Dr. Davis sites, if a dog fails on laxity alone, and no arthritis present, then Dr. Davis uses his precise positioning, he can get dogs to pass. He claims he did a "study". That statement is far from the truth. He sent out a survey to previous clients. It wasn't a study. It wasn't peer reviewed. Dr. Davis is NOT a board certified radiologist or orthopedist. He is a self proclaimed expert taking advantage of breeders. His goal is clearly monetary.
His precise positioning is NOT what OFA asks for. The dogs that he falsely gets to pass, are then bred. The disease continues.
He has gotten away with this by saying things like, "His positioning is close" to what OFA asks for. Unsuspecting breeders flock to him for this positioning, and its just not right.
Why is Dr Lonnie Davis allowed to deviate from what OFA asks for? And now with Cathy Turners article, it appears the GRCA endorses his procedure.
I can prove that when Dr. Davis repositions, his positioning is just as wrong as when patellas fall to the the outside of femur. Members need to be warned that his "Precise Positioning" will not help our breed make progress on hip dysplasia. As a matter of fact it is hurting our breed. A retraction and warning of some sort is due to the memebers.

Goldens 101

by Cathie Turner of the Breeder Education Committee

Both of these positions are equally wrong.

LEFT: With patellas falling to the outside, this loosens the hip socket.

RIGHT: With patellas over rotated so they face each other, this tightens up the hip socket (falsley). Study after study shows this to be true.
The position on the right is Dr. Lonnie Davis "Precise Positioning".

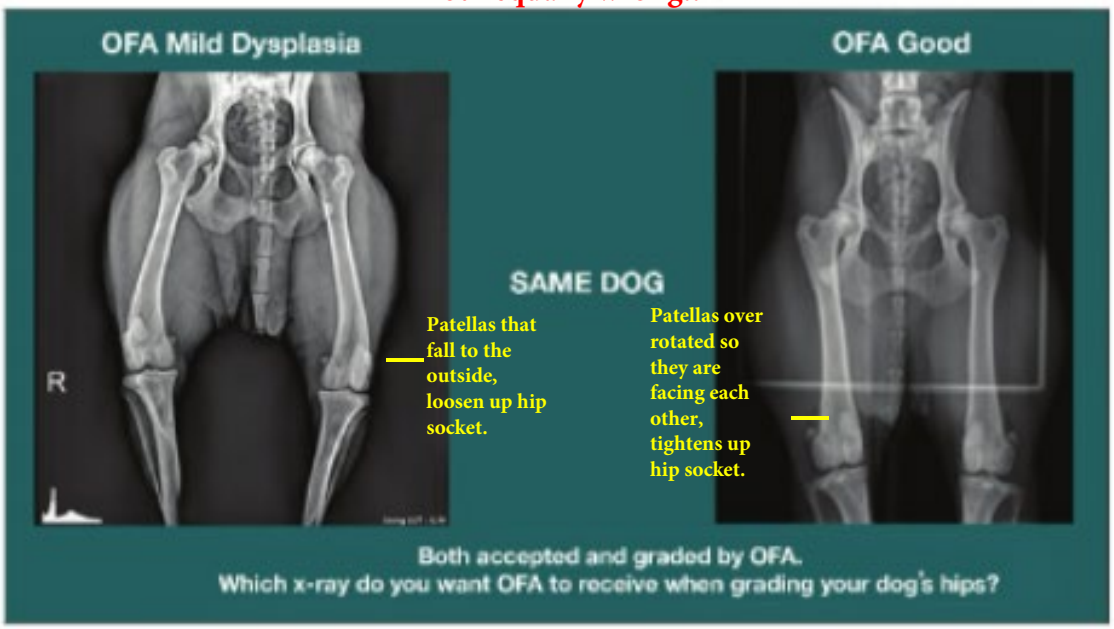
When members see the GRCA endorsing and printing in this magazine the position to the right, it's only logical they would believe this positioning correct.

It is NOT correct! Both images equally wrong.

