

# Membrum superius - musculi

**Prof. MUDr. Jiří Ferda, Ph.D.**

# m. serratus anterior

## ♦ Origo (O)

- ♦ *Costa I. – IX.*

## ♦ Insertio (I)

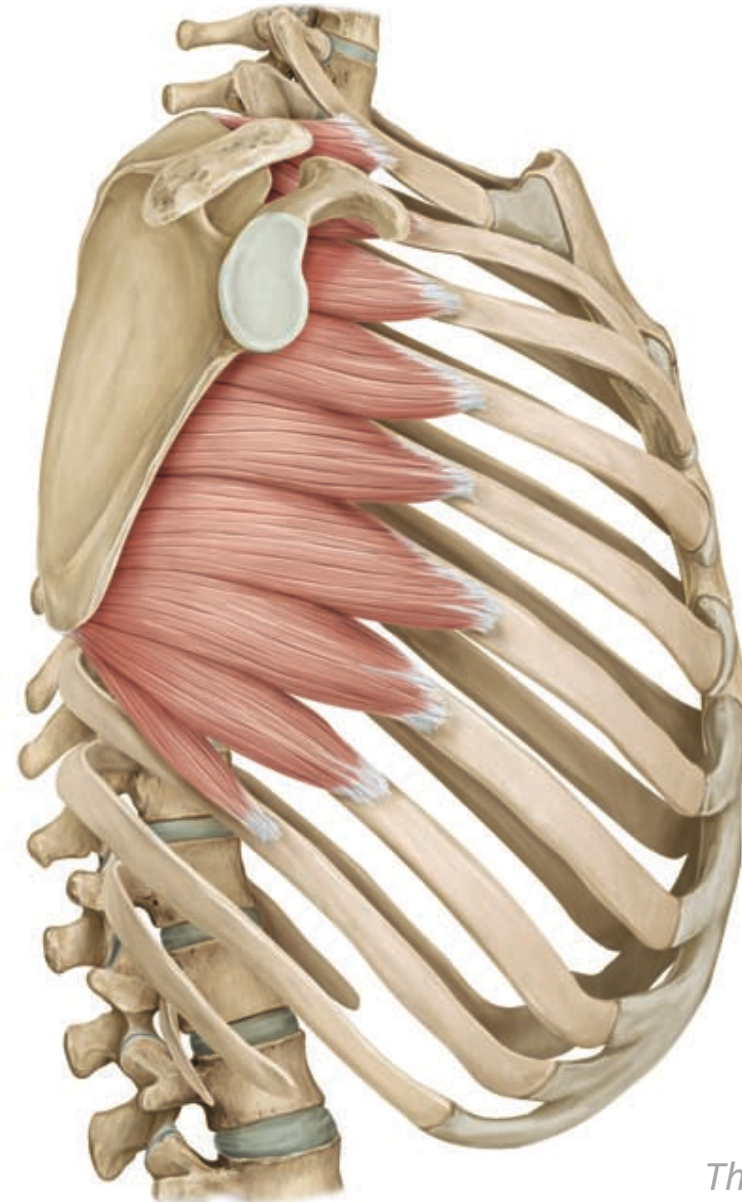
- ♦ *Scapula*

## ♦ Innervatio (N)

- ♦ *N. thoracicus longus (C5-7)*

## ♦ Functio (F)

- ♦ *Moving scapula*
- ♦ *Moving with ribs, when arm is fixed*



# m. subclavius

## ♦ Origo

- ♦ *Costa I.*

## ♦ Insertio

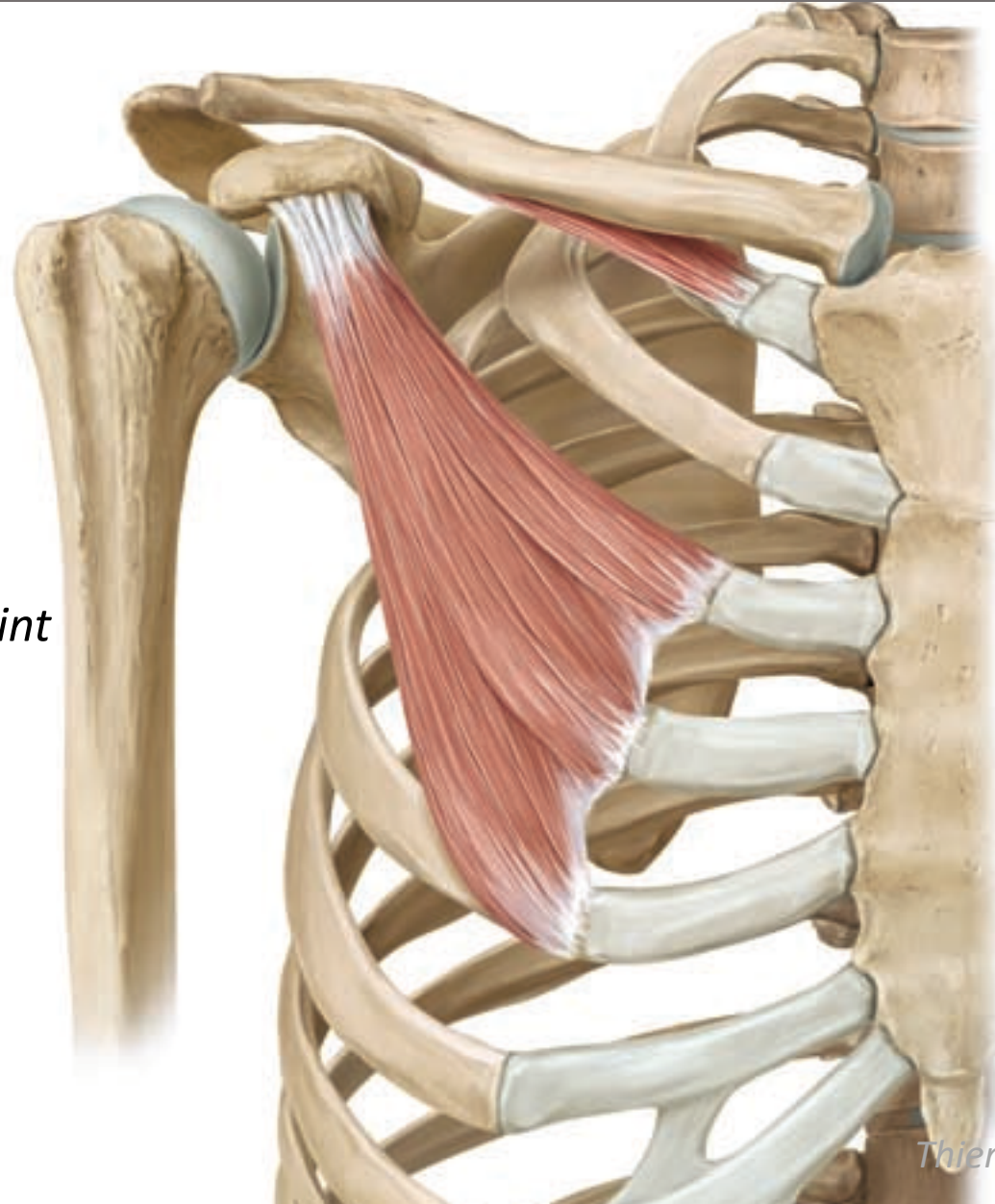
- ♦ *Facies inferior claviculae*

## ♦ Innervatio

- ♦ *N. subclavius (C5-6)*

## ♦ Functio

- ♦ *Stabilizes clavicle in sternoclavicular joint*



# m. pectoralis minor

## ♦ Origo

- ♦ *Costa III. – V.*

## ♦ Insertio

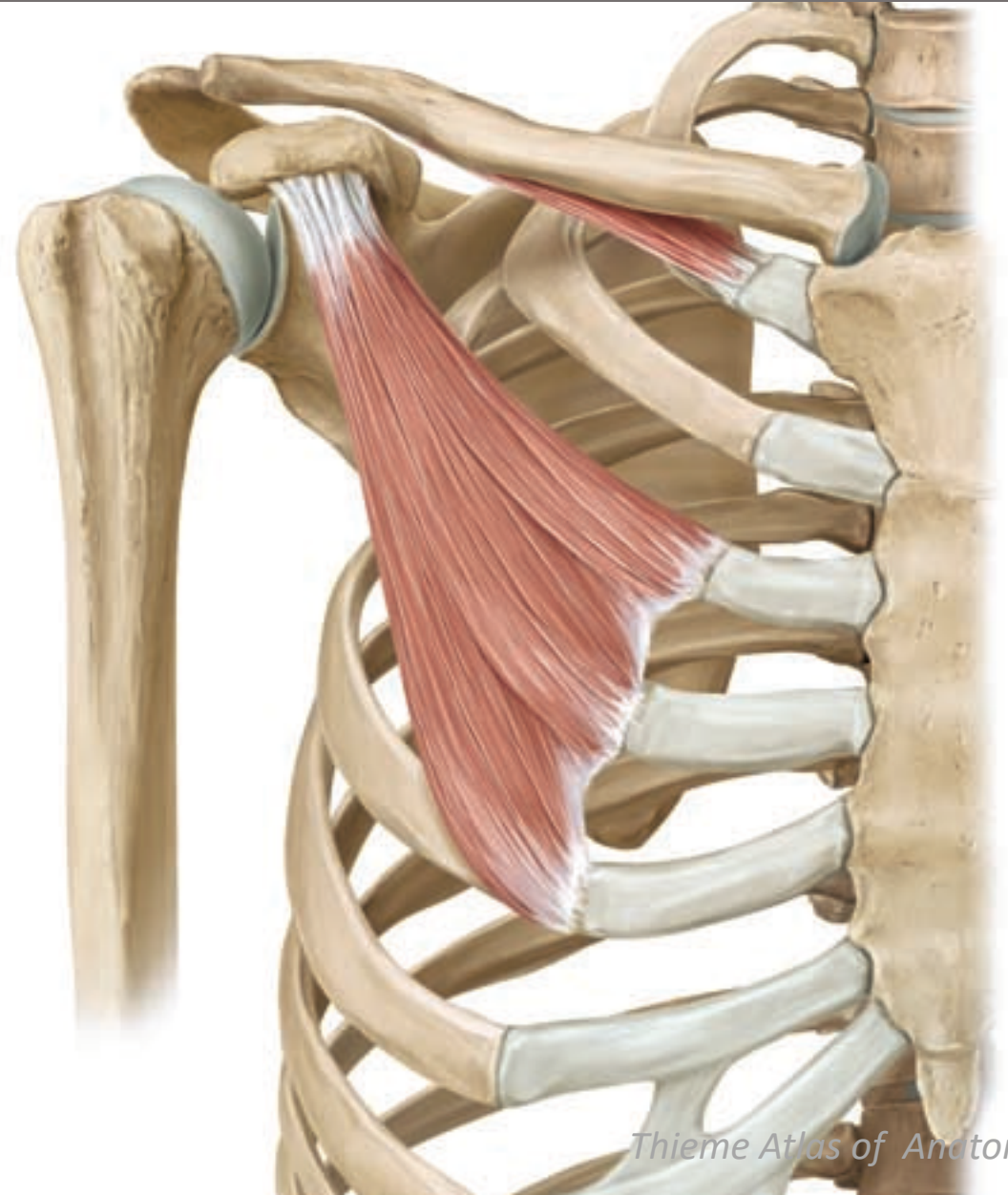
- ♦ *Processus coracoideus scapulae*

## ♦ Inervatio

- ♦ *N. pectorales lateralis et medialis (C6-Th1)*

## ♦ Functio

- ♦ *Pushes scapula down,*
- ♦ *Auxiliary respiratory muscle*





# m. subscapularis

## ♦ Origo

- ♦ *Fossa subscapularis*

## ♦ Insertio

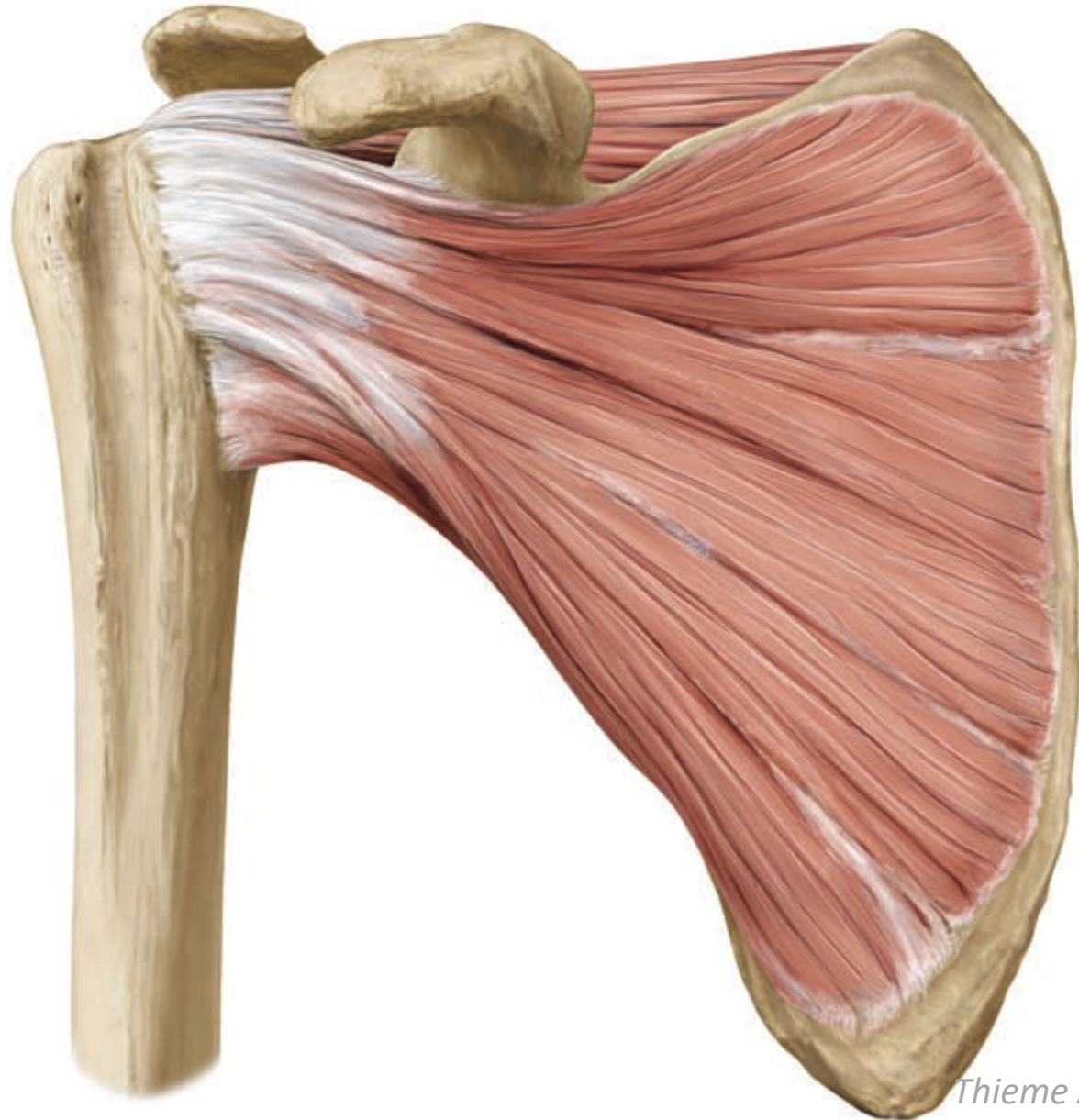
- ♦ *Tuberculum minor humeri*

## ♦ Innervatio

- ♦ *N. subscapularis (C5-6)*

## ♦ Functio

- ♦ *Inner rotation*



# m. supraspinatus

## ♦ Origo

- ♦ *Fossa supraspinata scapulae*

## ♦ Insertio

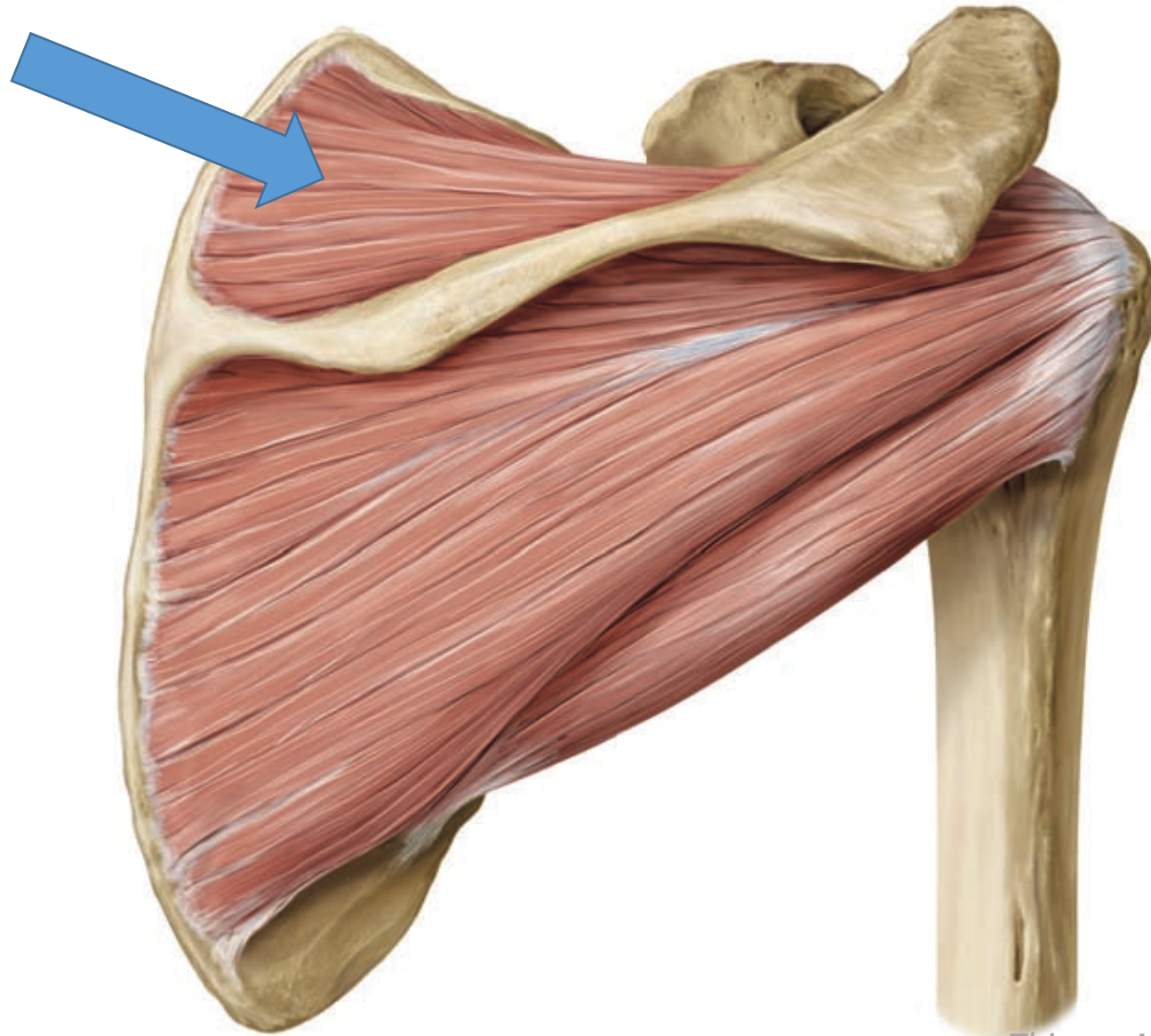
- ♦ *Tuberculum majus humeri*

## ♦ Innervatio

- ♦ *N. suprascapularis (C4-6)*

## ♦ Functio

- ♦ *abduction*



# m. infraspinatus

## ♦ Origo

- ♦ *Fossa infraspinara scapulae*

## ♦ Insertio

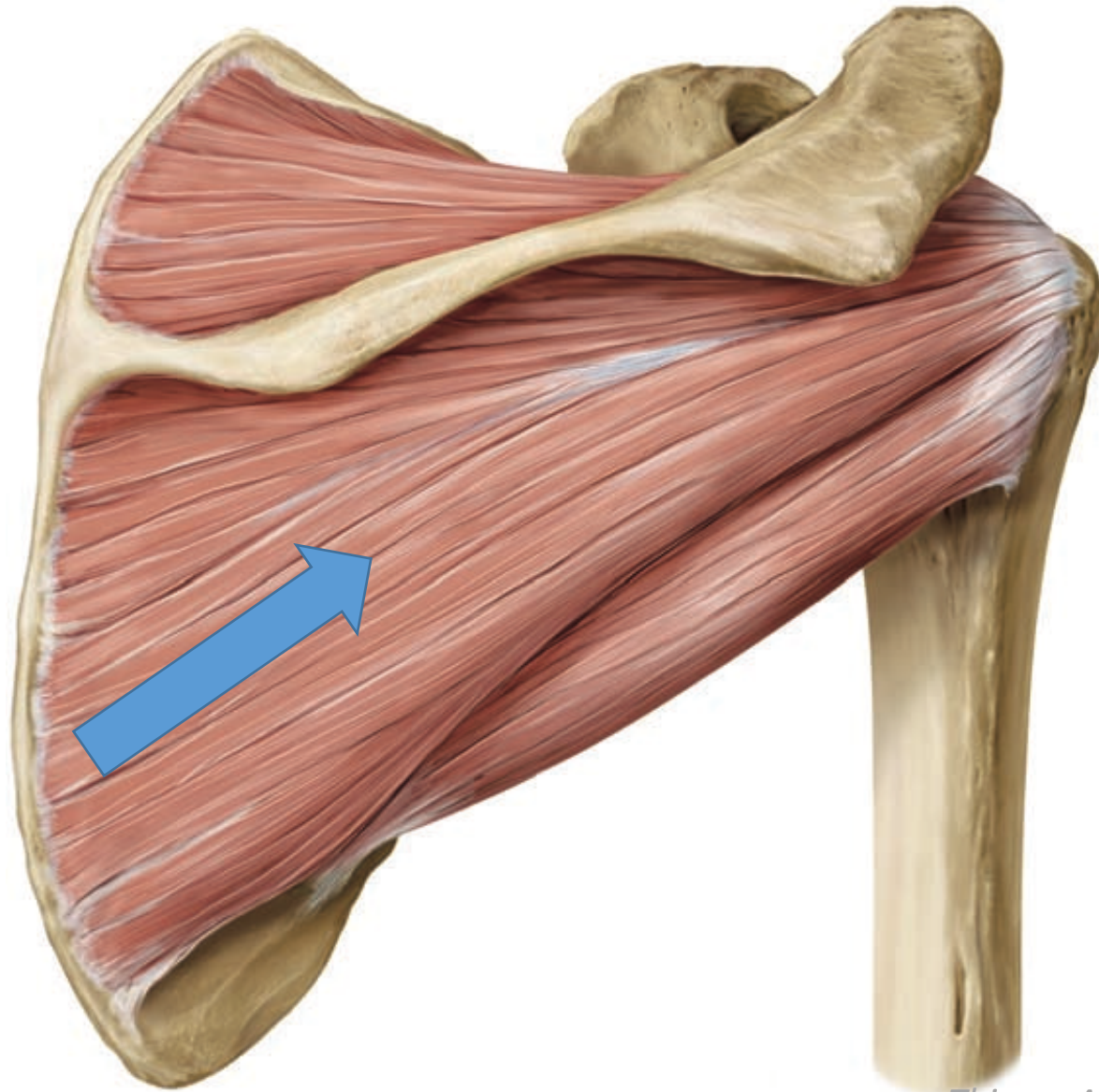
- ♦ *Tuberculum majus humeri*

## ♦ Innervatio

- ♦ *N. suprascapularis (C4-6)*

## ♦ Functio

- ♦ *Outer rotation*





# m. teres minor

## ♦ Origo

- ♦ *Margo lateralis scapulae*

## ♦ Insertio

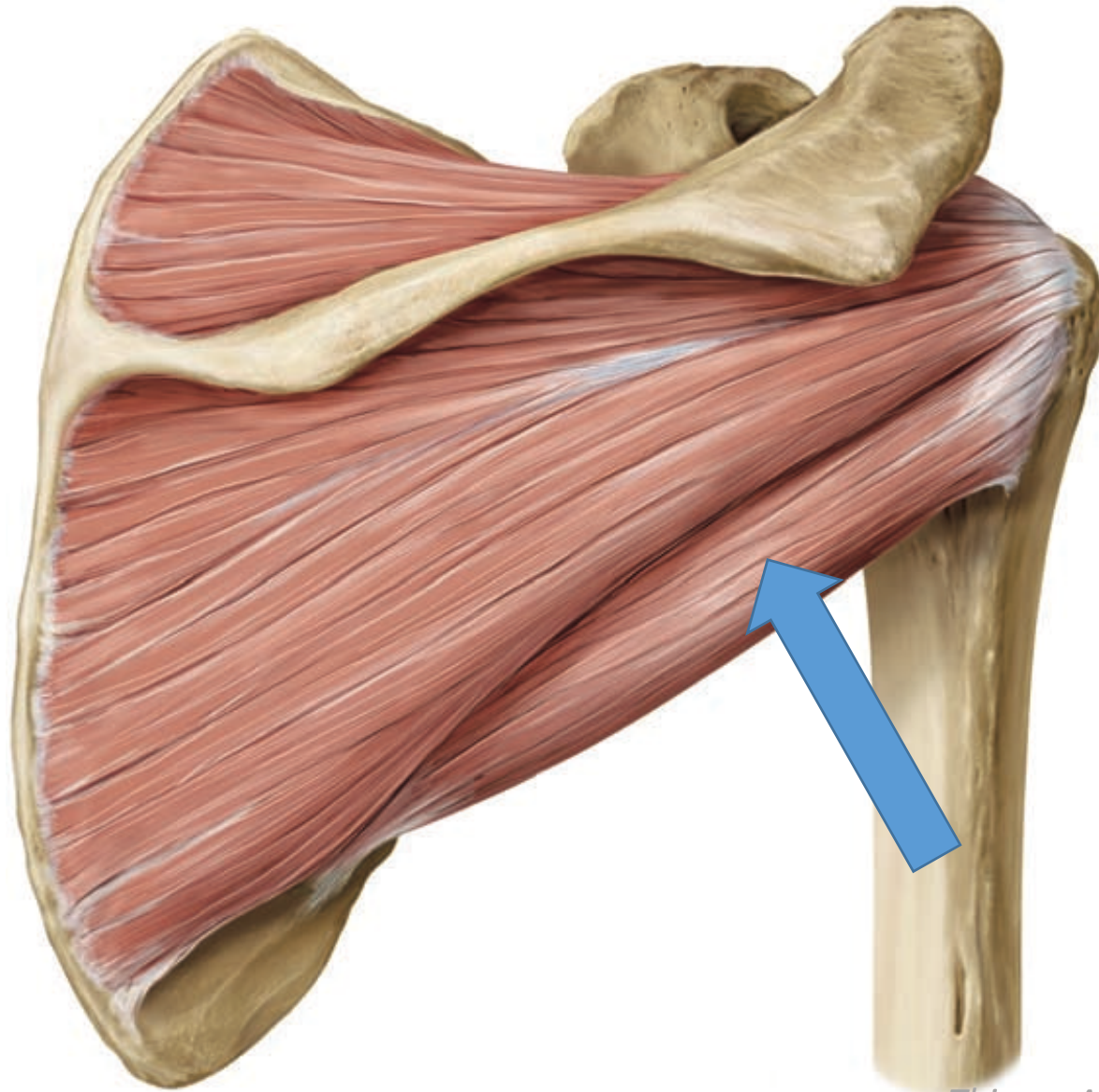
- ♦ *Tuberculum majus humeri*

## ♦ Innervatio

- ♦ *N. axillaris (C5-6)*

## ♦ Functio

- ♦ *Outer rotation, slightly adduction*





# m. deltoideus

## ♦ Origo

- ♦ *Pars clavicularis* – clavícula
- ♦ *Pars acromialis* – acromion
- ♦ *Pars spinalis* – spina scapulae

