CANINE HIP DYSPLASIA (HD) AND JUVENILE PELVIS SYMPHYSIODESIS (JPS) SURGERY EXPLAINED

By, Jenny De Lucia and Isabella De Lucia

Reference: https://www.babenberg.net/canine-hip-dysplasia.asp

Hip dysplasia (HD), is not a congenital defect; **it is not present at birth**.
Multiple studies have demonstrated that all normal puppies are born with "perfect" hips; that is, they are "normal" for a newborn with no signs of dysplasia.

Hip Dysplasia is a genetic disease passed on from the sire or dam of the puppy. HD arises primarily as a heritable condition, i.e. one that is inherited genetically, however, nutrition and physical activity during growth and development also play a role. Purchasing a puppy bred from parents that have undergone X-ray screening and have passed a recognised Hip Dysplasia Scheme, will reduce the chance of the puppy developing HD. The German Shepherd Dog Council of Australia (GSDCA) has had in place a Hip Dysplasia Scheme since 1982. Animals that gain a pass in the HD scheme are awarded an 'A' Stamp and certificate indicating that the overall quality of the hips is suitable for breeding. The minimum age at which German Shepherds can go through the scheme is 12 months as this is the age when the growth plates have closed. Screening is undertaken of breeding stock to ensure the control/reduction of severity of HD within the breed. Hip X-rays are assessed for various aspects of hip construction and looseness of joints and given a score for each hip. Only animals that score no more than 8 in any one hip, and no score greater than 3 in any one area, are awarded a pass if going through the GSDCA Scheme. From 1982 to January 2022, there have been 10,518 passes through the GSDCA HD Scheme. When a puppy is purchased from a registered breeder, it should have with it a five-generation pedigree showing the parentage of the puppy for five generations back and the hip and elbow status of all ancestors within that pedigree.

Juvenile Pelvis Symphysiodesis (JPS), is a surgical procedure performed in immature dogs that are at high risk for arthritis associated with hip dysplasia. The surgery involves using an electroscalpel to manually manipulate bone development and stop the growth of the pubis (part of the pelvis) to alter the growth/shape of the pelvis, while increasing the ball's degree of coverage by the socket to diminish hip laxity. JPS surgery needs to be performed on puppies less than 18 weeks of age while the pelvis is still growing. As the rest of the pelvis continues to grow normally, the two sides of the pelvis are forced to rotate slightly downward, causing the hip sockets to assume a slightly more horizontal orientation. Females undergoing this surgery are desexed at the same time due to the impact the JPS surgery has on the female's ability to give birth.

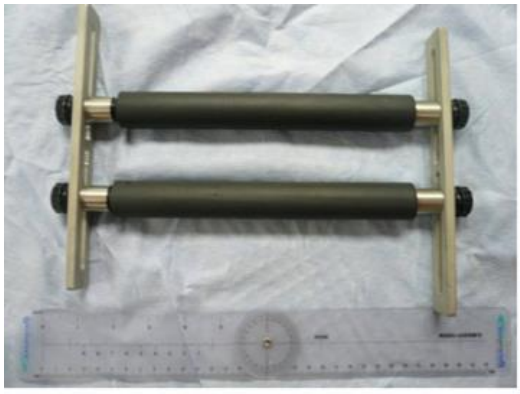
It is being broadly suggested by some veterinarians to owners of German Shepherd puppies, that simply due to the breed, HD is a common problem therefore, to prevent future hip problems in their puppy, that JPS surgery should be carried out. Some vets will not back this up with proof in the form of an X-ray but rather a physical diagnosis, while some vets will X-ray. The preferred method of X-ray seems to be PennHIP. PennHIP should be performed by an accredited vet who is able to read and score the x-ray accordingly. To become PennHIP accredited, veterinarians must undergo training and a certification process to demonstrate competency. Disturbingly, JPS surgeries are being carried out based on results of a PennHip X-ray taken by non-accredited vets and many of the X-rays being taken are using PennHIP theory to produce a Distraction Index (DI) but are not PennHIP method. Studies have shown that the PennHIP method has a very high degree of reproducibility between examiners. In other words, a dog should have similar distraction scores no matter which PennHIP certified veterinarian performs the radiographs. This high degree of consistency is attributable to the inherent biomechanics of the canine hip joint and to the quality-assurance training that all PennHIP network veterinarians must successfully complete.

The research-based hip-screening procedure known as PennHIP (which stands for, University of Pennsylvania Hip Improvement Program), has proven to be the most accurate and precise method to measure hip laxity.

PennHIP screening involves three separate radiographs (X-rays).

