

# **NAT Pro Series:**

# **Trigger Point Therapy For Dogs**

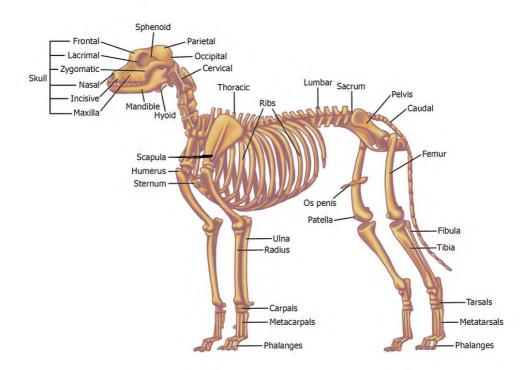
**Course Notes** 



**Andy Eckley** 

# **DOG ANATOMY**

# Skeleton of a Dog



Despite the varying appearances of different breeds of dogs, their anatomy and characteristics are basically the same. Dogs have 320 bones in their body, depending on the length of their tail. Unlike humans, dogs don't have a collar bone and this anatomically provides them with a larger stride for running.

The time it takes for the growth plates on a dog to fuse in order for them to reach their full size depends on the breed of the dog. Typically speaking, toy breeds take around 6 months for their skeletons to fully develop. However larger breeds can take anywhere between 18 months and 2 years to reach their full size.

#### **Fast & Slow Twitch Muscle Fibres**

A dog has around 700 muscles, and depending on the breed of the dog, the types of muscle fibres will differ.

There are two general types of skeletal muscle fibres; slow and fast twitch. Slow twitch muscles power endurance such as long-distance running. The other type of muscle fibres are called fast twitch, which fatigue quicker and are used in powerful exertion, e.g., if your dog is let off its leash in the park and sprints across the grass.

Lurchers are known for their sprinting capabilities, and so, unsurprisingly, they will have more fast twitch fibres in their legs. Compare this with the Alaskan Malamute who was bred for its endurance, and you will find more slow twitch fibres in their legs.

#### **Dog Leg Muscles**

Although dogs have four legs, the way they distribute their weight is not evenly spread across each leg. Dogs carry two thirds of their body weight on their front legs, and just one third is carried on their hind (back) legs. Despite their hind legs carrying less body weight, the muscles are in fact larger and stronger.

#### **Dog Leg Bones**

The anatomy of a dog's leg is similar to that of a human. The bone in between the hip and the knee is the femur. Below the knee is the tibia and fibula. The shoulder, elbow, ulna, humerus, radius and wrist form a dog's foreleg.

The elbow is one area that many dogs have a problem with, often with a condition called elbow dysplasia. This arises due to abnormal development in the joint. Elbow dysplasia begins during puppyhood when lesions form within the joint.

Owners may notice symptoms including lameness, stiffness, an abnormal gait or a reduction in the range of moment. Always consult a vet/healthcare practitioner if you are concerned.

#### The Hock Joint

The hock joint is the dog's equivalent to the human ankle. It is sometimes referred to as the tarsal joint. The hock connects the paw with the shin bone, which sits below the knee.

#### The Hip Joint

Just as elbow dysplasia can occur due to abnormal development in the elbow, the same can also happen with the hips which is known as hip dysplasia.

Environmental factors can increase the likelihood of hip dysplasia. These include: over-exercise as a puppy, slippery floors, rapid weight gain or growth, diets high in calcium and vitamin D or climbing stairs. Lesions can start to form during puppyhood due to any one of these factors or a combination of them

#### A Dog's Tail

Depending on the breed, a dog can have a tail that is long, short or curly. We typically think of a dog's tail as something which is used to communicate how the dog is feeling. For example, when a dog is bounding, full of energy, happy to see its owner, it will wag its tail energetically.

However, the purpose of the tail goes much beyond displaying emotion. The tail is actually an extension of the spine. As with a human spine, the bones are called vertebrae and in between each vertebrae lies a disc to cushion the space.

Damage to the tail can also mean damage to the spine. This in turn could affect their bowel control and movement, which is why a vet may ask if there have been any toileting issues following a tail injury.

There are a variety of complex nerve bundles that carry signals from the brain to other areas of the body. Injury to the spine (including the tail) may pinch, damage or even sever these nerves causing serious problems.

#### **Happy Tail**

We all know that one dog that wags its tail endlessly as if it was a percussion instrument. Labradors are a great example of this as they are constantly happy to be around us and always want to play.

However, "happy tail" can arise from a dog constantly wagging its tail where it is simultaneously hitting it against another object, such as a wall or plant pot for example. Over time, this can lead to lesions, which due to the nature of the condition, don't heal. Solutions to treat "happy tail" include bandaging the tail, or ensuring the dog is kept in large open spaces to minimise coming into contact with objects it can hit.

#### The Paws

Dogs have four paws, and both their front and rear paws are similar.

When you look at the front legs of a dog, you will notice that the metacarpal bones lead to their toes from the carpal (wrist) joint. Their rear paws stem from the hock (tarsal) joint, which lead to their toes via metatarsal bones.

A dog's paw has pads; one large pad in the centre (called metacarpal or metatarsal pad depending on whether it is front or rear) and four smaller oval shaped pads (digit pads). There is also a pad called the carpal pad found slightly further up their front leg.

Dogs have paw pads to provide cushioning for the bones in the form of traction and abrasion resistance. They act as a buffer between the foot and the surface the dog is walking on. When their paw pad is injured or damaged it can present itself as a problem with the limb. For example, a dog may limp because it is painful to put pressure onto the damaged paw.

