|  |  |  |  |
| --- | --- | --- | --- |
| **Muscles: origins, insertions and actions**  **Muscles of the Trunk** | | | |
|  | **Origin** | **Insertion** | **Action** |
| Abdominus rectus | Pubis | Sternum + ribs 5-7 | Trunk flexion |
| Abdominus transversus | Iliac crest (ilium)  lumbar fascia  Ribs 6-12 | Sternum  Pubis | Compression of abdomen |
| Erector spinae | Thoracic + lumbar vertebrae  Ilium  Ribs | Occiput (skull)  Ribs  Cervical + thoracic + lumbar vertebrae | Trunk extension |
| External oblique | Ribs 4-12 | Iliac crest | Bilaterally - compression of abdomen  Unilaterally – trunk side flexion |
| Gluteus medius | Ilium | Greater trochanter - upper femur | Hip abduction and medial rotation |
| Gluteus minimus | Ilium | Greater trochanter – upper femur | Hip abduction and medial rotation |
| Gluteus maximus | Ilium  Sacrum  Coccyx | Gluteal Tuberosity – (upper femur) | Hip extension and lateral rotation |
| Iliacus | Ilium | Tendon of psoas major | Hip flexion and lateral rotation  Trunk flexion |
| Infraspinalis/tus | Inferior scapula | Upper humerus | Arm lateral rotation |
| Intercostal (external) | Inferior border of ribs | Superior border of immediate rib below | Elevate ribs during forced inspiration |
| Intercostal (internal) | Costal groove of ribs | Superior border of immediate rib below | Depress ribs during forced expiration |
| Internal oblique | Ilium  Thoraco-lumbar fascia | Ribs 8-12 | Bilaterally – compression of abdomen  Unilaterally – trunk side flexion |
| Latissimus dorsi | Thoracic + ribs 6-12  Lumbar spine  Sacrum, Pelvis | Upper humerus | Arm extension, adduction, medial rotation |
| Levator scapula | Cervical 1- | Medial scapula | Scapula elevation |
| Pectoralis major | Clavicle  Sternum  Ribs 2-6 | Upper humerus | Arm flexion, adduction, medial rotation |
| Pectoralis minor | Anterior surfaces, costal cartilages of ribs 3-5 | Coracoid process of scapula | Draws scapula forward and down |
| Piriformis | Sacrum | Upper femur | Hip abduction and lateral rotation |
| Psoas | Lumbar 1-5 | Upper femur | Hip flexion and lateral rotation  Trunk flexion |
| Quadratus lumborum | Iliac crest | 12th rib  Lumbar 1-4 | Trunk side flexion |
| Rhomboids | Cervical 7 – Thoracic 5 | Superior + medial scapula | Scapula adduction |
| Serratus anterior | Ribs 1-9 | Inferior + medial scapula | Protraction.Retraction of Scapula, rotation of scapula  Rib elevation |
| Splenius capitis | Lower Cervical spine to temporal bone  Upper Thoracic Spine | Occiput and mastoid process (skull) | Bilaterally – cervical extension  Unilaterally – rotation to same side |
| Sternocleido mastoid | Sternum  Clavicle | Mastoid process (skull) | Bilaterally – cervical flexion  Unilaterally – cervical rotation to opposite side |

|  |  |  |  |
| --- | --- | --- | --- |
| Subscapularis | Scapula - surface next to ribcage | Upper humerus | Arm medial rotation |
| Suprasinalis/tus | Superior scapula | Upper humerus | Arm abduction |
| Teres major | Inferior scapula | Upper humerus | Arm extension, adduction, medial rotation |
| Teres minor | Lateral scapula | Upper humerus | Arm lateral rotation |
| Trapezius | Occiput  Lower Cervical spine  Thoracic spine | Clavicle  Acromion (scapula)  Superior scapula | Scapula elevation, depression, adduction  Cervical spine extension  Clavicle elevation |

