Common Canine Sporting Injuries and Prevention

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Sport Dog Specialty Medicine

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Disclosures

- Nutramax Laboratories

- Exubrion Therapeutics

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Overview

- Risk factors and prevention for athletic injuries
- Treatment, nonspecific
- Evidence, as available
- Injuries by sport

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Goals

- To take home at least one tool for your practice
- To help your canine athletes, working and active dogs avoid injury
- To aid in diagnosing injuries in this dog population

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Soft tissue injury & healing

- Soft tissue injuries are commonly underdiagnosed cause of lameness in dogs

- Injury most likely to occur during eccentric contraction at the myotendinous junction

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Tissue injury & healing

- Muscle and tendon repair dependent on:
  - Blood supply
  - Intact extracellular matrix
  - Source of myoblasts
  - Innervation
  - Amount of stress on the injured area
  - Size of defect

- Myofiber regeneration vs. fibrous scar tissue

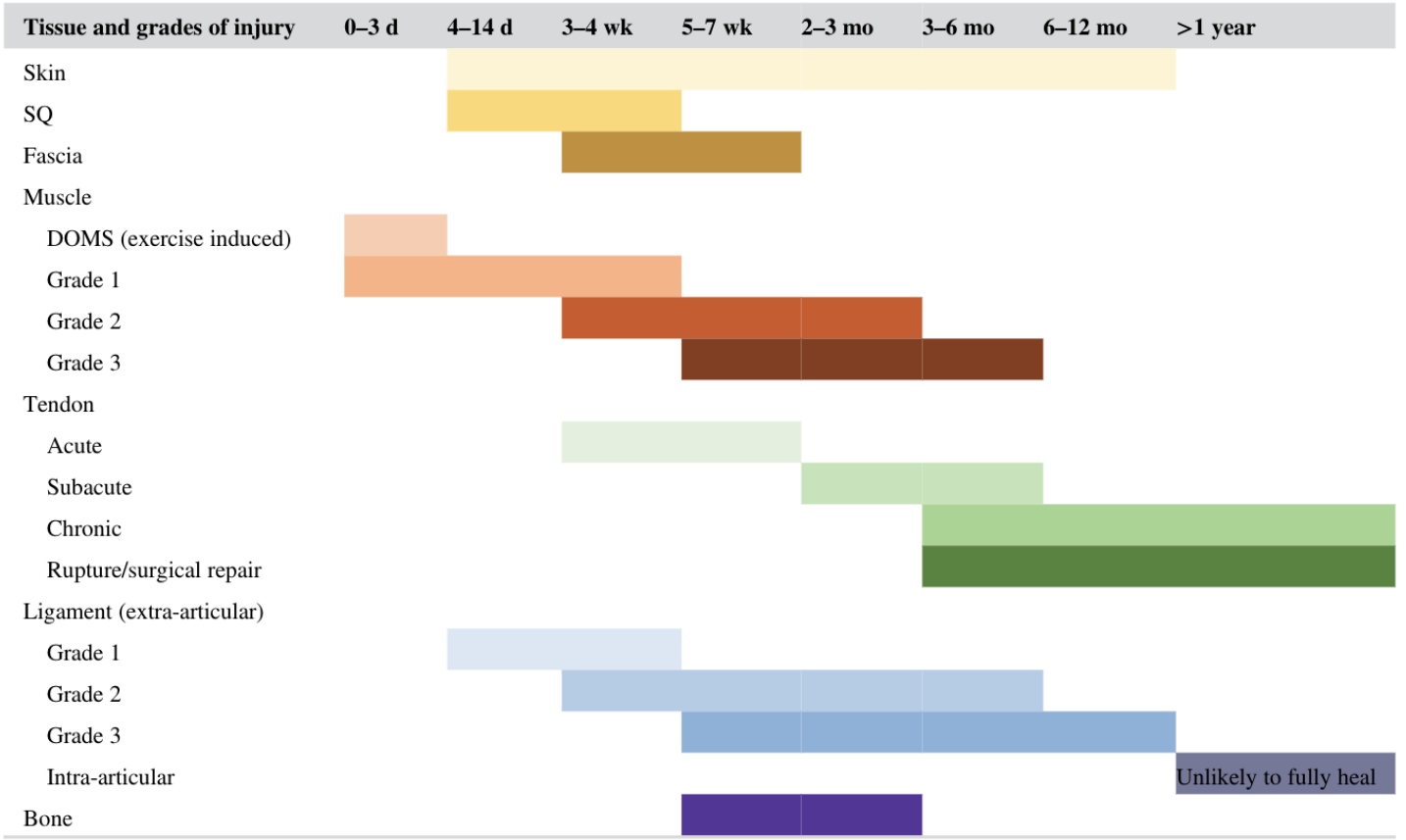
Soft tissue injury & healing

Fundamental principles of rehabilitation and musculoskeletal tissue healing

Kristin Kirkby Shaw DVM, MS, PhD
Leilani Alvarez DVM, CVA, CCRT,
Julia E. Tomlinson BVSc, MS, PhD,
Aaron J. Shaw OTR/L, CHT, CSCS[5]

Veterinary Surgery. 2020;49:22–32.

TABLE 2 Approximate rates of tissue healing[a]



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Soft tissue – General treatment

- Pain control
- Rest, without dog to dog play
- Manual therapy
- Modalities:
  - ESWT therapy
  - LASER therapy
  - tPEMF
  - Therapeutic ultrasound
  - PRP injection into lesion
- Exercise, controlled
- Therapeutic exercise
  - Eccentric
  - Isometric
  - Concentric

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Risk factors

- Poor tissue preparation
- Eccentric contraction
- Surrounding/regional tissues previously compromised
- Crossing 2 joints
- Joint incongruity
- Previous injury
- Poor conformation
- Poor BCS
- Infrequent DVM/PT visits

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Prevention

- Warm up
- Cool down
- Addressing abnormal muscle function
- Avoid over-reaching and over-training syndromes
- Inadequate rest
- Appropriate body condition
- Appropriately conditioned

