Muscles: Writing Assignment

There are basically ten muscles that we use most in Whole Body Balance. They are as follows:

1. Longissimus Dorsi
2. Latissimus Dorsi
3. Rhomboids
4. Trapezius
5. Tensor Fascia Latae
6. Biceps Femoris
7. Gluteus Medius
8. Brachiocephalicus
9. Rectus Capitis Dorsalis
10. Sacrocaudalis Dorsalis Medialis

Longissimus Dorsi:

This muscle belongs to a group of muscles known as the epaxial muscles which are extensors of the vertebral column and lie dorsal to the horizontal septum. These muscles are arranged in three parallel columns, the lateral column, the middle column and the medial column. In the middle column, the longissimus is the strongest, extending from the ilium and sacrum to the head and neck. In the medial column, the transversopinalis is the most complex, lying between the medial vertebral arches and the spinous processes.

Figure 1 Longissimus Dorsi

This muscle is also known as longissimus thoracis et lumborum, and is located lateral to the transversospinalis system or deep muscles of the spine. When this muscle contracts bilaterally (on both sides of the spine), it will extend the thoracic and lumbar spine and stabilize the spine. When this muscle contacts unilaterally (on one side or the other), it will laterally flex the thoracic and lumbar spine to the side that the muscle is contracting.

Adjoined to:

Figure 2 Transversospinalis

The transversospinalis system is a complex group of short muscle fibers that extend between pairs of vertebrae. These deep muscles extend the vertebral column when they contract bilaterally, will laterally flex the vertebrae when they contract unilaterally, and will rotate the vertebral column in the cranial region.

Latissimus Dorsi:

This muscle is known as extrinsic musculature and is part of a collection of muscles that are responsible for joining the forelimb to the trunk, forming a synsarcosis or union between parts of the skeleton through muscles alone, rather than a conventional joint. The other muscles in this collection include the trapezius, the brachiocephalic muscle, the omotransversarius, the pectoral muscles, the serratis ventralis, and the rhomboids.

Figure 3 Latissimus Dorsi

This muscle is innervated by the local branch of brachial plexus and is the broadest muscle of the back. It retracts the free limb and flexes the shoulder joint. It also draws the trunk forward over the fixed limb.

Adjoined to:

Figure 4 Serratus Ventralis

In the standing dog at rest, much of the weight of the trunk is transferred to the thoracic limb through the serratus ventralis, which attaches the medial aspect of the scapula to the trunk. The muscle can bring the trunk forward or back relative to the stationary foot. The muscle is divided into cervical and thoracic parts, relative to origin on cervical vertebrae or ribs.

Rhomboids:

This muscle, like the latissimus dorsi, is known as extrinsic musculature and is part of the same collection of muscles responsible for joining the forelimb to the trunk, forming a synsarcosis or union between parts of the skeleton through muscles alone, rather than a conventional joint. The other muscles in this collection include the latissimus dorsi, trapezius, the brachiocephalic muscle, the omotransversarius, the pectoral muscles, and the serratis ventralis.

The rhomboids are innervated by the brachial plexus, and insert along the dorsal border of the scapula. They are muscles of the neck which assist the movements of the forelegs. They can retract or raise the limb by pulling the scapula against the trunk.

