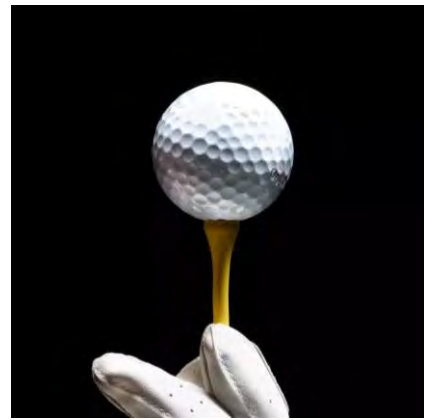
Labrum



Glenohumeralgelenk

Statische Stabilisatoren

Gelenkkapsel und Ligamente

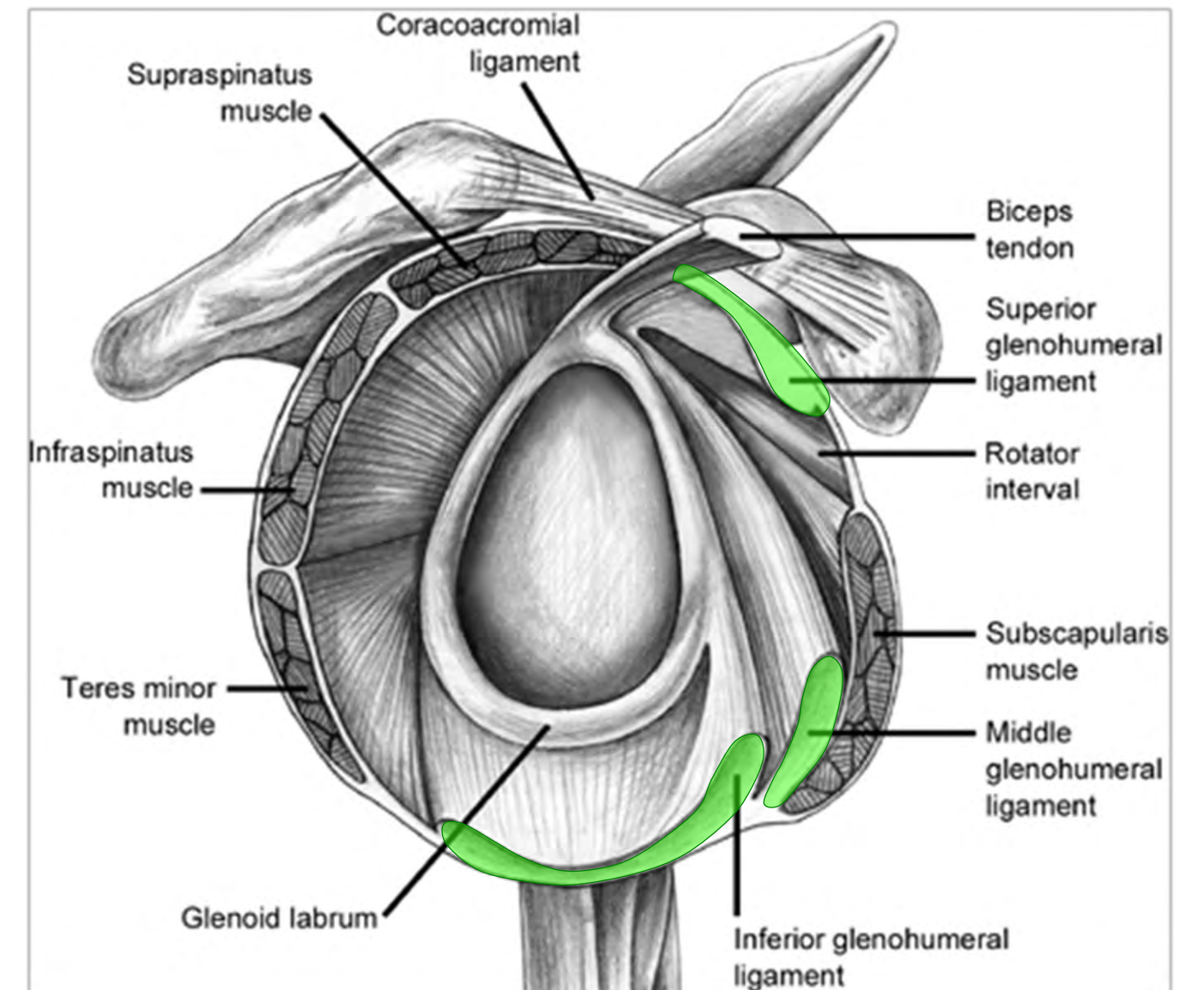
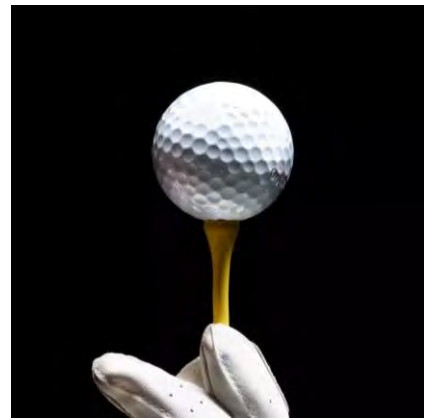
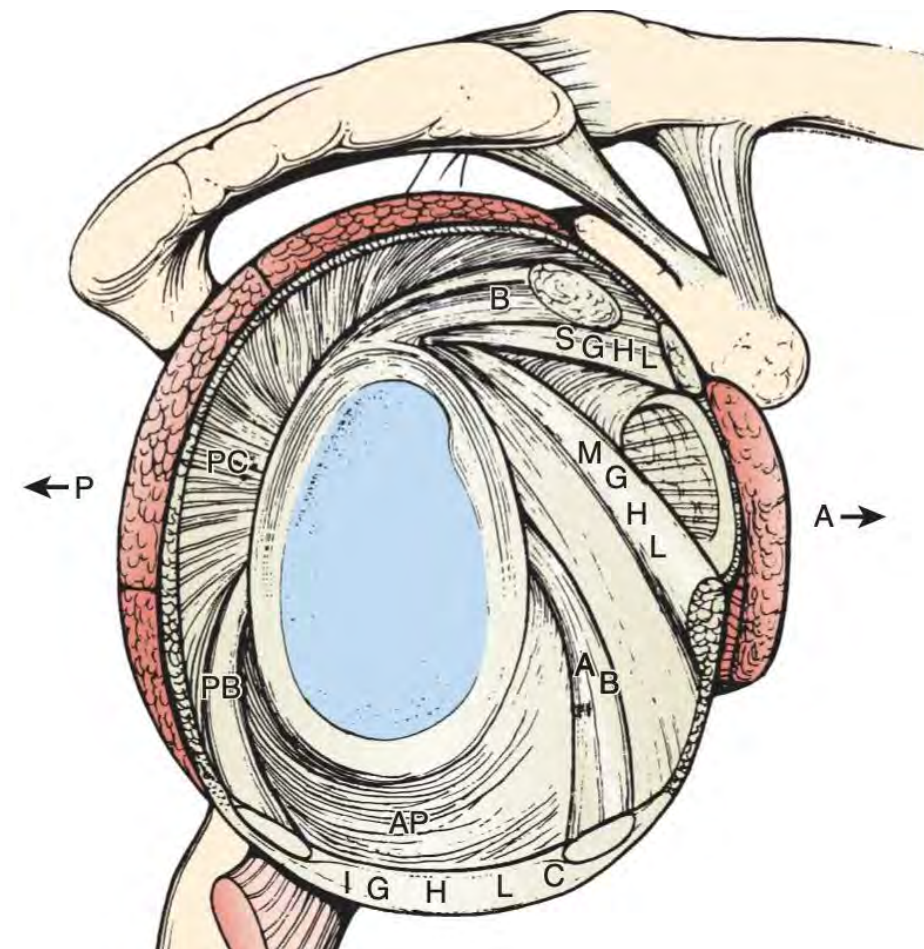


Glenohumeralgelenk

Statische Stabilisatoren

Gelenkkapsel und Ligamente

- Superiores glenohumerales Ligament (SGHL)
 - Mittleres glenohumerales Ligament (MGHL)
 - Inferiores glenohumerales Ligament (IGHL)
 - anteriores Bündel
 - axillary pouch
 - posteriores Bündel
- } inferior glenohumeral ligament complex

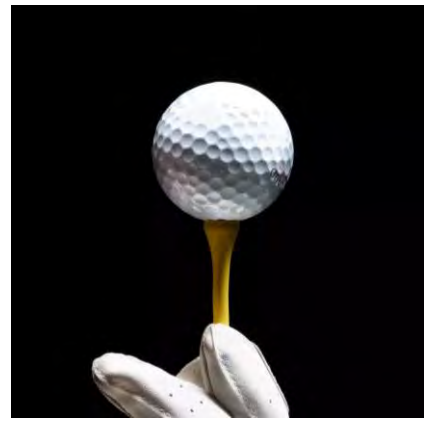
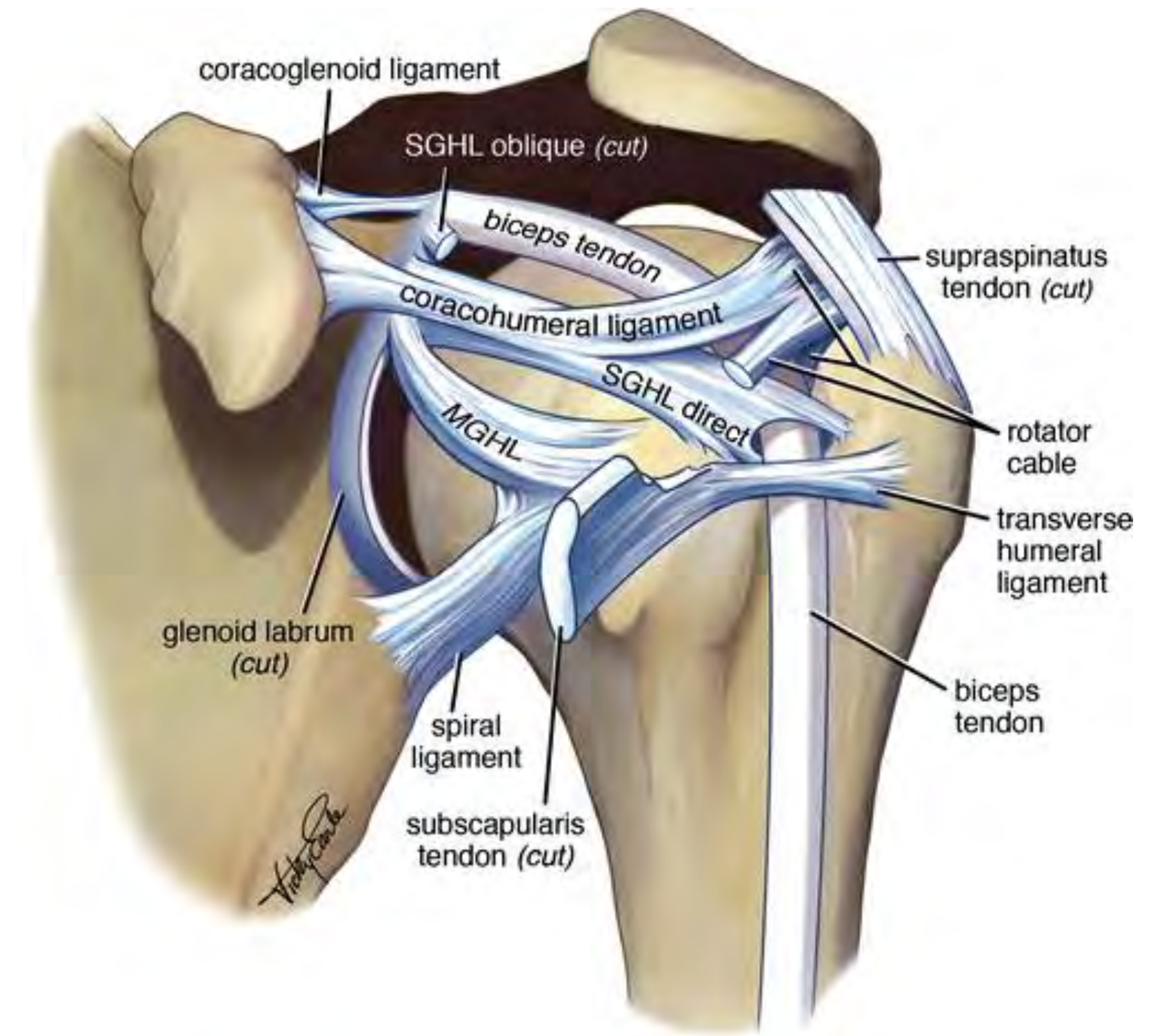
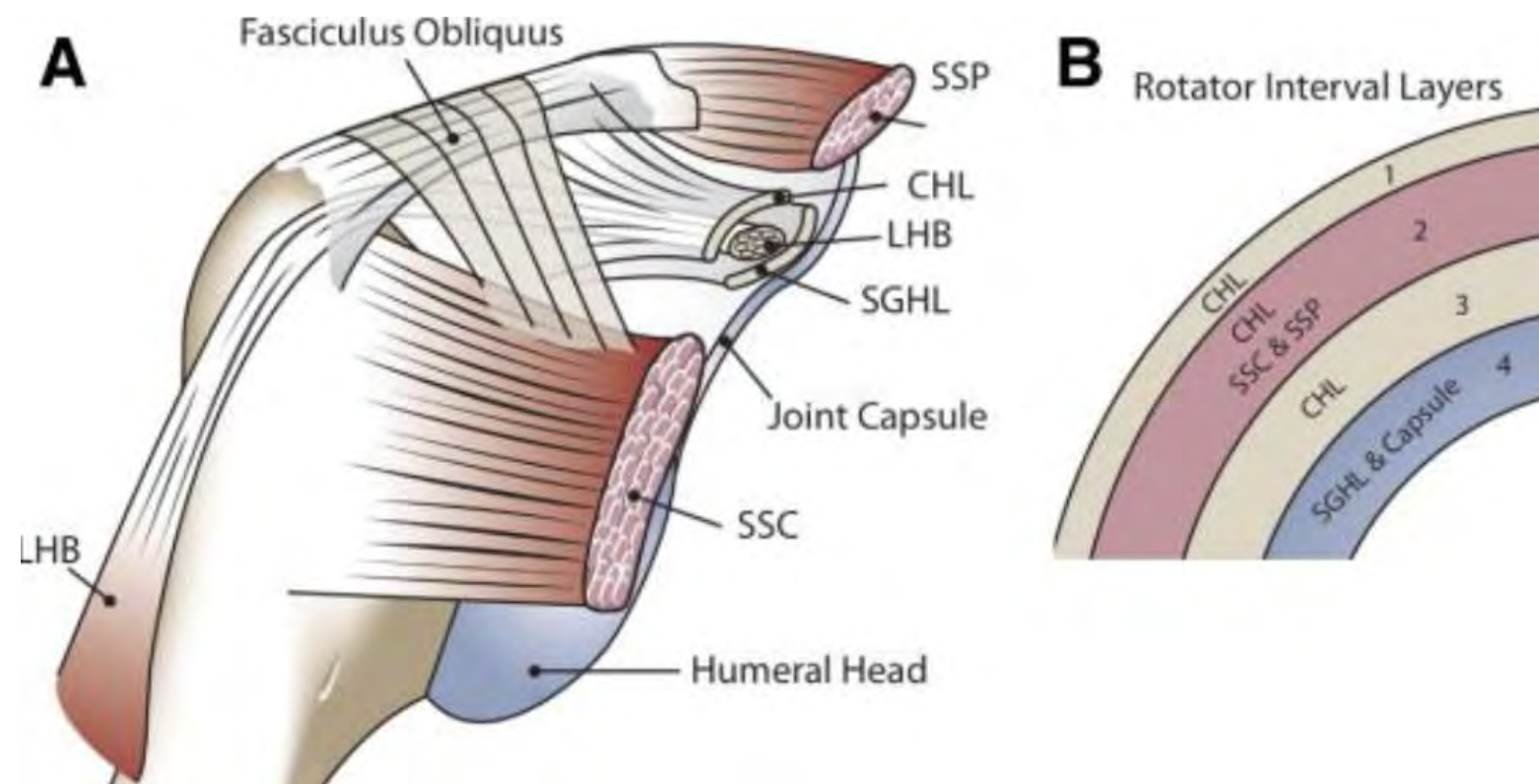


Glenohumeralgelenk

Statische Stabilisatoren

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- Mittleres glenohumerales Ligament (MGHL)
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 - anteriores Bündel
 - axillary pouch
 - posteriores Bündel
- Coracohumerales Ligament (CHL)

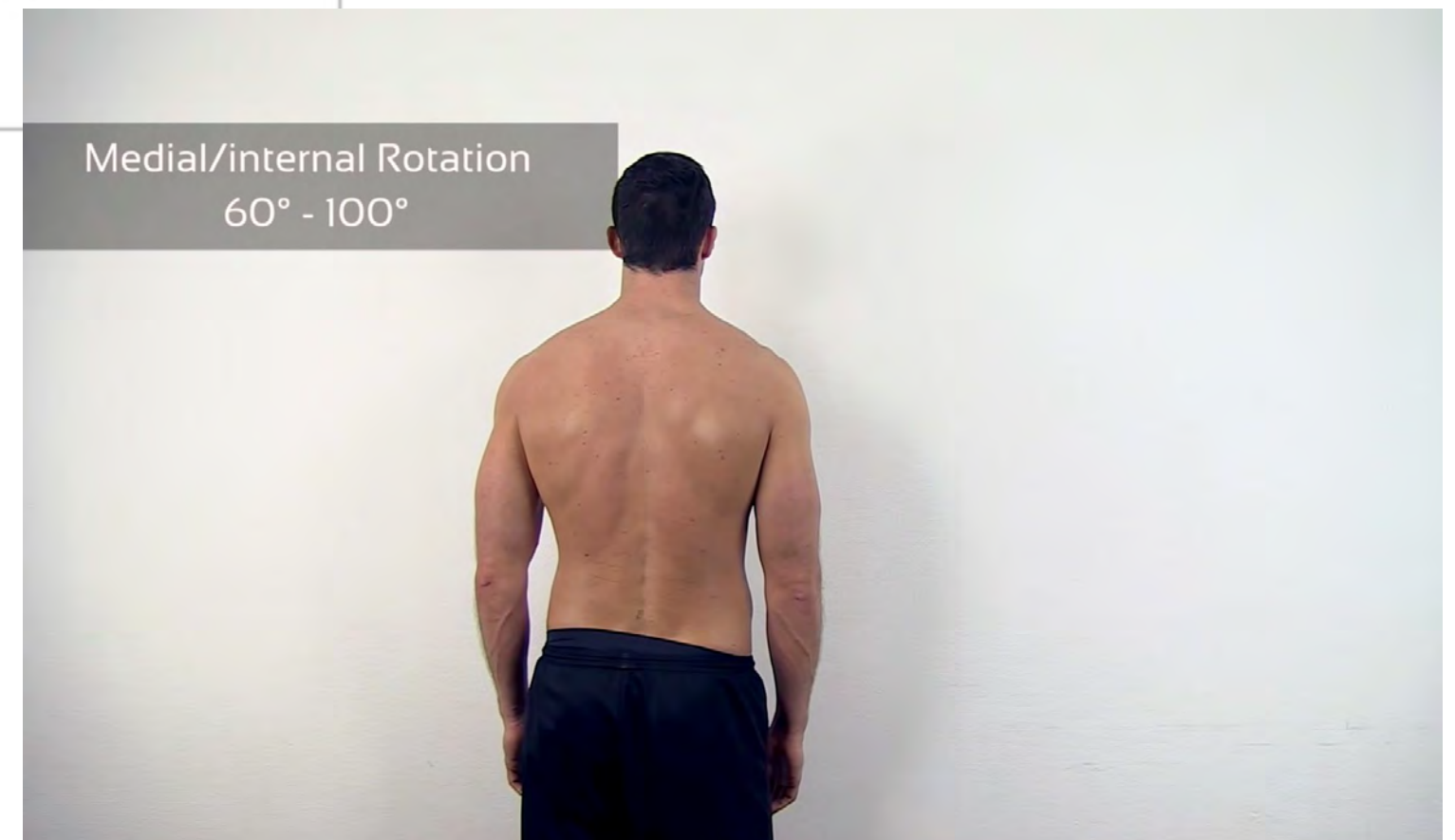
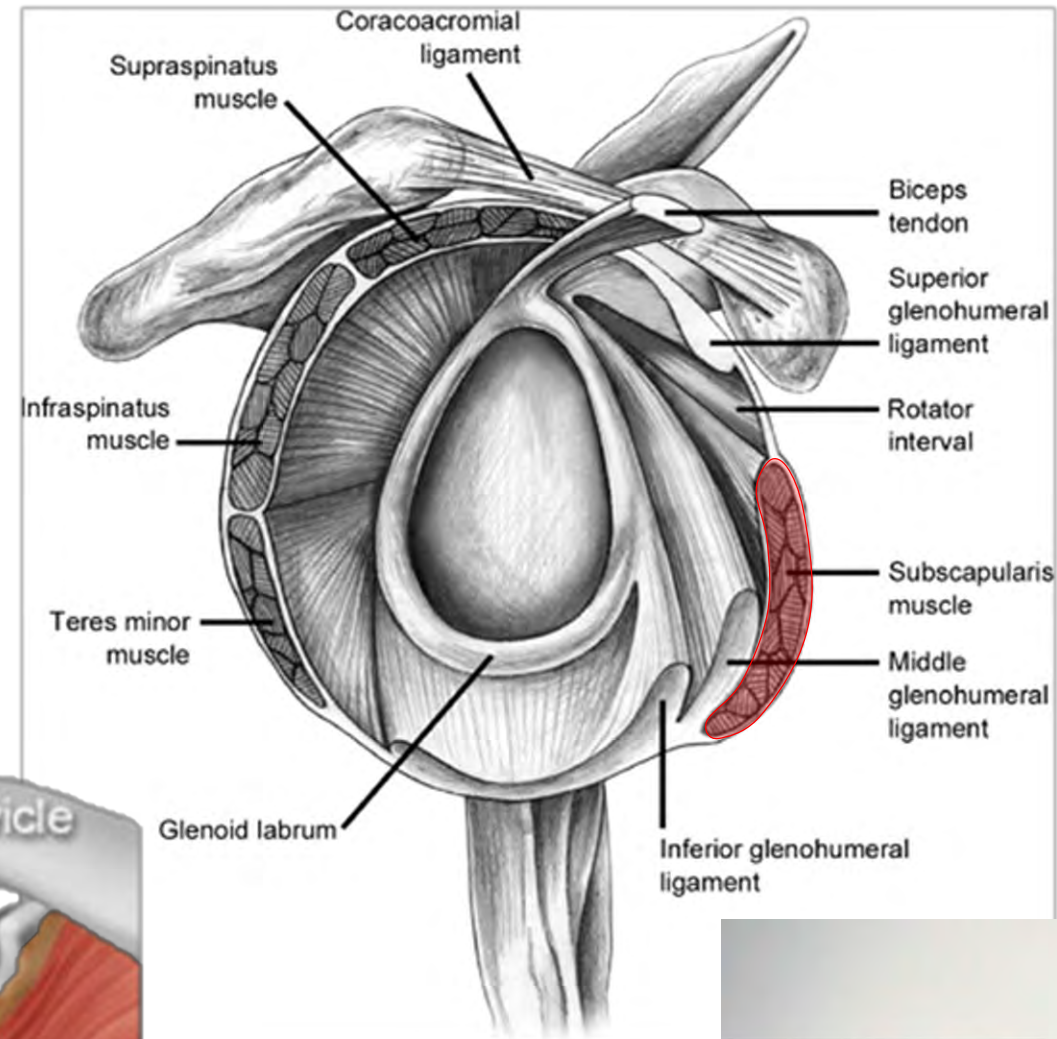
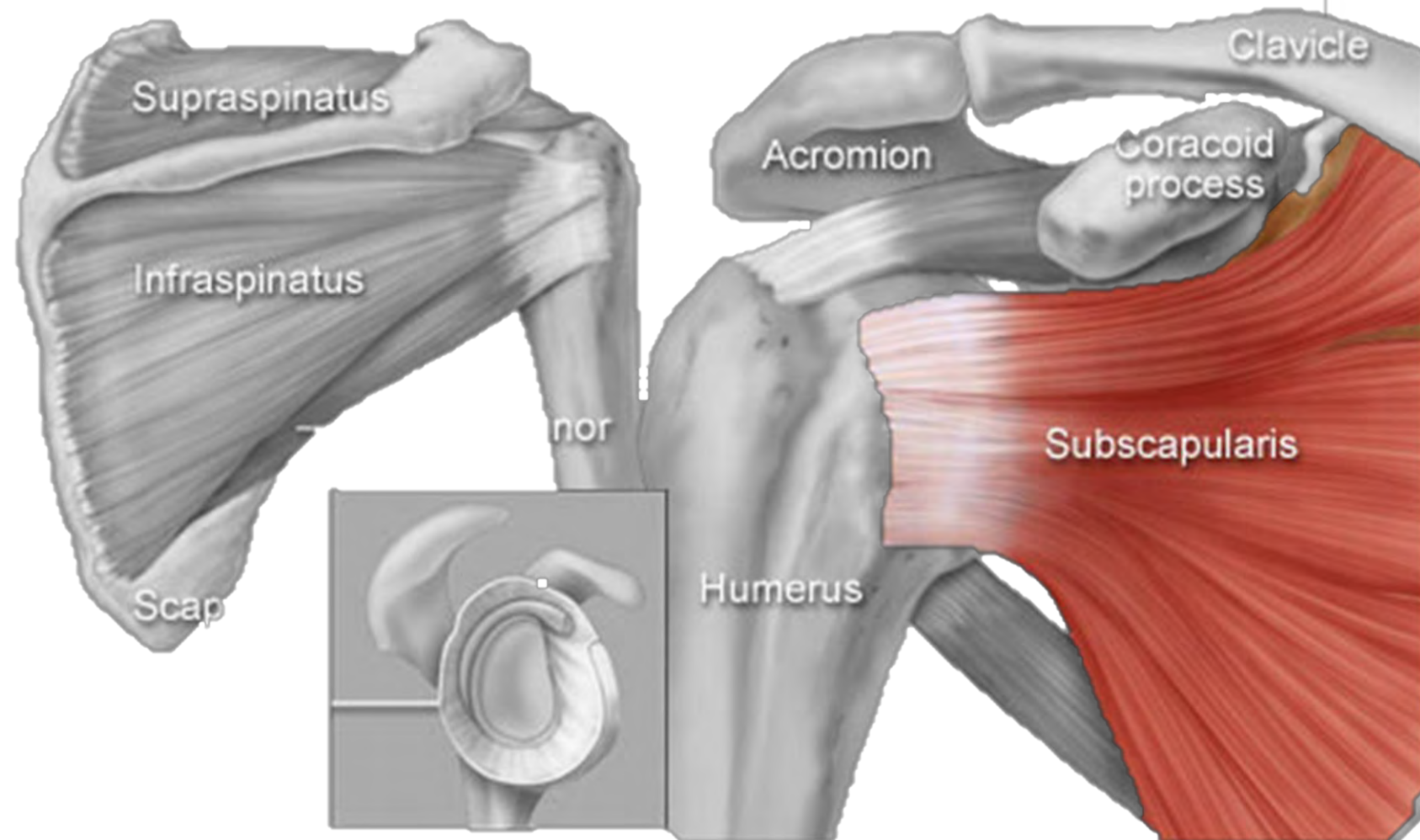
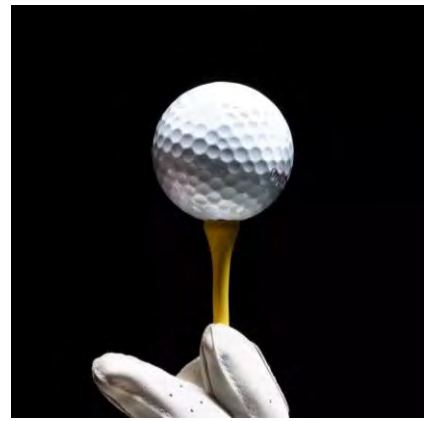