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Prevention – Warm up

- Increase blood flow to the muscles
- Prepare the tissues for the workload
- ~~Passive stretching~~

- Active exercise
- Preview of work
- Active stretching

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Prevention – Warm up

- Constant pace walk 5–10 minutes
- Preview of work
- Active stretching

- 5,4,3 Warm as can be
  - 5 minutes of a constant pace walk
  - 4 minutes of a preview of work
  - 3 minutes of active stretching

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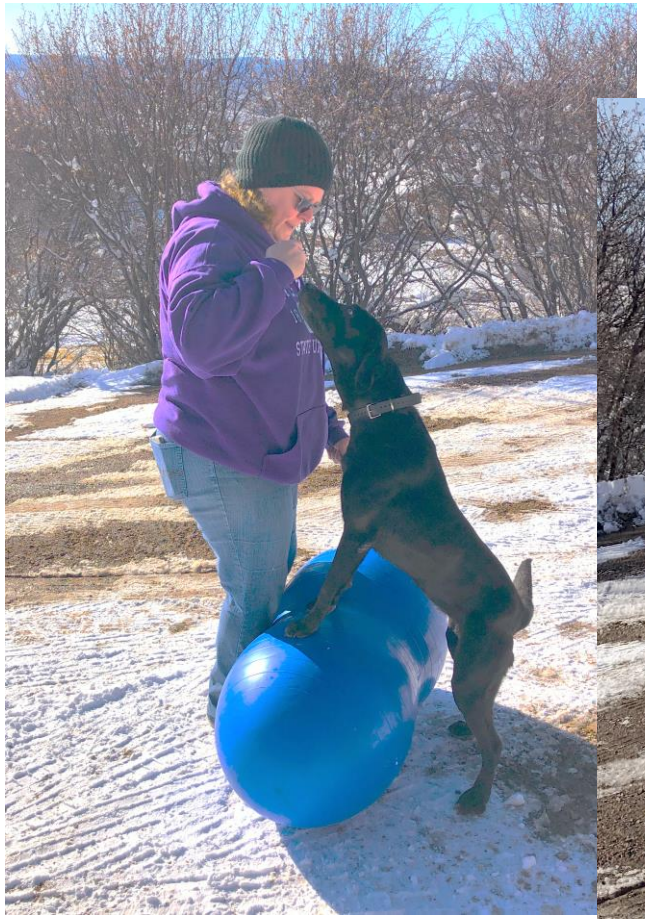
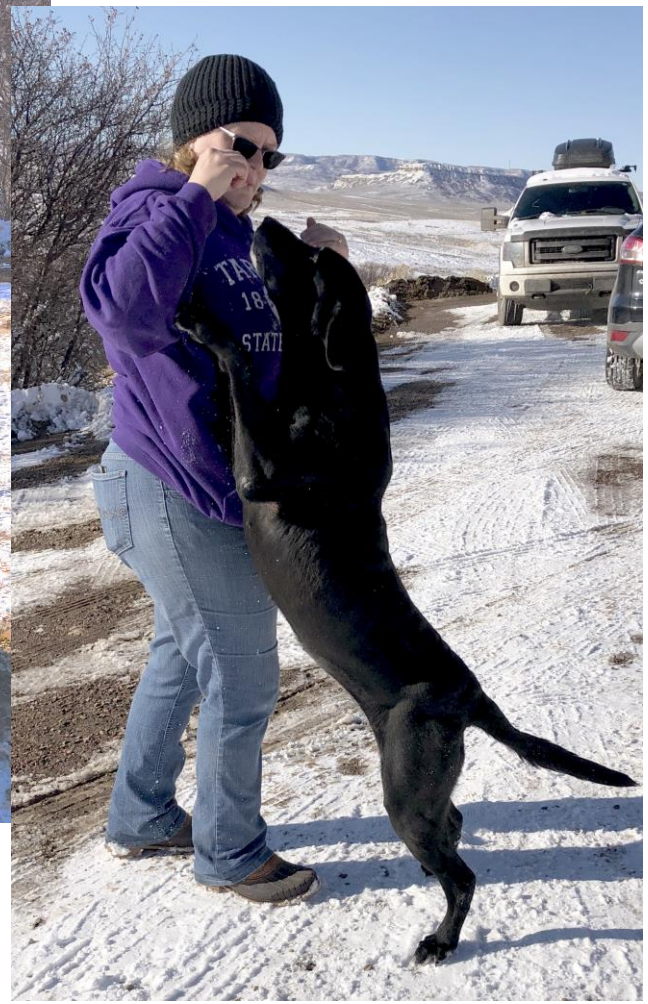
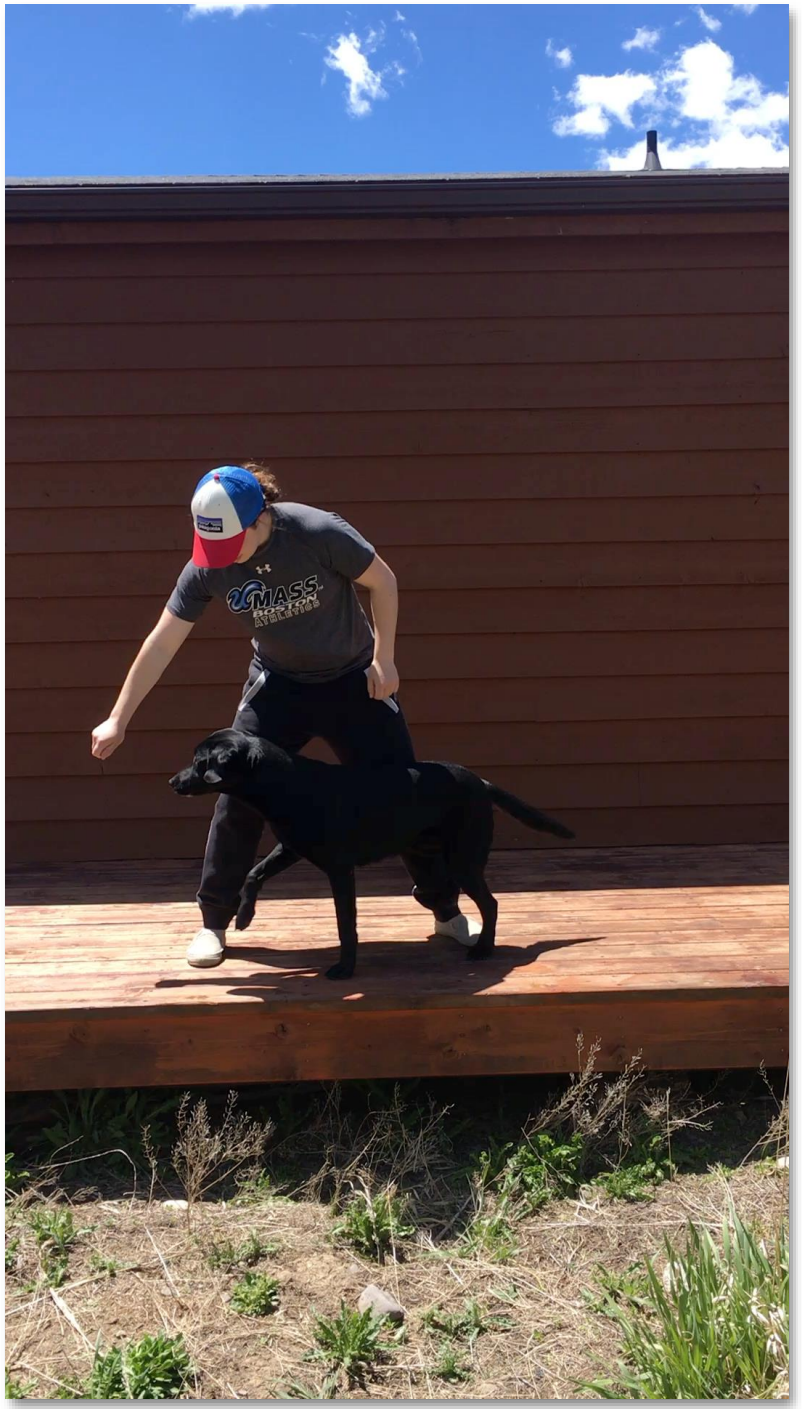
Prevention – Warm up







