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CARPAL SUBLUXATION and WEAK PASTERNS — TWO DIFFERENT CONDITIONS ?

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There are two pastern disorders that are often confused until one actually has seen the “extreme” type. The severity of “weak-by-genetic-neglect” wrists seen in many German Shepherds can approach the other type at first impression. In addition to these two, there are cases of retained cartilage and the unequal or asynchronous growth of the two bones in the lower forearm, but these are not included in the subject of this section. I constantly see variable expressions of pasterns changed by growth plate disturbances, with some dogs having a valgus (turned-out) deformity of only one carpus, some with little turning out, many with both feet pointing “east-west”. See the new book, *Hip Dysplasia and Other Orthopedic Disorders*, published 2005 by Los Perros (go to www.MrGSD.com). Some dogs have bilateral, others unilateral involvement; in many the flexion is greater in one pastern than the other. In most dogs with simply weak pasterns, and probably in every case of true luxation, both pasterns are equally affected. In some dogs, a knuckling-over may present, though perhaps this is either a modification or a slightly different disorder.

The German Shepherd Dog Club of America sponsored a survey in the 1980s because the situation in the American variety or bloodlines of the German Shepherd Dog got so bad regarding frank luxation as well as “down” pasterns from any cause. Several of those surveyed were on vitamin-mineral supplements, others not; no connection with diet was seen at the time, though the survey later raised a number of questions about nutrition’s effect on afflicted dogs.

Hyperextension or subluxation/luxation of the pasterns is seen as a flat-footed condition wherein the dog actually walks on the palmar surface of its wrists in the most extreme manifestation of this disorder. Some dogs will be partly (subluxated) or mostly/fully (luxated) “down on their pasterns”, and it has been my experience that if conditions are not changed, either disorder will get worse or at least not improve spontaneously as the dog matures.

The older American “parent club” finally officially recognized pastern problems existed (although it did not fully separate the two right away) and permitted the circulation of a questionnaire via its official journal and handouts. However, no real program to stop the breeding of those dogs producing much of this disorder has to date been enacted by the GSDCA. Only the nutritional aspect (environmental effect on genes) has been explored so far. A breeder in St. Louis named Helen “Scootie” Sherlock did a good job of soliciting testimonials and case histories, but many of the conclusions, either stated or implied, were fallacious. That is, they lacked adequate, convincing, logical connection between premises and conclusions. Further, as the answers were based on testimonial anecdotal response to questions, they and the tentative conclusions and suggestions must not be construed to be anything resembling scientific inquiry. For example, many unrelated data were mentioned that had no relationship to the etiology, course, or improvement of the disorders except perhaps solely in the minds of the respondents and readers.

In the normal dog, slope of pasterns varies from the very upright in the Terriers to only slightly less perpendicular in the Rottweiler to about 22° in the correct German Shepherd Dog (despite the pictures in the U.S. ads with 35-45° or worse). The proposed reason for some slope in the trotting and

galloping breeds is to cushion the impact of landing on the front limbs and prevent shock to the joints and fatigue. Excess slope makes a trotting dog look as if it were wearing socks too long for its feet, slapping its weak paws onto the ground with a very visible and almost audible effect. Yet many a professional handler, judge, and supposedly experienced breeder have been surprised to see it only after having it pointed out and explained. One source⁸ claimed that the "normal" standing angle of the canine carpal joint (average of breeds) is from 2° to 10°, but don't equate that with "mean or median", since that seems too steep to be an average in my view, and I've judged many thousands of dogs of several hundreds of breeds. GSD owners may resent their breed not being included in the category of "normal", although in America that may be hard to defend in regard to other characteristics, orthopedic or not.

Years ago, the noted Whippet fancier and Greyhound researcher Lou Pegram worked for Purina and had a chance to see the effect of kennel surfaces on the weakening and/or strengthening of pasterns. He told me that if you do not get the affected puppy (in his definition, one with "weak" pasterns, not full-blown carpal subluxation) onto a *variety* of surfaces by age four months, there was no chance of correcting the problem — it would stay the same or get worse. Doctors Alexander & Early gave credence to the effect of smooth surfaces dogs were raised on, which Pegram had discovered years earlier. Mild cases in their study were "managed" by giving the dogs free access to both gravel and grass, as the majority of affected dogs previously had been reared on concrete or in small pens.

