

## **Evidence Based | Experience Driven**

## Reference for this material: Miller's Anatomy of the Dog, 5th Edition.

| Structure   | Origin                                | Insertion  | Action  |
|---|---------------------------------------|--|---|
| Nuchal Ligament   | First 3 Thoracic Spinous<br>Processes | Dorsal Spinous Process of C2   | Support the head and prevent excessive ventroflexion  |
| Supraspinatus   |                                       | Greater Tubercle, anterior to  | Extend, advancement of the limb.  |
|   | Supraspinous Fossa                    | Intraspinatus  | Stabilize the shoulder joint.   |
| stabilize joint for as long as the limb is load bearing |                                       | Via a short, thick tendon to the free edge of the Greater Tubercle.                | Both the medial and lateral glenohumeral ligaments are weak. The joint is stabilized mainly by muscles functioning as active collateral ligaments.      |
| Infraspinatus   | Infraspinous<br>Fossa                 | Lateral Greater Tubercle,<br>between the Supraspinatus<br>and Teres Minor tendons. | Extend shoulder - during non-weight bearing assists supraspinatus because the tendon comes out so much in front near the supraspinatus.                 |
| Anugravity ins  |                                       |  | Flex shoulder- during weight bearing, flexion   |
|   |                                       |  | ABduct shoulder   |
|   |                                       |  | Rotate arm laterally- rotation is distal to the joint; the humerus rotates laterally compared to the shoulder. Prevents medial rotation of the humerus, |
|   |                                       |  | Stabilizes the joint- inserts near the joint line, and functions as the lateral collateral ligament of the shoulder joint.                              |

| Structure  | Origin   | Insertion   | Action   |
|--|--|---|--|
| Teres Minor  | Distal 1/3 of caudal border of scapula         | Greater Tubercle, caudal to<br>Infraspinatus tendon<br>(lateral humerus)  | Flex shoulder and externally rotate the humerus  |
|  |  | Proximal to deltoid tuberosity  |  |
| <b>Deltoideus</b><br>Spinous Head<br>Acromial Head | Spine of Scapula<br>Acromion                   | Deltoid Tuberosity of Humerus<br>(both heads)   | Flex Shoulder<br>ABduct humerus  |
| Teres Major  | Caudal angle and border of<br>Scapula          | Teres Major tuberosity of<br>Humerus<br>Via a short, flat tendon<br>(proximal and medial<br>humerus)  | Flex Shoulder (draws humerus caudally)<br>ADduction<br>Rotate arm medially (internal rotation of humerus )   |
| Subscapularis                                      | Subscapular Fossa of scapula                   | Minor tubercle of the humerus<br>via thick, short strong tendon<br>This tendon unites intimately<br>with the joint capsule of the<br>shoulder | ADduct limb<br>Extend shoulder<br>Internal rotation (medial)<br>Stabilizes the joint during flexion<br>The tendon functions as a medial collateral ligament of<br>shoulder joint |
| Anconeus   | Distal-lateral Humerus, just proximal to elbow | Proximolateral ulna   | Extend elbow<br>(tenses antebrachial fascia)   |