## ♦ Insertio

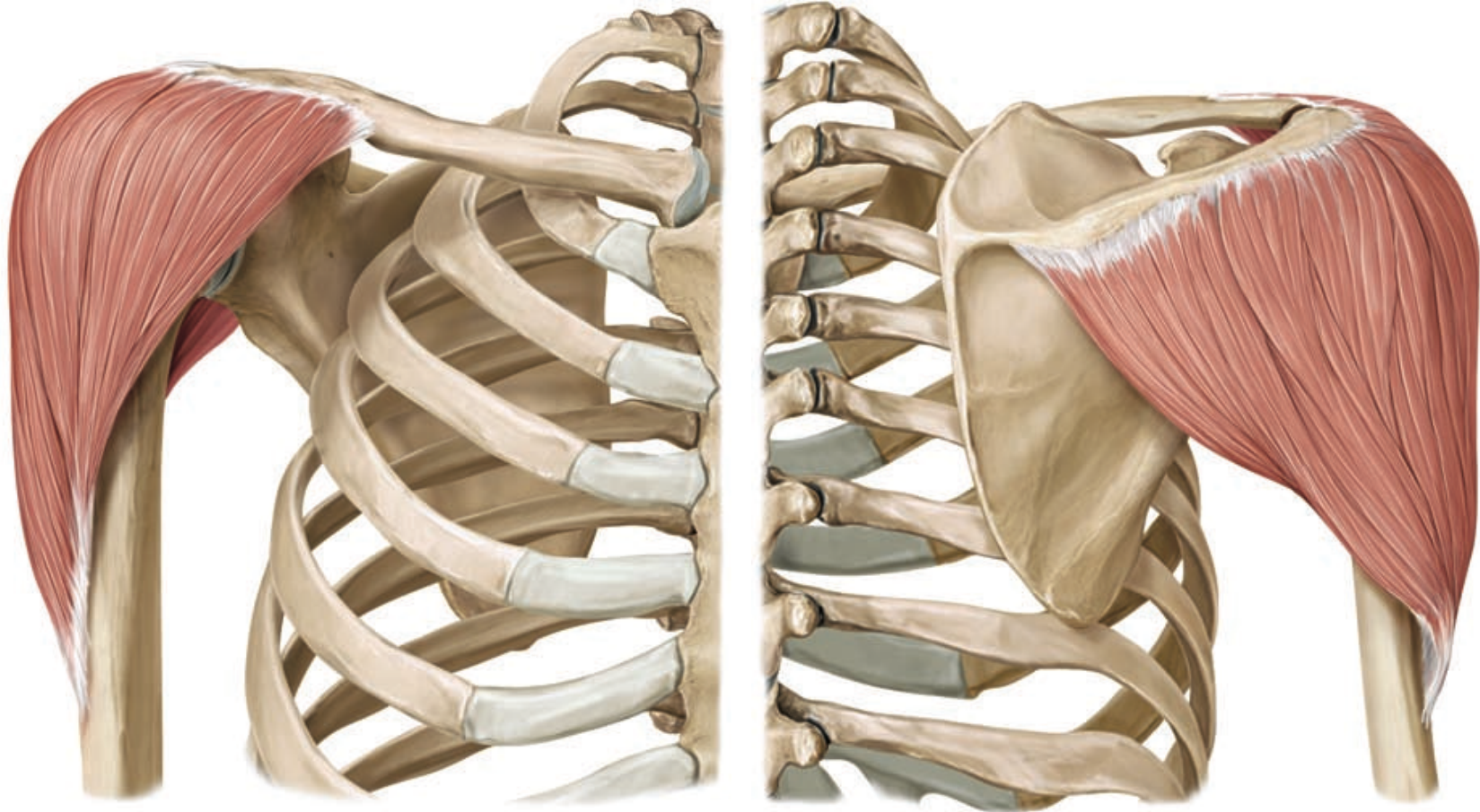
- ♦ *Tuberositas deltoidea humeri*

## ♦ Innervatio

- ♦ *N. axillaris (C5-6)*

## ♦ Functio

- ♦ *Anterverstion*
- ♦ *Abduction*
- ♦ *Adduction*
- ♦ *Outer rotation*



# m. latissimus dorsi

## ♦ Origo

- ♦ *Pars vertebralis – processus spinales Th7 – 12, fascia thoracolumbalis*
- ♦ *Pars iliaca – crista ossis ilii*
- ♦ *Pars costalis – costa IX – XII*
- ♦ *Pars scapularis – angulus inferior scapulae*

## ♦ Insertio

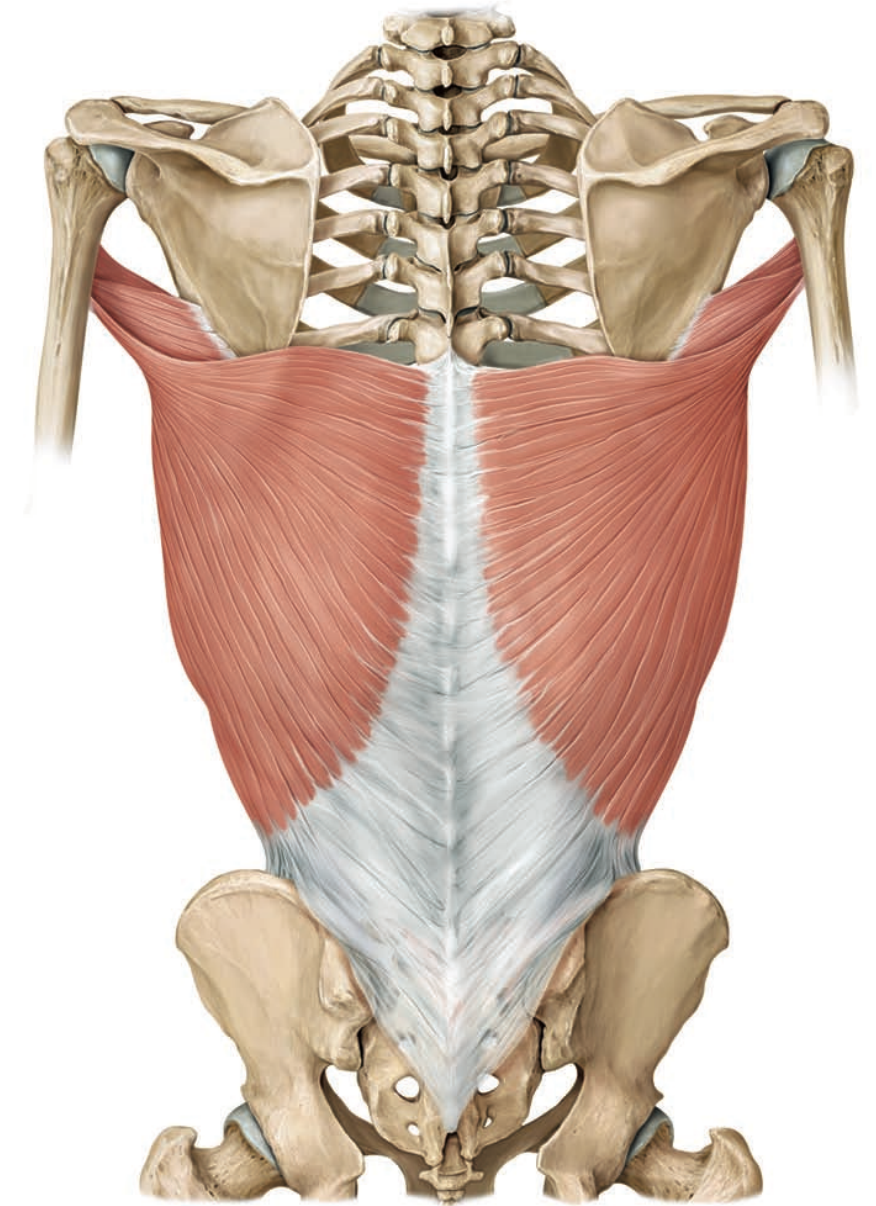
- ♦ *Crista tuberculi minoris humeri*

## ♦ Innervatio

- ♦ *N. thoracodorsalis (C6-8)*

## ♦ Functio

- ♦ *Inner rotation*
- ♦ *adduction*
- ♦ *Retroversion of the arm*
- ♦ *Respiration (cough muscle)*





# m. teres major

## ♦ Origo

- ♦ *angulus inferior scapulae*

## ♦ Insertio

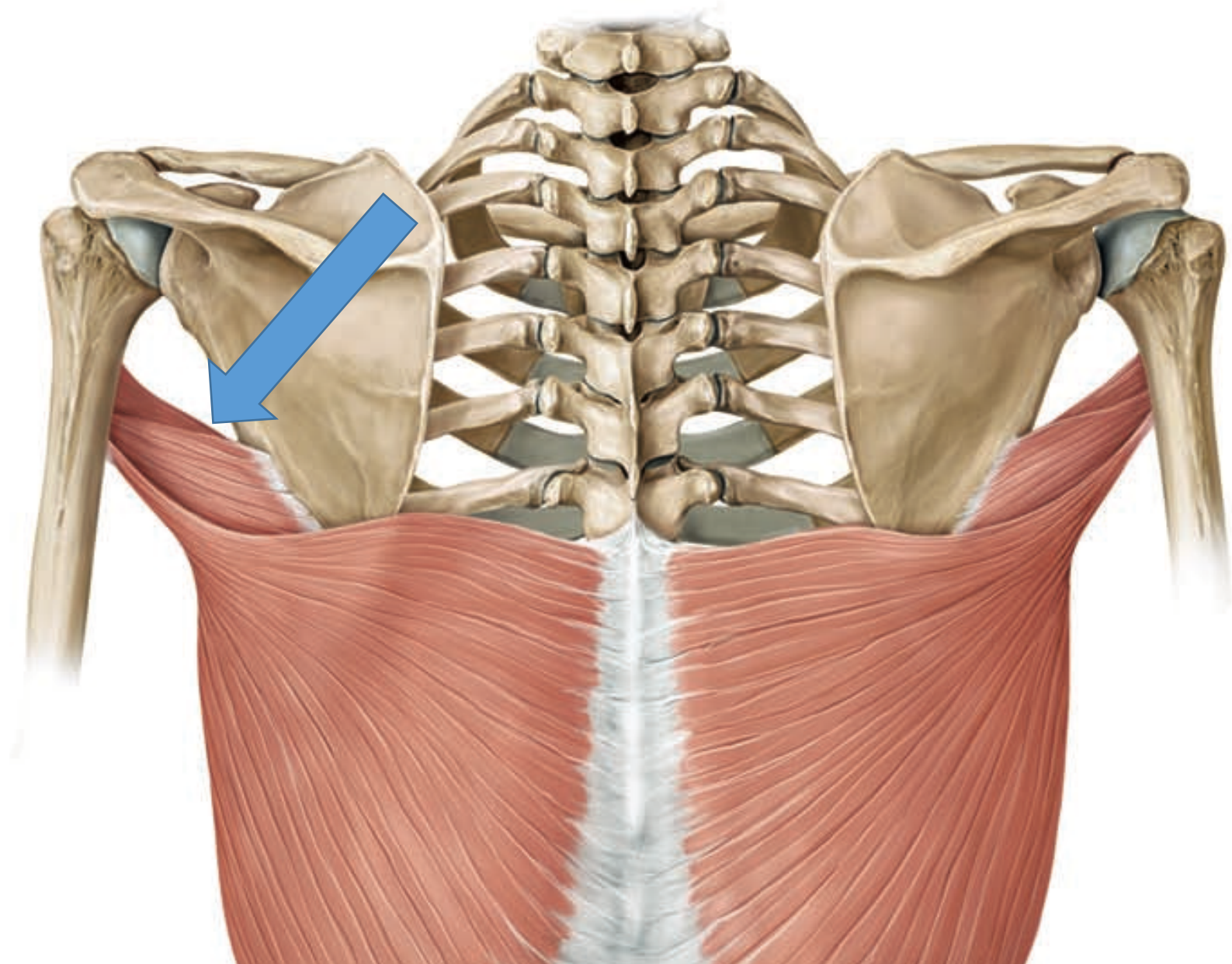
- ♦ *Crista tuberculi minoris humeri*

## ♦ Inervatio

- ♦ *N. subscapularis (C5-6)*

## ♦ Functio

- ♦ *Inner rotation*
- ♦ *Adduction*
- ♦ *Reversion of the arm*





# m. pectoralis major

## ♦ Origo

- ♦ *Clavicula, sternum, cartilagines costae*

## ♦ Insertio

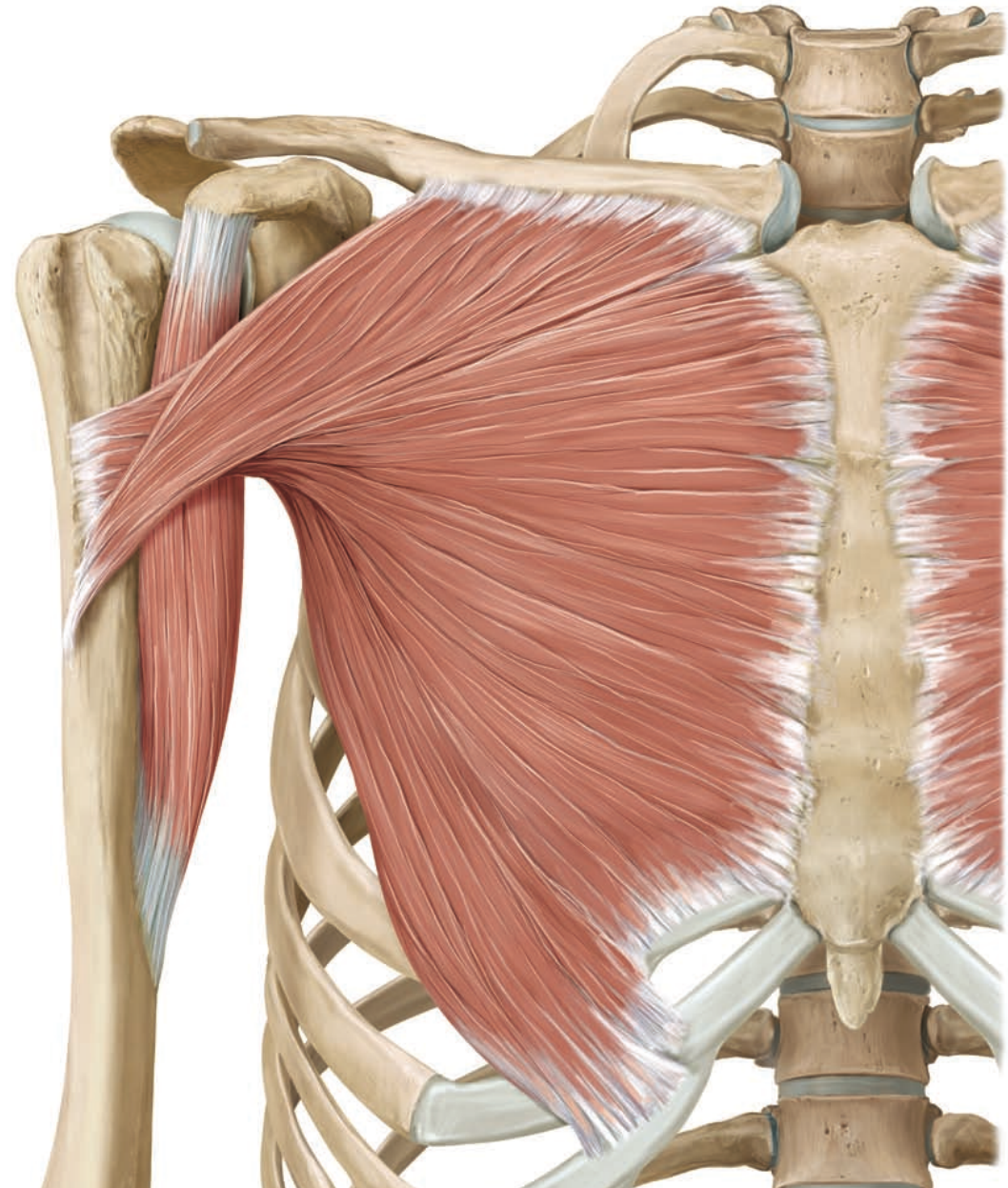
- ♦ *Crista tuberculi majoris humeri*

## ♦ Innervatio

- ♦ *Nn. pectoralis lateralis et medialis (C5-Th1)*

## ♦ Functio

- ♦ *Inner rotation*
- ♦ *Adduction*
- ♦ *Anteversion*



# m. coracobrachialis

## ♦ Origo

- ♦ *Processus coracoideus scapulae*

## ♦ Insertio

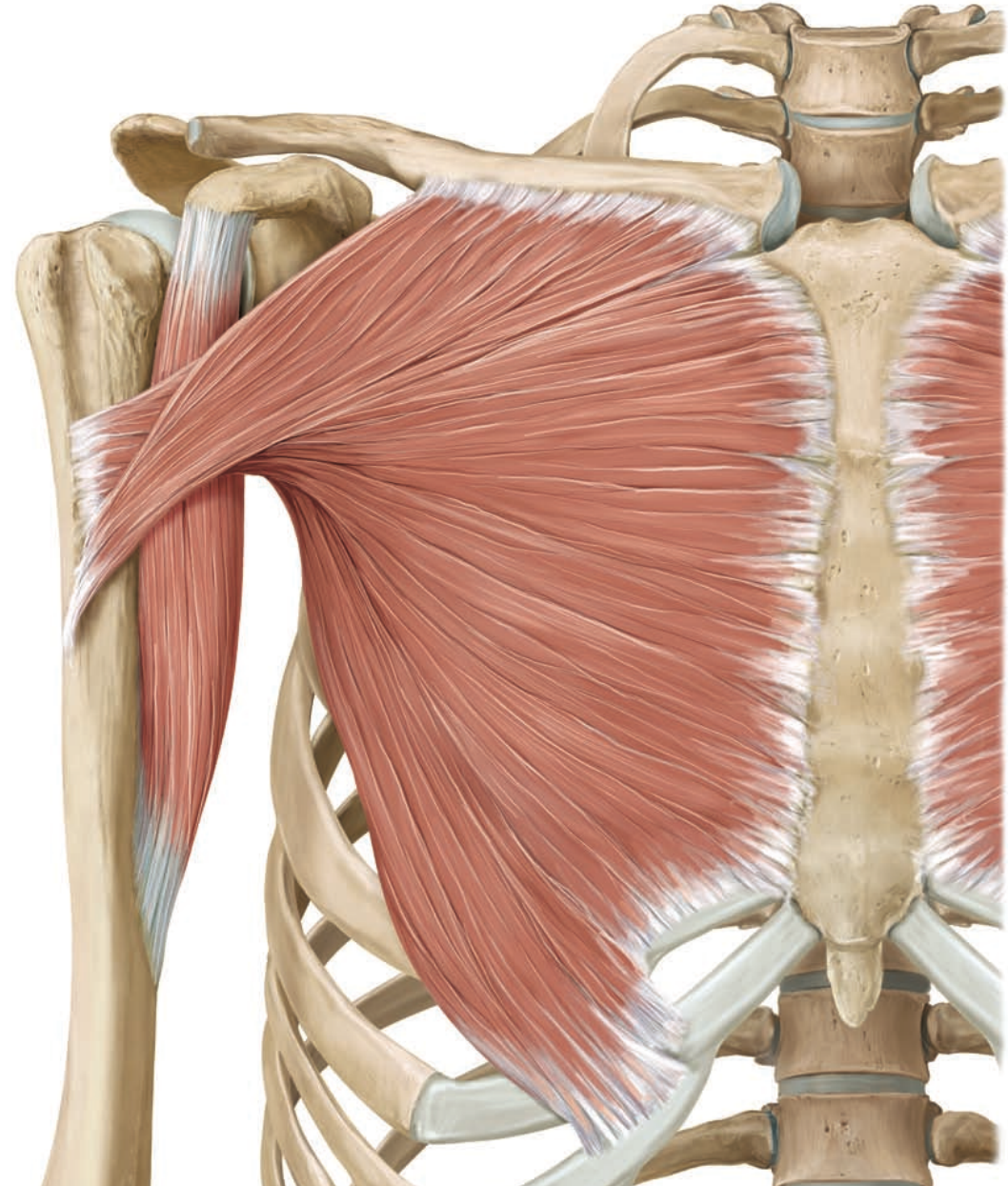
- ♦ *Střední třetina diafýzy humeru mediálně*

## ♦ Innervatio

- ♦ *N. musculocutaneus (C6-7)*

## ♦ Functio

- ♦ *Anteversion*
- ♦ *Inner rotation*
- ♦ *Adduction*



# m. biceps brachii

## ♦ Origo

- ♦ *Caput longum – tuberculum supraglenoidale scapulae*
- ♦ *Caput breve – processus coracoideus scapulae*

