Feet on the Ground

This article is the third in a four-part series contributed by Dr. Karen Gellman, DVM, PhD, and Dr. Judith M. Shoemarker, DVM. For more information about postural rehabilitation or training for vets, visit: **www.PosturalRehabVets.com.**

For all terrestrial animals, essential information about their environment is transmitted by their feet. Think of your own experiences...did you like to go barefoot when you were a kid? Remember the feeling of lush green lawn underfoot, of hot sidewalk, of ouchy pebbles or a trail in the woods? Your feet told your brain the texture, temperature and firmness of the ground beneath you in an instant. Now think of wearing unfamiliar shoes, maybe even high heels if you are unaccustomed to them. What if you want to dance, or run for your life? How confident would you be? Now imagine having a pebble in your shoe. All you can think about is how quickly you can sit down, take that shoe off and get rid of it.

GROUND SURFACE

Our brains, and those of our highly intelligent companion animals, are hard wired to interpret critical information through the soles of our feet, and the sensory nerves in our leg joints, tendons and muscles. They tell us where the ground is, how hard it is and whether it supports our bodies. One of the mechanisms we use is a skin surface "map" on the bottom of our feet (or paws) that registers body weight and sudden changes in weight bearing. For instance, if your dog is running in a field and puts a foot into a hole, perceived changes in the angle of the leg and pressure on the foot will trigger a fast withdrawal of that leg and shift of body weight, preventing a serious accident.

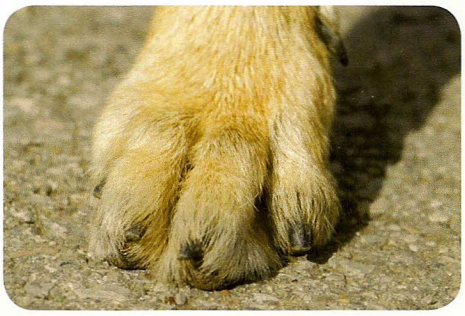

Figure 1: Normal toenails–*toes well above ground*

Unfortunately, our modern, man-made environments tend to alter the sensitivity of this feedback loop. Our dogs spend much of their time on slippery floors, abrasive concrete or pile carpet–all pretty unnatural surfaces! But dogs, as domestic animals, are highly adaptable. Most dogs with an intact nervous system can program a neural response to deal with these environmental changes. But when a dog has neurologic challenges–like advanced age, hind-end weakness, spinal disease–we have to carefully consider whether the information they are getting from their feet is helping or hindering their locomotion. Even in a healthy dog, the "domesticated lifestyle"–artificial surfaces and limited exercise–can interfere with their foot-brain connection.

Figure 2: Grossly abnormal toenails resulting in abnormal posture–*cramped in behind, base narrow in front, twisted toes, hyperextended*

WHEN DID YOU LAST GET A PEDICURE?

One of the most common foot issues among canine companions is long toenails. In wild canids, miles traveled daily over rough surfaces to "make a living" result in appropriately short nails. What is an appropriately short nail? One that does not touch the ground when standing on a firm, level surface, but will give useful traction when climbing a hill or digging. *(See Figure 1: Normal toenails)* So the only time a normal dog's nail should contact the ground is when it is climbing a hill. In a dog with overgrown nails, the neurologic signal from a long toenail contacting the ground is interpreted by the brain as an inclined ground surface. The central postural control system attempts to compensate for the imaginary hill by leaning forward, but since the dog is on level ground, this would make it fall on its nose. So the postural control system contrives a secondary compensation, by counter-balancing with the hind legs further forward. This creates the abnormal posture we call "goat-on-a-rock", with front legs behind the vertical and hind legs too far forward. *(See Figure 2: Grossly abnormal toenails resulting in abnormal posture)* This abnormal compensatory posture results in too much weight carried by the hind legs, thus overloading those joints. Many animals who seem to be lame or weak behind can be helped enormously with just an effective nail trim that changes this posture.