#### **Dew Claws**

Dew claws are located higher up than the rest of the toes and will not touch the ground when a dog is walking. The purpose of dew claws is to aid dexterity in dogs, similar to how the human thumb gives us more flexibility and mobility within our hands.

#### A Dog's Skull

Within any human or animal the primary role of the skull is to protect the brain. In dogs, the skulls can vary dramatically in terms of shape and size depending on the breed.

The majority of dog breeds fit into the following categories: dolichocephalic, mesocephalic and brachycephalic:

Dolichocephalic - Taken from the Ancient Greek term for "long", dogs with dolichocephalic skulls have an extended thin face. Dolichocephalic breeds include dogs such as Greyhounds, Irish Wolfhounds, Poodles and Whippets.

Mesocephalic - Sitting in the middle with a face that's not overly long but also isn't short and flat. Breeds include Labradors, Cairn Terriers, Golden Retrievers and Basset Hounds.

Brachycephalic - The skull is much narrower and flatter towards the front of the face. Breeds include Pugs, French Bulldogs, Shih Tzu and Boston Terriers.

A study found that there is a link between the type of skull a dog has and its personality. For example, dolichocephalic dogs tend to be more resilient in challenging situations but are less likely to engage in play. Smaller skull sized dogs (brachycephalic) will typically show more interest in humans and are typically more defensive.

# **DOG INJURIES**

If your dog gets injured, it can be hard to know what to do. If you happen to see your dog get injured, pay close attention to what happened and what part of your dog may be injured. Some general signs of injury include bleeding, swelling, limping or an inability to walk. While many injuries can be managed at home, more serious injuries need the attention of a vet.

#### **Back Injuries**

Many dogs suffer back injuries, and these can occur with only minimal trauma. Back injuries are most common in small and medium breed dogs, such as Dachshunds. Symptoms of back injuries can include:

- Stiff front legs
- Crying out in pain
- · Loss of appetite
- Wobbly rear legs
- Hunched up posture
- Inability to walk

Minor back injuries can be hard to identify and may mimic several other diseases. Dogs with pain, an abnormal posture, or loss of appetite may have a muscular back injury, sprain, or a disk herniation. If you see wobbly hind legs, stiff front legs or an inability to walk, this often indicates a disk herniate. If your pet is having any trouble walking with the rear legs, seek immediate veterinary care. For dogs that seem to be hunched up in pain, see a vet if this continues for more than a few hours.

If you decide not to see a vet right away, limit your dog's activity, with no running, jumping or rough playing. Avoid long walks and stairs.

#### **Leg and Joint Injuries**

Leg injuries are very common in dogs and can be easy to identify. Symptoms of leg and joint injuries in dogs include:

- Inability to walk
- Obvious deformity of the leg
- Limping
- Swelling of the leg
- Bleeding from the foot
- Licking at the foot

Most dogs with a leg or joint injury will start limping. Limping can indicate a strain or sprain, an overuse injury, or a flare-up of arthritis pain. With more serious injuries, your dog will not put the injured leg down at all or may not be able to figure out how to stand on the other three legs. If you see swelling of the leg or an obvious deformity, this can indicate a bone fracture or dislocated joint. In the rear legs, patellar luxation and torn cruciate ligaments are common causes of sudden lameness.

If your dog is not putting any weight on one leg, you should see an emergency vet. For dogs with mild limping, limit their activity with no running, jumping, or rough play. Avoid stairs and only take your dog out for a very short walk on-leash. If the limping continues, you will need to see a vet.

#### **Tail Injuries**

Tail injuries can occur, but are rarely serious. Most dogs with a tail injury will show the following symptoms:

- Not raising or wagging tail
- Pain near base of tail
- Swelling of the tail
- Deformity of the tail

The most common tail injury in dogs is called limber tail or swimmer's tail. It is common in active sporting breeds, such as Labrador Retrievers. Dogs with limber tail will show a characteristic drooped appearance to the tail. They will have pain if the base of the tail is touched and will not wag their tail. In some dogs, the base of the tail will appear swollen. If your dog appears to be in discomfort, you will need to see a vet. Otherwise, limber tail will heal with time.

Swelling or Deformity in the Tail

If there is swelling or deformity of the tail, it may be broken. You will need to see a vet if your dog's tail is bent in an unusual direction, although treatment for a broken tail can be difficult.

If at any time you are worried about your dog, it is best to get it checked by a vet or healthcare practitioner. Do not give any human medications as these can be toxic to your dog or can interfere with your vet's treatment.

# WHAT IS TRIGGER POINT THERAPY?

Trigger Point Therapy (TPT) is a remedial therapy in as much that remedial includes the systematic assessment and treatment of muscle, tendons, ligaments and connective tissue to assist with rehabilitation, pain and injury treatment.

Dr Janet G. Travell who was the personal physician to President John F. Kennedy discovered trigger points in 1942. Dr Travell had a lifelong passion of research and development of releasing the knots inside muscles that caused pain and discomfort in her patients. Dr Travell was partnered by Dr David G. Simons and carried out a great deal of scientific research.

## **What Causes Trigger Points?**

There are a few different reasons that trigger points develop inside muscles;

- Emotional stress
- Injury and accidents
- Holding static positions for too long
- Poor posture
- Sleep problems
- Repetitive movement

#### **Types of Trigger Points**

- Satellite (Secondary) Created as a result of the Primary knot (Trigger Point) causing extra stress in nearby areas of the same or adjoining muscles.
- Attachment A TP on the junction between the tendon and muscle usually as a result of Primary TP's in the same muscle.
- Active Applies to both Primary and Satellite TP's. It is both tender and gives referred pain.
- Inactive (Latent) Lumps and nodules that feel like TP's but are not painful.
- Ligamentus trigger points A lesser known TP but some research shows evidence that ligaments can develop TP's.