## ♦ Insertio

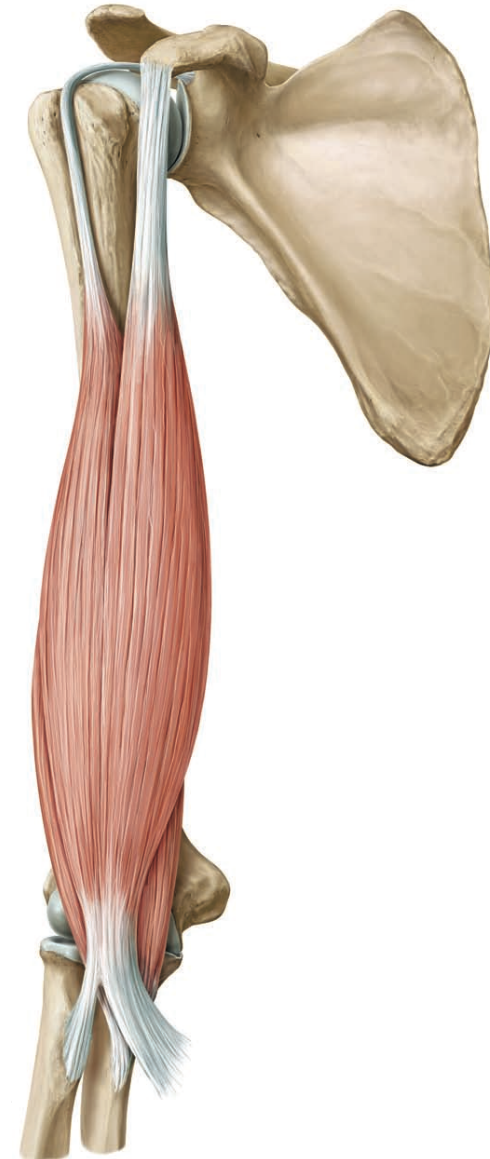
- ♦ *Tuberositas radii*
- ♦ *Aponeurosis m. bicipiti – medial part of the forearm*

## ♦ Innervatio

- ♦ *N. musculocutaneus (C6-7)*

## ♦ Functio

- ♦ *elbow – flexion and supination*
- ♦ *shoulder – flexion, stabilizes shoulder, adduction, anteversion*





# m. biceps brachii

## 🔥 Origo

- 🔥 *Distal half of the anterior surface of humerus*

## 🔥 Insertio

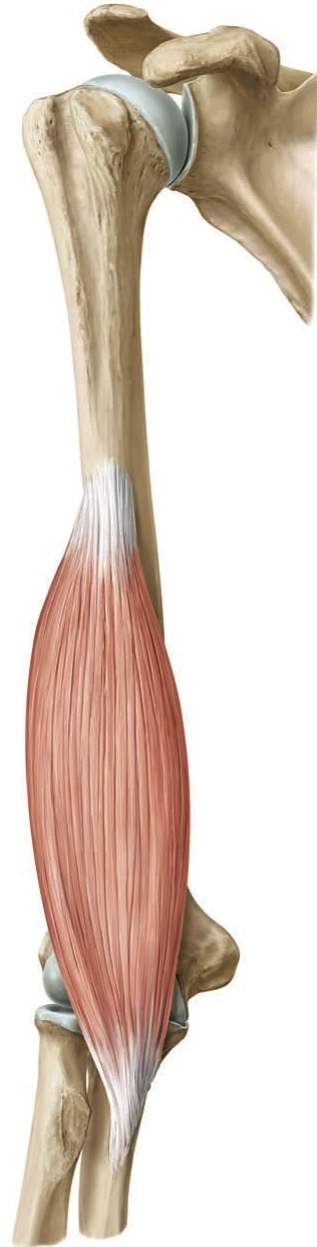
- 🔥 *Tuberositas ulnae*

## 🔥 Innervatio

- 🔥 *N. musculocutaneus (C6-7)*

## 🔥 Functio

- 🔥 *Elbow – flexion and supination*



# m. triceps brachii

## ♦ Origo

- ♦ *Caput longum*
  - ♦ *tuberculum infraglenoidale*
- ♦ *Caput mediale*
  - ♦ *Distal to sulcus radialis, dorsal surface of humerus*
- ♦ *Caput laterale*
  - ♦ *Proximal to sulcus radialis, dorsal surface of humerus*

## ♦ Insertio

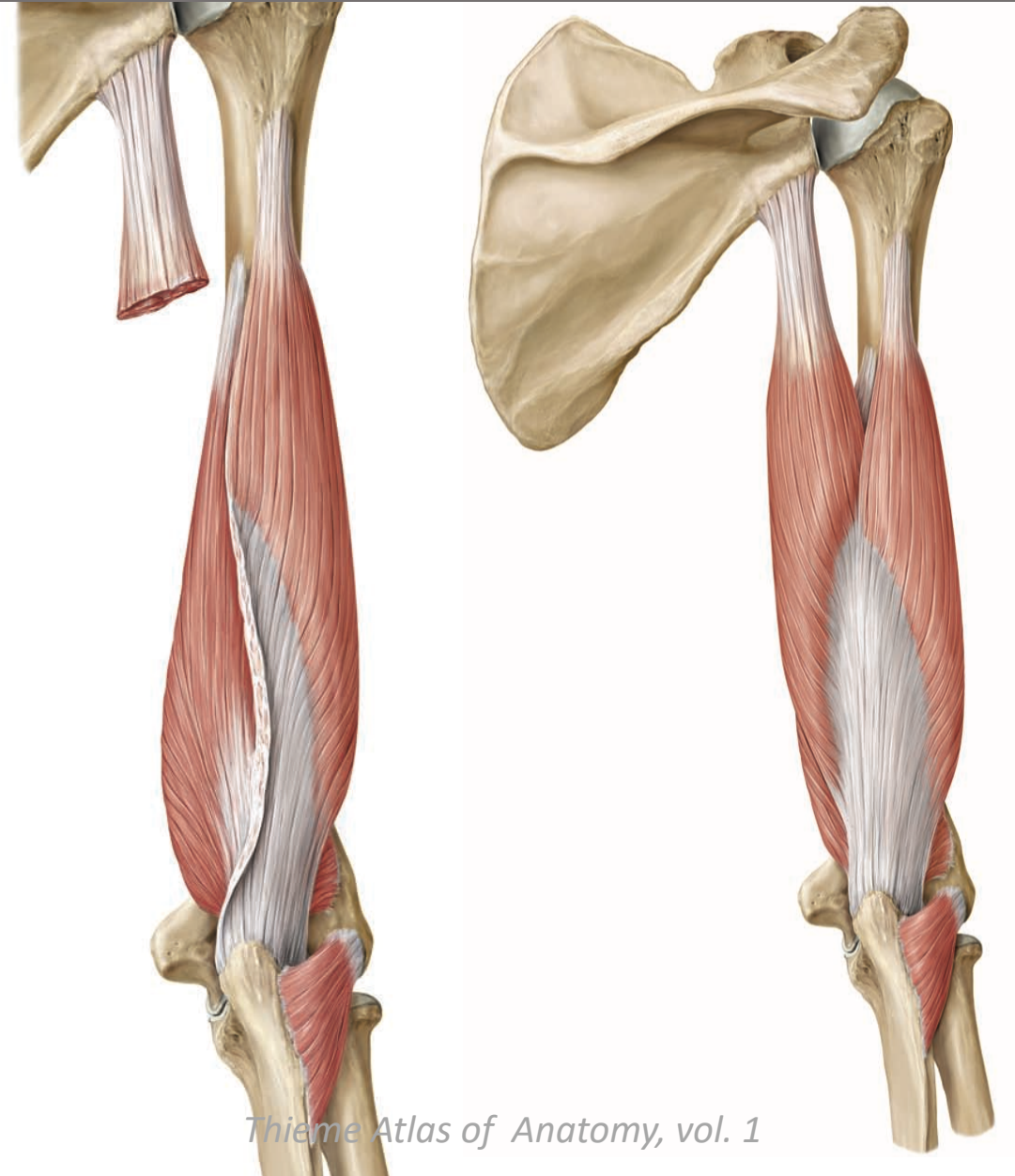
- ♦ *Olecranon ulnae*

## ♦ Innervatio

- ♦ *N. radialis (C6-8)*

## ♦ Functio

- ♦ *Elbow - extension*
- ♦ *Shoulder – retroversion and abduction*



# m. anconeus

## ♦ Origo

- ♦ *Epicondylus lateralis humeri*

## ♦ Insertio

- ♦ *Olecranon , prox. 1/3 ulnae*

## ♦ Inervatio

- ♦ *N. radialis (C6-8)*

## ♦ Functio

- ♦ *Abduction of ulna in pronation, accesory extension of elbow*





# Forearm extensores - part 1

## 🔥 M. brachioradialis

- 🔥 *O: lateral margin of distal 1/3 of humerus up to epicondylus lateralis intermuskular septum*
- 🔥 *I: lateral surface of distal radius*
- 🔥 *F: accessory flexion of forearm*

## 🔥 M. extensor carpi radialis longus

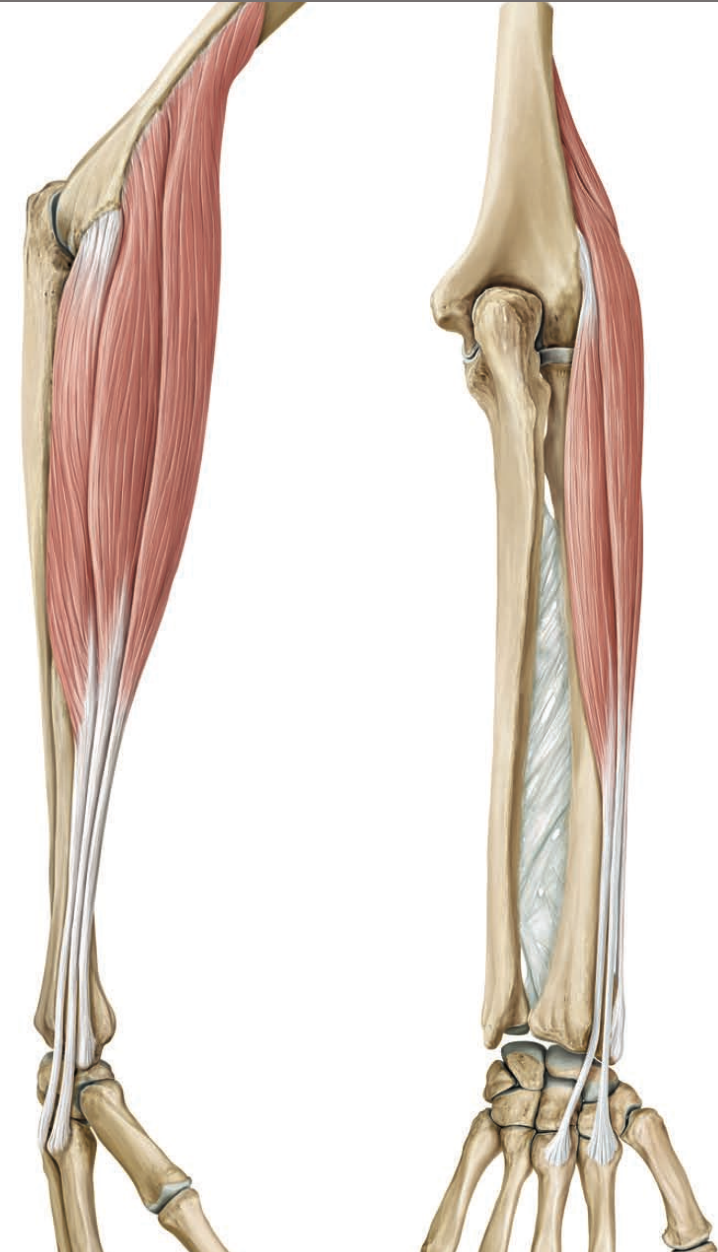
- 🔥 *O: lateral margin of distal 1/3 of humerus up to epicondylus lateralis intermuskular septum*
- 🔥 *I: dorsum of II. MTC base*
- 🔥 *F: extension and abduction of wrist*

## 🔥 M. extensor carpi radialis brevis

- 🔥 *O: lateral margin of distal 1/3 of humerus up to epicondylus lateralis intermuskular septum*
- 🔥 *I: dorsum of III. MTC base*
- 🔥 *F: extension and abduction of wrist*

## 🔥 Innervace

- 🔥 *Whole group n. radialis*



# Forearm extensores - part 2

## ♦ **M. extensor digitorum**

- ♦ *O: epicondylus humeri lateralis, septum intermusculare*
- ♦ *I: 4 tendons – extensor hood on middle and distal phalanges II. – V.*
- ♦ *F: extension of fingers*

## ♦ **M. extensor digiti minimi**

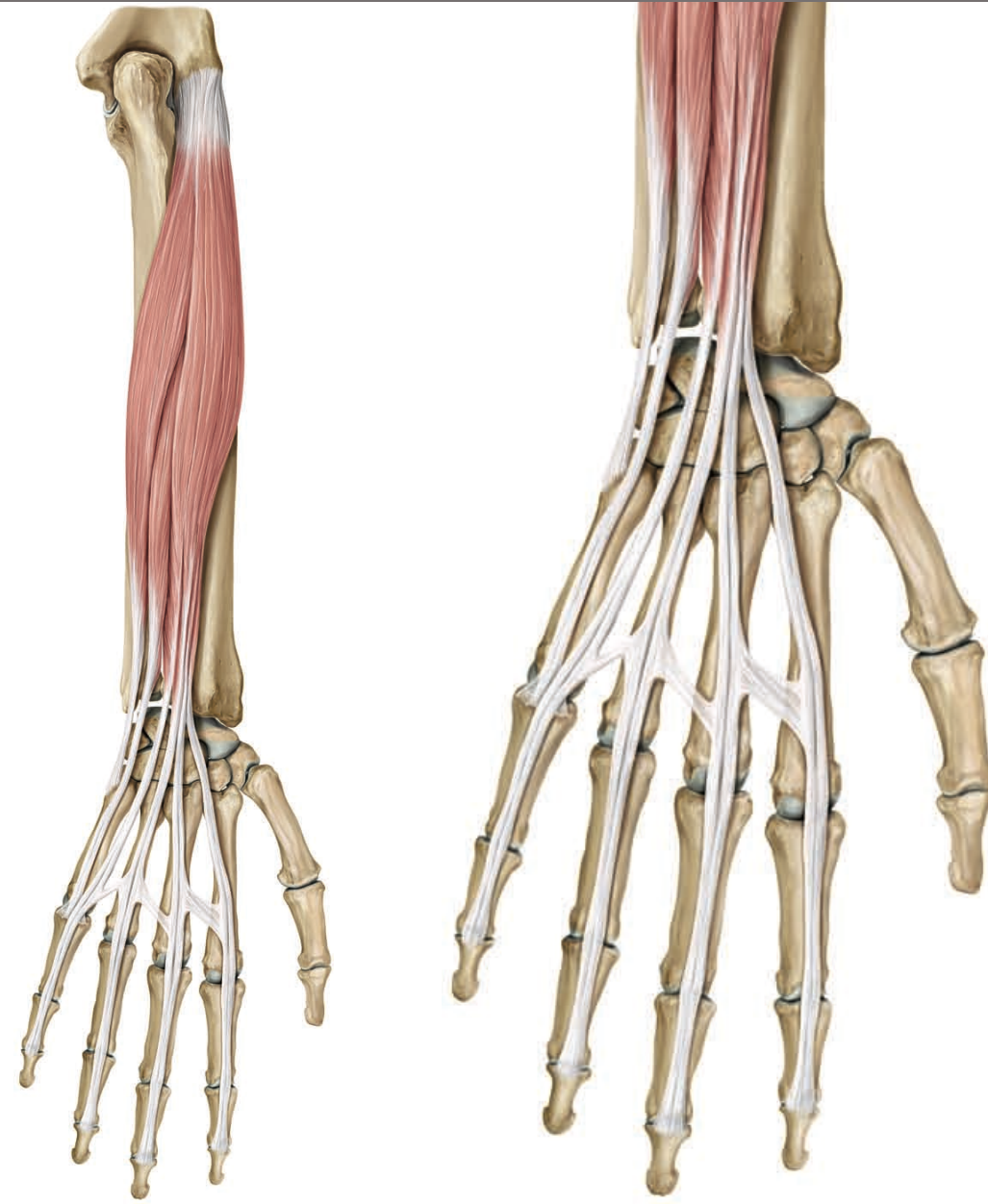
- ♦ *O: epicondylus humeri lateralis, septum intermusculare*
- ♦ *I: extensor hood on middle and distal phalanx of d. V.*
- ♦ *F: extension of minimus*

## ♦ **M. extensor carpi ulnaris**

- ♦ *O: epicondylus humeri lateralis, septum intermusculare*
- ♦ *I: V. MTC medial side of the base*

## ♦ **Inervace**

- ♦ *Whole group n. radialis*



# Forearm extensores – part 3

## ♦ M. supinator

- ♦ *O: povrchová část ligg. anulare et colaterale radii, hluboká - crista m. supinatori ulnae*
- ♦ *I: laterální část proximálního povrchu radia*

## ♦ M. abductor pollicis longus

- ♦ *O: facies posterior ulnae, et radii a membrána interossea mezi nimi*
- ♦ *I: baze I. MTC laterálně*

## ♦ M. extensor pollicis brevis

- ♦ *O: Membrana interossea*
- ♦ *I: baze proximálního článku palce dorsálně*

## ♦ M. extensor pollicis longus

- ♦ *O: facies posterior ulnae a přilehká část membrána interossea*
- ♦ *I: baze distálního článku palce dorsálně*

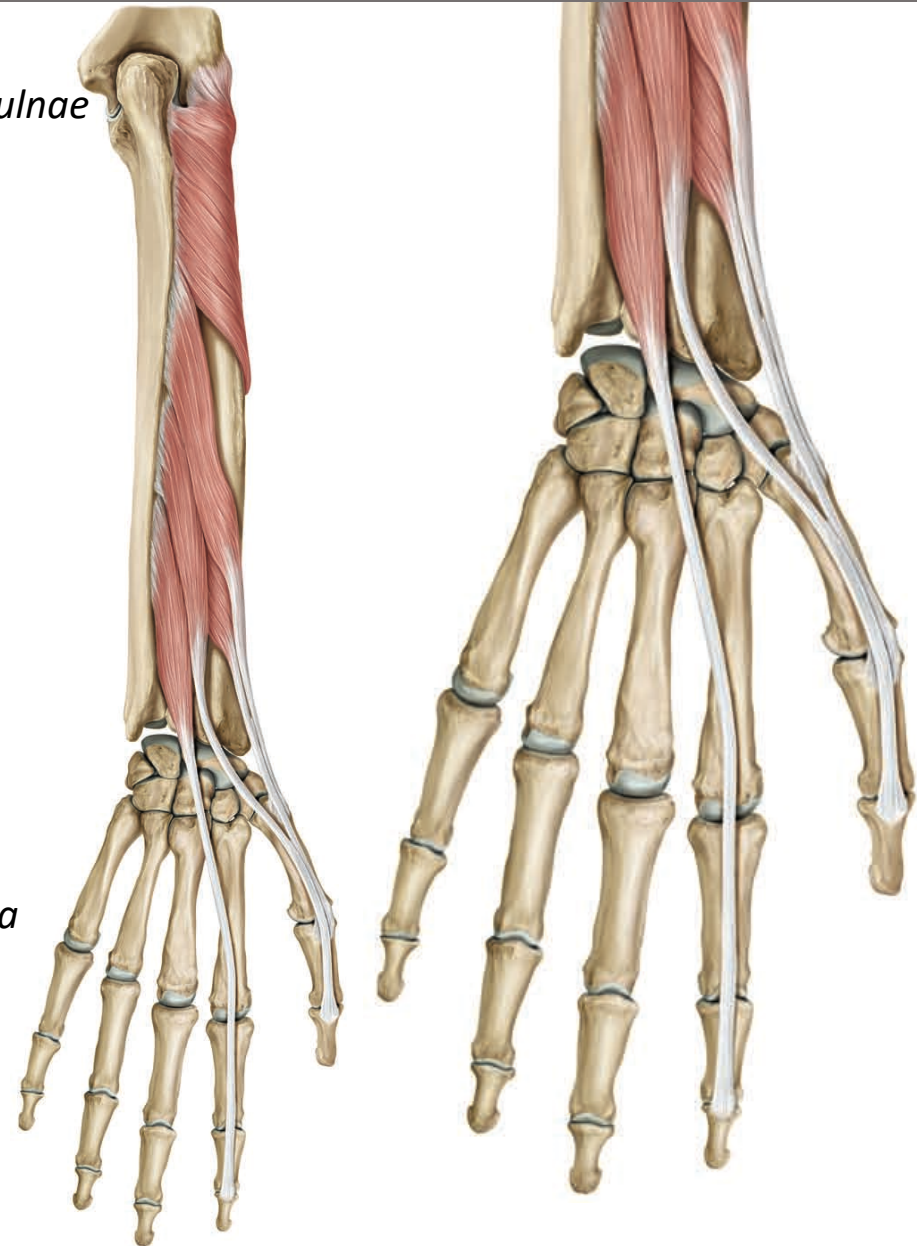
## ♦ M. extensor indicis

- ♦ *O: facies posterior ulnae, distálně od m. ext. pollicis longus a membrána interossea*
- ♦ *I: baze distálního článku II. prstu*

## ♦ Inervace

- ♦ *Celá skupina z n. radialis*

## ♦ funkce vyjádřeny názvy svalů





# Forearm flexores - superficial

## ♦ M. pronator teres

- ♦ *O: caput humerale epicondylus medialis humeri*
- ♦ *O: caput ulnare - proc. Coronoideus ulnae*
- ♦ *I: outer margin of radius*
- ♦ *N: n. medianus*
- ♦ *F: pronation*

## ♦ M. flexor carpi radialis

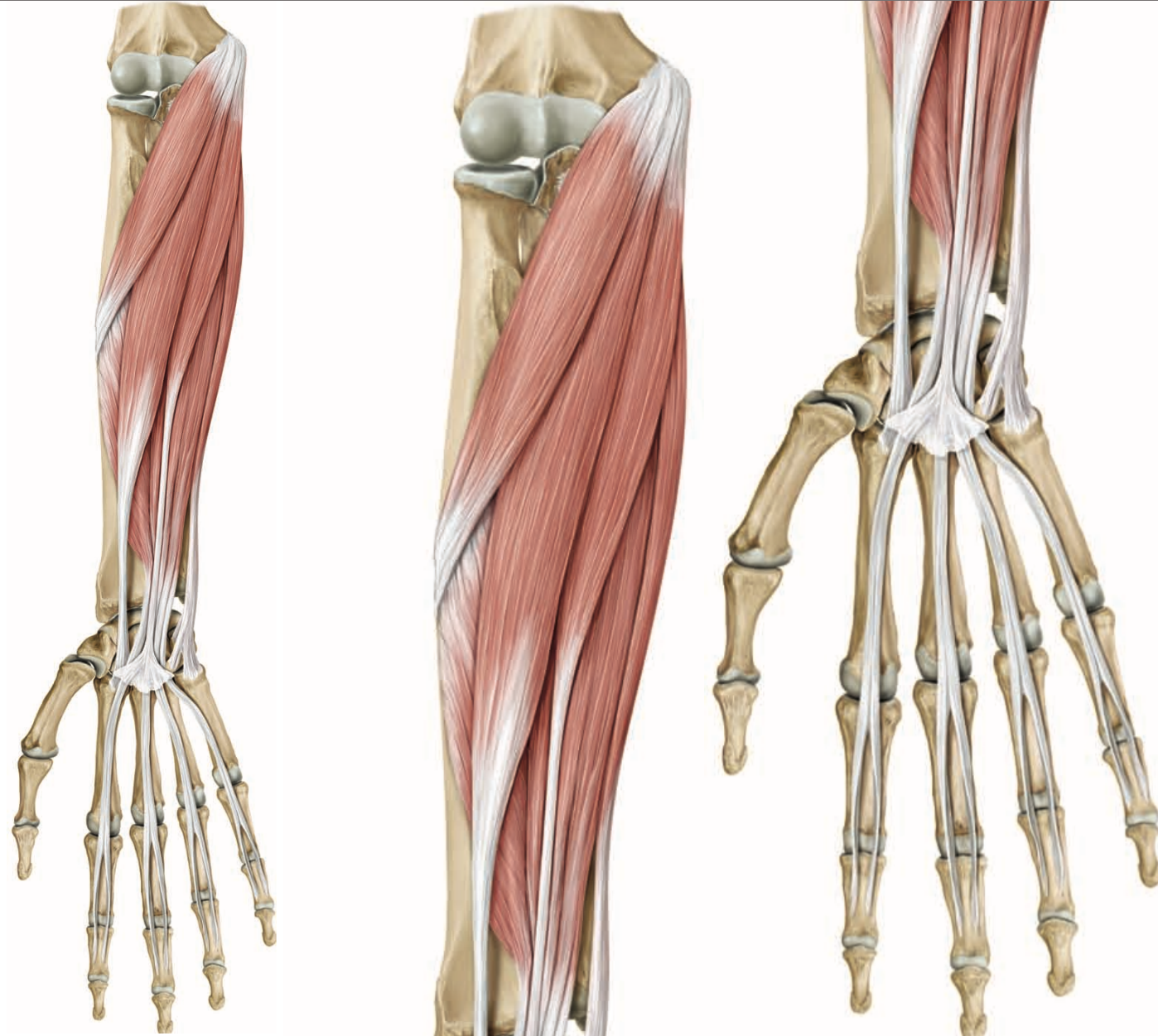
- ♦ *O: epicondylus medialis humeri*
- ♦ *I: base of II. and III. MTC*
- ♦ *N: n. medianus*
- ♦ *F: wrist flexion and radial duction*

