OIANs of all the muscles

Nathaniel Yomogida
Doctor of Physical Therapy, B.S. in Kinesiology

Chloë Kerstein
Doctor of Physical Therapy, B.A. in Neuroscience

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Back

Suboccipitals

Muscle	Origin	Insertion	Nerve	Action
Rectus Capitis Posterior Major	C2 (SP)	Occipital bone (inferior nuchal line, middle third)	Suboccipital N.	**BIL**: Extend head **UNIL**: I/L head rotation
Rectus Capitis Posterior Minor	C1 (posterior tubercle)	Occipital bone (inferior nuchal line, inner 1/3)	Suboccipital N.	**BIL**: Extend head; **UNIL**: I/L head rotation
Obliquus Capitis Superior	C1 (TP)	Occipital bone (inferior nuchal line, middle third)	Suboccipital N.	**BIL**: Extend head; **UNIL**: I/L SB, C/L rotation
Obliquus Capitis Inferior	C2 (SP)	C1 TP	Suboccipital N.	**BIL**: Extend head; **UNIL**: I/L rotation

Table 1: Suboccipital muscle group

Prevertebral Muscles

- Longus capitis
- Longus Colli Cervicis
- Rectus Capitis anterior
- Rectus Capitis Lateralis

Muscle	Origin	Insertion	Nerve	Action
Longus Capitis	C3-C6 (TP, ant tubercles)	Occipital bone (basilar part)	Direct branches from cervical plexus (C1-C3)	**BIL** flexes head; **UNIL** flexes and slight I/L rotation
Longus colli cervicis	**Vertical part:** C5-T3 (ant side of vertebral body); **Sup-oblique** C3-C5 (TP, Ant tubercle) **Inf-Oblique:** T1-T3 (ant side of vertebral body)	**Vertical part:** C2-C4 (ant sides of vertebral bodies); **Sup-oblique** C1 (TP, ant tubercle) **Inf-Oblique:** C5-C6 (TP, Ant tubercles)	Direct branches from cervical plexus (C2-C6)	**BIL**: Flex AO Joint; **UNIL**: Lat flex at AO joint
Rectus Capitis Anterior	C1 (lateral mass)	Occipital bone (basilar part)	C1 Ant ramus	**BIL**: flex AO Joint; **UNIL**: Lateral Flexion of AO joint
Rectus Capitis Lateralis	C1 (TP)	Occipital bone (basilar part, lateral to occipital condyles)	C1 Anterior Ramus	**BIL**: flex AO Joint; **UNIL**: Lateral Flexion of AO joint

Table 2: Prevertebral muscle group

Superficial intrinsic back Muscles

- Serratus posterior superior
- Serratus posterior inferior
- Splenius capitis
- Splenius cervicis

Muscle	Origin	Insertion	Nerve	Action
Serratus Posterior Superior	Nuchal ligament, C7-T3 SP	2-4th ribs (sup border)	Spinal nn. T2-T5 (Ant ramus)	Elevates ribs
Serratus Posterior Inferior	T11-L2 (SP)	8-12th ribs (inferior borders near angles)	Spinal nn. T9-T12 (Anterior rami)	Depresses ribs
Splenius Capitis	Nuchal ligament C7-T3/T4 SP	Lateral 1/3 nuchal line (occipital bone), Mastoid process (temporal bone)	spinal nn. C1-C6 (Post rami, lateral branches)	**BIL:** Extends C/S and head; **UNIL:** I/L head SB and Rotation
Splenius Cervicis	T3-T6/T7 (SP)	C1–C3/4 (TP)	Spinal nn. C1-C6 (Post rami, lateral branches)	**BIL:** Extends C/S and head; **UNIL:** I/L head SB and Rotation

Table 3: Superficial intrinsic back Muscles OIANs

Intermediate intrinsic back muscles (Erector Spinae)

- Iliocostalis
  - Iliocostalis Cervicis
  - Iliocostalis Thoracis
  - Iliocostalis lumborum
- Longissimus
  - Longissimus Capitis
  - Longissimus Cervicis
  - Longissimus Thoracis
- Spinalis
  - Spinalis Cervicis
  - Spinalis Thoracis

Muscle	Origin	Insertion	Nerve	Action
Iliocostalis cervicis	3rd-7th ribs	C4-C6 TP	Spinal nn. C8-L1 (Post rami, lateral branches)	**BIL:** Extends spine; **UNIL:** I/L spine lat-flexion
Iliocostalis thoracis	7-12th ribs	1st-6th ribs	Spinal nn. C8-L1 (Post rami, lateral branches)	**BIL:** Extends spine; **UNIL:** I/L spine lat-flexion
Iliocostalis lumborum	Sacrum, iliac crest, lumbar vertebrae SP; lower thoracic vertebrae TP	6-12th ribs, thoracolumbar fascia (posterior layer), upper lumbar vertebrae (TP)	Spinal nn. C8-L1 (Post rami, lateral branches)	**BIL:** Extends spine; **UNIL:** I/L spine lat-flexion
Longissimus Capitis	T1-T3 (TP), C4-C7 (TP & articular process)	Temporal bone (Mastoid process)	Spinal nn. C1-L5 (Post rami, lateral branches)	**BIL**: Extends head; **UNIL**: Flexes and I/L rotation
Longissimus Cervicis	T1-T6 (TP)	C2-C5 (TP)	Spinal nn. C1-L5 (Post rami, lateral branches)	**BIL**: Extends spine; **UNIL**: I/L SB
Longissimus Thoracis	Sacrum; Iliac crest; Lumbar vertebrae (SP); Lower thoracic vertebrae (TP)	2nd-12th ribs; Thoracic & Lumbar vertebrae (TP)	Spinal nn. C1-L5 (Post rami, lateral branches)	**BIL**: Extends spine; **UNIL**: I/L SB
Spinalis Cervicis	C5-T2 (SP)	C2-C5 (SP)	Spinal nn. (Posterior Rami)	**BIL**: Extends C/S and T/S; **UNIL**: I/L SB cervical and thoracic spine
Spinalis Thoracis	T10-L3 (SP, lat surface)	T2-T8 (SP, lat surface)	Spinal nn. (Posterior Rami)	**BIL**: Extends C/S and T/S; **UNIL**: I/L SB cervical and thoracic spine