# What are the effects of Trigger Points?

- Impossible for the muscle to completely relax.
- It weakens the muscles.
- Reduces range of motion.
- The trigger point or knot is very tender to touch and gives referred pain.
- A trigger point often causes the muscle to go into spasm and can trap nerves giving referred pain down the path of the nerve.
- Some research shows a connection between Fibromyalgia and trigger points.

# What are the Symptoms of Trigger Points?

- Numbness or tingling
- Balance problems
- Visual disturbances (eyesight issues)
- Deep aching pain in a muscle
- Pain that persists or gets worse
- Difficulty sleeping due to pain
- Sciatic type pain

# **Types of treatments**

- Dry Needling
- Spray and stretch Cold spray then stretching
- Targeted manual pressure

#### How long should you hold a trigger point?

These are the main theories on treating pressure with all of them being successful

- 3 to 6 seconds x 3
- Up to 2 mins
- As long as it takes to release

# **ASSESSING AND PALPATION**

A GUIDE TO FINDING PAIN IN YOUR DOG

#### The First View

Assessing dogs or in fact any animal can be both static and dynamic and in an ideal world you would be able to view the dog being walked and run in hand. Guidance from the owner is often useful, especially details of the dogs behaviour, but you need to be aware that the owner's thoughts may lead you to a false conclusion of where the pain is. The owner may see the result of the pain and restriction and not the cause of it.

# Tip: Look at a dog walking from three directions.

- 1. Directly in front focus on the point of the shoulders
- 2. Directly behind focus on the point of the hips
- 3. Sideways focus on both the tracking up and neck carriage.

Looking at these landmarks (point of shoulders and point of hips) notice where the difference is:

- Is your eye drawn to above or below these points?
- Are you drawn to the left or right side?
- Are there signs of compensatory muscular development on one side as a result of pain on the opposite side?
- Is the dog tracking in a straight line or is it veering to one side (the side of pain)?
- Looking from the side of the dog is the stride even both sides?
- Is the head bobbing on one leg only (the side of pain)?
- Look for differences, where are your eyes drawn? Trust your intuition.

Tip: Your first impression is always correct! Trust yourself and develop the intuition needed to notice subtle signs of pain or restriction.

Often we can get confused by looking too long at a dog and seeing what isn't there. You will notice in the first moment of looking! Dogs are not very good at hiding where their pain and restrictions are and will limp noticeably if in pain from old injuries, arthritis, damage, inflammation etc.

#### **Palpating Skills**

Palpating your dog is key to discovering where the pain and restrictions are. If you don't palpate you're just guessing where the pain is. Palpating doesn't adversely affect the therapeutic changes in any way and five minutes of palpating your dog will give you the key points to achieve your treatment outcomes.

#### Tip: Don't be afraid to palpate the dog all over and here's why...

- Palpating gives the dog a reassurance that you are not a Vet who's about to stick a needle in!
- Palpating allows you to feel areas of tension, heat, cold, knots and scars.
- Palpating is nice for the dog, which is a good bonding exercise with dogs you don't know and more importantly they don't know you.
- You will release some pain and tension by just palpating.

Tip: Watch their eyes! Now this really is key to understanding what the dog is trying to tell you. The dog will give away with its eyes and react with a twist of its head to you if you're on an active trigger point.

Take note of all the points your dog closes its eyes or reacts during your palpating exercise as you will need to go back to all of these and release the knots underlying the pain reaction.

# THE TECHNIQUE

How to find and release a trigger point in your dog

#### **Direct Pressure**

When releasing a trigger point it is recommended that you use direct pressure. Direct pressure means your thumb or finger is applying pressure at 90 degrees to the surface of the muscle. So it doesn't mean it is horizontal or vertical as a rule but it is at right angles to the surface you're working on.

You could use any finger or thumb to apply the pressure as it makes no difference to the animal. What is important is your touch must be accurate and comforting. You should start off light then increase the pressure a little but always with the agreement of the dog.

#### **Be Patient**

Don't try to overpower your dog but just be patient with light pressure and make it seem more like a pampering session than forcing the dog down.

#### **Small Circles**

You can move your thumb in small circles on a trigger point or use direct pressure with no movement - whatever works to release that point.

#### What the Dog is Telling You With its Eyes

A common comment is that an animal can't tell you where it is in pain so it must be more difficult to treat animals than people, however that's just not true. Any animal will always tell us where their pain is, it's just that most people don't understand its language.

Tip: The dog will often stand rock steady and slowly half close and flutter its eyes when your at the correct point and at the correct pressure for the correct amount of time! This is key for you to understand your dog and develop your skills.

#### **How Long to Hold a Trigger Point?**

You hold a trigger point until it releases! It is as simple as that. The timescale is often a few seconds to a few minutes but releasing your pressure before the trigger point softens just because an arbitrary time has passed doesn't make any sense.

If the trigger point isn't releasing then you could try a different technique for a few moments like using the heel of your hand and do a stroking action instead of a supported thumb or you could reposition your thumb as you may have slipped off the point.

#### **Stretching and Exercising Post Treatment**

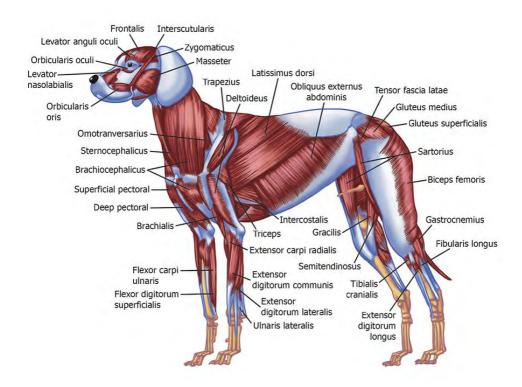
It is recommended that stretching and exercise is done on the same day as a treatment. Don't try to stretch out a trigger point before the session as that could cause the surrounding tissue to tear. After the dog has had it's trigger point session then by all means do some stretching exercises and walk the dog which will accentuate the changes you've made.