Glenohumeralgelenk

Dynamische Stabilisatoren

Rotatorenmanschette

- **Subscapularis**
 - Nn. subscapulares sup. et inf.

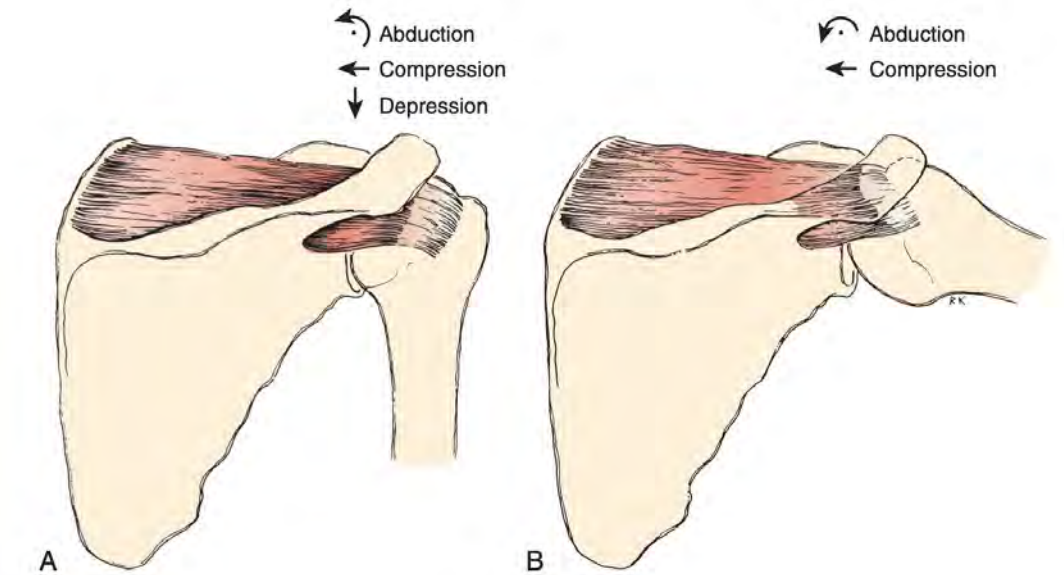
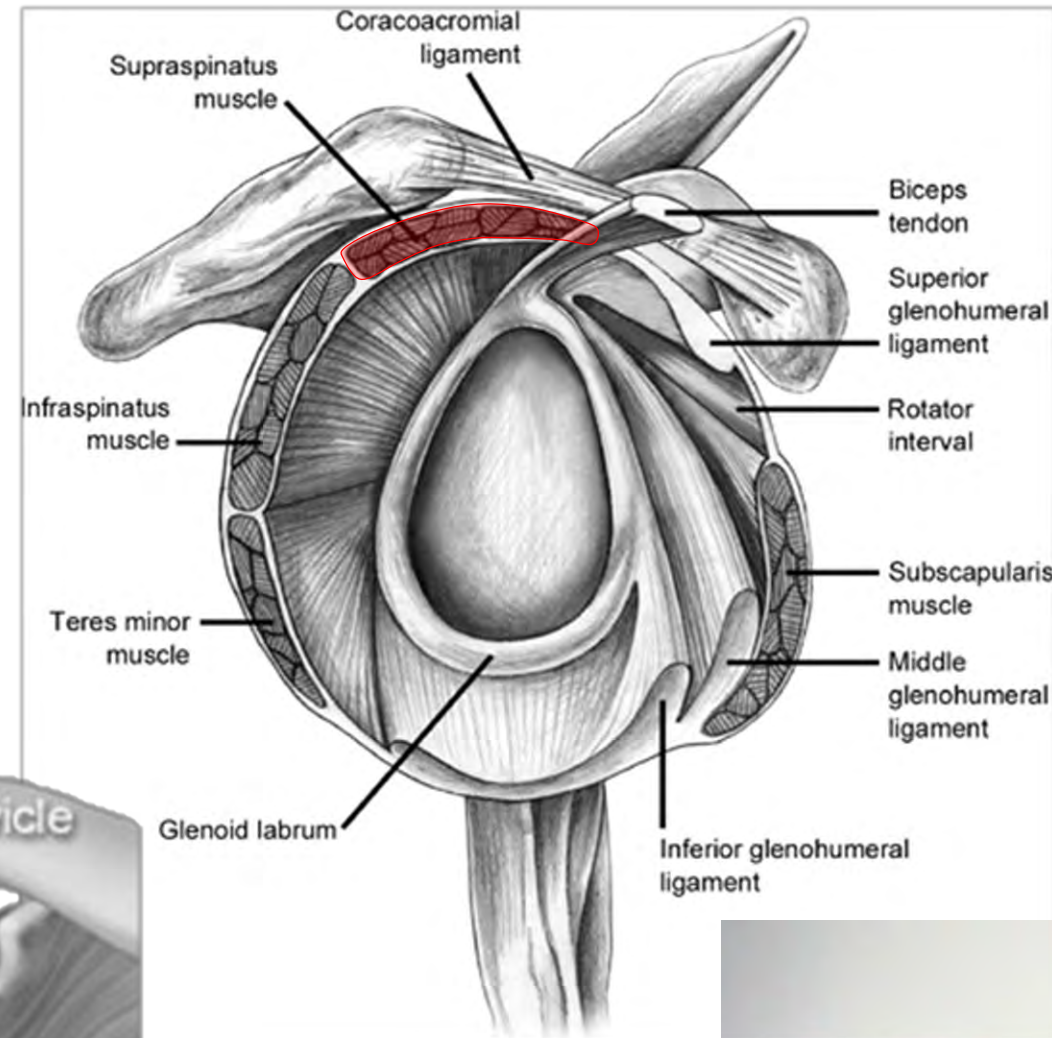
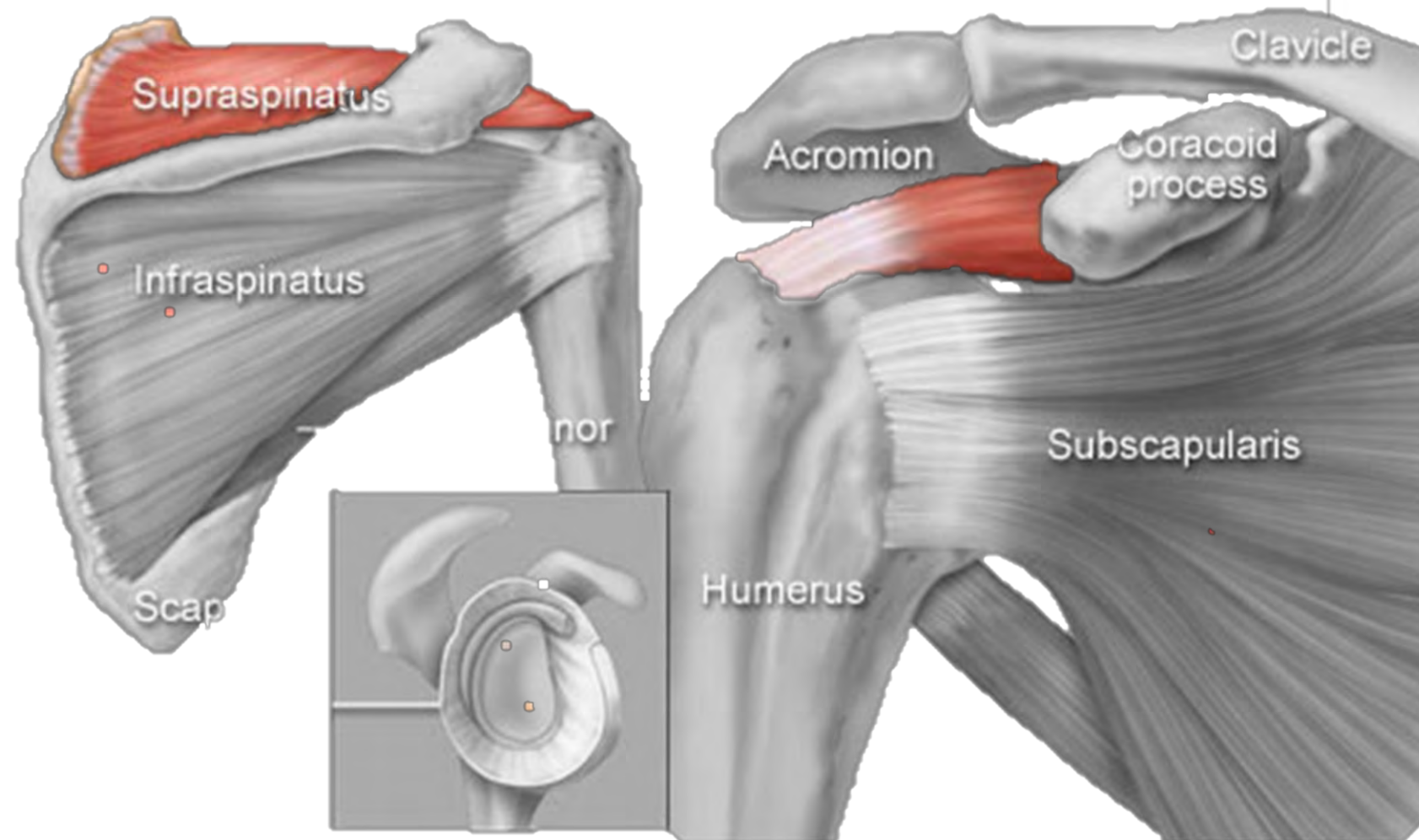


Glenohumeralgelenk

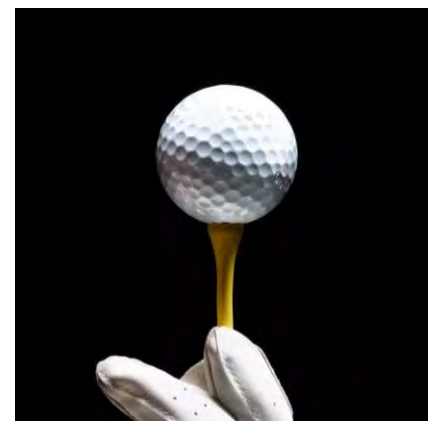
Dynamische Stabilisatoren

Rotatorenmanschette

- Subscapularis
- **Supraspinatus**
 - N. suprascapularis



Elevation through Abduction
170° - 180°

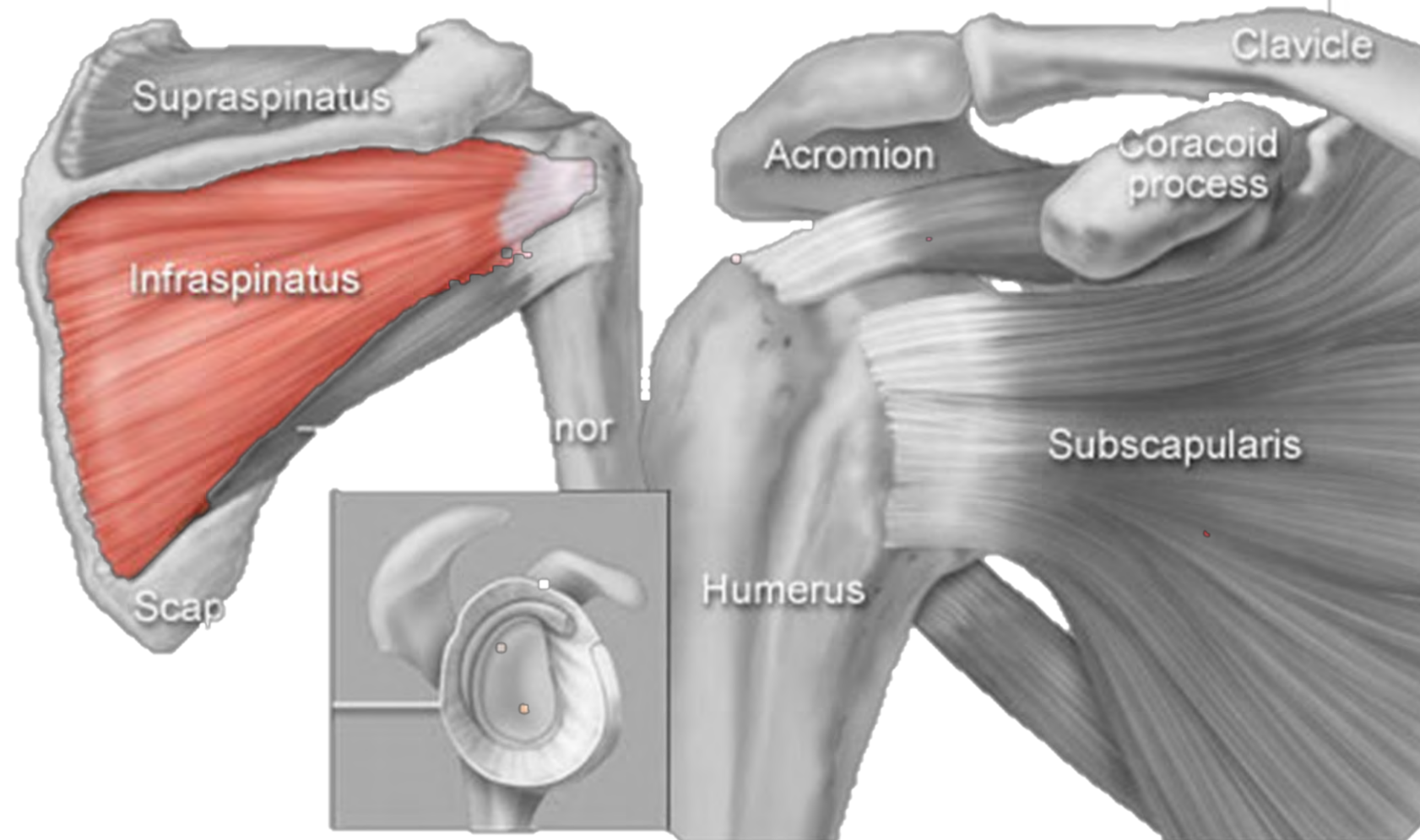
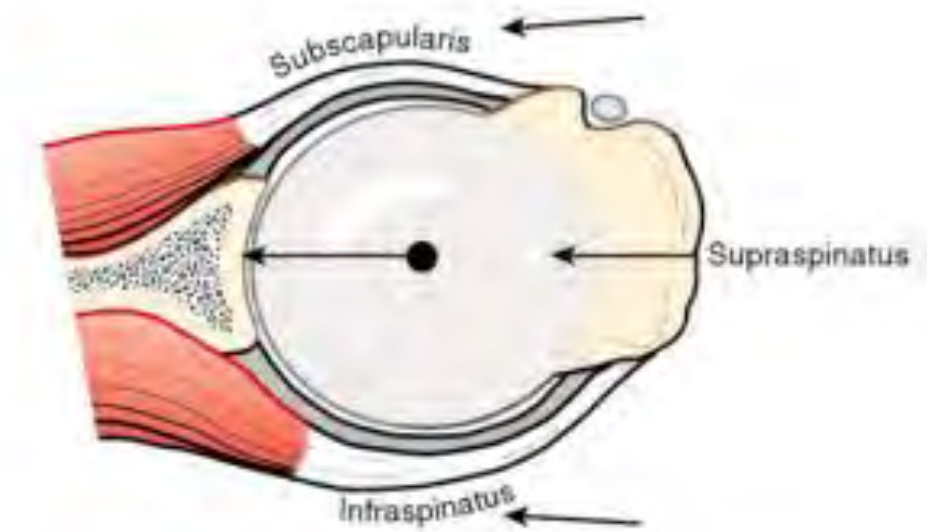
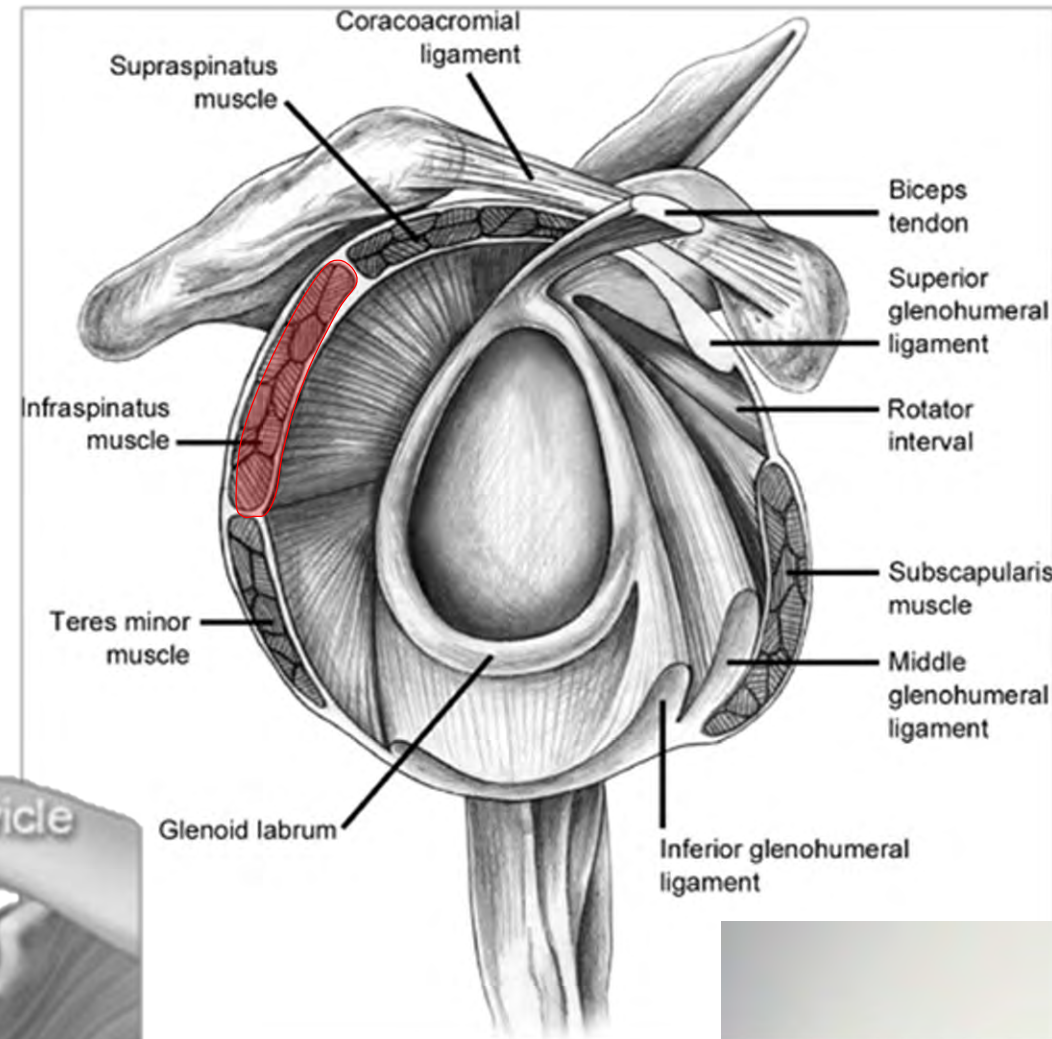
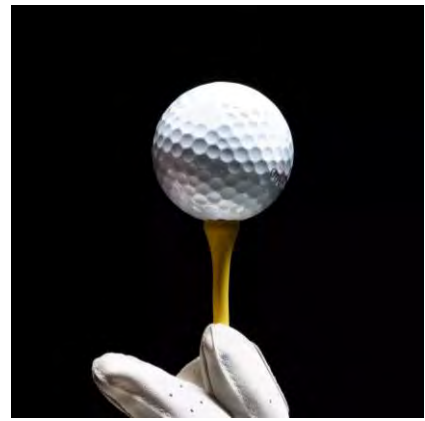


