LOAD en COAST

Wat doe je ermee?

Prof. Dr. Geert Verhoeven

Kwantificatie OA/pijn/functie

- Eerder systeem: CBPI = Canine Brief Pain Index

CBPI: pijn

Description of pain:
Rate your dog's pain:

1. Fill in the oval next to the one number that best describes the pain at its **worst** in the last 7days.

○0 ○1 ○2 ○3 ○4 ○5 ○6 ○ 7 ○ 8 ○ 9 ○ 10

No pain — Extreme pain

2. Fill in the oval next to the one number that best describes the pain at its **least** in the last 7 days

○0 ○1 ○2 ○3 ○4 ○5 ○6 ○ 7 ○ 8 ○ 9 ○ 10

No pain — Extreme pain

3. Fill in the oval next to the one number that best describes the pain at its **average** in the last 7 days.

○0 ○1 ○2 ○3 ○4 ○5 ○6 ○ 7 ○ 8 ○ 9 ○ 10

No pain — Extreme pain

CBPI: Effect van die pijn op Functie

Fill in the oval next to the one number that best describes how during the last 7 days **pain has interfered** with your dog's:

5. **General Activity**

○0 ○1 ○2 ○3 ○4 ○5 ○6 ○ 7 ○ 8 ○ 9 ○ 10

Does not interfere — Completely interferes

6. **Enjoyment of Life**

○0 ○1 ○2 ○3 ○4 ○5 ○6 ○ 7 ○ 8 ○ 9 ○ 10

Does not interfere — Completely interferes

7. **Ability to Rise to Standing From Lying Down**

○0 ○1 ○2 ○3 ○4 ○5 ○6 ○ 7 ○ 8 ○ 9 ○ 10

Does not interfere — Completely interferes

LOAD

LIVERPOOL OSTEOARTHRITIS IN DOGS

LOAD?

- Clinical Metrology Instrument
  - Objectief scoringssysteem voor honden met OA
- “Liverpool OsteoArthritis in Dogs”
  - Cfr Helsinki Chronic Pain Index (HCPI)
  - Cfr Canine Brief Pain Index (CBPI)
- Eerst enkel elleboog OA, daarna uitgebreid naar andere gewrichten

Hercock, C.A., Pinchbeck, G., Giejda, A., Clegg, P.D. and Innes, J.F. (2009)
Validation of a Client-Based Clinical Metrology Instrument for the Evaluation of Canine Elbow Osteoarthritis.
Journal of Small Animal Practice, 50, 266-271.
http://dx.doi.org/10.1111/j.1748-5827.2009.00765.x
Walton MB, Cowderoy E, Lascelles D, Innes JF (2013)
Evaluation of Construct and Criterion Validity for the ‘Liverpool Osteoarthritis in Dogs’ (LOAD) Clinical Metrology Instrument and Comparison to Two Other Instruments.
PLOS ONE 8(3): e58125. https://doi.org/10.1371/journal.pone.0058125
https://todaysveterinarypractice.com/assessing-chronic-pain-in-dogs/

LOAD

- Tool ontwikkeld om eigenaars op een objectieve manier te laten inschatten hoeveel last hun dier ondervindt van de artrose
  - Gestandaardiseerde vragen
  - Gegroepeerde onderwerpen
  - Duidelijke formulering antwoorden

UNIVERSITY OF LIVERPOOL

Initial Visit

Liverpool Osteoarthritis in Dogs (LOAD)

Owner questionnaire for dogs with mobility problems

Dear Owner,

Thank you for agreeing to complete this questionnaire.

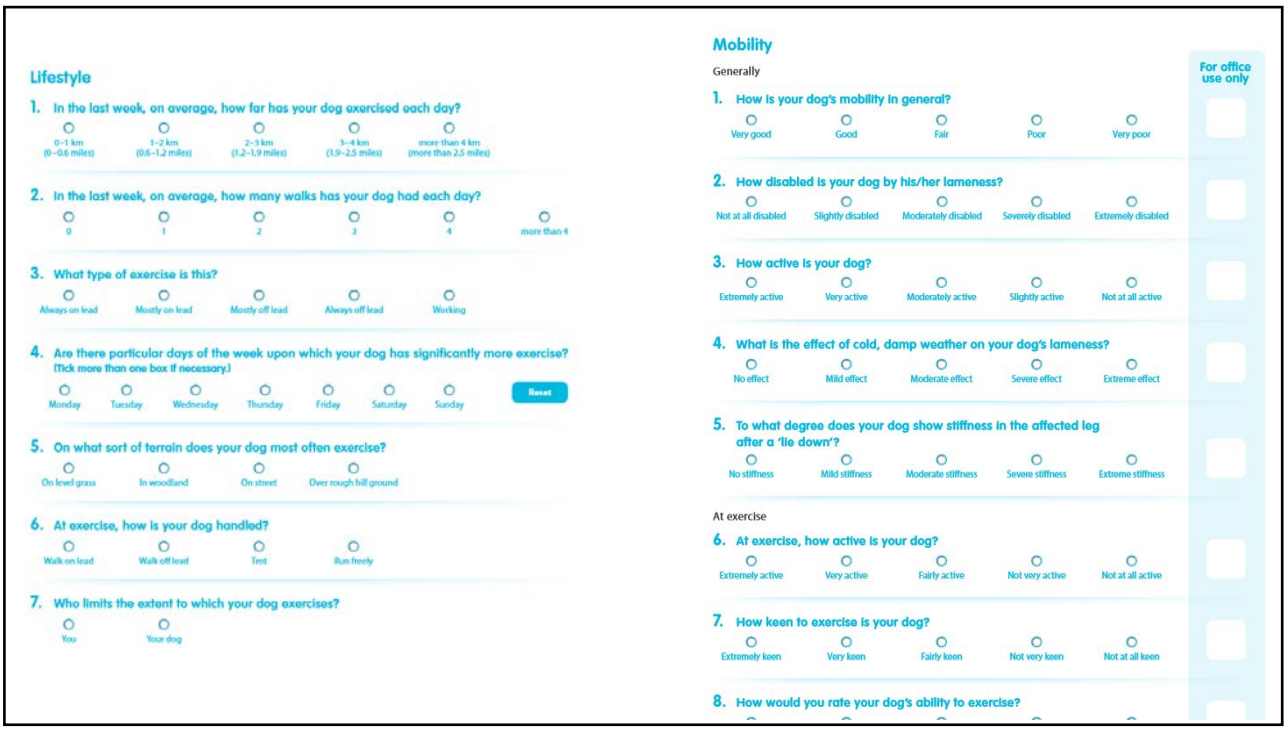
Your assistance in this endeavour will enable us to gather valuable information about your pet, and is a vital component in our ongoing quest to combat painful and debilitating diseases such as arthritis. It is important that all questions are answered to the best of your ability and if you have a question regarding the questionnaire, please contact a member of staff from your veterinary clinic.

Thank you again for your help.

Answering the questions

Most of the questions are fairly simple. It is important that you only tick one box per question except where otherwise requested (e.g. Question 4 under Lifestyle).

If you are in any doubt as to how to answer a particular question, please contact a member of staff for assistance.



Lifestyle

1. In the last week, on average, how far has your dog exercised each day?
   ○ 0–1 km (0–0.6 miles) ○ 1–2 km (0.6–1.2 miles) ○ 2–3 km (1.2–1.9 miles) ○ 3–4 km (1.9–2.5 miles) ○ more than 4 km (more than 2.5 miles)
2. In the last week, on average, how many walks has your dog had each day?
   ○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ more than 4
3. What type of exercise is this?
   ○ Always on lead ○ Mostly on lead ○ Mostly off lead ○ Always off lead ○ Working
4. Are there particular days of the week upon which your dog has significantly more exercise? (Tick more than one box if necessary.)
   ○ Monday ○ Tuesday ○ Wednesday ○ Thursday ○ Friday ○ Saturday ○ Sunday Reset
5. On what sort of terrain does your dog most often exercise?
   ○ On level grass ○ In woodland ○ On street ○ Over rough hill ground
6. At exercise, how is your dog handled?
   ○ Walk on lead ○ Walk off lead ○ Trot ○ Run freely
7. Who limits the extent to which your dog exercises?
   ○ You ○ Your dog

Mobility

Generally

For office use only

1. How is your dog's mobility in general?
   ○ Very good ○ Good ○ Fair ○ Poor ○ Very poor
2. How disabled is your dog by his/her lameness?
   ○ Not at all disabled ○ Slightly disabled ○ Moderately disabled ○ Severely disabled ○ Extremely disabled
3. How active is your dog?
   ○ Extremely active ○ Very active ○ Moderately active ○ Slightly active ○ Not at all active
4. What is the effect of cold, damp weather on your dog's lameness?
   ○ No effect ○ Mild effect ○ Moderate effect ○ Severe effect ○ Extreme effect
5. To what degree does your dog show stiffness in the affected leg after a 'lie down'?
   ○ No stiffness ○ Mild stiffness ○ Moderate stiffness ○ Severe stiffness ○ Extreme stiffness

At exercise

6. At exercise, how active is your dog?
   ○ Extremely active ○ Very active ○ Fairly active ○ Not very active ○ Not at all active
7. How keen to exercise is your dog?
   ○ Extremely keen ○ Very keen ○ Fairly keen ○ Not very keen ○ Not at all keen
8. How would you rate your dog's ability to exercise?