There is a technique of spray and stretch which is rapidly cooling the area with a freezing spray then stretching the muscle. I think it best to not use this on dogs as it could be a bit too stressful.

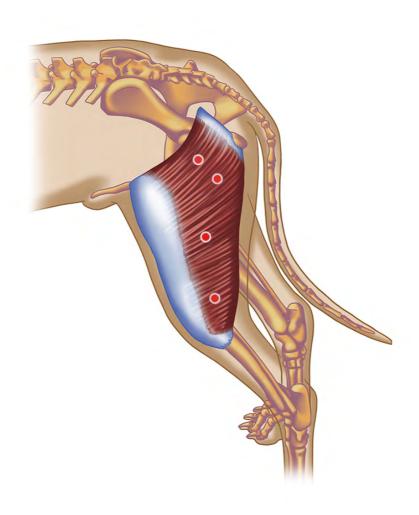
It would however work in most cases (the same as it does for humans). My advice is to be cautious and only try this if you use this successfully on people first and are gentle and listen to the dog.

# KEY MUSCLES AND THEIR TRIGGER POINTS

# **Superficial Muscles of a Dog**



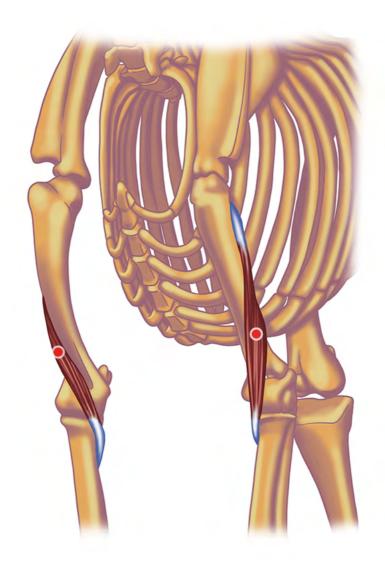
# **Biceps Femoris** with Trigger Points



#### **Biceps Femoris**

This large muscle is located on the lateral part of the thigh and extends from an attachment around the ischial tuberosity to the calcaneus. It has two heads, a cranial, superficial head and a deeper caudal head which is much smaller. This muscle extends the hip and stifle joints.

# **Brachialis** with Trigger Points

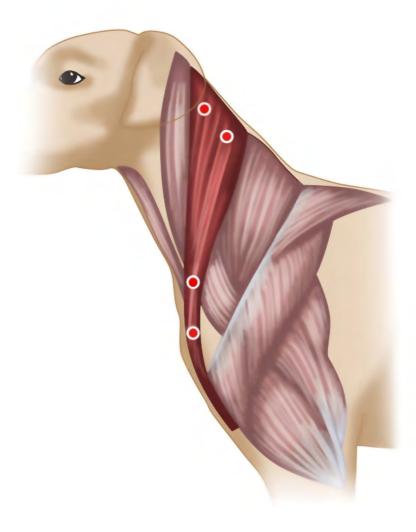


#### **Brachialis**

This muscle attaches to the humerus and inserts into the ulnar tuberosity. Its action is to flex the elbow joint. It is innervated by the musculocutaneus nerve.

Similar to the human arm, nerves such as the radial and ulnar are present along this section of the arm.

# **Brachiocephalicus** with Trigger Points



#### **Brachiocephalicus**

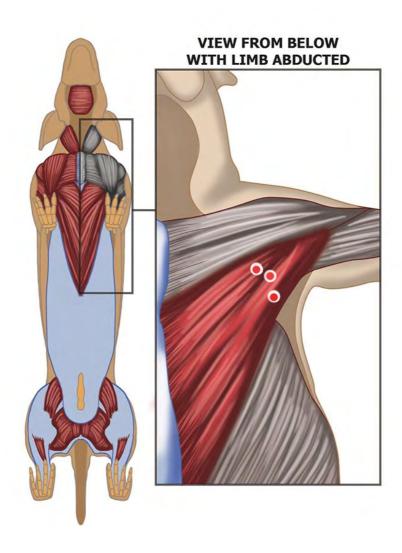
The action of the brachiocephalicus is to draw the limb forward bilaterally to fix the neck. If the leg is planted, the muscle will draw the neck and head to the side. This muscle has two parts, a lower part called the cleidobrachialis, and an upper part called the cleidomastoideus. The upper cleidomastoideus has two divisions, the cervical part and the mastoid part. In the centre of this muscle is the clavicular intersection. This is fibrous tissue that sometimes attaches or contains the vestigial clavicle.

The three portions of this muscle are named by their relationship to this intersection. The upper portion of the brachiocephalicus attaches to the median raphe of the neck and the occipital bone for the cervical part, the mastoid process for the mastoid part, and then below to the humerus.

The brachiocephalicus muscle lies at the top of the skull and is connected all the way down to the tip of the shoulder. It's actually formed of two muscles that are separated by the clavicular intersection, which can be felt as fibrous tissue or a sliver of bone

The role of the brachiocephalicus muscle is to pull the leg forwards and the head and neck down to one side.

