

ACSMA Newsletter

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The Eight Step Program to Orthopedic Success: A Systematic Approach to Canine Lameness

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(This article was presented by Dr. Fitch at the AVMA convention in Minneapolis July 2005.)

"The accurate diagnosis of conditions responsible for lameness by careful, systematic physical examination and astute observation has been a seriously neglected topic in canine orthopedics, by contrast to the long traditions of detailed textbooks published in such problems in horses."

Kenneth Johnson, MVSc, PhD, FACVSc,
Diplomate ACVS and ECVS. Introduction of
Diagnosing Lameness in Dogs.
(Leo Brunberg). Blackwell Sciences Ltd
(Malden, MA) 1998

Components of the Canine Orthopedic Examination

1. Signalment
2. History
3. Gait examination
4. Standing examination
5. Recumbent orthopedic examination
6. Sedated orthopedic examination
7. Radiographic evaluation: standard plus special views—stress, skyline, contrast
8. Additional diagnostics: arthrocentesis, arthroscopy, ultrasound, CT, MRI

Eight-Step Format: I have found lameness evaluation to be one of the most rewarding and constantly challenging area of orthopedics. Most patients have multiple abnormalities; therefore the real challenge in orthopedics is not to find a diagnosis, but to focus on the right diagnosis. History, signalment and orthopedic examination provide the perspective and basis to triage relevant clinical findings. The following organizational diagnostic outline has been developed over several years through the continue efforts and cooperation with veterinarians and veterinary students. Remember that even a simple orthopedic work-up may take more time then allotted in a busy schedule. When those situations

occur, knowing what you did not complete can be as important as knowing what you finished.

1) **SIGNALMENT** (age, gender, breed): Many diseases tend to occur in certain age, breed, weight and to a lesser extent gender of animals. Signalment is of great assistance in facilitating accurate diagnosis in an efficient manner. Separating juvenile onset from adult onset and geriatric acquired diseases will provide better efficiency and accuracy. Signalment may also have some influence on treatment options.

2) **HISTORY** (duration, onset and progression, severity and association with other activities, previous treatments): History should provide insight into clinical severity, etiology and treatment options. Was onset of symptoms sudden or gradual? Have the dog's clinical signs been getting progressively worse, better, or the same? I subdivide my history into five relevant categories 1) onset, 2) progression, 3) severity, 4) association with other activities, and 5) current and previous medications and treatments. Current medical therapy is composed of a mixture of traditional medicines and alternative treatments (acupuncture) with advancements in those drugs and foods available to the veterinarian.

3) **VISUAL EXAMINATION** (Stance, Walk, Trot, Run, Jumping, Hills/Stairs): Examination for orthopedic and neurologic problems should begin with observation of the dog's conformation and stance. This will also allow the dog to relax, thus starting with a more positive interaction (especially with nervous dogs). The gait should be observed from multiple perspectives to fully assess locomotion. Most of the specialists I've worked with have difficulty performing this outdoor evaluations



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(on a good surface, not crowded with few distractions) can be more enlightening. The dog should be observed going directly away and coming directly toward you to determine symmetry and distribution. Evaluation from both sides will allow assessment of animation and specific joint motion as well as redistribution of weight (forward or backward). The dog should be on a loosely held leash and away from distractions. Long and/or vigorous periods of exercise may be necessary before the lameness will become present, so I will occasionally send the owners and dog on a hike. Mild sedation in very nervous dogs will often intensify the lameness (especially in those dogs that were lame "until they reached the clinic"). Some physical parameters to observe are comparison of stride length, kinematics of the limb (straight flight versus circular motion, abduction or adduction present), and the motion of all joints during weight-bearing (is range of motion normal). It takes several passes for me, since I will concentrate on different limbs. Nearly every patient is asked to perform functional tasks (sit, stairs, ascend, descend). Gait evaluation is fun, but requires practice to become proficient. I work with a neurologist and two orthopedists and we commonly reevaluate each others patients.

4) STANDING EXAMINATION (muscle symmetry, back & neck pain, brief palpation of limbs, reevaluate gait): The standing examination is typically performed in concert with the lameness examination.