Glenohumeralgelenk

Dynamische Stabilisatoren

Rotatorenmanschette

- Subscapularis
- Supraspinatus
- **Infraspinatus**
 - N. suprascapularis



Lateral/external Rotation
80° - 90°

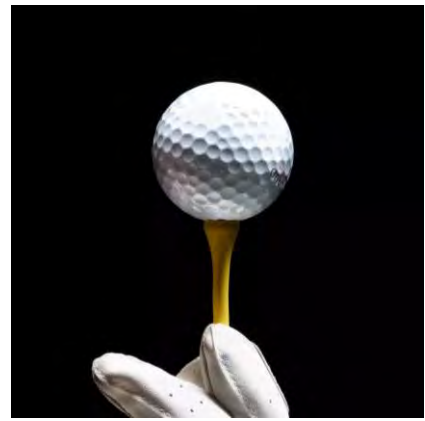
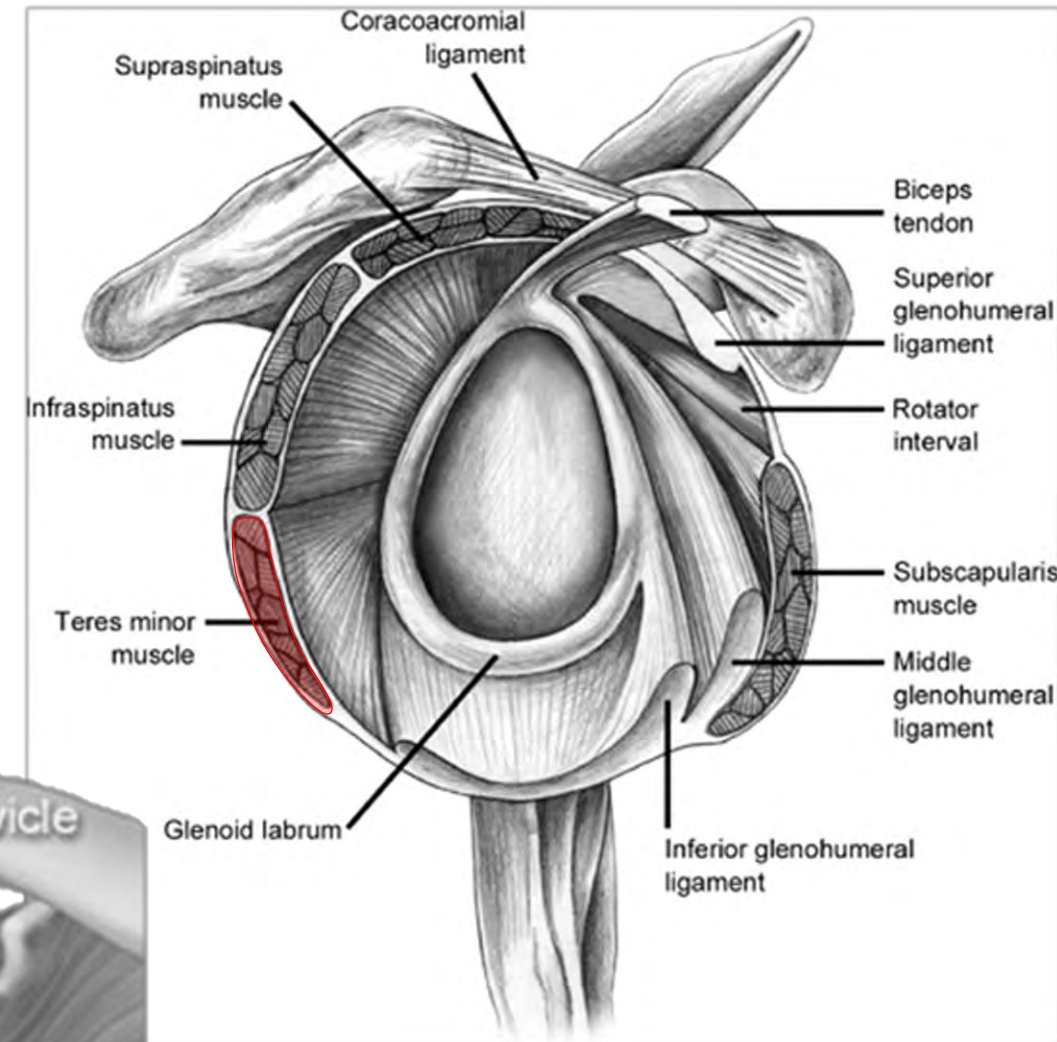
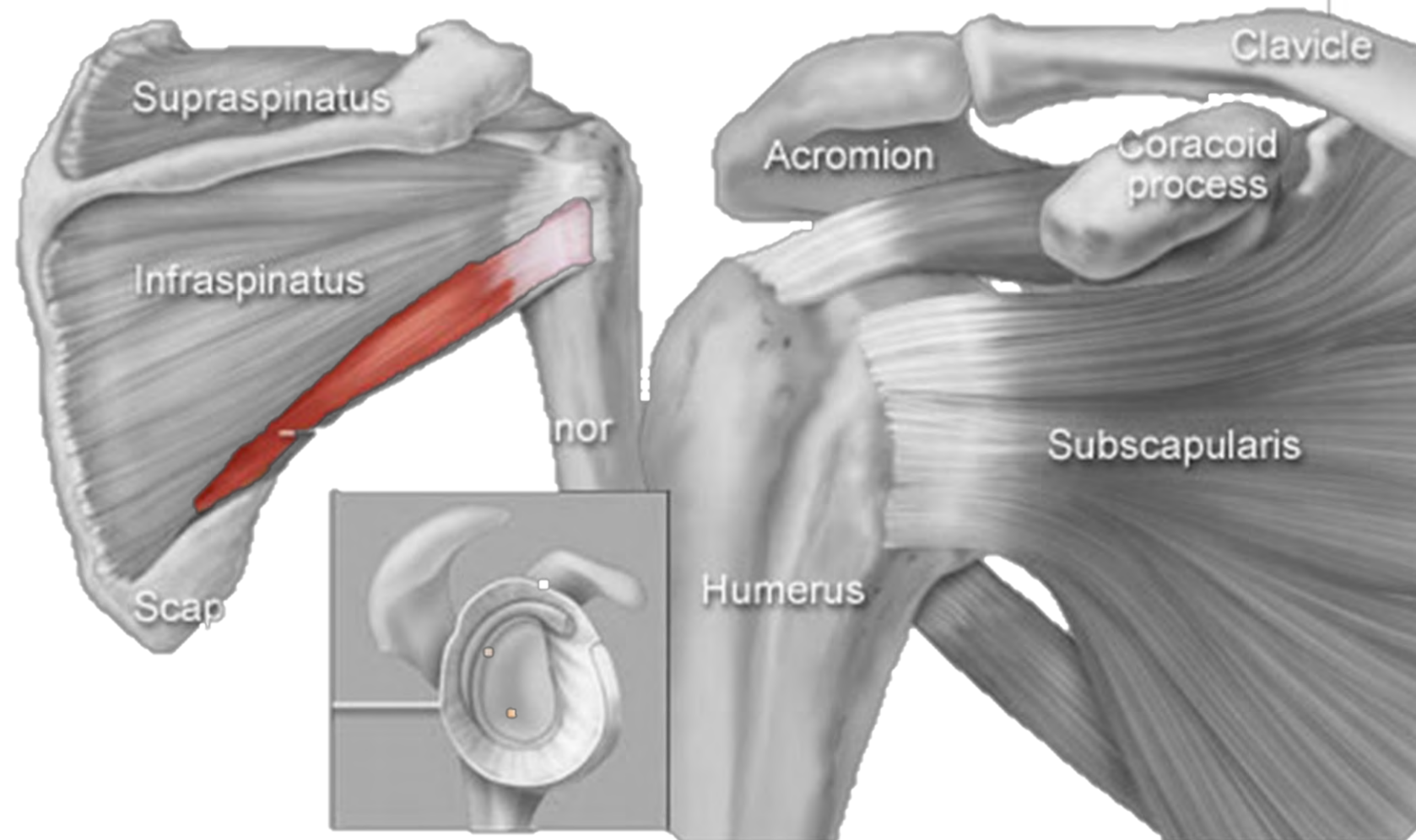


Glenohumeralgelenk

Dynamische Stabilisatoren

Rotatorenmanschette

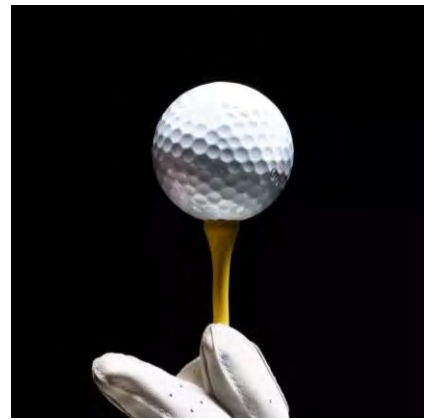
- Subscapularis
- Supraspinatus
- Infraspinatus
- **Teres minor**
 - N. axillaris



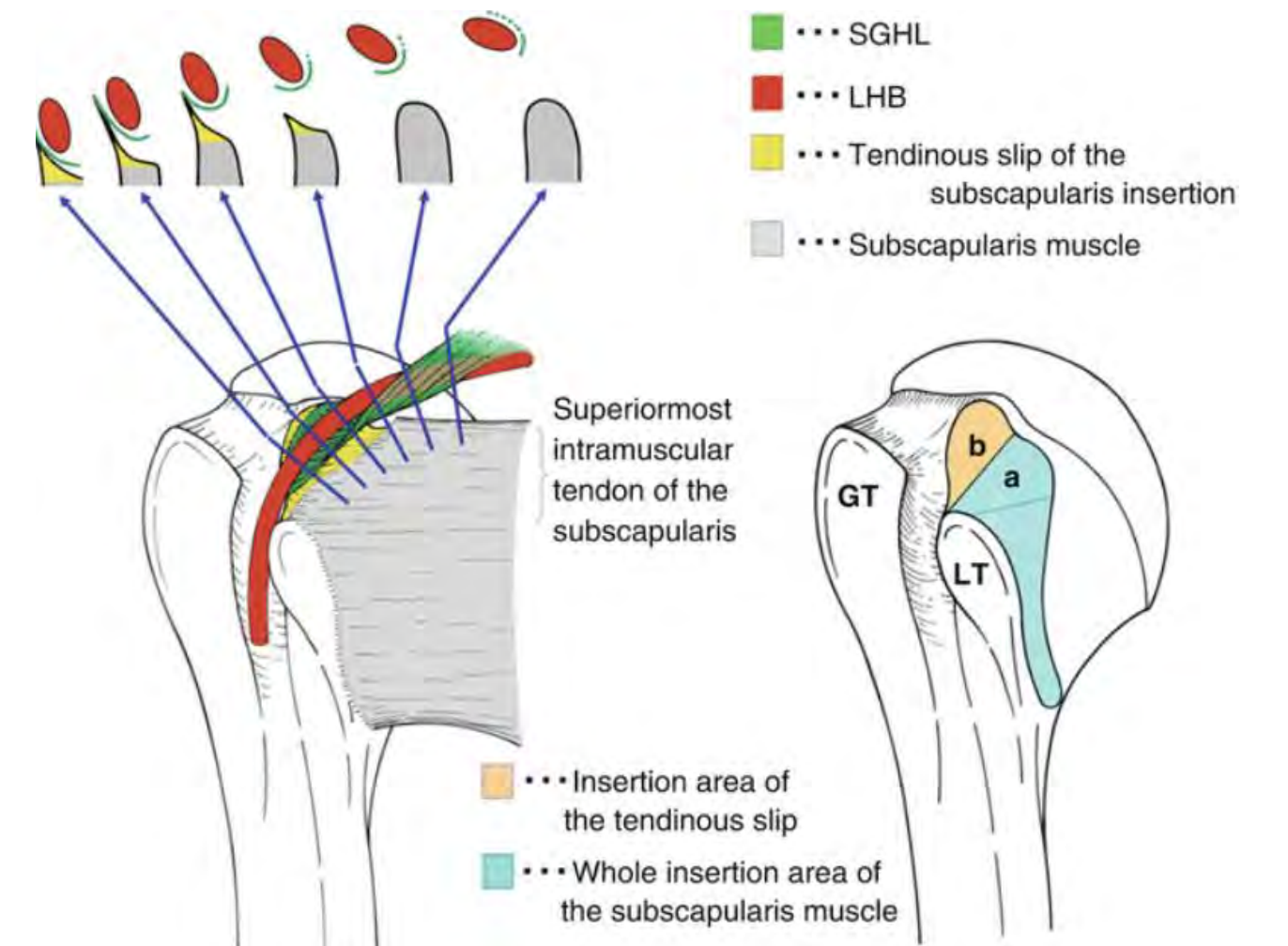
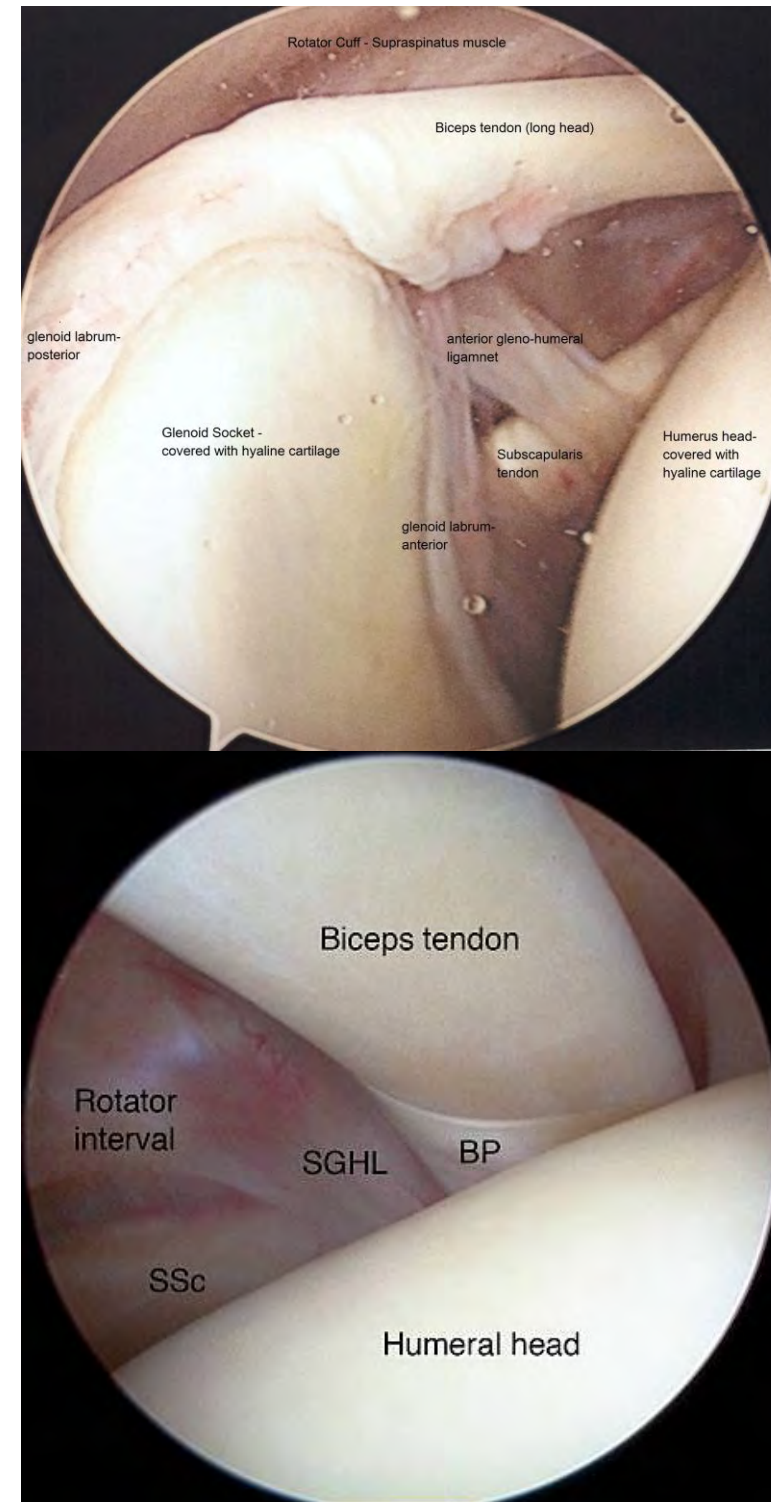
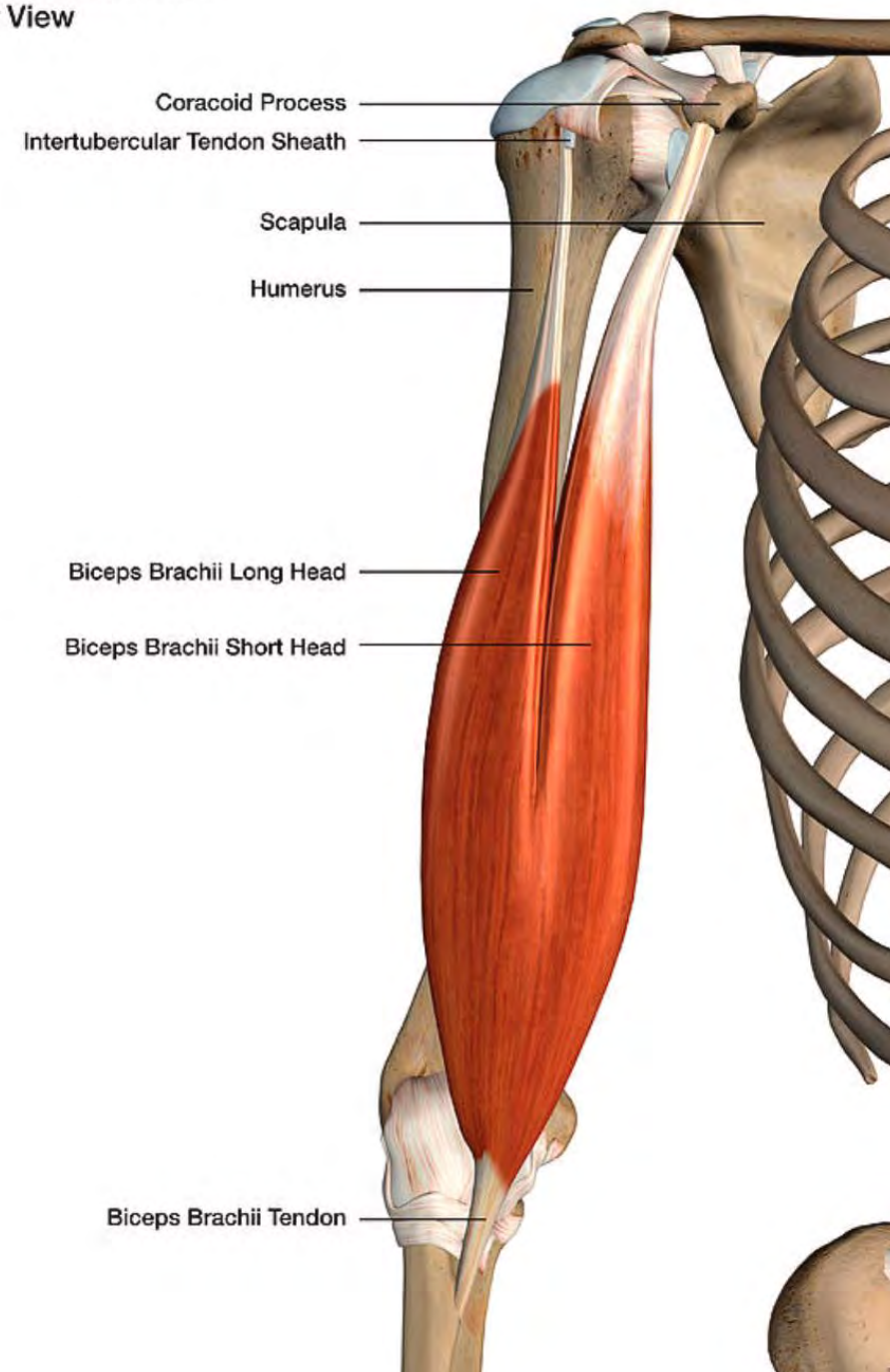
Glenohumeralgelenk