Table 4: Erector Spinae OIAN

Transversospinalis Muscles

Muscle	Origin	Insertion	Nerve	Action
Rotatores Breves	T1-T12 TP of lower vertebrae	T1-T12: SP of adjacent vertebrae	Spinal nn. (Posterior Rami)	**BIL**: Extends T/S; **UNIL**: C/L Rotation of T/S
Rotatores Longi	T1-T12 TP of lower vertebrae	T1-T12: SP of vertebrae 2 above (it skips a vertebrae)	Spinal nn. (Posterior Rami)	**BIL**: Extends T/S; **UNIL**: C/L Rotation of T/S
Multifidi	Sacrum, ilium, mamillary process of L1-L5, T1-T4 (TP and Articular process), C4-C7	Superomedially to SP (skipping 2-4 vertebrae)	Spinal nn. (Posterior Rami)	**BIL**: Extends extends spine; **UNIL**: I/L SB and C/L Rotation
Semispinalis Capitis	C4-T7 (TP and Articular process)	Occipital bone (between superior and inferior nuchal lines)	Spinal nn. (Posterior Rami)	**BIL**: Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); **UNIL**: I/L SB of head, cervical, and thoracic spine; C/L Rotation
Semispinalis Cervicis	T1-T6 (TP)	C2-C5 (SP)	Spinal nn. (Posterior Rami)	**BIL**: Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); **UNIL**: I/L SB of head, cervical, and thoracic spine; C/L Rotation
Semispinalis Thoracis	T6-T12 (TP)	C6-T4 (SP)	Spinal nn. (Posterior Rami)	**BIL**: Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); **UNIL**: I/L SB of head, cervical, and thoracic spine; C/L Rotation

Table 5: Transversospinalis Muscles OIAN

Deep Segmental Back Muscles

Muscle	Origin	Insertion	Nerve	Action
Interspinales Cervicis	C1-C7: SP of inferiorly adjacent vertebrae	C1-C7: SP of superiorly adjacent vertebrae	Spinal nn. (Posterior Rami)	Extends cervical and Lumbar spines
Interspinales Lumbora	L1-L5: SP of inferiorly adjacent vertebrae	L1-L5: SP of superiorly adjacent vertebrae	Spinal nn. (Posterior Rami)	**BIL**: Stabilizes and extends cervical and lumbar vertebrae; **UNIL**: I/L SB cervical and lumbar spines

Table 6: Deep Segmental Back Muscles OIAN

Head and Neck

Muscles of Facial Expression

Muscle	Origin	Insertion	Nerve	Action
Calvaria				
Occipitofrontalis (Frontal belly)	Epicranial aponeurosis	Skin and subcutaneous tissue of eyebrows and forehead	Facial Nerve CN VII	Elevates eyebrows; wrinkles skin of forehead
Palpebral Fissure and Nose				
Procerus	Nasal bone, Lateral nasal cartilage (upper part)	Skin of lower forehead between eyebrows	Facial Nerve CN VII	Pulls medial angle of eyebrows inferiorly, producing transverse wrinkles over bridge of nose
Orbicularis Oculi	Medial orbital margin, medial palpebral ligament, lacrimal bone	Skin around margin of orbit, superior and inferior tarsal plates	Facial Nerve CN VII	Acts as orbital sphincter (closes eyelids): Palpebral portion gently closes, orbital portion tightly closes (winking)
Nasalis	Maxilla (superior region of canine ridge)	Nasal cartilages	Facial Nerve CN VII	Flares nostrils by drawing ala (side) of nose toward nasal septum
Levator Labii superioris alaeque nasi	Maxilla (Frontal process)	Alar cartilage of nose and upper lip	Facial Nerve CN VII	Elevates upper lip; Opens nostril
Ear				
Anterior Auricular Muscle	Temporal fascia (ant. portion)	Helix of the ear	Facial Nerve CN VII	Pulls ear superiorly and anteriorly
Muscle	Origin	Insertion	Nerve	Action
——	———	——-	———-	———
Superior Auricular Muscle	Epicranial aponeurosis on side of head	Upper portion of auricle	Facial Nerve CN VII	Elevates ear
Alaeque nasi	Maxilla (superior region of canine ridge)	Nasal cartilages	Facial Nerve CN VII	Flares nostrils by drawing ala (side) of nose toward nasal septum

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Muscles of Mastication

Muscle	Origin	Insertion	Nerve	Action
Masseter muscle	**SF layer**: zygomatic arch (ant 2/3); **Deep layer**: Zygomatic arch (post. 1/3)	Mandibular angle (Masseteric tuberosity)	Trigeminal CN V: Mandibular (V_3)	**Entire muscle**: Elevates mandible; **SF Fibers**: Protrude mandible
Temporalis muscle	Temporal fossa (inferior temporal line)	Coronoid process of mandible (apex and medial surface)	Mandibular (V_3) divison of CN V via deep temporal nn	**Vertical fibers**: Elevate mandible; **Horizontal Fibers**: Retract (retrude) mandible; **Unilateral Fibers:** Lateral movement of mandible (chewing)
Lateral Pterygoid	**Superior Head:** Greater wing of sphenoid bone (infratemporal crest); **Inferior head:** Lateral surface of pterygoid plate (lat surface)	**Superior Head:** Tempormandibular joint (articular disc); **Inferior head:** Mandible (condylar process)	Mandibular (V_3) divison of CN V via lateral pterygoid n.	**BIL:** Protrudes mandible (pulls articular disk forward); **UNIL:** C/L Lateral movements of mandible (chewing)
Medial Pterygoid	**SF Head:** Maxilla (tuberosity); **Deep head:** Medial surface of lateral pterygoid plate and pterygoid fossa	Pterygoid tuberosity on medial surface of the mandibular angle	Mandibular (V_3) divison of CN V via medial pterygoid n.	**BIL:** Elevates mandible with masseter and contributes to protrusion; **UNIL:** Small grinding movements

