

MERCURY'S Hips

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Just like my dog Rideau before him, I decided to have Mercury x-rayed and sent to the University of Pennsylvania's PennHip evaluation program to see how his hips looked. The reason I chose PennHip for both dogs was a little different. With Rideau, he was being neutered at the same time as taking the x-rays, so I figured it wasn't too much extra to PennHip him while he was already under anaesthetic.

With Mercury, I was a little more knowledgeable and wanted PennHip done because it is a more accurate process. I had no real plans to breed Mercury, (and I had none with Rideau) - hip and elbow x-rays were for my own information and to make sure that all the training I do would not have any ill effects on their joints.

I had Mercury PennHip'd when he was around 6.5 months old. I had his elbows x-rayed as well and when I went to pick him up the vet tech told me that his elbows were fine or the vet would not have continued on with the hips. With PennHip, as soon as the process is started, the vet is obligated to send in the radiographs for evaluation. With other evaluation systems, the vet or dog owner can decide to withhold the x-rays from the certification organization and this has a negative effect on the whole process.

According to an article by Fred Lanting about the objectives of the OFA, they claim that "**Breeders working with the OFA have reduced hip dysplasia by 29% and increased the rate of OFA Excellent by 56%**". But if you think about it, if vets and/or owners get to choose whether they send in x-rays for evaluation, **how can these statistics be correct?** If your vet tells you that your dog is dysplastic, do you need to spend the extra \$XX.00 US to get a second opinion?

I asked about Mercury's hips and I was told that his hips were borderline. I was extremely upset by this news and instead of waiting the 6-8 weeks for the actual results; I began looking into what this meant.

Unfortunately I didn't get a copy of all the PennHip x-rays (they take 3 different views) but I did get a copy of what is called the 'Distraction' View:



The distraction view is taken while the hips are pushed apart (this in no way hurts the dog) to see the actual laxity of the joints. The dog is placed on his back, knees up to show a more natural position. From this position, a Distraction Index (DI)

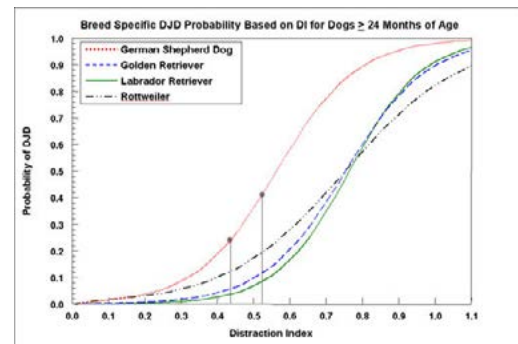
is calculated. From the PennHip Website: "*On average the distraction view has been shown to reveal 2.5 - 11 times more hip laxity (depending on breed) than the hip-extended view.*" From this x-ray you can clearly see that one side is much looser than the other. (you can also see my car on the right hand side because the film was held up to the window to take the photo).

So what did this mean??? Is my dog dysplastic? I didn't really know at that point.

From the x-ray, his hips don't look badly formed, just loose, so I started reading, asking questions and discussing the x-ray with a variety of people. [Fred Lanting](#) was especially helpful and told me that Mercury could be showing something called '*cavitation*' ([what is cavitation?](#)) Cavitation is not a bad thing - but it is rare. Cavitation is, for simplicity sake, an air pocket. I waited for the PennHip results - I waited for cavitation.

I received the results on New Years Eve - It wasn't cavitation. Mercury's DI was .44 for one hip and .52 for the other side. This put him in the 30th percentile according to PennHip. This means 70% of GSDs tested had tighter hips than him. The mean DI for a GSD was .43 at that time (the average laxity can change over time when more results are gathered). PennHip states: "*DI is greater than 0.30 with no radiographic evidence of DJD. There is an increasing risk of developing DJD as the DI increases; low risk when DI is close to 0.30, high risk when DI is close to 0.70 or above.*" So what does this all mean?? It meant that he has a 25% chance of developing DJD (Degenerative joint disease) in one hip and 40% in the other and according to the PennHip results, he currently has no DJD in either hip.

This graph shows Distraction Index results vs. the probability of developing Degenerative Joint Disease for 4 different breeds.



Generally, it is agreed that laxity in the hip joints in puppies determined through palpation, wedge technique, or by compression/distraction studies is correlated in a positive manner with the radiographic evidence of development of Osteoarthritis in the adults (Lust 1972, 1993; Smith 1995). This strongly supports the concept that joint laxity is an indicator of hip dysplasia.