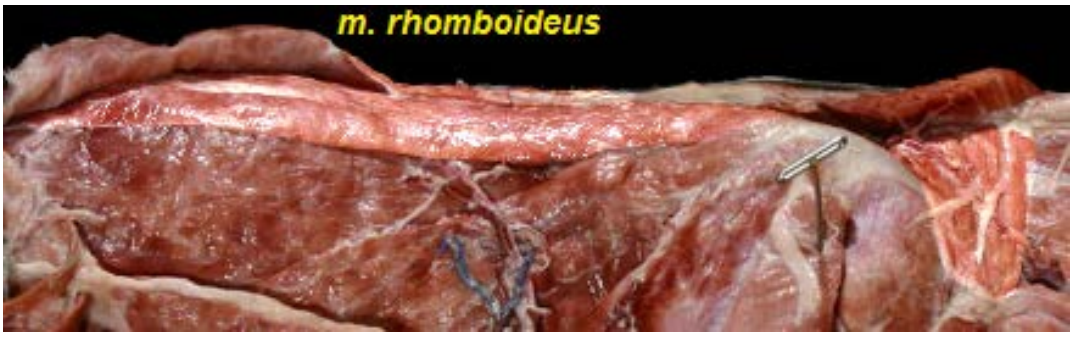

Figure 5 Rhomboids

Adjoined to:

Figure 6 Serratus Dorsalis

This muscle is divided into two parts, the wider or serratus dorsalis cranialis, and serratus dorsalis caudalis. Its insertion is the proximal part of the ribs. The serratus dorsalis cranialis lifts the ribs for inspiration while the serratus dorsalis caudalis lowers the ribs for expiration.

Trapezius:

This muscle, like the latissimus dorsi and the rhomboids, is known as extrinsic musculature and is part of the same collection of muscles responsible for joining the forelimb to the trunk, forming a synsarcosis or union between parts of the skeleton through muscles alone, rather than a conventional joint. The other muscles in this collection include the latissimus dorsi, rhomboid, the brachiocephalic muscle, the omotransversarius, the pectoral muscles, and the serratis ventralis.

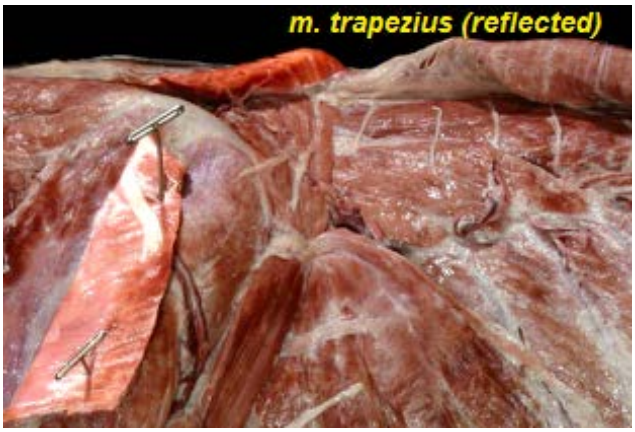

Figure 7 Trapezius

The trapezius is innervated by accessory nerves, and its insertion is along the spine of the scapula. It has cervical and thoracic parts. It raises the scapula against the trunk, and swings cranially to advance the limb through elevation and abduction, or movement away from the midline, of the thoracic limb or foreleg.

Adjoined to:

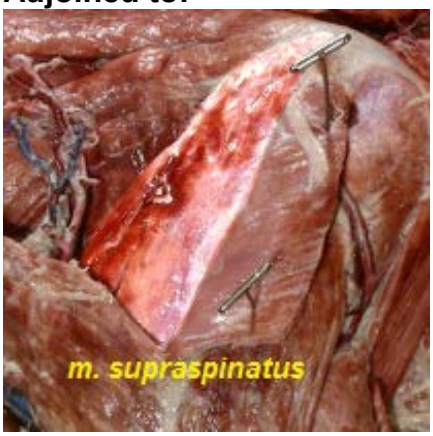

Figure 8 Supraspinatus

The supraspinatus is innervated by the suprascapular nerve of the brachial plexus and is a thick muscle that covers the cranial margin of the scapula. Its primary function is shoulder stabilization during the support phase of gait, and shoulder extension.

Tensor Fascia Latae:

This muscle is a thigh muscle whose Latin name literally translates to “the muscle that stretches the band on the side.” It has two clearly distinguishable parts, with the cranial part being superficial (see Fig. 9), and the caudal part (see Fig. 10) being deeper. Its insertion is into the fascia covering the thigh muscles.

