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*Dr. Oglesby is a 1984 graduate of the University of Georgia School of Veterinary Medicine and the owner of Stokesdale Veterinary Hospital. He has been practicing in the Northwest corner of Guilford County for 31 years. Dr. Oglesby is shown here with his wife, Janette.*

## Hip Dysplasia, PennHip Testing, and the Eradication of Hip Dysplasia

For decades now it has been recognized that some breeds of dogs are predisposed to the early development of a progressive arthritis of the hips and its concurrent debilitating lameness. The conformational weaknesses that were deemed to cause early hip arthritis were termed “Hip Dysplasia” (“HD”) and the number of breeds affected and the incidence within breeds is growing. It was thought that a shallow acetabulum, the “socket of the hip joint”, was the chief culprit. Recognizing there was a problem, the Orthopedic Foundation of America (OFA) was formed in 1966 to develop a database of radiographs to be used to help provide genetic counseling in an effort to reduce the incidence of HD and hip arthritis.

In the late 1980’s, Dr. Gayle Smith of the University of Pennsylvania, and his coworkers, began investigating the differences in the hips of large breed dogs that were developing early arthritis with those that didn’t. To make a very long story short he found the chief correlating conformational factor leading to the development of early progressive arthritis was laxity in the soft tissues that make up the joint capsule of the hip. From this work he developed a method for measuring this laxity which became known as the PennHip Method.

The PennHip method consists of three radiographic views: an extended hip view (same as the OFA), a compressed hip view and a distracted hip view. The compressed view is where the ball is pushed down into the socket and the distracted view is where the ball is pulled away from the socket. Neither procedure is dangerous to the dog’s health. These radiographs are then evaluated. An important component of this evaluation is measuring the range of motion of the head of the femur (the ball) between

the compressed and distracted view. This calculated distance is the “Distraction Index”.

Many of the initial research projects were performed to find the range of Distraction Indexes (DI) within a breed, how the DI changed over time as the dog aged, and how well the DI correlated with the later development of arthritis. It was noted early on that different breeds had different ranges of DI, so databases of DI ranges were started based on individual breeds. The DI was found to be very consistent as dogs aged. Once sufficient numbers of DI’s were accumulated, and the dogs aged, it was found that dogs with greater ranges of motion when young were at high risk of developing arthritis. Those in the lower ranges were at low risk. Where a particular dog falls in the range of hip laxity for their breed is called the “Laxity Profile Ranking”. The next question was how heritable was hip laxity.

Though many studies showed the usefulness of this procedure, the largest and longest project was centered around the See Eye Inc. breeding project for guide dogs. While significant progress had been made using OFA principles, the chief geneticist was interested in further decreasing the incidence of hip arthritis in their breeding population. He introduced PennHip principles into the breeding program and monitored the results over 4 generations of dogs. Within just one generation he found further decreases in the incidence of hip arthritis and after several generations it became rare in their population of breeding dogs. See Eye Inc. now uses PennHip as the method for evaluating hip health.

PennHip has proven itself to be a reliable method for the early prediction of the future onset of hip arthritis in dogs. It has also proven itself to be a reliable method of predicting the hip health of the next generation. Selecting on the basis of the top 40% tightest hips on the Laxity Profile Ranking reliably decreases the incidence of hip arthritis in the next generation. It does seem we now have a tool to all but stop the heritable predisposition to arthritis in the hips, aka Hip Dysplasia.

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