Doel van de LOAD

- Objectiveren van last door artrose
  - Vragen over achtergrond
  - Vragen over levensstijl
  - Vragen over mobiliteit (13)
    - Algemeen (5)
    - Bij bewegen (8)
- Inschatting duur en activiteitsniveau
- Numeriek resultaat Mobiliteit (0 – 52)

COAST

CANINE OSTEOARTHRITIS SCORING TOOL

The Veterinary Journal 235 (2018) 1–8

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The Veterinary Journal

journal homepage: www.elsevier.com/locate/tvjl

Personal View

Face validity of a proposed tool for staging canine osteoarthritis: Canine OsteoArthritis Staging Tool (COAST)☆

T. Cachon[a,b], O. Frykman[c], J.F. Innes[d], B.D.X. Lascelles[e,f,g,h,*], M. Okumura[i], P. Sousa[j], F. Staffieri[k], P.V. Steagall[l,m], B. Van Ryssen[n], COAST Development Group

[a] Service de chirurgie, Campus vétérinaire de Lyon VetAgro-Sup, 1 avenue Bourgelat, 69280 Marcy l'Etoile, France
[b] Unité de recherche ICE, UPSP 2007-03-135, VetAgro-Sup Campus vétérinaire, Université de Lyon, 1 Avenue Bourgelat, 69280 Marcy l'Etoile, France
[c] Herrgårdskliniken, Aneby, Sweden
[d] CVS(UK) Ltd. ChesterGates Veterinary Specialists, Unit E, Telford Court, Gates Road, Chester CH1 6LT, UK
[e] Comparative Pain Research and Education Centre, Department of Clinical Sciences, College of Veterinary Medicine, North Carolina State University, Raleigh, NC, USA
[f] Comparative Medicine Institute, North Carolina State University, Raleigh, NC, USA
[g] Center for Pain Research and Innovation, UNC School of Dentistry, Chapel Hill, NC, USA
[h] Center for Translational Pain Research, Department of Anesthesiology, Duke University, Durham, NC, USA
[i] Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine, Hokkaido University, Sapporo, Hokkaido, Japan
[j] Hospital Veterinari Molins, Sant Vicenç dels Horts, Barcelona, Spain
[k] Section of Veterinary Clinics and Animal Production, D.E.O.T., 'Aldo Moro' University of Bari, Bari, Italy
[l] Department of Clinical Sciences, Faculty of Veterinary Medicine, Université de Montréal, Saint-Hyacinthe, QC, Canada
[m] Groupe de Recherche en Pharmacologie Animale du Québec, Faculty of Veterinary Medicine, Université de Montréal, Saint-Hyacinthe, QC, Canada
[n] Department of Medical Imaging and Small Animal Orthopedics, Faculty of Veterinary Medicine, Ghent University, Belgium

COAST?

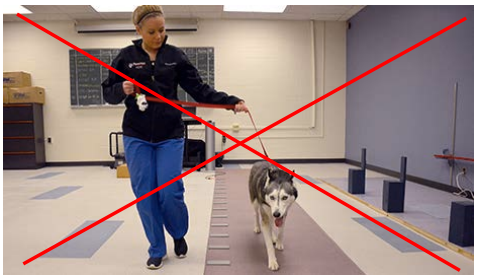
- Een makkelijk toegankelijke scoringstool ontwikkelen dat toegankelijk is voor practici.

COAST?

- Mening van zowel eigenaar als dierenarts als “team”

COAST?

- Praktijk gerichte scoringsmethoden
  - Klinisch onderzoek
  - RX
  - Geen pressure plate, force plate,…



COAST?

- Bias reduceren
  - Eenvoudige vragen
  - LOAD gebruiken als “eigenaarsmening”

1

GRADE THE DOG

Have the dog owner complete a validated questionnaire and report the dog's overall level of discomfort.

Assess the dog's posture while stationary and while in motion.

NAME _____ **DATE** _____

Grade the Dog

PET OWNER ASSESSMENTS	**Clinical Metrology Instrument (CMI)**	Not Clinically Affected 0 ○	Mildly Affected 1-10 ○	Moderately Affected 11-20 ○	Severely Affected 21+ ○
	Degree of Dog's Discomfort	None ○	Low ○	Moderate ○	High ○
EVALUATION BY VETERINARIAN	**Static Posture**	Normal ○	Mildly Abnormal ○	Moderately Abnormal ○	Severely Abnormal ○
		Breed-appropriate with proper limb loading and normal body weight distribution between forelimbs and hindlimbs.	Subtle abnormality in limb loading and light shift in body weight distribution.	Clear abnormality in limb loading and obvious shift in body weight distribution.	Stands with difficulty and unease. Severe shift in body weight distribution.
	Motion	Normal ○	Mildly Abnormal ○	Moderately Abnormal ○	Severely Abnormal ○
		Fluent and symmetric gait with appropriate weight bearing and body weight distribution.	Subtle lameness, asymmetry and gait stiffness. Possible impact with some activities, yet no difficulty getting up.	Consistent gait abnormalities and some difficulty getting up, obvious stiffness, change in body weight, and reduction in use of affected limb.	Severe weight shift and lameness. Has difficulty getting up and struggles to move.

2

GRADE THE JOINT

Determine how much pain there is on manipulation, assess range of movement and take radiographs.

Grade the Joint

EVALUATION BY VETERINARIAN

Pain Upon Manipulation	None ○	Mild ○	Moderate ○	Severe ○
Passive Range of Movement	Normal ○	Mildly Abnormal ○	Moderately Abnormal ○	Severely Abnormal ○
		Slight joint thickening with minimal ROM reduction and no crepitus.	Clear joint thickening with obvious ROM reduction and muscle atrophy.	Extremely limited ROM with severe muscle atrophy, joint thickening and crepitus. Anatomical misalignment and loss of normality on palpation.
Radiography	No Signs of OA ○	Mild Signs of OA ○	Moderate Signs of OA ○	Severe Signs of OA ○
	If preclinical "at risk," the dog may have evidence of risk factors such as dysplasia and/or trauma.	Early signs of OA and minimal osteophytes.	Clear osteophytes.	Advanced osteophytes and remodeling.

3

SELECT THE HIGHEST GRADE FROM ALL EVALUATIONS

The highest grade from evaluating the dog or the joint equates to that patient's COAST stage.*

	COAST Stage	
Pre-clinical 	0	Clinically normal. No OA risk factors.
	1	Clinically normal, but OA risk factors present.
Clinical 	2	Mild OA.
	3	Moderate OA.
	4	Severe OA.

*If there is a disparity of two or more grades between dog and joint results, re-evaluate.