Show dogs are groomed and clipped regularly for aesthetic reasons, but reap enormous musculoskeletal

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benefits from this beauty regimen. The average pet dog gets its nails clipped a couple of times a year, if it's lucky! Several factors conspire to make nail cutting a dreaded activity. With such infrequency, the dog may not be inclined to cooperate, turning nail clipping into a wrestling match. The constant painful stimulus from the long toenails hitting the ground sensitizes the nail bed, making it very uncomfortable for the dog to have its feet handled. Indeed, when the toes are pushed up or twisted by long nails, the toe joints can become arthritic and painful as well.

HOW TO CLIP WITH CONFIDENCE

We don't often appreciate how much dog toenails are like our own! If you look at your fingertip, you will see the hard, insensitive nail laid on top of the living finger. If, for instance, you filed the top of the "living" portion, it would not hurt, because there is a layer of keratin—a hard, horn-like substance—that protects the nail bed. A dog's nails are actually pretty similar. The tip of their finger is "the quick," which has sensitive nerves and blood vessels. When you "quick" a dog, making it bleed, you have essentially nipped off the end of their finger. No wonder they don't like it! But no dog ever died from a quicked toenail, so it is not the end of the world. With good technique, you can shorten even ghastly long toenails without ever making them bleed.

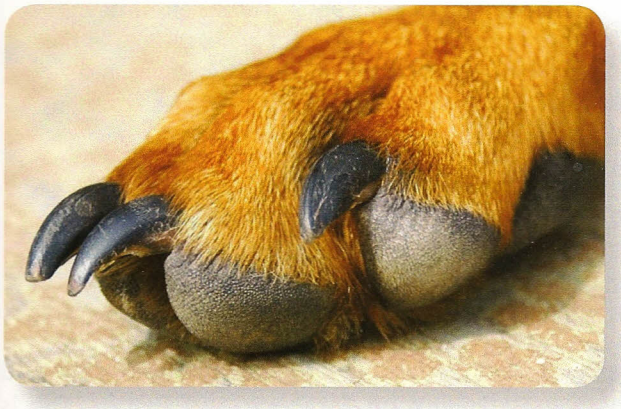

Figure 3: Abnormal toenails-*claws below weight-bearing pad, pushing nail bed*

When toenail length is excessive, the quick grows longer, protected by the long nail. *(See Figure 3: Abnormal toenails)* The goal of therapeutic podiatry is to remove the protective long nail so that the quick will recede. The easiest way to do this is to use ***shallow*** cuts with a sharp, small, scissor-type nail clipper (Four Paws Super Nail Clipper for Small Animals works well for nearly all dogs), cutting away the top of the nail. The cuts should be parallel to the quick, not across it.

Figure 4: Close-up view of intact quick exposed by shallow nail cutting technique

Figure 5: View of dark nails- *chalky insensitive nail, dark, shiny quick*

Whether the nail is dark or light, it is easy to distinguish between the insensitive nail and the sensitive finger tip. There is a white and chalky line around the quick—even easier to see on a dark nail than on a white one. *(Figures 4 & 5)* The quick is shiny and moist—it looks like living tissue. In most dogs, there is a clear demarcation between them. It is possible to significantly shorten the toenails, and get an immediate postural response in a single session. Nails need to be cut every other week to maintain their length. To shorten the quick, one must cut once a week. Some dogs tolerate a rotary grinder, like Pedi Paws, Oster Gentle Paws or a Dremel® tool better than clippers.

Without the interference of erroneous information from toenails, a dog can fully rely upon its feet on the ground to stand straight and move with confidence.

FUTURE SEGMENTS:

It's more than just bite! – Did you know that more than half of the AKC breed standards allow for a bite other than a scissors bite? It's not just aesthetics we are worried about—malformed dentition and distorted skull shapes have a profund effect on posture and balance. Some simple juvenile interventions can go a long way in helping our dogs have a better bite.

PREVIOUS SEGMENTS:

What is Posture and Why Should We Care About It?

Oh, That Flexible Neck.

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