The muscle is innervated by the cranial gluteal nerve, and it has several actions. It is a flexor of the hip joint, an extensor of the stifle joint, a tensor of the fascia latae, and it draws the limb forward during the cranial movement of the hind limb’s stride.

Figure 9 Cranial Tensor Fasciae Latae

Figure 10 Caudal Tensor Fasciae Latae

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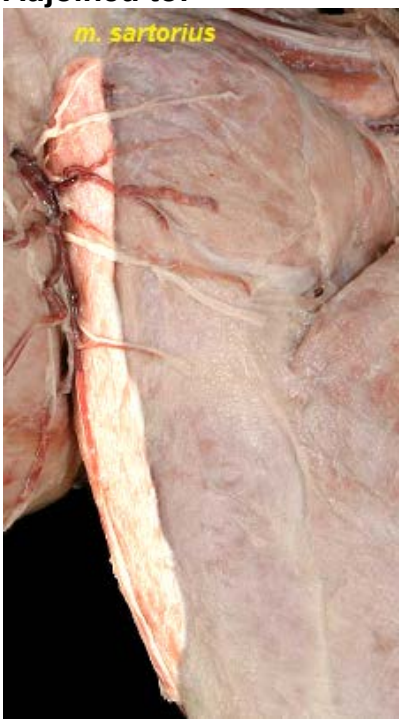

Figure 11 Sartorius muscle

The sartorius muscle has a thick cranial part and a thin strap-like caudal part. The caudal border of the caudal part of the muscle forms the cranial boundary for the femoral triangle through which vessels and nerves pass from inside the body cavity out to the pelvic limb.

It is innervated by the femoral nerve and its origin is the wing of the ilium which is the uppermost and largest part of the hip bone. The muscle's function is to flex the hip and adduct, or draw toward the axis of the body, the pelvic limb.

Biceps Femoris:

The biceps femoris is a large caudolateral thigh muscle with very broad origins and insertions. Consequently, it can produce a variety of movements at the joints of the pelvic limb, depending on which fascicles are contracted. Also, the effect of contraction of the muscle is dependent on whether the limb is weight-bearing or in the swing phase of gait. It is innervated by the sciatic nerve and its insertion is via fascia lata and fascia of the leg to patella, patellar ligament, tibial crest and body, and tuber calcanei.

Figure 12 Biceps Femoris

The biceps femoris, along with the semitendonosus and semimembranosis, lie caudally to the femur, and are together referred to as the hamsting group of muscles.

The action of this muscle involves extension of the hip, stifle and hock, and flexion of the stifle by caudal parts of the muscle.

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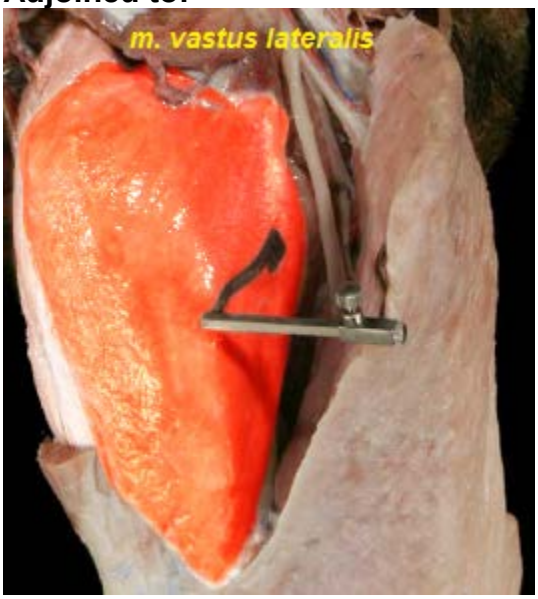

Figure 13 Vastus Lateralis

The vastus lateralis is the lateral head of the quadriceps femoris and its origin is the craniolateral aspect of the proximal femur. Its insertion is the tibial tuberosity via the patella and the patellar ligament.

In addition to its origin and insertion, it is firmly connected to the fascia lata. It is innervated by the femoral nerve, and its function is to extend the stifle.