Table 8: Muscles of Mastication OIAN

Muscles of the Neck

Superficial Neck Muscles

- Platysma
- Sternocleidomastoid
- Trapezius

Nuchal muscles (Intrinsic back muscles)

Muscle	Origin	Insertion	Nerve	Action
Semispinalis Capitis	C4-T7 (TP and Articular process)	Occipital bone (between superior and inferior nuchal lines)	Spinal nn. (Posterior Rami)	**BIL**: Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); **UNIL**: I/L SB of head, cervical, and thoracic spine; C/L Rotation
Semispinalis Cervicis	T1-T6 (TP)	C2-C5 (SP)	Spinal nn. (Posterior Rami)	**BIL**: Extends thoracic and cervical spines and head (stabilizes craniovertebral jt); **UNIL**: I/L SB of head, cervical, and thoracic spine; C/L Rotation
Splenius Capitis	Nuchal ligament C7-T3/T4 SP	Lateral 1/3 nuchal line (occipital bone), Mastoid process (temporal bone)	spinal nn. C1-C6 (Post rami, lateral branches)	**BIL:** Extends C/S and head; **UNIL:** I/L head SB and Rotation
Splenius Cervicis	T3-T6/T7 (SP)	C1–C3/4 (TP)	Spinal nn. C1-C6 (Post rami, lateral branches)	**BIL:** Extends C/S and head; **UNIL:** I/L head SB and Rotation
Longissimus Capitis	T1-T3 (TP), C4-C7 (TP & articular process)	Temporal bone (Mastoid process)	Spinal nn. C1-L5 (Post rami, lateral branches)	**BIL**: Extends head; **UNIL**: Flexes and I/L rotation
Longissimus Cervicis	T1-T6 (TP)	C2-C5 (TP)	Spinal nn. C1-L5 (Post rami, lateral branches)	**BIL**: Extends spine; **UNIL**: I/L SB
Iliocostalis cervicis	3rd-7th ribs	C4-C6 TP	Spinal nn. C8-L1 (Post rami, lateral branches)	**BIL:** Extends spine; **UNIL:** I/L spine lat-flexion
Rectus Capitis Posterior Major	C1 TP (SP)	Occipital bone (inferior nuchal line, inner middle third)	Suboccipital N.	**BIL:** Extend head; **UNIL:** I/L Head Rotation
Rectus Capitis Posterior Minor	C1 (SP) tubercle	Occipital bone (inferior nuchal line, inner middle third)	Suboccipital N.	**BIL:** Extend head; **UNIL:** I/L Head Rotation

Thoracoappendicular

Anterior Axioappendicular

Muscle	Origin	Insertion	Nerve	Action
Pectoralis Major	**Clavicular part**: Clavicle (medial half) **Sternocostal part**: sternum, costal cartilages 1–6 **Abdominal part**: rectus sheath (anterior layer)	Humerus (crest of greater tubercle)	Lateral pectoral nerve Medial pectoral nerve (C5, C6, C7, C8, T1)	**Entire muscle**: GHJ Adduction, Internal rotation **Clavicular and sternocostal parts**: Flexion; assist in respiration when shoulder is fixed
Pectoralis Minor	3rd to 5th ribs	Coracoid process	Medial Pectoral n. (C8, T1)	**Scapulothoracic**: Depression, protraction, downward rotation **Respiration**: Assistance
Subclavius	1st rib	Clavicle (inferior surface)	N. to Subclavius (C5, C6)	**SCJ Stabilization**: Via Clavicle depression, elevation of 1st rib
Serratus Anterior	1-9th ribs	**Superior part**: Superior angle of Scapula (costal and dorsal surfaces) **Intermediate part**: Medial border of Scapula (costal surface) **Inferior part**: Medial border of Scapula (costal surface), Inferior angle (costal and dorsal surfaces)	Long Thoracic N. (C5, C6, C7	**Entire muscle**: Draws scapula laterally forward, elevates ribs when shoulders are fixed **Superior part**: Lowers the raised arm **Inferior part**: Rotates inferior angle of scapula laterally forward (allows elevation of arm above 90°)

Table 10: Anterior Axioappendicular Muscles

Posterior Axioappendicular

Muscle	Origin	Insertion	Nerve	Action
Upper Trapezius	Occipital bone SP of C1–C7	Clavicle (lateral one third)	**Motor**: CN XI Accessory n. (C3, C4) **Proprioception**: Cervical plexus (C2, C3, C4)	**Scapula**: Elevation, Upward rotation **Neck**: I/L sidebend and C/L rotation
Middle Trapezius	Aponeurosis at T1–T4 SP	Acromion of Scapula	**Motor**: CN XI Accessory n. (C3, C4) **Proprioception**: Cervical plexus (C2, C3, C4)	Scapular retraction Stabilize the scapula during upward rotation
Lower Trapezius	SP of T5–T12	Scapular Spine	**Motor**: CN XI Accessory n. (C3, C4) **Proprioception**: Cervical plexus (C2, C3, C4)	**STJ**: Retraction, Depression, Upward Rotation
Latissimus Dorsi	**Vertebral part**: SP of T7–T12 vertebrae; thoracolumbar fascia **Scapular part**: Scapula (inferior angle) **Costal part**: 9-12th ribs **Iliac part**: Iliac crest (posterior 1/3)	Floor of intertubercular groove of humerus	Thoracodorsal n. (C6, C7, C8)	**GHJ**: Internal rotation, adduction, extension **Respiration**: "cough muscle"