Muscle symmetry and tone, as well as vertebral discomfort are palpated and assessed. Palpation and extension is performed of multiple



joints (lumbosacral, hips, stifle, tarsus, ...). When pain is elicited, I perform another gait evaluation to determine if the lameness is exacerbated.

5. RECUMBENT EXAMINATION (specific palpation of joints, bones, ligaments and tendons to localize discomfort, swelling and instability):

The patient should be placed in lateral recumbency with specific palpation of joints, bones, ligaments and tendons in an attempt to "pinpoint" discomfort, swelling and instability. Orthopedic examination should always include all four legs for comparison and completeness. Begin at the toes and work proximally, examine for normal anatomical relationship of parts, pain, size swelling or atrophy) and motion.

President's Letter

Here's hoping that everyone enjoyed the holiday season and that the weather is not terrible in your part of the world. ACSMA embarks on a new year and we will endeavor to be more timely in publishing newsletters. I received some interesting feedback on the TTA article in the previous issue, which we plan to publish in a "letter to the editor" format. Your comments are always welcome, both negative and positive. It is nice to know that members are reading.

Spring is just around the corner and the dogs are returning to training after a winter hiatus of recreation and hunting. Our training group in North Central Texas assembled in mass this

weekend for the first time in two months, under spring-like conditions. Retriever field trials begin on the Texas, Louisiana, and Oklahoma circuit in February.

Our colleagues in South Louisiana and Mississippi have suffered incomprehensible devastation. A friend (he and his wife are both veterinarians) from Mandeville, Louisiana lost their clinic to Katrina, but fortunately their home was spared. I was informed that they had been working out of their home and looking at plans for their new facility to be built. Thankfully their clients are slowly coming back. It makes me feel a little silly to complain about lack of rainfall when so many have lost

so much.

If you have not seen retriever events, the Super Retriever Series will be on OLN in April. It is a television staged event, so the resemblance to Retriever Field Trials is miniaturized, but it gives the viewer an idea of what a highly trained retriever is required to do in competition. And, come join us in Hawaii in July.

Respectfully yours,
Ed

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Canine Lameness (con't)

6. SEDATED EXAMINATION

(biomechanical evaluation of joints and limbs): Allows mechanical palpation and evaluation of joints and limbs without muscle resistance. The patient's discomfort must be localized prior to sedation. Complete mechanical examination requires knowledge of the normal anatomy. For example, the tarsus collateral ligaments are Y shaped, therefore abnormal motion in a valgus and varus direction must be done with the hock in extension and repeated in flexion. Cranial cruciate ligament rupture is common, and can be detected by cranial displacement of the tibia (cranial drawer sign, tibial compression test). Partial rupture of the cranial cruciate ligament can only be diagnosed by applying the cranial drawer sign at different angles of joint flexion and with an understanding of the anatomy and function of the cranial cruciate ligament.

7. RADIOGRAPHIC EXAMINATION

(standard plus special views—stress, skyline, contrast): Radiography is a common and invaluable diagnostic tool in orthopedics. In most cases, radiography should be used to confirm or "rule out" a suspected diagnosis based on your history, signalment and examinations. Remember in regions such as the carpus and tarsus that rely heavily on ligament and tendon support, stress view radiographs are essential. Comparison to the unaffected limb can also prove useful.

8. ADDITIONAL DIAGNOSTICS

(ultrasound, arthrocentesis, arthroscopy, MRI, scintigraphy): Imaging modalities that have become increasingly useful in veterinary orthopedics are arthroscopy, ultrasonography, magnetic resonance imaging, computed tomography and scintigraphy.

Synovial fluid analysis is a simple, inexpensive and valuable diagnostic technique for confirming the presence of joint disease. Simply placing a needle in the joint and evaluating the gross properties of the synovial fluid (volume, color, clarity, viscosity) will differentiate a normal from an abnormal joint, and suggest degenerative joint disease versus infectious, autoimmune or traumatic joint pathology. Microscopic evaluation with white blood cell count will further aid in a likely diagnosis. Arthroscopy and ultrasound have become irreplaceable tools in our hospital.