Prevention – Cool down

- Decrease heart rate and respiratory rate gradually to normal
- Prevents blood pooling in large skeletal muscles
- Removes metabolic waste products
- Decreases delayed onset muscle soreness (DOMS)
- Prepares the muscles for the next bout of exercise

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Prevention – Cool down

- 5, 3, 1 And you're done
  - 5 minutes of a constant pace walk
  - 3 minutes of active or passive stretching
  - One minute "tailgate exam"

Pheasants Forever

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Prevention - Abnormal muscle function

- Fibrous scar tissue

- Myofascial trigger points (MTrPs)
  - Referred pain
  - Muscle stiffness
  - Decreased range of motion
  - Motor dysfunction
  - Delayed muscle activation
  - Altered microfiber recruitment patterns
  - Loss of reciprocal inhibition leading to loss of movement coordination

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Prevention – Overtraining, inadequate rest

- Over-reaching syndrome
- Over-training syndrome
- Inadequate time off

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Common soft tissue injuries

- Supraspinatus and biceps tendinopathies
- Medial shoulder syndrome
- Teres major & teres minor strains
- Common calcaneal tendinopathy
- Iliopsoas strain
- *Jump down syndrome*

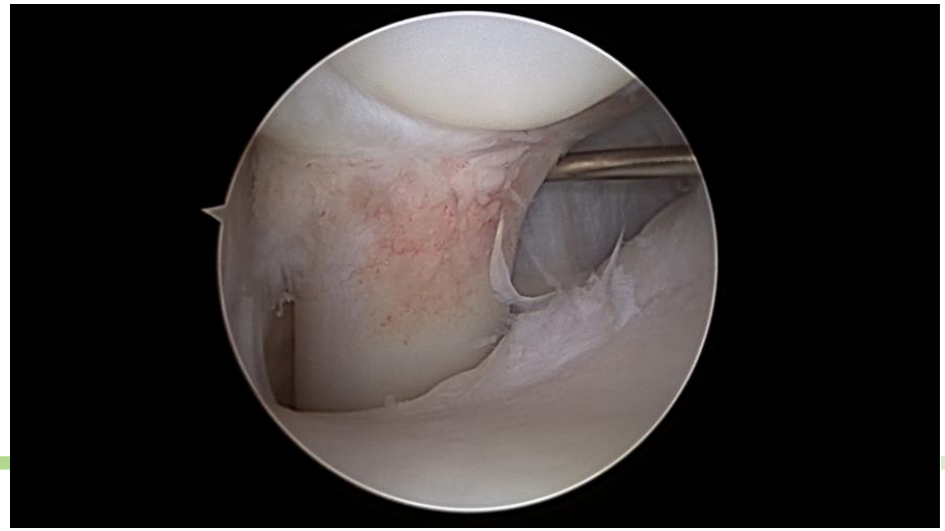