Gluteus Medius:

There are three gluteal muscles that work together to extend the hip and abduct the hind limb. They are the superficial gluteal, the middle gluteal, and; the deep gluteal. Since they work to move the limb away from the body, they are therefore essential for a male dog to lift its leg during urination. The superficial gluteal originates on the gluteal fascia, the middle gluteal originates on the wing of the ilium, and the deep gluteal originates on the body of the ilium.

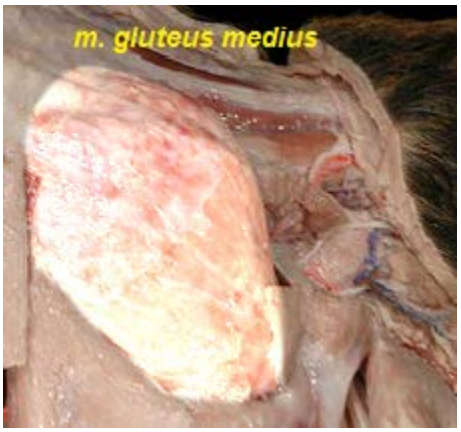

Figure 14 Gluteus medius

The gluteus medius, or middle gluteus muscle, is a thick muscle in the rump region. Its origin is the wing of the ilium, and the insertion of this muscle is the greater trochanter on the top of the femur. It is innervated by the cranial gluteal nerve.

This muscle extends and abducts the hip, and also rotates the thigh in a medial direction.

Adjoined to:

Figure 15 Gluteus Superficialis

The gluteus superficialis or superficial gluteus is the smallest of the gluteal muscles and is caudal to the gluteus medius. It has a tendon of insertion on the trochanter tertius of the femur and it originates on the gluteal fascia. It is innervated by the cranial gluteal nerve and acts to extend or abduct the hip. It also rotates the thigh in a medial direction.

Brachiocephalicus:

The brachiocephalicus is a long muscle bridging between the brachium and the head. It is divided by an indistinct clavicular intersection (tendon) into one part (cleidocephalicus) extending from the tendinous remnant of the clavicle to the head, and the second part (cleidobrachialis) extending from the tendon to the front limb. The cleidocephalicus has two distinct muscle bellies, one inserting on the neck (pars cervicalis) and one inserting on the skull (pars mastoideus).

The muscle is innervated by the cervical spinal nerve and the accessory nerve.

Figure 16 Brachiocephalicus

The muscle will advance the fore limb and extend the shoulder joint when the limb is in motion.

It draws the head and neck ventrally when the limb is fixed. It also laterally flexes the neck, depending on which side of the neck the muscles contract.

Adjoined to:

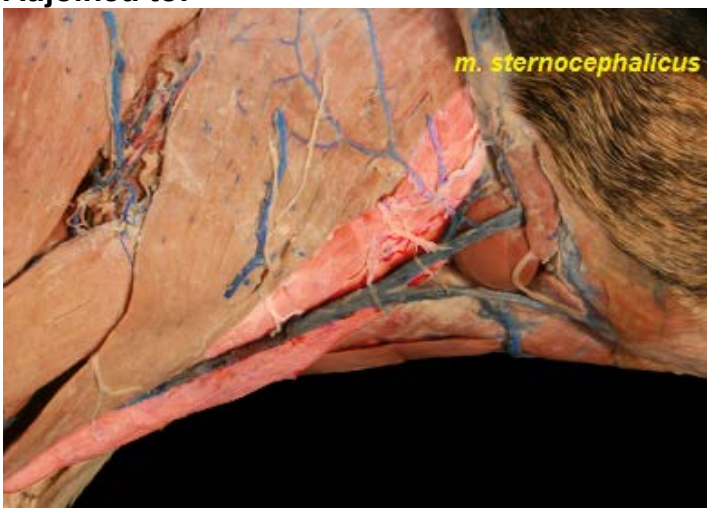

Figure 17 Sternocephalicus

The sternocephalicus has two distinct muscle bellies. The occipital part is broad and flat while the mastoid part is round in cross-section.
The origin of this muscle is the manubrium sterni or the most cranial part of the sternum.
The occipital part inserts on the nuchal crest in the occipital region of the skull and the mastoid part inserts on the mastoid process of the temporal bone. It is innervated by branches of the accessory nerve and ventral branches of the cervical nerves.
Its action is to draw the head and neck to the side.