What's Your Position on Hip Dysplasia?

You Have Choices

Both equally wrong!!



The primary purpose of this column is to discuss positioning of OFA radiographs. But it's worthwhile to start by exploring some advances in knowledge about canine hip dysplasia, or CHD, since the founding of OFA and the 1991 article in the *GRNews*.

When the Orthopedic Foundation for Animals was founded in 1966, its mission was **"to provide radiographic evaluation, data management and counseling for Canine Hip Dysplasia."** In 1991, the cover story of the March-April *GRNews*, entitled "Can You Shoot From The Hip?," gave us a look at two hip X-rays and the issue included a quiz about hips. Thirty years later we have made statistical improvements in the incidence of hip dysplasia, but we have little "counseling" data to reduce hip dysplasia in Goldens.

The first Project Manager for OFA was Wayne Riser DVM. Riser wrote that hip dysplasia was primarily a bio-mechanical issue and there are certainly bio-mechanical aspects. This is what Dr. Riser wrote:

"In the dog, the hip is normal at birth. Intrauterine stresses are not sufficient to produce incongruity of the hip. The first time such forces are great enough is when the pup begins to take its position to nurse.

"Observations of the disease in man, dog, and a number of other mammals for many years have culminated in the conviction that the bony changes of hip dysplasia, regardless of species, occur because the soft tissues do not have sufficient strength to maintain congruity between the articular surfaces of the femoral head and the acetabulum."

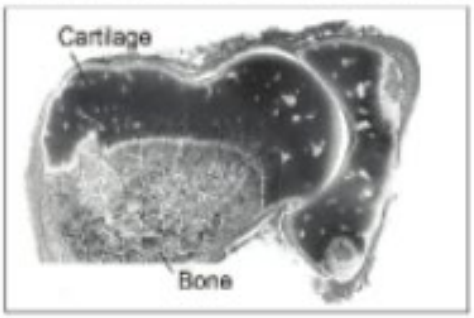
(Riser 1985)

GRCA Breeder Education Committee:
Cathie Turner, Chair • Pat Flanagan • Robin Bowen • Susan Babich • Linda Willard

OFA is very clear on its positioning. They want legs extended and parallel with table and each other.
They want the femurs rotated internally until the patellas are midline, in line with the grooves.
Dr. Davis has this description written all over his website stating it is correct. Yet he doesn't follow this. He has been able to not bring notice to this by saying his positioning "is close".

These dogs receive a passing grade because socket falsely tightened up. They are bred. The disease is passed on and continues. Dr. Davis has been doing a disservice to us.

Hip construction - this is the hip joint of a one-day-old puppy. The cartilage tissue does not show up on an x-ray until the minerals are deposited that form bone. Proper development of the joint depends on maintaining the proper fit between the head of the femur and the socket (acetabulum).



After the puppy is a month of age, the joint capsule replaces the teres or round ligament and is responsible for maintaining the proper fit or congruity between the head of the femur and the acetabulum. This contemporary summary of the veterinary understanding of what happens in hip dysplasia is available online at *www.ivis.org/library/mechanisms-of-disease-small-animal-surgery-3rd-ed/pathogenesis-of-hip-dysplasia*.

So how do we square this bio-mechanical view with the conclusion **"CHD is moderately heritable and, given its impact on welfare should be considered an imperative breeding priority"? (OFA website)**

One reason we have not had great progress with managing hip dysplasia is that it is being treated as a single gene disease, with a test for carriers. In canine hip dysplasia, there is no excellent hip gene, although that is what most breeders are selecting for. In polygenic disorders, the phenotype of the individual (what the dog looks like and how it moves) does not directly represent its genotype. Breeders must break down affected phenotypes into traits that more directly represent the genes that control them. These include clinical signs of lameness (especially during the critical period of bony ossification between six and eighteen months of age), palpable laxity, deep acetabula, rounded femoral heads, the absence of remodeling, deeply seated hips on an extended leg view, and radiographic distractibility.