Supraspinatus & Biceps tendinopathies

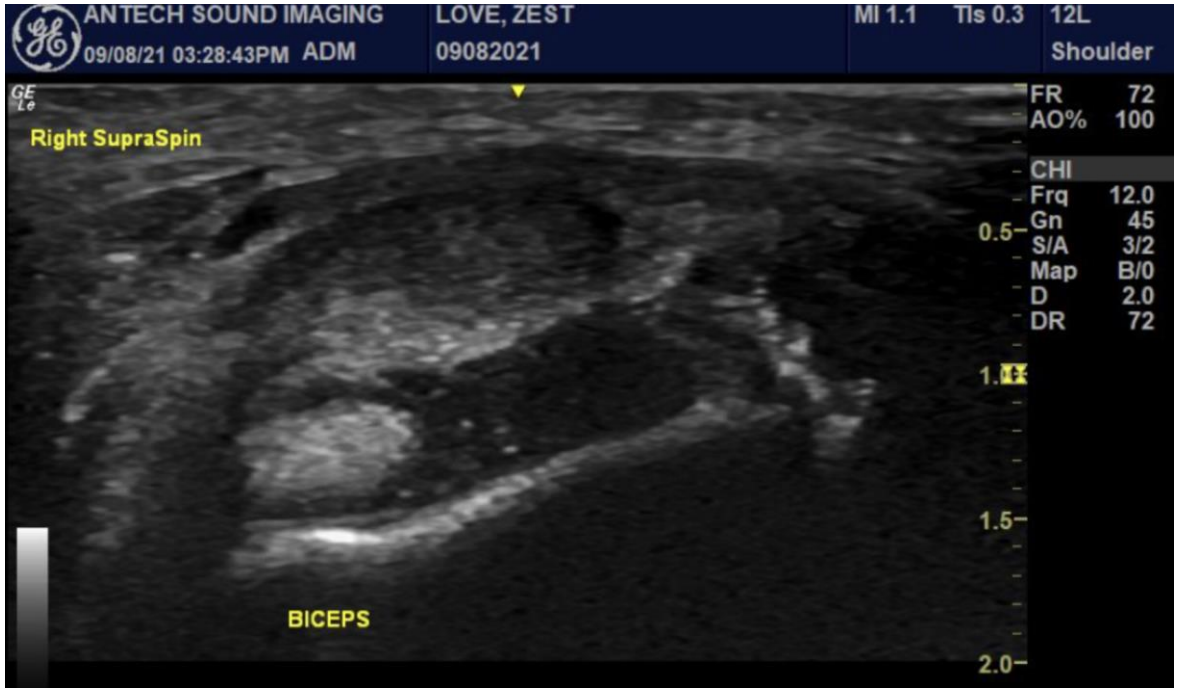
- Typically presents as a chronic intermittent for lameness
  - Exacerbated by exercise *and* rest
- Large-breed dogs more common
- Can be mistaken for elbow disease, others

- PE findings:
  - Mild to severe lameness
  - Biceps stretch *with* biceps palpation for BT
  - Shoulder flexion with internal rotation for ST

Supraspinatus & Biceps tendinopathies - Diagnosis

- Diagnostics
  - Radiographs
  - Musculoskeletal ultrasound
  - MRI
  - Arthroscopy (biceps tendon only)





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Medial shoulder instability

- Occurs most commonly during concurrent abduction and rotation of the shoulder
- Often a chronic, repetitive stress injury
- Acute injuries can occur

- PE findings
  - Mild to moderate lameness
  - Shorten foreleg stride length
  - Pain on extension and abduction of the shoulder
  - Shoulder abduction angles typically greater than 35-40°

Medial shoulder instability

- Palpation
  - Medial-lateral instability
- Goniometry
  - Up to 30^{o} shoulder abduction
- MRI
- Arthroscopy

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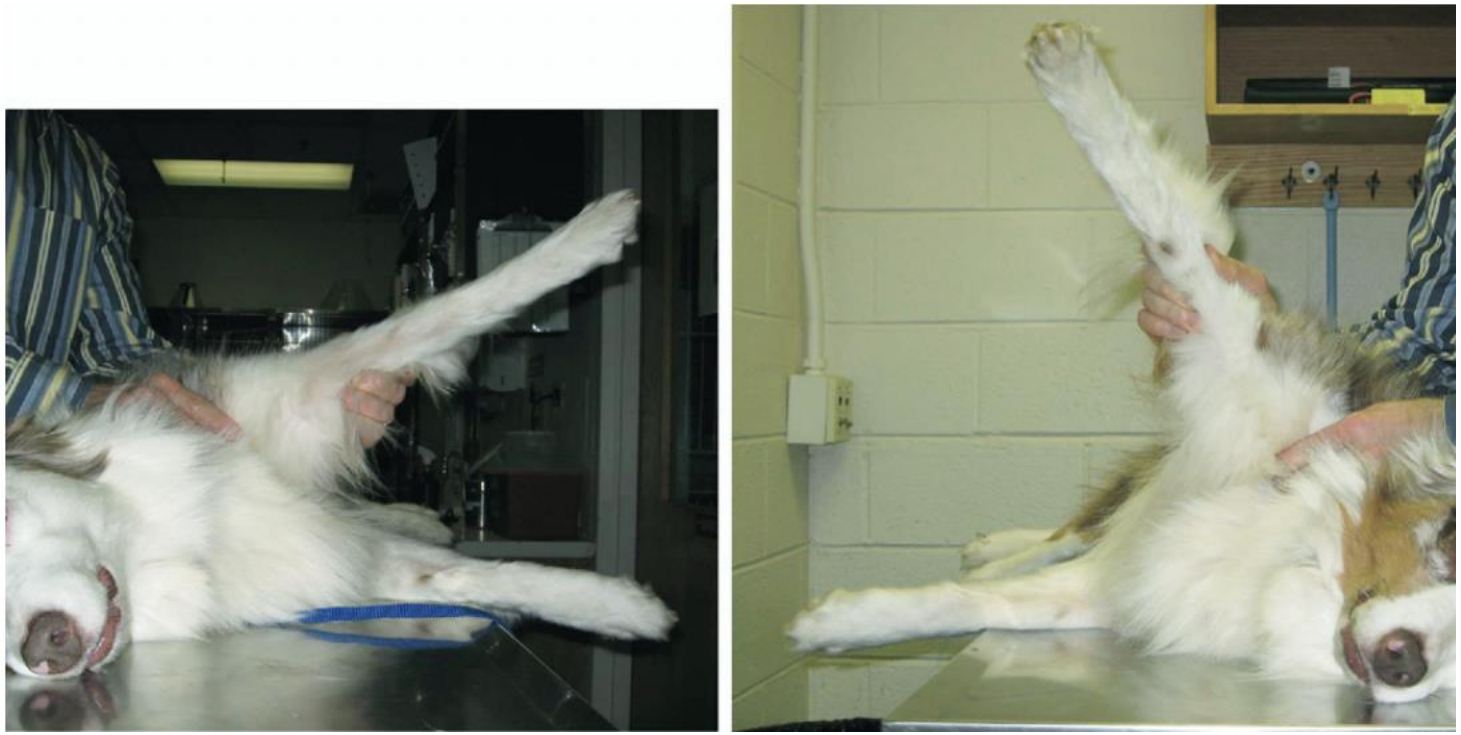
Medial shoulder instability



doi:10.1111/j.1532-950X.2005.00070.x463Veterinary Surgery34:463–468, 2005

Medial shoulder instability

› Can Vet J. 2021 May;62(5):461-468.