Dynamische Stabilisatoren

- Biceps brachii, Caput longum
 - N. musculocutaneus



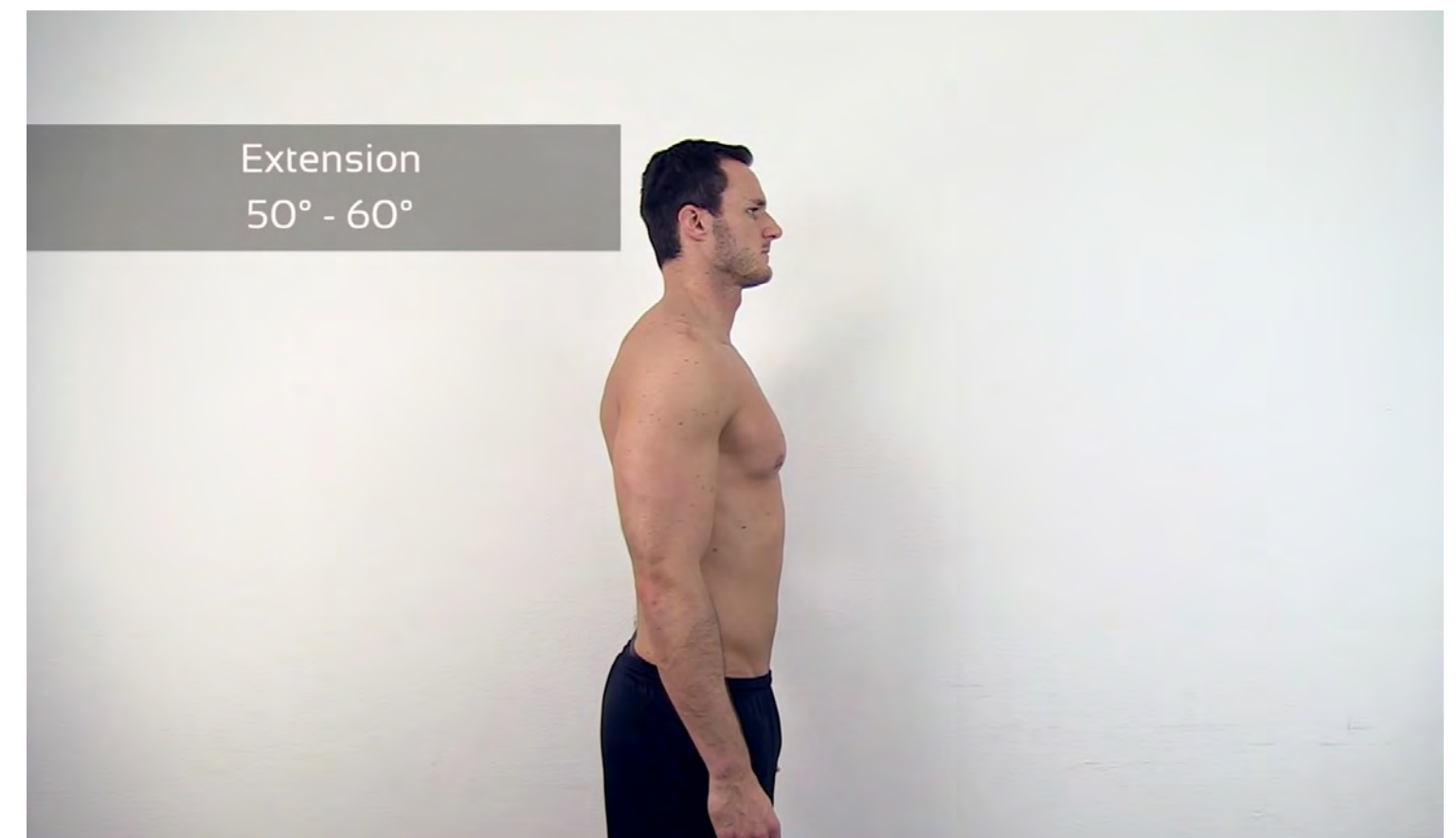
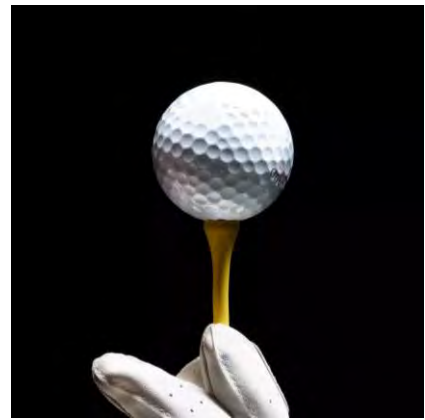
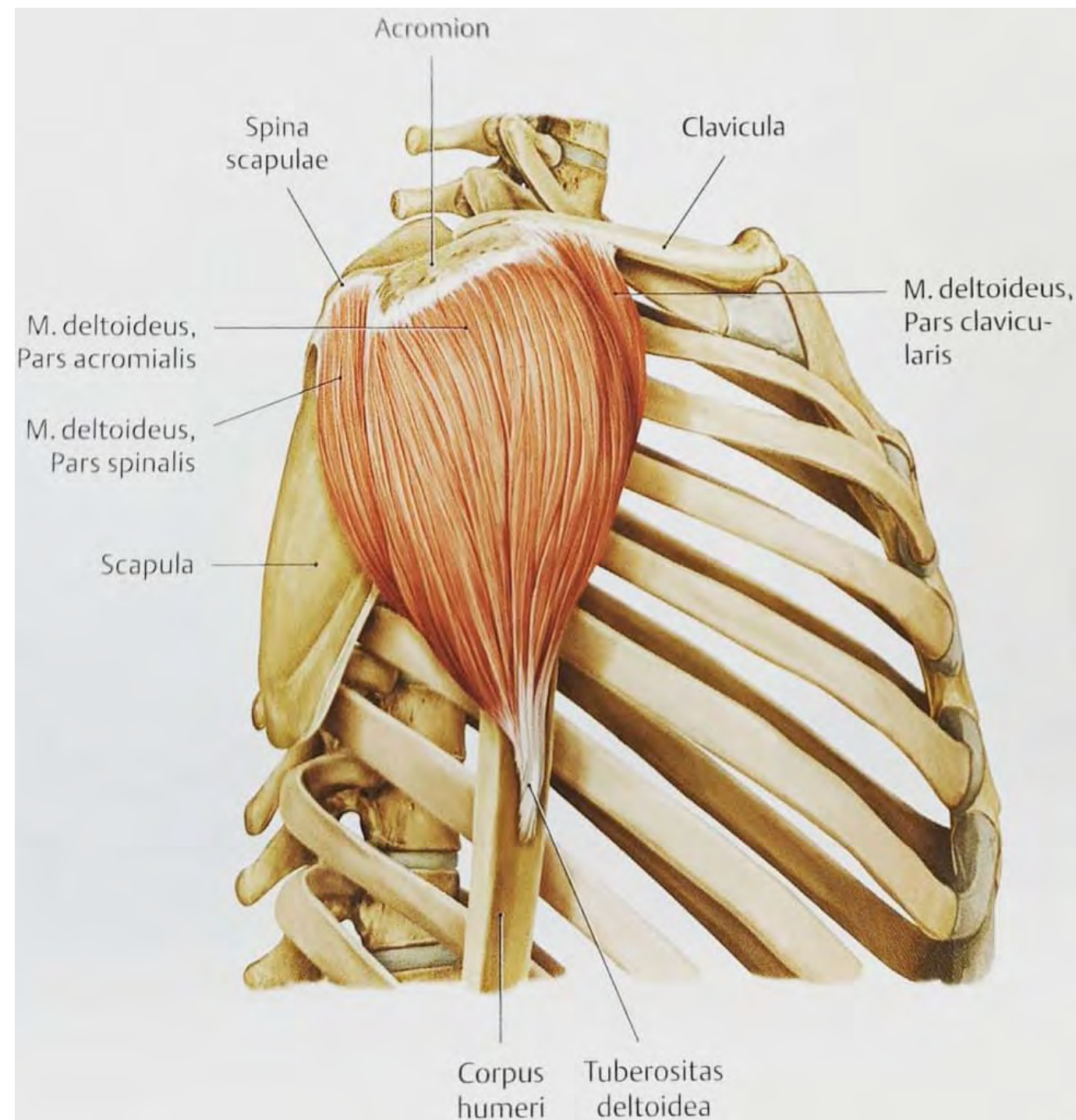
Biceps Brachii Muscles
Anterior View



Glenohumeralgelenk

Dynamische Stabilisatoren

- Deltoideus
 - N. axillaris



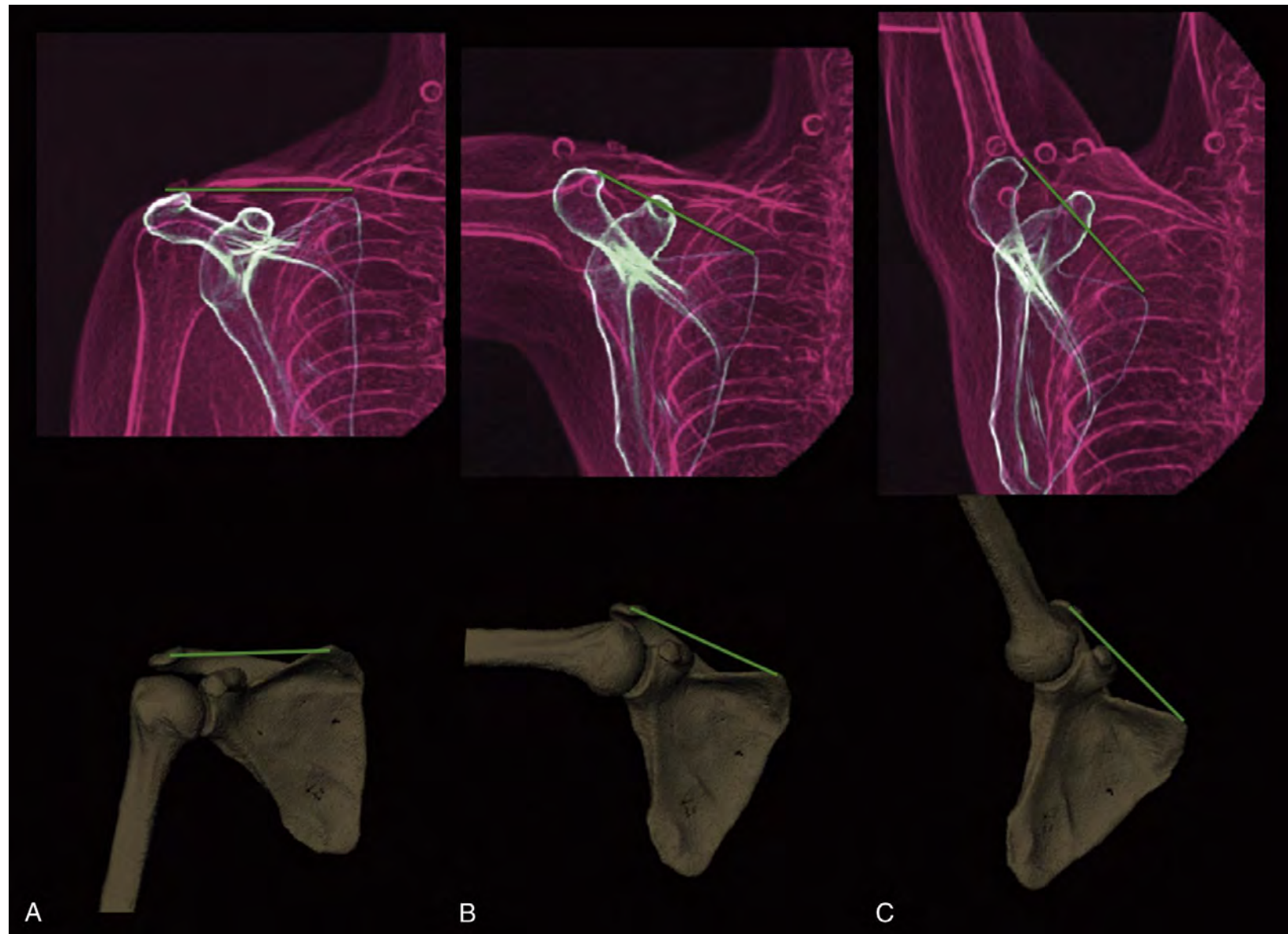




Skapula

Skapulothorakales Gleitlager

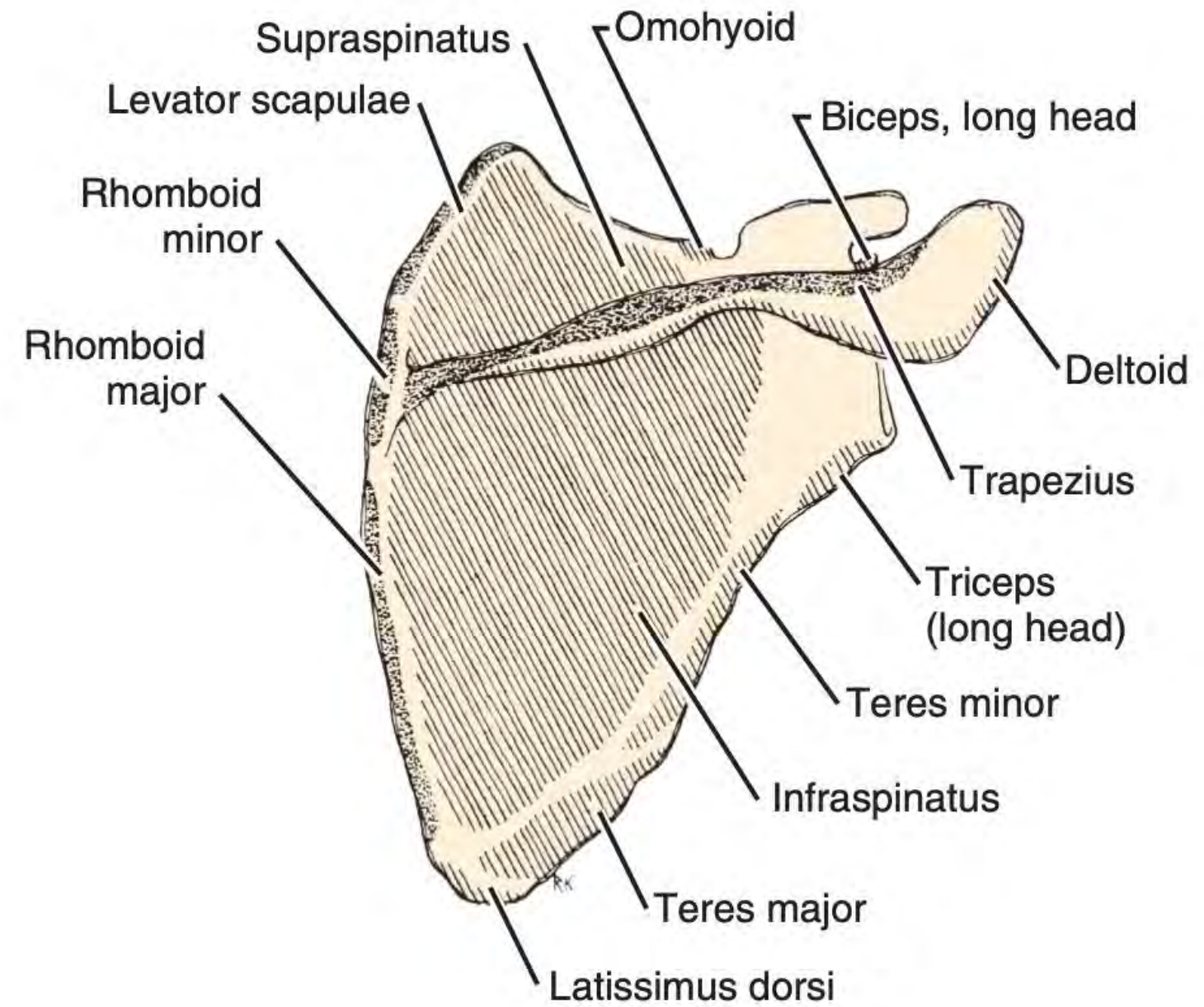
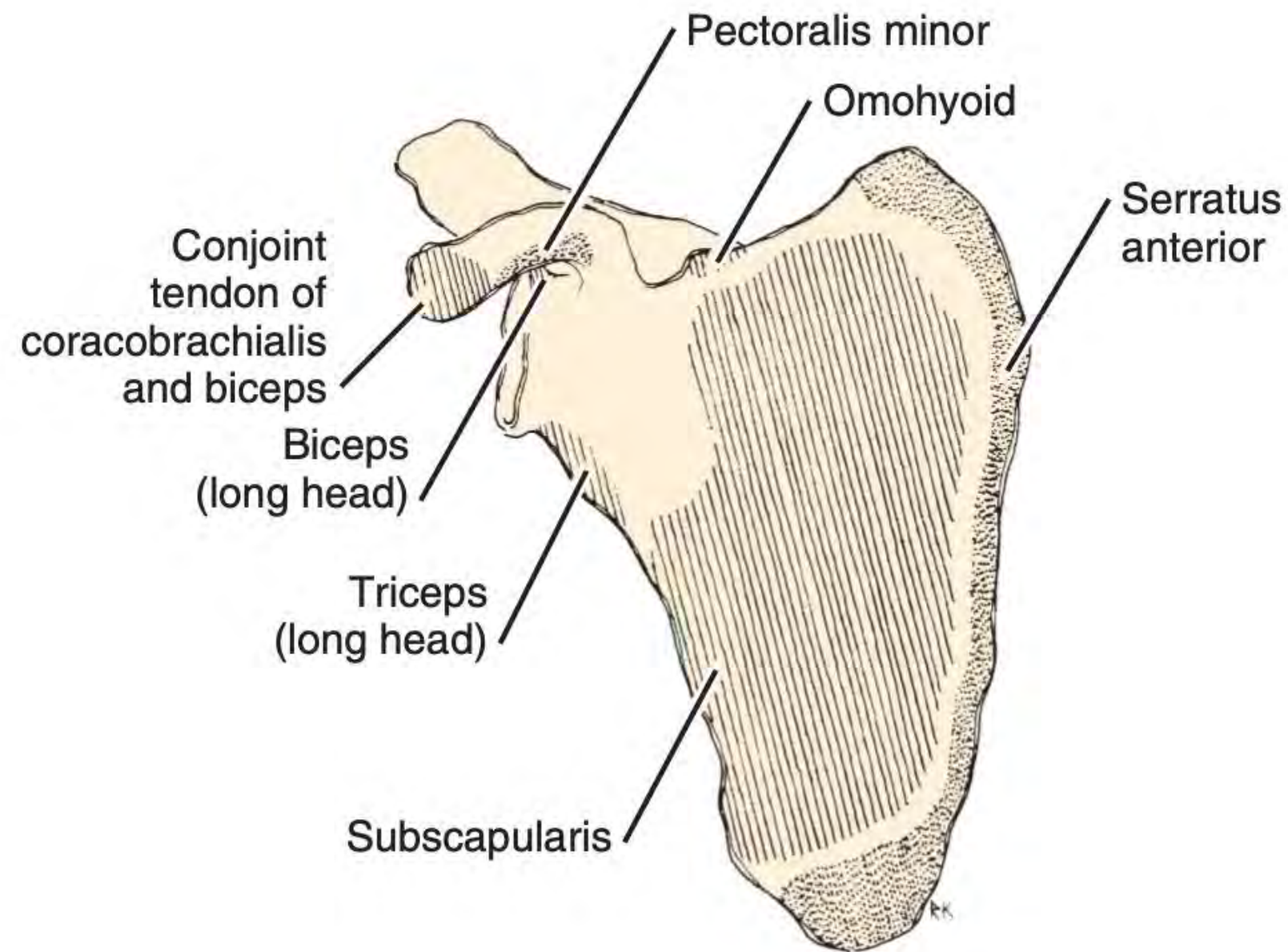
Skapulohumeraler Rhythmus