## ♦ M. palmaris longus

- ♦ *O: epicondylus medialis humeri*
- ♦ *I: aponeurosis palmaris*
- ♦ *N: n. medianus*
- ♦ *F: flexion of wrist, and grip*

## ♦ M. flexor carpi ulnaris

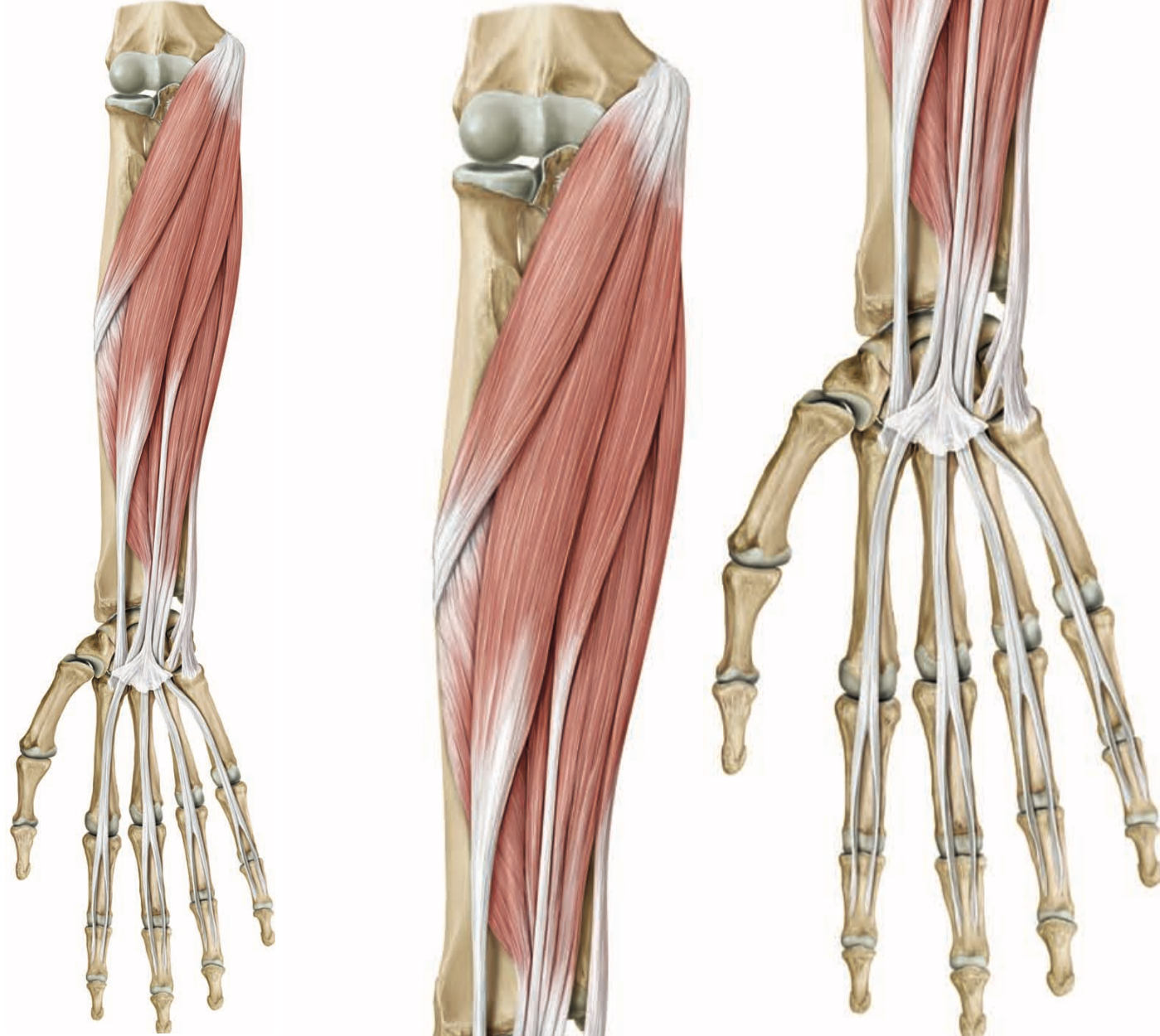
- ♦ *O: epicondylus medialis humeri, I: os pisiforme,*
- ♦ *N: n. ulnaris CAVE!, F: wrist adduction*



# Forearm flexores - intermedial

## ♦ **M. flexor digitorum superficialis**

- ♦ *O: Epicondylus medialis humeri*
- ♦ *I: 4 splitted tendons*
- ♦ *I: palmar aspect of middle phalanx*
- ♦ *N: n. medianus*
- ♦ *F: motion in proximal IP joint*
- ♦ *F: flexion in MTC/ph joint*
- ♦ *F: wrist flexion*





# Forearm flexores – deep

## ♦ **M. digitorum profundus** (*n. medianus + ulnaris*)

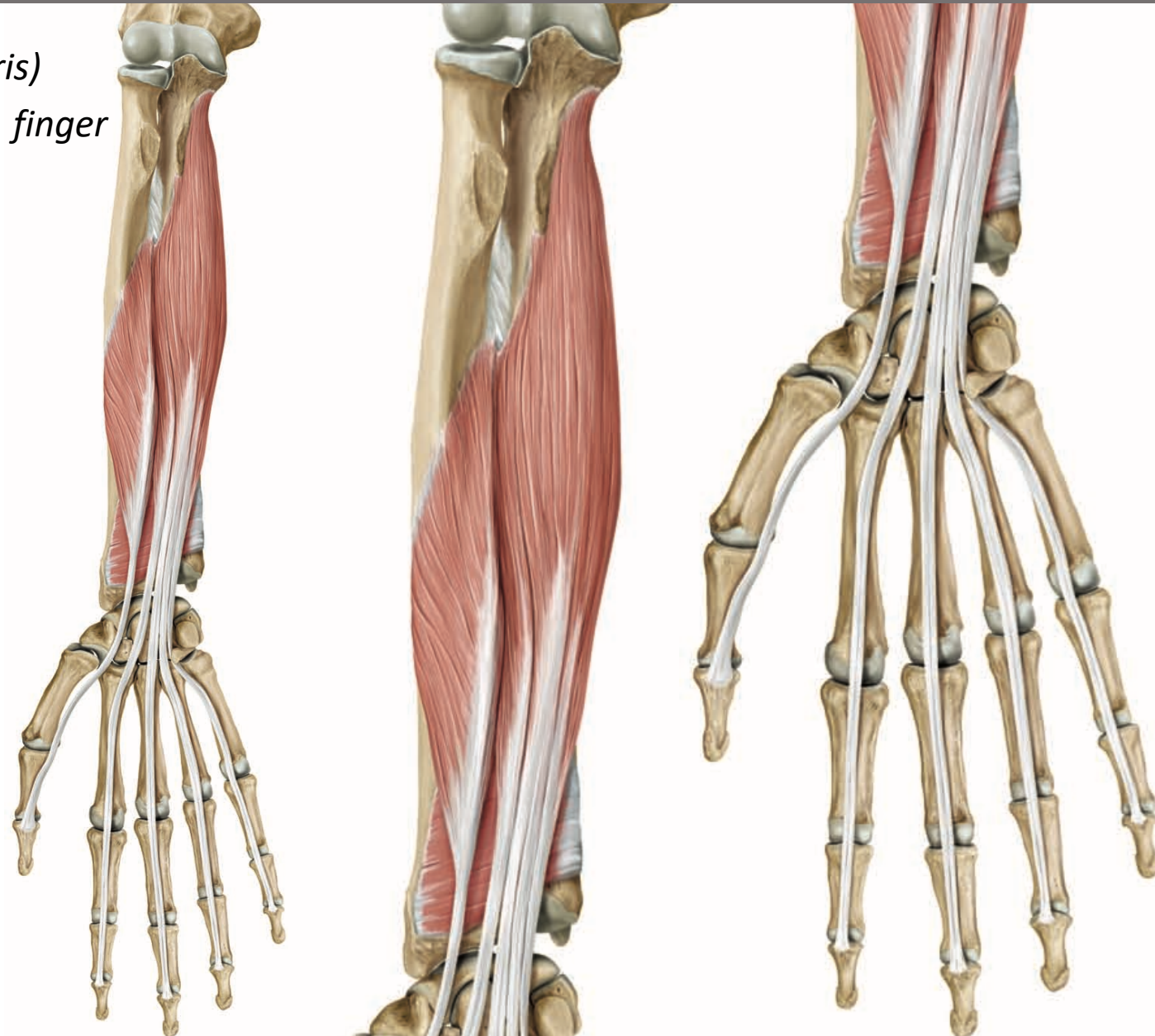
- ♦ *N. medianus* for 2. – 3. finger, *n. ulnaris* 4. and 5. finger
- ♦ *O*: prox ¼ of ulna and membrana interossea
- ♦ *I*: palmar part of distal
- ♦ *F*: flexion of distal IP joint MTC/Ph wrist flexion

## ♦ **M. flexor pollicis longus**

- ♦ *O*: facies anterior radii, membrana interossea
- ♦ *I*: palmar část distálního článku prstu
- ♦ *N*: *n. medianus*
- ♦ *F*: flexion of IP joint of thumb

## ♦ **Pronator quadratus**

- ♦ *O*: on the ridge of ulna
- ♦ *I*: distal part of the radius
- ♦ *N. n. medianus*
- ♦ *F*: pronation

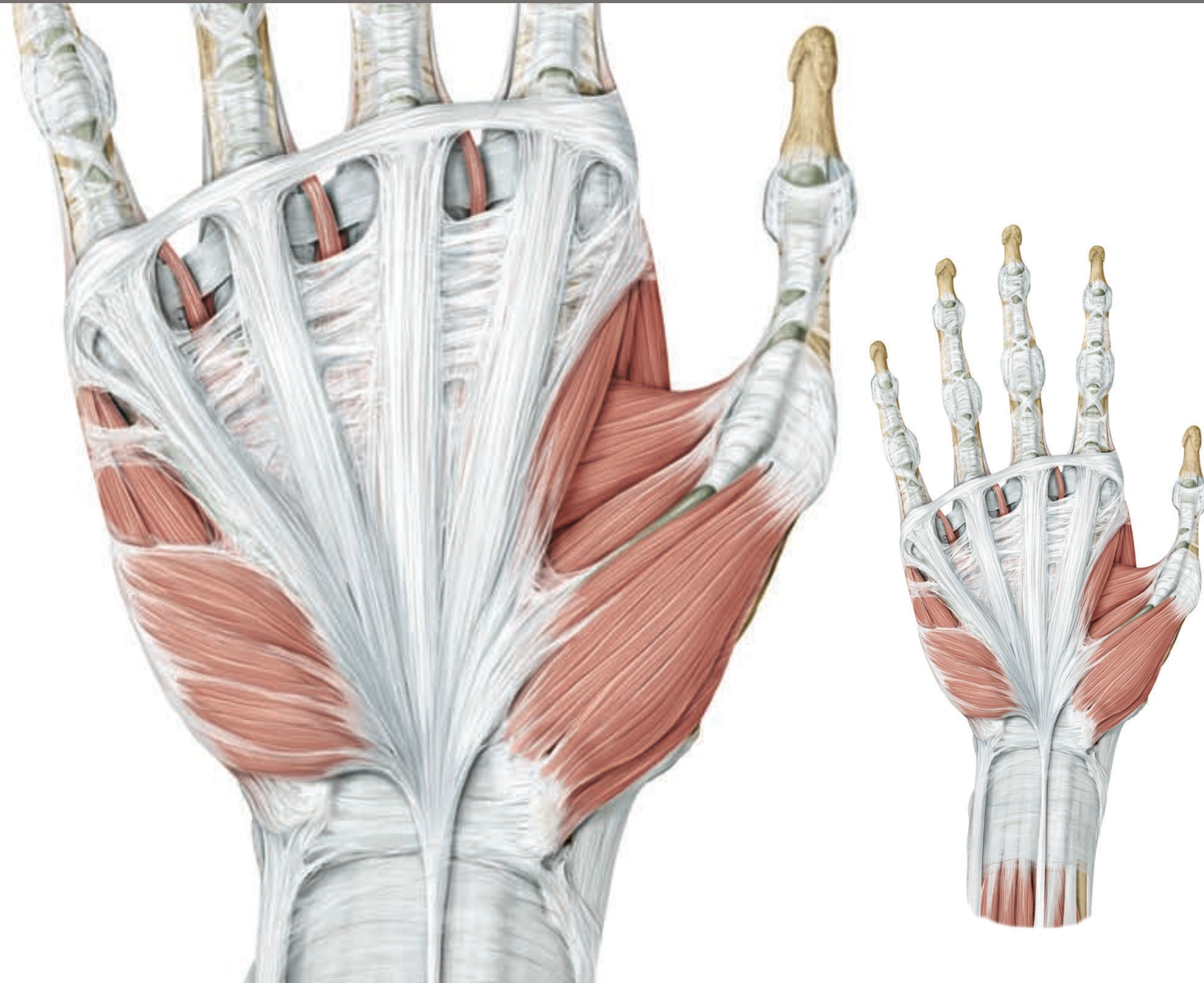




# Palmaris brevis

## ♦ M. palmaris brevis

- ♦ *Small muscle covers hypothenar*
- ♦ *O: aponeurosis palmaris, retinaculum flexorum*
- ♦ *I: skin of medial edge of the hand*
- ♦ *N: n. ulnaris*
- ♦ *F: enforces a grip*



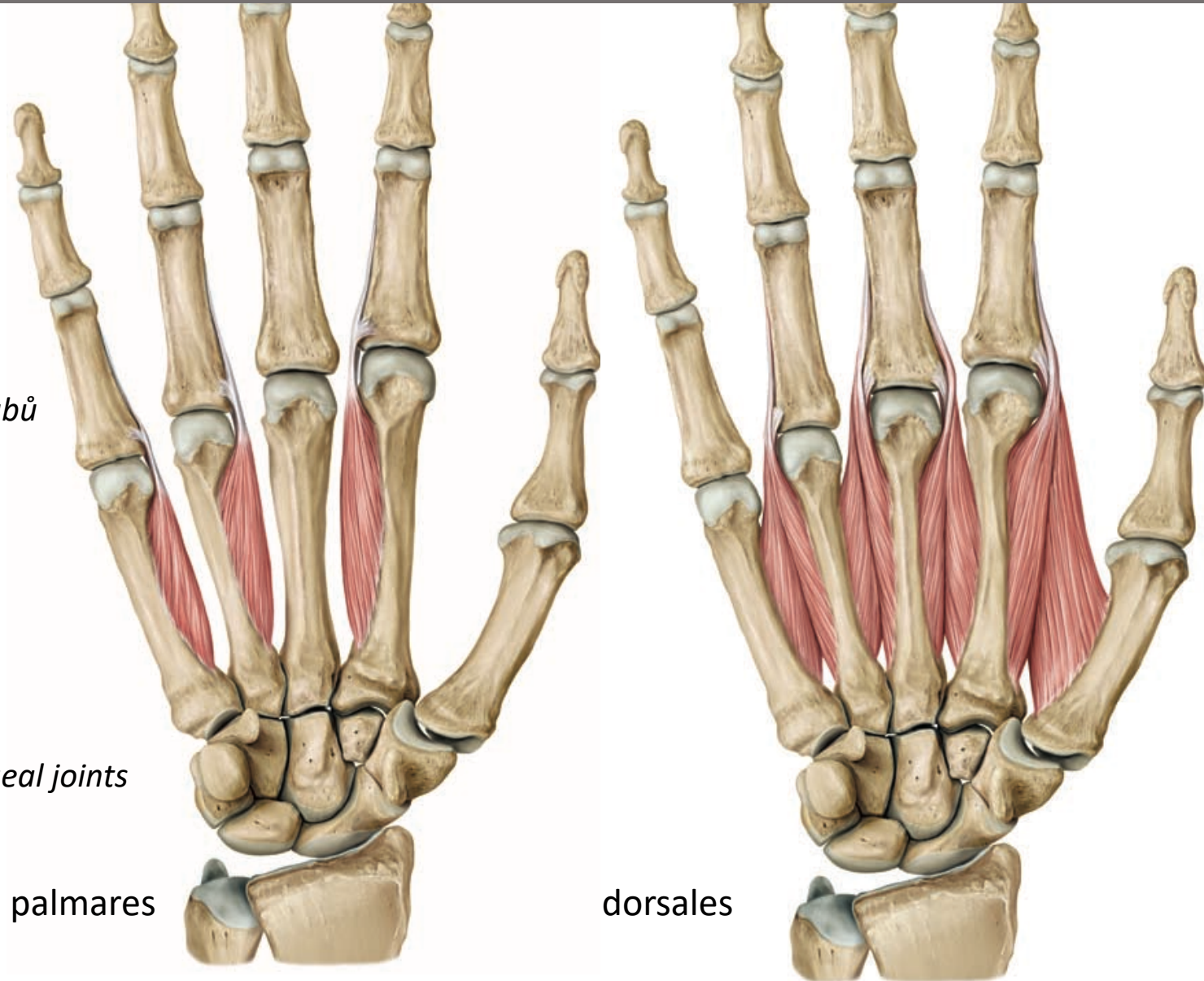
# Hand muscles

## ♦ Musculi interossei palmares

- ♦ unipennate
- ♦ II., IV a V. MTC (sometimes also I.)
- ♦ O: facies MTC towards hand axis
- ♦ I: extensor hood towards hand axis
- ♦ N: n. ulnaris
- ♦ F: adduction
- ♦ F: flexe MTC/Ph kloubu , extenze interfalang. kloubů

## ♦ Musculi interossei dorsales

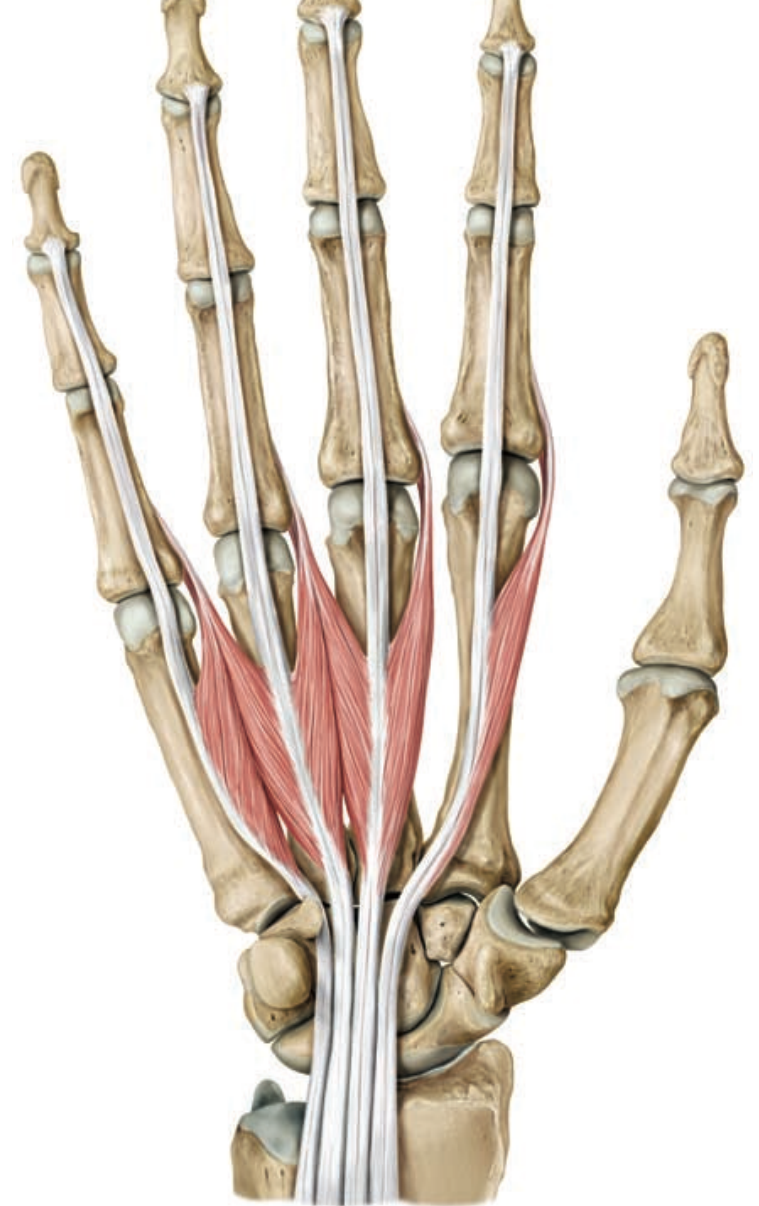
- ♦ bipennates
- ♦ O: neighbors faces of MTC
- ♦ I: extensorhood outside the axis
- ♦ N: n. ulnaris
- ♦ F: abduction
- ♦ F: flexion MTC/Ph joint , dxtension of intephalangeal joints



# Lumbricoid muscles

## 🔥 Musculi lumbricoides

- 🔥 *Unipennate I. and III. finger*
- 🔥 *bipennate IV. And V. finger*
- 🔥 *II., IV a V. MTC (někdy i I.)*
- 🔥 *O: tendons of m. flexor digitorum profundus*
- 🔥 *I: extensor hood*
- 🔥 *N: n. ulnaris - bipennate , n. medianus - unipennate*
- 🔥 *F: flexion of MTC/Ph joint , extension of interfalang. joints*

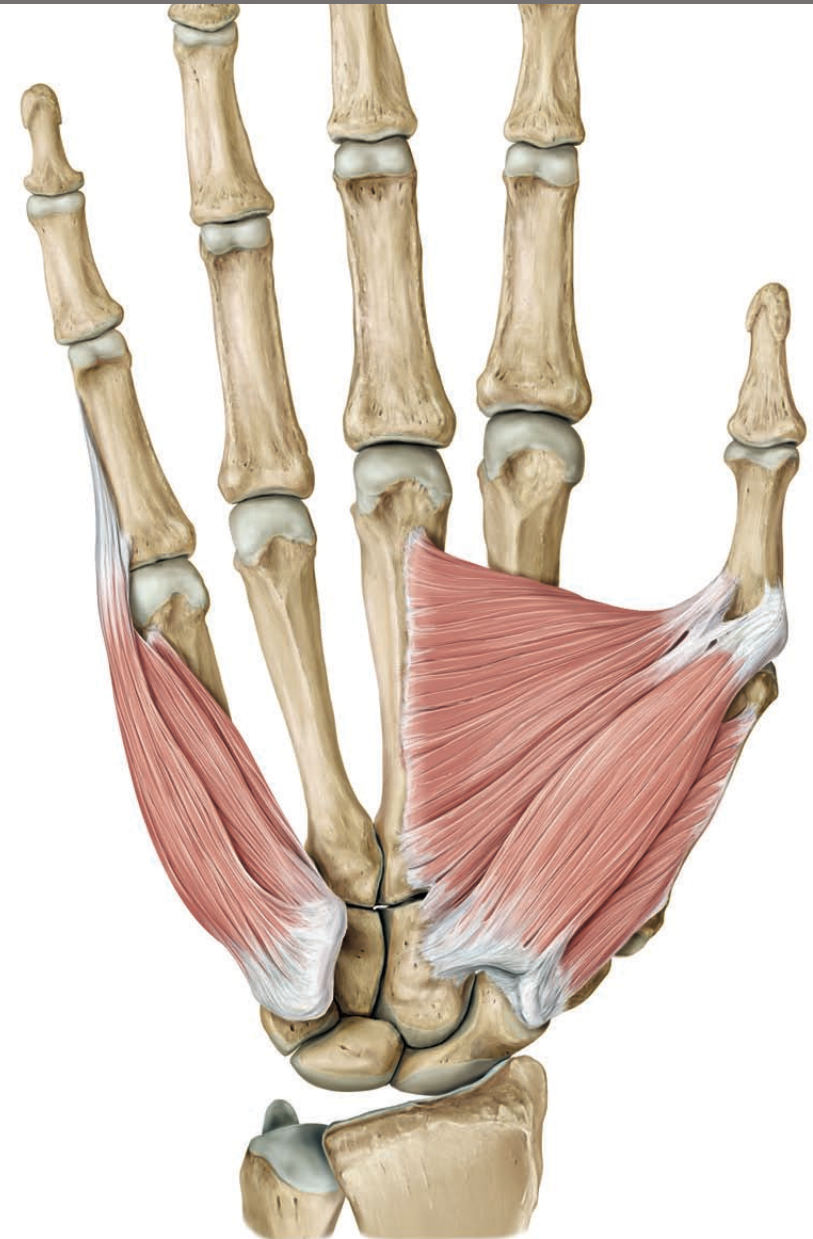




# Hand muscles

## ♦ M. adductor pollicis

- ♦ Caput transversum
- ♦ Caput obliquum
- ♦ Localized close to thenar but not the own muscle of thenar
- ♦ *O: caput transversum – diaphysis of III. MTC*
- ♦ *O: caput obliquum - os capitatum, base II. a III. MTC*
- ♦ *I: base of proximal thumb phalanx, inside tendo n - os sesamoideum*
- ♦ *N: n. ulnaris*
- ♦ *F: thumb aduction*