All dogs do not have hip dysplasia due to the same gene combinations. A dog with laxity and subluxation but normal anatomy, has hip dysplasia caused by different genes than a dog with no subluxation but malformed sockets. If one were to breed a quality dog which has shallow hip sockets, it should be bred to a dog with deep hip sockets. Two dogs with fair hips can be bred together and produce much worse hips if they share detrimental traits, or could improve on each other if they complement each other's good traits. You need to select for enough genes influencing normal development, to get above the threshold where dysplasia develops. Not all of these aspects will ensure a genetically normal dog, but the chances increase with the more that are present.

Polygenic disorders such as hip dysplasia have been more difficult for breeders to manage. To manage them, they must be considered as threshold traits. A number of genes must combine to cross a threshold producing an affected individual. If phenotypically normal parents produce affected offspring, both should be considered to carry a genetic load that combined to cause the disorder. Managing Polygenic Disease: Canine Hip Dysplasia as an Example - Jerold S. Bell DVM; Tufts University School of Veterinary Medicine. Canine and Feline Breeding Conference 2003.

NEW INFORMATION ALLOWS MORE CHOICES.

Since 1991 we have learned more about how environmental and hormonal changes can also play a role in hip dysplasia. The choices we make as breeders are important. Breeders strive to breed their bitches to males that will maximize the odds of producing puppies that will have normal hips. But are we doing enough? Digital radiographs are the norm now, most stud dog owners have a copy. Are we actually looking at hip X-rays of possible sires? Very importantly are we looking deeply enough? Many deleterious genes do not manifest themselves as symptomatic during the prime breeding life of the dogs.

Fortunately Golden Retriever breeders have access to K9data and OFA which allows us to look at vertical pedigrees that were difficult to access previously. By checking the hip status of the dogs in the vertical pedigree, we can look at a family of dogs. There is an excellent article on the OFA website *www.OFA.org/pdf/howanart.pdf* that provides important information on vertical pedigrees. The closing statement in the *GRNews* article on CHD from OFA (in 1991) remains as true today as it was then:

"A dog with excellent hips but with more than 25% of his brothers and sisters being dysplastic is a poorer breeding prospect than a dog with fair hips and fewer than 25% of its brothers and sisters being dysplastic."

Hip Dysplasia A Guide For Breeders and Owners; Dr. E Al Corley and Dr. G. G. Keller as quoted in GRNews - Volume XXXXVII, No. 3, May-June 1991, page 7.

Hip dysplasia is also affected by hormones. Dogs sterilized at a young age have many deviations from the normal growth of an intact dog. Breeders have known for years the dogs sterilized early didn't end up looking (phenotypically) like the dogs that were kept as part of a breeding program. But in the last 10 years we have learned a combination of interrupted endocrine system development and open growth plates in puppies produce a significantly higher incidence of hip dysplasia in Goldens altered early as opposed to those kept intact until at least 12 months of age.

We know hip dysplasia is more prevalent in larger, heavier dogs so Golden Retrievers are always going to be more prone to hip dysplasia than Greyhounds. One factor we can control is early growth and weight. A dog that is too heavy ends up with more stress on his hips and the teres ligament, joint capsule, cartilage and bones of the hip joint at a time they are remodeling to obtain adult size. It behooves responsible

(continued on next page)

breeders to make sure puppies we produce grow at a slow rate and adult dogs are kept in ideal weight.

We used to believe altering a dog would not cause a gain weight. Now we know sterilization does affect dogs' tendency to become overweight. In 2019 Simpson and co-workers showed a strong association between early sterilization, becoming overweight and orthopedic injury in Golden Retrievers (PLoS ONE 14(7):e0209131, 2019 *10.17/journal.pone.0209131.*) This puts extra stress on the hips - on all the elements which are supposed to ensure congruity. We need to make choices about sterilization that will not work against the good choices made in deciding on the sire and dam of the litter. We must educate puppy buyers about the importance of healthy weight.

