Lameness in Dogs

**Lameness**

Evaluate history & client observations

Perform general lameness examination:
- Stance & posture
- Stride length & duration
- Limb tracking
- Symmetry
- Head bob

Forelimb lameness?

- Complete forelimb orthopedic examination
  - Localize apparent pain (flexion elicits pain more readily in forelimb joints)
  - Assess for long bone pain
  - Localize crepitus
  - Examine ROM for pain/mechanical limitations

Check for muscle atrophy**:
- Spinatus suggests shoulder problem
- Brachial suggests elbow problem
- Antebrachial suggests carpal problem
- Diffuse suggests neurologic problem

Evaluate stability:
- Shoulder: Abduction angle, craniocaudal, mediolateral, internal/external rotation
- Elbow: Varus, valgus
- Carpus: Varus, valgus, flexion, extension

Examine for joint effusion (elbow, carpus)

Perform further diagnostics:
- Sedate with analgesia
- Palpate ROM & conduct stability tests again to differentiate painful response from mechanical causes
- Radiograph affected area(s) ± stress/special views (eg, biceps groove, oblique, pronated, supinated) when indicated

Combination forelimb & hindlimb lameness?

- Complete further diagnostics:
  - Neurologic examination*
  - CBC, serum biochemistry profile, urinalysis, arthrocentesis & synovial fluid analysis of joints with effusion
  - Tick titers

Perform further diagnostics:
- Consider arthrocentesis if no definitive diagnosis
- Consider advanced imaging ± arthroscopy if no definitive diagnosis
**Nerve root signature** is a common cause of lameness.

**When localizing a problem, evaluating apparent pain may be less effective than identifying muscle atrophy, as it is difficult to flex one joint without affecting others, either by movement or engagement of muscles that cross multiple muscles (eg, biceps during elbow extension).**

**Orthopedic Examination: Techniques & Signs**

- **Stance & posture**: Look for externally rotated limb, shifting weight off ≥1 limbs, sitting with ≥1 hindlimbs extended (ie, sit test), elbows abducted, and hindlimb adducted.

- **Stride length & duration**: Evaluate walk and trot for stride length symmetry and duration of stance; shortened stride, decreased stance time, and stilted gait indicate lameness and can help localize if asymmetric.

- **Limb tracking**: Look for limb crossing the center line during straight line walk or trot, circumduction of limb, wide-based in forelimbs/hindlimbs, and asymmetry of limb tracking.

- **Symmetry**: Examine for above signs plus for loading (ie, pad flare), joint angles, swing phase duration and distance, pelvic excursion (ie, hip hike), turning (eg, circles, figure-8 patterns), and ascents and descents.

- **Head bob**: Check whether head is lifted when affected forelimb is in stance phase (ie, up on lame, down on sound).

**Check for muscle atrophy**:
- Gluteal suggests hip problem
- Quadriceps suggests stifle problem
- Crural suggests hock problem
- Diffuse suggests neurologic problem

**Examine for joint effusion** (stifle, hock)

**Evaluate stability**:
- Hip: Barden, Barlow, & Ortolani tests
- Stifle: Cranial drawer, tibial thrust, internal rotation, patellar luxation, varus, valgus
- Hock: Varus, valgus

**Complete hindlimb orthopedic examination**

- Localize apparent pain (extension elicits pain more readily in hindlimb joints)
- Assess for long bone pain
- Localize crepitus
- Examine ROM for pain/mechanical limitations

**Hindlimb lameness?**