EIGHT QUICK DIAGNOSTIC AIDS FOR DIAGNOSING CRANIAL CRUCIATE LIGAMENT DISEASE:

Recent improvements in our ability to diagnose early onset cranial cruciate ligament injuries (especially arthroscopy) is providing earlier recognition and treatment with more benefit and superior ultimate outcome for our patients. Note all of the diagnostic criteria need to be fulfilled to diagnose cranial cruciate ligament disease.

1) **Gait evaluation**- Dogs have a stilted, shuffling gait with immobilization of the stifles producing circumduction of the limb. Muscle atrophy is notable in chronic cases. Bilateral disease can be more challenging due to the lack of asymmetry in the gait.

2) **Sit examination**- At the sit, patients are reluctant to fully flex their stifles producing an asymmetric posture indicative of stifle pain.

3) **Stifle extension**- Stifle extension elicits pain and exacerbates lameness. This is a quick diagnostic tool which can be performed in concert with the gait evaluation. This is especially useful to diagnose patients that are having a "good day".

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Mark your calendar with the following important dates:

ACSMA Symposium July 15
(www.avmaconvention.org to register)

Contributing speakers:

Randall Fitch, DVM, MS, DACVS
Holly Hamilton, DVM
Edward Aycock, DVM

4) Palpable joint effusion or capsular fibrosis-

The patella tendon should be easily discernable on palpation. Effusion and fibrosis obscures the tendon palpation providing a sensitive method of early detection.



5) Palpable osteophytes-

Periarticular osteophytes present in chronic injuries are palpable. Osteophytosis is most detectable along the medial aspect of the tibia and along the lateral trochlear ridge of the femur, but obscures anatomic distinction throughout the stifle.



6) Drawer Evaluation- This classic examination technique detects cranial displacement (translation) of the tibia, however it is technique sensitive.

Partial ligament tears and chronic injuries with secondary fibrosis can be difficult to detect.

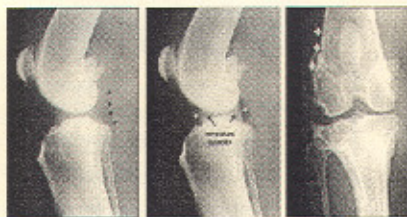
7) Tibial compression- Flexion of the tarsus with the stifle in a near standing angle emulates weight-bearing forces and produces cranial displacement of the tibia in the cranial cruciate ligament deficient stifle.



8) Arthrocentesis- Provides quick confirmation of synovial effusion and aids in distinguishing from other arthropathies (septic, immune-mediated, etc). Volume, viscosity and color are gross characteristics of synovial fluid that can be quickly evaluated.

Radiography- Initially radiographic evidence of cranial cruciate ligament rupture can be subtle with only effusion noted. Early evidence of effusion is detected by loss of visibility of the fascial planes caudal to the stifle joint (the popliteus and gastrocnemius fascial planes) and cranial

displacement of the infrapatellar fat pad. Over time, joint destruction progresses and becomes more



evident on radiographs showing osteophytosis and severe osteoarthritis throughout the joint.

Additional Reading:

Brunnberg, Leo. *Diagnosing Lameness in Dogs.* Blackwell Sciences Ltd (Malden, MA) 1998.

Fitch RB, Montgomery RD, Jaffe MH. *Muscle Injuries in Dogs. The Compendium on Continuing Education.* 19(8): 947-958, 1997.

Van Ryssen, B. and H. van Bree, *Arthroscopic findings in 100 dogs with elbow lameness.* Vet Rec, 1997.

Bardet, J.F., *Diagnosis of shoulder instability in dogs and cats: a retrospective study.* J Am Anim Hosp Assoc, 1998.

From the office:

Welcome to all our new members who joined in 2005!

Our membership year extends from January 1 to December 31 or August 1 to July 31, depending on the time of year application is made. A reminder postcard will be mailed to you. We're sorry but at the present time we are unable to accept credit card payments.

Please note your address on your statement and check your listing on our website to make sure your information is correct. For corrections or updates: postmaster@acsma.org.

Thank You!