THERE IS ONLY ONE TIME YOU CAN CHOOSE TO MAKE A DIFFERENCE. POSITIONING MATTERS.

Having put so much time and effort into selecting the parents and raising puppies appropriately, it is surprising how many breeders simply **make a choice** to send to OFA the radiograph their veterinarian hands to them. This step has a huge impact on your breeding program and the work you have done for years. Yet some breeders are submitting radiographs that may contribute to their dog's getting an OFA rating lower than it should be.

Hopefully after reading this column you will feel differently about just acknowledging what your veterinarian says is an acceptable x-ray and you will feel comfortable showing him or her samples of what a good x-ray should look like.

The photograph at the beginning of this column is from a website maintained by Dr. Lonnie Davis DVM, DABVP. Dr. Davis wrote an article about positioning which was printed in the January-February 2013 issue of *GRNews*. You can find the article on his website at *www.caninehipxray.com*.

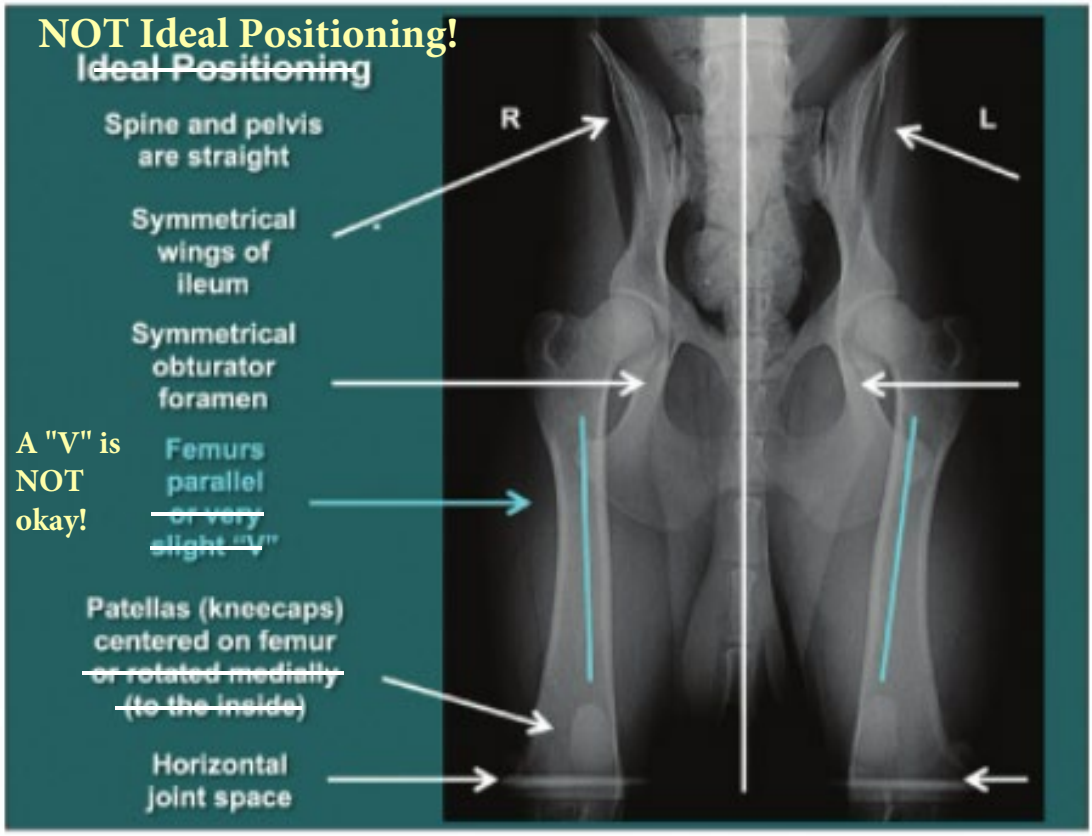
When Dr. Davis did a study evaluating dogs of multiple breeds that failed their OFA hip evaluation because of **subluxation only**, he found 81.8% (27) of the 33 dogs that had their hips re-x-rayed and resubmitted to OFA between January 1, 2012 and October 13, 2012, received a passing grade. *(One dog improved but still failed; two dogs received the same grade and failed and three dogs dropped a grade and failed.)* The OFA site itself notes the importance of positioning *www.ofa.org/diseases/hipdysplasia/hip-screening-position-procedures.*