|  |  |  |  |
| --- | --- | --- | --- |
| **Muscles of the Arm** | | | |
|  | **Origin** | **Insertion** | **Action** |
| Abductor pollicis brevis | Flexor retinaculum  Tubercle of scaphoid  Trapezoid | Lateral side of proximal phalanx of the thumb | Thumb abduction |
| Biceps brachii | Glenoid and coracoid process (both scapula) | Radius – just below elbow | Elbow flexion  Forearm supination |
| Brachialis | Distal humerus | Upper ulna | Elbow flexion |
| Brachioradialis | Distal humerus | Styloid process radius - wrist | Elbow flexion |
| Coracobrachialis | Coracoid process (scapula) | Mid-humerus | Arm flexion and adduction |
| Deltoid | Clavicle  Acromion (scapula)  Superior scapula | Upper humerus | Arm flexion, extension, abduction |
| Extensor digitorum communis (includes tendons on dorsal surface of hand) | Lateral epicondyle humerus (elbow) | Mid/distal phalanges | Finger extension |
| Extensor carpi radialis | Lateral epicondyle humerus | 2nd metacarpal | Wrist extension and abduction |
| Extensor carpi ulnaris | Lateral epicondyle humerus  Ulna | 5th metacarpal | Wrist extension and adduction |
| Extensor pollicis longus | Posterior surface of distal third of ulna and interosseous membrane | Distal phalanx of the thumb | Thumb extension |
| Flexor digitorum profundus | Anterior surface of the ulna  Interosseous membrane | Bases of the distal phalanges of the second to fifth digits | Finger and hand flexion |
| Flexor digitorum superficialis | Medial epicondyle humerus (elbow) | Bases of the intermediate phalanges of the second to fifth digits | Finger and hand flexion |
| Flexor carpi radialis | Medial epicondyle humerus | 2nd/3rd metacarpals | Wrist flexion and abduction |
| Flexor carpi ulnaris | Medial epicondyle humerus | Pisiform  Hamate  5th metacarpal | Wrist flexion and adduction |
| Flexor pollicis brevis | Flexor retinaculum Trapezoid Trapezium | Base of the proximal phalanx of the thumb | Thumb flexion |
| Hypothenar eminence | Pisiform  Hamate | 5th metacarpal  5th proximal phalanx | 5th finger flexion, abduction, opposition |
| Palmar aponeurosis | Flexor retinaculum | Fibrous sheaths of the flexor tendons of digits | Contibutes to grasp action |
| Palmaris longus | Medial epicondyle of humerus | Flexor retinaculum, palmar aponeurosis | Wrist flexion and tenses palmar aponeurosis |
| Pronator teres | Medial epicondyle humerus  Ulna | Mid-radius | Forearm pronation |
| Supinator | Lateral epicondyle humerus  Ulna | Mid-radius | Forearm supination |
| Thenar eminence | Trapezium  1-3 metacarpals | 1st metacarpal  1st proximal phalanx | Thumb flexion, abduction, adduction, opposition |
| Triceps brachii | Glenoid (scapula)  Upper humerus | Olecranon (ulna) | Elbow extension |

|  |  |  |  |
| --- | --- | --- | --- |
| **Muscles of the Leg** | | | |
|  | **Origin** | **Insertion** | **Action** |
| Abductor hallucis | Calcaneal tuberosity | Proximal phalanx of the 1st digit of foot | Abduction and flexion of 1st digit of foot |
| Adductor: brevis | Pubis | Mid-femur | Hip adduction, medial rotation, flexion |
| Adductor: longus | Pubis | Mid-femur | Hip adduction, medial rotation, flexion |
| Adductor: magnus | Pubis  Ischium | Mid-femur | Hip adduction, flexion, extension |
| Extensor digitorum brevis | Superior and lateral surface of calcaneus | Tendon of extensor digitorum longus | Extension of 2nd, 3rd and 4th digits of foot |
| Extensor digitorum longus | Upper tibia  Upper fibula | Mid/distal phalanges (not 1st) | Toe extension  Foot dorsiflexion and eversion |
| Extensor hallucis longus | Mid-fibula | Distal 1st phalanx | Hallux extension  Foot dorsiflexion and inversion |
| Flexor digitorum brevis | Calcaneal tuberosity  Plantar aponeurosis | Bases of the medial phalanges of 2nd to 5th digits of foot | Flexion of proximal and medial phalanges of 2nd to 5th digits of foot |
| Flexor digitorum longus | Mid-tibia | Distal phalanges (not 1st) | Toe flexion  Foot plantarflexion and inversion |
| Flexor hallucis longus | Posterior surface of fibula  Interosseous membrane | Distal phalanx of 1st digit of foot | Flexion, supination and adduction of foot  Flexion of 1st digit |
| Gastrocnemius | Lateral and medial condyles femur (knee) | Calcaneus (Achilles Tendon\*) | Foot plantarflexion  Knee flexion |
| Gracilis | Pubis | Upper tibia | Hip adduction  Knee flexion |
| Hamstring: biceps femoris | Ischium  Mid-femur | Upper fibula  Upper tibia | Hip extension  Knee flexion |
| Hamstrings: semimembranosis | Ischium | Upper tibia | Hip extension  Knee flexion |
| Hamstrings: semitendinosis | Ischium | Upper tibia | Hip extension  Knee flexion |
| Peroneus brevis | Lateral surface of fibula  Intermuscular septa | 5th metatarsal | Foot flexion, abduction and pronation |
| Peroneus longus | Upper/mid-fibula | 1st metatarsal  1st cuneiform (foot) | Foot plantar flexion and eversion |
| Peroneus tertius | Anterior surface of fibula  Interosseous membrane | Base of 5th metatarsal | Foot extension and eversion |
| Quadriceps: rectus femoris | Anterior iliac crest | Patella  Upper tibia | Hip flexion  Knee extension |
| Quadriceps: vastus intermedialis | Mid-femur | Patella  Upper tibia | Knee extension |
| Quadriceps: vastus lateralis | Mid-femur | Patella  Upper tibia | Knee extension |