# Intrinsic muscles of thenar

## ♦ **M. opponens pollicis**

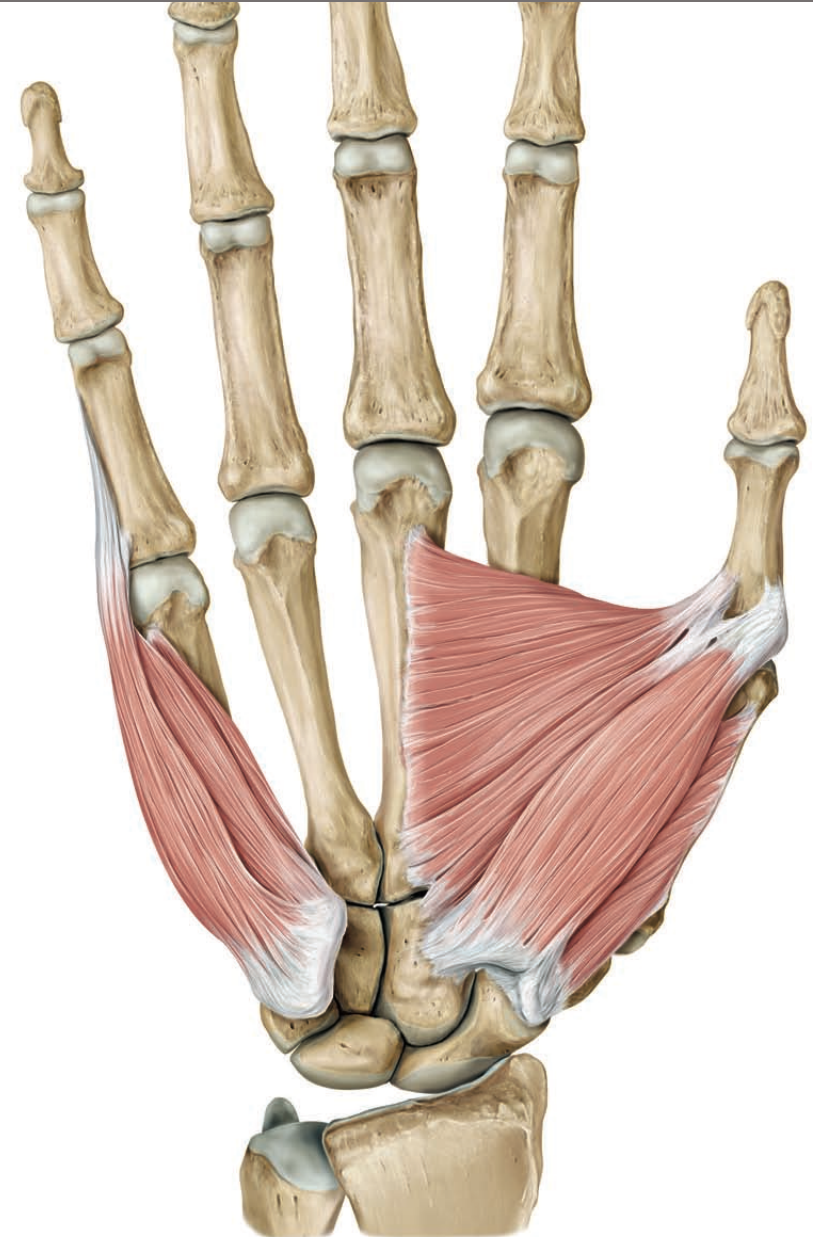
- ♦ *Deep in thenar*
- ♦ *O: tuberculum ossei trapezii, retinaculum flexorum*
- ♦ *I: lateral margin of MTC I*
- ♦ *N: n. medianus*
- ♦ *F: opposition of a thumb*

## ♦ **M. abductor pollicis brevis**

- ♦ *superficially*
- ♦ *O: tuberculum ossis scaphoidei et trapezoidei*
- ♦ *I: proximal phalanx and extensor hood*
- ♦ *N: n. medianus*
- ♦ *F: thumb abduction*

## ♦ **M. flexor pollicis brevis**

- ♦ *Radial margin*
- ♦ *O: tuberculum ossei trapezii, retinaculum flexorum*
- ♦ *I: proximal phalanx I., inside tendon - os sesamoideum*
- ♦ *N: n. medianus*
- ♦ *F: thumb flexion*



# Intrinsic muscles of hypothenar

## ♦ **M. opponens digiti minimi**

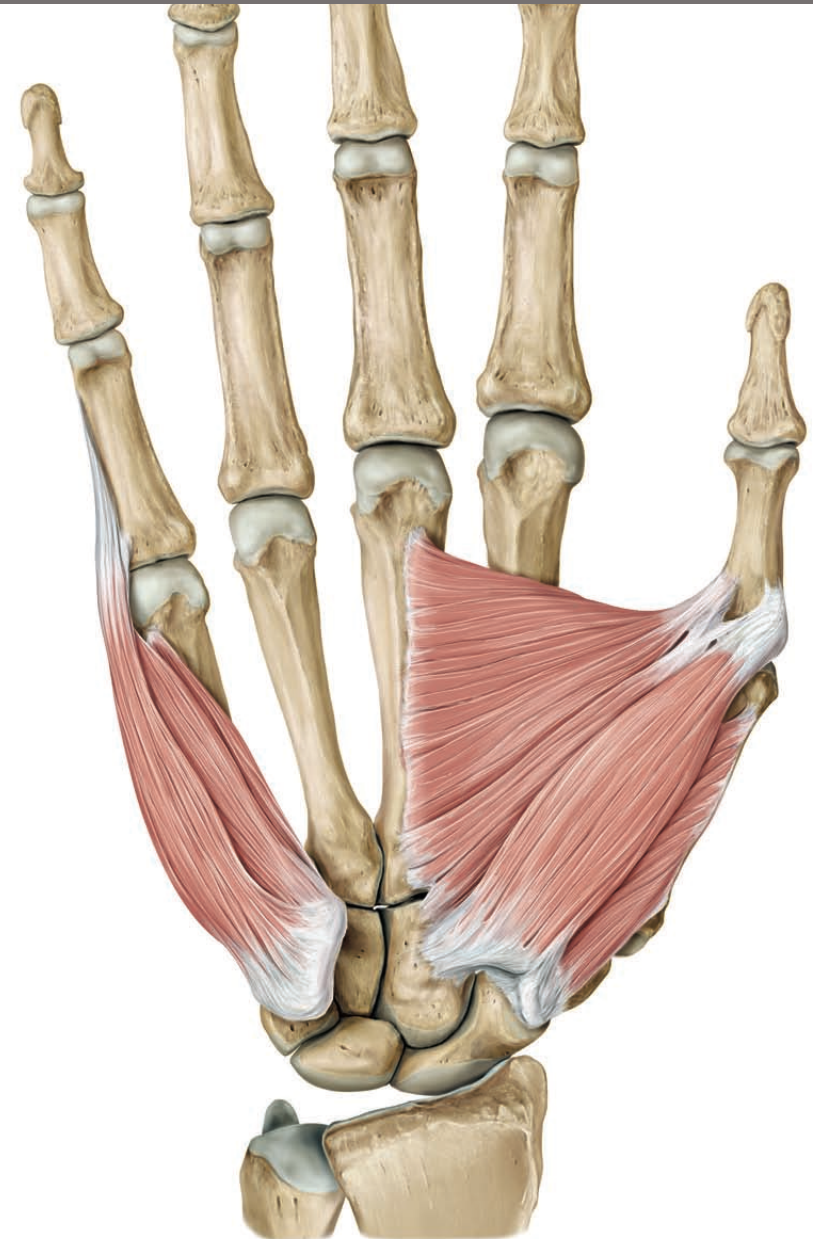
- ♦ *deep to other muscles*
- ♦ *O: hamulus ossis hamati, retinaculum flexorum*
- ♦ *I: MTC V.*
- ♦ *N: n. ulnaris*
- ♦ *F: minimus opposition*

## ♦ **M. abductor pollicis brevis**

- ♦ *O: os pisiforme a lig. pisohamatum*
- ♦ *I: proximal phalanx of a minimus*
- ♦ *N: n. ulnaris*
- ♦ *F: abduction in MTC/ph joint*

## ♦ **M. flexor pollicis brevis**

- ♦ *O: tuberculum ossei trapezii, retinaculum flexorum*
- ♦ *I: hamulus ossis hamati, retinaculum flexorum*
- ♦ *N: ulnaris*
- ♦ *F: minimus flexion in MTC/ph joint*





# Membrum superius - musculi

**Prof. MUDr. Jiří Ferda, Ph.D.**

**Následuje námět pro samostudium**

- ♦ **M. biceps brachii**

- ♦ Caput longum

- ♦ Caput breve

- ♦ **M. triceps brachii**

- ♦ Caput longum

- ♦ Caput mediale

- ♦ Caput laterale

- ♦ **M. brachialis**

- ♦ **N. radialis**

- ♦ **N. ulnaris**

- ♦ **N. medianus**

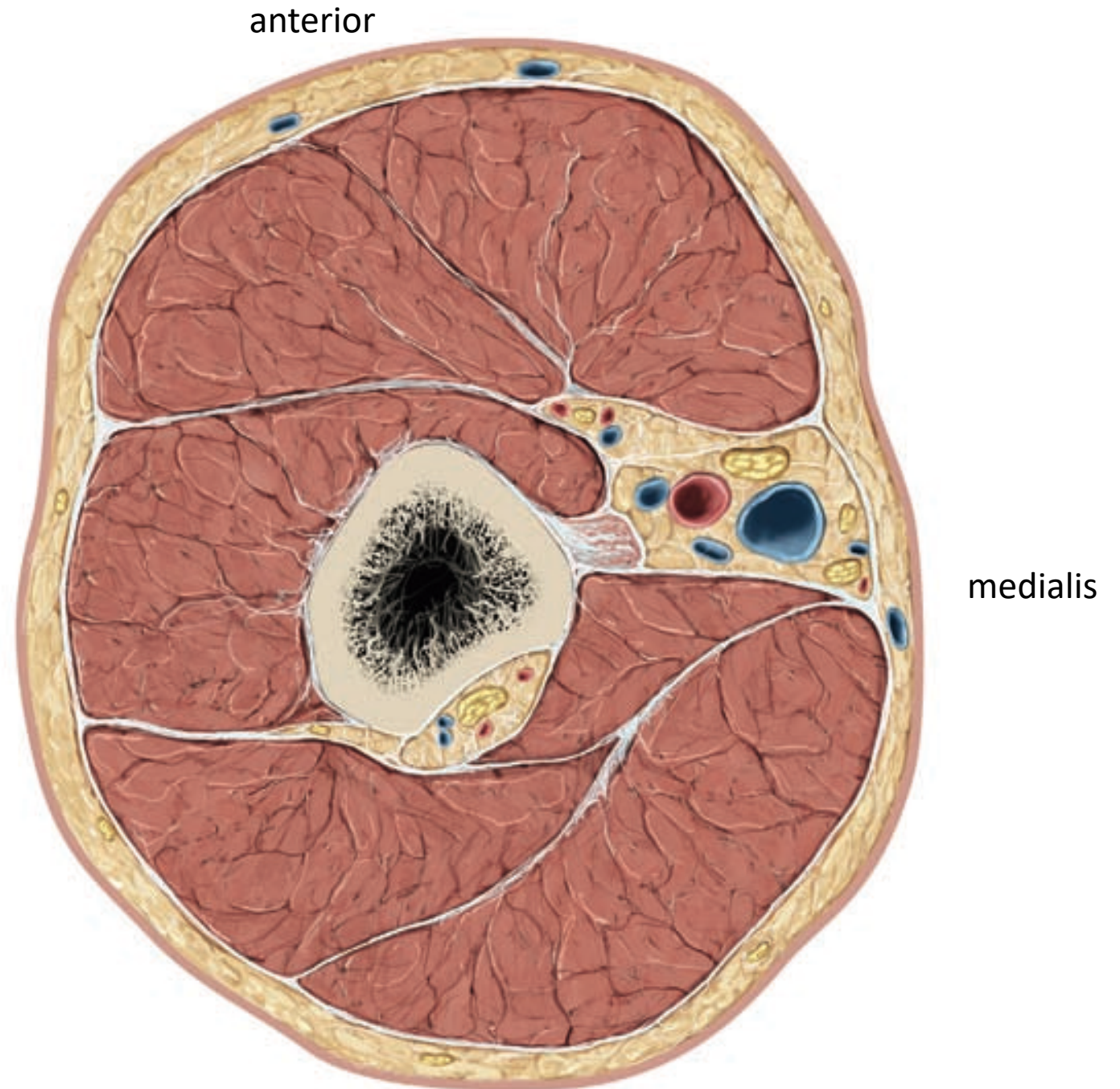
- ♦ **N. musculocutaneus**

- ♦ **A et v. brachialis**

- ♦ **A. et v. profunda brachii**

- ♦ **Septum intermusculare mediale**

- ♦ **Septum intermusculare laterale**



- ♦ **M. palmaris longus**
- ♦ **M. Flexor carpi radialis**
- ♦ **M. flexor digitorum superficialis**
- ♦ **M. flexor carpi ulnaris**
- ♦ **M. pronator teres**
- ♦ **M. flexor pollicis longus**
- ♦ **M. flexor digitorum profundus**
- ♦ **M. nrachioradialis**
- ♦ **M. extensor carpi radialis brevis**
- ♦ **M. extensor cari radilais longus**
- ♦ **M. extensor digitorum**
- ♦ **M- extensor pollicis longus**
- ♦ **M. abductopr pollicis longus**
- ♦ **M. extensor pollicis longus**
- ♦ **M. extensor digiti minimi**
- ♦ **M. extensor carpi ulnaris**

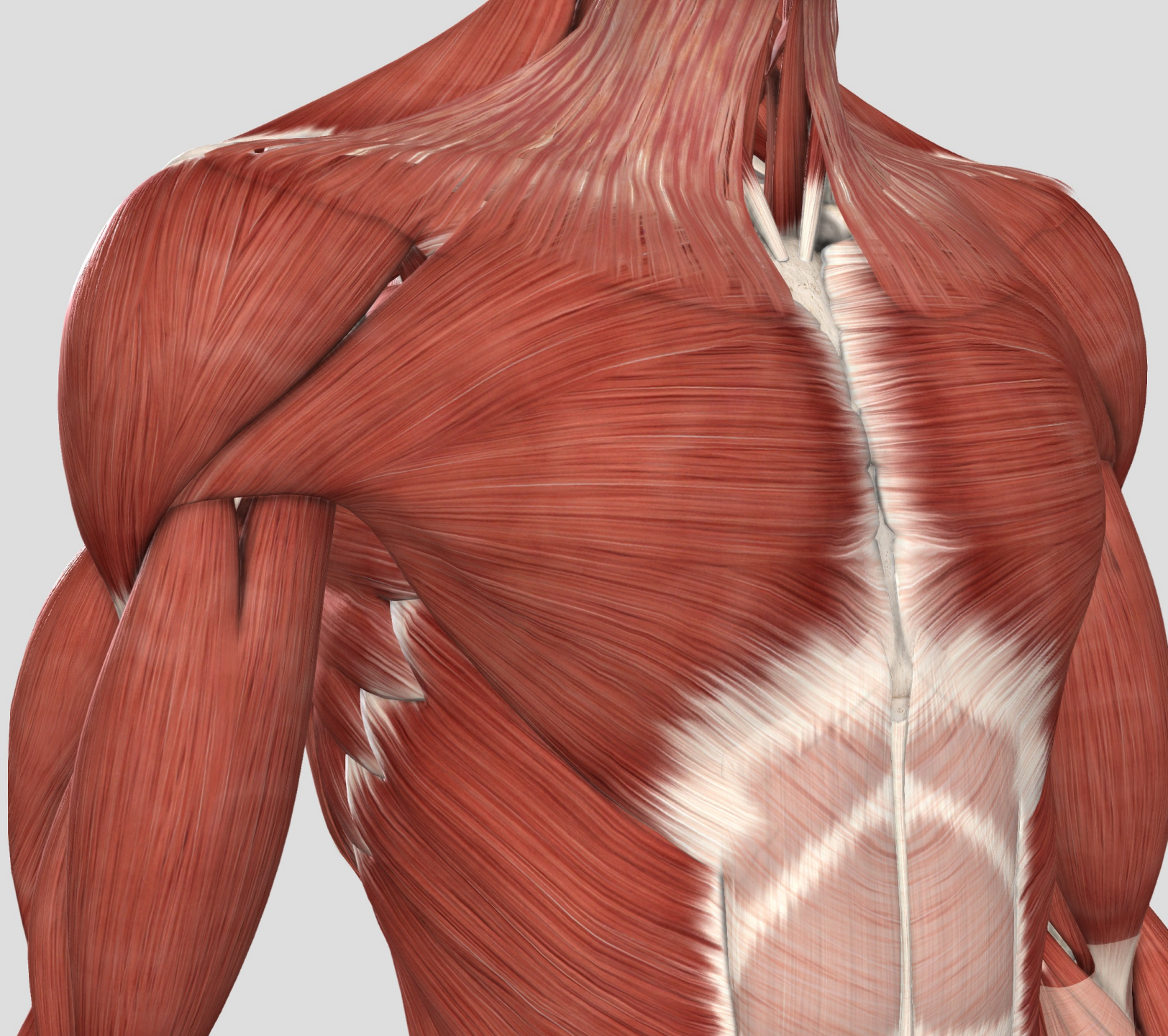
anterior

- ♦ **N. radialis**
- ♦ **N. ulnaris**
- ♦ **N. medianus**
- ♦ **A et v. radialis**
- ♦ **A. et v. ulnaris**