The continued success of your breeding program is dependent upon your requiring the radiograph you are submitting to OFA is well-positioned and clear. This is impotant because:

- Correct positioning provides the most accurate diagnostic evaluation
- Deviation from the ideal positioning reduces accuracy
- Deviation from the ideal can make normal hips look abnormal
- Ideal positioning will not make abnormal hips look normal
- Redoing" radiographs is not "shopping" for good hips; it is seeking accuracy.

Below is a slide courtesy of Rhonda Howan, Research Facilitator, Health and Genetics Committee, showing what you

(continued on page 16)



This was NOT a study. It was NOT peer reviewed. Dr. Davis is a self proclaimed specialist. He has no doubt made a lot of money judging by the number of people that flock to him for a passing grade.

All these highlighted bullets are the truth, but Dr. Davis doesn't follow this. His positioning he claims is close enough.

Why does Dr. Davis believe he can deviate from what OFA asks for?

Some members are beginning to understand this is wrong, but there are many that believe he is helping. They need to be warned!

This image is being promoted as "Ideal Positioning"! It was taken from Lonnie Davis website.
This is NOT ideal nor is it what OFA asks for.
With patellas being over rotated, so they face each other, this falsely winds up and tightens the hip socket.
And, in order to achieve this position, the legs can't physically be parallel to each other like OFA asks for. So Cathy has coined the term that a "slight V" is okay!
NO ITS NOT! No where in any literature is this written!
In order to justify this horrible position, that phrase was added. That is deception!!

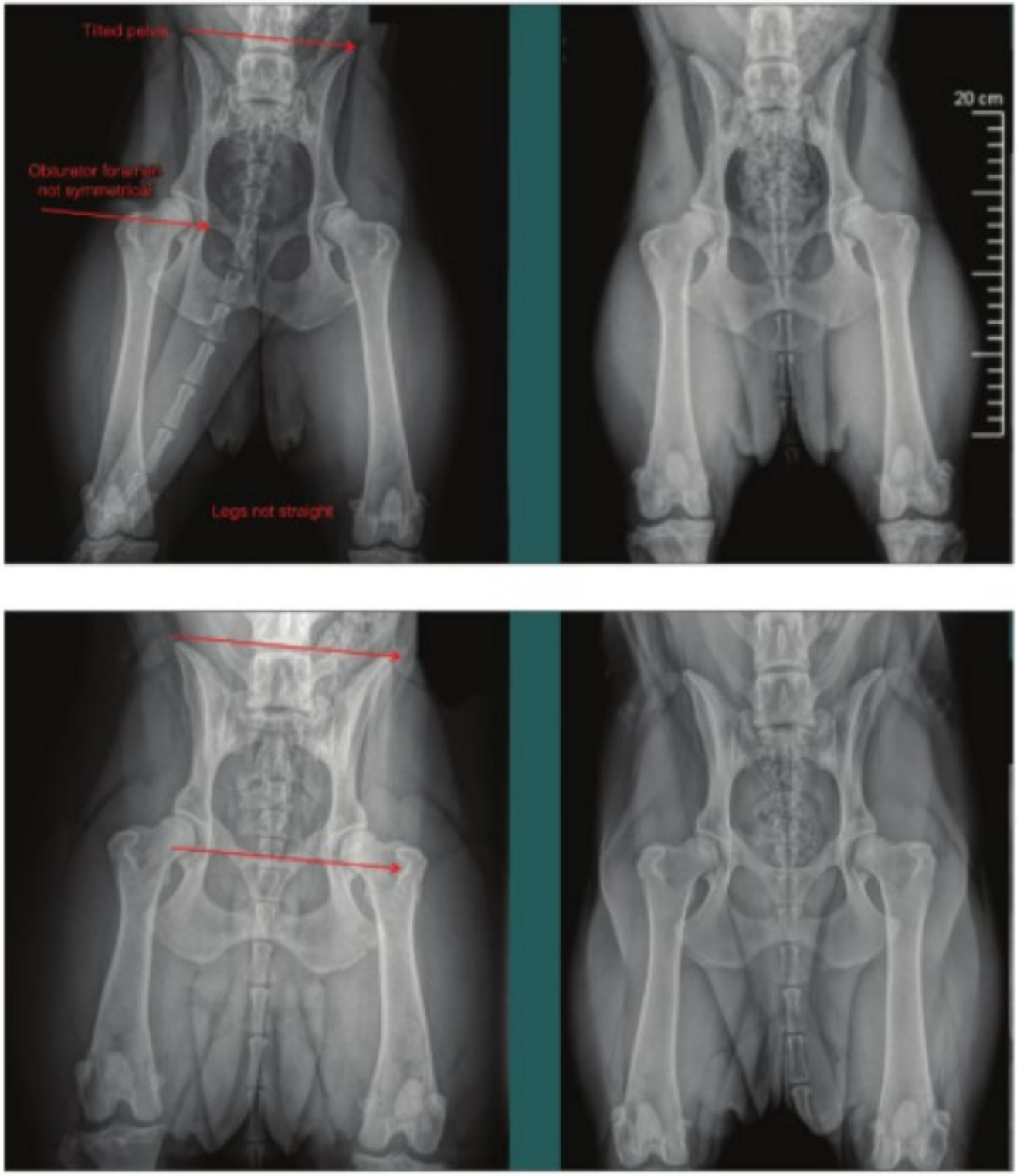
You can also tell the femurs aren't level with the table because the patella end of the image becomes larger. The legs are lifted from the hip.