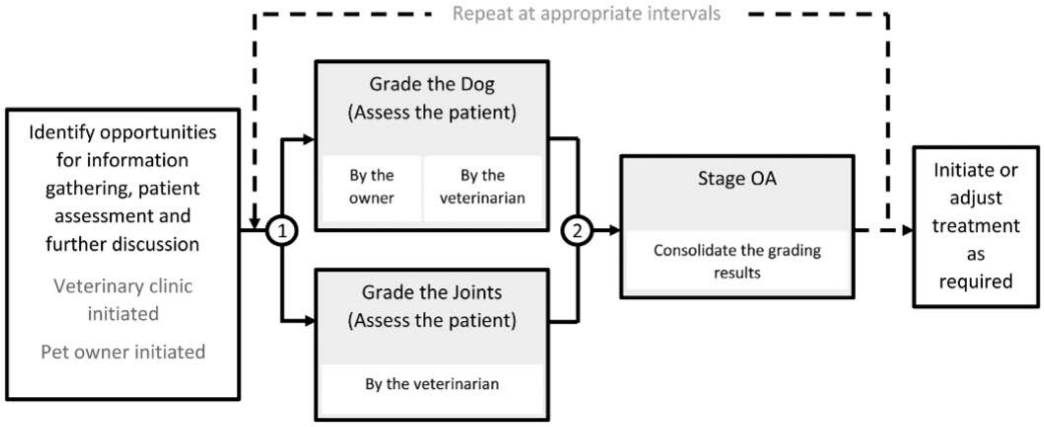
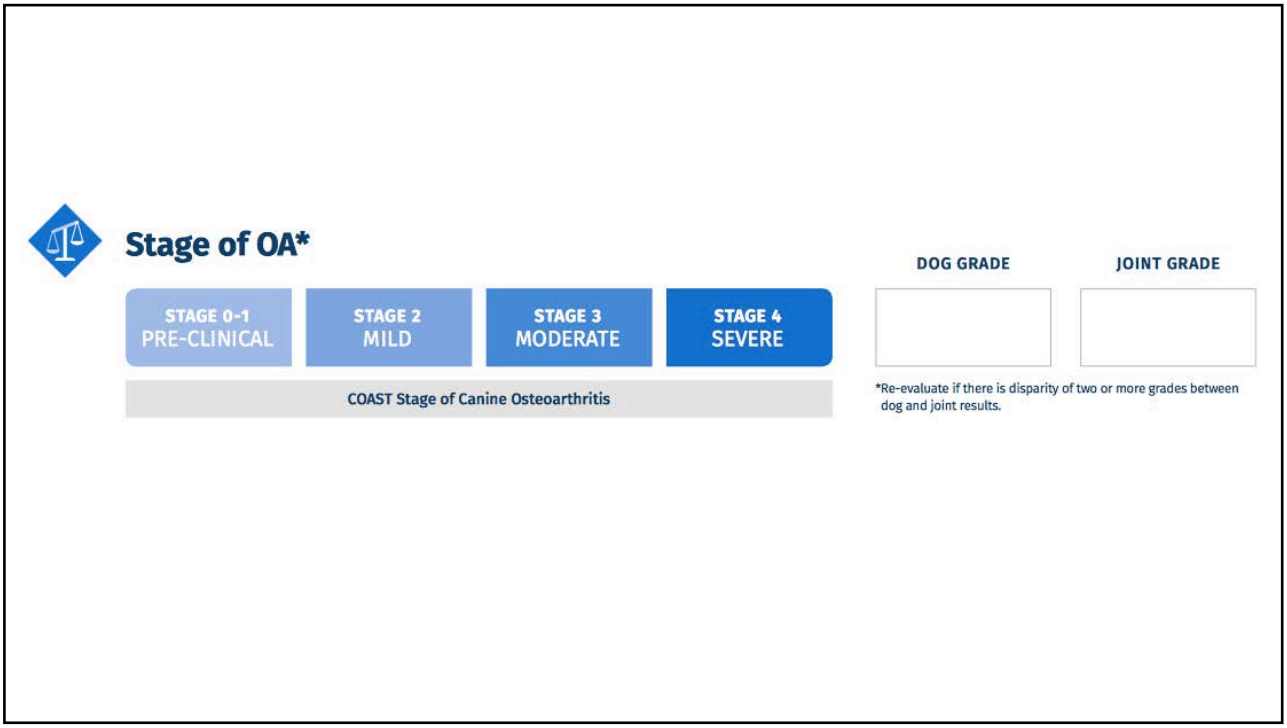


Fig. 1. Flow chart illustrating the two main steps in Canine OsteoArthritis Staging Tool (COAST; 1 = grading and 2 = staging). Regular evaluations and a two-pronged approach to grading ('grade the dog' and then 'grade the joints') in order to stage and track osteoarthritis are the fundamentals of this diagnostic aid.



Mismatch??

- Verschil van 2 of meer graden tussen
  - score van de hond
  - score van het gewricht
- Bv: hond heeft geen klinische last (score 0), maar radiografisch zeer erge artrose (score 4) (<->)

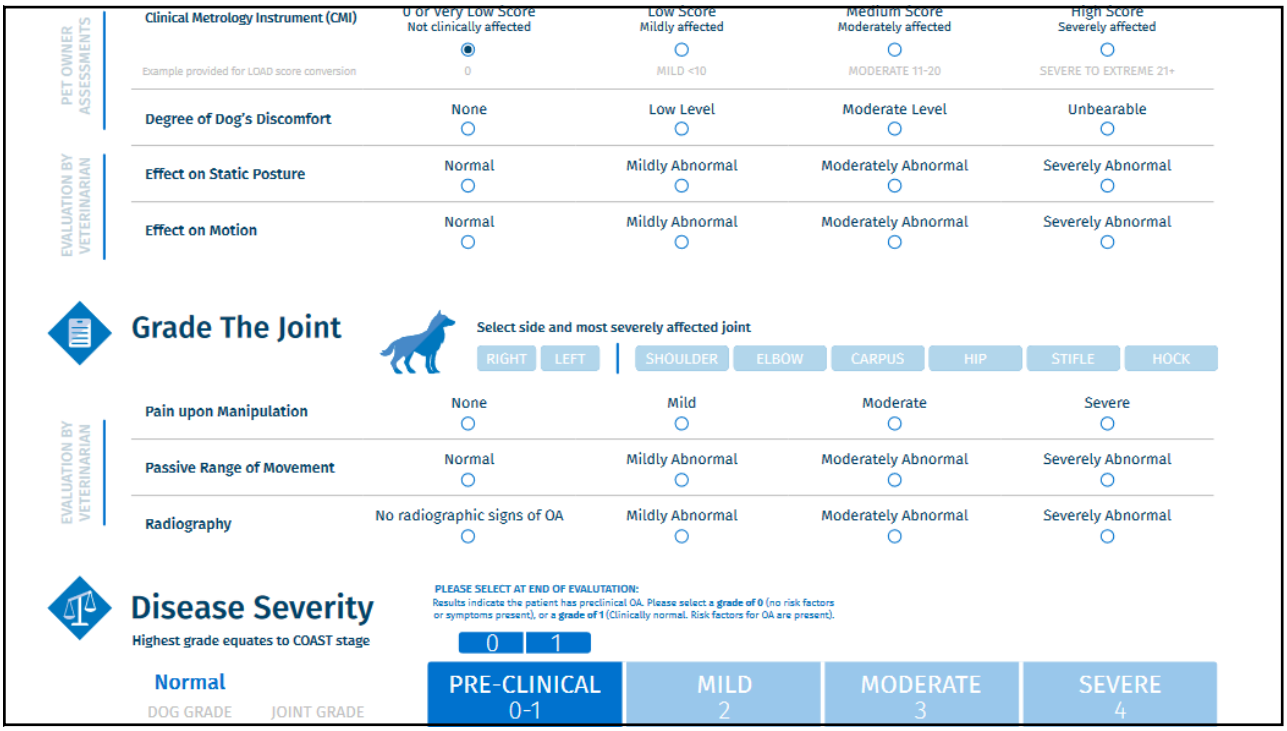
- (Normaal weinig waarschijnlijk, maar niet onmogelijk)
- Herwaardering na enkele weken/maanden

Focus

1. Dieren zonder klachten (pre-klinisch) met een verhoogd risico op artrose
   - Rassen met een verhoogd risico (eigenaars bewust maken!)
   - Dieren die recent een gewrichtschirurgie ondergingen
2. Dieren met artrose
   - Gekend → long term plan opstellen
   - Niet gekend → herkennen van symptomen

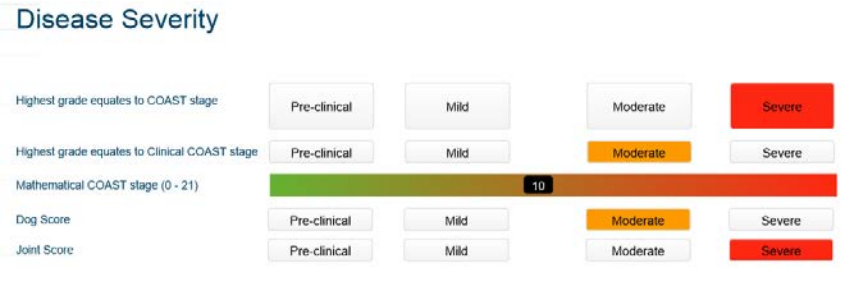
Niet teveel werk voor practici

- Praktijk is al druk genoeg…
- Digitalisering en automatisering!
- https://www.galliprantfordogs.com/vet/resources
  - LOAD formulieren (digitaal en printable)
  - COAST formulieren (digitaal en printable)



Enige nadeel…

- RX kan bepalend zijn voor de definitieve score…
- Bv:
  - Een hond met erge OA en weinig klinische klachten, zal toch in categorie 4 van de COAST vallen.
  - Gekend probleem…



Conclusie

- Nuttige tool
- Zeer toegankelijk
- Snelle beoordeling
- Evolutief in de tijd
  - Help een therapie of niet?
  - Hoe evolueert een “verhoogd risico” hond zonder therapie?