In the GSD, linebreeding and neglect in selecting genes are behind probably all cases of excessively sloping, non-luxated pasterns that I have seen — and they are legion! I have seen the disorder-of-neglect in GSDs regardless of surface, and very early, so I believe this weakness — common in the U.S. and becoming a slight problem in Europe now — is primarily a genetic problem that is more easily brought out (expressed by environmental forces) in some breeds than in others. In other words, heritability may vary between breeds. I doubt that the weak pasterns so pervasive in the American Shepherd (GSD) has the same root as the severe condition of carpal luxation, because I have seen the latter arise spontaneously in the Malamute, Lab, **Sheltie, Rottweiler, Wolfhound**, and others — breeds that are not neglected in respect to pasterns the way the GSD was and is in North American (AKC-CKC) lines and even to a smaller degree in Germany in recent generations.

There probably are differences between breeds when it comes to cause, or at least heritability index. Shar-Peis, Dobes, Danes, and others may have a different etiology than does the German Shepherd Dog. Or it may be simply that we are talking about two different disorders. There are various degrees of extension (greater slope) but in the worst cases, the affected dog walks on what would be analogous to the human palm. The movement appears like a seal walking on its flippers; another description is "sloppy, floppy padding". These dogs remind me of circus clowns with grossly exaggerated shoes, or of children with socks longer than their feet and flopping as they run. Occasionally, in the GSD, anyway, pastern luxation (sometimes known as carpal subluxation syndrome) is **accompanied by hyperflexion of the hocks. Since so many over-angulated American GSDs are "hock-walkers", this latter condition may easily go unnoticed and taken as typical.**

Carpal subluxation has been produced experimentally in Beagles by altering the calcium/magnesium/phosphorus levels and ratios in the diet. In her report revealing this, Dr. Robin Woodley says that mild to moderate cases have responded to magnesium supplementation if carefully monitored, and that the condition has been seen in pups fed "many different types of rations, from low-protein, cheap kibble to premium kibbles to high-protein, home-cooked meals." By the way, that is more evidence of genetic cause. Woodley has been a member of the GSDCA's Internal Defects Committee, which has implicated high-energy, high-protein foods in the expression, though not the cause, of carpal subluxation, with certain brands being more often listed on their questionnaire returns. Woodley also raises the question of the role of trypsin, an intestinal/pancreatic enzyme useful in hydrolyzing protein and thought to be deficient in the German Shepherd Dog. Trypsin is needed to digest soy protein, and since GSDs possibly have some intolerance to soy and also are susceptible to toxic gut syndrome, Woodley proposed that the survey include questions that might uncover a link between these disorders. Both the weak pasterns and the disorder known as carpal subluxation/luxation are basically genetic, as are almost all other problems.

Several breeds have been seen to have the carpal luxation or subluxation syndromes, although the GSD may be the most often seen, perhaps due to its population (though in the U.S. more Labs are

registered). An e-mail correspondent has told me that she has heard from people whose mixed breeds, Dachshunds, Rottweilers, Springer Spaniels, Bloodhounds, and others have had the same flat-foot condition. While judging in the land of the midnight sun (Alaska) in the mid-1980s, I was shown an example of a Malamute — a full, classical case, but this individual seemed to have a genetic combination of that carpal luxation and pleiotropic dwarfism associated with anemia.

Alexander & Early found (although in a very small, statistically insignificant number of 7 breeds and 12 cases) that Dobes and Danes were most affected. Incredibly, only one GSD was in that study! Pups in this study were mostly 10-16 weeks old, but I have seen the problem easily identifiable by the time pups were walking for a very few weeks.

In some German Shepherd Dogs having carpal subluxation, and which were in the initial GSDCA tabulations, hyperflexion of the hock was *also* seen (the dog stands or walks flat on its "hock" like a sitting jackrabbit). There are two reasons I discount any relationship: one is that no other breeds so far have shown the two conditions to coexist, and the other is that GSD breeders in North America have unfortunately and concurrently selected for extreme rear angulation and have produced a nation of hock-walkers, independently of most other characteristics except for generally loose ligaments. The concurrence of carpal subluxation is coincidental, not causal -- American GSD breeders have been negligent in two separate areas at once. Full carpal luxation is a separate genetic defect from the much more common GSD subluxation/weakness that shows itself as excessive slope of the pasterns.