Table 11: Superficial Posterior Axioappendicular Muscles

Muscle	Origin	Insertion	Nerve	Action
Levator Scapulae	TP C1-C4	Superior angle of the scapula	Dorsal Scapular N. Cervical Spinal nn. (C4, C5)	**STJ**: Elevates and downwardly rotates scapula **C/S**: Extends and I/L lateral flexion
Rhomboid Major	SP T1–T4	Medial border of scapula (*below scapular spine*)	Dorsal Scapular N. (C4, C5)	**STJ**: Retraction, Downward rotation, Stabilization
Rhomboid Minor	SP of C6 & C7	Medial border of scapula (*above scapular spine*)	Dorsal Scapular N. (C4, C5)	**STJ**: Retraction, Downward rotation, Stabilization

Table 12: Deep Posterior Axioappendicular Muscles

Scapulohumeral

Scapulohumeral muscles AKA intrinsic shoulder muscles

Muscle	Origin	Insertion	Nerve	Action
Deltoid	**?var:ref-deltoid.origin**	**?var:ref-deltoid.insertion**	**?var:ref-deltoid.nerve**	**?var:ref-deltoid.action**
Deltoid (*anterior head*)	Lateral 1/3 of clavicle	Humerus (deltoid tuberosity)	Axillary n. C5, C6	**GHJ:** Flexion, internal rotation, adduction
Deltoid (*lateral head*)	Acromion	Humerus (deltoid tuberosity)	Axillary n. C5, C6	Abduction
Deltoid (*posterior head*)	Scapular spine	Humerus (deltoid tuberosity)	Axillary n. C5, C6	**GHJ:** Extension, external rotation, adduction
Teres Major	Inferior angle of the scapula (posterior aspect)	Crest of lesser tubercle of the humerus (*anterior angle*)	Lower Subscapular N. (C5, C6)	**GHJ**: Extension, Internal rotation, Adduction
Supraspinatus	Supraspinous Fossa of scapula	Greater tubercle of Humerus	Suprascapular n. (C4, C5, C6)	**GHJ**: Initiates abduction
Infraspinatus	Infraspinous Fossa of scapula	Greater tubercle of Humerus	Suprascapular n. (C4, C5, C6)	**GHJ**: External rotation, Stabilization
Teres Minor	Lateral border of scapula	Greater tubercle of Humerus	Axillary N. (C5, C6)	**GHJ**: External Rotation, Weak Adduction, Stabilization
Subscapularis	Subscapular fossa of Scapula	Lesser tubercle of Humerus	Upper Subscapular N. Lower Subscapular N. (C5, C6)	**GHJ**: Internal Rotation, Adduction

Arm

Anterior Arm

Muscle	Origin	Insertion	Nerve	Action
Biceps Brachii (Long head)	Supraglenoid tubercle of scapula Adjacent rim of Glenoid Labrum	Radial tuberosity Bicipital aponeurosis	Musculocutaneous N. (C5, C6)	**Shoulder**: Flexion **GHJ**: Abduction, Internal rotation, Stabilization of humeral head during deltoid contraction **Elbow**: Flexion; Supination
Biceps Brachii (Short head)	Coracoid process of Scapula	Radial tuberosity Bicipital aponeurosis	Musculocutaneous N. (C5, C6)	**Shoulder**: Flexion **GHJ**: Abduction, Internal rotation, Stabilization **Elbow**: Flexion, Supination
Brachialis	Distal 1/2 of Anterior humerus	Ulnar tuberosity	Musculocutaneous N. (C5, C6) Radial N. (C7, Minor)	**Elbow**: Flexion
Coracobrachialis	Coracoid process of Scapula	Middle 1/3 of Humerus (*in line with crest of lesser tubercle*)	Musculocutaneous N. (C5, C6, C7)	**GHJ**: Flexion, Adduction, Internal rotation

Table 14: Muscles of the Anterior Compartment of the Arm

Posterior Arm

Muscle	Origin	Insertion	Nerve	Action
Triceps brachii (Long head)	Infraglenoid tubercle of scapula	Olecranon process of Ulna	Radial N. (C6, C7, C8)	**Elbow**: Extension **Shoulder**: Extension, Adduction
Triceps brachii (Medial head)	Posterior surface of humerus (distal to radial groove) Medial intermuscular septum	Olecranon process	Radial N. (C6, C7, C8)	**Elbow**: Extension
Triceps brachii (Lateral head)	Posterior surface of humerus (prox to radial groove) Lateral Intermuscular Septum	Olecranon process	Radial N. (C6, C7, C8)	**Elbow**: Extension
Anconeus	Lateral epicondyle of humerus (*Possibly joint capsule*)	Olecranon of ulna (Radial surface)	Radial N. (C6, C7, C8)	**Elbow**: Weak extension, stabilization

Table 15: Muscles of the Posterior Compartment of the Arm

Forearm

Anterior Forearm

Muscle	Origin	Insertion	Nerve	Action
Pronator Teres	**Humeral head**: medial epicondyle of humerus **Ulnar head**: coronoid process	Lateral radius (*Distal to supinator insertion*)	Median N. (C6, C7)	**Elbow**: Weak flexion **Forearm**: Pronation
Flexor Carpi Radialis	Medial epicondyle of Humerus	Base of 2nd or 3rd metacarpal	Median N. (C6, C7)	**Wrist**: Flexion, Radial deviation *Assists with Elbow flexion and Pronation*
Palmaris Longus	Medial epicondyle of humerus	Palmar aponeurosis	Median N. (C7, C8)	**Elbow**: Weak Flexion **Wrist**: Flexion, Tenses palmar aponeurosis
Flexor Carpi Ulnaris	**Humeral head**: Medial epicondyle of Humerus **Ulnar head**: Olecranon of Ulna	Pisiform Hook of hamate Base of 5th metacarpal	Ulnar N. (C7, C8, T1)	**Wrist**: Flexion, Ulnar deviation

Table 16: Superficial

Muscle	Origin	Insertion	Nerve	Action
Flexor Digitorum Superficialis	**Humeral-ulnar head**: Medial epicondyle of humerus, Coronoid process of Ulna **Radial head**: Proximal half of anterior border of radius	Sides of Middle Phalanges of digit 2-5	Median N. (C8, T1)	**Elbow**: Weak Flexion **Wrist**: Flexion **MCP & PIP 2-5**: Flexion