Diagnose osteoartritis

Orthopedisch onderzoek

Normal Range of Motion for Canine Joints

JOINT	RANGE OF MOTION (MAX)*		ANTICIPATED CHANGE WITH
	FLEXION TO	EXTENSION TO	
SHOULDER · relative to the spine and scapula	57°	165°	Loss of flexion
ELBOW · relative to the axis of the humerus	36°	166°	Loss of flexion
CARPUS · relative to the antebrachium	32°	196°	Loss of flexion
HIP · relative to the axis of the pelvis	50°	162°	Loss of extension
STIFLE · relative to the femur	41°	162°	Loss of flexion
TARSUS · relative to tibia with the stifle at 90°	38°	165°	Loss of flexion

*Range of motion expressed as flexion-extension in Labrador retrievers. Jaegger G, Marcellin-Little DJ, Levine D. Reliability of goniometry in Labrador Retrievers. Am J Vet Res 2002;63:979-986.

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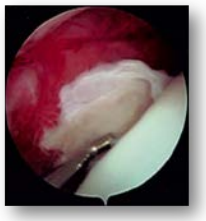
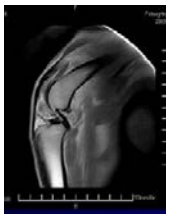
Diagnose osteoartritis

Aanvullend onderzoek

- **Aanvullend onderzoek**
  - Röntgen
  - Artroscopie
  - Artrocentese
  - Scan (MRI/CT)
  - Force/pressure plate analyse





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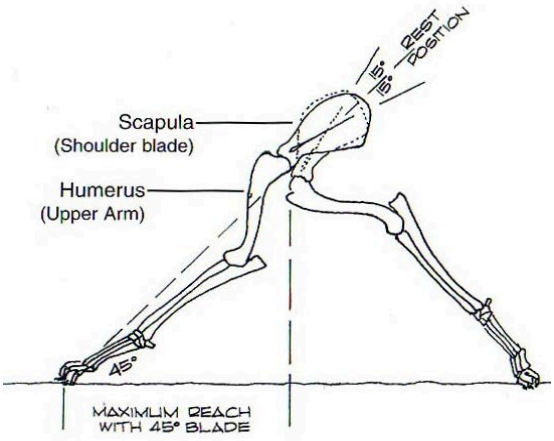
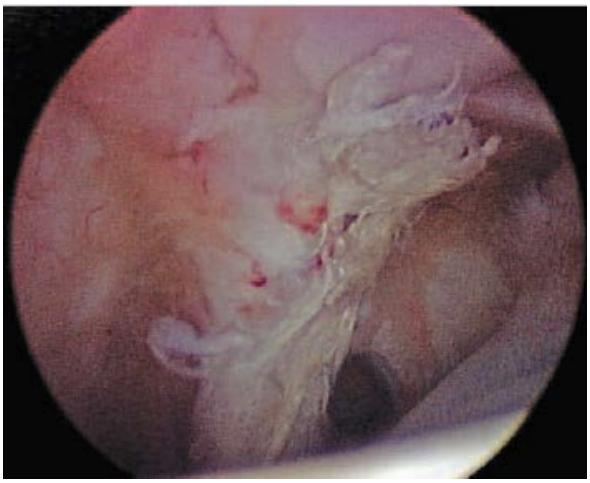
Schouder

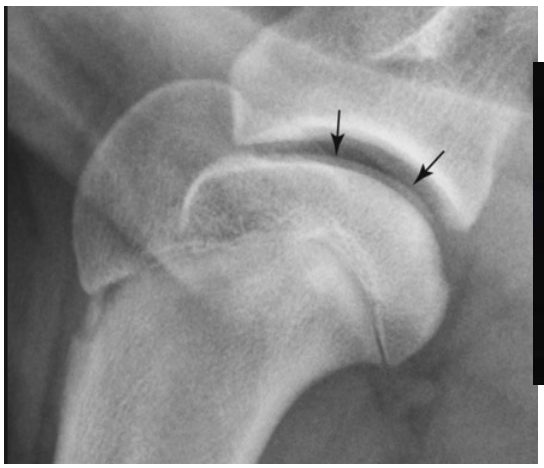


Schouder positionering RX

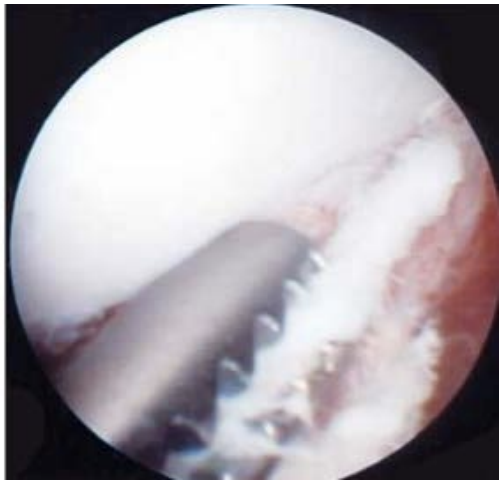
Schouder positionering RX

Diagnose van OA schouder

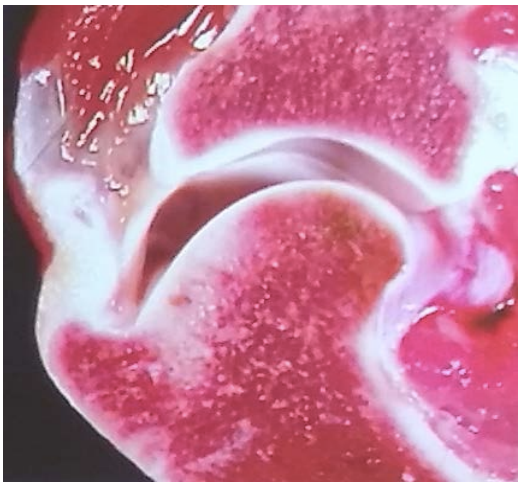




Diagnose van OA schouder

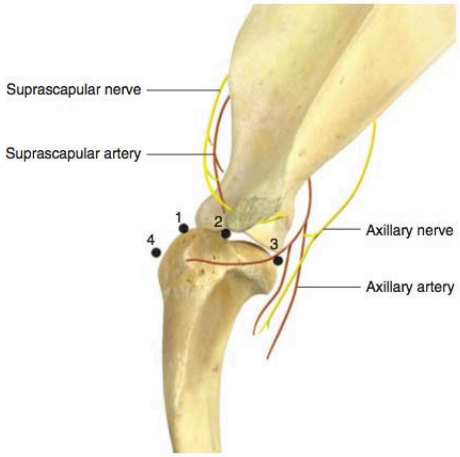


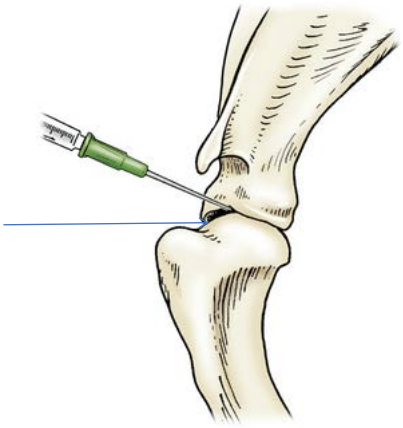
Schouder: puncties

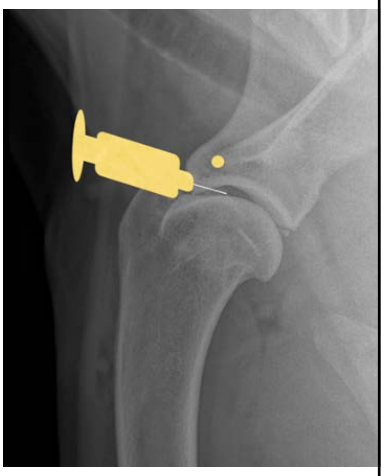


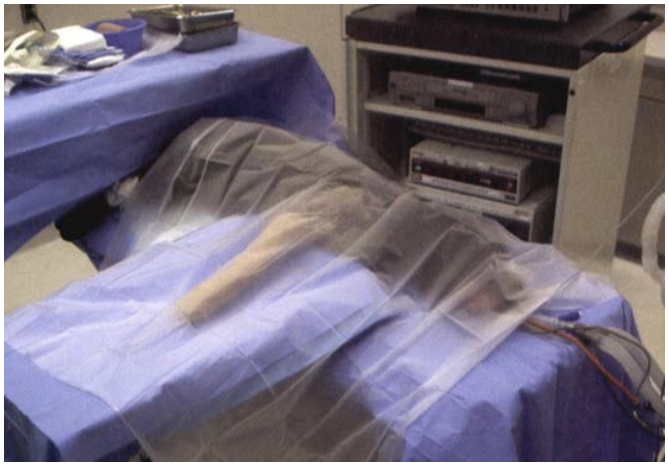
Punctie schouder

- Normale positie
- Lichte tractie
- 1 vinger onder acromion
- 19-20G naald (Aseptie!)
- Heel klein beetje naar proximaal richten