Treatments involving splinting have been tried but are not satisfactory in most cases. Some have tried a Mason's metasplint to keep the joint somewhat upright while soft tissue responded to exercise. One should be careful about believing everything that is said, although there does seem to be some good to be had with a nutritional approach. The e-mailing woman mentioned earlier unfortunately took the GSDCA survey responses and Ms. Sherlock's article as gospel and has been preaching the use of a wide range of remedies: She **"changed [her dog's] feed to Science Diet Lamb and Rice, supplements of Vitamin C and E, gelatin tablets, Selenium tablets, Prozyme, glucosamine, and chondroitin."** And although not a dietician or veterinary professional, says, **"Please before you follow this regimen please contact me first. The dosage for each dog will be different depending on how bad they are in the pasterns!"** Well-meaning, but it's potentially dangerous for people to quote from survey responses the same way one might from a scientific study.

The interesting and surprising thing that I learned from recent reports is that some improvement to the point of apparently resuming normalcy is sometimes possible with manipulation of the nutritional intake of the dog. While much of the survey response had nothing to do with the disorder, a recurring theme and the most likely approach to use in improving both the weak pastern and the true subluxated joint, is the lowering of protein level in the diet. Less calcium and phosphorus (though in the same recommended ratio) also may be beneficial. Conclusions of the GSDCA survey that might have currency include the elimination or considerable reduction of such additives to a commercial food as meats, eggs, yogurt, milk, and cottage cheese, which are all high in protein, and some rich in phosphorus and calcium. If your affected dog is eating an otherwise acceptable ration, you can change the protein/carbohydrate ratio by substituting some of the meal with tasty "battered noodles" or other pasta. Poor thyroid function may play a part, although that may be coincidental. Since it is usually reported to be familial (CSS appears in dogs closely related to each other more often than random occurrence would account for), the wise breeder will avoid the lines in which it appears. Nutritional "remedies" may merely be masking a hereditary problem.



GSD with carpal luxation – standing



GSD with carpal luxation – sitting



12-week-old pup with almost normal pasterns



Same pup at 5 months on high-protein ration



Same pup at 6 months, after changing food



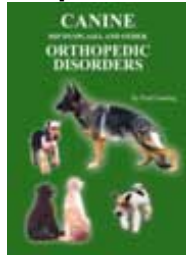
One year of age, after 6 or 7 months on lower-protein food.

Fred Lanting is an internationally respected show judge, approved by many registries as an all-breed judge, has judged numerous countries' Sieger Shows and Landesgruppen events, and has many years experience with SV. He presents seminars and consults worldwide on such topics as Gait-&-Structure, HD and Other Orthopedic Disorders, Anatomy, Training Techniques, and The GSD. He conducts annual non-profit sightseeing tours of Europe, centered on the Sieger Show (biggest breed show in the world) and BSP. Check out his website: www.MrGSD.com



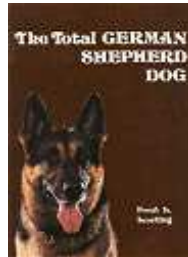
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Canine HD and Other Orthopedic Disorders by Fred Lanting.



It covers all joints plus many bone disorders and includes genetics, diagnostic methods, treatment options, and the role that environment plays. This new Hip Dysplasia and Other Canine Orthopedic Disorders\' book is a comprehensive (nearly 600 pages!), amply illustrated, annotated, monumental work that is suitable as a coffee-table book, reference work for breeders and vets, and a study adjunct for veterinary students, for the dog trainer and the general dog owner of any breed.

The Total German Shepherd Dog by Fred Lanting



This is the expanded and enlarged second edition, a "must" for every true GSD lover. It is an excellent alternative to the "genetic history" by Willis, but less technical and therefore suitable for the novice, yet very detailed to be indispensable for the reputable GSD breeder. Chapters include: History and Origins, Modern Bloodlines, The Standard, Anatomy, The German Shepherd in Motion, Shows, Showing, and Training, The Winners, Nutrition and Feeding, General Care and Information, Health and First Aid, Parasites and Immunity, Diseases and Disorders, The Geriatric German Shepherd, Breeding, Basics of Genetics, Reproduction, Whelping, The First Three Weeks, Four to Twelve Weeks, Trouble-shooting Guide

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