Hereditary bone and joint diseases in the dog By Joe P. Morgan, Alida Wind, Autumn P © 2000

Again, it was fine to have the results - but what does it all mean, and what did it mean to Mercury's health and my plans? I asked

more questions about the results and found out that these distraction index measurements don't equal a death sentence and that I would probably be able to go forward and do everything I had planned on. But...one thing I had wanted to do was to have Mercury breed surveyed at some point and a breed survey needs passing hips & elbow x-rays from either the OFA or the SV's A-Stamp Program. So after discussing this and reading more, I found out that Mercury may easily pass an OFA evaluation. What? He "fails" PennHip but could pass OFA? How confusing is that? Well, first of all, PennHip is not Pass or Fail - it is simply a measurement. According to Fred Lanting "*For practical purposes, in most breeds, you could say that laxity is dysplasia.*" The measurement of laxity just shows you how far from normal your dog is and how your dog rates compared to all others of your breed in their database. OFA and 'a' stamp only look at the hip extended view and **this view can hide laxity**. "*This (the hip extended view) tends to present an artificially tight appearance to all but the worst hips, and is certainly not representative of the forces at work in the standing or walking/trotting dog.*" -Fred Lanting

Being completely confused - not just with the x-rays, DI ratings and explanations - but thinking about ALL other dogs rated by OFA - I decided to have Mercury x-rayed again and have this radiograph sent to the OFA for a preliminary evaluation. Now, if I had of known everything before I started, I could have had the hip extended view also sent to OFA at the same time I had PennHip done. I had him re-x-rayed when he was just over 8 months.

OFA preliminary "GOOD". Not Fair, not Borderline, Not Dysplastic..... Good. No finding of subluxation.



While I was having him x-rayed for the second time (where I got to actually help) I had a long discussion with the vet (who was not the same vet that did the PennHip x-rays). I was not surprised to hear that MANY breeders have their dog's hips and elbows x-rayed and if the elbows are not good, they don't have them sent in to OFA. This is a **BIG red flag** that shows puppy buyers to **beware of dogs without elbow ratings!** Like I previously mentioned, PennHip requires a vet to follow through with

submitting the radiographs for evaluation. A-Stamp also requires this, but vets in North America are unaware. Unfortunately, PennHip does not do elbows.

During my discussion with this vet, she was amazed at my knowledge of hips, and my knowledge of the systems and how they work. She told me that my ethics were well ahead of most breeders she had met as I can only see improvement in the breed if we are honest about the dogs we are breeding and those that have been bred. I think every breeder should encourage their puppy buyers to have x-rays taken AND submitted for evaluation to help them with their breeding program.

So, how did my dog pass OFA but 'fail' PennHip?

Relationship of OFA Score to DI (Distraction Index)

Hips were evaluated in a population of 65 large-breed dogs both by the official OFA radiographic process and by the compression/distraction stress radiographic method (PennHip). An analysis of the distribution of DI scores corresponding to the seven OFA scoring categories revealed several interesting findings. All dogs graded as having mild, moderate or severe HD by the OFA had corresponding DI scores above 0.0 (mean DI 0.55), indicating excellent agreement of the two scoring methods relative to disease phenotypes. That is, all dogs that the OFA judged to have dysplasia were clearly in the hip hyperlaxity category (OA <osteoarthritis> susceptible) as judged by the distraction method.

The converse, however, was NOT true. Of the dogs having hips judged excellent by the OFA, 50% had DI scores in the OA susceptible category, above 0.3 (mean DI 0.3). Further, 66% of the dogs judged to be good and 100% of the dogs judged fair by the OFA had DI scores greater than 0.3 (mean DI 0.35 and 0.50 respectively). Therefore a high percentage of dogs that were officially approved for breeding by OFA subjective scoring had hip laxities corresponding to OA susceptibility. Whether dogs with hip hyperlaxity actually express OA within their lifetimes or not may be of little importance if their genetic makeup they carry or have the potential to transmit the susceptibility for OA to their offspring. It is this very fundamental association between hip laxity and susceptibility of OA that we feel is not addressed by the current OFA diagnostic method and which perhaps explains the poor progress in reducing HD frequency after 31 years of application of OFA score as a selection criterion.

From the book: **Hereditary bone and joint diseases in the dog**
By Joe P. Morgan, Alida Wind, Autumn P © 2000.

So, in the end, what does it all mean.... It means that hips should not just be a pass or fail part of breeding. Knowing what you have, understanding what it means is more important than whether your dog can pass OFA.

