

Synergist Muscles

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Shoulder (glenohumeral joint)

Flexion

Deltoid (anterior fibers)
Pectoralis major (upper fibers)
Biceps Brachii
Coracobrachialis

Extension

Deltoid (posterior fibers)
Latissimus dorsi & Teres major
Infraspinatus & Teres minor
Pectoralis major (lower fibers)
Triceps brachii (long head)

Horizontal Abduction

Deltoid (posterior fibers)
Infraspinatus & Teres minor
Latissimus dorsi & Teres major

Horizontal Adduction

Deltoid (anterior fibers)
Pectoralis major (upper fibers)
Coracobrachialis

Abduction

Deltoid (all fibers)
Supraspinatus
Biceps brachii (when laterally rotated)

Adduction

Latissimus dorsi & Teres major
Infraspinatus & Teres minor
Pectoralis major
Triceps brachii (long head)
Coracobrachialis

Medial/Internal Rotation “SPLAT”

Subscapularis
Pectoralis major
Latissimus dorsi
Anterior Deltoid
Teres major

Lateral/External Rotation

Deltoid (posterior fibers)
Infraspinatus & Teres minor

Scapula (scapulo-thoracic joint)

Elevation

Trapezius (upper fibers)
Levator scapula
Rhomboids

Depression

Trapezius (lower fibers)
Serratus anterior
Pectoralis minor

Abduction / Protraction

Serratus anterior
Pectoralis minor

Adduction / Retraction

Trapezius (middle fibers)
Rhomboids

Upward rotation

Trapezius (upper and lower fibers)

Downward rotation

Rhomboids
Levator scapulae

Elbow (humero-ulnar joint)

Flexion 3B's and pronator teres

Biceps brachii
Brachialis
Brachioradialis
Pronator teres
Palmaris longus
Flexor carpi radialis & ulnaris
Extensor carpi radialis longus and brevis

Extension

Triceps brachii
Anconeus

Supination

Biceps brachii (when bent)
Supinator (when straight)
Brachioradialis

Pronation

Pronator teres
Pronator quadratus
Brachioradialis

Wrist (radio-carpal joint)

Flexion

Flexor carpi radialis & ulnaris
Palmaris longus
Flexor digitorum superficialis & profundus

Extension

Ext. carpi radialis longus & brevis
Extensor carpi ulnaris
Extensor digitorum

Abduction / Radial Deviation

Ext. carpi radialis longus & brevis
Flexor carpi radialis

Adduction / Ulnar Deviation

Extensor carpi ulnaris
Flexor carpi ulnaris

Hand and Fingers

(metacarpophalangeal, proximal &
Distal interphalangeal joints)

Extension of 2nd thru 5th fingers

Extensor digitorum

Flexion of 2nd thru 5th fingers

Flexor digitorum superficialis & profundus

Thumb

First carpometacarpal. Metacarpophalangeal joint)

Flexion

Flexor pollicis longus
Adductor pollicis

Extension

Extensor pollicis longus & brevis
Abductor pollicis longus

Opposition

Opponens pollicis

Adduction

Adductor pollicis

Abduction

Abductor pollicis longus

Vertebral Column

Flexion

Rectus abdominus
External oblique (bilaterally)
Internal oblique (bilaterally)

Extension

Spinalis, Longissimus, Iliocostalis (bilaterally)
Multifidi
Rotatores
Semispinalis
Quadratus lumborum
Latissimus dorsi (when arm is fixed)

Rotation

External oblique (to opposite side)
Internal oblique (to same side)
Multifidi (to opposite side)
Rotatores (to opposite side)

Lateral Flexion

Spinalis (unilaterally)
Longissimus (unilaterally)
Iliocostalis (unilaterally)
Quadratus lumborum (unilaterally)
External oblique (to same side)
Internal oblique (to same side)
Latissimus dorsi

Cervical Spine

Flexion

Sternocleidomastoid (bilaterally)
Anterior scalene
Longus capitis & colli

Extension

Trapezius (upper fibers bilaterally)
Levator scapulae (bilaterally)
Splenius capitis & cervicis (bilaterally)
Rectus capitis posterior major
Rectus capitis posterior minor
Oblique capitis superior
Semispinalis

