



It's More than Just Bite!

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Did you know that more than half AKC breed standards allow 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 interventions can go a long way to helping your dogs have a better bite.

In the past three articles we have discussed the importance of canine posture, how it influences health and soundness, and what are the most important factors controlling posture: the neck, the feet and the teeth. We learned that manual therapy can help reset the proprioceptors of the neck after injury, and that keeping toenails short can have a profound effect on back and hind end pain and disability. What about the teeth? And what could we possibly do about them that would be ethical in the show ring?

Dogs come in all shapes and sizes. From the biological standpoint, the domestic canine shows more variation than almost any other species: body size, body shape, hair type, hair color, and head shape. Since ancient times, humans have selectively bred dogs to serve our needs with their particular talents-- like herding sheep, or hunting rats, or protecting our homes-- resulting in the glorious diversity that is the AKC array of breeds. All wild canids, by contrast, look remarkably similar: medium size, medium length hair coat, long bushy tail and cone shaped skull and nose. But, did you know that without selective breeding, colonies of feral domestic dogs will, in a few generations, revert to the same look as wild dogs?

Skull shape is one of the most biologically important variations in the dog, because changing the "default" cone-shaped head will change the size and shape of the brain case, the eyes, nose, teeth and airway. There are some health risks that are suspected to have associations with the size and shape of the dog's head. Researchers are currently trying to understand the causes of Syringomyelia (SM), a common spinal cord abnormality in small breed dogs. It is believed that genetic factors contribute to the disease.



Mesocephalic



Dolichocephalic



Brachycephalic

In a very broad sense, we have three basic skull types in domestic breeds: long nosed (dolichocephalic), short-nosed (brachiocephalic) and medium (mesocephalic). The dolichocephalic breeds, like Greyhounds and Borzois, tend to have very narrow skulls, and may have problems with eye formation, overbites and not enough room for their incisor teeth to fit properly. Brachiocephalic breeds, like Pugs and Bulldogs, have under bites, which are even more exaggerated in some versions of these breeds. When the shape of the skull is distorted, the space into which the teeth erupt can be distorted as well. This results in crooked teeth, that don't fit together properly, or "malocclusions."

Why do dog breeders care about bite? Because well-bred, truly functional dogs have good bites! A good bite is associated with good posture and good gaiting, because the teeth and temporomandibular joints (TMJ) are giving critical postural information to the brain. A good bite results in neutral TMJs, which allow neutral

posture. Try this exercise: Stand on level ground with easy neutral stance, arms at your sides. Feel how your weight is centered between your feet. Thrust your lower jaw forward as far as you can voluntarily, creating an under bite. Wait, and feel the postural changes. Now pull the jaw back as far as you can. Most people will feel their bodies pitch forward and back with the movement of the jaw. You can experiment with side to side as well, and feel your weight shift from foot to foot. This is a cool “party trick,” but it actually shows something very profound: jaw position helps determine weight-bearing, because the top priority of the nervous system is to keep the brain safe by making sure the nearby TM joints are symmetrically stimulated, indicating that the head is level and symmetrically supported. When a dog has a congenital or genetic malocclusion, the rest of the body may have an adapted posture-- which may make them susceptible to some weight-bearing injuries over time.

What about dental anomalies outside the brachiocephalic/dolichocephalic pattern? While orthodontic procedures can help some adult dogs become more functional, it is considered unethical to use these techniques on a potential breeding animal. But some dental problems are from juvenile injury, and can be helped with early intervention. It is critically important to evaluate the baby teeth at six weeks, because missing teeth and non-symmetrical jaw growth can be most easily influenced in the fast growing young dog. Why should we do this? Cutting edge research in epigenetics shows that life experience influences gene expression in a heritable way. And it will improve a dog’s quality of life, and athletic performance to have a functional bite. A truly functional bite is self-cleaning, requiring less dental intervention. And it will help reduce the risk of musculoskeletal problems secondary to postural abnormalities, like hip dysfunction, ACL tears, arthritis, and disc disease.

In this four part series, we have explored a variety of causes for common postural problems in domestic dogs. This has been a tiny peek into the amazing world of posture, of which every dog owner, dog breeder and veterinarian should be aware. Postural Rehabilitation training for veterinarians teaches how to recognize and solve postural problems that may be complicating health or performance issues.

This article is the last in a four-part series featured in The American Kennel Club, Canine Health Foundation Journal, contributed by Dr. Karen Gellman, DVM, PhD, and Dr. Judith M. Shoemaker, DVM.

Other Articles in this Series:

[What is Posture and Why Should We Care About It?](#)

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