Table 17: Intermediate

Muscle	Origin	Insertion	Nerve	Action
Flexor Digitorum Profundus	Ulna (*proximal 2/3 of anteromedial surface*) IO membrane	Palmar surface of distal phalanges 2-5	**Digits 2-3**: Anterior Interosseous N. (C8, T1) **Digits 4-5**: Ulnar N. (C8, T1)	**Wrist**: Flexion **MCP, PIP, DIP 2-5**: Flexion
Flexor Pollicis Longus	Anterior/proximal Radius Adjacent IO membrane	Distal phalanx of thumb (*palmar surface*)	Anterior Interosseous N. (C8, T1)	**Wrist**: Flexion, Radial deviation **CMC**: Flexion **1st MCP/IP**: Flexion
Pronator Quadratus	Distal 1/4 of ulna (*anterior surface*)	Distal ¼ of radius (*anterior surface*)	Anterior Interosseous N. (C8, T1)	**Forearm**: Pronation **Distal RU**: Stabilization
Brachioradialis	Lateral Humerus (*Superior to lateral supracondylar ridge*) Lateral intermuscular septum	Styloid process of the Radius	Radial N. (C5, C6)	**Elbow**: Flexion **Forearm**: Initiates pronation and supination

Table 18: Deep

Posterior Forearm

Muscle	Origin	Insertion	Nerve	Action
Extensor Carpi Radialis Longus	Lateral supracondylar ridge of Humerus Lateral intermuscular septum	Base of 2nd metacarpal	Radial N. (C6, C7)	**Elbow**: Weak flexion **Wrist**: Extension and Radial deviation
Extensor Carpi Radialis Brevis	Lateral epicondyle of Humerus	Base of 3rd metacarpal	Posterior Interosseous N. (C7, C8)	**Elbow**: Weak Flexion **Wrist**: Extension, Radial deviation
Extensor Digitorum	Lateral epicondyle of Humerus (*Common head of ED, EDM, ECU*)	Dorsal digital expansions of 2-5 digits	Posterior Interosseous N. (C7, C8)	**Wrist**: Extension **MCP, PIP, DIP 2-5**: Extension/abduction
Extensor Digiti Minimi	Lateral epicondyle of Humerus (*Common head of ED, EDM, ECU*)	Dorsal digital expansion of 5th digit	Posterior Interosseous N. (C7, C8)	**Wrist**: Extension, Ulnar radiation **5th MCP, PIP, DIP**: Extension, Abduction
Extensor Carpi Ulnaris	Lateral epicondyle of humerus (*Common head of ED, EDM, ECU*) Dorsal surface of ulnar head	Base of 5th MT	Posterior Interosseous N. (C7, C8)	**Wrist**: Extension, Ulnar deviation

Table 19: Posterior Forearm Muscles (Superficial layer)

Muscle	Origin	Insertion	Nerve	Action
Extensor Indicis	Ulna (*posterior surface*) IO membrane	Posterior digital extension of 2nd digit	Posterior Interosseous N. (C7, C8)	**Wrist**: Extension **2nd MCP, PIP, DIP**: Extension
Supinator	Lateral epicondyle of Humerus Olecranon of Ulna Radial collateral ligament Annular ligament of radius	Radius (*between radial tuberosity and insertion of pronator teres*)	Posterior Interosseous N. (C6, C7)	**Forearm**: Supination
Abductor Pollicis Longus	Proximal Dorsal Radius Proximal dorsal Ulna IO Membrane	Base of 1st metacarpal	Posterior Interosseous N. (C7, C8)	**RC**: Radial deviation **1st CMC**: Abduction
Extensor Pollicis Longus	Ulna (Posterior surface) IO membrane	Base of distal phalanx of thumb	Posterior Interosseous N. (C7, C8)	**Wrist**: Extension **2nd MCP, PIP, DIP**: Extension
Extensor Pollicis Brevis	Distal posterior Radius IO membrane	Base 1st Metacarpal	Posterior Interosseous N. (C7, C8)	**Wrist**: Extension, Radial deviation **Thumb**: Extension

Table 20: Posterior forearm (Deep layer)

Hand

Thenar Muscles

Muscle	Origin	Insertion	Nerve	Action
Opponens Pollicis	Trapezium	1st metacarpal (*lateral side*)	Recurrent Br. of Median N. (C8, T1)	**1st CMC**: Opposition
Abductor Pollicis Brevis	Flexor retinaculum Scaphoid Trapezium	Lateral side of base of 1st proximal phalanx (*via radial seasamoid*)	Recurrent Br. of Median N. (C8, T1)	**1st CMC**: Abduction
Flexor Pollicis Brevis	**Superficial head**: Flexor retinaculum **Deep head**: Capitate, Trapezium	Lateral side of base of 1st proximal phalan (*via the radial sesamoid*)	**Superficial head**: Recurrent Br. of Median N. **Deep head**: Deep Br. of Ulnar N. (C8, T1)	**1st CMC**: Flexion

Table 21: Thenar Muscles of the Hand

Adductor Compartment

Muscle	Origin	Insertion	Nerve	Action
Adductor Pollicis	**Oblique head**: Base of 2nd and 3rd metacarpal, Capitate **Transverse head**: Palmar surface of 3rd metacarpal	Medial base of 1st proximal phalanx (*via ulnar sesamoid*)	Deep Br. of Ulnar N. (C8, T1)	**1st CMC**: Adduction **1st MCP**: Flexion

Table 22: Adductor Compartment of the Hand

Hypothenar

Muscle	Origin	Insertion	Nerve	Action
Abductor Digiti Minimi (hand)	Pisiform	Medial side of base of 5th proximal phalanx Dorsal digital expansion of 5th digit	Deep Br. of Ulnar N. (C8, T1)	**5th MCP**: Flexion, Abduction **5th PIP, DIP**: Extension
Flexor Digiti Minimi Brevis (Hand)	Hook of hamate Flexor retinaculum	Medial side of base of 5th proximal phalanx	Deep Br. of Ulnar N. (C8, T1)	**5th MCP**: Flexion
Opponens Digiti Minimi	Hook of hamate Flexor retinaculum	5th Metacarpal (ulnar border)	Deep Br. of Ulnar N. (C8, T1)	**5th MCP**: Draws anterior and rotates it towards the thumb

