

## LAMENESS EXAMINATION IN WORKING DOGS

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### Step 1: Gait Assessment

I like to modify the traditional approach of history taking, physical exam and then lameness examination by beginning with an assessment of the animal's gait, ideally outside in good light on a non-slippery surface. I like to be able to anticipate lameness evaluations and meet the client in the car park if possible. This is made easy by having the consultations booked with keywords such as 'lameness' or 'stiffness', to alert you there is a case coming up that will need a gait evaluation. I try to meet the owners at their car, or walk them back outside before going near the consult room. I like to blind myself so without taking any history I observe the gait to form an unbiased opinion. Then I ask the client to identify the leg they think is affected by pointing it out, just so that there is no confusion over the leg that is the cause of concern. Examine the patient from three directions: walking towards you, walking away from you and from the side.

We are all familiar with the concept of a 'head bob' for forelimb lameness (the animal raises its head and neck when the lame leg is placed) and 'hip hike' for hind limb lameness (the hip appears to lift over the affected leg). *When an animal is lame, the swing and stance phases are shortened, thereby reducing the amount of time spent on the affected limb.* During the examination, observe the length of the stance phase, the position of the contact point, the position of the lift point, the plane of the stride and whether or not the limb is abducted or adducted during the cycle. Note alterations in joint angles; a reduction in flexion is common with joint disease. Observe the area of foot contact; normally the main pad is the first to touch the ground followed by the toes. The opposite may occur when there is reluctance to fully load the foot.

### Recognising Hind limb lameness

With a hind limb lameness, weight is shifted forward by extending the neck and lowering the head. There may be a change from the normal side to side oscillation of the tail to a more vertical oscillation. The "up" motion of the tail occurs when the affected limb contacts the ground. The stride length is shortened and the pelvis is tilted in the axial plane so that the hemipelvis on the affected side is more dorsal. When there is unilateral hip disease, the pelvis is tilted sideways, and an oscillating motion is seen towards the affected side. This manoeuvre minimises hip motion by using lateral bending of the spine to achieve forward movement. When viewed from the rear, the pelvis of an animal with bilateral hip disease swivels from side to side (Marilyn Munroe style).

### Forelimb lameness

With lameness in a forelimb, the animal **lifts** its head when the **affected** limb bears weight (and *appears* to dip its head when the sound limb contacts the ground). **Note:** When there is shortening of a forelimb stance phase, there is also a slight shortening of the opposite hind limb step as the animal hastens to remove weight from the forelimb. This phenomenon can often cause a misdiagnosis.

## Step 2: History taking and palpation of topographical anatomy

After the gait assessment comes history taking, which I typically combine with a “pat-down” of the patient. While I am taking the history I have my hands on the patient stroking it and looking for asymmetry of muscle and bone. This gentle start gains the patient’s confidence ahead of potentially painful manipulation later. You should look for any loss of muscle mass over the scapula and humeral areas and check the thigh circumference and the cranial tibialis muscles. The latter is an indicator of long nerve neuropathies (can be seen in Labradors presented with laryngeal paralysis).

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| History Questions: | <ol style="list-style-type: none"><li>1. Identify the problem – in the eyes of the owner</li><li>2. Onset, duration, progression, response to rest</li><li>3. Any association with trauma</li><li>4. Any juvenile bone disease</li><li>5. Response to medication or other therapy so far</li><li>6. Patient's environment and exercise regimen</li><li>7. Diet composition, quantity fed and mineral supplementation important in the younger</li></ol> |
|--------------------|---|

patient

## Step 3: Physical examination

Resist the temptation to skip the full physical examination and just move right to the ortho exam. Concurrent injuries or disease could affect both the prognosis and safety of sedation or anaesthesia required at a later time. It is important to palpate regional lymph nodes for lymphadenopathy. Body temperature may be elevated in some disease states (abscessation, cellulitis, marked tissue injury). Lack of an elevated temperature should not be used as an exclusion criteria for joint injection or IMPA, (in one study only 18% of dogs with confirmed polyarthritis were febrile).

## Step 4: Basic spinal neurological examination

I next perform a very basic neurological examination at the same time checking for the relative amount to weight the animal is placing on each limb. With the patient standing on the floor or table, each paw is lifted (check the amount of weight transferred to the other leg as you do this) and placed on its dorsum (knuckling response). Check for the speed with which the animal replaces the paw. This tests conscious proprioception and loss of this response is a sensitive indication of spinal cord disease. However, it can also be caused by peripheral nerve lesions, thus the loss of CP gives us no insight as to upper versus lower motor neuron dysfunction. Remember too that this reflex is consciously mediated, hence an animal can “choose” not to respond normally, which is typically seen when the reflex is repeated many times over, or the animal has a painful lesion in the limb being tested (eg a fracture). In trauma cases it is necessary to ascertain the presence of any nerve injury when the CP is altered. Test the withdrawal reflex by pinching the skin of the digits. Ensure you test medial and lateral toes. A centrally mediated response (vocalisation, turning to bite, trying to move off) indicates the integrity of the nerve pathway (ruling out LMN disease) even if a withdrawal of the limb is not stimulated due to fracture or muscle trauma. Testing the myotactic reflexes follows in order to localise a spinal lesion (not performed if above all normal).

The neurological examination is most important in the recumbent patient. For example, an animal with bilateral cranial cruciate ligament can present recumbent and unable to rise. This “won’t” walk state must be differentiated from “can’t” walk. Helping such an animal to its feet will allow an assessment of proprioception/myotactic reflexes and withdrawal reactions. These would be expected to be normal unless there is major structural disability.

### **Step 5: The orthopaedic exam**

Commences with evaluation of the affected limb and begins distally. Avoid the temptation to immediately focus on the most likely cause of disease, rather, develop a systematic approach so that nothing is missed. Work your way up the limb until swelling or tenderness is noted. If by now I have a focal area of discomfort, I will complete the examination above and beyond that site then come back to the sore area last to maximise the patient's patience with manipulations. Localisation of solitary limb lameness is based around the demonstration of pain and pathology. Loss of joint range of motion, presence of crepitation or effusion and peri-articular thickening indicate presence of pathology and, in the latter, evidence of chronicity. The other limbs should not be neglected either, especially if a potentially genetic disease is present. A pup with mildly subluxated hips has a good prognosis, but if there is bilateral elbow pain it may not be a viable proposition. This brings me on to one of the real traps for both owners and vets - bilateral disease. Due to lesions in both fore or hind limbs some dogs will into appear asymmetrical in gait to the owners. A common example would be a large breed pup with elbow dysplasia. These dogs may walk with abducted elbows and a short striding gait, but not appear overtly lame.

This session will concentrate on specific examination and manipulation as it applies to working dogs undergoing lameness assessment. Video and pictorial demonstration will be used to illustrate each step. Amongst other topics we will cover:

*Biceps disease: ddx bicipital tenosynovitis, biceps avulsions, biceps calcifying tenopathy*

Exam: biceps retraction testing, biceps insertion traction, palpation of the inter-tubercular groove during above.

Findings: pain on manipulation at stretch of biceps

*Medial glenohumeral ligament injury: shoulder joint laxity / instability*

Exam: abduction test of Bardet, sedation or anaesthesia required

Findings: normal <30 degs, abnormal >50 degs, grey zone between

*Sesamoid disease: ddx fracture, fragmentation*

Exam: forced flexion of the digits, palmar/plantar pressure to the MCPJt

Findings: repeatable pain in association with radiographic signs

*Traumatic joint instability: requires manipulation +/- sedation and stress radiography*