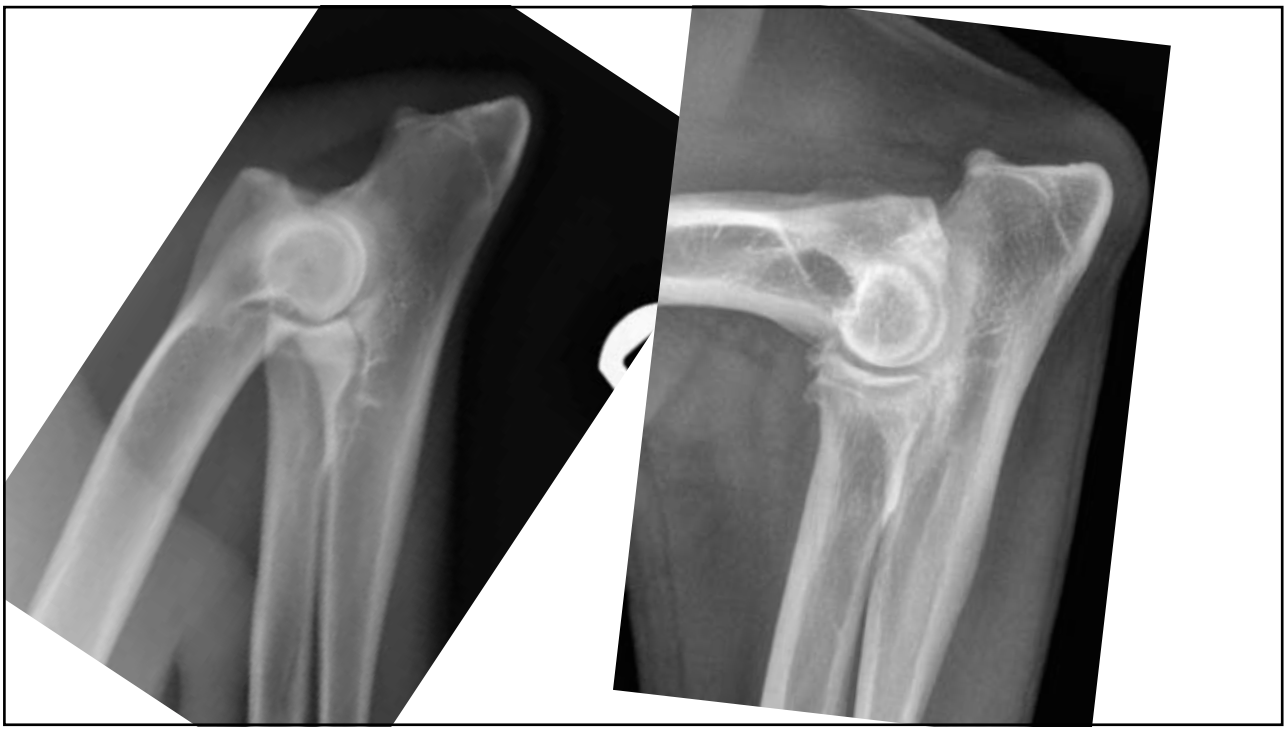

Suprascapular nerve
Suprascapular artery
1
2
3
4
Axillary nerve
Axillary artery

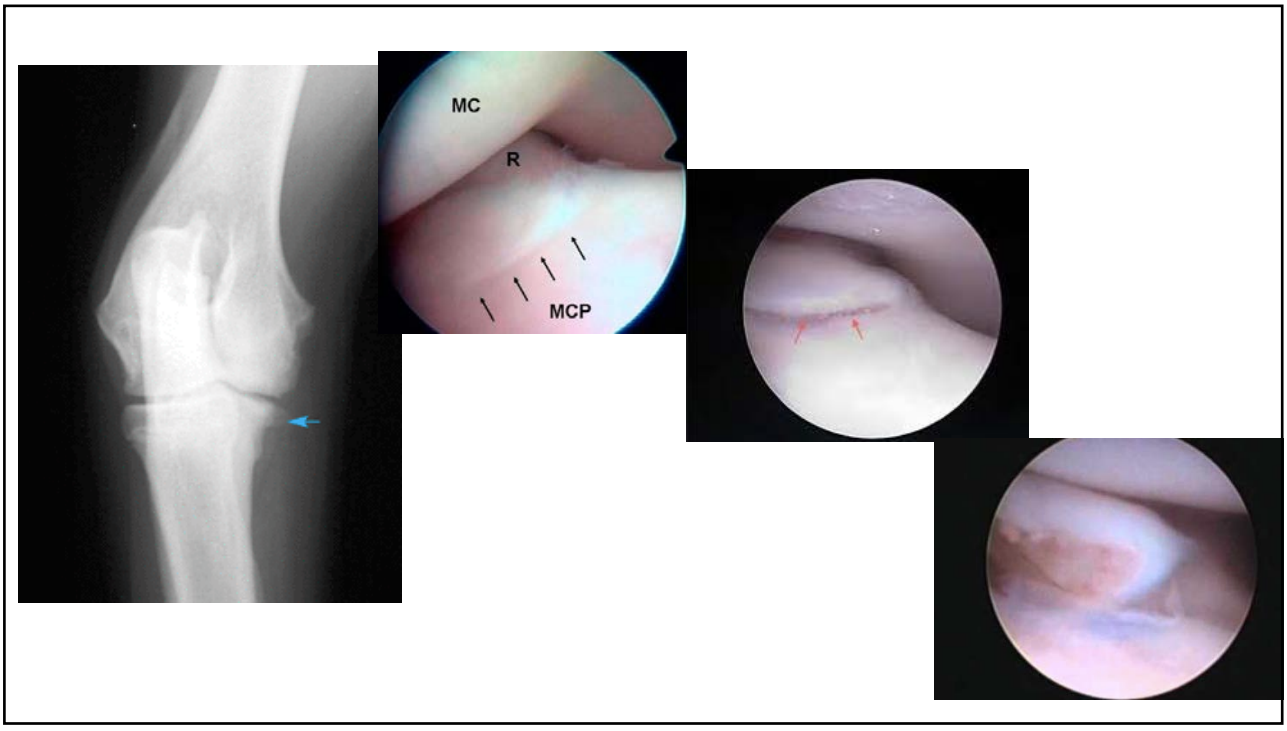


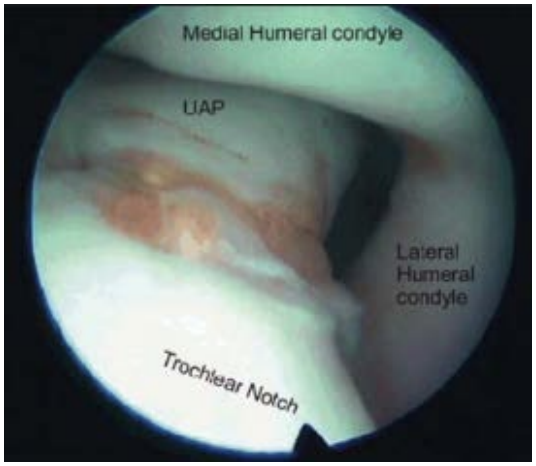


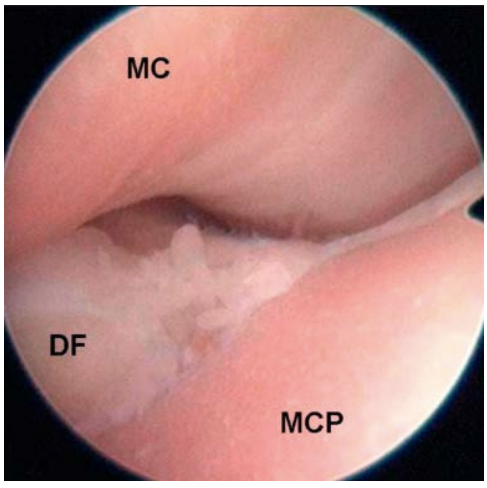


Elleboog

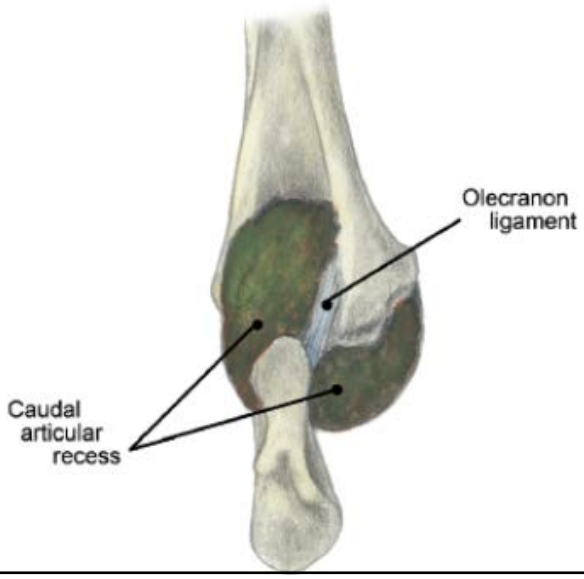


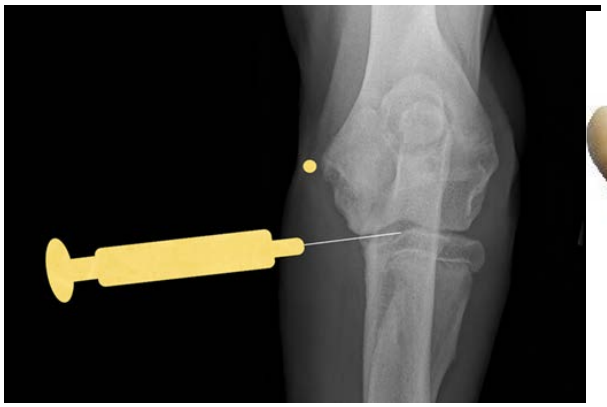

MC
R
MCP

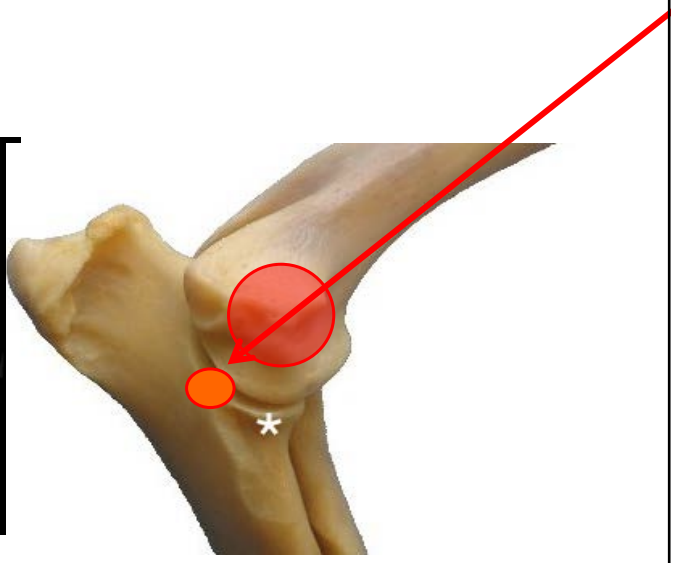

Medial Humeral condyle
LIAP
Lateral
Humeral
condyle
Trochlear Notch


MC
DF
MCP

Punctie plaats elleboog

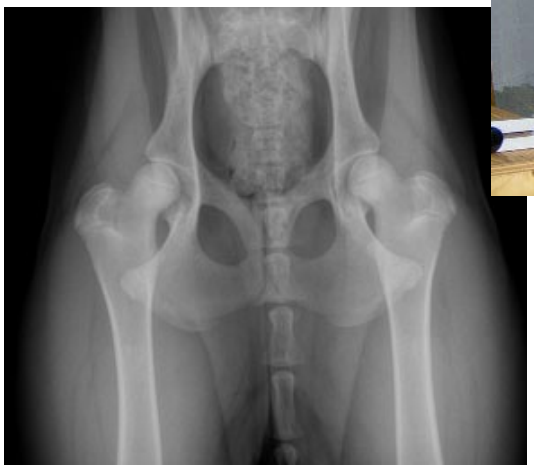






Tip

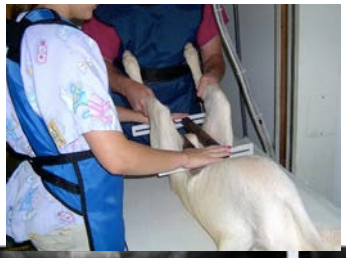
De heup

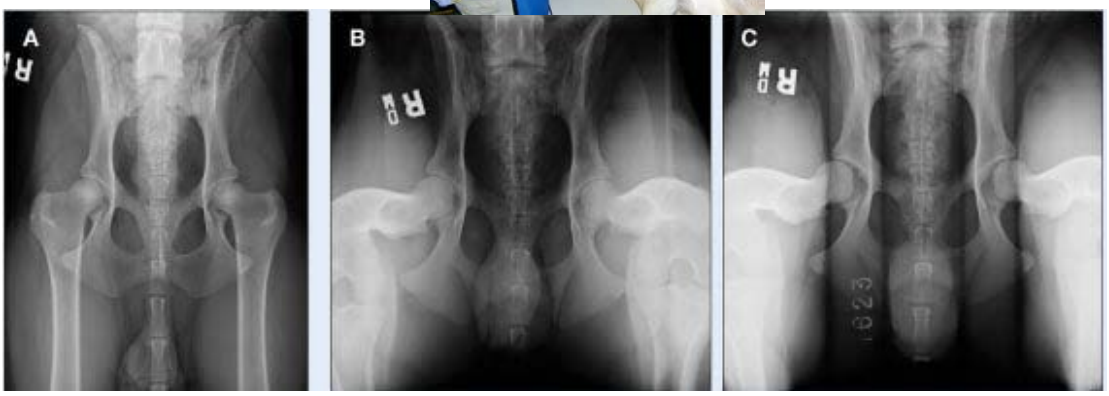


Frog view

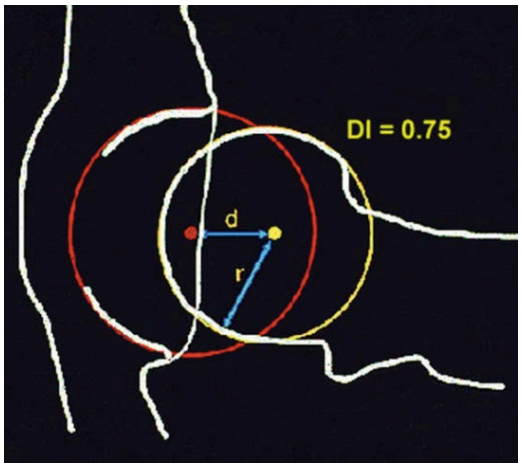
De heup

Laxiteits profiel

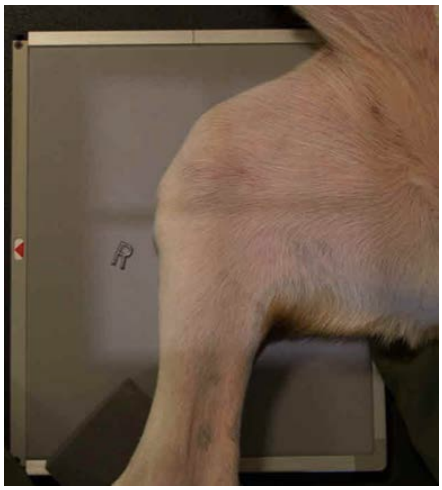




DI van 0 tot 1



De knie



Medic

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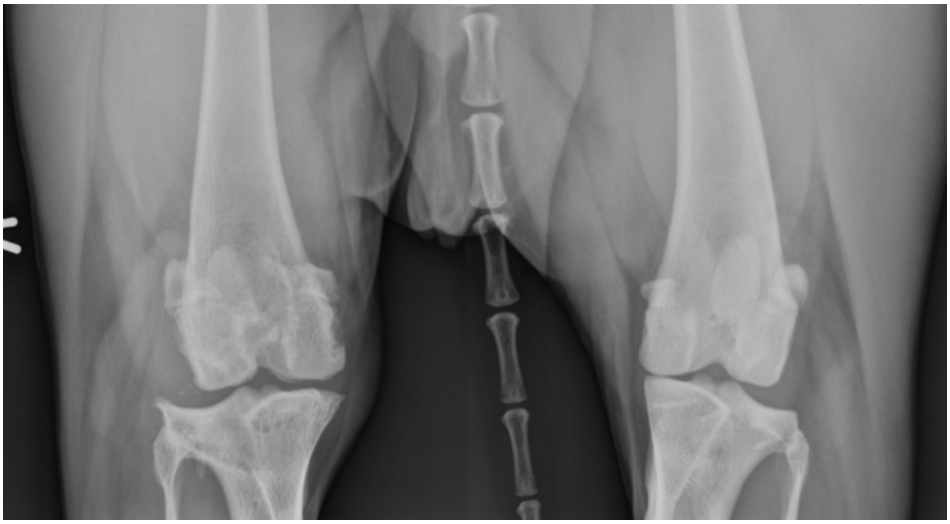

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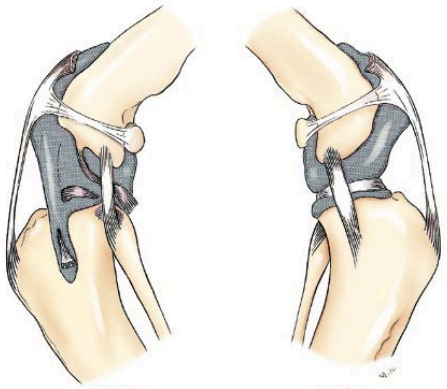
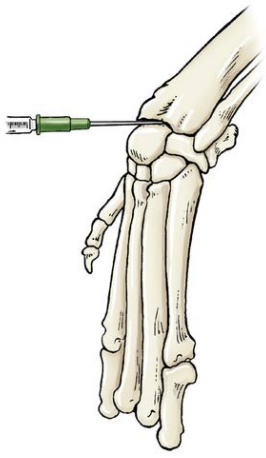
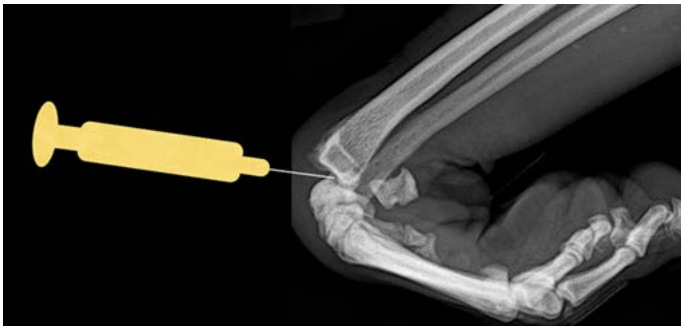


FIGURE 5-41 Capsule of left stifle joint.

Carpus





Multimodale aanpak therapie = conservatief

- Symptomen verminderen
- Progressie OA vertragen

↳ Genezing is dus niet mogelijk!!!

SMOAD's

- Symptom Modifiyng OA Drugs