Rectus Capitis Dorsalis:

This muscle belongs to a group of short neck muscles located on the back of the neck behind the skull. They are the obliquus capitis caudalis, the obliquus capitis cranialis,

and the rectus capitis dorsalis major. They are covered by narrow and wide tendons and thin muscles.

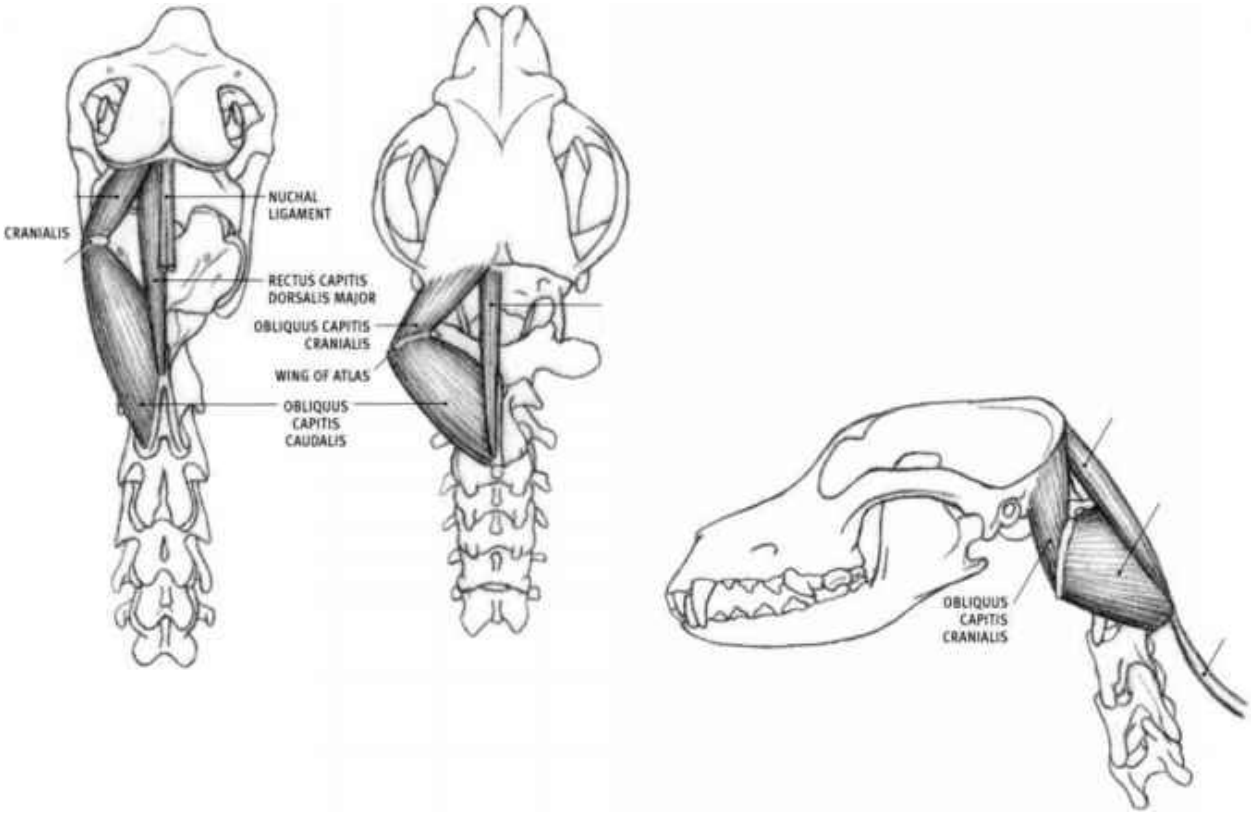

Figure 18 Rectus Capitis Dorsalis

The rectus capitis dorsalis belongs to the muscles of the cervical vertebrae. The rectus capitis dorsalis major is a thick triangular muscle. The origin of this muscle is the upper edge of the upright spine of the second neck vertebra, and its insertion is the rear end of the occipital bone near the midline. The rectus capitis dorsalis minor is a short, flat muscle lying between the atlas and the occipital bone. These muscles are innervated by the cervicalis nerve. Both muscles extend the atlantooccipital joint which is the joint that connects the occiput to the first cervical vertebra or atlas.

Adjoined to:

Figure 19 Semispinalis Capitis

The semispinalis capitis originates at the transverse processes of the thoracic spine at T2-T4 vertebrae and inserts ventrolaterally to the external occipital protuberance. It is innervated by the dorsal branches of the cervical nerves. Its action is to extend the head and neck, and laterally flex the neck when acting unilaterally.

Sacrocaudalis Dorsalis Medialis:

The sacrocaudalis dorsalis is comprised of two sets of dorsal sacrocaudal muscles, a medial and a lateral group. The fascicles of these muscle groups lift the tail while unilateral action assists with lateral movement of the tail, enabling a dog to wag its tail.

