

■ The Healthy PBGV

by Karen Gellman, DVM, PhD, and
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What is Posture and Why Should We Care About it?

The Canine Athletic Speaker at the 2014 PBGVCA National Specialty is Judith Shoemaker, DVM. Dr. Shoemaker graduated from the University of Georgia College of Veterinary Medicine. She received advanced training in both small and large animal orthopedics, surgical techniques and animal reproduction. Dr. Shoemaker is certified as a veterinary acupuncturist and is a charter member of the American Veterinary Chiropractic Association. She was awarded the American Holistic Veterinary Medical Association's Practitioner of the Year in 2011-2012. Dr. Shoemaker's equine and companion animal veterinary practice focuses on complementary medicine and holistic therapy, integrating chiropractic, acupuncture and other alternative modalities. With her colleague, Karen Gellman, DVM, PhD, Dr. Shoemaker wrote four articles for the AKC Canine Health Foundation to educate veterinarians on canine health. The Health Committee thought readers might be interested in this article on postural rehabilitation.



Photo by Jane Swanson

When we think about the activities of our dogs, usually we picture their play, their “jobs” or their quiet repose on our laps or couch. However, in all animals the ability to stand quietly at rest is critically important for health and soundness. Many dog owners don't realize that the reason their dogs flop down on the ground as soon as they come to rest may be that they have postural problems that make it uncomfortable or tiring to stand up for very long. In some ways, standing is harder than moving. Think about riding a bicycle — the faster you go, the easier it gets. We have many mechanisms for balance in motion that are not available to us for standing. What does it take to just stand up? A lot, actually!

Running animals, including humans, have multiple centers in the brain that are devoted to postural control. Their job is to coordinate signals from many parts of the body about where the limbs, trunk and head are located in space, relative to each other and to the ground. It's like a big air-traffic-control center where unconscious decisions are made about standing and moving based upon information

from the feet, the joints, the muscles, the inner ear, the eyes and the jaw. The information is coordinated, analyzed and then sent to the movement centers of the brain to generate stance or gait. Many of us know that when someone has an inner-ear infection their balance and coordination can be affected, but some of the other inputs for stance and balance are not quite as widely known. For instance, we are highly dependent upon our eyes to maintain equilibrium. This is why some people and dogs can get carsick when riding in the back seat. Under most circumstances, the eyes can see level surfaces that give visual clues to the terrain being traveled. But when watching scenery rush by from a car, the body perceives motion visually and is not able to register the ground surface, resulting in queasiness from mismatched information.

Much of the postural information the body uses is related to gravity or “knowing where down is.” It seems pretty simple to know where down is, but when it goes wrong big trouble ensues! The postural control system is a complex system in which small changes to the input can have

far-reaching changes in the output. For instance, you can turn off a large part of your own postural stability by clenching your hands in a fist with the tips of your fingers tucked in against your thumb. Get a pal and try this. Stand neutrally, with your hands at your sides in a fist, and then ask a friend to try and push you off balance from front or behind. Feel your body's responses to resisting the external forces and think about which muscles you are using. Now switch your hand position so that the pads of your fingers are flat on the heel of your palm. Try again to resist your friend's attempt to push you over. Again, feel your body's response. Quite different! In the second instance you are more stable, able to resist the force of being pushed with very little effort.

This is an example of how our "fore feet" are programmed to give information to our brain about the ground surface. If we had four legs and the pads of our front toes were stretched flat on the ground, like the flat fingered hand, our brain would conclude that we had contacted a ground surface that was appropriate to support our bodies. This sets off a cascade of reflexes to enable standing: The extensor muscles of the leg switch on, making it straight to stand on; the trunk muscles switch on, holding the trunk and spine firm; and the head is held in an appropriate position for standing. Our stance stabilizers are at work.

Why are all animals, including humans, posturally programmed to stand up straight? Because it is the most economical way to stand. Dogs, like humans and horses, are large, fast animals compared with most vertebrates. Comparative biomechanics has shown that the larger an animal is, the lower its metabolic rate. This means that large animals have less metabolic energy per pound of body weight to devote to body maintenance. Large fast animals have solved this "problem" by minimizing the

metabolic energy required to support their own weight through anatomic adaptations. They have long, straight legs that support body weight in a vertical column. When the limbs are in position correctly like the legs of a table, the only muscles working are slow twitch postural muscles, which are strategically placed to stabilize joints without a lot of costly energy. However, when the legs are misplaced, or

are very crooked, many muscles must be recruited to keep the dog standing.

Normal neutral posture in dogs is like a table, with a limb at each corner. Dog-show competitors are very familiar with this posture; it is "stacking" the dog for the judge to examine, with its forelegs and hocks-to-the-ground vertical. The reason this pose is used, historically, is that high-quality dogs with good neurologic responses will stack naturally.

So what are some of the reasons our dogs have trouble standing or "stacking" correctly? And how does this affect everything they do? We will discuss this in later segments. It's amazing how important simply standing properly is! ■

This article is the first in a four part series. Coming up in this Postural Rehabilitation series:

Oh, that flexible neck! In this segment we learn how the neurologic feedback from the upper neck is critically important to posture and balance, and how daily canine activities that include restraint and confinement, as well as athletic feats, can compromise this system.

Feet on the ground. For all terrestrial animals, essential information about their ground surface is transmitted by the feet. However, our modern man-made environment tends to obliterate the sensitivity of this feedback loop. Even more critically, dogs can get very large distortions in ground perception if their toenails scrape the ground in daily life, leading to postural distortions that are punishing to their joints. How does this mechanism work, and can we fix it when it goes wrong?

It's more than just bite! Did you know that more than half of 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 profound effect on posture and balance. Some simple juvenile interventions can go a long way to helping your dogs get a better bite.

To retrieve these articles in Dr. Shoemaker's Postural Rehabilitation series, go to the American Kennel Club Canine Health Foundation library (www.akcchf.org/news-events/library/). In the SEARCH box on the upper right, type in Shoemaker. The PBGVCA Health Committee hopes to see you at Dr. Shoemaker's Canine Athletic Seminar at the 2014 PBGVCA National Specialty!

Karen Gellman, DVM, PhD and Judith M. Shoemaker, DVM, are working together to provide postural rehabilitation continuing education for veterinarians in addition to a variety of other special clinical skills. Dr. Gellman can be reached at equinesportsmed@mac.com for more information.

Due to national being late this year, the deadline for the Summer Saber Tails has been extended to

• May 25 •

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