**Muscles of the Leg**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Origin** | **Insertion** | **Action** |
| Quadriceps: vastus intermedialis | Mid-femur | Patella  Upper tibia | Knee extension |
| Quadriceps: vastus lateralis | Mid-femur | Patella  Upper tibia | Knee extension |
| Quadriceps: vastus medialis | Mid-femur | Patella  Upper tibia | Knee extension |
| Sartorius | Anterior iliac crest | Upper tibia | Hip flexion and lateral rotation  Knee flexion |
| Soleus | Upper fibula  Upper tibia | Calcaneus (Achilles Tendon\*) | Foot plantarflexion |
| Tibialis anterior | Upper/mid-tibia | 1st metatarsal  1st cuneiform (foot) | Foot dorsiflexion and inversion |
| Tibialis posterior | Posterior surfaces of tibia and fibula  Interosseous membrane | Navicular and medial cuneiform bones | Foot flexion, adduction and supination |
| Tensor fascia latae | Iliac crest | Upper tibia | Hip flexion and abduction |

\*The Gastrocnemius and Soleus muscles unite into one band of tissue which becomes the Achilles tendon at the lower end of the calf.

|  |  |  |  |
| --- | --- | --- | --- |
| **Muscles of the Face** | | | |
|  | **Origin** | **Insertion** | **Action** |
| Buccinator | Maxilla  Mandible | Orbicularis oris | Compresses cheek – blowing  Caves cheek – sucking |
| Corrugator | Frontal bone | Skin of eyebrow | Frowning |
| Depressor anguli oris/triangularis | Mandible  Platysma | Skin of corner of mouth  Orbicularis oris | Turns down corners of mouth |
| Depressor labii inferioris | Mandible | Skin of lower lip | Depresses lower lip |
| Frontalis | Frontal bone | Above eye socket | Moves scalp forward  Raises eyebrows  Horizontal wrinkles of forehead |
| Levator anguli oris | Maxilla | Outer end of upper lip | Elevate angle of mouth – smiling |
| Levator labii superioris | Maxilla | Skin at angle of mouth  Orbicularis oris | Elevates upper lip |
| Levator palpebrae superioris | Inferior aspect of lesser wing of sphenoid | Tarsal plates of upper eyelid | Elevates upper eyelid |
| Masseter | Maxilla  Zygomatic arch | Mandible | Elevates and protracts mandible |
| Mentalis | Mandible | Skin of chin | Elevates and protracts lower lip – pouting |
| Nasalis | Maxilla | Procerus  Bridge of nose | Flares nostrils |
| Occipitalis | Occipital and temporal bones | Frontal bone | Draws scalp backwards |
| Orbicularis oculi | Medial wall orbit – eye socket | Circular path around orbit | Closes eye |
| Orbicularis orbis | Muscles around mouth | Skin at corners of mouth | Closes and compresses lips – shapes lips for speech |
| Platysma (neck  muscle) | Fascia over deltoid and pec major muscles | Mandible  Muscles round mouth  Skin of lower face | Depresses mandible  Pouting |
| Procerus | Nasal bone and cartilage | Skin between eyebrows | Pulls skin of forehead downwards |
| Pterygoids (medial and lateral) | Maxilla | Mandible | Elevates, protracts and sideways movement of mandible |
| Risorius | Masseteric fascia | Skin of the angle of the mouth | Pulls angle of the mouth laterally |
| Temporalis | Temporal Bone | Mandible | Elevates the Mandible |
| Zygomaticus (major and minor) | Zygomatic bone | Skin at corners of mouth  Orbicularis oris | Draws corners of mouth up and out – laughing/smiling |