- Pijn bestijding
- Geen effect op kraakbeen zelf
- Geen effect op progressie OA

DMOAD's

- Disease Modifying OA Drugs
- Progressie vertragen
- Homeostase regelen

Wat is de Therapie voor een arthrose patiënt?

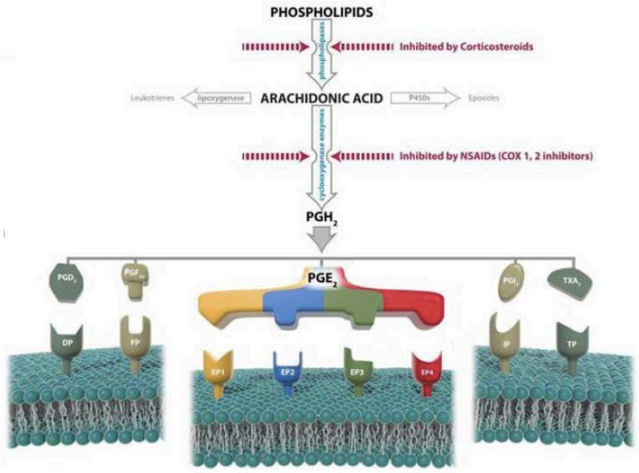
- Pijnmedicatie
- Voedingssupplementen
- Vermageren
- Aanpassing levensstijl
- Fysiotherapie/prolotherapie…

Pijnreductie

- NSAID
- Opiaten
- Pijnmodulerende middelen

NSAIDS

- Cox remmers:
  - Rimadyl
  - Onsior
  - Cimalgex
  - Trocoxil
- EP4 remmer: Galliprant



Is het veilig om langdurig NSAIDs toe te dienen?

- Wie zegt Ja?
- Wie zegt nee?

Bij OA: lange termijn

Review of the safety and efficacy of long-term NSAID use in the treatment of canine osteoarthritis

J. F. Innes, J. Clayton, B. D. X. Lascelles

The published, peer-reviewed literature was systematically searched for information on the safety and efficacy of long-term (defined as 28 days or more of continuous therapy) NSAID use in the treatment of canine osteoarthritis. Online databases were reviewed in June 2008 and papers were selected based on their relevance. Fifteen papers were identified and evaluated. Six of seven papers indicated a benefit of long-term treatment over short-term treatment in terms of the reduction of clinical signs or lameness; one study