# **Deep Pectoral** with Trigger Points



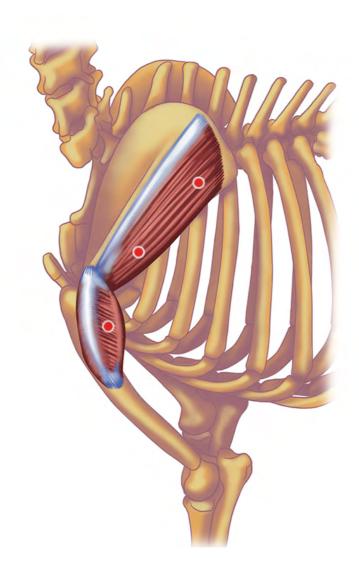
#### **Deep Pectoral**

Also called the descending pectoral. This muscle connects the forelimb with the trunk. It adducts and retracts the forelimb. It attaches to the manubrium of the sternum and inserts into the deltoid tuberosity and crest of the humerus. The nerve supply comes from the cranial and caudal pectoral nerves.

This muscle can be found on either side of the pectorals on the chest. It is attached to the sternum (breastbone). The deep pectoral is also attached to the skull by the superficial pectoral.

The deep pectoral muscle allows a dog to move its front leg inwards as well as backwards. It also helps prevent the dog from splaying its legs out to the side.

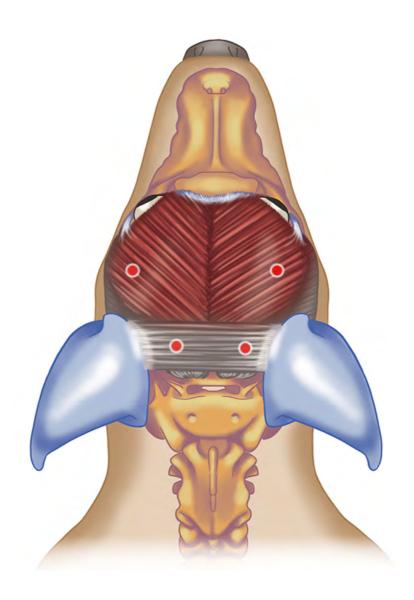
# **Deltoideus** with Trigger Points



#### **Deltoideus**

Also called the deltoid. This muscle is closely tied to the infraspinatus and assists flexion of the shoulder joint. There are two parts to this muscle, one that attaches to the spine of the scapula and one that attaches to the acromial process. Both insert into the deltoid tuberosity of the humerus.

# Frontalis with Trigger Points



#### **Frontalis**

This is a thin muscle that lays over the temporalis muscle. It attaches at the rostral border of the scutiform cartilage and extends to the forehead and attaches to the nasofrontal fascia and into the zygomatic process. This muscle fixes and pulls the scutiform cartilage rostrally.

The frontalis muscle of a dog sits on its forehead between the eyebrows and ears, and is responsible for many of its facial expressions. Specifically, raising the eyebrows and wrinkling the forehead.

# **Gastrocnemius** with Trigger Points



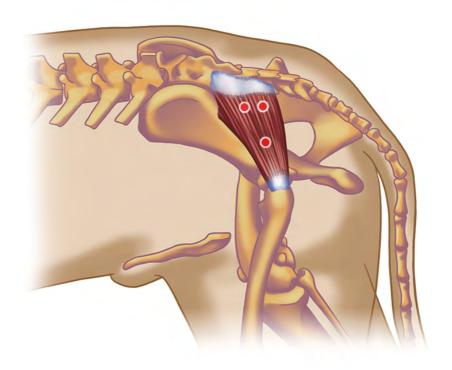
#### Gastrocnemius

This is a large muscle that is divided into a lateral and medial head. This muscle has two attachments, one to the lateral supracondylar tuberosity of the femur, and the other on the medial supracondylar tuberosity. The individual threads blend into a strong tendon called the common cacanean tendon, which inserts into the tuber calcanei.

This muscle mainly extends the tarsal joint but has a slight action of flexing the stifle join, although this last action is minor because of the lack of mechanical advantage. It is innervated by the tibialis nerve.

The gastrocnemius tendon is one of 5 that make up the Achilles. The role of the Achilles tendon is to prevent the heel of the paw from touching the ground. The gastrocnemius tendon itself specifically works to extend the hock (ankle) and flex the top of the fibula known as the stifle.

# **Gluteus Superficialis** with Trigger Points



#### **Gluteus Superficialis**

Sometimes called the superficial gluteal. It is the smallest and most superficial of the gluteus muscles and attaches to the sacrum and first caudal vertebrae. It inserts into the trochanter tertius. Its action is to extend the hip joint. It is innervated by the gluteus caudalis nerve.

The gluteus superficialis is a small muscle that is connected via the tibia at the top of the dog's leg with the pelvis. This muscle works to lift the leg out to the side, rotate the thigh and also straighten the leg.

# **Gracilis** with Trigger Points



#### **Gracilis**

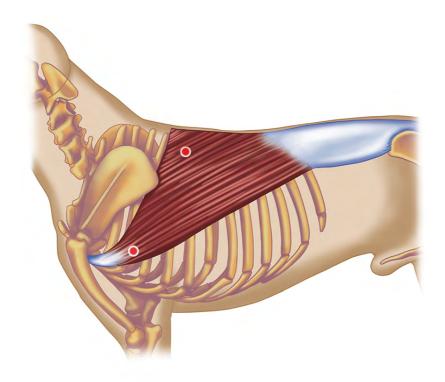
The gracilis muscle in the dog forms a large muscular sheet on the inner thigh. It attaches to the pelvic symphysis via a symphysial tendon. It inserts into the cranial border of the tibia, and has fascial extensions into the semitendinosus tendon attachment too. It is the most medial muscle and tendon. This muscle adducts the limb, extends the hip and flexes the stifle.

The gracilis muscle can be found on a dog's inner thigh, and enables movement of the leg towards the body. It is a thin piece of muscle that is anchored to the bone.