Recently, an article appeared in Dogs in Canada - **Is it time to put OFA to sleep?** by Dr. Arnold L. Goldman based on two JAVMA articles that states what I already figured out and have reiterated here. Hip dysplasia increases with age and testing young dogs without seeing the complete picture proves nothing and does nothing to prevent more dogs from developing issues. From what I've seen in all my years in German Shepherds, breeders have more interest in passing their dogs through whatever system they

can, rather than eliminating the disease. Unfortunately, I don't see any changes in the foreseeable future.

So, what conclusions does this bring me to? First and foremost, knowing that laxity is hereditary, my dog should not be bred. I am also going to be careful with him as far as jumping - but that should apply to any puppy.

“Efforts by dog breeders and veterinarians to reduce the prevalence of the disorder have proven marginally effective.” **Smith G.K., Biery D.N.** New concepts of coxofemoral joint stability and the development of a clinical stress- radiographic method for quantitating hip joint laxity in the dog. *J Am Vet Med Assoc.* 1990;196:59-70.

Based on 444,451 progeny in the OFA Hip database with known sire and dam hip scores

		Dam			
		Excellent	Good	Fair	Dysplastic
Sire	Excellent	T = 13,694	43,240	8,077	2,255
		N = 13,177 (96%)	40,420 (93%)	7,288 (90%)	1,940 (86%)
		D = 517 (4%)	2,820 (7%)	789 (10%)	315 (14%)
	Good	T = 42,045	195,696	45,874	12,724
		N = 39,465 (94%)	175,840 (90%)	39,766 (87%)	10,159 (80%)
		D = 2,580 (6%)	19,856 (10%)	7,108 (15%)	2,565 (20%)
	Fair	T = 6,214	41,304	13,475	4,114
		N = 5,611 (90%)	35,407 (86%)	10,772 (80%)	2,985 (73%)
		D = 603 (10%)	5,895 (14%)	2,703 (20%)	1,129 (27%)
	Dysplastic	T = 1,569	9,465	3,123	1,582
		N = 1,341 (85%)	7,651 (81%)	2,249 (72%)	1,018 (64%)
		D = 228 (15%)	1,814 (19%)	874 (28%)	564 (36%)

T = total number of progeny; N = number and percent of normal progeny; D = the number and percent dysplastic progeny.

“Hip dysplasia is genetically inheritable and is polygenic and multifactorial. In short, you can get it in your breeding program when you bred from animals that did not show it.” **Canine Hip Dysplasia Part I**, by John C. Cargill MA MBA MS & Dr. Susan Thorpe-Vargas Copyright May, 2000 - 2009

In a study conducted by the Seeing Eye Inc, Morristown, NJ 07963, USA hip quality was assessed for 2,037 German Shepherd Dogs and 1,821 Labrador Retrievers from 1980 to 1996. A subjective hip score assigned by 1 radiologist was used to assess hip quality during the study period. In the past 8 years, the distraction index was also used. Genetic change was produced by selecting a small percentage of dogs to be parents of the next generation. Dogs were selected to become parents of the next generation on the basis of estimated breeding values. These were calculated by combining observed values of individual dogs with known relationships in the population pedigrees to predict which dogs were the best candidates for selection as parents. **RESULTS:** In < 5 generations of selection, **the percentage of German Shepherd Dogs with canine hip dysplasia at 12 to 16 months of age decreased from 55 to 24%.** Among Labrador Retrievers, the percentage decreased from 30 to 10%. **CLINICAL IMPLICATIONS:** This report gives practitioners **documented proof that genetic selection will work to improve hip quality.** Dog breeders must be advised to be patient, however, to allow enough generations to elapse to make meaningful genetic change.

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Mercury is now neutered (not solely because of his hips) and my study of canine diseases continues. I do not use OFA for my dogs but continue to use a combination of PennHip and the SV's a-stamp program. Since I wrote this article, the SV now has an online database which was one of the only reasons I liked OFA.

To me, proving breed worthiness is like filling a bucket. Everything you do adds to the bucket and when it's full is when you can say “yes, this dog should be bred”. Health testing, good pedigree, proper temperament and titles all contribute, they all help to fill the bucket and you can't fill a bucket with only one of these. But if a breeder isn't doing everything they can, the bucket will never be full. I have read a few ‘excuses’ for not using the PennHip screening method from breeders. None of which hold any water....

IMPROVE HIPs

- Breeding with PennHip & OFA or A-Stamp
- Breeding with PennHip
- Breeding with OFA or A-Stamp
- Breeding with Preliminary Evaluations only
- Breeding with no x-rays