showed no benefit. Fourteen papers evaluated safety with calculated experimental (adverse) event rates (EER) between 0 and 0.31, but there was no correlation between study length and EER (r_s=−0.109, P=0.793). The balance of evidence for the efficacy of NSAIDs supports longer-term use of these agents for increased clinical effect. There is no indication in the literature that such an approach is associated with a reduction in safety, although robust data on the safety of long-term NSAID use are lacking in large numbers of dogs.

Vet Rec, 2010 166(8): 226-30

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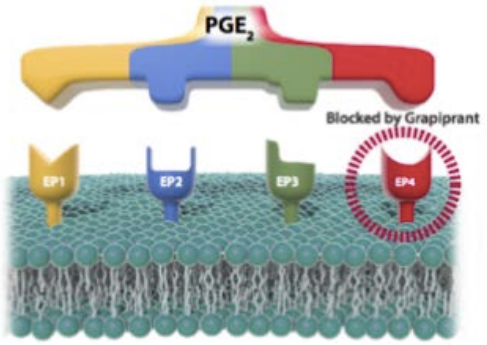
Galliprant: enkel voor arthrose pijn



THE NEW PIPRANT CLASS: Prostaglandin Receptor Antagonists (PRAs)

Opiaten

- Tramadol?
- De ene zegt dat het werkt
- De andere zegt: geen verschil met placebo na 1 week

Lack of effectiveness of tramadol hydrochloride for the treatment of pain and joint dysfunction in dogs with chronic osteoarthritis

Steven C. Budsberg DVM, MS; Bryan T. Torres DVM, PhD; Stephanie A. Kleine DVM; Gabriella S. Sandberg BS; Amanda K. Berjeski BS

JAVMA 2018, 252(4): 427-432

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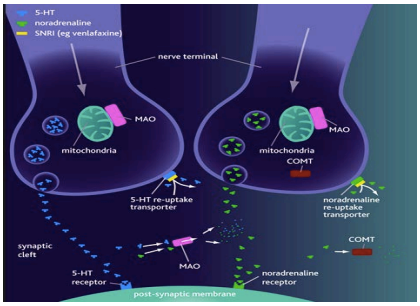
Tramadol: hoe komt dat het niet zo goed werkt?