This is how Dr. Davis has fallen under the radar, by saying "Close" is okay!
It is NOT okay. OFA is clear. Legs to be pulled straight so they are parallel with the table and each other. The patellas are to be mid-line, in line with the Grooves. Dr. Davis has the correct positioning written all over his website, but he doesn't follow instructions. Why is he exempt from positioning correrctly?

want to study before you submit a radiograph to OFA. All of these indicators mean the radiograph has been well-positioned. If a radiograph is not close to this standard, owners may wish to consider re-doing. Your veterinarian cannot make hips look better than they actually are, but he or she should be able to produce radiographs with good positioning.

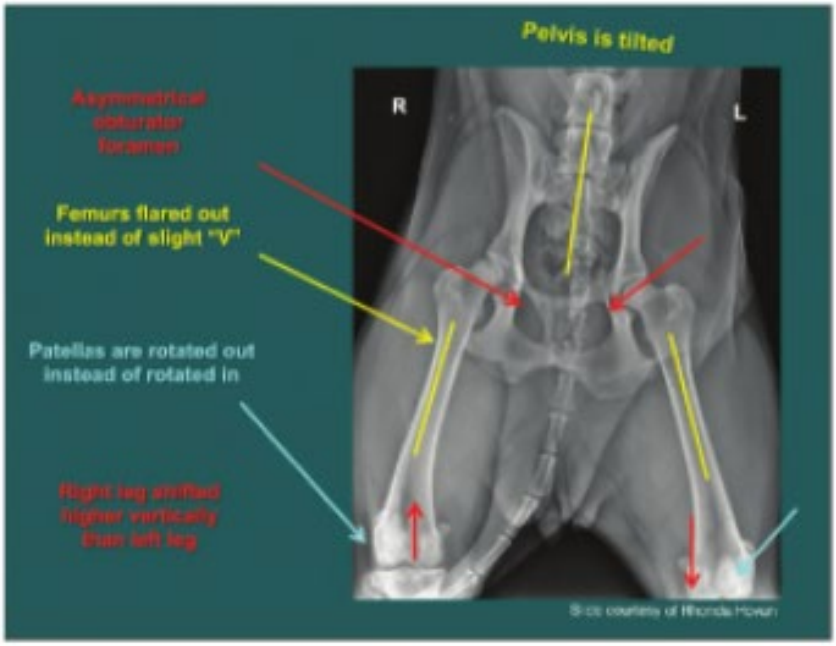
For comparison, here are some radiographs of two young Golden bitches taken by two different veterinary practices. The first set was taken three days apart; the second set was four months apart.