Short Muscles

Muscle	Origin	Insertion	Nerve	Action
Lumbricals (Hand)	**1-2nd Lumbrical**: FDP Tendons (*radial sides*) **3-4th Lumbrical**: FDP tendons (*bipennate from medial and lateral sides*)	**1st**: 2nd digit (DDE) **2nd**: 3rd digit (DDE) **3rd**: 4th digit (DDE) **4th**: 5th digit (DDE)	**1-2nd**: Median N. **3-4th**: Deep Br. of Ulnar N. (C8, T1)	**2-5 MCP**: Flexion **2-5 PIP, DIP**: Extension
Dorsal Interossei	**1st**: 1-2nd metacarpals **2nd**: 2-3rd metacarpals **3rd**: 3-4th metacarpals **4th**: 4-5th metacarpals (*adjacent sides, two heads*)	**1st**: 2nd DDE, 2nd proximal phalanx (radial side) **2nd**: 3rd DDE, 3rd proximal phalanx (radial side) **3rd**: 3rd DDE, 3rd proximal phalanx (ulnar side) **4th**: 4th DDE, 4th proximal phalanx (ulnar side)	Deep Br. of Ulnar N. (C8, T1)	**2-4th MCP**: Flexion **2-4th PIP, DIP**: Extension, Abduction
Palmar Interossei (Hand)	**1st**: 2nd metacarpal (ulnar side) **2nd**: 4th metacarpal (radial side) **3rd**: 5th metacarpal (radial side)	**1st**: 2nd DDE, 2nd proximal phalanx (base) **2nd**: 4th DDE, 4th proximal phalanx (base) **3rd**: 5th DDE, 5th proximal phalanx (base)	Deep Br. of Ulnar N. (C8, T1)	**2,4,5 MCP**: Flexion **2,4,5 PIP, DIP**: Extension, Adduction

Hip & Thigh

Iliopsoas

Muscle	Origin	Insertion	Nerve	Action
Psoas Major	**Superficial**: T12–L4 and associated intervertebral disks (lateral surfaces) **Deep**: L1–L5 vertebrae (TPs)	Femur (lesser trochanter)	Lumbar plexus Direct Br. (L1, L2, **L3**)	**Hip joint**: Flexion and External rotation **L/S**: *Unilateral contraction (with the femur fixed)* ipsilateral trunk sidebend *Bilateral contraction* raises the trunk from the supine position
Psoas Minor				
Iliacus	Iliac fossa	Femur (lesser trochanter)	Femoral N. (L2, L3)	**Hip joint**: flexion and external rotation **L/S**: UNIL: contraction (with the femur fixed) flexes the trunk laterally to the same side BIL: Raises the trunk from the supine position

Gluteal

Muscle	Origin	Insertion	Nerve	Action
Gluteus Maximus	Sacrum (dorsal surface, lateral part) Ilium (gluteal surface, posterior part) Thoracolumbar fascia Sacrotuberous lig.	**Upper fibers**: iliotibial tract **Lower fibers**: gluteal tuberosity	Inferior gluteal nerve (L5, S1, S2)	**Entire muscle**: Hip extension and ER **Upper fibers**: Hip abduction **Lower fibers**: Hip adduction
Gluteus Medius	Ilium (gluteal surface below the iliac crest between the anterior and posterior gluteal line)	Greater trochanter of the femur (lateral surface)	Superior gluteal nerve (L4, L5, and S1)	**Entire muscle**: Hip ABD, Pelvic stabilization (coronal plane) **Anterior Fibers**: Hip flexion and Hip IR **Posterior Fibers**: Hip Extension and External rotation
Gluteus Minimus	Ilium (gluteal surface below the origin of gluteus medius)	Greater trochanter of the femur (anterolateral surface)	Superior gluteal nerve (L4, L5, and S1)	**Entire muscle**: Hip abduction pelvic stabilization (coronal plane) **Anterior fibers**: Hip flexion and IR **Posterior fibers**: Hip Extension and ER
Tensor Fascia Latae	ASIS	IT Tract	Superior gluteal nerve (L4, L5, and S1)	**Fascia Latae**: Tenses **Hip**: Abduction, Flexion, and IR
Piriformis	Anterior surface of sacrum	Apex of the greater trochanter of the femur	Direct branches from sacral plexus S1, S2	*Hip*: External rotation, abduction, and extension of the hip joint Stabilizes the hip joint
Quadratus Femoris	Ischial tuberosity (lateral border)	Intertrochanteric crest and tubercle on posterior surface of greater trochanter	Nerve to quadratus femoris (L4, L5, S1)	**Hip**: External rotation, ER, abduction Stabilization (also active in adduction, depending on the position of the joint)
Obturator Externus	Inferior margin of the obturator membrane and its bony boundaries	Medial surface of greater trochanter	Obturator nerve (L3, L4)	**Hip**: External rotation, ER, abduction Stabilization (also active in adduction, depending on the position of the joint)