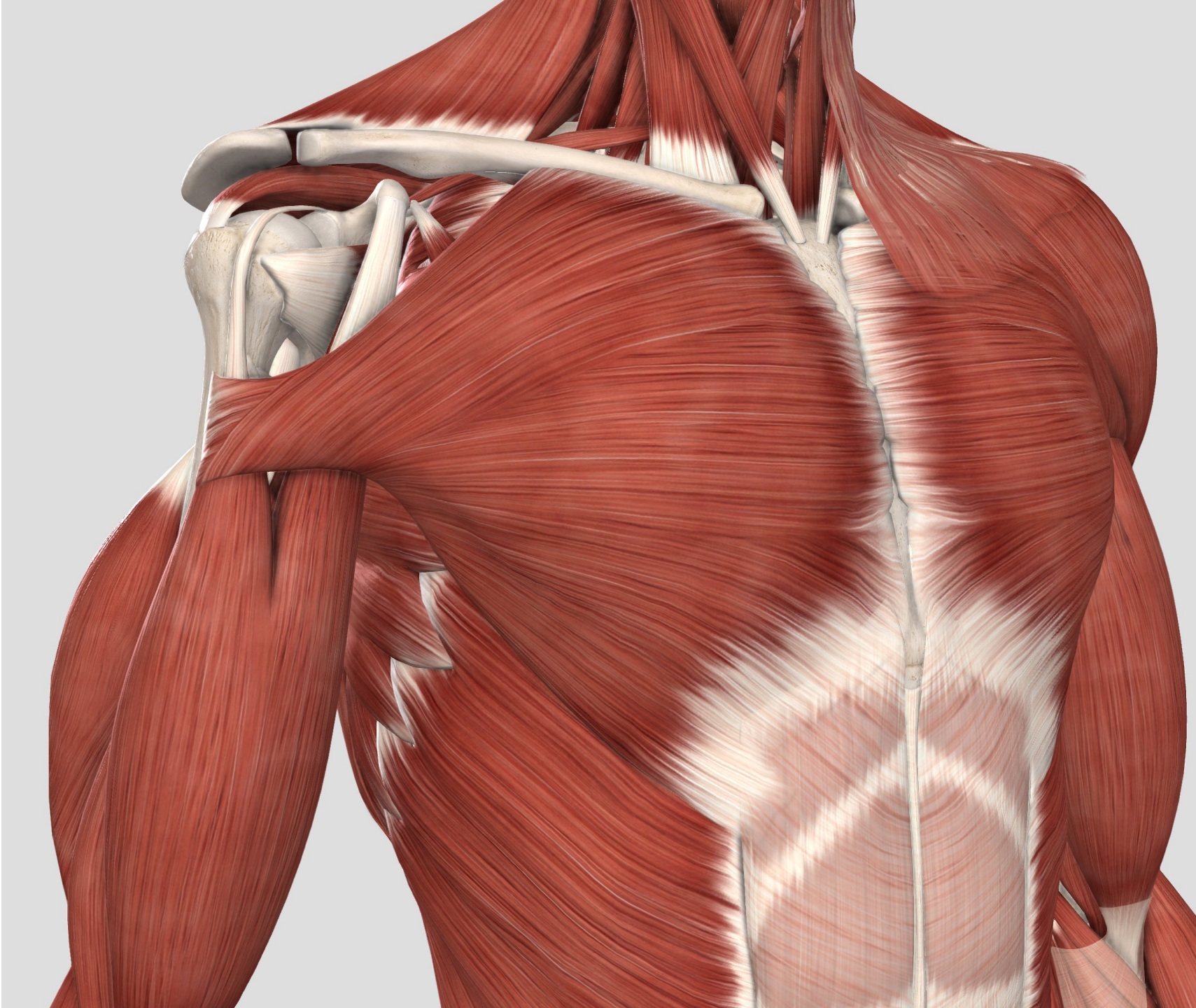


medialis

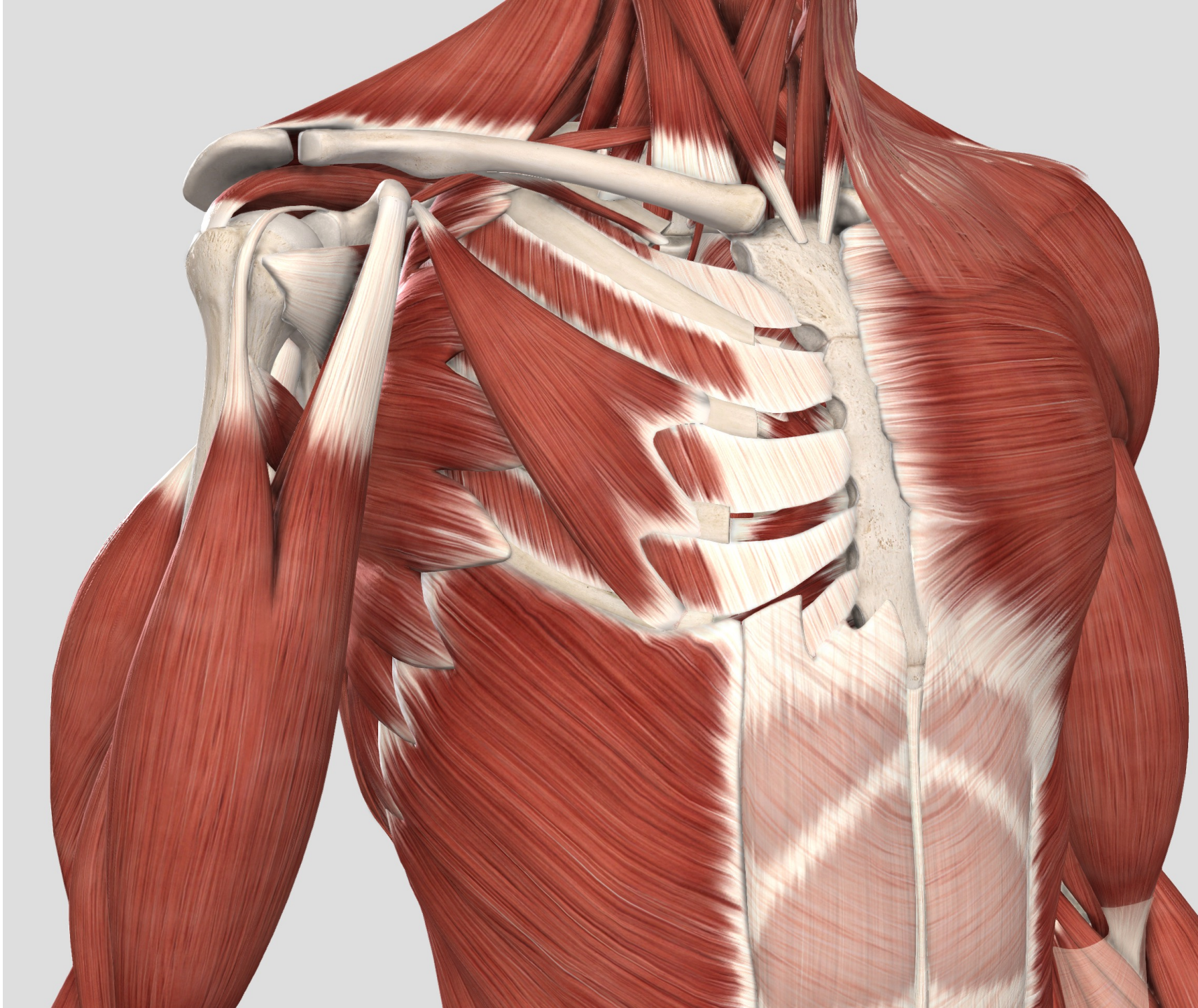




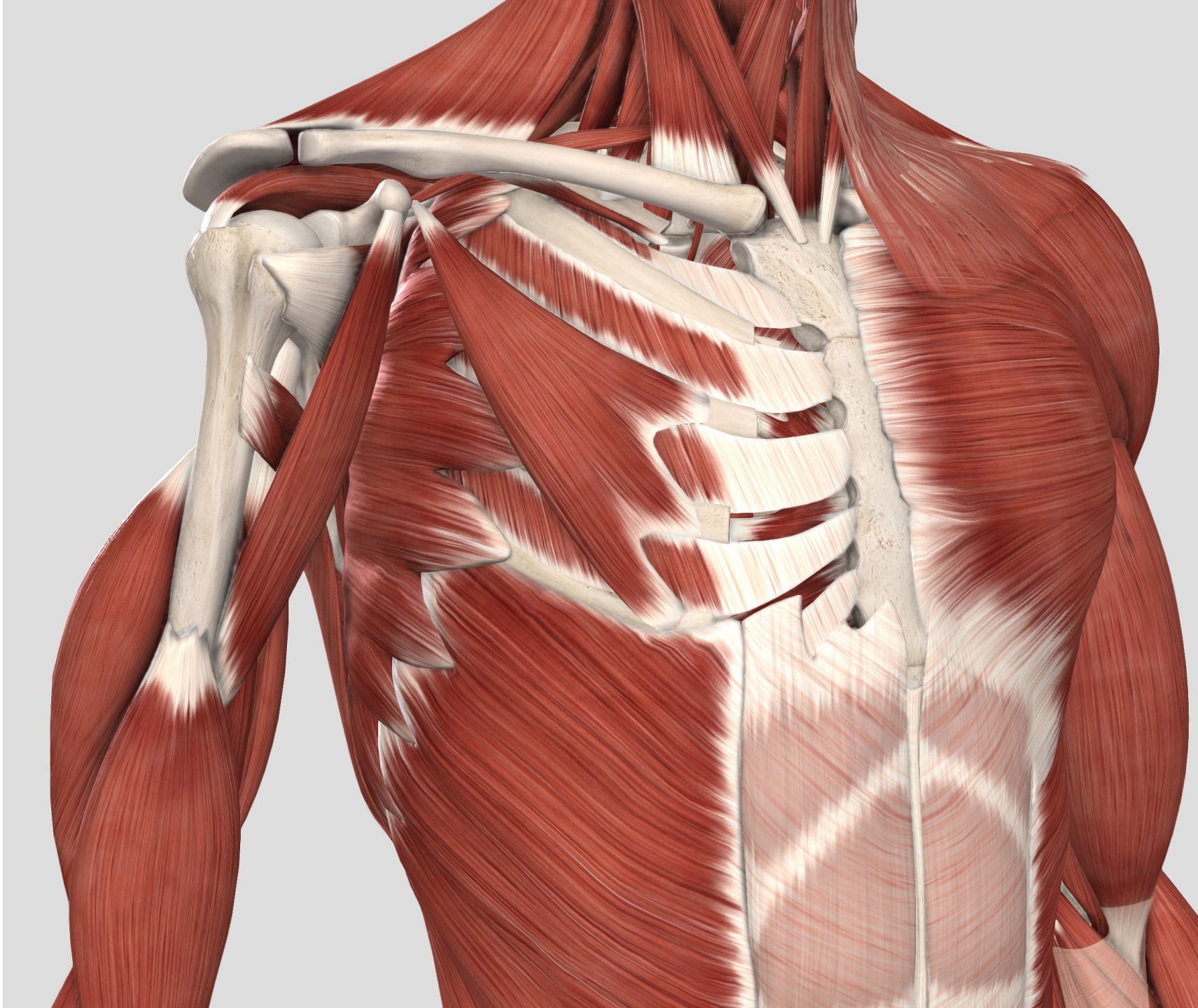




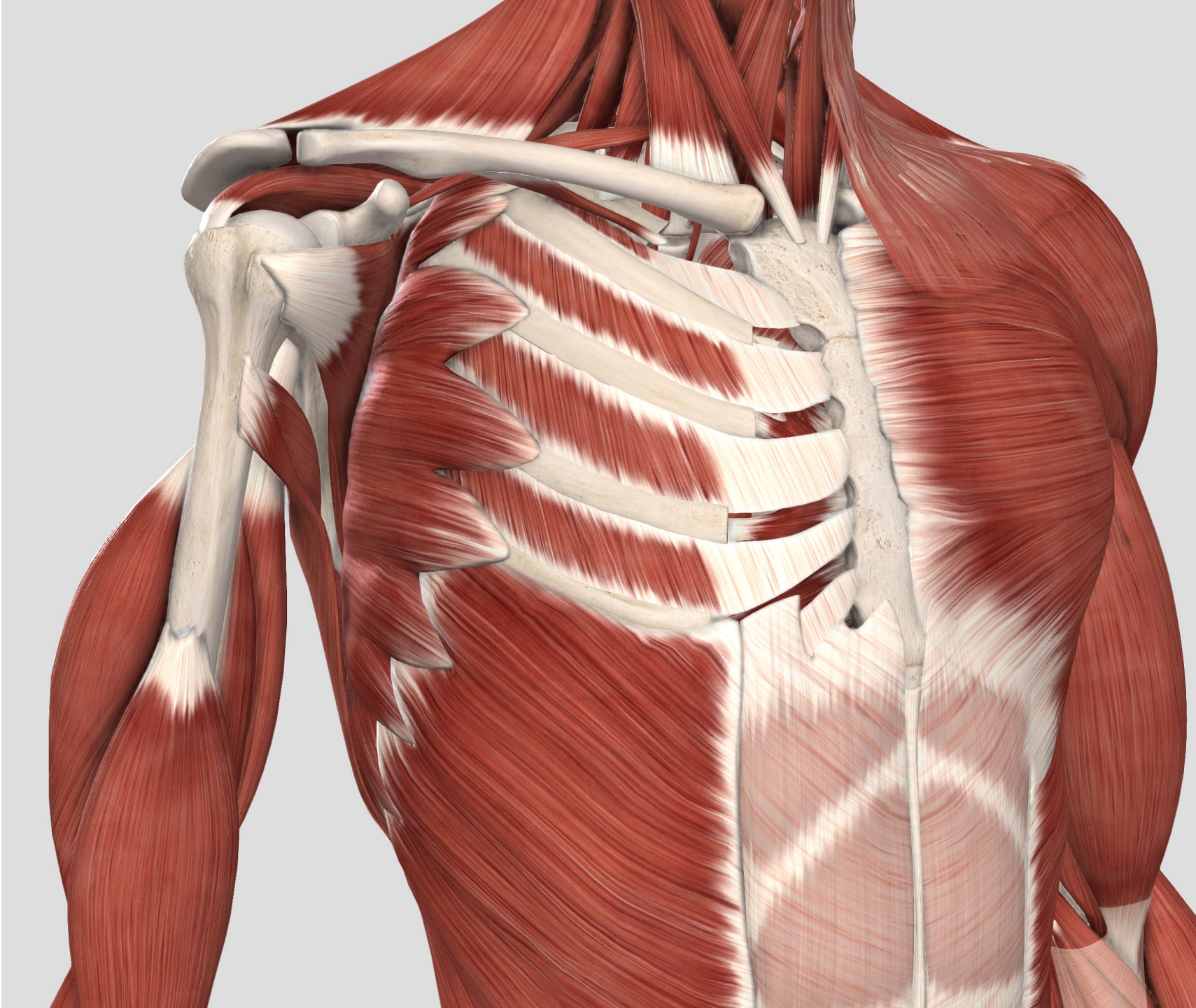




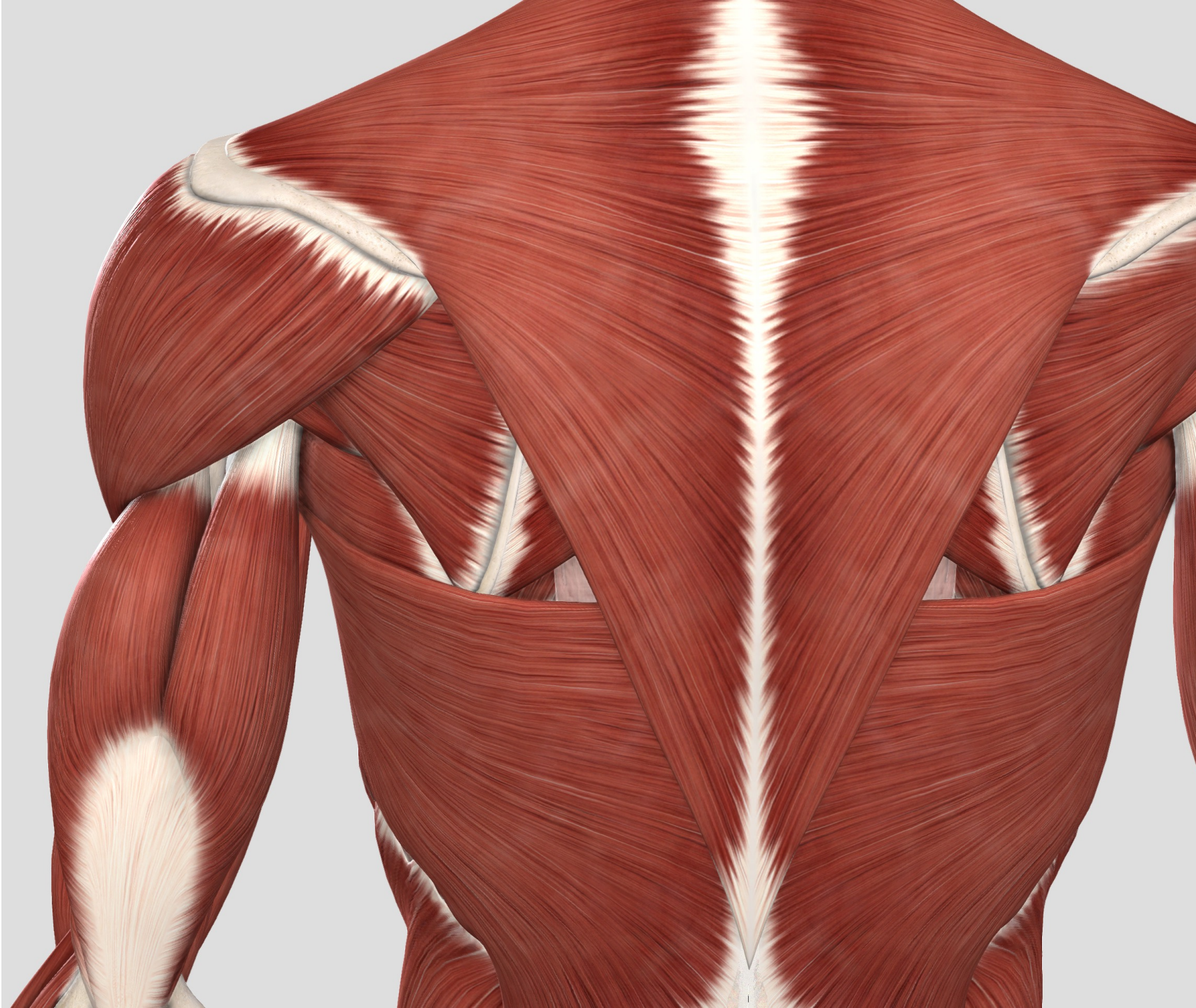




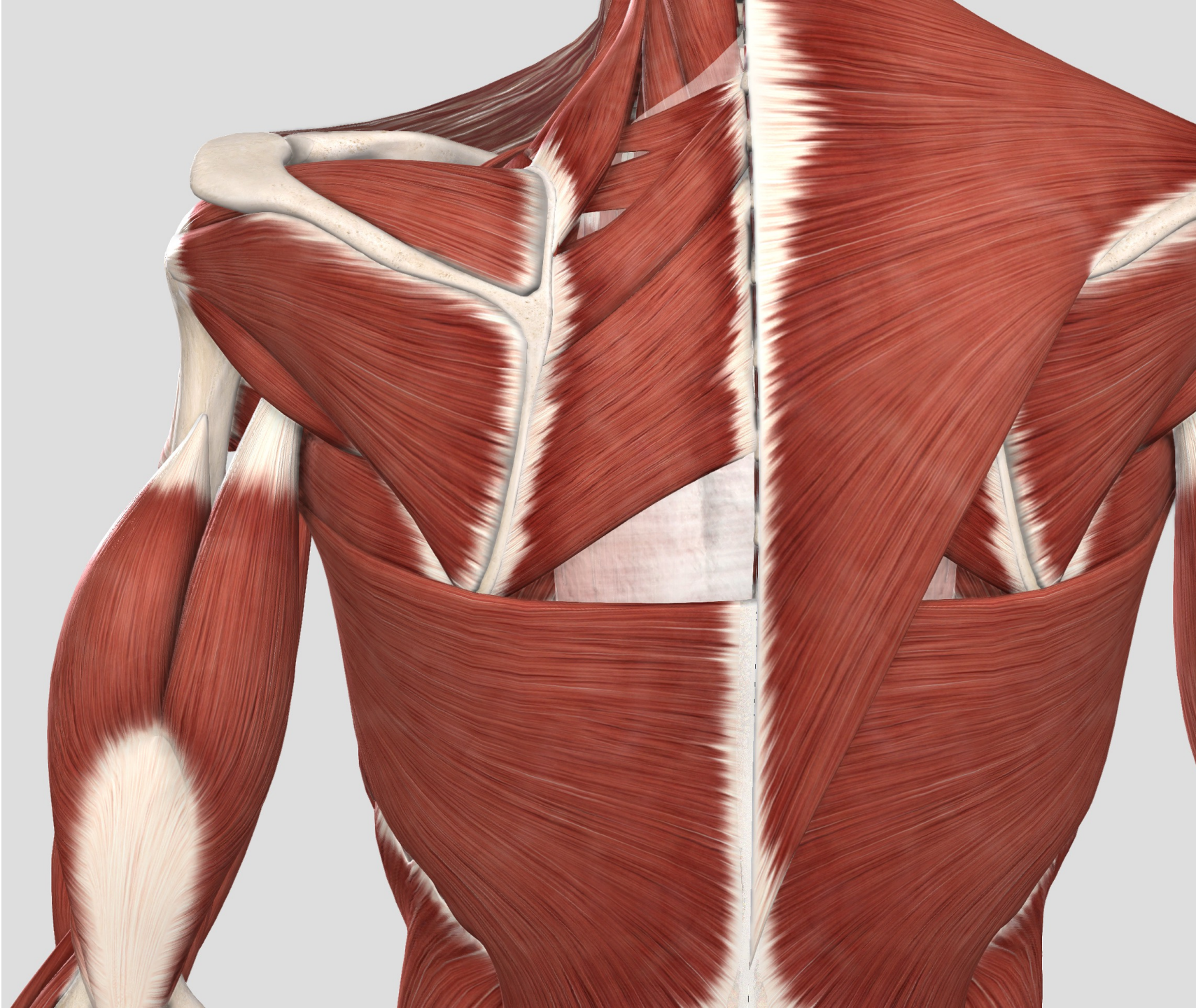








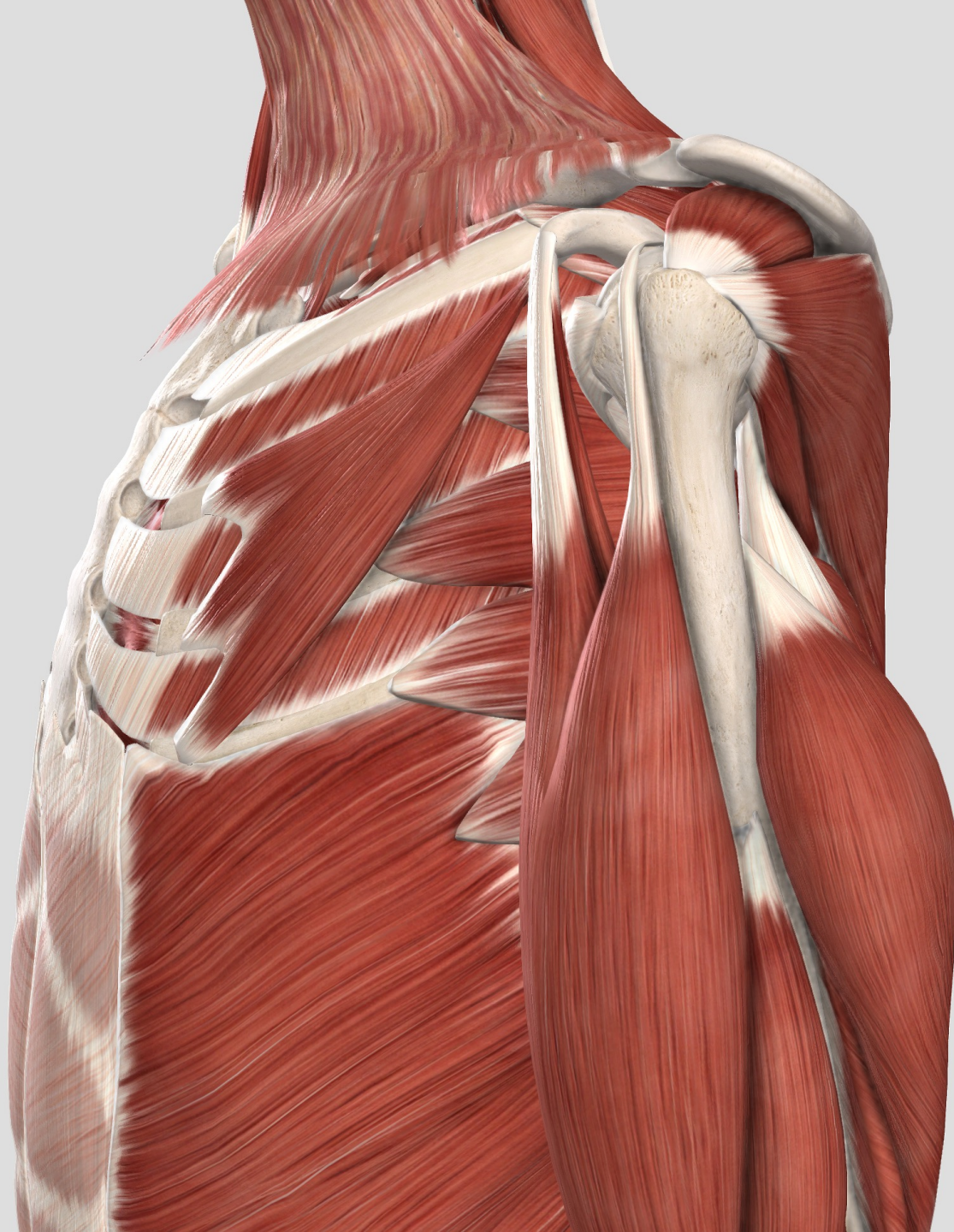