Comparison of classic and needle arthroscopy to diagnose canine medial shoulder instability: 31 cases

Dirsko J F von Pfeil [1], Sara Megliola [1], Christopher Horstman [1], Desmond Tan [1], Mathieu Glassman [1]

- 31 dogs
- No change in surgery times
  Significantly less anesthesia time with needle arthroscopy
- Significantly lower cost with needle arthroscopy

Medial shoulder instability

- Hobbles??

www.dogleggs.com

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Teres major & Teres minor strains

- Injured often when turning at speed

- PE findings
  - Pain at myotendinous junction at origin and/or insertion with simultaneous stretch
  - Pain on shoulder extension and abduction

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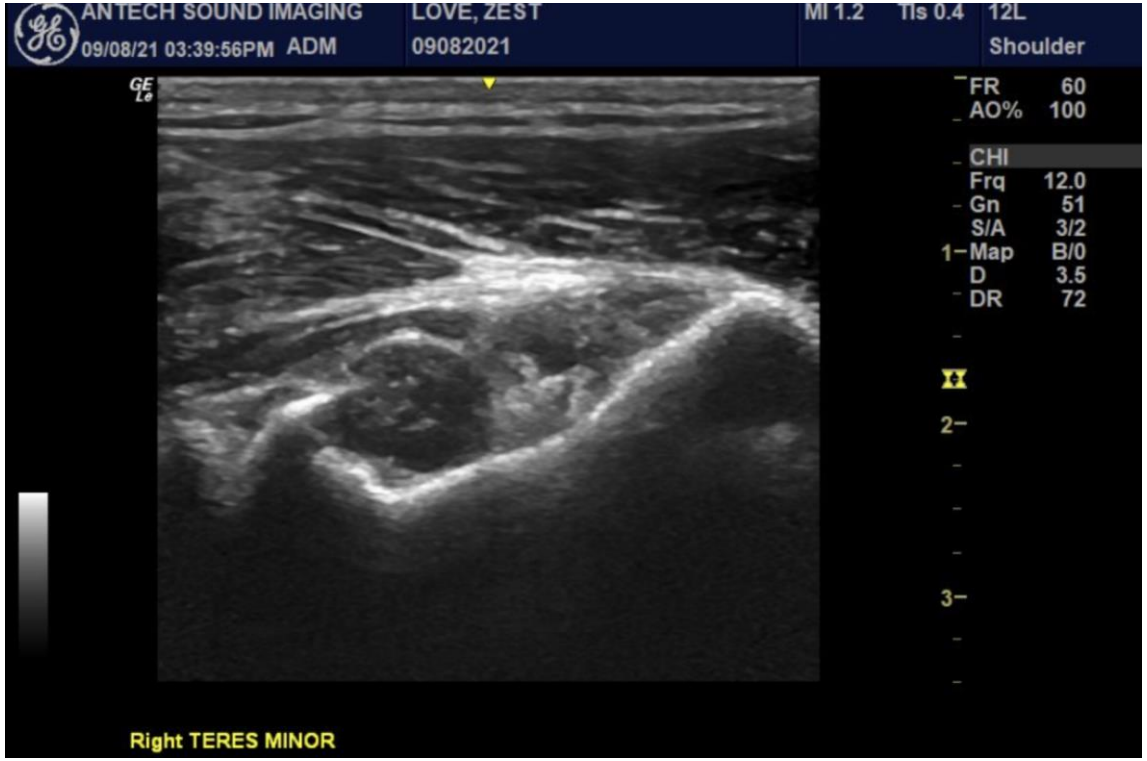
Teres major & Teres minor strains

- Dx
  - PE findings
  - MSKUS
  - MRI



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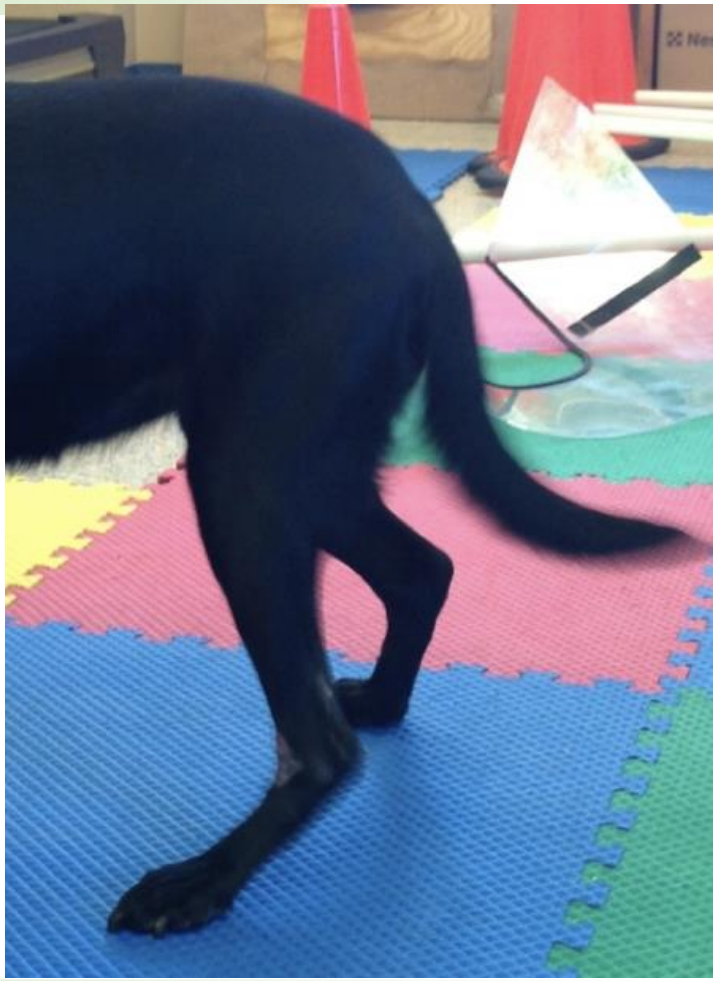
Common calcaneal tendinopathy