Injury of the gracilis muscle can be a common problem in dogs, and can happen as a result of a tear or strain. Problems with the gracilis muscle first become apparent when dogs present with a loss of control of the limb, or have trouble crossing over their feet. The dog may also shift their weight when standing, by placing their back legs forward.

It's not uncommon for dogs with gracilis muscle problems to display characteristics of other conditions such as hip dysplasia. An MRI will pick up an injury with the gracilis muscle.

# Latissimus Dorsi with Trigger Points



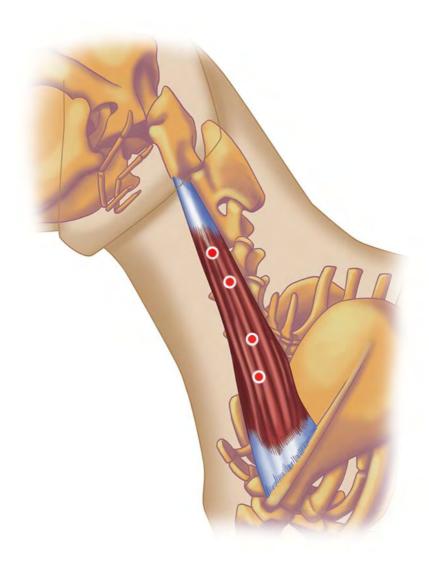
#### **Latissimus Dorsi**

This muscle begins as a wide, tendinous leaf from the superficial leaf of the lumbosacral fascia and this from the spinous processes of the lumbar vertebrae, and it arises muscularly from the last two or three ribs. It inserts into the greater tubercle of the humerus.

It's action is to draw the limb forward and possibly laterally; depression of the vertebral column, support the limb, draw the limb against the trunk, draw the free limb backward during flexion of the shoulder joint. Decelerates forward motion of the limb. It is innervated by the Pectorales caudales and thoracodorsalis nerves.

The latissimus dorsi is responsible for flexing the shoulder joint. Problems with this muscle can present as stiffness or spasms behind the shoulder blade. The latissimus dorsi responds well to passive touch rather than pressure.

# **Omotransversarius** with Trigger Points

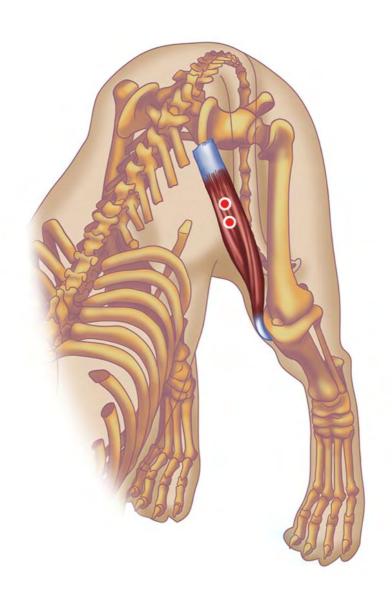


#### **Omotransversarius**

This muscle raises the scapula and helps to move the limb forward. This is a flat, thin muscle that is deep to the cleidocephalicus (part of the brachiocephalicus). It originates on the wing of the atlas, inserts into the distal part of the spine of the scapula and some of the fascia that covers the deltoid.

The omotransversarius muscle sits along the neck, and is located between the shoulder joint and the skull of the dog. The role of this muscle is to allow movement of the neck from side to side. It's also responsible for helping the limbs to move, due to the attachment onto the top of the scapula (the shoulder blade).

# **Sartorius** with Trigger Points

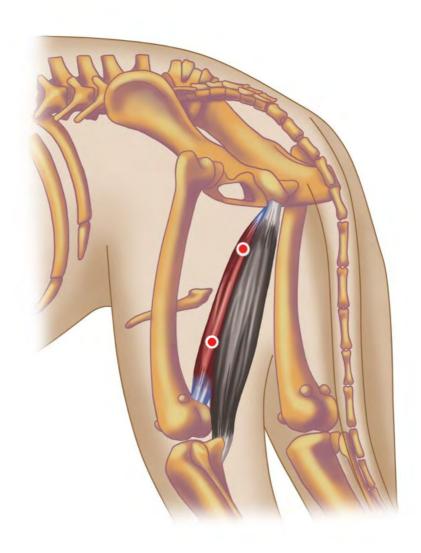


#### **Sartorius**

This muscle has two parts. The cranial part arises from the iliac crest and the cranial ventral iliac spine, as well as from the lumbodorsal fascia. The caudal part arises on the bony ridge between the two ventral spines of the ilium. It inserts into the cranial border of the tibia. Its action is to flex the hip and stifle where the limb is being protracted and to contribute to stifle extension during stance. It is innervated by the saphenous nerve.

The sartorius muscle is a thin band of muscle connecting the top of the dog's body with its hind legs. It aids the movement of the hip and knee joint.

# Semimembranosus with Trigger Points



#### **Semimembranosus**

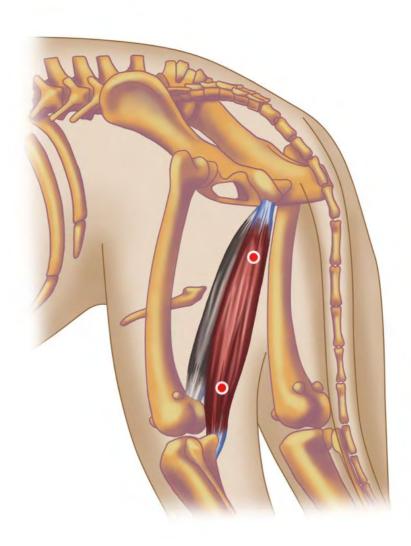
This muscle attaches to the caudal and medial and to the semitendinosus on the lower surface of the rough portion of the tuber ischiadicum and inserts into the aponeurosis of origin of the gastrocnemius and the distal end of the medial lip of the femur and the medial condyle of the femur.

