

The Unique Nutritional Needs of Active, Athletic Dogs

If you have a herding and hunting dog, agility competitor, a search & rescue pup, or a military or police K9, you may be making a big mistake if you're feeding him regular high-performance food. An active dog produces large amounts of excess radicals during exercise, making these extra nutrients.

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STORY AT-A-GLANCE

- Active, athletic dogs require specialized diets to meet their nutritional needs
- These dogs should consume adequate amounts of antioxidants to protect against the free radical damage that occurs during intense periods of exercise
- Feeding fresh foods is the best way to provide antioxidants to canine athletes (and all dogs); new research also suggests it's important that every active dog gets adequate dietary taurine to protect the heart
- Very active dogs need a nutrient-dense diet that provides optimum energy in a smaller quantity of food; the protein source should be excellent quality and animal-based, and the diet should be relatively high in clean dietary fat

Very active, athletic canines, e.g., hunting and herding dogs, military and police K9s, search and rescue dogs, and agility competitors, require specialized diets just as human athletes do. It's important for every dog to maintain good energy levels, a balanced immune system, strong muscles, flexible joints and an ideal weight, but this is especially true for very active dogs.

The Importance of Antioxidants

During exercise, your dog's body (and yours) produces large amounts of free radicals (DNA-damaging molecules), which is why canine athletes may need to consume more antioxidants than less active dogs to protect against free radical damage.

In a 2018 study, researchers evaluated American Foxhounds during hunting season.¹ One group of dogs was fed a "high-performance commercial diet" while a different group was fed a similar diet supplemented with antioxidants, including vitamins C and E, lutein, zinc, and taurine.

During the course of the study, dogs from both groups were taken to hunt two to three times a week, for two to five hours at a time. The hunting sessions were a form of unstructured endurance exercise during which the dogs weren't running the entire time but were also stopping to sniff or slowing down to pick up a scent.

The researchers took blood samples from the dogs to evaluate oxidative stress markers and other blood metabolites before they were put on the diets, and four additional times during the seven-month study. The researchers accurately predicted that the dogs eating the antioxidant-enriched diet would have lower levels of oxidative stress.

They also expected those dogs to show improved performance compared to the other group. This didn't turn out to be the case during the study but could be realized with more strenuous exercise and higher metabolic demands.

Active Dogs May Need Extra Taurine and Vitamin E

The researchers also discovered that over the course of the hunting season, the dogs fed the diet without antioxidant supplementation showed a decline in both taurine, an important nutrient for heart health, and vitamin E. One of the dogs even came close to a "critically low" level of taurine during the study.

Taurine and vitamin E levels for the dogs eating the supplemented diet remained at or above the baseline, which suggests these nutrients are compromised in athletic dogs over months of unstructured exercise. The researchers also believe more-active dogs (e.g., sled dogs) may experience even greater nutrient depletion.

If you haven't read my article about taurine and heart disease in dogs, I encourage you to do so. Taurine deficiency from any cause (genetics, dietary insufficiency, etc.) can lead to dilated cardiomyopathy, a heart muscle disease, in certain dogs.

Until we have much more information on the subject, my current recommendation is to supplement all dogs with high-taurine foods as treats and snacks, no matter what type of diet they're eating. An easy way to do this is to simply mix a can of sardines (packed in water) into your pet's meal once a week, or if you have a little dog, give a sardine a day. You can also find the taurine content of many other foods on page two of [**this study**](#).

The Best Source of Antioxidants for Dogs

Antioxidants play a key role in longevity, and high levels of circulating antioxidants are commonly seen in the "oldest old" among us and several studies of older dogs have proved the benefits of an antioxidant-rich diet for the aging canine brain.^{2,3,4,5} Antioxidant vitamins and delicate polyphenols found in real foods are the first molecules to be inactivated when the ingredients in ultraprocessed pet food are repeatedly heated.

The results of a 7-year study of 90 cats aged 7 to 17 who were fed an antioxidant-rich diet showed fewer decreases in lean muscle mass; improved body weight, lean body mass, skin thickness, and red cell quality; decreased incidence of disease; general improvement in quality of life; and significantly longer life span.⁶

The same is true for dogs. The more free radicals the body makes, the more antioxidants the body requires, and research shows puppies may have antioxidant deficiencies.