Skapula

Skapulothorakales Gleitlager

Periskapuläre Muskulatur



Skapula

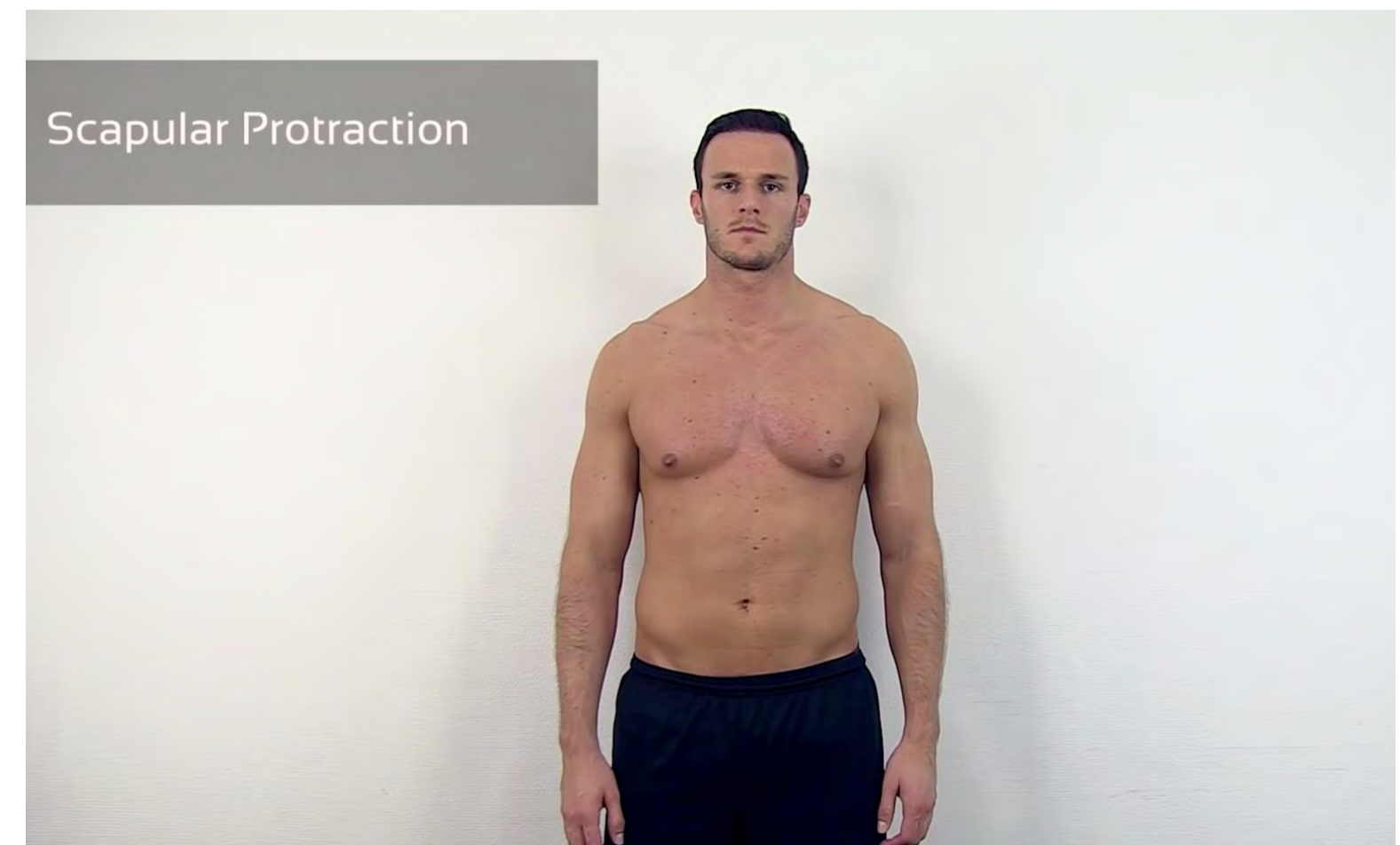
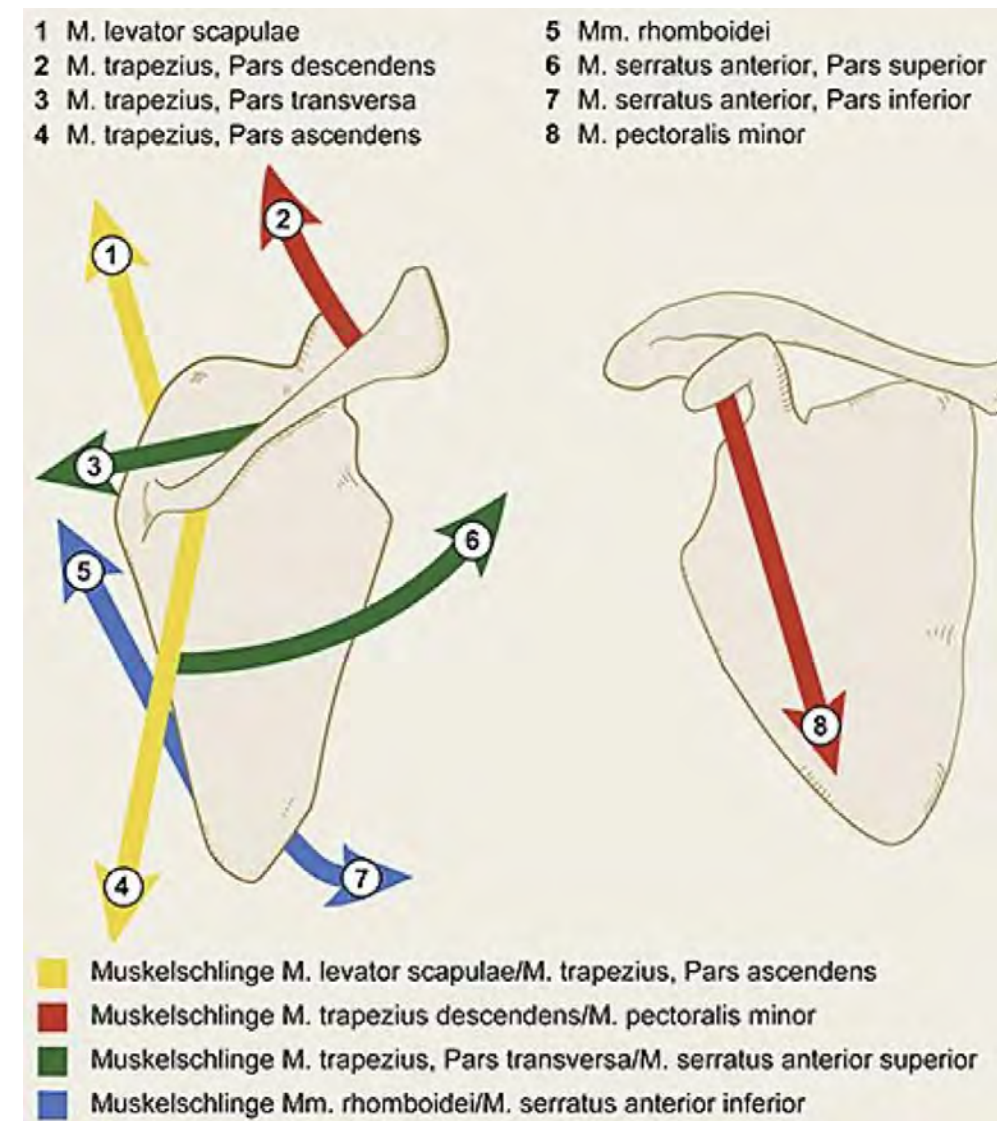
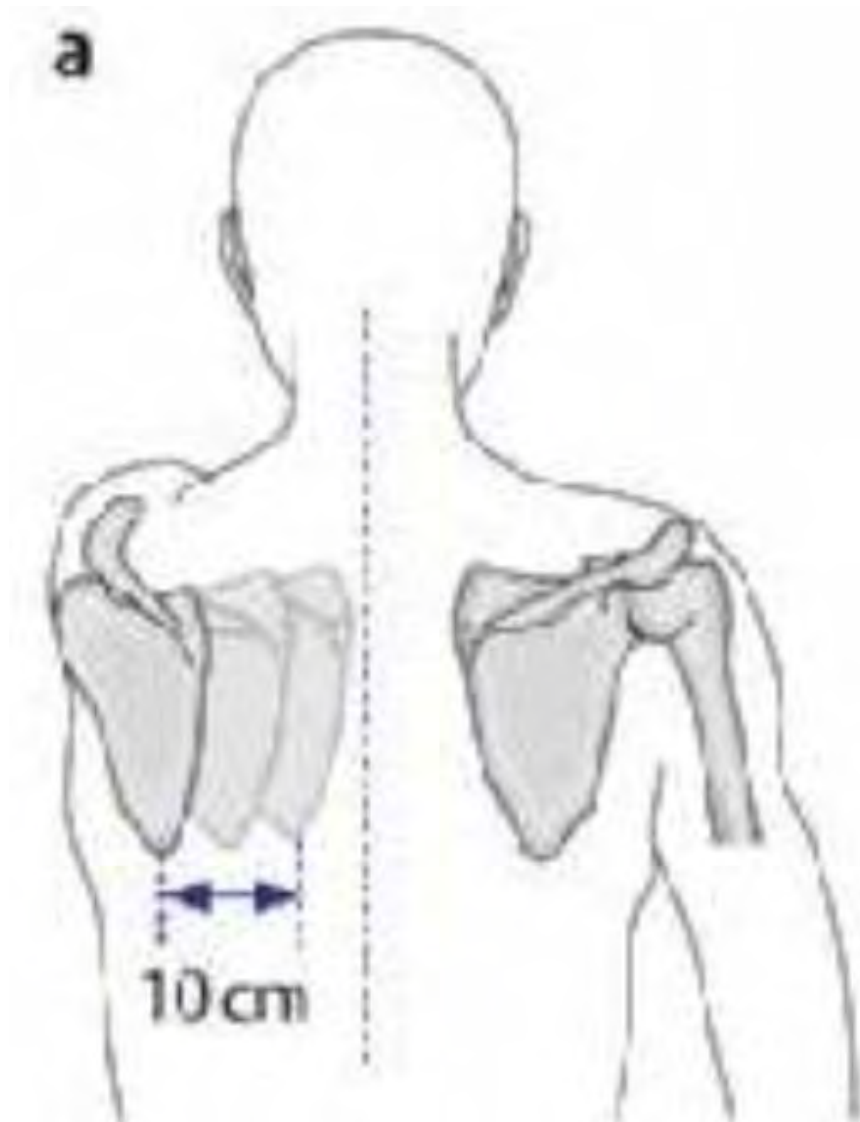
Skapulothorakales Gleitlager

Protraktion

- M. serratus anterior, M. pectoralis minor

Retraktion

- M. trapezius pars transversa, Mm. rhomboidei



Skapula

Skapulothorakales Gleitlager

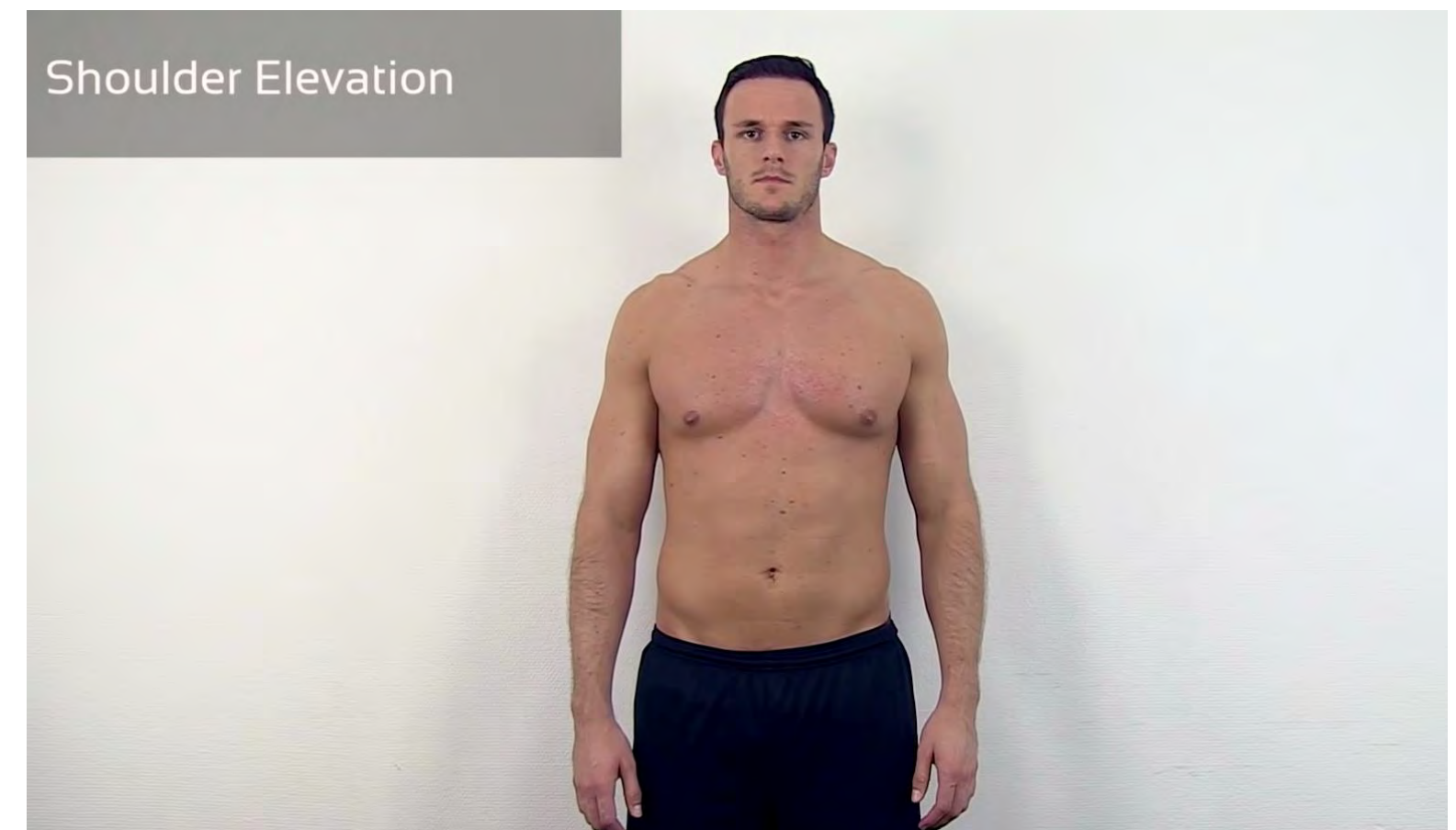
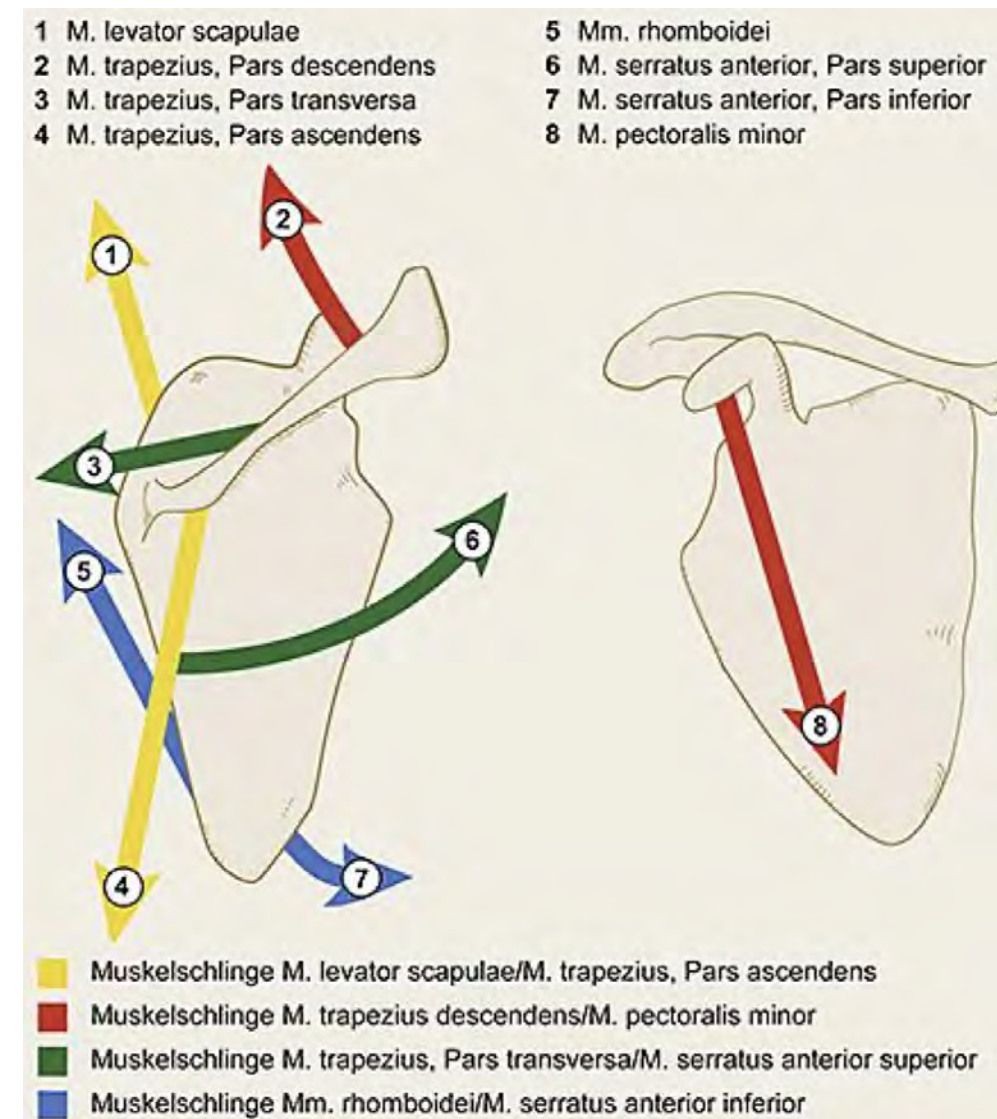
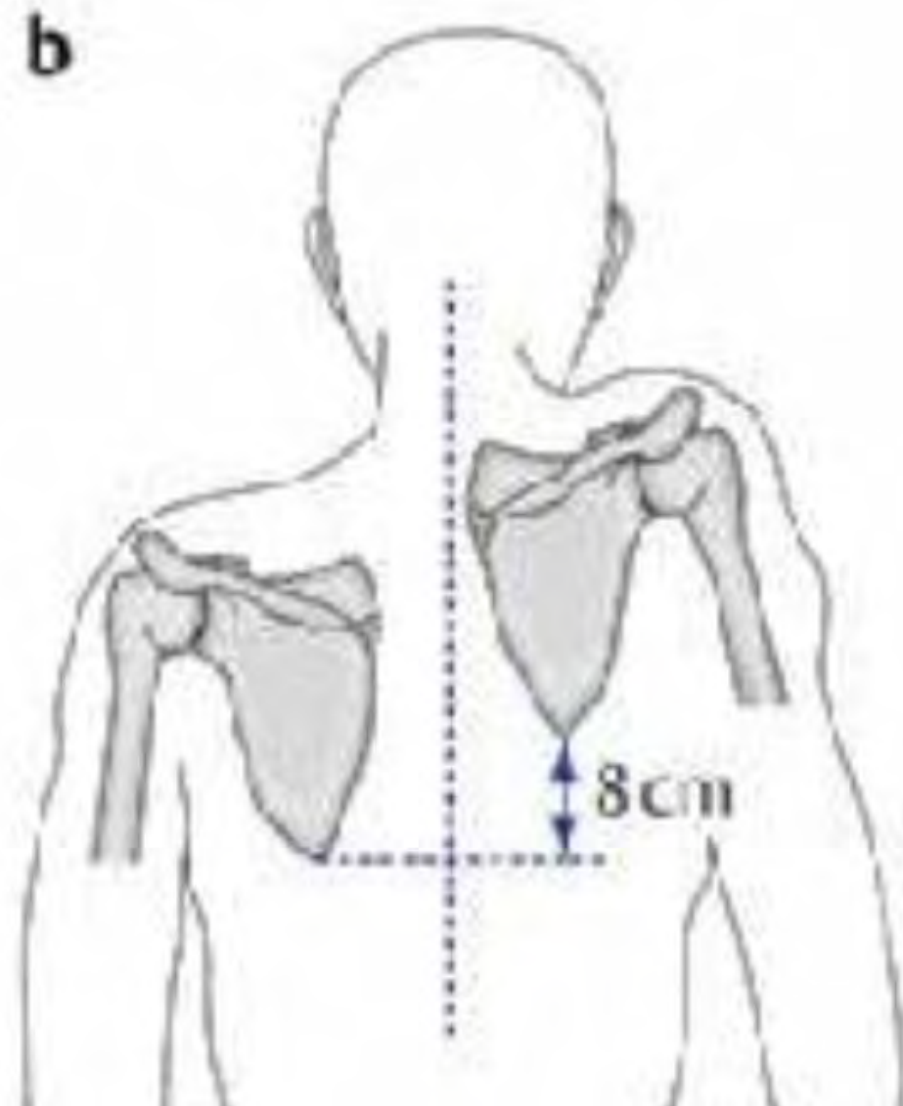


Elevation

- M. trapezius pars descendens, M. levator scapulae, Mm. rhomboidei, M. serratus anterior pars superior

Depression

- M. trapezius pars ascendens, M. serratus anterior pars inferior, M. pectoralis minor