Its action is to extend the hip when the foot is placed on solid substrate. The cranial head extends the hip and is active during the stance phase of locomotion. The caudal head is a two-joint muscle and can flex the stifle and contribute to hip extension. It is innervated by the tibialis nerve.

The semimembranosus makes up the hamstring in the dog, and is important in the movement of the hip, loin and thigh.

It is an area where dogs can benefit from massage as lactic acid builds up in this muscle which can cause pain, and a reduction in movement.

# Semitendinosus with Trigger Points



#### **Semitendinosus**

This muscle attaches to the lateral angle of the ischial tuberosity between the biceps femurs and semimembranosus and inserts into the medial surface of the tibia in front of the flexor muscles and the tuber calcanei with the biceps femurs. Its action is extension of the hip and tarsal joints, flexion of the stifles joint in the free non-weight-bearing limb. It is innervated by the tibialis nerve.

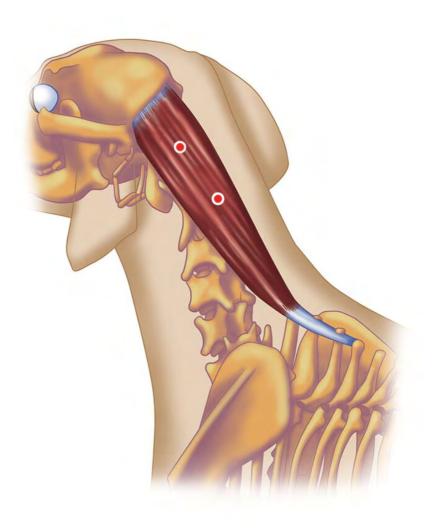
The semitendinosus muscle allows the knee joint to flex. It can be found alongside the gracilis muscle, and also forms part of the Achilles tendon.

Problems occur in this muscle when scar tissue starts to build up, known as semitendinosus myopathy. The connective tissue of the semitendinosus muscle is not able to stretch as the muscle itself would. This can result in the muscle becoming shortened or contracted.

Symptoms include lameness, weakness and pain. A dog's gait may also shift with the dog displaying a shorter stride.

The breeds which are most likely to be affected with either semitendinosus or gracilis myopathy include Boxers, Belgian Shepherds, Doberman Pinschers, German Shepherds, Greyhounds, Old English Sheepdogs and St. Bernards.

# **Splenius Capitis** with Trigger Points

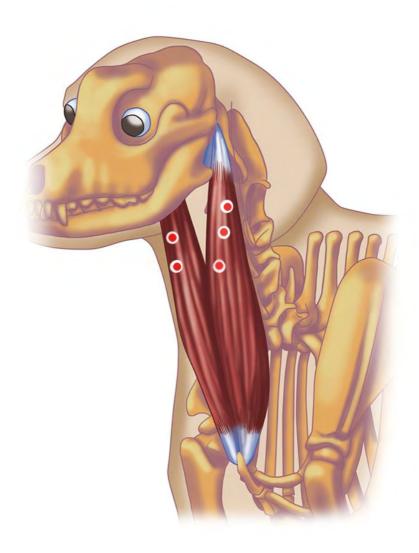


#### **Splenius Capitis**

This muscle attaches from the end of the first and sometimes second thoracic spine and from the ligament niche in front of the first thoracic spine. Also from the medial dorsal raphe of the neck as far as cranial as the cervical vertebra. Final origin is by an aponeurosis from the cranial border of the thoracolumbar fascia.

It inserts into the dorsal nuchal lines of the occipital bone and mastoid part of the temporal bone. Its action is to extend and raise the neck. In unilateral action it draws the head and neck laterally. It is innervated by the cervicales nerve.

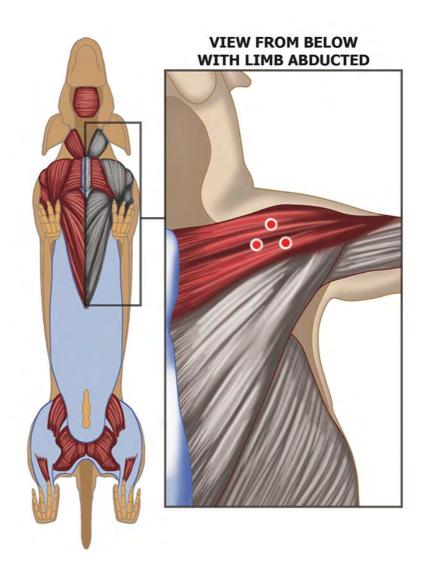
# Sternocephalicus with Trigger Points



### **Sternocephalicus**

This muscle arises from the manubrium stern and inserts into the mastoid part of the temporal bone and to the dorsal nuchal line of the occipital bone. Its action is to draw the head and neck to one side. It is innervated by the ventral branches of the cervical nerves and branches of the accessory nerve.

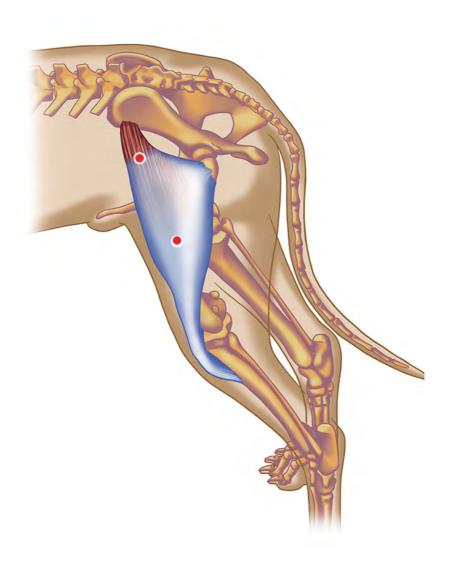
### **Superficial pectoral with Trigger Points**



### **Superficial pectoral**

This muscle attaches to the cranial end of the sternum and instead into the entire crest of the greater tubercle of the humerus. Its action is to draw back the limb inward, draw the limb forward or backward according to its position, and draw the trunk sideward. It is innervated by the pectoralis cranial nerve.