- Zwakke μ-receptor agonist
- Uptake hond is variabel
- Metabolieten waarvan M1 meest actief is
- Hond produceert M1 niet hetzelfde als de mens

- TIP: werkt bij plotse opstoot van pijn



Gabapentin (humaan geneesmiddel)

- Pijn modulatie
- Zeer goede uptake bij de hond (10-15mg/kg TID)
- Affiniteit voor Gamma amino boterzuur receptor
- Blokkeren van Ca kanalen
- Sederend effect afh van dosis, zeker bij de kat
- Geen studies bij OA

Nonsurgical management of OA in dogs. Johnston et al . Vet Clin Small Anim 38 (2008) 1449-1470

Assessment of the effects of gabapentin on activity levels and owner-perceived mobility impairment and quality of life in osteoarthritic geriatric cats Guedes et al. JAVMA Vol 253 (5) Sept 1, 2018: 579-585

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Andere opiaten?

- Buprenorphine
- Fentanyl druppels/patches
- Pentazocine

Geen gegevens beschikbaar voor OA

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Nutraceuticals

- Helpen ze?
- Soorten
  - Glucosamine
  - Chondroitin sulphate
  - Omega 3 FFA
  - Collagen Type II
  - …

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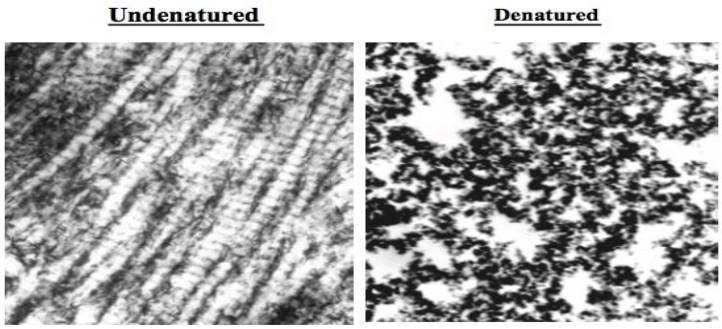
Niet-gedenatureerd collageen type 2

- Positief effect!
  - Minder pijn, manken en stijfheid
  - Meer activiteit



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Hoe werkt collageen Type 2?

- Uit kippen sternum
- Collageen reageert met Peyerse platen in darm
- Triggert immuunrectie
  - Minder afbraak collageen type 2 in kraakbeen
  - Anti-inflammatoir
- Blinded studie
  - 15 honden ged 90d (Deperle et al)
  - 25 honden ged 120 d (Peal et al)

J vet Pharmacol Therap. Deperle et al, 2005: 28,385-390
J vet Pharmacol Therap. Peal et al. 2007: 30, 275-278

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Studies: glucosamine vs placebo (activity monitoring)

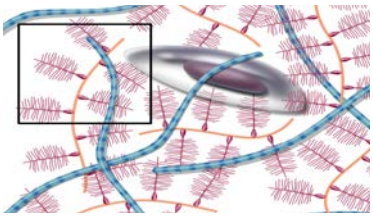
Efficacy of an oral nutraceutical for the treatment of canine osteoarthritis

A double-blind, randomized, placebo-controlled prospective clinical trial

Ruth M. Scott[1]; Richard Evans[2]; Michael G. Conzemius[1]
[1]College of Veterinary Medicine, University of Minnesota, Saint Paul, MN, USA; [2] Waukesha, WI, USA

Keywords
Dogs, osteoarthritis, glucosamine, activity monitor, chondroitin

Summary
Objectives: To assess the safety and efficacy of an orally administered nutraceutical (Glu/CS+; + for additional ingredient) for the treatment of clinical osteoarthritis (OA) in dogs.
Methods: In this double-blind, randomized, placebo-controlled clinical trial, client-owned dogs with clinical signs of OA in one or more joints were assigned to a Glu/CS+ (n = 30) or placebo (n = 30) group. Dogs were administered Glu/CS+ or placebo orally and wore an activity monitor (AM) continuously throughout a 97 day study period. Prior to the initiation of the treatment, seven days of baseline activity was collected. On days –7, 30, 60 and 90 of the study, owners completed a patient assessment form (Canine Brief Pain Inventory). Data between groups were compared.
Results: No serious adverse events were reported. No difference was found between groups when evaluating daily activity counts during the seven-day pre-treatment period and the 90-day treatment period. Owner assessment (pain interference and pain severity scores) improved over the 90-day treatment period for both groups, however no difference was found between treatment groups.
Conclusions: Treatment with oral Glu/CS+ for a 90 day treatment period when compared to placebo treatment did not result in a significant increase in activity counts in dogs with clinical OA. However, owner assessment scores similarly improved throughout the study period for dogs in both groups, suggesting a caregiver placebo effect in this outcome measure.



VCOT, 2017: 2018-2023

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Omega-3 vetzuren

- Veeeeel studies gedaan
- Positieve effecten gevonden
- Conclusie: “The conclusions of these studies should be considered with caution”

J vet Pharmacol Ther. Review of dietary supplements for the management of OA in dogs in studies from 2004 to 2014 Comblain et al 2015 39, 1-15

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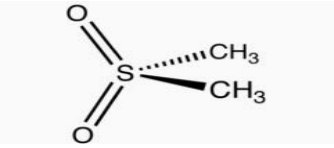
MSM: methyl sulfonyl methaan



- Verwant aan dimethyl surfoxide (DMSO)
- Organisch zwavel
- Methylering
- Antioxidant
- Anti-inflammatoir
- Effect op C-vezes
- Bouwsteen
- Anti-allergisch

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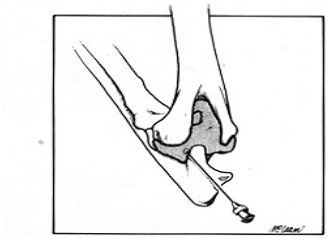
Intra-articulair corticostroiden

- Direct hoge dosis anti-inflammatoire substantie
- Goede anatomische kennis vereist
- Compartimentair (weinig of geen algemene effecten)
- Dikwijls effectief, maar voor hoelang?



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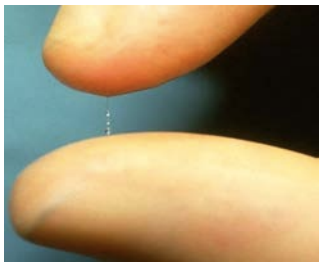
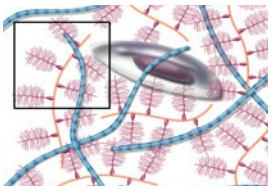
Intra-articulair hyaluronzuur



- HA
  - is de belangrijkste component van synoviaal vocht
  - Geeft visco-elisticiteit: smering
  - Neemt af bij OA
- Studies voor knieOA en heupdysplasie: positieve resultaten
  - Minder progressie OA
  - Pijnstillend
  - Anti-inflammatoir



Evidence-Based Compl and alternatie med. Carapeba et al 2016: 1-10
J vet sc. Nganvongpanit et al. 2012: 215-222

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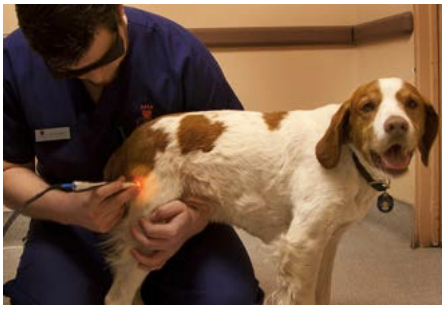
Fysiotherapie

- Passieve ROM
- Warmte compressen
- Laser



Prolotherapie…wat denk je zelf?

- Plaatjes
- Stamcellen
- Hyaluronzuur
- Sorbitol
- …

Vetzucht

- Dieet
- Beweging

Lifelong diet restriction and radiographic evidence of osteoarthritis of the hip joint in dogs

Gail K. Smith, VMD, PhD; Erin R. Paster, DVM; Michelle Y. Powers, DVM; Dennis F. Lawler, DVM; Darryl N. Biery, DVM, DACVR; Frances S. Shofer, PhD; Pamela J. McKelvie, VMD; Richard D. Kealy, PhD

- Purina onderzoek: 48 Labradors levenslang
  - 1 groep kreeg 25% minder calorie-intake
  - Andere groep werd obees
    - Kregen vroeger + erger HD

JAVMA, 2006

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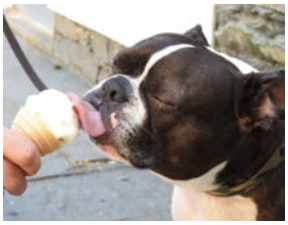
Gewichtsverlies

- Beetje is al genoeg (6-8%): pijnscores dalen bij honden met OA
- Dus: van 40kg naar 37 kg is al heel goed!



Marshall et al. Vet Res Communications 34, 241-253

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Levensstijl aanpassen

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