Most commercially available pet foods, even high-quality formulas, rely on synthetic nutrients to meet the bulk of their nutritional requirements. My good friend and fellow pet food formulator, Steve Brown created the following chart to demonstrate the differences between nutrients in the diet dogs used to eat (their ancestral diet of whole foods) vs. what's considered "acceptable" (AAFCO minimum nutrient requirements) for ultraprocessed foods:

Comparing AAFCO to Ancestral Standards:
(per 1000kcal, Adult)

	AAFCO	Ancestral
Calcium (g)	1.25	5.7
Phosphorus (g)	1.0	3.3
Potassium (g)	1.5	2.0
Sodium (g)	0.2	1.0
Magnesium (g)	0.15	0.4
Iron (mg)	10	43
Copper (mg)	1.8	6.0
Manganese (mg)	1.3	3.1
Zinc (mg)	20	24
Vitamin E (IU)	12.5	23

As the chart above illustrates, AAFCO nutrition recommendations sustain life, but they certainly don't nourish animals in the way nature intended. Adding real food sources of antioxidants to your dog's diet is the best thing you can do to increase intake of these beneficial compounds.

Here's a quick reference to real foods you can safely use as nutrient-dense, fresh food treats or meal toppers for your pet. Antioxidants are contained in the vitamins, minerals and cofactors in fresh foods, including:

- Vitamin A and carotenoids, which are found in liver and bright colored fruits and veggies like apricots, broccoli, cantaloupe, carrots, peaches, squash, sweet potatoes and tomatoes
- Vitamin C, found in guava, strawberries, kiwi, as well as green peppers, broccoli, and green leafy vegetables
- Vitamin E, found in nuts and seeds
- Selenium, found in protein sources like Brazil nuts, fish, chicken, beef, and eggs

Phytochemicals also contain antioxidant properties:

- Flavonoids/polyphenols are in berries and tea (decaffeinated, for pets)
- Lycopene is in tomatoes and watermelon
- Lutein sources are dark green vegetables like spinach, broccoli and kale

Active Dogs Also Require Animal Protein-Packed Diets

Dr. Joseph J. Wakshlag of Cornell University College of Veterinary Medicine studies nutrition as it relates to active dogs, and in particular, their protein requirements. Most of what is known on the subject focuses exclusively on sprinting dogs like the Greyhound, or endurance sled dogs like the Husky.

According to Wakshlag, there was one study in particular that focused on dietary protein, and its unparalleled ability to preserve musculoskeletal integrity, as well as appropriate total protein, albumin, and red blood cell status.⁷

Hematocrit and serum albumin levels tend to drop while a dog is training and racing, and adequate dietary protein intake can improve the situation. Studies in endurance and sprinting dogs suggest that from 24% to 30% of the metabolizable energy (ME) in the dogs' diets should be highly digestible animal protein, for example real lamb, beef,

and chicken.

According to PetfoodIndustry.com, "Active, sporting, working - whatever term you use to describe dogs that do a specific job like running, hunting, sniffing or jumping, really means that they are a canine that requires a very specific diet to maintain their rigorous lifestyle."⁸

A very active, athletic dog needs a nutrient-dense diet that provides optimum energy in a smaller quantity of food. The protein source should be excellent quality and animal-based, and the diet should be relatively high in unadulterated dietary fat, including supplementation with raw organic coconut oil and higher-fat meats for extra calories, if needed.

The main components of a nutritionally complete fresh food diet for a canine athlete with no health problems include a variety of raw meaty bones, muscle and organ meats, a rotation of colorful, antioxidant-rich vegetables, appropriate supplementation to meet trace mineral and vitamin requirements, and a constant supply of fresh, clean water.

There are also many commercially available human-grade raw or gently cooked meat-based pet foods that are perfect for canine athletes, if you decide home-prep isn't for you.

Sources and References

¹ [Journal of Animal Science, Volume 96, Issue 3, 3 April 2018, Pages 930-940](#)

^{2, 3} [Cotman CW, et al. Brain aging in the canine: a diet enriched in antioxidants reduces cognitive dysfunction. Neurobiol Aging 2002;23:809-818](#)

⁴ [Ikeda-Douglas CJ, et al. Prior experience, antioxidants, and mitochondrial cofactors improve cognitive function in aged beagles. Vet Ther 2004;5:5-16](#)

⁵ [Milgram NW, et al. Dietary enrichment counteracts age-associated cognitive dysfunction in ca-nines. Neurobiol Aging 2002;23:737-745](#)

⁶ [Cupp, CJ, et al. Effect of Nutritional Interventions on Longevity of Senior Cats. JARVM 2007; Vol 5, Iss 3](#)

^{7, 8} [PetfoodIndustry.com, September 12, 2014](#)