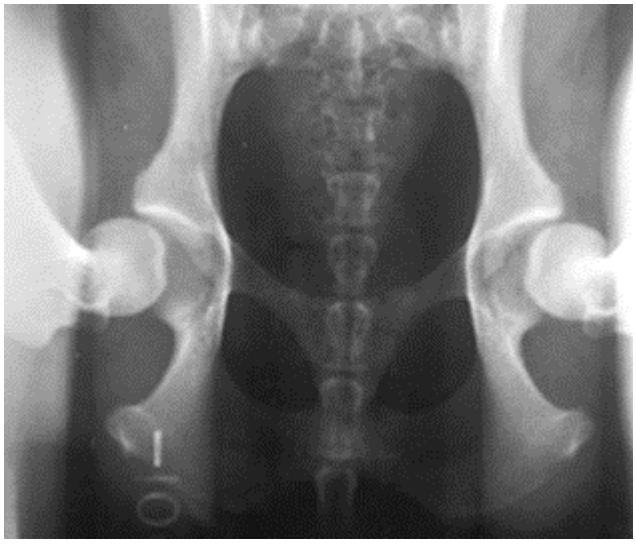
1. The Hip Extended Radiograph
2. The Compression Radiograph
3. The Distraction Radiograph (DI)

1. The Hip Extended Radiograph - The dog's hind legs are placed in "extension" with both hind legs straight, to identify radiographic signs of hip arthritis also known as osteoarthritis (OA).
2. The Compression Radiograph - The dog's hind legs are positioned in a neutral, weightbearing orientation and the femoral heads (balls of the femur) are gently seated into the acetabula (hip sockets). This view can identify critical anatomic landmarks of the hip and determine how well the femoral head fits into the acetabulum.
3. The Distraction Radiograph (DI) - The dog's hind legs are positioned in the same neutral position as the compression radiograph and a Distraction Device is placed between the dogs' legs with the dog on its back. The device acts as a fulcrum to apply a lateral distractive force. The DI is a measure of hip laxity—the inherent distance the ball can be displaced (distracted) from the hip socket—and is expressed as a number between zero and one.