Skapula

Skapulothorakales Gleitlager

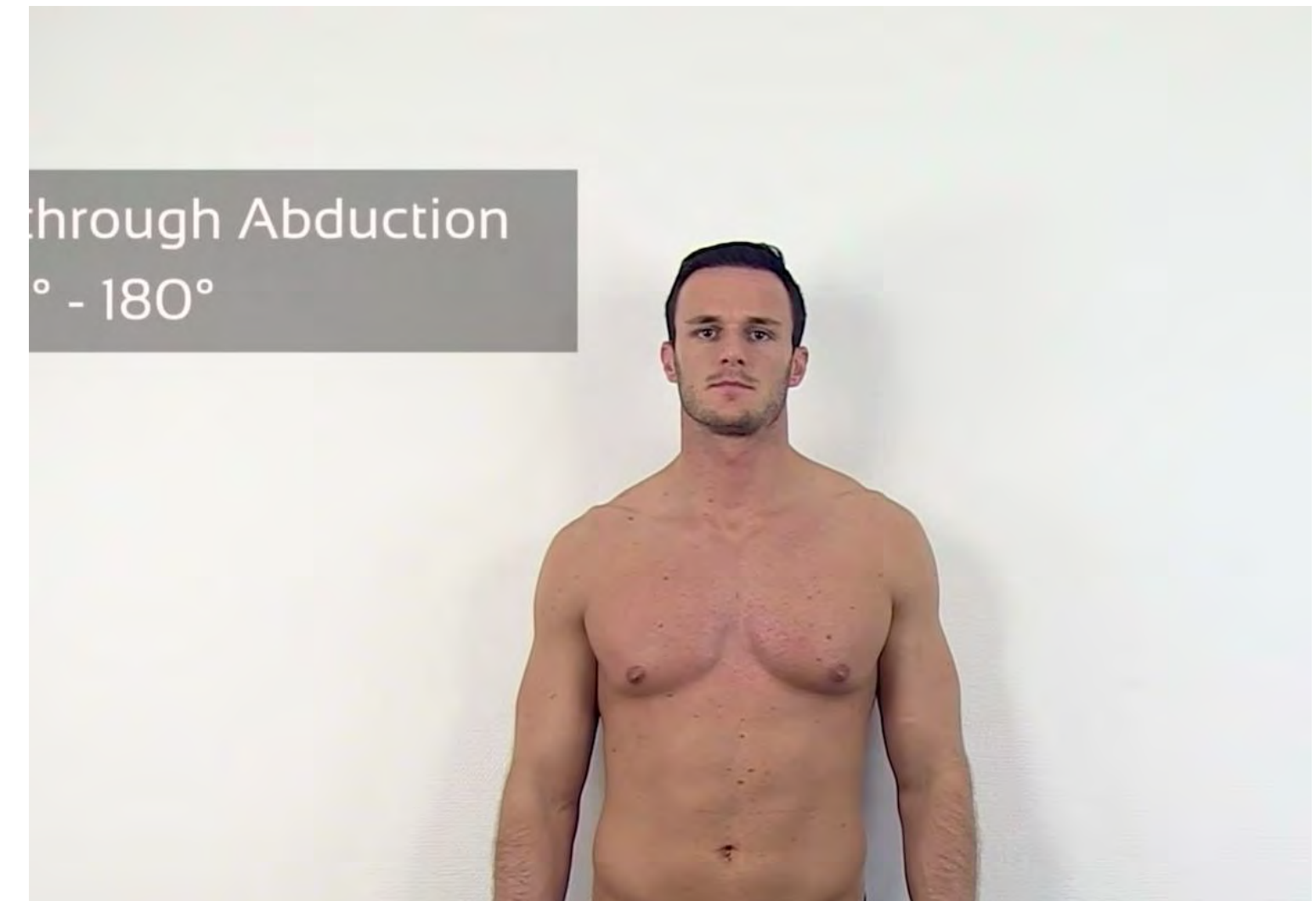
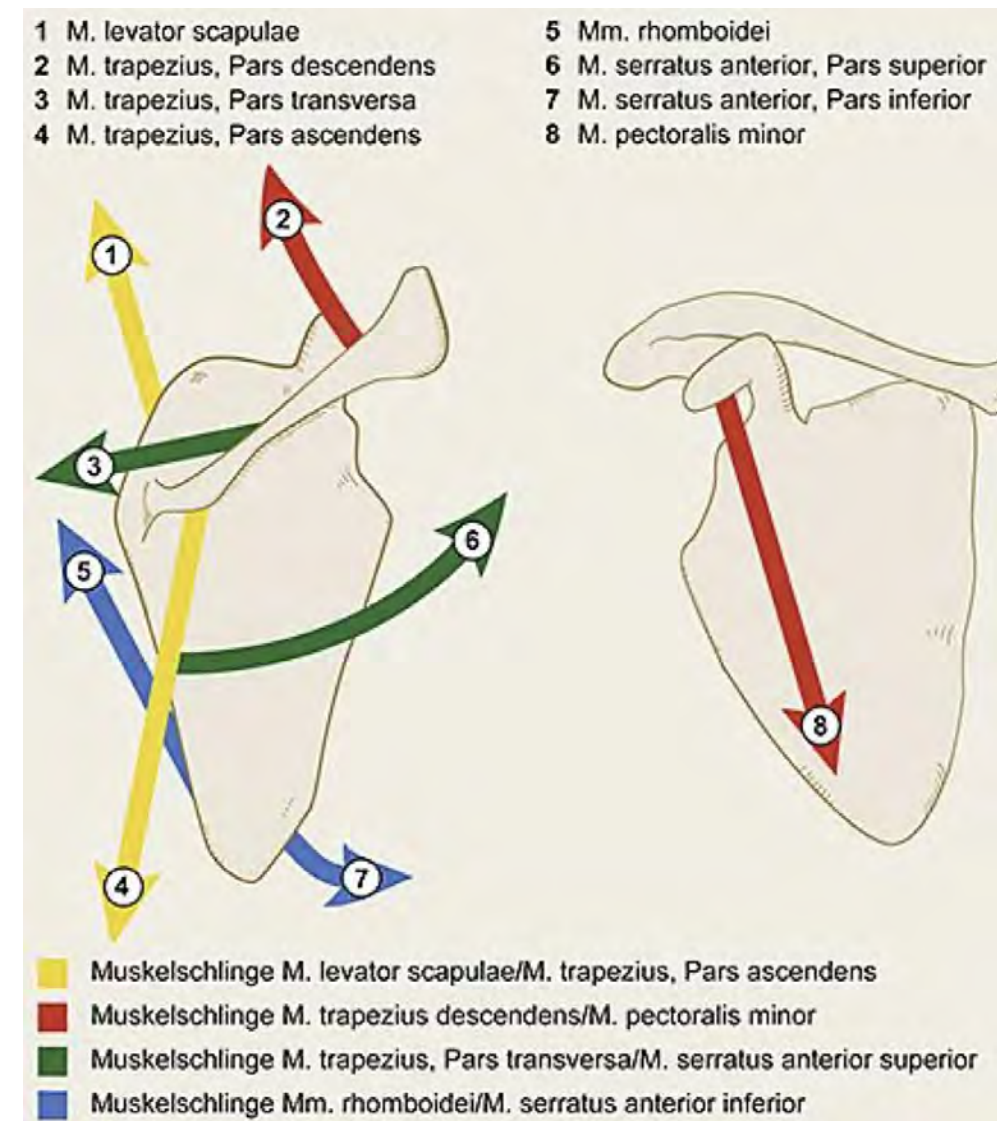
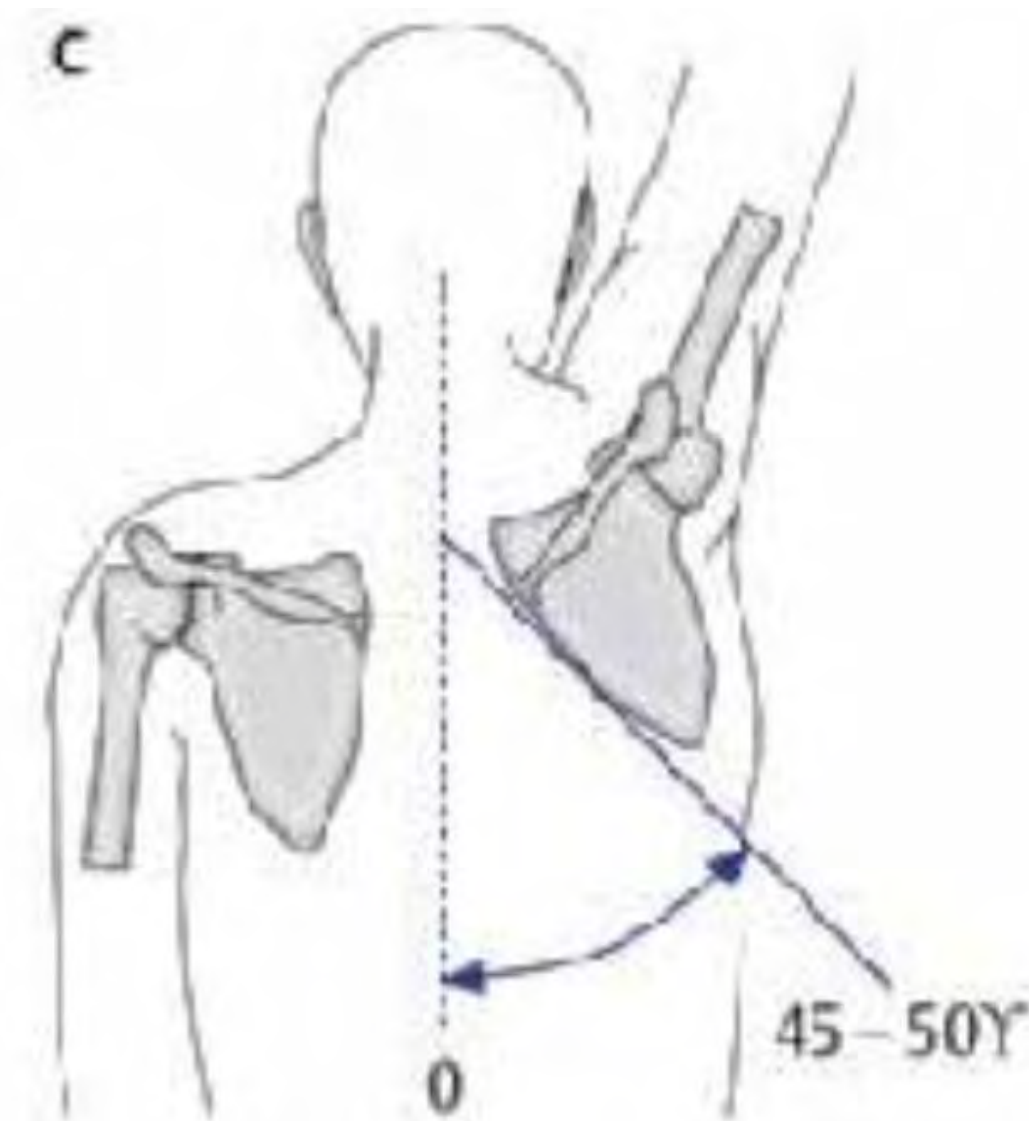


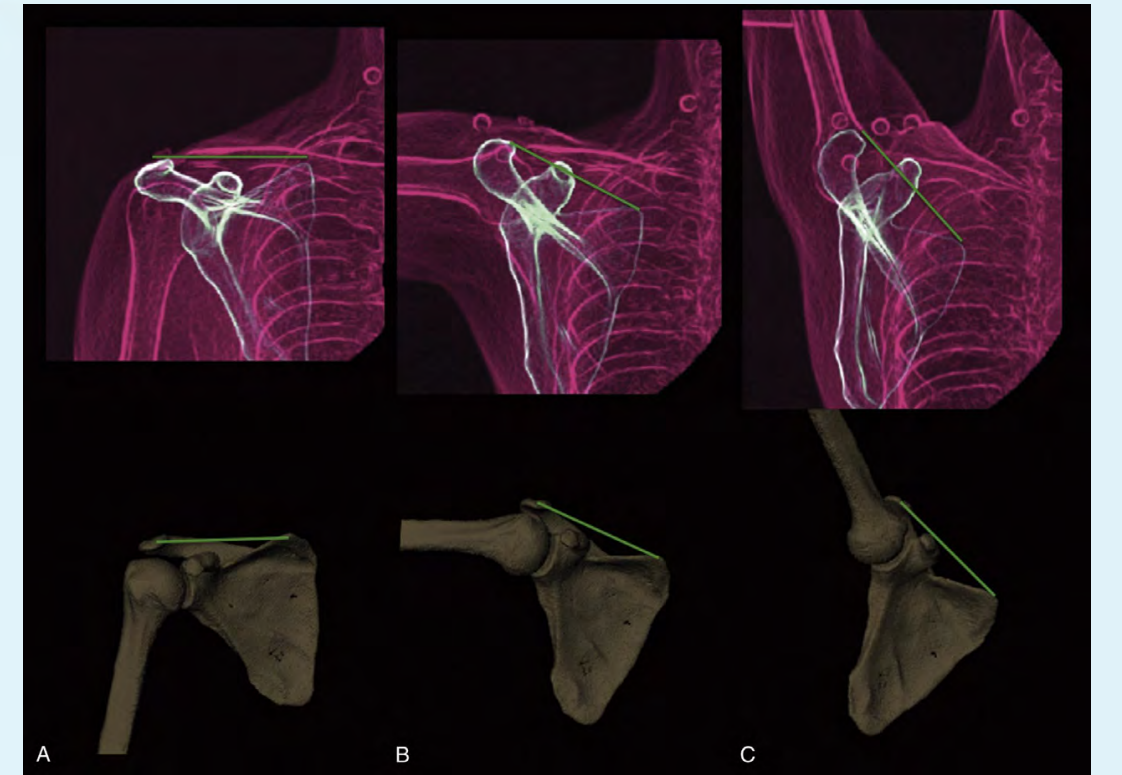
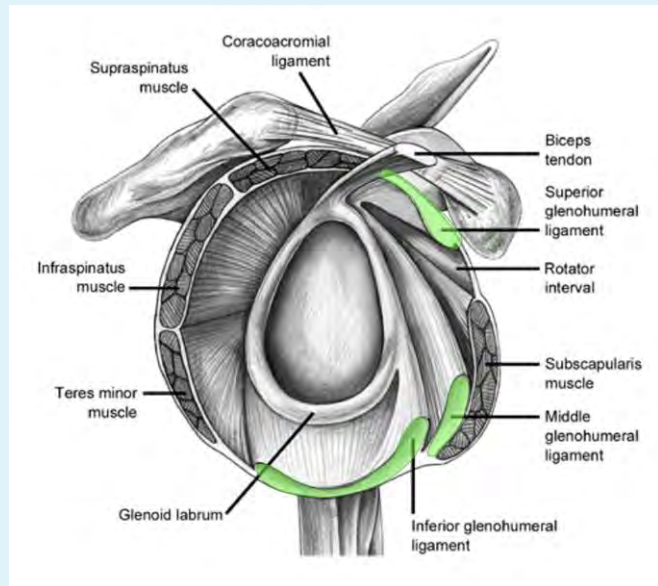
Aufwärtsrotation

- M. trapezius pars ascendens/descendens, M. serratus anterior pars inferior

Abwärtsrotation

- Mm. rhomboidei, M. serratus anterior pars superior, M. pectoralis minor, M. levator scapulae



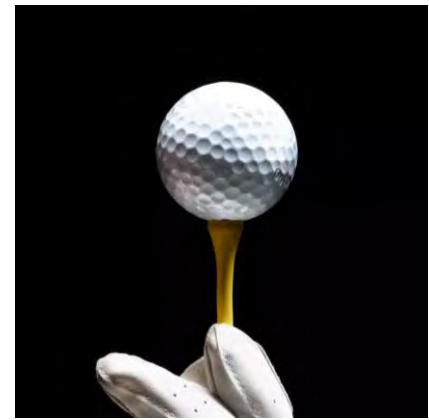
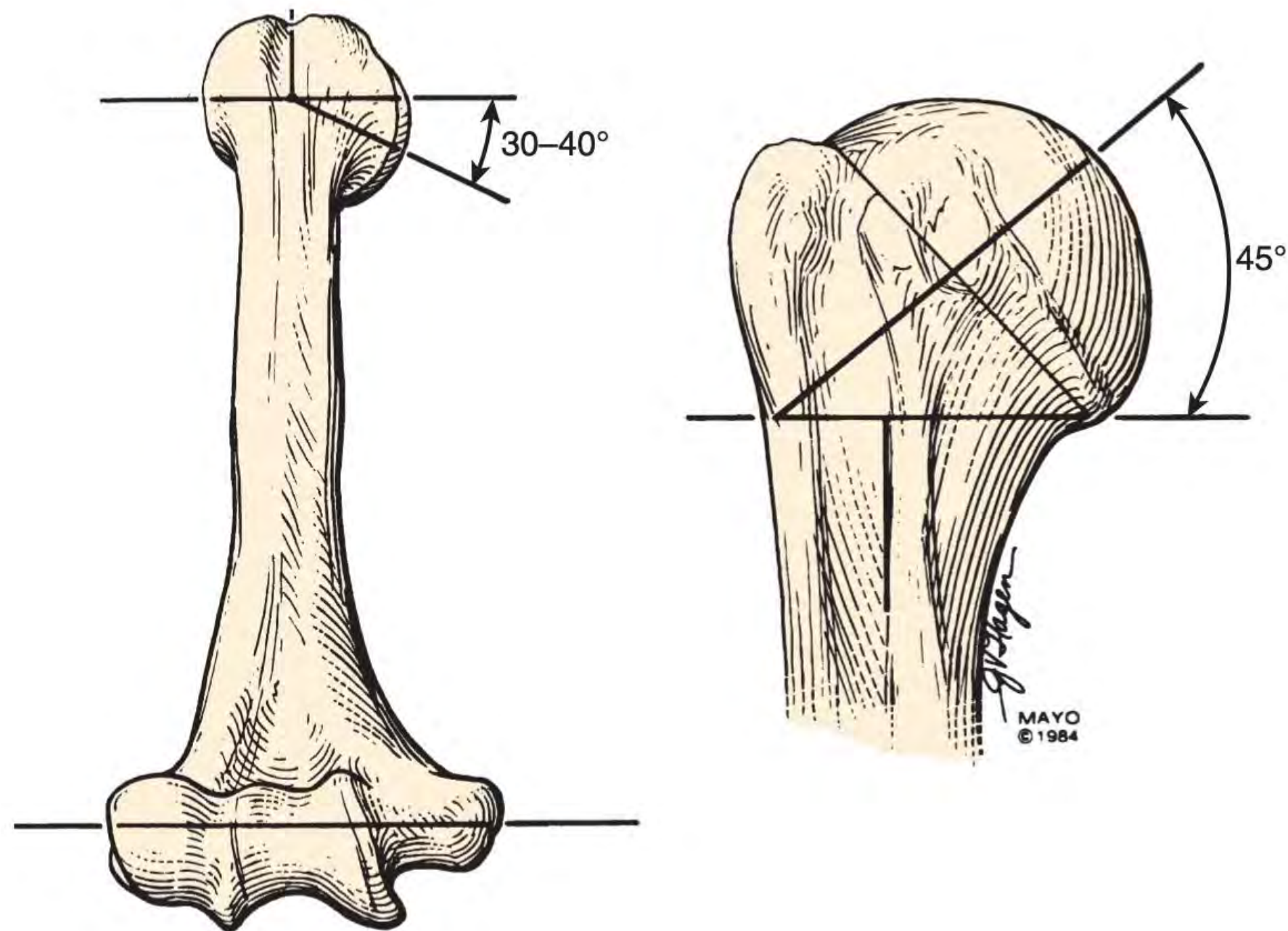


Glenohumeralgelenk

Statische Stabilisatoren

ossäre Anatomie

- Humerus

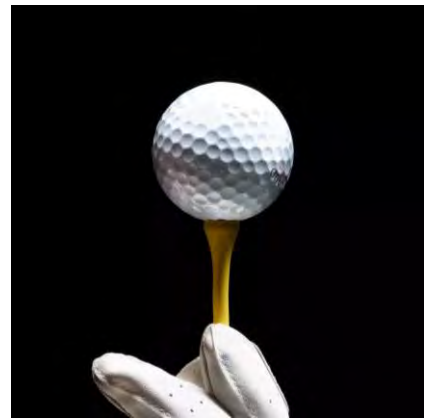
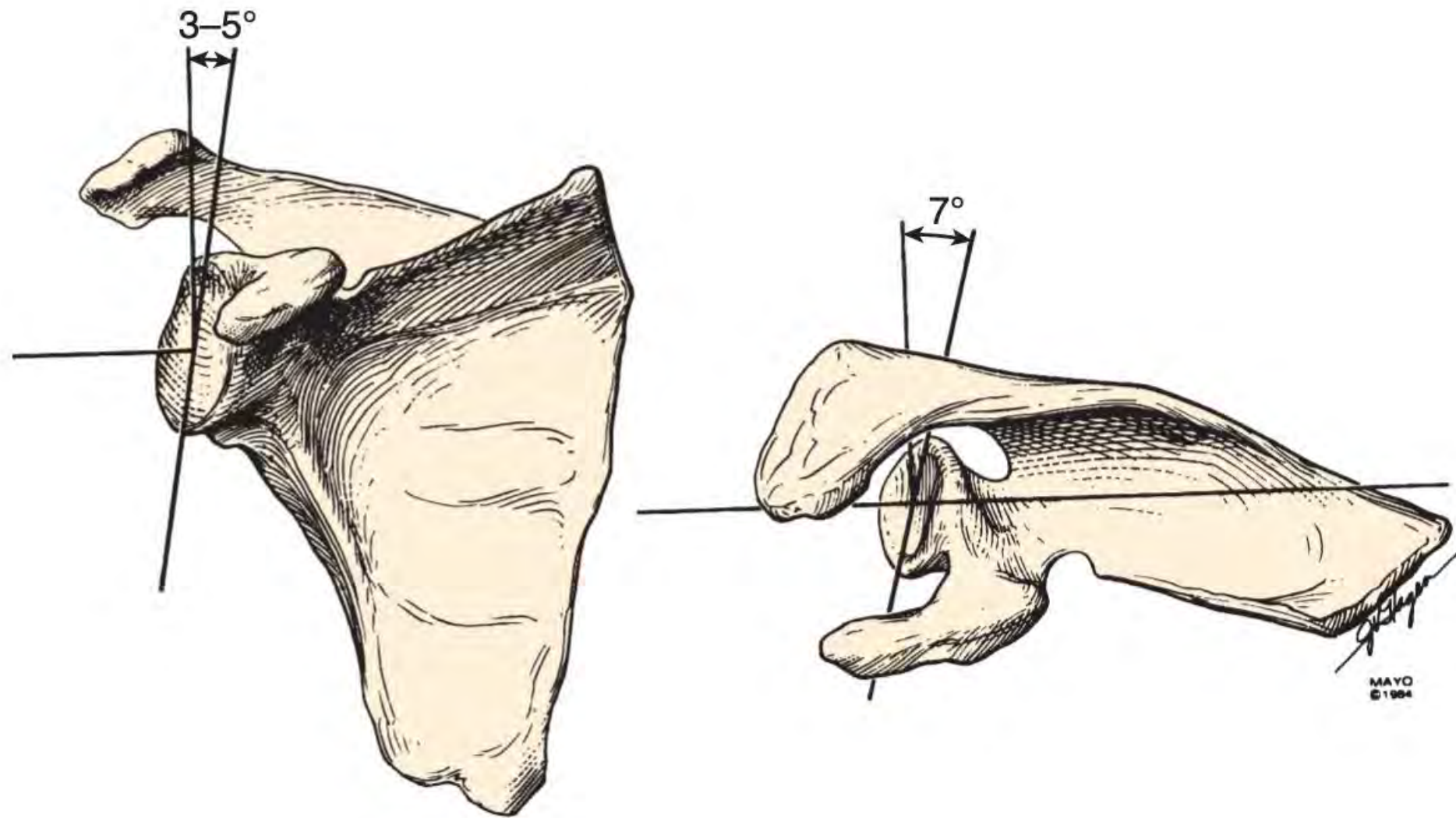