Medial Thigh

Muscle	Origin	Insertion	Nerve	Action
Pectineus	Pecten Pubis	Femur (pectineal line and proximal linea aspera)	Femoral N., ref-obturator-nerve (L2, L3)	**Hip joint**: ER, ADD, slight flex **Pelvis Stabilization:** Coronal and sagittal plane
Gracilis	Inferior pubic ramus	Pes Anserine of the Tibia (medial border of the tuberosity)	Obturator N. (L2, L3)	**Hip**: Adduction and Flexion **Knee**: Flexion and Internal rotation
Adductor Longus	Superior pubic ramus Anterior side of the pubic symphysis	Femur (linea aspera, medial lip in the middle third of the femur)	Obturator N. (L2, L3, L4)	**Hip joint**: Adduction and flexion (up to 70°); Extension (past 80° of flexion) **Pelvic Stabilization**: Coronal and Sagittal planes
Adductor Brevis	Inferior pubic ramus	Femur (linea aspera, medial lip in the middle third of the femur)	Obturator N. (L2, L3)	**Hip joint**: Adduction and flexion (up to 70°); Extension (past 80° of flexion) **Pelvic Stabilization**: Coronal and Sagittal planes
Obturator Externus	Outer surface of the obturator membrane and its bony boundaries	Trochanteric fossa of the femur	Obturator N. (L3, L4)	**Hip**: adduction and external rotation **Pelvic Stabilization**: Sagittal plane
Adductor Magnus	Inferior pubic ramus Ischial ramus Ischial tuberosity	**Deep part ("fleshy insertion")**: medial lip of the linea aspera **Superficial part ("tendinous insertion")**: Adductor tubercle of the femur	**Deep (Adductor) Part**: Obturator N. (L2, L3, L4) **Superficial (Hamstring) Part**: Tibial N. (L4)	**Hip**: Adduction, Extension, and slight flexion (*the tendinous insertion is also active in internal rotation*) **Pelvic Stabilization**: Coronal and Sagittal planes

Anterior Thigh

Muscle	Origin	Insertion	Nerve	Action
Sartorius	ASIS	Medial to the Tibial Tuberosity (Pes Anserine)	Femoral N. (L2, L3)	**Hip**: Flexion, ER, ABD **Knee**: Flexion, IR
Rectus Femoris	Anterior inferior iliac spine (AIIS) Acetabular roof of hip joint	Tibial tuberosity (via patellar lig.)	Femoral nerve (L2, L3, L4)	**Hip**: Flexion **Knee**: Extension
Vastus Medialis	Linea aspera (medial lip) Intertrochanteric line (distal part)	Tibial tuberosity via patellar lig. Patella and tibial tuberosity via medial patellar retinacula	Femoral nerve (L2, L3, L4)	**Knee**: Extension
Vastus Lateralis	Linea aspera (lateral lip) Greater trochanter (lateral surface)	Tibial tuberosity via patellar lig. Patella and tibial tuberosity via Lateral patellar retinacula	Femoral N. (L2, L3, L4)	**Knee**: extension
Vastus Intermedius	Femoral shaft (anterior side)	Tibial tuberosity (via patellar lig.)	Femoral N. (L2, L3, L4)	**Knee**: Extension
Articularis Genus	Anterior side of femoral shaft at level of the suprapatellar recess	Suprapatellar recess of knee joint capsule	Femoral N. (L2, L3, L4)	**Knee**: Extension **Knee Capsule**: Retracts the suprapatellar bursa to prevent entrapment of capsule

Table 28: Muscles of the Anterior Thigh

Posterior Thigh

Muscle	Origin	Insertion	Nerve	Action
Biceps Femoris Long Head	Ischial tuberosity Sacrotuberous lig. (*common head with Semitendinosus*)	Head of Fibula	Tibial N. (L5, S1, S2)	**Hip**: Extends the hip **Pelvic Stabilization**: Sagittal plane **Knee**: Flexion and ER
Biceps Femoris Short Head	Lateral lip of the linea aspera in the middle third of the femur	Head of Fibula	Common Fibular N. (L5, S1, S2)	**Knee**: Flexion and External rotation
Semitendinosus	Ischial tuberosity Sacrotuberous lig. (*common head with long head of biceps femoris*)	Medial to the tibial tuberosity in the Pes Anserine (*along with the tendons of gracilis and sartorius*)	Tibial N. (*Tibial division of Sciatic N.*) (L5, S1, S2)	**Hip**: Extension **Pelvic Stabilization**: Sagittal plane **Knee**: Flexion and Internal rotation
Semimembranosus	Ischial tuberosity	Medial tibial condyle Oblique popliteal lig. Popliteus fascia	Tibial N. (L5, S1, S2)	**Hip**: Extension **Pelvic Stabilization**: Sagittal plane **Knee**: Flexion and Internal rotation

Knee & Lower Leg

Anterior Compartment

Muscle	Origin	Insertion	Nerve	Action
Tibialis Anterior	Tibia (upper 2/3 of the lateral surface) Interosseous membrane Superficial crural fascia (highest part)	Medial cuneiform (medial and plantar surface) 1st metatarsal (medial base)	Deep Fibular N. (L4, L5)	**Talocrural joint**: Dorsiflexion **Subtalar joint**: inversion (supination)
Extensor Hallucis Longus	Fibula (middle third of the medial surface) IO membrane	1st toe (*at the dorsal aponeurosis at the base of its distal phalanx*)	Deep Fibular N. (L4, L5)	**TCJ**: DF **STJ**: INV or EV (*depending on initial position of foot*) **1st toe MTP and IP**: Extension
Extensor Digitorum Longus	Tibia (lateral condyle) Fibula (head and medial surface) IO membrane	2nd to 5th toes (*at the dorsal aponeuroses at the bases of the distal phalanges*)	Deep Fibular N. (L4, L5)	**TCJ**: DF **STJ**: Eversion **MTP & IP 2-5 Toe**: Extension
Fibularis Tertius	Distal Fibula (anterior border)	Middle shaft or base of 5th MT	Deep Fibular N. (L4, L5)	**TCJ**: DF **STJ**: Eversion

Lateral Compartment

Muscle	Origin	Insertion	Nerve	Action
Fibularis Longus	Proximal lateral surface of the fibiula	Medial cuneiform Base of 1st MT	Superficial Fibular N. (L5, S1)	**TCJ**: PF **STJ**: Eversion **Transverse arch**: Support
Fibularis Brevis	Middle lateral surface of fibula	5th metatarsal base	Superficial Fibular N. (L5, S1)	**TCJ**: PF **STJ**: Eversion