- Degenerative more common than acute injury
  - Repetitive stress
  - Metabolic disease

- Partial tear more common than complete tear



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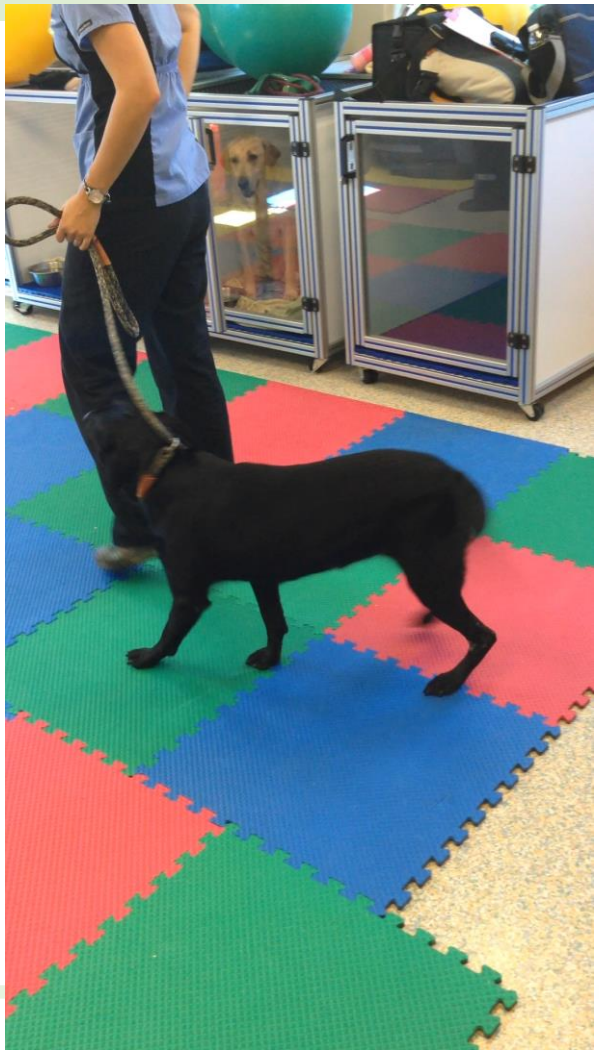
Common calcaneal tendinopathy

- PE findings
  - Acute
    - Palpable swelling of calcaneus
    - Typically non-weight bearing
    - Painful
  - Chronic
    - Weight bearing plantigrade “Bear Claw” stance
    - Thickening of calcaneus
    - Degree of hyper-flexion of hock joint
    - Often non-painful



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Common calcaneal tendinopathy

- Diagnostics
  - Radiographs
  - MSKUS
  - Clinical signs

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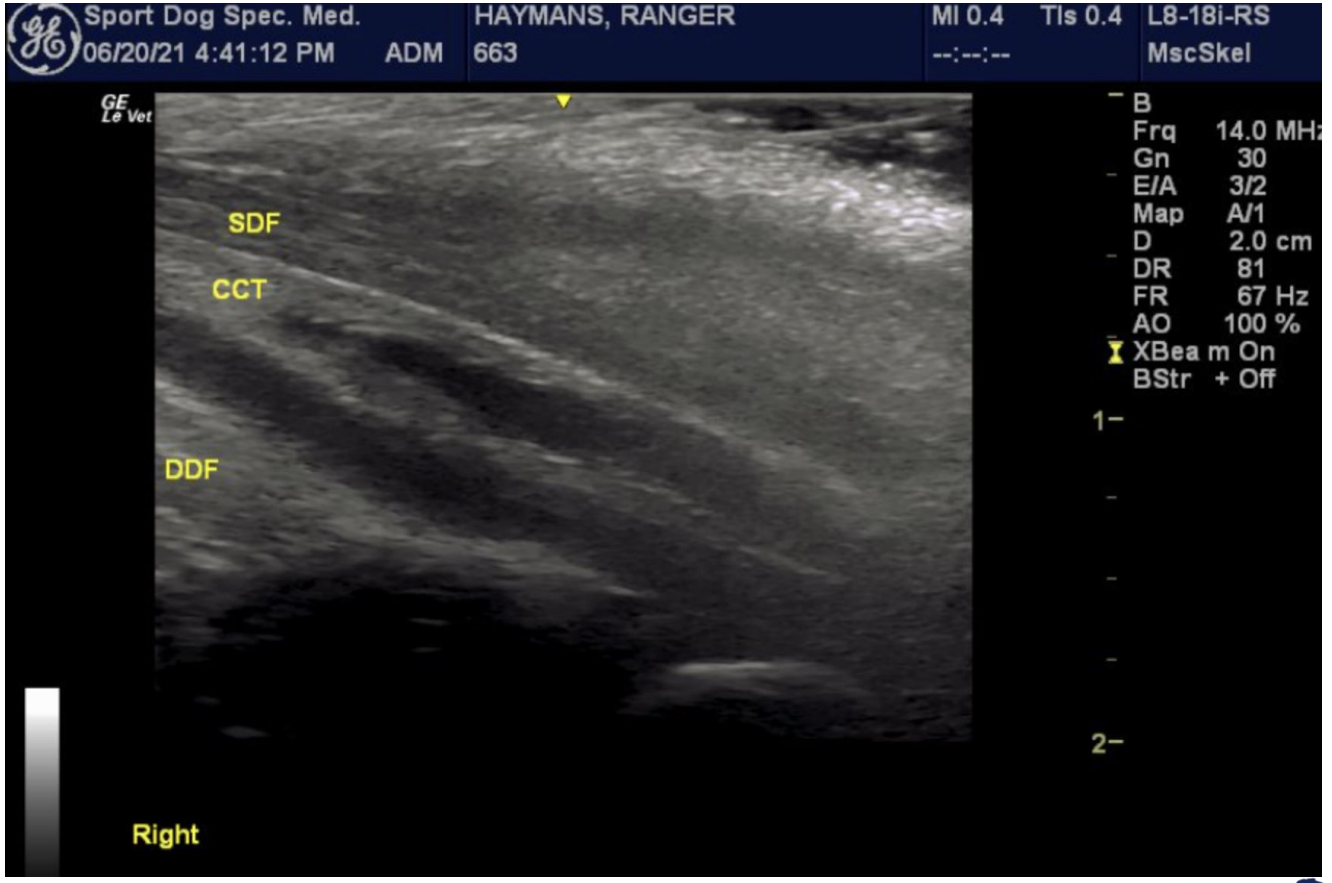

