



For Active Dogs!

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Scents of Success



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The extraordinary olfactory abilities of dogs have long been used by humans for odor identification and discrimination. Our use of this incredible canine tool, which we are completely unable to imitate or engineer, is continuously expanding. We deploy the canine nose for life-and-death activities such as improving our safety (e.g., bomb and drug detection, tracking lost individuals, avalanche work) and our health (e.g., cancer detection, diabetes/seizure alert). We also use the dog's exceptional scenting ability for recreation as we hunt game and play novel games involving scent detection (e.g., nose/scent work, utility obedience, tracking, hunt tests/field trials).

Given the importance of the dog's superlative schnoz, it's important to understand what factors might alter its function. What about physical stressors such as exercise, conditioning, diet and environment?

Several studies provide important information about what dogs need to be at their scenting best and reveal clues about how we can optimize olfaction!

Factors That Can Affect Scents-Ability in Dogs

1. Conditioning

Some people are surprised that conditioning can affect a dog's scenting ability. I mean, what does the strength of a dog's muscles have to do with the ability of odor molecules to land on the receptors in the nose and transmit a neurological signal to the brain? However, fitness is one of the most important factors in your dog's odor detection ability. In one study, dogs that were less fit had an astounding 64% reduction in their scent sensitivity compared to physically conditioned dogs (1)! Another showed a higher frequency of correct target alerts in physically fit dogs (2). This might be related to the lower heart rate in conditioned dogs and therefore a reduction in the need for panting (which reduces olfaction because of reduced airflow through the nose).

2. Diet

There are just a few studies of the effects of diet on scenting ability in dogs, but they offer some fascinating insights into the potential for improving scenting ability through appropriate nutrition. English Pointers withheld from exercise and fed a diet supplemented with coconut oil appeared to experience compromised olfaction, but exercised dogs maintained their olfactory acuity (3) – another reason to keep your dog fit!

Another study showed benefits to olfaction when using a corn oil-supplemented diet and exercise – there's that fitness component again (1)! A third study looked at "the breakfast effect" in which dogs searched more accurately 30 min following the consumption of breakfast than when fasted. They concluded that food might provide energy for cognitive processes, and that search accuracy in fasted dogs decreased as a function of energy depletion (4).

3. Environment

Factors that lead to heat stress including lack of acclimatization to a novel environment, increased environmental temperature, increased humidity, lack of access to water, and/or poor ventilation, all contribute to reduced odor detection ability (5). A dog that is heat stressed will pant, which itself reduces olfaction due to reduced airflow through the nose. In addition, dehydration can significantly decrease odor detection capabilities in dogs (3).

4. Age

Older dogs can have age-related changes in their scenting system, similar to that experienced by aged people (6). Older dogs had a reduced number of odor-detecting cells in their noses and the cells that remained had a reduced number of cilia (the tiny hairs that contain odor receptors, which grab odor molecules out of the air). Scent detection games can provide excellent environmental stimulation for old dogs, though, so don't let this possible deficiency stop you from providing your oldster with odoriferous experiences. Just make sure the odors are strong!

5. Drugs

There is a long list of pharmaceuticals that can cause reduced olfaction in humans including anesthetics, antiarrhythmics, antihistamines, antimicrobials, antiproliferative and immunosuppressive drugs, endocrine drugs, gastrointestinal (GI) drugs, neurologic drugs, and NSAIDs (7, 8, 9). The list of drugs that have been proven to affect scenting ability in dogs is shorter because of a lack of research. Those include some cardiac drugs, high doses of metronidazole, steroids, and chemotherapeutics (10). Regardless, it is important to consider that any dog being treated with a

pharmaceutical might have diminished scenting ability.

6. Subclinical or Chronic Diseases

Interestingly, endocrine conditions such as hypothyroidism, diabetes and Cushing's disease can cause a lack of scenting ability in dogs (11). The mechanism for this is unknown but given that many dogs live with these chronic conditions, it is important to ensure that the dog is getting the best current therapy for the condition, which should minimize the risk of effects on olfaction. If your dog is living with one of these conditions, consider that they might be less efficient at scenting.

It might seem worrisome that there are so many factors that can affect your dog's scents-ability, but the good news is that, with a little knowledge and forethought, you can substantially reduce the risk of odor detection deficiencies and even help your dog establish and maintain superlative scenting skills!

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