| Triceps Brachii   |   |  |  |
|---|---|--|--|
| Medial head   | Medial surface of the humerus   |  | Extend Elbow   |
| Accessory   | Neck of humerus   | All heads insert on the<br>Olecranon   | Extend Elbow   |
| Lateral Head  | Proximal Lateral humerus  |  | Extend Elbow   |
| Long Head   | Caudal border of Scapula  |  | Extend Elbow & Flex the shoulder   |
|   |   |  |  |
| Structure   | Origin  | Insertion  | Action   |
|   |   |  |  |
| Biceps Brachii  | Supraglenoid tubercle of the scapula.   | Ulna and Radius, medially just<br>distal to the elbow joint  | Flex the elbow<br>Extend the shoulder<br>Helps to stabilize the shoulder joint during stance<br>phase and quiet standing   |
| Biceps Brachii<br>Extensor Carpi Radialis   | Supraglenoid tubercle of<br>the scapula.<br>Lateral epicondyle of the<br>humerus  | Ulna and Radius, medially just<br>distal to the elbow joint<br>Bases (proximal end) of MC 2<br>& 3, on the dorsal surface  | Flex the elbow<br>Extend the shoulder<br>Helps to stabilize the shoulder joint during stance<br>phase and quiet standing<br>Extend Carpus<br>(weakly flex the elbow)   |
| Biceps Brachii<br>Extensor Carpi Radialis<br>Common Digital Extensor  | Supraglenoid tubercle of<br>the scapula.<br>Lateral epicondyle of the<br>humerus<br>Lateral epicondyle of the<br>humerus                                    | Ulna and Radius, medially just<br>distal to the elbow joint<br>Bases (proximal end) of MC 2<br>& 3, on the dorsal surface<br>Extensor processes of the<br>distal phalanges (P3) of digits<br>2-5   | Flex the elbow<br>Extend the shoulder<br>Helps to stabilize the shoulder joint during stance<br>phase and quiet standing<br>Extend Carpus<br>(weakly flex the elbow)<br>Extend carpus<br>Extend digits of the carpus (2-5)                           |
| Biceps Brachii<br>Extensor Carpi Radialis<br>Common Digital Extensor<br>Deep Digital Flexor                 | Supraglenoid tubercle of<br>the scapula.<br>Lateral epicondyle of the<br>humerus<br>Lateral epicondyle of the<br>humerus                                    | Ulna and Radius, medially just<br>distal to the elbow joint<br>Bases (proximal end) of MC 2<br>& 3, on the dorsal surface<br>Extensor processes of the<br>distal phalanges (P3) of digits<br>2-5   | Flex the elbow<br>Extend the shoulder<br>Helps to stabilize the shoulder joint during stance<br>phase and quiet standing<br>Extend Carpus<br>(weakly flex the elbow)<br>Extend carpus<br>Extend digits of the carpus (2-5)                           |
| Biceps Brachii<br>Extensor Carpi Radialis<br>Common Digital Extensor<br>Deep Digital Flexor<br>Humeral Head | Supraglenoid tubercle of<br>the scapula.<br>Lateral epicondyle of the<br>humerus<br>Lateral epicondyle of the<br>humerus<br>Medial Epicondyle of<br>humerus | Ulna and Radius, medially just<br>distal to the elbow joint<br>Bases (proximal end) of MC 2<br>& 3, on the dorsal surface<br>Extensor processes of the<br>distal phalanges (P3) of digits<br>2-5<br>Palmar surface of base<br>(proximal end) of distal<br>phalanx (P3) of each digit | Flex the elbow<br>Extend the shoulder<br>Helps to stabilize the shoulder joint during stance<br>phase and quiet standing<br>Extend Carpus<br>(weakly flex the elbow)<br>Extend carpus<br>Extend digits of the carpus (2-5)<br>Flex digits and carpus |

| Radial Head                | Middle 1/3 of medial border of Radius   |  |  |
|----------------------------|---|--|--|
| Flexor Carpi Ulnaris       |   |  |  |
| Ulnar Head<br>Humeral Head | Caudal Border and medial<br>surface of Olecranon<br>Medial epicondyle of<br>humerus | Two muscle bellies converge<br>into a single tendon and insert<br>on the Accessory carpal bone | Flex carpus<br>ABduction of the carpus   |
| Superficial Digital Flexor | Medial epicondyle of the<br>Humerus   | Medial and lateral surfaces of<br>P2 digits 2-5 (wraps around<br>the DDF)                      | Flexes carpus<br>Flexes MC/P joints<br>Flexes proximal interphalangeal joints (P1-P2) of digits<br>2-5 |

## Muscles of the Trunk & Pelvis

| Structure  | Origin                                    | Insertion   | Action                             |
|--|---|---|------------------------------------|
| Transversospinalis System                                    |   |   |                                    |
| Short  | Mammillary, transverse<br>process process | Spinous process 1 vertebrae<br>cranial to origin= short         | Rotate vertebrae                   |
| Long Rotator   |   | Spinous process 2 vertebrae<br>cranial to origin = long         | Rotate vertebrae                   |
| Multifidus   |   | Spinous process 3 vertebrae<br>cranial to origin = multifidus   | Rotate vertebrae                   |
| Semispinalis (starts in mid-lumbar region and moves forward) |   | Spinous process 5 vertebrae<br>cranial to origin = semispinalis | Rotate vertebrae & Lateral flexion |