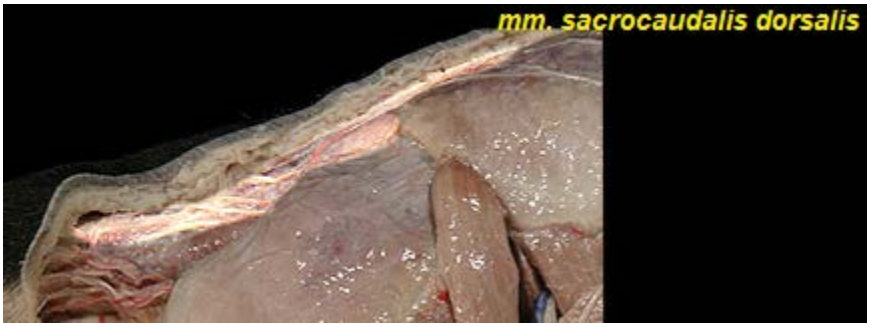

Figure 20 Sacrocaudalis Dorsalis

The muscles originate at the lumbar vertebrae L7, the sacrum, the caudal vertebrae and the longissimus muscle. They insert at the last caudal vertebrae and are innervated by the dorsal branches of the sacral and caudal spinal nerves. They act to lift the tail, and assist with lateral movement of the tail.

Adjoined to:

Figure 21 Sacrocaudalis Ventralis Lateralis

The sacrocaudalis ventralis lateralis is a hypaxial muscle of the tail which means that it lies ventral to the horizontal septum of the vertebrae. The muscle is arranged in segmentally arrayed fascicles extending from the last lumbar vertebrae through the end of the tail.
The muscle originates at the ventral aspect of the lumbar spine at L7 vertebra, the sacrum and the ventral aspects of the caudal vertebrae. It inserts at the caudal fascia and is innervated by the conjoined ventral branches of the caudal nerves (plexus caudalis ventralis). It acts to depress the tail, and supports lateral deviation when contracted unilaterally.

How does ABP affect muscles?

Animal Bowen Physiotherapy affects muscles indirectly through light, gentle stimulation of the superficial layer of fascia under an animal's skin. Fascia is a single sheet of connective tissue, and muscles are literally wrapped in this tissue. Each Bowen move at specific landmarks on an animal's body sends healing energy throughout the body, relaxing restricted fascia and returning it to its original stretchy state. This serves to alleviate pain or restricted movement in affected muscles, the adjoining muscles, and ultimately, the entire body.