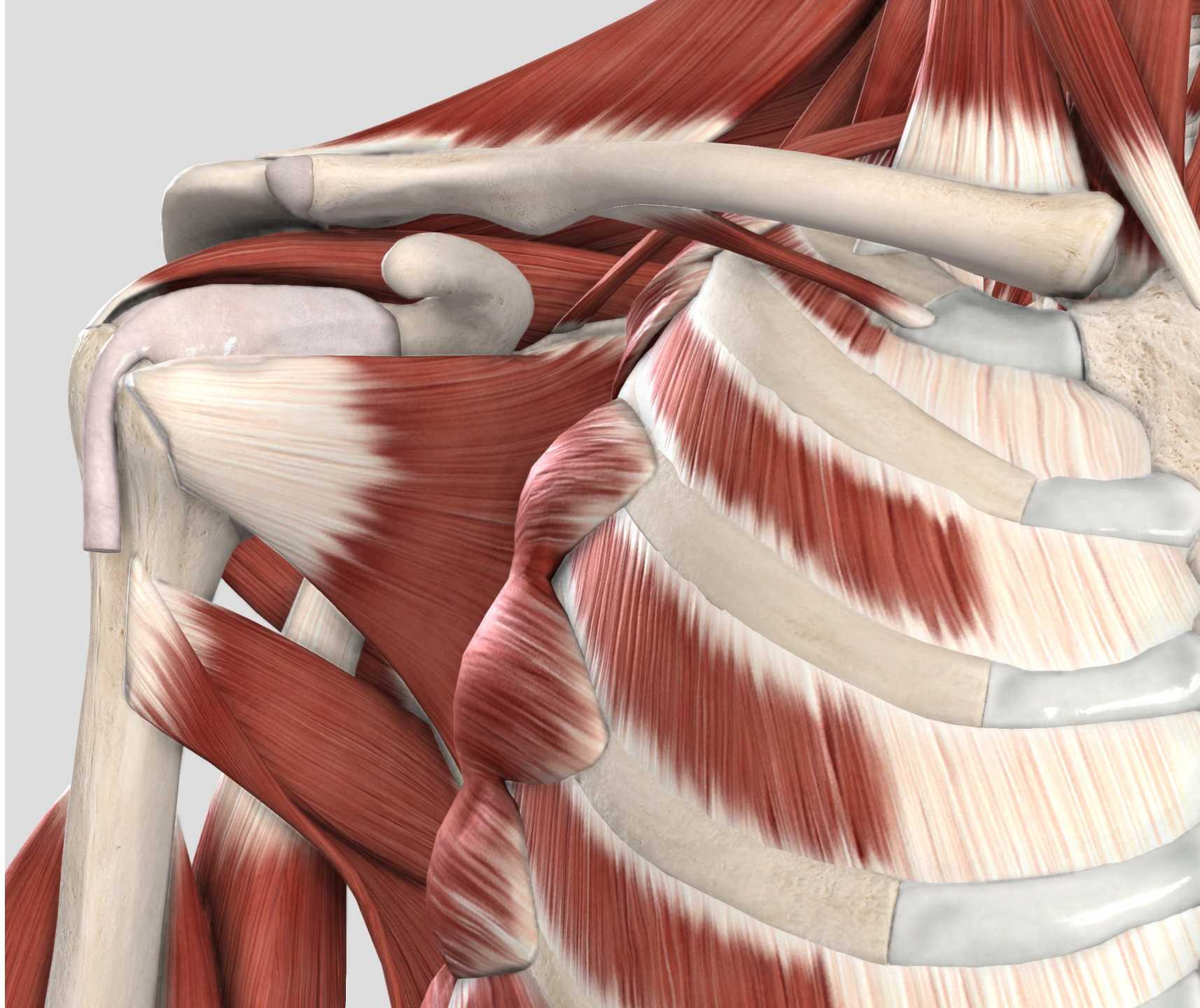




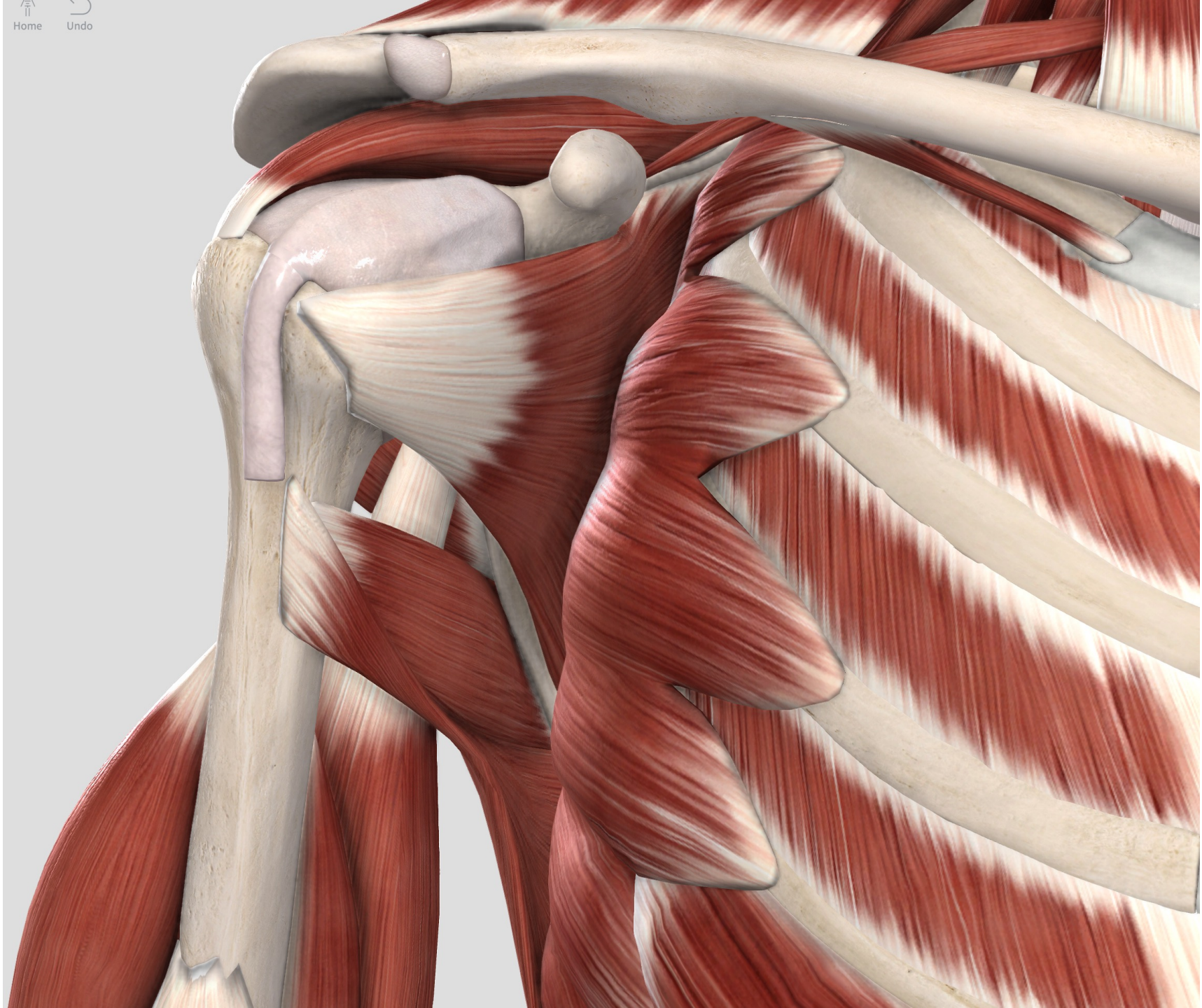




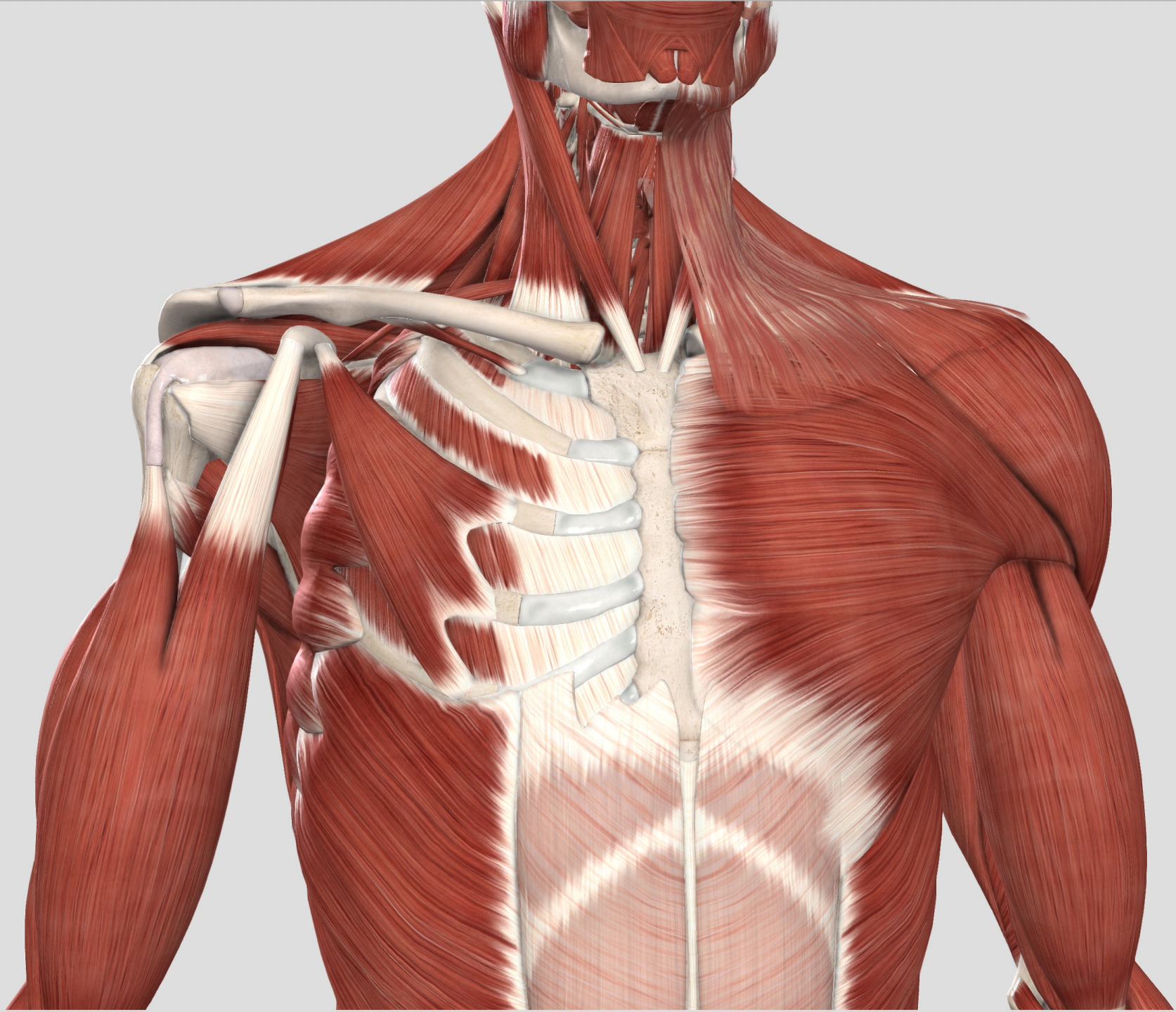




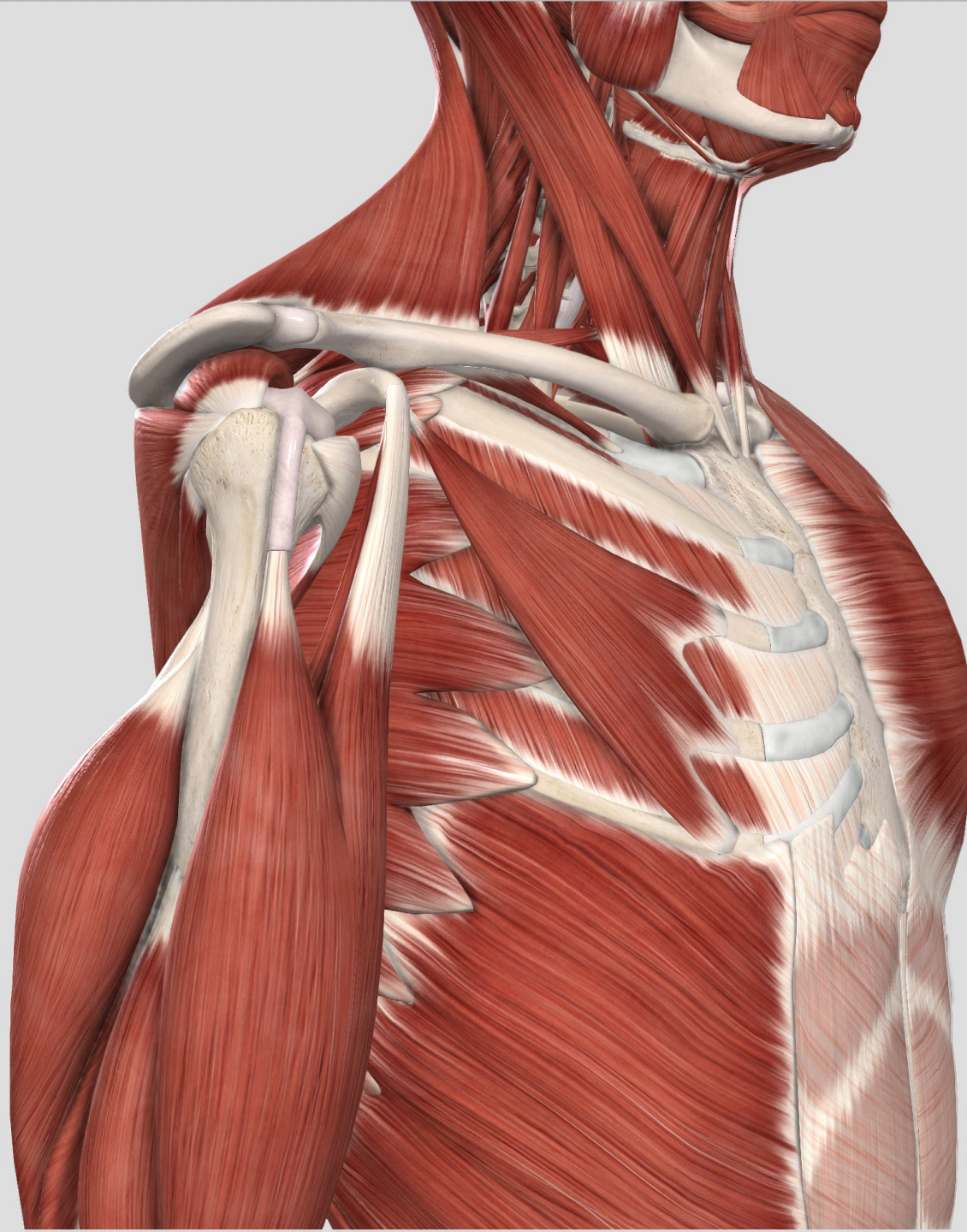


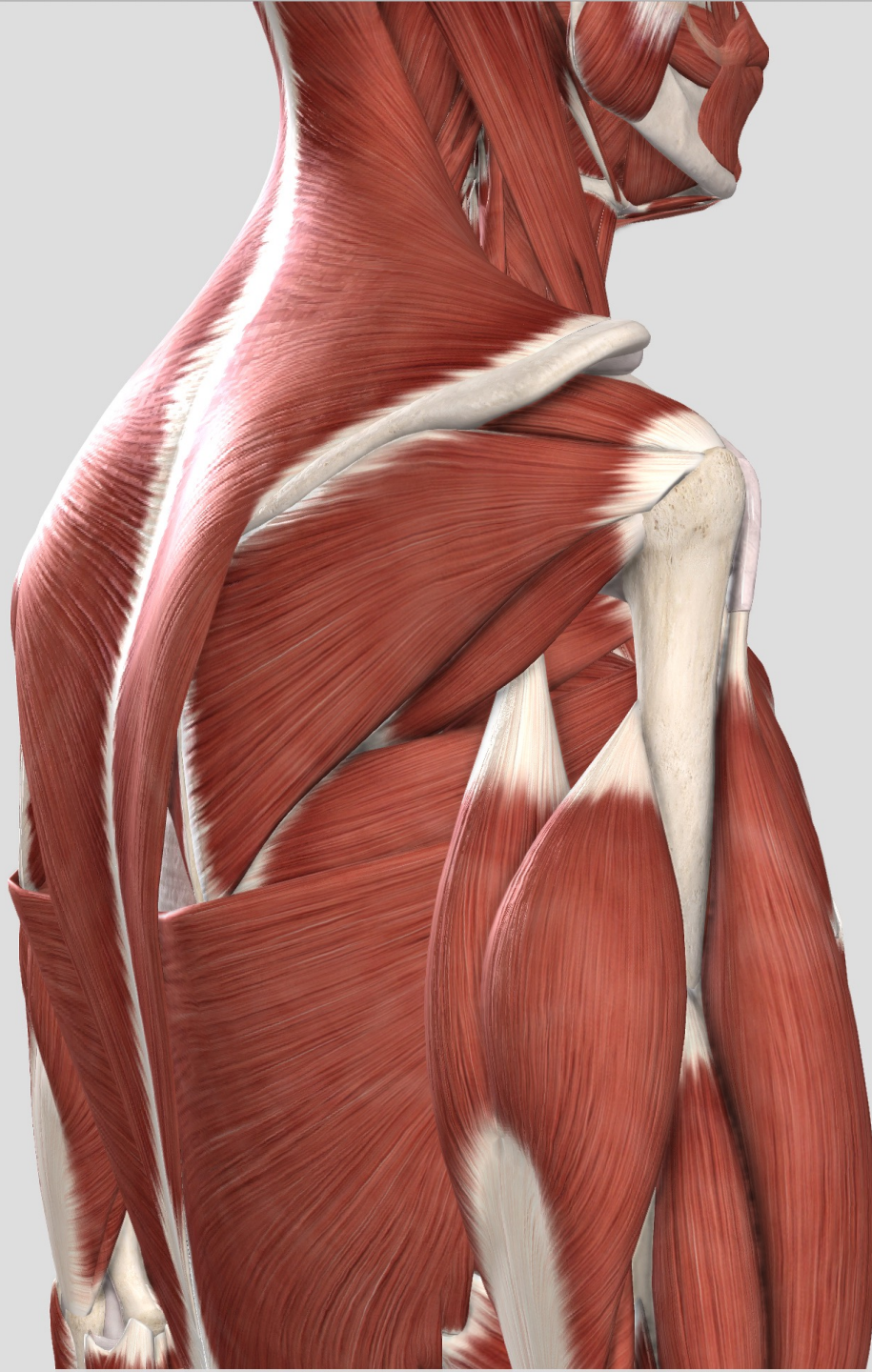








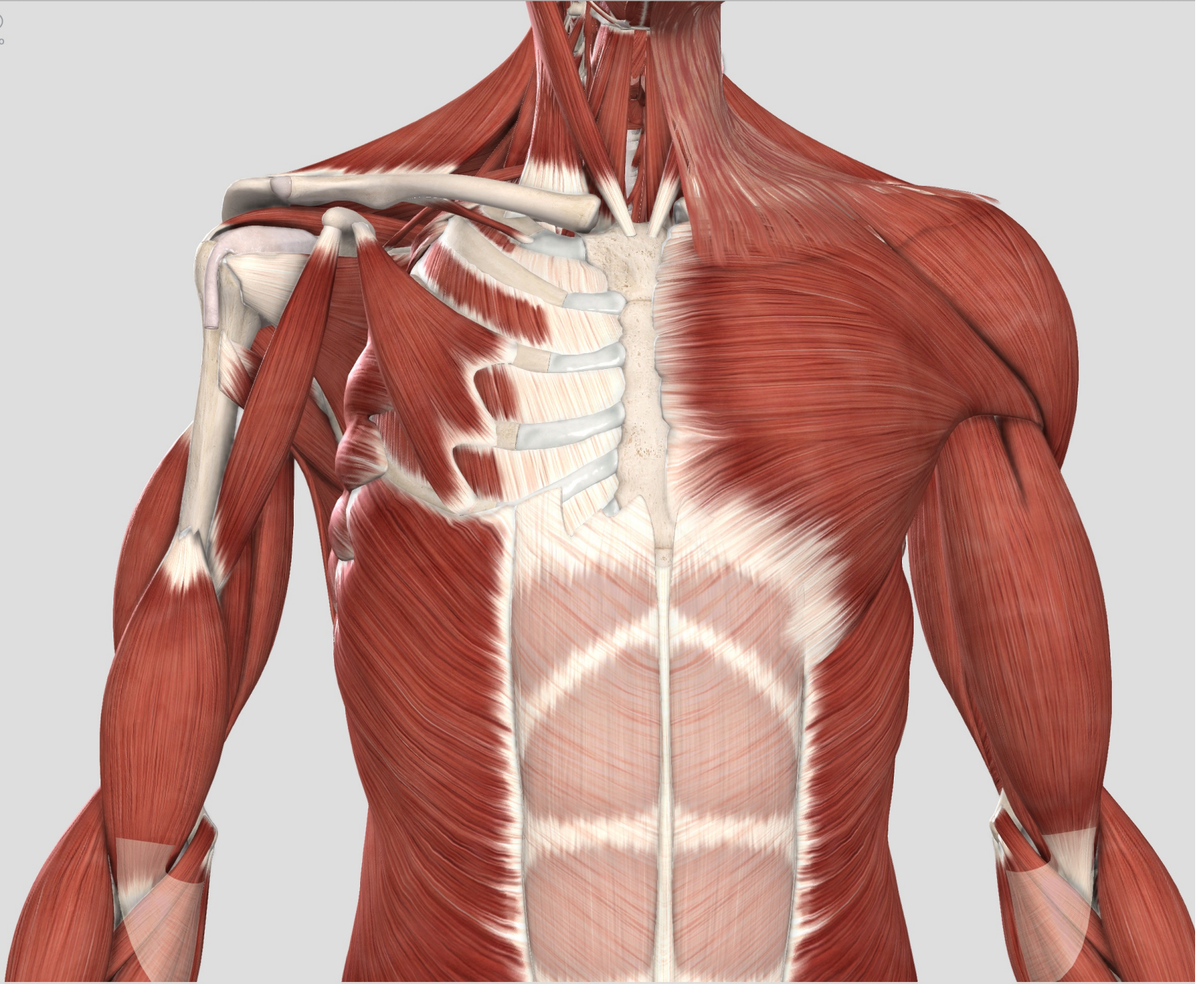




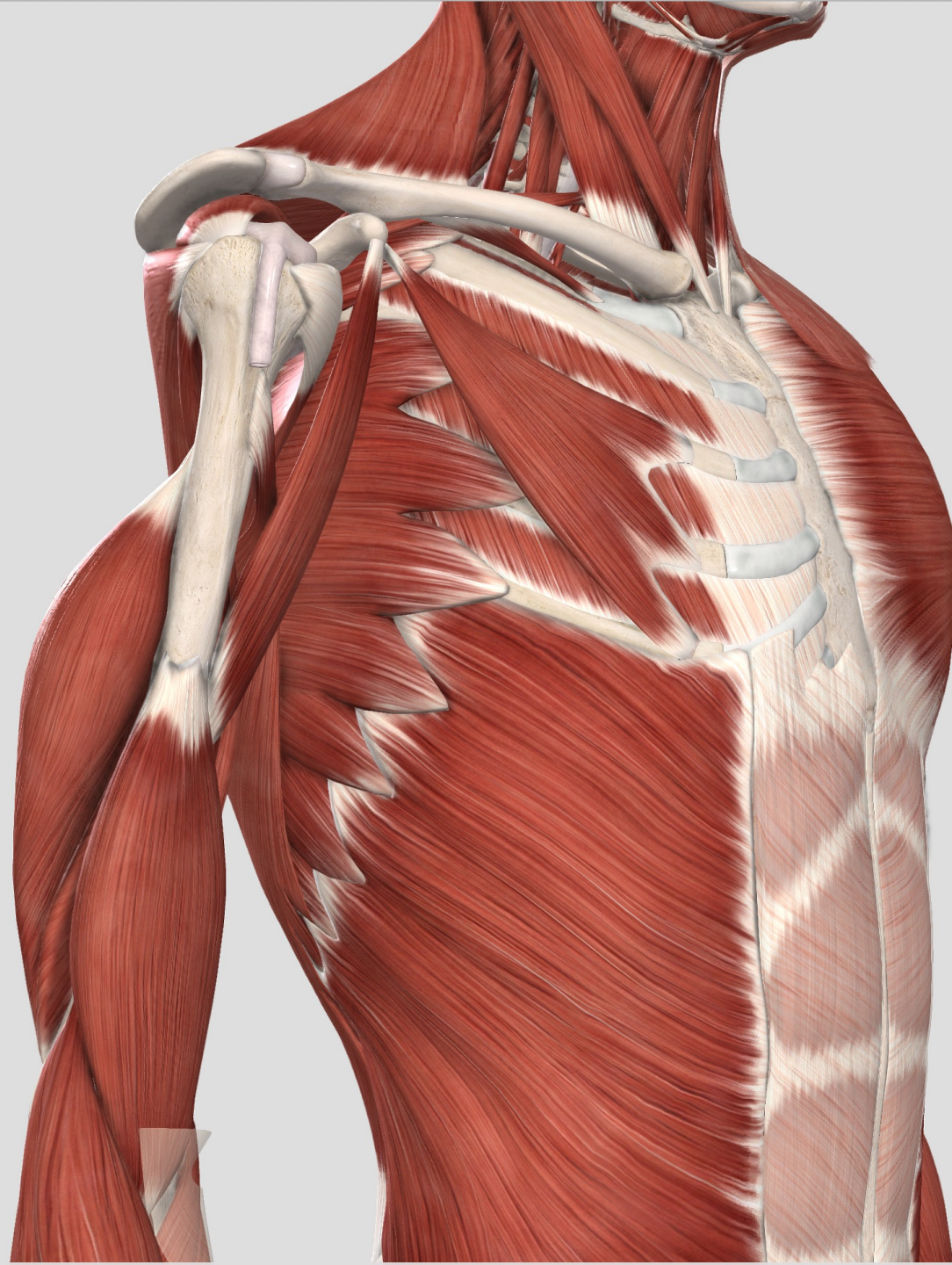








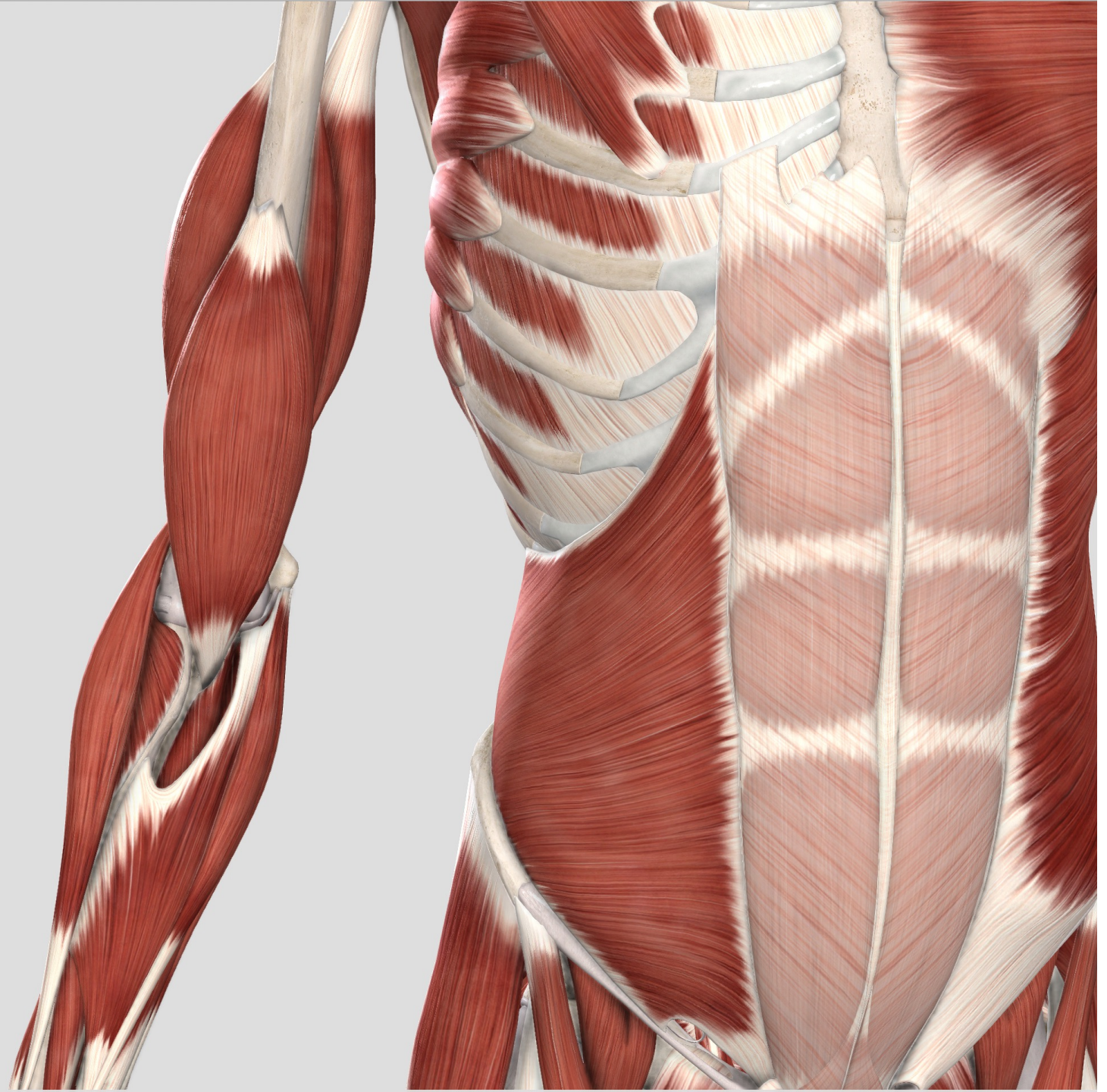