| Longissimus                       | Crest and the medial<br>surface of the wing of<br>the ilium<br>Supraspinous ligament<br>Spines of the lumbar<br>and thoracic vertebrae | Spinous, mamillary, and<br>transverse process of the<br>lumbar, thoracic vertebrae and<br>ribs   | Rotation, extension, and lateral flexion of the thoracic and lumbar spine   |
|-----------------------------------|--|--|---|
| Iliocostalis thoracis et lumborum | Wing of the ilium (along<br>w/longissimus)<br>And transverse<br>processes of lumbar<br>vertebrae                                       | Transverse processes of the lumbar vertebrae and last 4 to 5 ribs  | Lateral flexion of lumbar and thoracolumbar spine   |
| Deep Pectoral                     | Ventral sternum &<br>Xiphoid   | Lesser tubercle<br>Greater tubercle<br>Crest of the humerus  | When weight bearing - draw trunk cranially and flex<br>shoulder<br>When not weight bearing- draw limb caudally and flex<br>Shoulder |
| Superficial Pectoral              | First 2-3 sternebrae, ventral median raphe   | Crest of the greater tubercle  | When weight bearing- prevents abduction<br>When non weight bearing - adduction  |
| Brachiocephalicus                 | Clavicular tendon  | Distal part: distal end of anterior<br>humerus<br>Cervical part: cranial 1/2 of the<br>dorsal median raphe<br>Mastoid part: mastoid part of<br>the temporal bone | Advance the limb<br>Extend the shoulder<br>Draw head and neck to the side   |
| Serratus Ventralis                | Dorso-medial 1/3 of the scapula  | Transverse processes of the<br>last 5 cervical vertebrae<br>First 7-8 ribs, ventral to middle  | Supports the trunk and depresses the scapula  |
| Latissimus Dorsi                  | Thoracolumbar fascia<br>from the spinous<br>processes of the lumbar<br>and last 7-8 thoracic<br>vertebrae                              | Proximo-medial humerus along<br>with the Teres Major at the<br>Teres Major tuberosity  | Draw the forelimb caudally and flex the shoulder<br>Digging   |
|                                   |  |  |   |

| Rhomboideus  | Nuchal crest of the<br>occipital bone<br>Median Raphae<br>Spinous processes of<br>the first seven thoracic<br>vertebrae                  | Dorsal border and adjacent surfaces of the scapula   | Elevate the limb and draw the scapula against the chest                              |
|--|--|--|--|
| <b>Trapezius</b><br>Cervical part<br>Thoracic part | Median Raphe of the<br>neck<br>Supraspinous ligament<br>T3-T9  | Spine of Scapula<br>Distal part of the spine remains<br>free for omotransversarius.            | Elevate the limb and draw it cranially,<br>ABduct the forelimb<br>Rotate the scapula |
| Omotransversarius                                  | Distal spine of the scapula  | Caudal end of the wing of the atlas and the transverse process of the axis                     | Draws the limb forward   |
| Iliopsoas<br>Iliacus & Psoas Major                 | Iliacus - cranioventral<br>ilium<br>Psoas - Ventral bodies &<br>transverse processes of<br>all lumbar and last 3-4<br>thoracic vertebrae | Less trochanter of the femur   | Flexion of hip<br>External rotation of the hip<br>Flexion of the lumbar spine        |
| Deep Gluteal                                       | Body of ilium and ischial spine  | Cranial aspect of the greater<br>trochanter (distal to the insertion<br>of the middle gluteal) | Extend the hip<br>Abduct the hip<br>Medially rotate the femur                        |
| Piriformis   | Lateral surface of S3<br>and CD 1  | Dorsal greater trochanter (with middle glute)  | Extend the hip   |
| Middle Gluteal                                     | Crest and gluteal surface of the ilium   | Dorsal greater trochanter (with piriformis)  | Extend the hip<br>Medial rotation  |
| Adductor   | Entire pelvic symphysis,<br>ventral pubis and<br>ischium, symphyseal<br>tendon of the pelvic<br>symphysis                                | Entire lateral border of the caudal rough surface of the femur                                 | Adduct the limb<br>Extend the hip  |
|  |  |  |  |

| Pectineus              | Body of the pubis from<br>the illiopubic eminence<br>to pubic tubercle    | Distal end of the medial rough surface of the femur   | ADduct the limb               |
|------------------------|---|---|-------------------------------|
| Sacrotuberous Ligament | Transverse process of S3- CD1   | Lateral angle of the ischiatic<br>tuberosity<br>(just dorsal to where the<br>semitend originates) | No action - ligament          |
| Superficial Gluteal    | Lateral border of sacrum<br>and Cd1 and Proximal<br>1/2 of Sacrotub. Lig. | Third trochanter  | Extend hip<br>Abduct the limb |