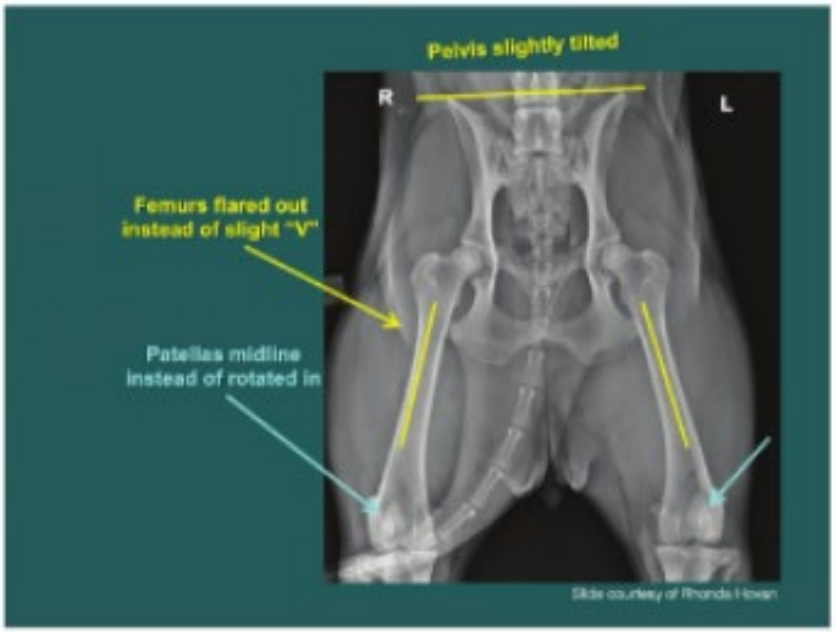
In both cases the radiograph on the right received a Good rating. Would you bet a breeding program the radiograph on



the left would have received a Good? Would have passed?

At right are two other examples of radiographs which were judged by a veterinary practice that took them to be appropriate for submitting to OFA. Do you agree?





This implies endorsement

The Breeder Education Committee hopes that this discussion and these examples help you think differently about hip dysplasia and all the ways you can improve your breeding program through better use of pedigrees, especially vertical pedigrees; better understanding of the polygenic nature of canine hip dysplasia; weight management and especially positioning. **Because positioning is the one input entirely within your ability to manage.**

Some breeders may choose to do a PennHIP evaluation, in addition to getting an OFA rating, to get a numerical assessment of joint laxity they can compare to the breed norms to determine if their dog has hips that are tighter or looser than the breed average.

This endorses this incorrect positioning. And Cathy has made a bad situation worse by this "V" is okay nonsense!!

These final notes and recommendations below are from Rhonda Hovan. Hovan, along with Carol Beuchat, PhD.[1] was especially helpful in providing examples and talking through this entire article.

[1] www.instituteofcaninebiology.org/blog/an-

Notes and Recommendations from Rhonda Hovan

- Redo radiograph with a veterinarian highly recommended by other breeders in the area, who has a proven track record of correct positioning
- Highly recommend either parallel femurs with kneecaps directly center on femur or rotating patella (kneecaps) to the inside; resulting in femur forming a slight "V"
- Be certain the dog is in excellent muscle tone, even if it means delaying radiographs while improving conditioning

The yellow highlighted is WRONG WRONG WRONG. Patellas are to be midline, in line with the grooves. A slight "V" is made up because, when you over rotate the femurs, so patellas face each other, its impossible to straighten femurs.