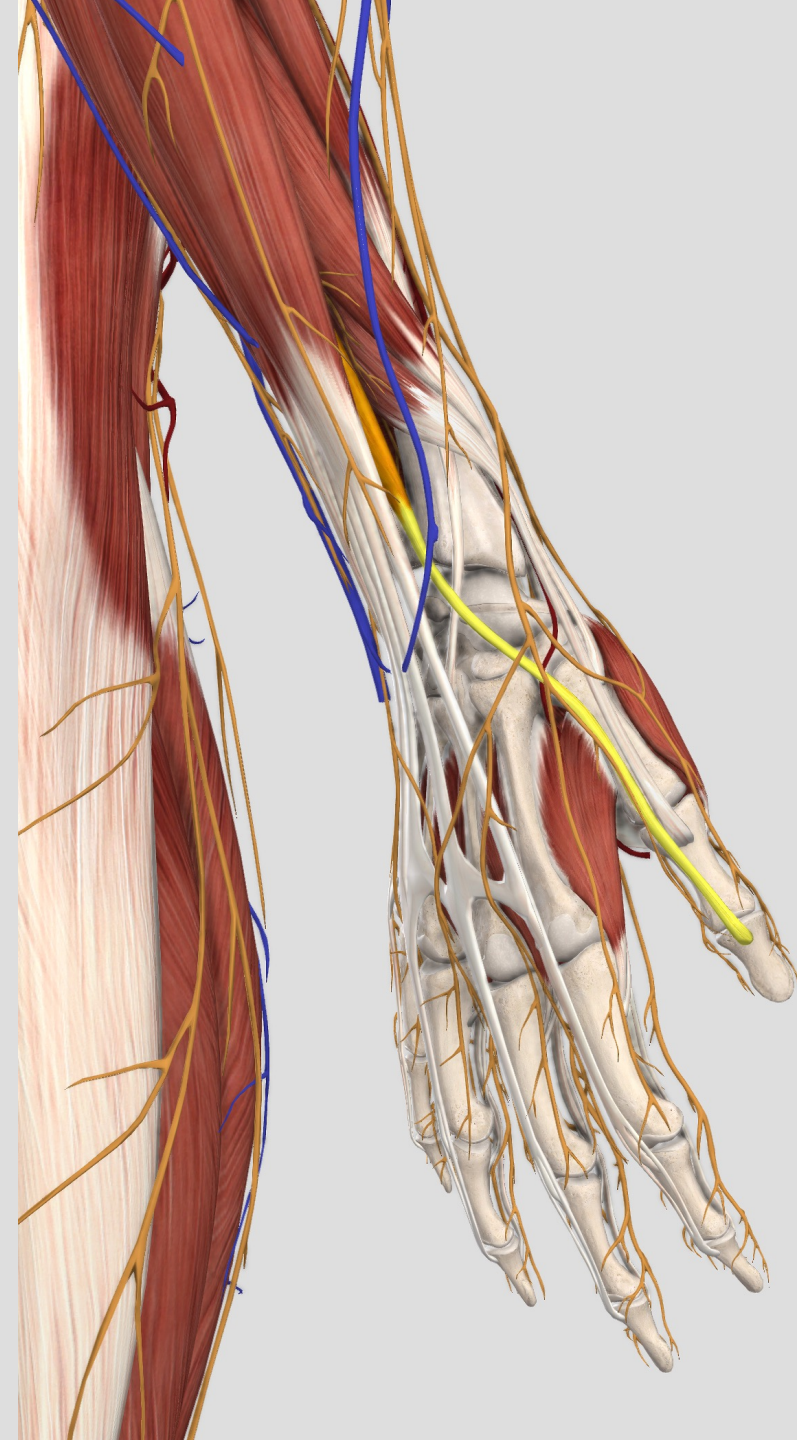
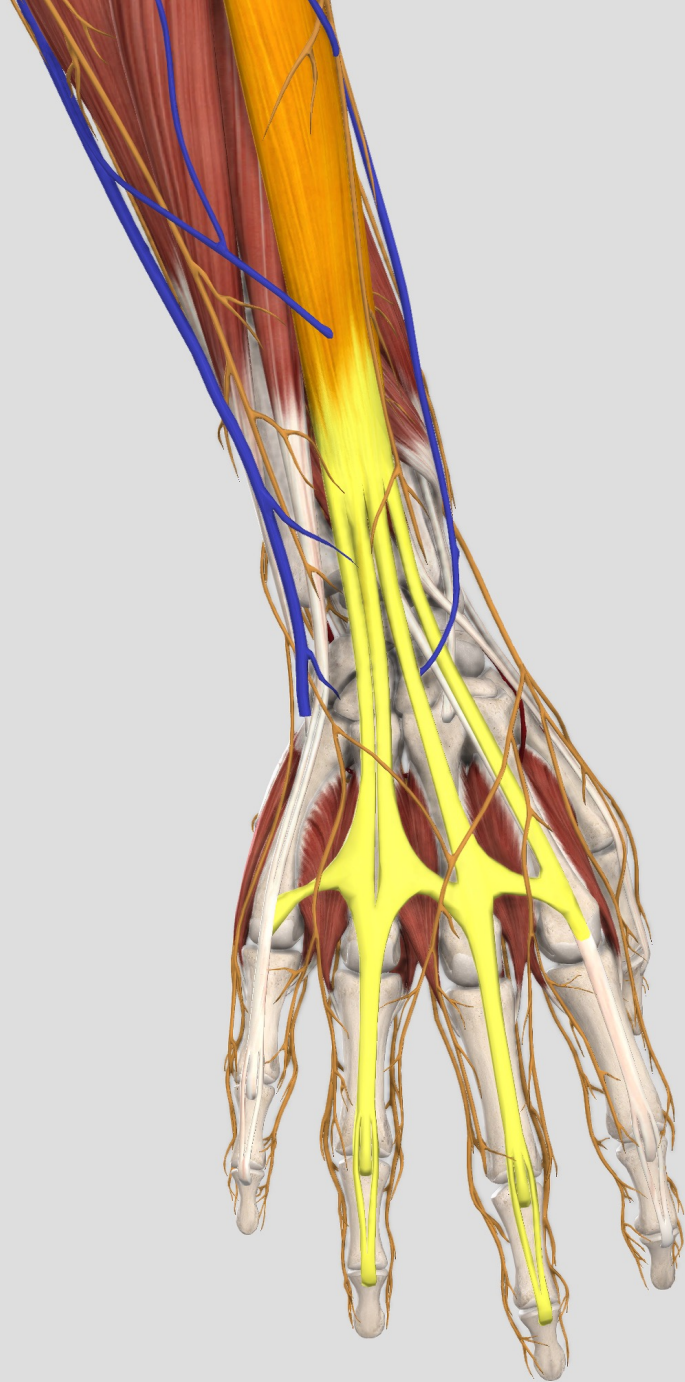
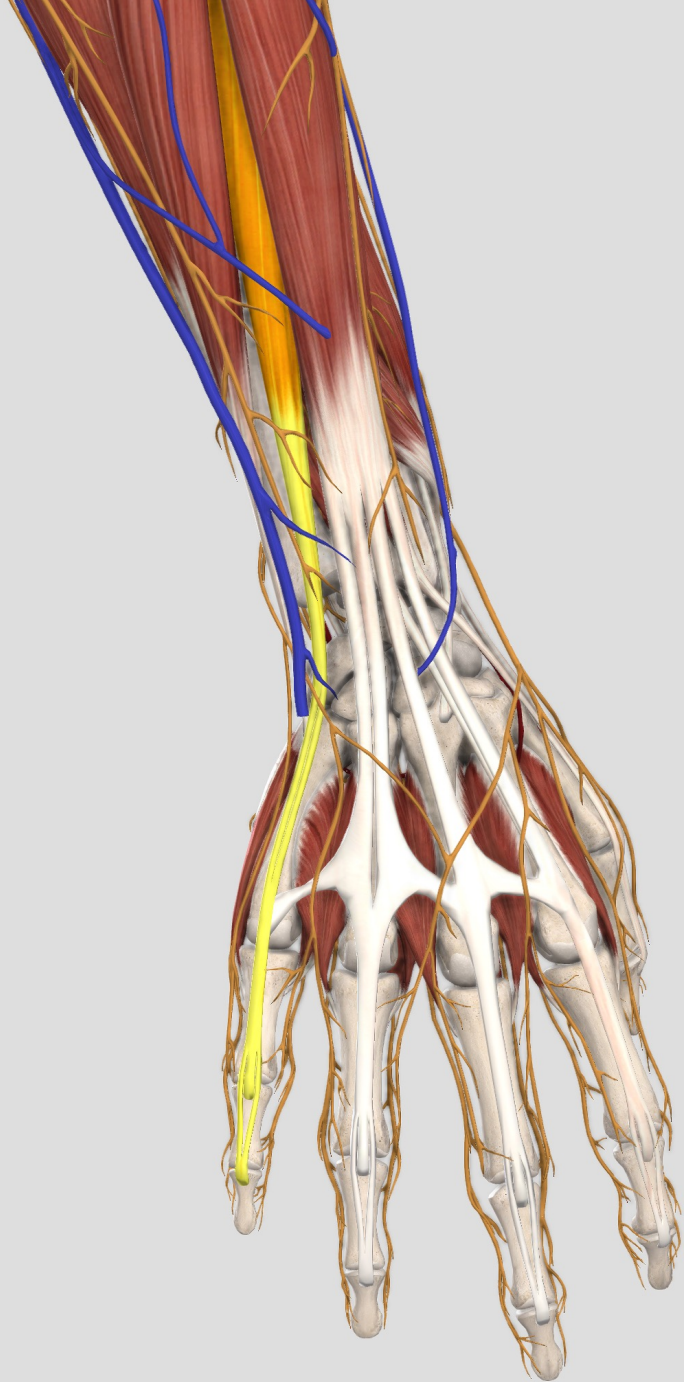




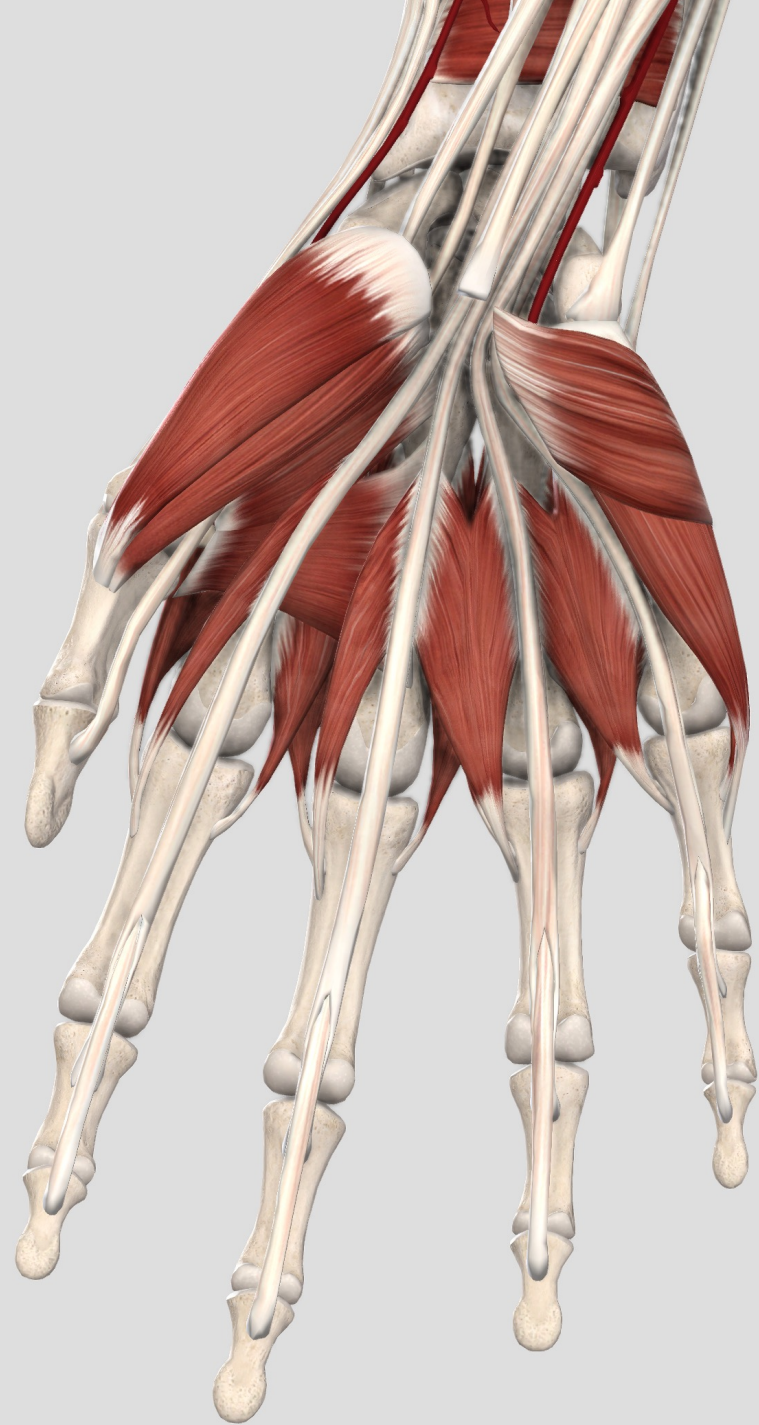
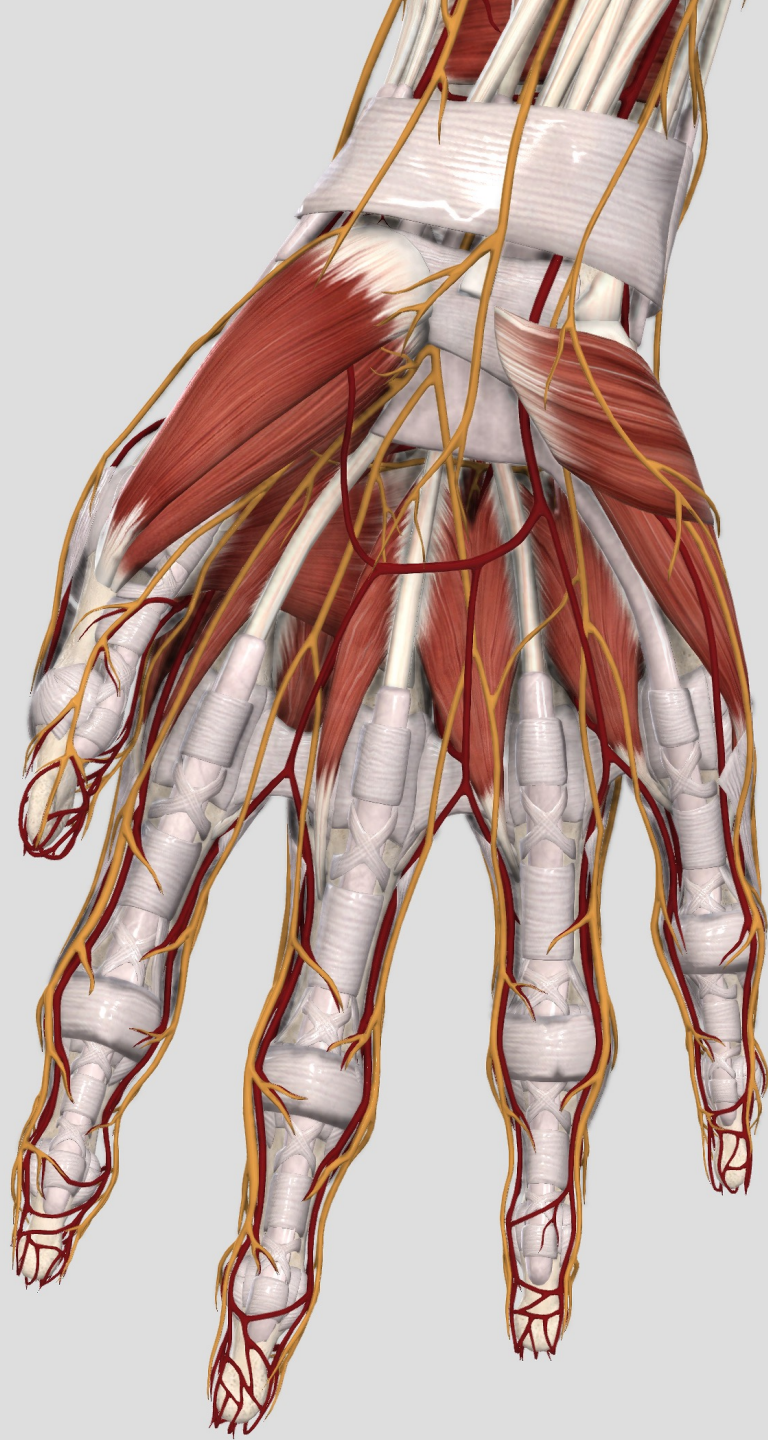




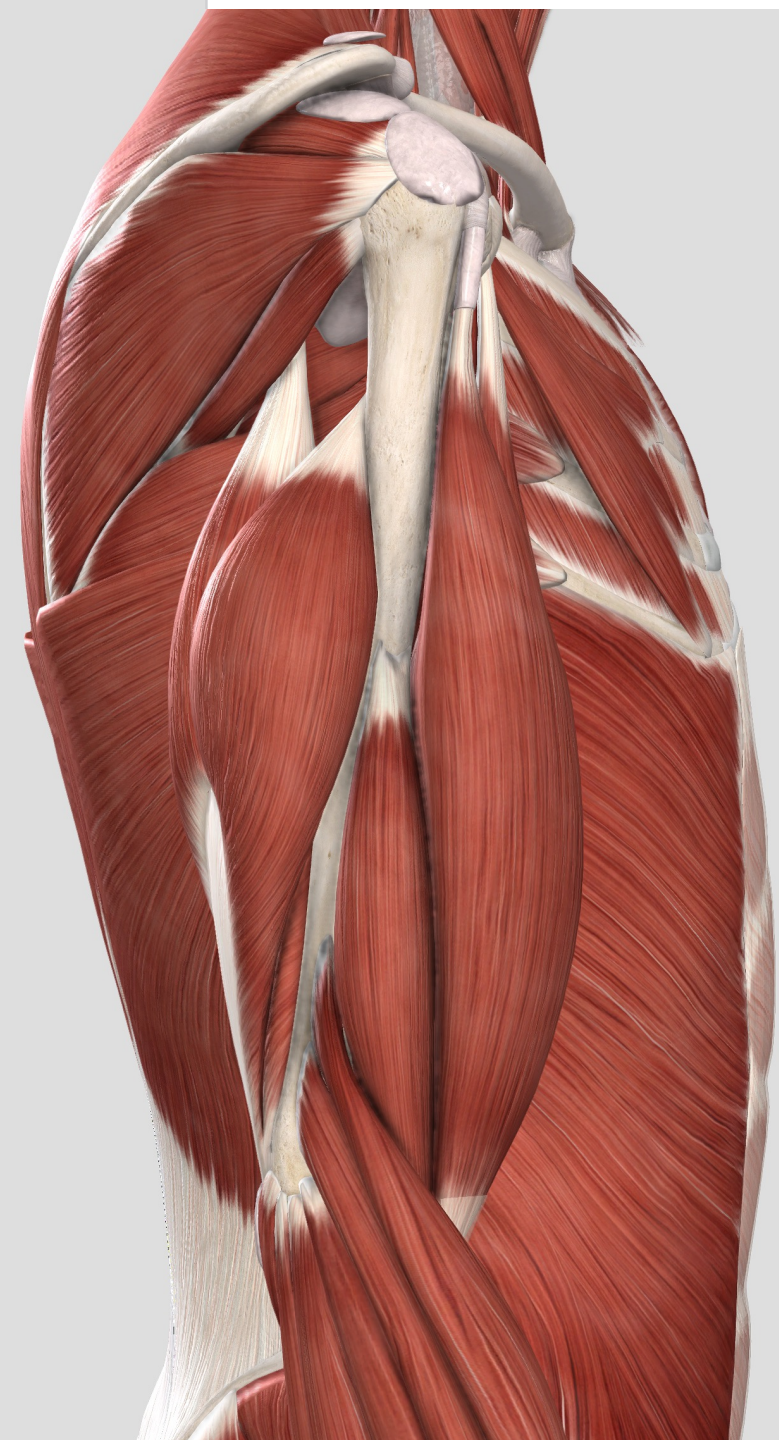
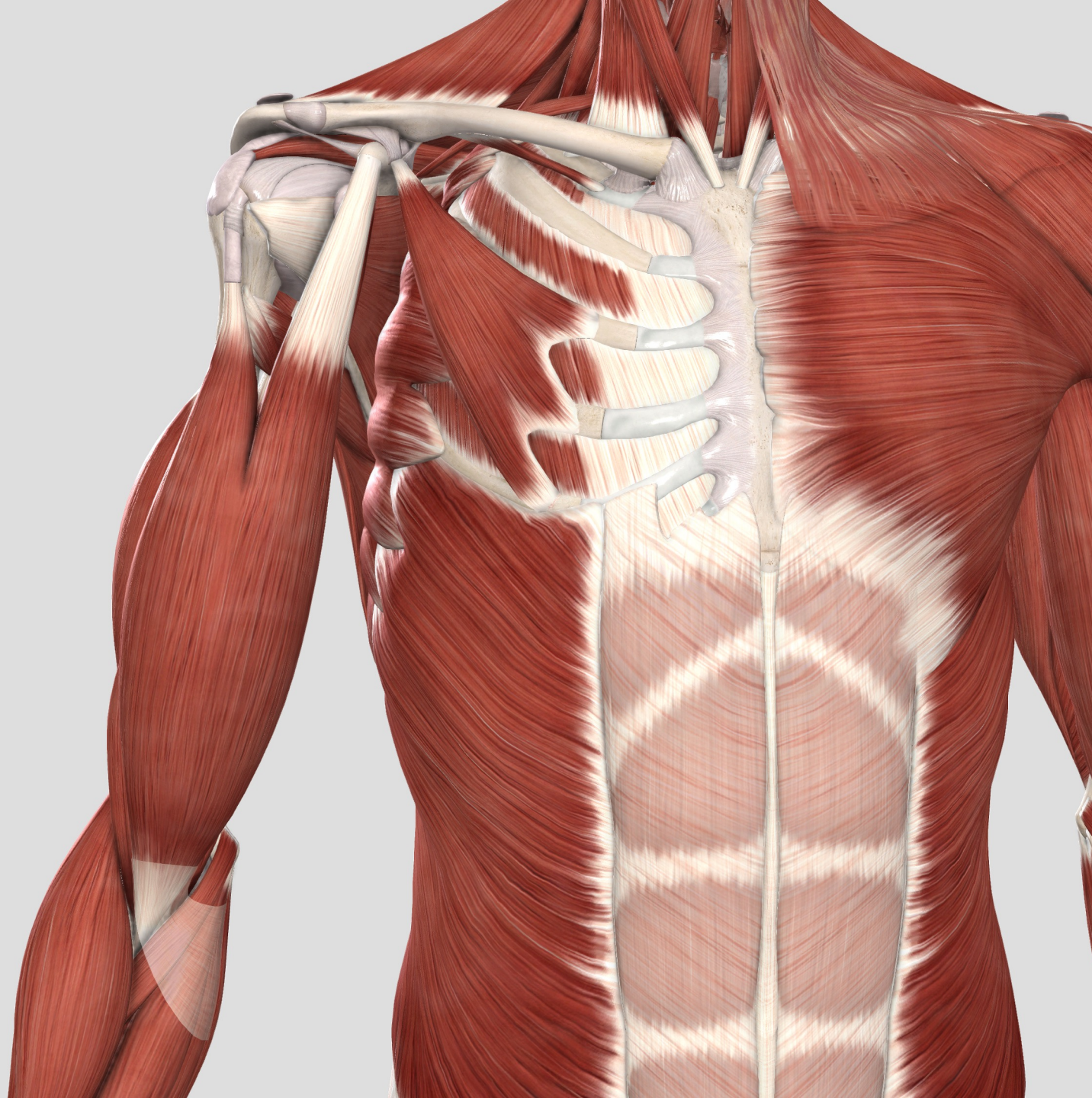














# Flexory a extenzory zpředu

