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# What is Posture and Why Should We Care about it?

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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

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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 featured in The American Kennel Club, Canine Health Foundation Journal.*

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