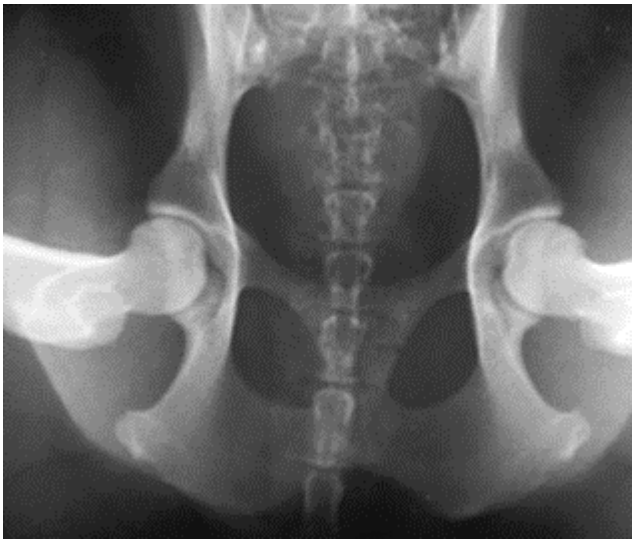


Juvenile Distraction Device

Adult Distraction Device



Distraction View

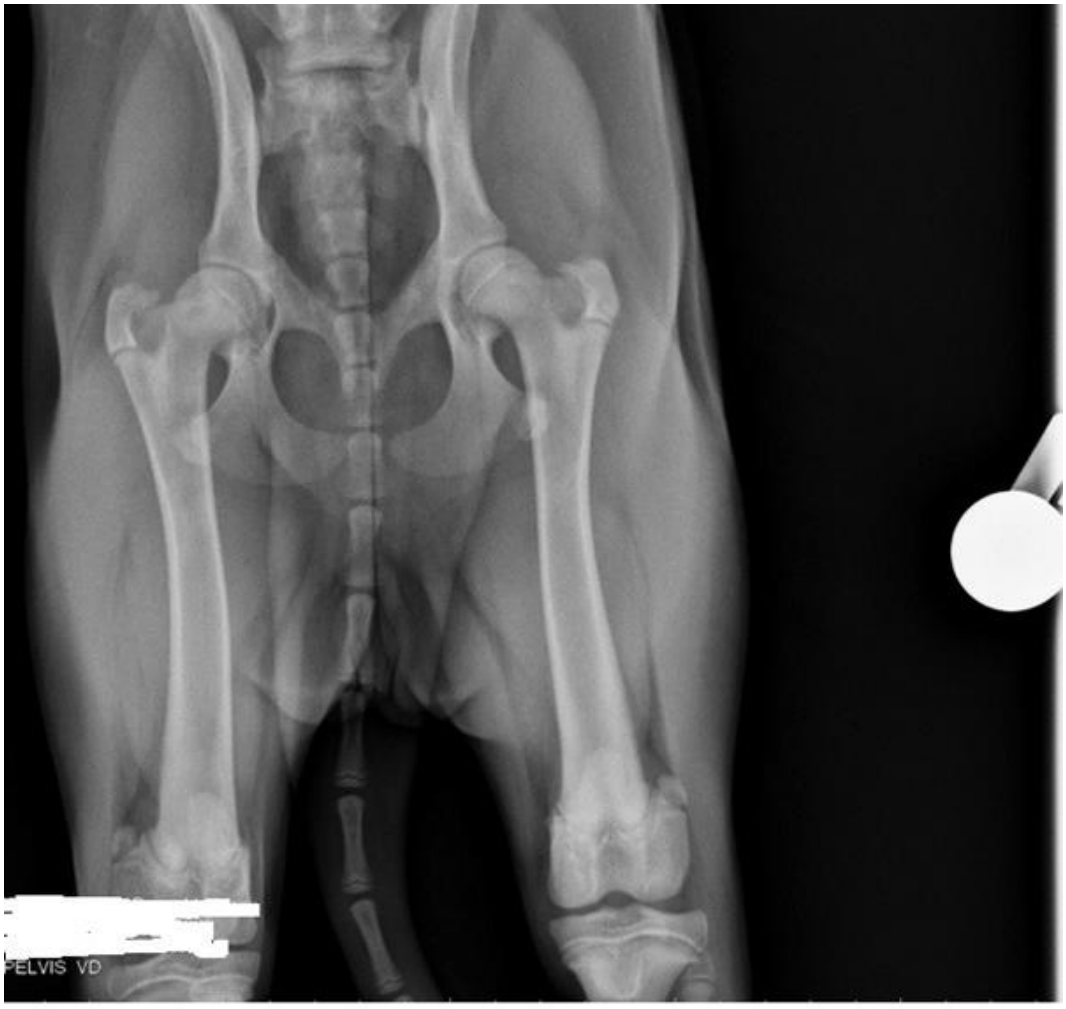


Compression View


Hip Extended View

Taken from the University of Pennsylvania (PennHip), *"There are no level 1 or level 2 studies to definitively show the efficacy of JPS to prevent or delay osteoarthritis. Therefore, it should not be considered a routine procedure backed by scientific evidence"*.
Furthermore*, "If distraction images are not read by trained eyes there will be high variability in Distraction Index (DI) scores and ultimately, the value of the technique will decline or become worthless"*.

Level 1 studies are the highest level of study - large population, long duration, x-rays performed regularly over the life time of the pet of those that had JPS and those with similar radiological signs at 16 weeks that did not undergo the study, performed at an educational/teaching/research facility with rigorous process and controls, etc. As the standards reduce, i.e. small population with less and less controls, procedures put in place or retrospective study then the level of reliability of the data reduces.



The radiograph above shows the hip extended view of a 16 week old border collie with normal hips.

This is the same 16-week-old Border Collie, incorrectly x-rayed using PennHIP under Distraction View – the rods to perform the view are not positioned wide enough.
The stifles are covering/superimposing the femoral heads.
The distraction has been severe resulting in likely cavitation of both hips (levered forcefully out of the acetabulum resulting in a large air bubble in both views).

EXERCISE AND DIET

As previously mentioned, HD arises primarily as a heritable condition, however, nutrition and physical activity during growth and development also play a role. Exercise is important for a young puppy however, too much exercise can have a detrimental effect. As a general guide, 5 minutes of exercise per month of age up to 12 months of age is a good rule of thumb. Natural free running is the best form of exercise for a puppy because when they tire, they can easily stop. More strenuous exercise should not occur until the dog has reached the age of 12 months.

Diet of the puppy is just as important. Studies into dogs and nutrition show us that feeding excessive calcium, phosphorus and vitamin D together with a high energy diet and rapid weight gain that causes rapid growth, can result in joint disorders.

Below is a chart showing average weight relative to age for both male and female German shepherd dogs.

AGE MONTHS	MALE AVERAGE KG	FEMAE AVERAGE KG	AGE MONTHS	MALE AVERAGE KG	FEMALE AVERAGE KG
1	3.5	3	7	27	23
2	7	6.5	8	29	25
3	12	10	9	31	26
4	17	15	10	32	27
5	21	18	11	33	28
6	24	21	12	34	28

Overall, this article has defined what HD is and how it is passed on, whether it be through genetics or an environmental factor. It has explained what JPS surgery is and the reason it is being performed by veterinarians who are usually unaccredited.

When purchasing a puppy from a registered breeder they will provide you with any and all genetic information you may need to avoid unnecessary stress and panic by an unaccredited vet informing you that JPS is needed when as evidenced through this article, it is not. If you have any questions regarding this surgery or if you are pressured by a vet, the best course of action is to contact your breeder or someone from your local German Shepherd Dog Club as they will be able to recommend a vet for a second opinion and provide you with any genetic information you may need.

The most important thing to take from the above information is this – JPS surgery is not a necessary procedure for a young puppy, it causes trauma and stress for both the owner and the puppy and can have ongoing issues that develop from this surgery.

Ensure you are seeking information from a vet recommended by your breeder and understand any diagnosis given to you. Your breeder will always be available to help and provide you information and if the animals have gone through a registered hip and elbow scheme as explained above then the risk of developing HD has already been minimised.