Glenohumeralgelenk

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ossäre Anatomie

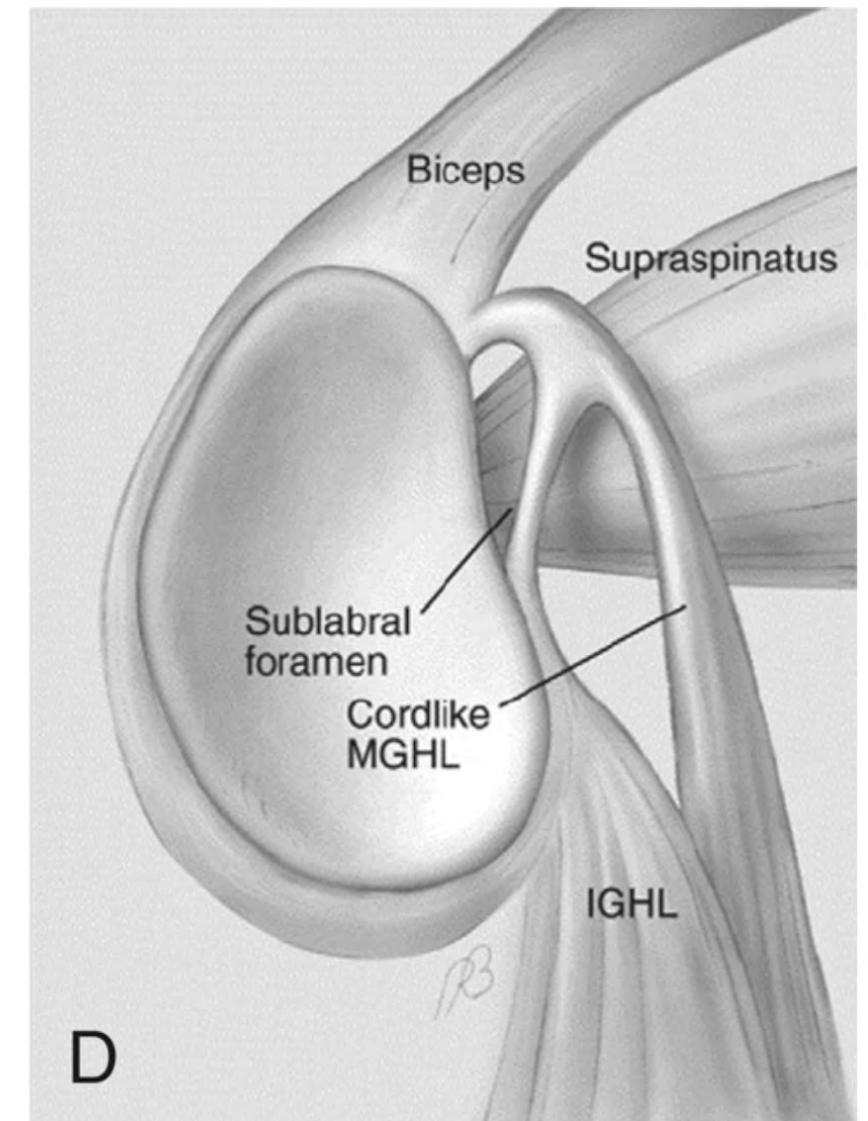
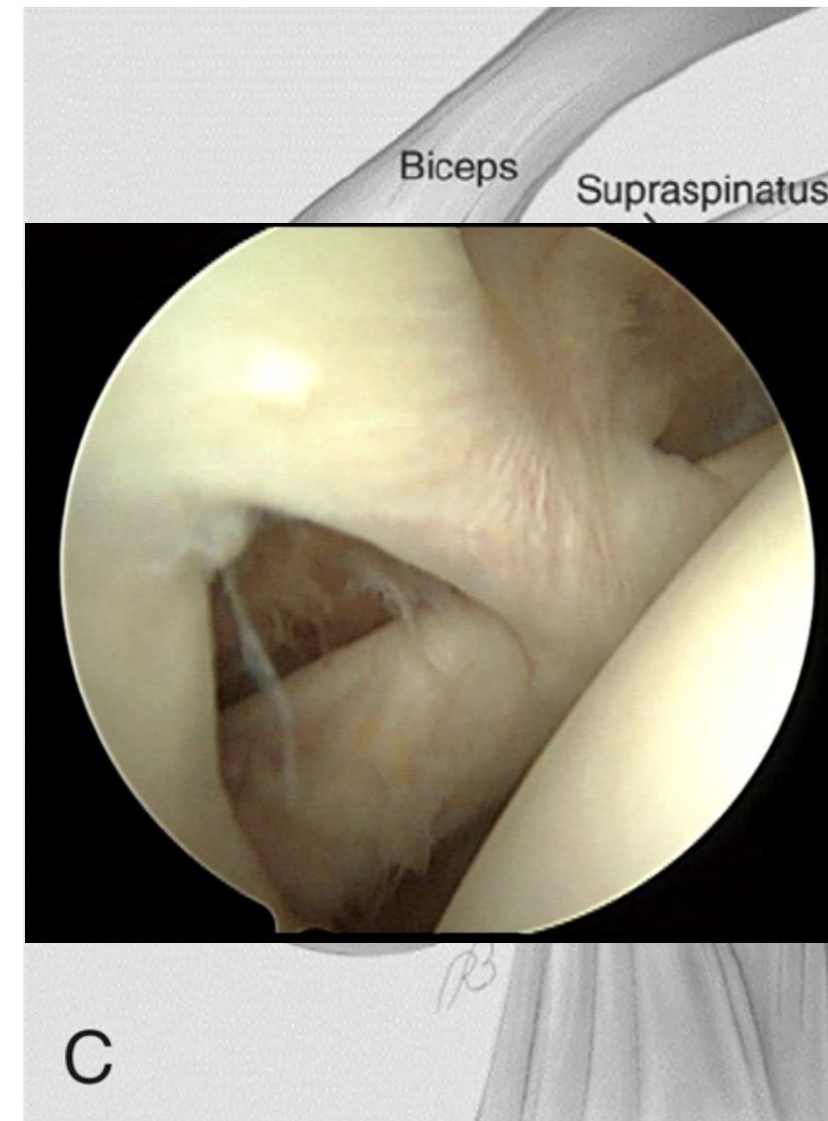
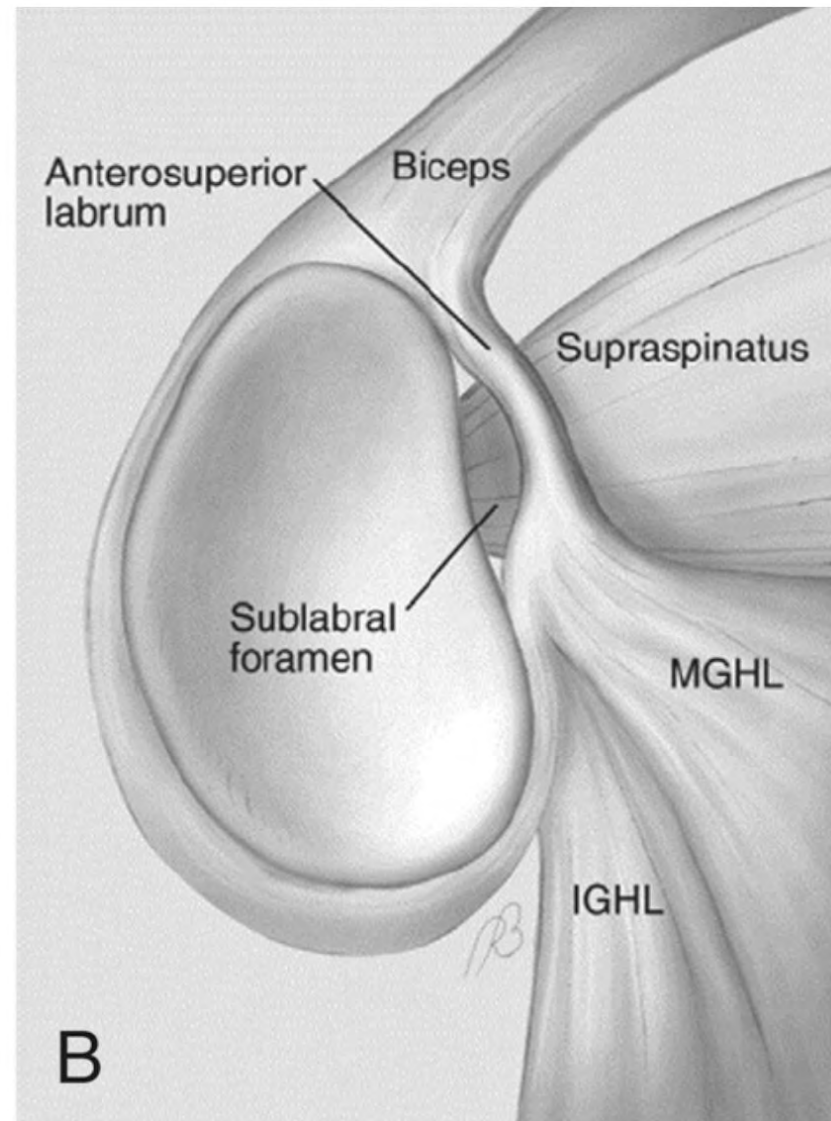
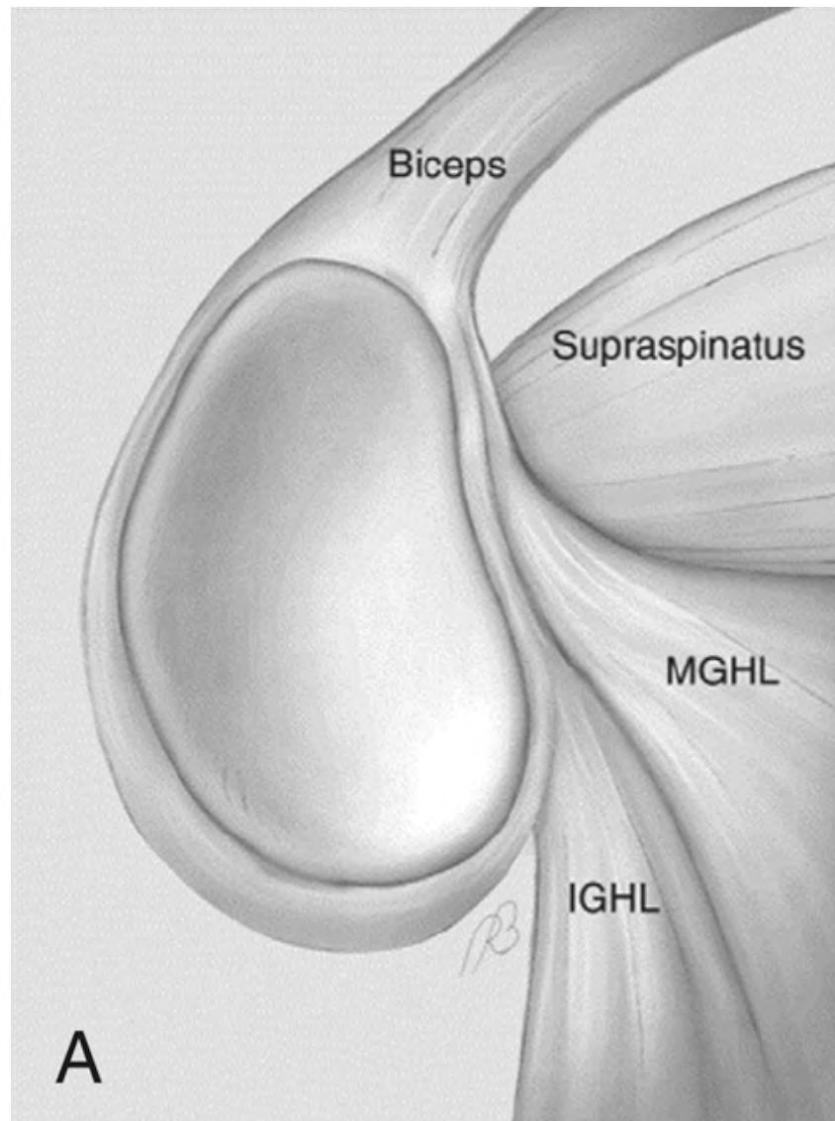
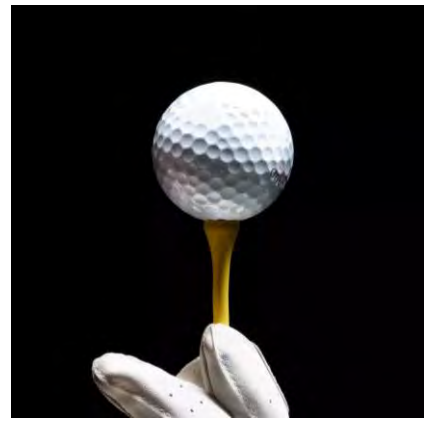
- Glenoid



Glenohumeralgelenk

Statische Stabilisatoren

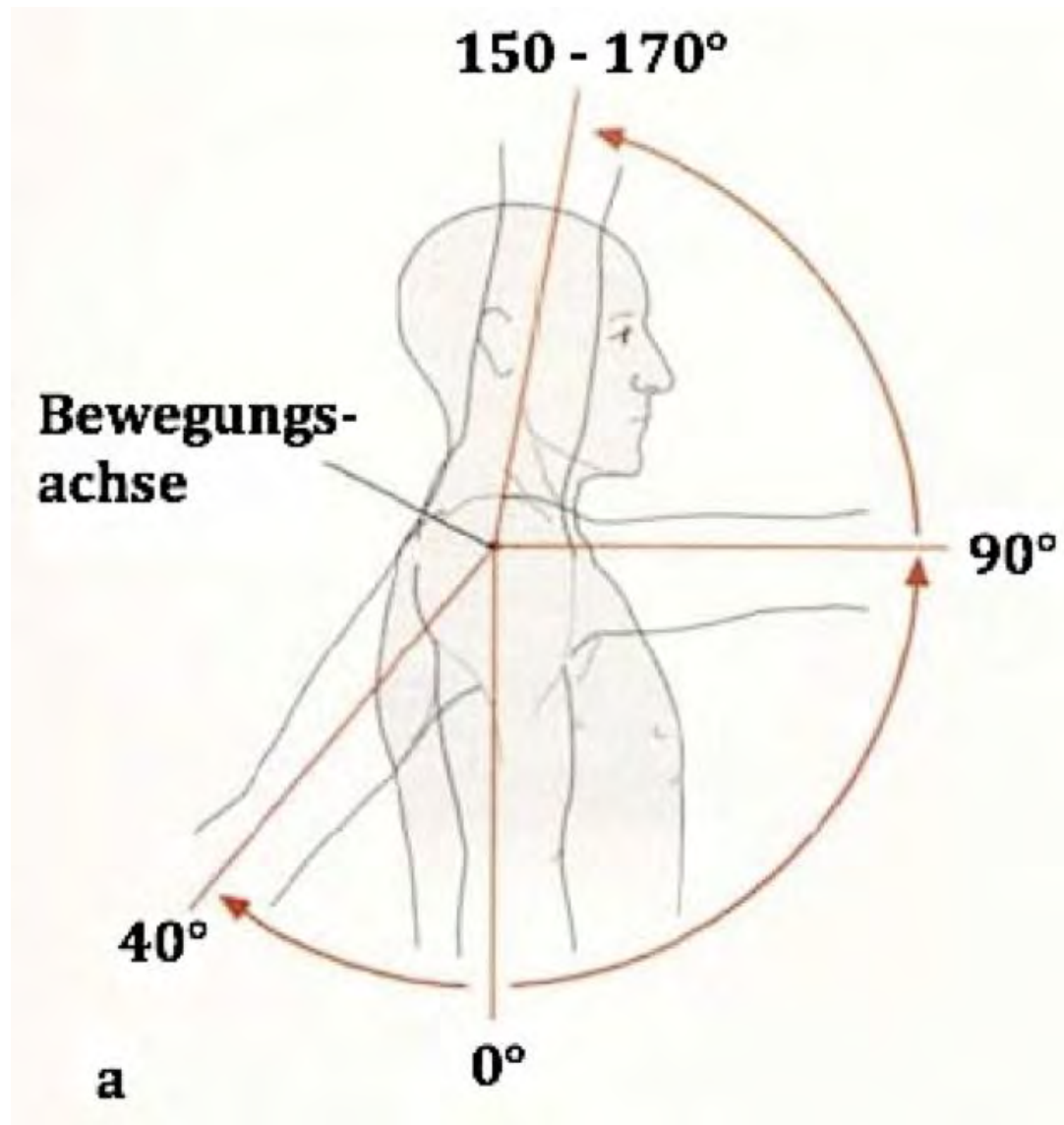
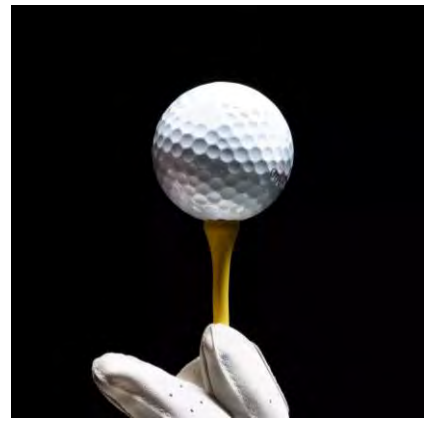
Labrum



Buford complex

Glenohumeralgelenk

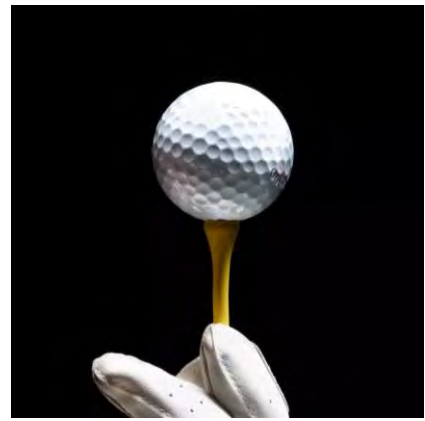
Bewegungsumfang



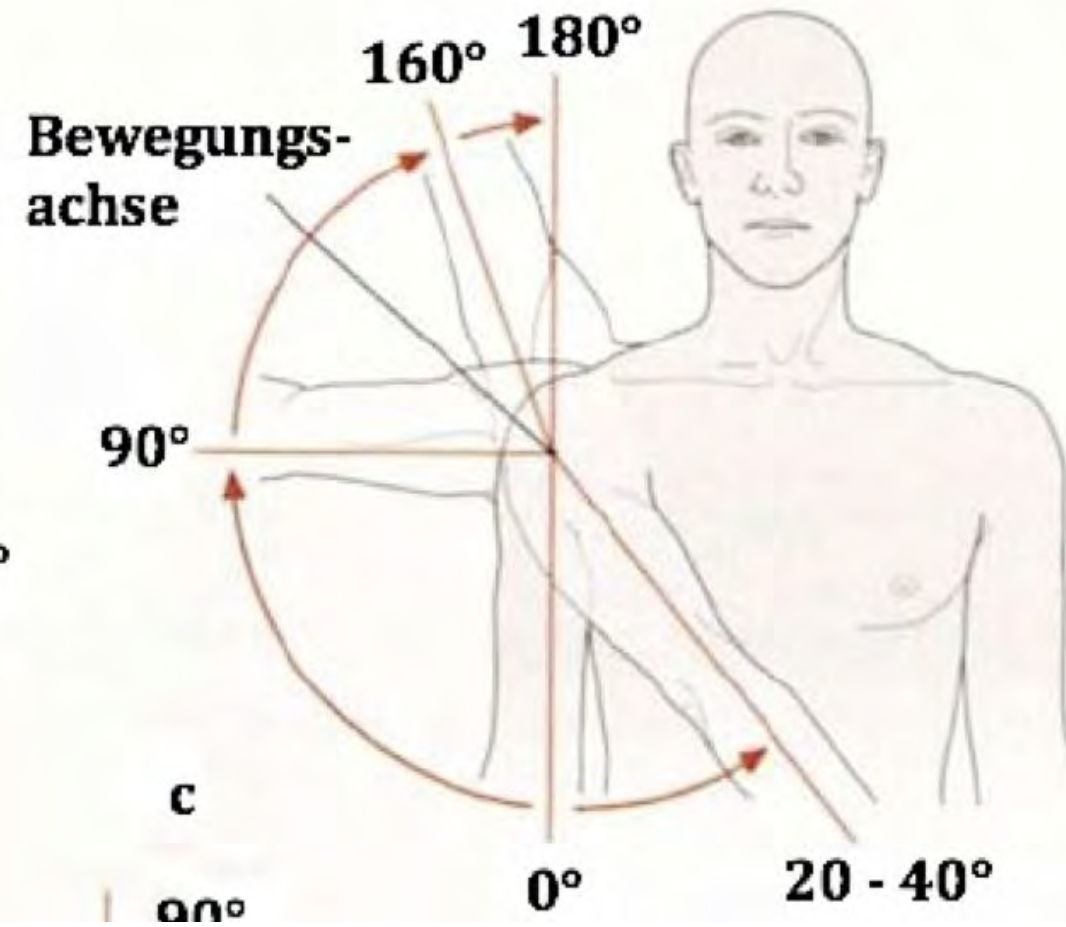
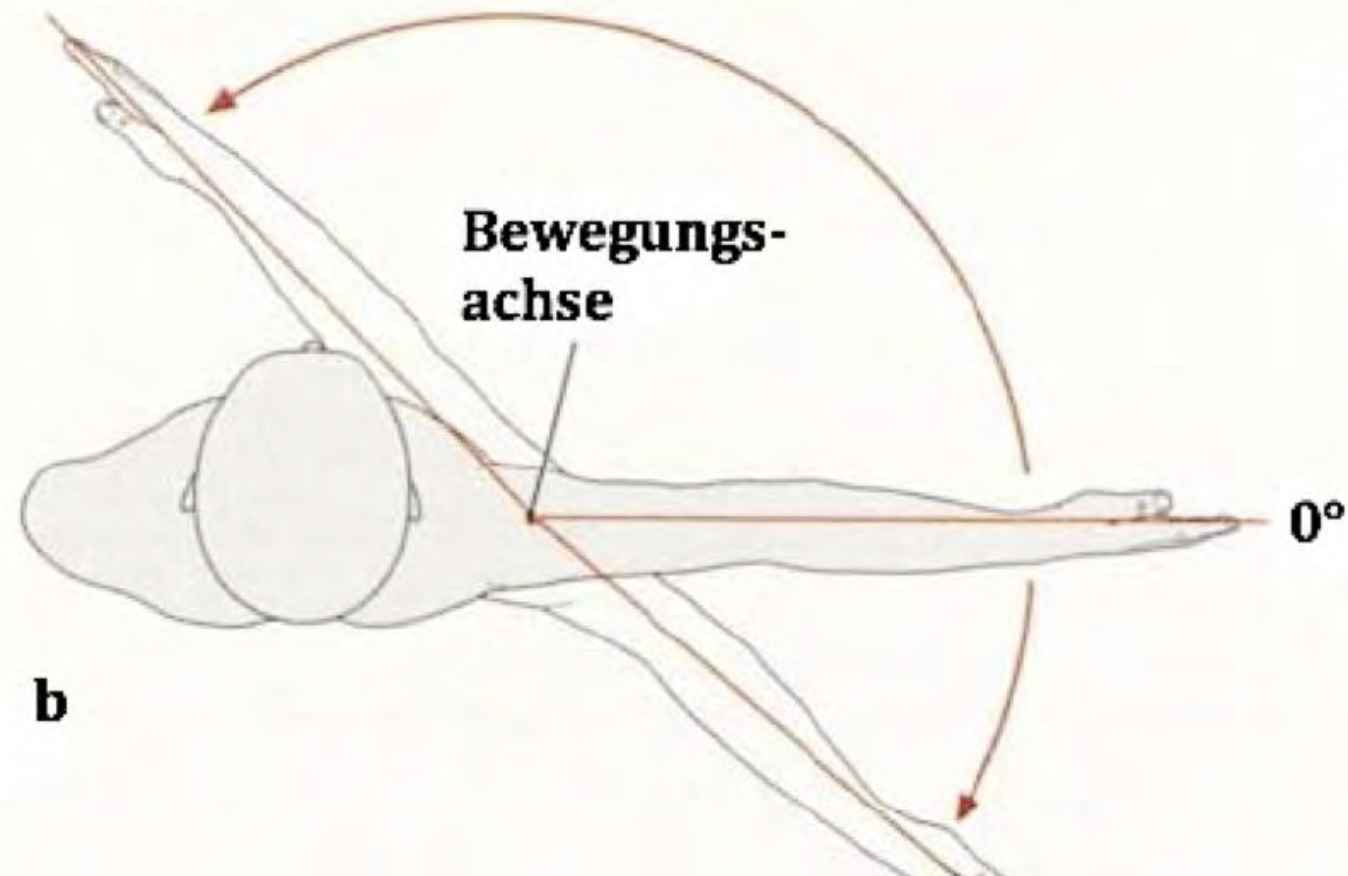
Anteversion (Flexion)	Retroversion (Extension)
M. deltoideus (Pars clavicularis)	M. latissimus dorsi
M. biceps brachii	M. teres major
M. pectoralis major (Pars clavicularis und Pars sternocostalis)	M. triceps brachii (Caput longum)
M. coracobrachialis	M. deltoideus (Pars spinalis)