## **Muscles of the Pelvic Limb**

| Structure  | Origin   | Insertion   | Action  |
|--|--|---|---|
| Quadriceps (Femoral Heads)<br>Vastus Medialis<br>Vastus Intermedius-<br>Vastus Lateralis | proximal end of the<br>cranio-medial femur<br>Lateral part of proximal<br>1/4 of femur<br>Proximal lateral femur | Come together as a tendon to<br>the patella, then as a ligament<br>to the distal end of the tibial<br>tuberosity.                   | Extend the stifle   |
| Rectus Femoris (Ilial Head)  | ilium, cranial to the acetabulum   | Joins the other three heads by common tendon to the patella, then on to Tibial Tuberosity   | Extend the Stifle Flex the Hip  |
| Semimembranosus  | Ischiatic Tuberosity   | 2 insertions:<br>Distal Medial femur<br>Proximal end of tibia (broad<br>membranous attachment- Not a<br>small tendinous attachment) | Extend the Hip (cranial head)<br>Depending on the position of the limb can FLEX OR<br>EXTEND STIFLE |

| Semitendinosus                           | Ischiatic tuberosity  | Medial surface of the body of<br>the tibia via a prominent tendon<br>and Tuber calcanei via the<br>crural fascia             | Extend the hip<br>Flex the stifle<br>Extends tarsus   |
|--|---|--|---|
| Gracilis                                 | Pubic Symphysis   | Cranial border of the tibia, and<br>with the Semitendinosus, the<br>Tuber Calcaneus  | Adduct the limb<br>Flex the stifle<br>Extend the Hip<br>Extend Tarsus   |
| Tensor Fascia Latae                      | Tuber Coxae and adjacent ilium  | Lateral Femoral Fascia   | Tense the femoral fascia<br>Flexes the Hip<br>Extends the Stifle<br>ABducts the limb                                      |
| Sartorius<br>Cranial Head<br>Caudal Head | Iliac Crest and cranial<br>ventral iliac spine<br>Tuber coxae         | Patella, with the Quadriceps<br>Cranial border of the Tibia with   | Flex the Hip (both heads)<br>Cranial - also extends the stifle<br>Caudal - also flexes the stifle                         |
| Biceps Femoris                           | Sacrotuberous ligament<br>and ischiatic tuberosity                    | By the tensor fascia to the<br>patella, patellar ligament, and<br>cranial tibia; via crural fascia to<br>the tuber calcaneus | Extend the hip; flex and extends the stifle; and extend<br>the tarsus (b/c of the contribution to the calcaneal<br>tendon |
| Long Digital Extensor                    | Extensor fossa of the femur   | Extensor process of the distal phalanges of digits II-V  | Flex the taurus and extend the digits at P3   |
| Peroneus Longus                          | Lateral condyle of Tibia, proximal end of Fibula                      | 4⊤⊢ tarsal bone, plantar aspect of base of the II-V MT   | Flex tarsus and rotate dorsum of paw medially, so plantar surface faces lateral (pronation) (eversion)                    |
| Deep Digital Flexor                      | Caudal aspect of Proximal<br>2/3 of Tibia and proximal ½<br>of Fibula | Plantar surface of base of each of the distal phalanges  | Extend Tarsus<br>Flex digits  |

| Cranial Tibial             | Lateral edge of Cranial<br>Tibial border  | Plantar surface of base of MTs I<br>and II meets up with Peroneus<br>longus                    | Tarsal flexion<br>And rotation the paw laterally (supination) (inversion) |
|----------------------------|---|--|---|
| Superficial Digital Flexor | Distal Caudal Femur                       | Tuber Calcaneus (with the<br>Calcaneal Tendon) and bases of<br>middle phalanges of digits II-V | Extension and fixation of the tarsus<br>Flex digits<br>Flex the stifle    |
| Gastrocnemius              | Medial and Lateral Femoral Sesamoid bones | Proximal dorsal surface of Tuber<br>Calcaneus  | Flex stifle; extend the tarsus  |