

## Musculoskeletal Examinations From Nose to Tail

### General Suggestions:

- Allocate enough time.
  - You can't bang off a complete MSK exam and describe your findings in 20 minutes.
- Mood/tone – the more relaxed you are, the more relaxed the patient will be.
  - The more relaxed the patient, the better your ability to detect subtle findings.
  - Do what you can to keep the exam room quiet and as stress free as possible. No matter how far behind you are in appointments that day, leave your distractions at the door.
  - Let the patient pick the position – standing/lying
  - Respect ticklish feet a/o pick your battles
- Go slow!
  - Palpate in levels – hair, skin, SQ fat, muscle
  - If the patient screams, you screwed up
  - Watch for avoidance behavior, darting of eyes, change in breathing pattern, twitching, guarding, etc.

### A complete MSK examination includes:

- History taking
- Gait analysis
- Static Posture analysis
- Neurologic assessment
- Palpation of all 4 limbs and vertebral column (ideally in both a standing and lying position)
- Testing passive +/- active range of motion (ROM)
- Palpation of individual joints and muscles

### Prepare the client before the appointment:

- If indicated, have them flare the lameness beforehand
- Have them video the lameness at its worst, away from the white coat effect
- Do they have adequate footwear to trot with the dog?

### History:

- Overarching questions:
  - Acute or chronic, or chronic active?
  - Sharp or dull pain?

- When is it at its worst?
  - During or after exercise?
  - What types of exercise flares it the most?
  - Do they warm out of it?
  - What ADLs are affected the most?
- Other clues:
  - What effect did medication have?
  - Is appetite affected?
  - Body shake
  - Is limp affected by terrain?

### **Gait Exam**

- Start the moment you 1<sup>st</sup> see the dog – while greeting the client, getting the Hx etc.
- Watch how they stand, move around, and lie down again
- Do the gait exam outside, as far away from the hospital as you reasonably can. No dog walks normally in a vet hospital
- Watch owner video in slow motion, or with scrub bar
- Let your vision blur – get a general impression of movement rather than laser focus on certain things... at least at first
- More than just head bobs and hip hikes – look at back movement, lateral head movement, head bob in relation to stance vs flight phase, double hitch with bilateral forelimb lameness

### **Static exam**

- Conformation
- Weight shifting
- Sit posture
- Topline and tail carriage

## Assessment of each body region:

### Neck:

- Range of motion – lateral, flexion and extension
- Atlas position
- Muscle stiffness/tenderness
- Detailed palpation of neck is difficult – more content than can be covered in a single lecture... so this is just the basics

### Feet

- Sesamoids: check for fibrous thickening and pain (sesamoiditis)
- Digits:
  - Fibrous joint capsule or osteophytes (OA)
  - Luxations
  - SDF/DDF rupture
- Pad or interdigital lesions

### Carpi

- Flexion
- Extension
- Osteophytes
- UCF tendon
- Assess stability – valgus/varus, cranial/caudal translation
  - If suspicious, then sedate and get stress rads

### Elbows

- Carpal flexor tendons on medial epicondyle (see previous lecture)
- Pain on end range ROM, both flexion and extension
  - Combine flexion test with internal and external rotation of manus
- Crepitus and osteophytes (especially b/w olecranon and lateral epicondyle)
- Palpating MCP plus overlying biceps insertion
- Check for effusion while patient is standing
- Palpate forearm musculature

### Shoulders

- Isolate glenohumeral (GH) joint extension
- Extend shoulder region (including scapula and thoracic spine)
- Scapular mobility
- Extend GH joint with concurrent elbow flexion (long head of triceps)
- Hyperflex GH joint with concurrent elbow flexion (supraspinatus > biceps)
- Flex GH joint with extended elbow (biceps > supraspinatus)
- Internally rotate GH joint (infraspinatus)

- Externally rotate GH joint (subscapularis)
- Extend and abduct GH joint (subscapularis, MCL)
- Palpate triceps
- Palpate the pectoral muscles
- Palpate teres tuberosity (common tendon of insertion for teres major and latissimus dorsi)
- Follow caudally along rib cage to isolate latissimus dorsi
- Follow caudal margin of scapula to dorsocaudal border deep to scapula for Teres major
- Palpate proximal to greater tubercle of humerus (supraspinatus tendon)
- Palpate medial to greater tubercle of humerus proximally to supraglenoid tubercle of scapula (biceps tendon)

### **Ribs**

- Palpate 1<sup>st</sup> rib between manubrium and greater tubercle of humerus
- Palpate costochondral junction T1-5
- Palpate costal arch T6-13

### **Thoracolumbar Spine**

- Motion palpate dorsal spinous processes (DSP) dorsoventrally and laterally
- Assess for pain and degree of mobility
- Palpate paraspinal musculature for pain or avoidance behavior
- Particularly note the anticlinal vertebral region (usually T11)
- Palpate trapezii muscles
- Palpate longissimus (dorsally)
- Palpate iliocostalis, especially at origin, and especially in paretic patients
- Palpate quadratus lumborum
- Palpate psoas major and iliopsoas tendon

### **Hip Region**

- The sacroiliac joint (SIJ) is called a joint for a reason
  - And like all other joints in the body, it can be a source of pain
  - Assess SIJ resting position – note cranial translation
  - Assess SIJ ROM (takes practice)
- Elevate tail (LS joint)
- Extend hip while immobilizing ischial tuber (CF joint)
- Extend hip region without immobilizing ischial tuber (LS, SIJ, lower lumbar)
- Extend hip with stifle flexed 90 degrees (quads, Sartorius)
- Flex hip with stifle flexed (lower back)
- Flex hip with stifle extended (hamstrings)
  - Add abduction/adduction and concurrent palpation to address
- Internally and externally rotate femur with stifle at 90 degrees (CF joint)

- Abduct (adductors, CF joint, lower back)
- Palpate pectineus
- Palpate adductor muscle
- Palpate caudal abdominal wall
- Palpate quadriceps
- Palpate Sartorius (especially at origin)
- Palpate biceps femoris

### **Stifles**

- Palpate comfort on end range flexion and extension
- Palpate stifle stability with stifle in flexion and extension (drawer sign and tibial thrust)
- Palpate patellar stability with stifle in flexion and extension, and while dog is standing to look for passive luxation with weight shift
- Palpate patellar tendon for thickening or pain
  - Palpate for effusion medial and lateral to patellar tendon
- Assess degree of internal rotation (increases with CrCL rupture)
- Palpate fabellae, caudal musculature, and hamstring tendons
- Assess long digital extensor tendon for luxation (can cause a skipping gait)
- Palpate gastrocnemius muscle and calcaneal tendon

### **Hocks**

- Assess Range of motion
  - Hyperextension associated with severe CF issues
- Assess stability – valgus/varus, cranial/caudal translation
- Fibrous thickening and osteophytes
- Superficial digital flexor tendon luxation in collie breeds