# Tensor Fasciae Latae with Trigger Points

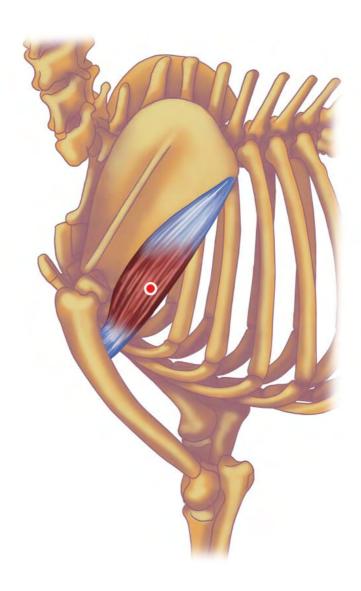


#### **Tensor Fasciae Latae**

This triangular shaped muscle flexes the hip joint, abducts the limb and extends the stifle. It originates on the tuber coxae of the ilium and inserts into the femoral fascia over the vastus lateralis. It is innervated by the gluteus cranialis nerve.

The tensor fascia latae is more commonly referred to as the thigh muscle. It connects from the hips onto the legs, and aids with movement of the legs.

# Teres major with Trigger Points



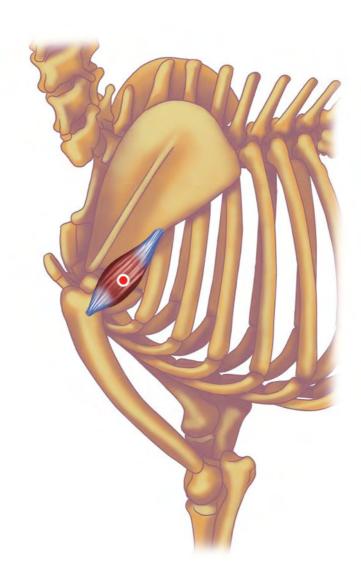
#### **Teres major**

This muscle attaches to the caudal angle and adjacent caudal edge of the scapula, and inserts into the teres major tuberosity of the humerus. Its action is to flex the shoulder joint, and to draw the humerus backward. It is innervated by the maxillaries nerve.

The teres muscle is located within the shoulder of the dog. It helps to move and rotate the shoulder when its front legs are stretched out. The muscle itself is quite thick and flat, and the teres minor and teres major form a space in which important nerve bundles flow through.

The teres major is the muscle most likely to be strained in dogs, as they use it to push themselves forwards, as well as jump and pull.

# Teres minor with Trigger Points

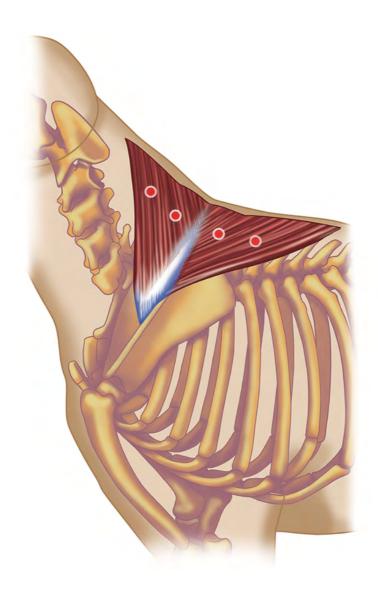


#### **Teres minor**

This muscle arises by an aponeurosis which lies on the long head of the triceps muscle, from the distal third of the caudal edge of the scapula and primarily from the infraglenoid tubercle. It inserts into the greater tubercle of the humerus just above the deltoid tuberosity. Its action is to flex the shoulder joint. It is innervated by the axillaris nerve.

The teres muscle is located within the shoulder of the dog. It helps to move and rotate the shoulder when its front legs are stretched out. The muscle itself is quite thick and flat, and the teres minor and teres major form a space in which important nerve bundles flow through.

# **Trapezius** with Trigger Points



#### **Trapezius**

This muscle attaches to the median fibrous raphe of the neck and the supraspinous ligament of the thorax. Its origin extends from the third cervical vertebra to the ninth thoracic vertebra. It inserts into the spine of the scapula. Its action is to elevate the limb and draw it forward. It is innervated by the accessories nerve.

The trapezius helps lift the legs up and also contributes to other muscles around the neck.

# **Triceps** with Trigger Points



#### **Triceps**

The triceps muscle has for heads (caput longum, caput laterale, caput mediale, caput accessorium) that all insert into the olecranon tuber. In the image, the lateral head covers the medial and accessory head (which are deep). The long head arises from the distolateral two thirds of the caudal border of the scapula and the infraglenoid tuberosity – and is the two shapes on the right side of the image. The lateral head arises from an aponeurosis on the tricipital line between the tuberosity for the teres minor and deltoid tuberosity on the humerus and is shown as the big muscle on the left of the image. The medial head arises from the humerus between the teres major and coracobrachialis attachments. The accessory head arises from the proximal caudal part of the neck of the humerus. They are all innervated by the radialis nerve.

The triceps allow dogs to extend their elbows and flex their shoulders. It's an important muscle group as it enables the dog to run and jump, helping to counteract gravity and the dogs body weight.



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