Glenohumeralgelenk

Bewegungsumfang



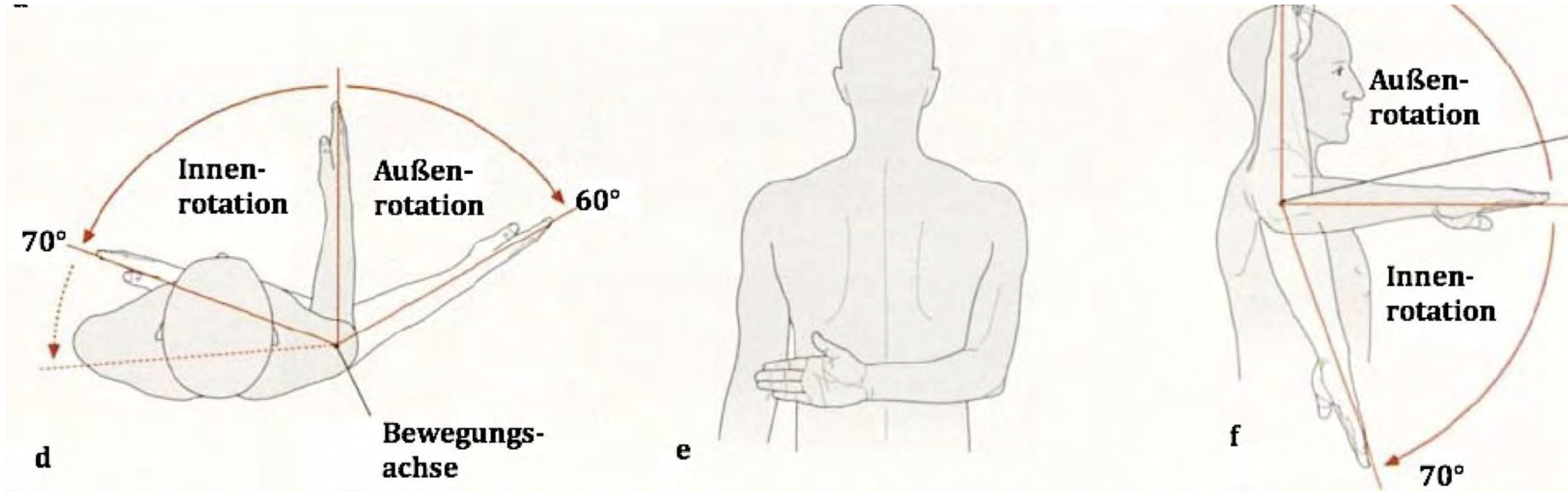
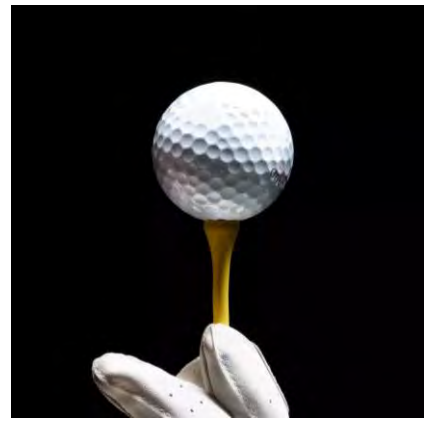
130 - 160°



Adduktion	Abduktion
M. pectoralis major	M. deltoideus (Pars acromialis, ab 60° der gesamte Muskel)
M. latissimus dorsi	M. supraspinatus
M. triceps brachii (Caput longum)	M. biceps (Caput longum)
M. teres major	
M. deltoideus (Pars clavicularis und Pars spinalis)	
M. biceps brachii (Caput breve)	
M. coracobrachialis	

Glenohumeralgelenk

Bewegungsumfang

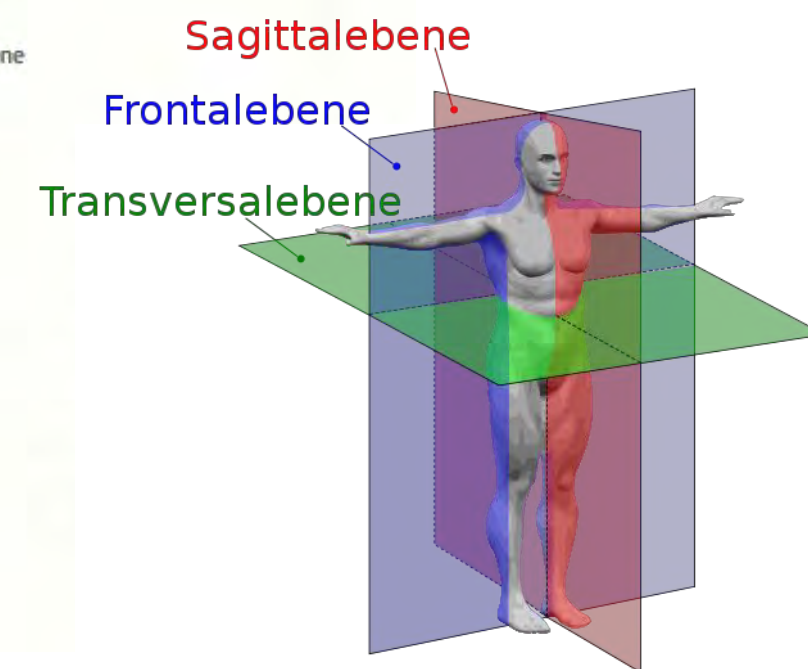
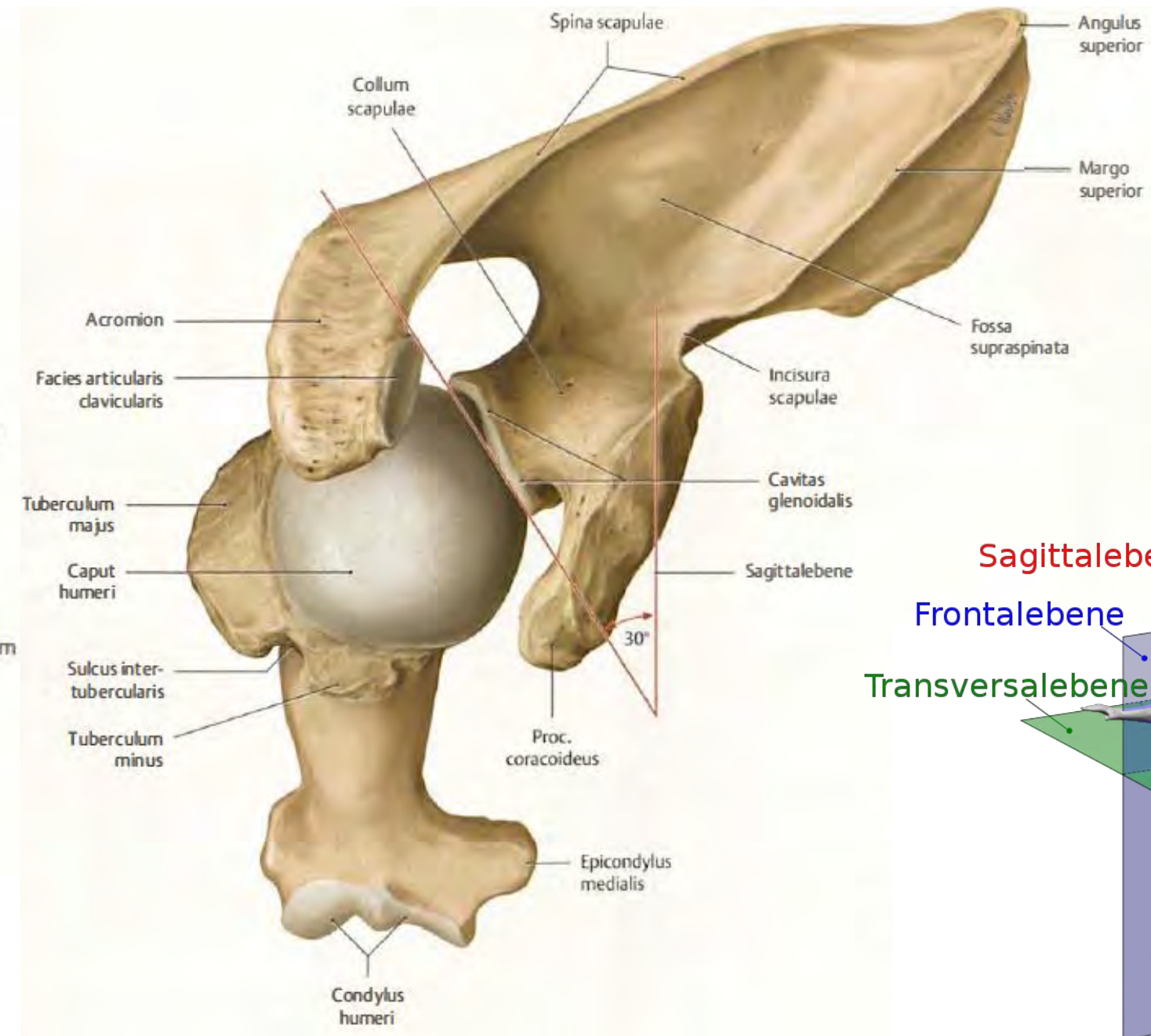
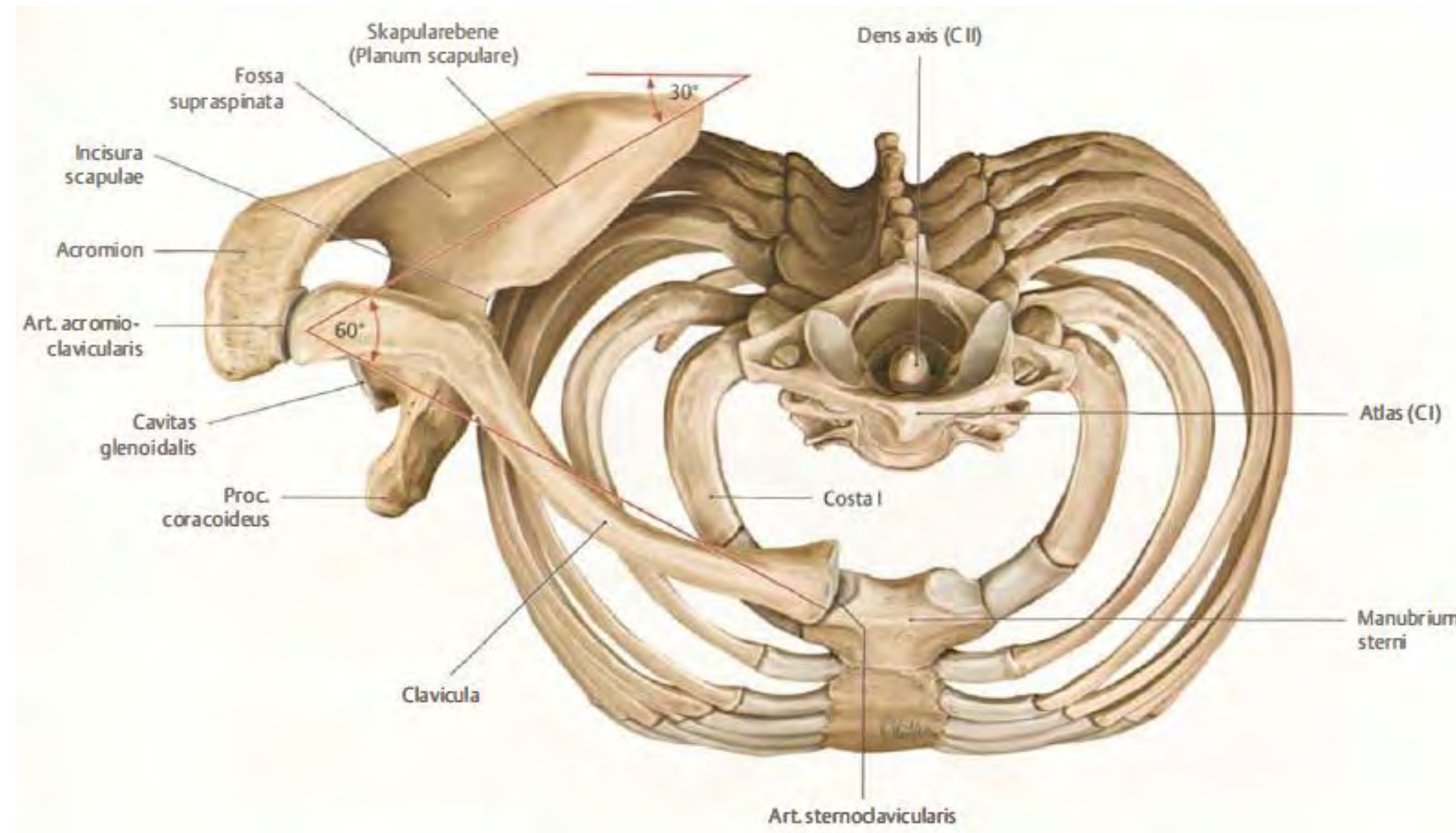


Innenrotation	Außenrotation
M. subscapularis	M. infraspinatus
M. pectoralis major	M. teres minor
M. biceps brachii (Caput longum)	M. deltoideus (Pars spinalis)
M. deltoideus (Pars clavicularis)	
M. teres major	
M. latissimus dorsi	

Skapula

Skapulothorakales Gleitlager

ossäre Anatomie



Skapula

Skapulothorakales Gleitlager

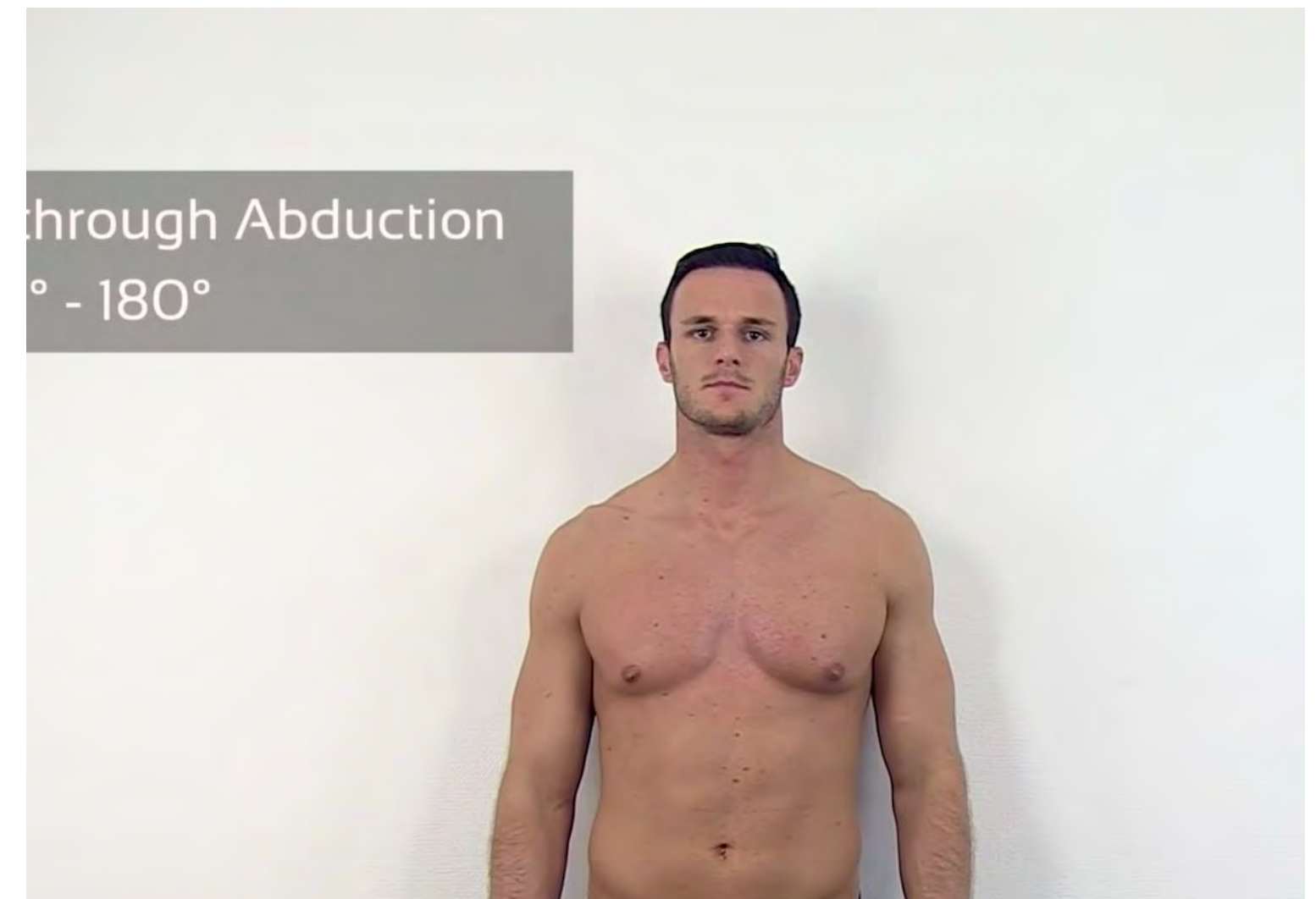
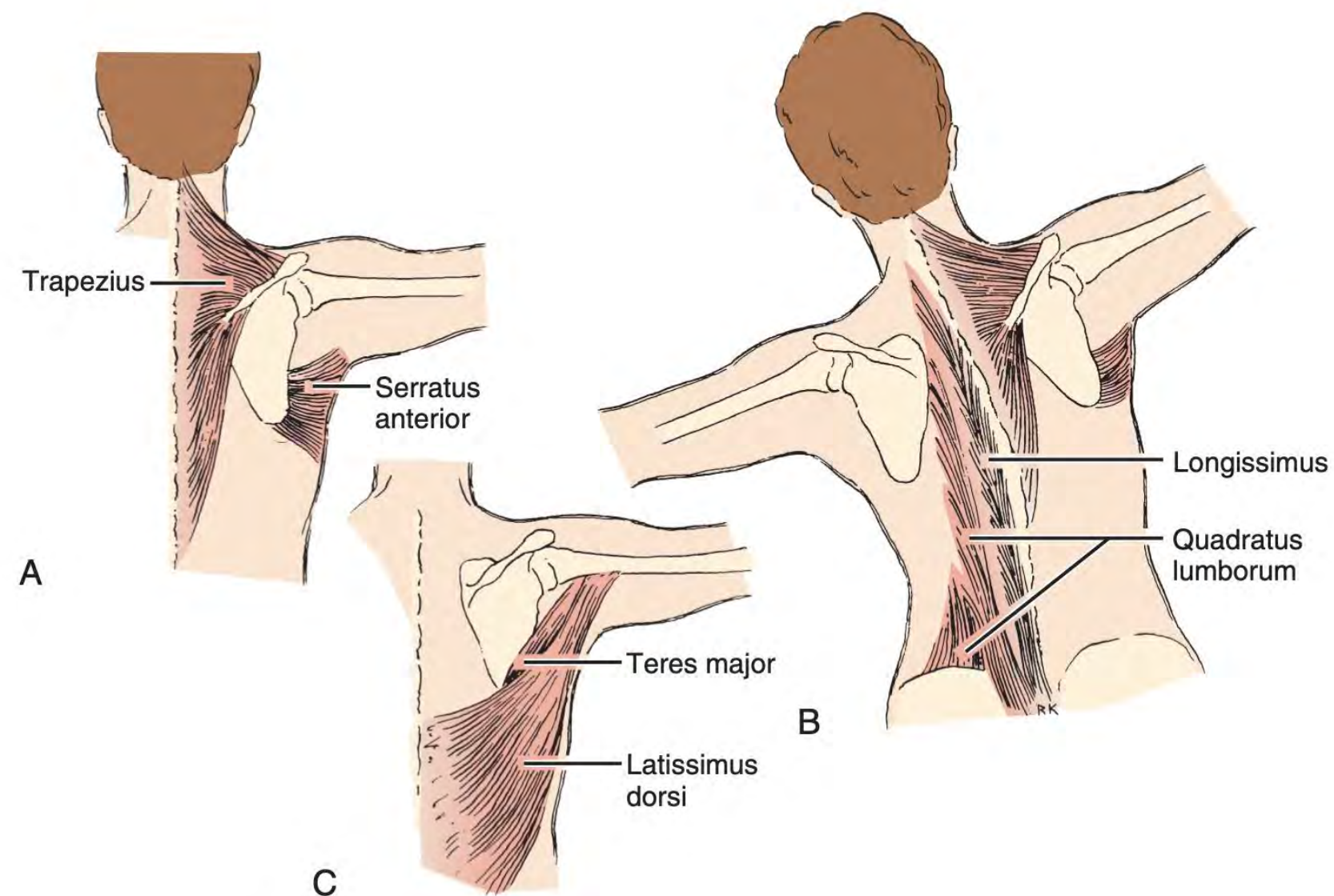


Aufwärtsrotation

- M. trapezius pars ascendens/descendens, M. serratus anterior pars inferior

Abwärtsrotation

- Mm. rhomboidei, M. serratus anterior pars superior, M. pectoralis minor, M. levator scapulae



Skapula

Skapulothorakales Gleitlager

Arthrodesese

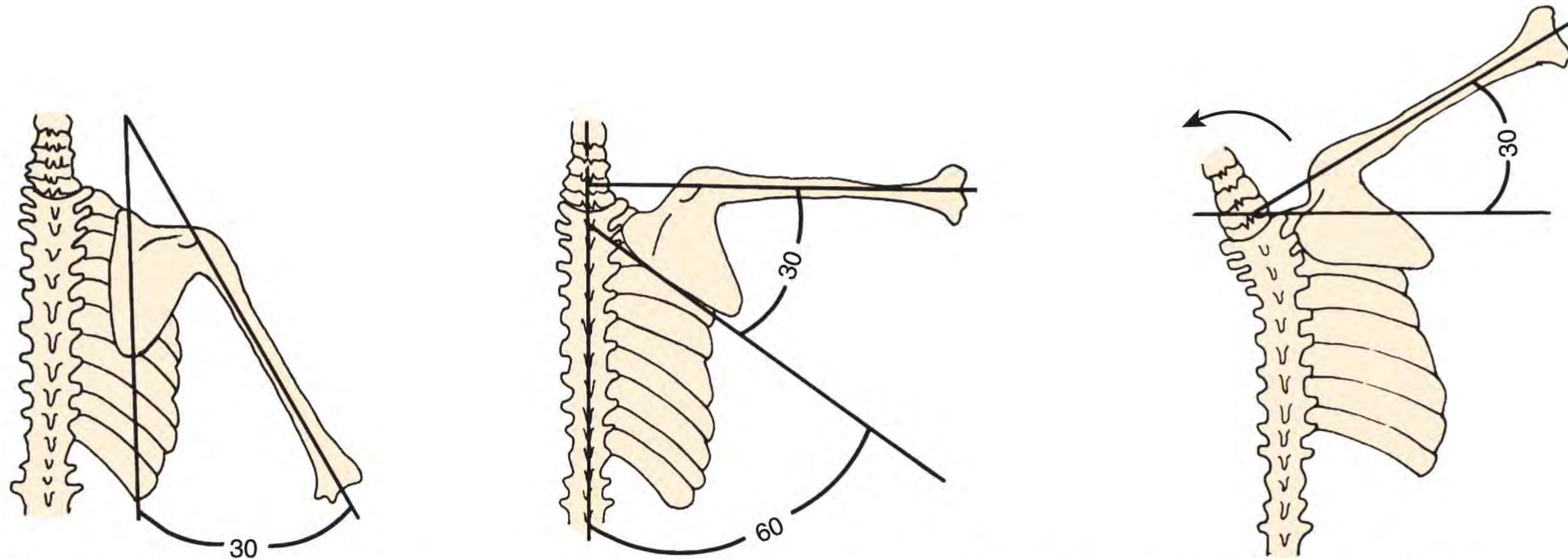


FIGURE 6-24 Arthrodesis of the glenohumeral joint in the optimal position (*left*) allows arm elevation to and above the horizontal by scapulothoracic motion (*center*) as well as by tilting the trunk (*right*).