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Iliopsoas injury

- *Often* a secondary problem
- Most commonly due to chronic, repetitive overuse
- Also due to an eccentric injury during jumping or a splay injury

- PE findings
  - Grade of lameness 1-5/5
  - Very painful
  - Hip extension and internal or external rotation
  - Decreased patellar reflex

Iliopsoas injury - Diagnosis

- PE alone
- MSKUS
- MRI

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Iliopsoas injury - Treatment

animals

MDPI

Article

Observational Study on Lameness Recovery in 10 Dogs Affected by Iliopsoas Injury and Submitted to a Physiotherapeutic Approach

Giuseppe Spinella [1,*], Benedetta Davoli [1], Vincenzo Musella [2] and Ludovica Dragone [3]

- No underlying physical issues
- 10 dogs, all >2 years of age
- Participation in agility, other ports
- Physical rehabilitation program
  - Median 5 sessions
- Recovery with no lameness
  - Mean 22.6 days
  - Median 18 days

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Traumatic Fracture of the Medial Coronoid Process

- Jump Down Syndrome
- Any breed
- Distinct from elbow dysplasia-related fragmentation

- PE findings:
  - Any grade lameness, decreased swing phase of stride
  - Pain on palpation of medial compartment of elbow
  - Joint effusion
  - Periarticular thickening
  - Pain on elbow flexion

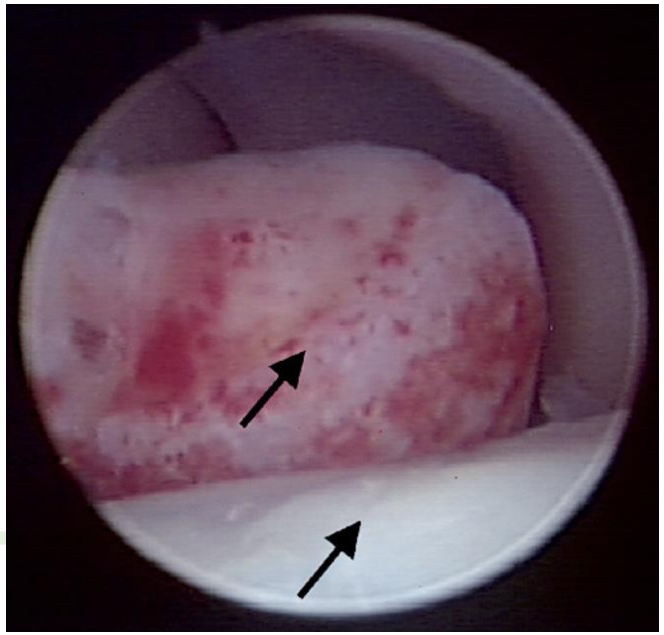
Traumatic Fracture of the Medial Coronoid Process

- Acute non-weight bearing lameness traumatically
- 13 dog breeds + mixed breeds
- Mean age 48 months
- No radiographic evidence of chronic elbow disease

Traumatic fracture of the medial coronoid process in 24 dogs

Desmond K. Tan; Sherman O. Canapp Jr.; Christopher S. Leasure; David L. Dycus; Erica O'Donnell

Veterinary Orthopedic and Sports Medicine Group, Annapolis Junction, MD, USA



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Traumatic Fracture of the Medial Coronoid Process

- Treatment
  - Fragment removal
- Prevention
  - Non-concussive jumping
  - Ramps

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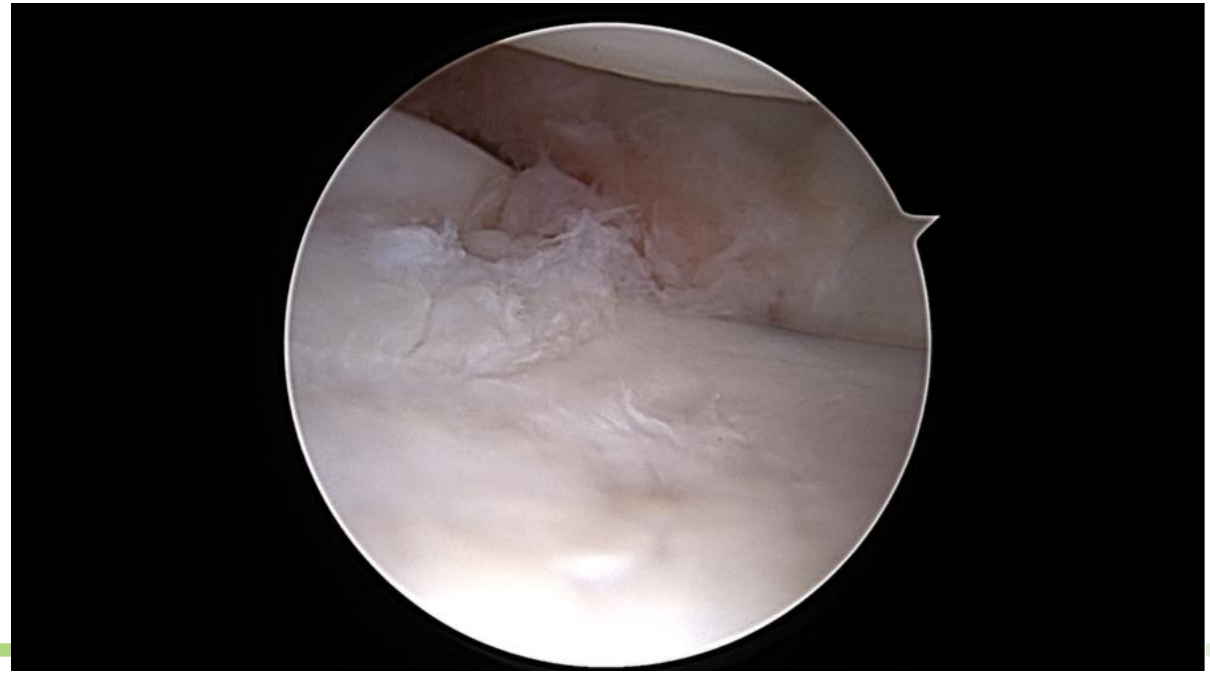
Traumatic Fracture of the Medial Coronoid Process

