Critical appraisal – Randomised controlled trial questions

McCarthy et al (2007) Randomised double-blind, positive-controlled trial to assess the efficacy of glucosamine/chondroitin sulfate for the treatment of dogs with osteoarthritis

Introduction	
Are the aims clearly stated?	Yes
Methods	
Is the study design suitable for the aims?	Yes
Which population was studied?	Forty two dogs recruited via veterinarians – doesn't state where the dogs have come from
Were the treatments randomly allocated? If yes, how was the randomisation done?	Sort of Assigned by trial coordinator, who used order of recruitment to assign to alternate treatment groups
Were the groups comparable prior to intervention?	For lameness, joint mobility, pain, weight bearing and overall condition, yes. Gender, joints affected, age and weight not statistically tested – appears to be a possible difference in mean age and mean weight.
Was the person who administered the interventions blinded?	Yes
Is it clear what measurements were carried out in the study?	Yes
Were the correct measurements chosen? Do they reflect (or are they strongly related to) the	Yes

outcome of interest?	
Were previously established validated methods used to make the measurements? (e.g. Glasgow pain score, International Units etc)	Used an ordinal scoring system which has not been used previously
What outcomes were measured?	Severity of clinical signs (clinical scoring system) – made up of 5 parts - lameness, joint mobility, pain on palpation, weight-bearing, overall score of clinical condition. Measured at day 14, 42, 70, and 98
Are the outcomes clinically relevant?	Yes
Were the outcomes assessed blind?	Yes
Are the statistical methods described?	Yes
Was the statistical significance level stated?	Yes
Was the sample size justified?	Did a power calculation
Was ethical approval obtained?	Yes
Are the methods described in enough detail that you could repeat them?	More information needed about how the animals were recruited, how the scoring system training was performed and how the scoring system was used in dogs with multi-joint osteoarthritis.
Results	
Were the basic data adequately described?	Not really

Do the numbers add up? Are all subjects accounted for?	35/42 dogs completed the trial fully to day 70. All dogs not completing the trial were accounted for.
Was the statistical significance (p value) stated in the results? Is this consistent with the methods? (It should be stated in the sample size or power calculation)	Yes Yes
Were any side effects of the intervention reported if applicable?	Yes – two adverse drug reactions in the Glu/CS group.
What were the main findings/key results?	Glu/CS group – significant improvements ($P<0.001$) in pain, weight bearing and overall condition at Day 70 compared to pre-treatment scores. Carprofen group – significant improvements in all five parameters (but not at all time points). Weight bearing and joint mobility was improved at all 3 time points (also at day 98 for weight bearing). Joint pain was improved at day 42, lameness at day 70 and overall score at days 42 and 70. The average improvement in pain scores at day 70 were comparable between groups. A mean reduction in disease score in the carprofen group was greater than the Glu/CS group at day 70 for lameness, joint mobility, weight bearing and overall condition. Talked about demonstrating non-inferiority of Glu/CS at day 70 to carprofen – but it is not stated that this is a non-inferiority trial
Discussion and conclusion	
What do the main findings/key results mean?	That both carprofen and Glu/CS may have some benefits for dogs with OA, although the possible scoring system biases makes this difficult to assess

Are the negative findings discussed? How are the negative findings interpreted?	Yes Discussed the subjectivity of the scoring system
Does the discussion reflect the results?	Lots of discussion focused on Glu/CS
Interpretation	
What are the clinical implications of this study? Are the subjects in the study similar to those in the BET/your own?	Glu/CS may offer some relief for dogs with OA, but further trials using validated scales of assessment and a specifically targeted sampling frame are required Dogs in the study appear to be younger
General	
Who funded this study?	VetPlus (manufacturer of the glucosamine/chondroitin supplement) and PetSavers for funding one of the authors' residency