Ipsilateral Rotation

Levator scapulae
Splenius capitis
Splenius cervicis
Rectus capitis posterior major
Oblique capitis inferior

Contralateral Rotation

Trapezius
Sternocleidomastoid
Anterior scalene
Middle scalene
Posterior scalene

Lateral Flexion

Trapezius (upper fibers)
Levator scapulae
Splenius capitis and cervicis
Sternocleidomastoid
Longus capitis and colli
Ant, mid. and post. Scalenes

Mandible

Elevation

Masseter
Temporalis
Medial pterygoid

Depression

Platysma
Digastric
Geniohyoid
Mylohyoid
Stylohyoid

Protraction

Lateral pterygoid

Retraction

Temporalis
Digastric

Ribs

Elevation

Ant, mid. & post. Scalene (bilaterally)
Sternocleidomastoid (indirectly)
External intercostals
Pectoralis major (if arm is fixed)
Pectoralis minor (if scapula is fixed)
Serratus anterior
(lower ribs, if scapula stabilized)
Subclavius; Quadratus lumborum
Serratus posterior superior

Depression

Internal intercostals
Serratus posterior inferior

Hip (femoro-acetabular joint)

Flexion

Psoas & Iliacus
Rectus femoris
Sartorius
Gluteus medius & minimus
Tensor fasciae latae
Pectineus
Adductor longus, magnus, brevis

Extension

Gluteus maximus
Biceps femoris
Semitendinosus & Semimembranosus
Adductor magnus (posterior fibers)
Gluteus medius

Medial Rotation

Semitendinosus & Semimembranosus
Gluteus medius & minimus
Adductor magnus, longus, brevis
Pectineus
Gracilis
Tensor fasciae latae

Lateral Rotation

Biceps femoris
Gluteus maximus & medius
Psoas & Iliacus
Sartorius
Piriformis
Gemellus inferior
Obturator internus
Gemellus superior
Obturator externus
Gemellus inferior
Quadratus femoris

Abduction

Gluteus maximus, medius, minimus
Tensor fasciae latae
Sartorius
Piriformis (when hip flexed)

Adduction

Adductor magnus, longus, brevis
Gracilis
Pectineus
Psoas & Iliacus
Gluteus medius (lower fibers)

Knee (tibiofemoral joint)

Flexion “*Good People Go Poop Because Smelly Shit Stinks*”

Gracilis
Popliteus
Gastrocnemius
Plantaris
Biceps femoris
Semitendinosus
Semimembranosus
Sartorius

Extension

Rectus femoris
Vastus lateralis
Vastus intermedius
Vastus medialis

Medial Rotation of flexed Knee

Semitendinosus
Semimembranosus
Sartorius
Gracilis
Popliteus

Lateral Rotation of flexed Knee

Biceps femoris

Ankle (talocrural joint)

Plantarflexion

Gastrocnemius
Soleus
Plantaris
Tibialis posterior
Flexor digitorum longus
Flexor hallucis longus
Peroneus longus & brevis

Dorsiflexion

Tibialis anterior
Tibialis posterior
Extensor digitorum longus
Extensor hallucis longus

Foot and Toes

(tarsometatarsal, metatarsophalangeal, interphalangeal joints)

Inversion

Tibialis anterior
Tibialis posterior
Flexor digitorum longus
Flexor hallucis longus
Extensor hallucis longus

Eversion

Peroneus longus & brevis
Extensor digitorum longus

Flexion of toes 2 thru 5

Flexor digitorum longus
Flexor digitorum brevis (2nd-4th)
Abductor digiti minimi (5th)

Extension of toes 2 thru 5

Extensor digitorum longus
Extensor digitorum brevis (1st-4th)

Flexion of 1st toe

Flexor hallucis longus
Abductor hallucis

Extension of 1st toe

Extensor hallucis longus

Adduction of 1st toe

Abductor hallucis

Abduction of 5th toe

Abductor digiti minimi