Posterior Compartment

Muscle	Origin	Insertion	Nerve	Action
Gastrocnemius	**Medial head**: Superior-posterior part of the medial femoral condyle **Lateral Head**: Lateral surface of lateral femoral condyle	Calcaneal tuberosity via the Achilles' tendon	Tibial N. (S1, S2)	**TCJ**: Plantarflexion (*when knee is extended*) **Knee**: Flexion
Soleus	Posterior fibula Posterior Tibia	Calcaneal tuberosity via the Achilles' tendon	Tibial N. (S1, S2)	**TCJ**: Plantarflexion **Stabilizes leg**
Plantaris	Lateral epicondyle of Femur (proximal to lateral head of gastrocnemius)	Calcaneal tuberosity	Tibial N. (S1, S2)	**Knee**: *negligible* flexion **TCJ**: PF **Proprioception**

Table 32: Superficial Flexors of the Posterior Compartment

Muscle	Origin	Insertion	Nerve	Action
Tibialis Posterior	IO membrane Tibia (*adjacent border*) Fibula (*adjacent border*)	Navicular tuberosity Cuneiforms (medial, intermediate, and lateral) MTP 2-4 (bases)	Tibial N. (L4, L5)	**TCJ**: Plantarflexion **STJ**: Inversion (supination) **Longitudinal Arch**: Support **Transverse Arch**: Support
Flexor Digitorum Longus	Tibia (middle third of posterior surface)	Bases of 2-5 distal phalanges	Tibial N. (L5, S1, S2)	**TCJ**: PF **STJ**: INV **MTP & IP 2-5**: PF
Flexor Hallucis Longus	Fibula (posterior distal two thirds) IO membrane (adjacent)	1st distal phalanx (base)	Tibial N. (L5, S1, S2)	**TCJ**: PF **STJ**: INV **MTP and IP 1st toe**: PF
Popliteus	Lateral femoral condyle Lateral Meniscus (post. horn)	Posterior tibial surface (*above the origin at the soleus*)	Tibial N. (L4, L5, S1)	**Knee**: flexes and unlocks the knee by externally rotating the femur on the fixed tibia

Table 33: Deep Flexors of the Posterior Compartment

Foot

Dorsum of the Foot

Muscle	Origin	Insertion	Nerve	Action
Extensor Digitorum Brevis	Calcaneus (lateral dorsal surface)	Bases of middle phalanges of digits 2-4	Deep Fibular N. (L5, S1)	**MTP/PIP 2-4**: Extension
Extensor Hallucis Brevis	Calcaneus (lateral dorsal surface)	Prox. phalanx of 1st toe	Deep Fibular N. (L5, S1)	**1st MTP**: Extension

Superficial Intrinsic Plantar Foot muscles

Muscle	Origin	Insertion	Nerve	Action
Abductor Hallucis	Medial calcaneal tuberosity Plantar aponeurosis Flexor retinaculum	Medial proximal phalanx of 1st toe	Medial Plantar N. (S1, S2)	**1st MTP**: flexion, abd of first toe **Longitudinal Arch**: Support
Flexor Digitorum Brevis	Medial tubercle of calcaneal tuberosity Plantar aponeurosis	Sides of middle phalanges #2-5	Medial Plantar N. (S1, S2)	**MTP and PIP 2-5**: Flexion **Longitudinal Arch**: Support
Abductor Digiti Minimi (foot)	Medial tubercle of calcaneal tuberosity Plantar aponeurosis	5th toe (Base of proximal phalanx) 5th metatarsal at tuberosity	Lateral Plantar N. (S1, S2, S3)	**5th MTP**: Flexion, ABD **Longitudinal Arch**: Support

Deep Intrinsic plantar foot muscles

Muscle	Origin	Insertion	Nerve	Action
Quadratus Plantae	Medial and Plantar borders of calcaneal tuberosity	Lateral border of tendons of FDL	Lateral Plantar N. (S1, S2, S3)	Redirects/augments pull of FDL
Lumbricals (foot)	Medial borders of tendons of FDL	Dorsal aponeurosis of toes 2-5	**1st lumbrical (2nd toe)**: Medial Plantar N. (S2, S3) **2-4 Lumbricals (3rd-5th toes)**: Lateral Plantar N. (S2, S3)	**MTP 2-5**: Flexion **IP 2-5**: Extension **Toes 2-5**: Adducts toes 2-5 towards big toe
Flexor Hallucis Brevis	Cuboid Lateral cuneiform Plantar calcaneocuboid lig	Base of proximal phalanx 1st toe (*via med and lateral sesamoids*)	**Medial head**: Medial Plantar N. (S1, S2) **Lateral head**: Lateral Plantar N. (S1, S2)	**1st MTP**: Flexion **Longitudinal arch**: Support
Adductor Hallucis	**Oblique head**: Base of 2-4th metatarsals Cuboid Lateral cuneiform **Transverse head**: MTP joints of toes 3-5 Deep transverse lig.	Base of prox phalanx of 1st toe	Lateral Plantar N. (*deep branch*) (S2, S3)	**1st MTP**: Flexion **1st Toe**: Adduction **Transverse head**: supports transverse arch **Oblique head**: Supports longitudinal arch
Flexor Digiti Minimi Brevis (Foot)	Base of 5th MT Long plantar lig	Base of proximal phalanx of 5th toe	Lateral Plantar N. (*superficial branch*) (S2, S3)	**5th MTP**: Flexion
Opponens Digiti Minimi	Long plantar lig Plantar tendon sheath of Fibularis Longus	5th MT	Lateral Plantar N. (*superficial branch*) (S2, S3)	Pulls 5th metatarsal in plantar and medial direction
Plantar Interossei	**?var:ref-plantar-interossei.origin**	**?var:ref-plantar-interossei.insertion**	**?var:ref-plantar-interossei.nerve**	**?var:ref-plantar-interossei.action**
Dorsal Interossei	**?var:ref-dorsal-interossei.origin**	**?var:ref-dorsal-interossei.insertion**	**?var:ref-dorsal-interossei.nerve**	**?var:ref-dorsal-interossei.action**

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