- Bilateral elbow CT scan
- Arthroscopy



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By Sport

- Agility
  - Shoulder
  - Iliopsoas/groin
  - Digits
  - Lumbar spine
  - Elbow
  - Stifle

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By Sport

- Canicross, Bikjoring, Skijoring
  - Footpads
  - Forelimbs

- Types of injuries
  - Lacerations
  - Abrasions
  - Punctures

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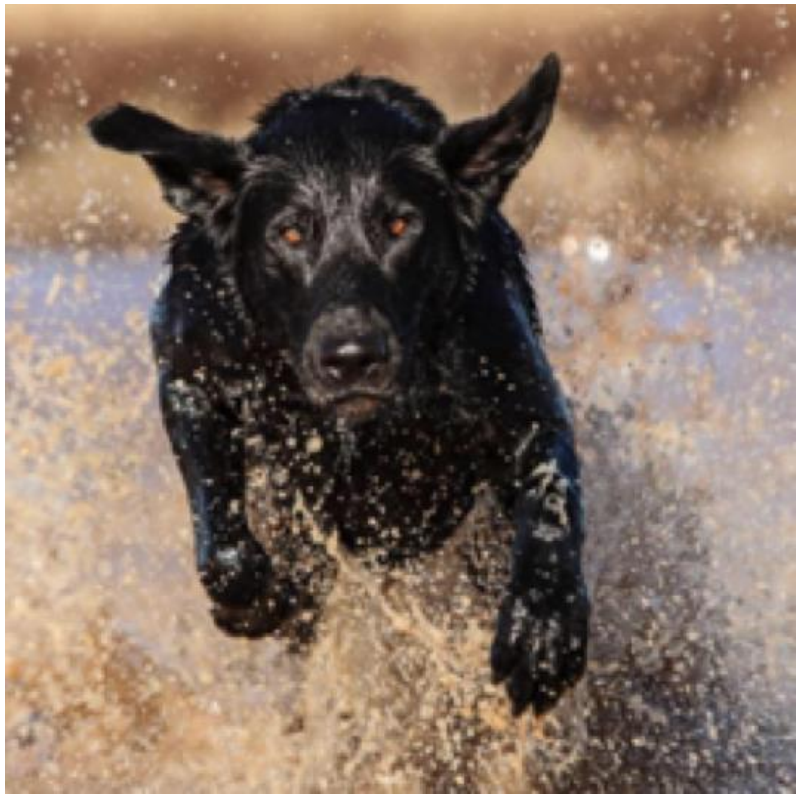
By Sport

- Flyball
  - Forepaw/pad/nail/digit
  - Shoulder
  - Back/neck/tail
  - Iliopsoas/groin
  - Carpus
  - Elbow

www.sniffspot.com

By Sport

- Field Trial/Hunt Tests/Hunting dogs
  - Biceps tendinopathy
  - Iliopsoas tendinopathy
  - Supraspinatus tendinopathy
  - Common calcaneal tendinopathy
  - Digits
  - Sesamoids
  - CCL disease



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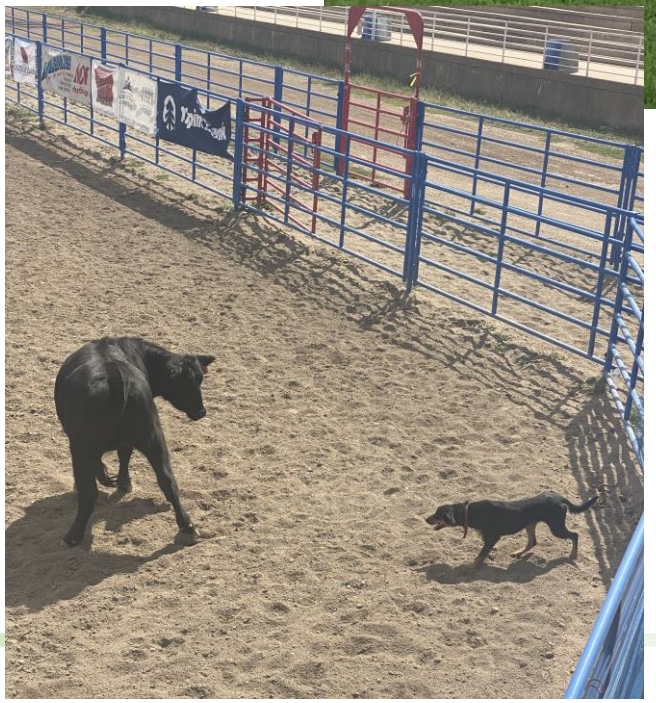
By Sport

- Herding
  - Digits
  - Carpal
  - Distal limb tendinopathies
  - Sesamoids



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Summary

- Follow tissue healing guidelines to lead you
- Prevention is the best tool to arm your clients, handlers, trainers with to avoid injury
- Education of clients, handlers, trainers is vital to seek out maintenance and preemptive care in athletic and working dogs

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Thank you!

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