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Water: An Essential Nutrient

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As owners of performance dogs, we know how important nutrition can be for both health and performance. We take time evaluating pet food labels, talking about nutrition with other competitors, and seeing how well our dogs actually do on various foods. However, there is one nutrient that dog food alone can't supply enough of—water!

Water is easy to overlook in our dog's nutritional program. It is essential, however, for a dog's health and ability to perform. Most working dogs can tolerate a dietary deficiency in protein, fats, vitamins or minerals for a short time - it can take weeks or even months to detect any adverse effects on performance or health. However, dehydration will lead to a diminished performance quickly, and in severe cases, even lead to death.

Water is a critical component of a dog's body. The total body water content of a healthy dog is approximately 70% of its body weight. So, for a 70-pound Golden Retriever, water is responsible for 49 of his 70 pounds!

If exercise is prolonged and water is not available for replenishment, the water content in the dog's body will drop and the dog will suffer from dehydration. With dehydration, plasma fluid is reduced, the blood thickens, and the heart has to work harder to pump the thicker blood. In addition, there is less fluid traveling through the vessels to provide oxygen and nutrients to tissues. In severe cases of dehydration, organ failure and death can occur.

How Water Is Lost

Dogs are constantly losing water through urine, feces, respiratory vapor (panting/breathing), saliva and sweat. Of these five, the least amount of water loss occurs from sweating, since dogs sweat only a small amount through their footpads. Of the four other causes of water loss, the amount of water lost from each depends on the dog's health, environment, workload and diet.

Health problems greatly influence the amount of water lost on a daily basis. Urinary or kidney diseases, diabetes, systemic infections and other metabolic diseases can increase water loss through increased urination. As a result, dogs with health problems need to have their hydration status closely

monitored.

Environmental temperature plays a large part in how much water is lost through respiration. In low humidity and cool temperatures, air has very little moisture. By the time inhaled air reaches the lungs, it is saturated with water from the dog, making water nearly 6% of every exhaled breath. In warm and humid temperatures, the inhaled air is nearly saturated with water, so the dog loses less water from the lungs with each breath. However, in warm, humid temperatures, dogs tend to pant more to cool themselves, which increases water loss through salivation. Therefore, water losses in warm conditions are equal or greater than those in cold, dry environments. However, it is important to keep dogs well hydrated in both cold and warm temperatures.

Exercise can also play a major role in the amount of fluids that are lost. For example, a 45 pound house dog, living in a climate controlled environment, loses about 1000 mL of water through urine, 100 mL of water through feces, and 300 mL of water through evaporation from breathing and salivating (a total of 1400 mL) in a day. However, if that same dog stayed outside and ran a long distance sled race, he would lose about 2250 mL of water through urine, 250 mL through the feces, and 2000 to 2500 mL from breathing and panting during exercise (a total of 5000 mL—a 257% increase in water loss)!

Diet also plays an important part in water balance. Dogs fed poor-quality foods need to eat more to meet their energy and nutrient needs. An increase in food consumed can increase stool production. Feces are 80-90% water, so for dogs fed poor-quality diets, that can mean greater water loss! More food also means more production of metabolic wastes that must be filtered and excreted by the kidneys—another loss of water. Feeding a high-quality, performance food actually can help decrease the amount of water loss on a daily basis.

How Much Water Does My Dog Need?

Because it's impossible to calculate exactly how much water a dog requires each day, you can't just offer your dog an exact amount of water and expect him to stay well hydrated. Instead, Mother Nature has provided internal mechanisms to stimulate a dog to drink when hydration status is low. For example, as a dog's plasma gets more concentrated, the increased salt content is detected internally, triggering thirst. Since it takes a while for water to be absorbed from the stomach to the plasma, the dog's body does not rely on the return of plasma salt concentration to tell him to stop drinking. Instead, the stretching of the stomach and drop in throat temperature signal that the dog's thirst has been quenched. Theoretically, a dog will drink as much as he needs as long as water is available when he

needs it. But in reality, some working dogs don't drink enough.

Conclusion

Water is a very important part of keeping the performance dog in tip-top condition. Dehydration can easily lead to poor performance or serious health conditions if not properly addressed. Remember to always evaluate your performance dog and watch for any early warning signs of dehydration. Offer him water on a regular basis. Immediate medical assistance is critical with dehydration, so consult a veterinarian if the signs of dehydration become severe.

Physical Signs of Dehydration

Refusal to exercise or work

Poor focus on the task at hand

Tenting of the skin (when pinched, the skin stands up like a tent)

Drooling with thickened saliva

Refusal to drink or take treats

Lethargy

Dull look to the eyes

Severely labored breathing (except in severe dehydration, where panting ceases, to conserve water and energy)

Eyes sunken into the skull

Inability to move (severe dehydration)

References:

A. Reynolds. Hydration Strategies for Exercising Dogs. In Reinhart, GA and Carey DP, eds. Recent Advances in Canine and Feline Nutrition Volume II. Wilmington, OH: Orange Frazer Press, 1998; 259-267