

The Whole Dog Journal™



VOLUME 19 | NO. 7 | \$5.95

A monthly guide to natural dog care and training

JULY 2016

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Subscriptions: \$39 annually (12 issues). Bulk rate subscriptions for organizations and educational institutions available upon request.

Postmaster: Please send address changes to THE WHOLE DOG JOURNAL, PO Box 8535, Big Sandy, TX 75755-8535

In Canada, send to THE WHOLE DOG JOURNAL, PO Box 39, Norwich, ON, N0J 1P0



Hot Stuff

It's hard to think!

BY NANCY KERNS

It's just about the hottest part of the day as I write this. In my part of the country, at this time of year, that's between 5 and 7 p.m. My husband I don't have air-conditioning, which strikes everyone we know as an odd choice, but it *is* a choice. We could afford it, but we both grew up with budget-conscious parents and have environmental concerns about everyone burning fossil fuels in order to cool themselves down all summer. We manage it "old-school," by positioning fans in every other window to bring in cool air and blow out hot air all night long, and then shutting the house down tight all day. It preserves a cool bubble of air in the house – but this bubble heats up a tiny bit every time someone opens a door to come in or go out, or, more often, to let a dog in or out.

Let me just add that there are currently nine dogs in the house at this moment – another odd choice – so it's warmer than it ought to be. Before you call an animal control officer from the local shelter, asking for a welfare check on the excessive number of dogs, keep in mind that most of these dogs belong to the local animal shelter! Six of the nine are fosters: Mama Great Dane and five of her 11 puppies. (The other six puppies are being fostered across town by a good friend.)

All of the puppies, and most of the dogs, sleep outside at night, but come indoors during the day to escape the heat. The pups play hard in the early morning and late at night, when it's cool. Right now, though, it looks like someone melted wax puppies in my kitchen – there are literal and figurative puppy puddles all over the vinyl floor. I'll put them outside in the shade soon, and start opening windows and mopping the floor. Than I can take my dogs for a swim in the icy cold Feather River, which flows right through my town, just blocks away. Ah, I can't wait. But first, I have to finish writing this. What was I writing about? I can't think, it's so hot!

Happily, it has developed that my newish adolescent dog, former foster puppy Woody, is an enthusiastic swimmer. Given his youth and naiveté, buckling him into a canine life jacket has proven to be prudent, as he has, several times, combined his love of swimming with his interest in ducks, even those that are swimming hundreds of yards away. Lucky for me, I had a couple of weeks' head start to read over WDJ contributor/

dog trainer Stephanie Colman's review of personal flotation devices for dogs, which starts on page 6 of this issue, so I could buy the best one for my happy, neoprene-covered Woody duck. Even friends who don't really care for pit bulls smile when they see Woody goofing, diving, and splashing in and out of the river in his bright yellow and blue PFD.

Speaking of ducks, maybe Woody comes by his combined interests honestly. In preparation for an upcoming article on mixed-breed identification tests, I sent a sample of Woody's (and Otto's) DNA to different companies to be tested. Woody's first result came back indicating he's an American Staffordshire Terrier/Labrador Retriever-mix, and I think that's likely. His mom looked like a black Lab with a slightly blocky head, and all the pups looked very "pittie." The result from the second company agreed about one of those breeds, not the other, and added three more. You can guess, what they were if you want, but I won't reveal the results for Woody's second test (or Otto's first and second tests) until the article is done.

And speaking of DNA tests, suspected "pit bulls," and people's perceptions thereof, I think you'll enjoy trainer Linda Case's article on the facing page. She turns a cool, scientific gaze on a hot topic, and produces great food for thought. You will have to excuse me for that mixed metaphor – it's really much too hot in here, and the river is calling. Stay cool!

NK

Breed Matters

The breed identification associated with a mixed-breed dog can have life-or-death repercussions.

BY LINDA P. CASE, MS

Our youngest dog, Ally, has a “bestie.” Her name is Colbie and she belongs to our friend Amanda, a trainer who also works as an instructor at my training center, AutumnGold. Ally is a Golden Retriever. Colbie is a pit bull, adopted from a local shelter while Amanda was on staff there.

Being young girls, both Ally and Colbie wear pink collars, Gentle Leaders, and harnesses. For Ally, this is simply a fashion statement. For Colbie, given her breed and the breed stereotypes that she may encounter, it means a bit more. Amanda purposefully dresses Colbie in pink, hoping that such feminine attire will present Colbie as the sweetheart that she is.

Although Ally does not care about Colbie’s genetic heritage (or that she wears pink), many *people* do. Breed stereotypes are pervasive and impact local and state breed-specific legislation (BSL), homeowner’s insurance rates, rental property regulations, and shelter decisions regarding adoption and euthanasia. BSL in the United States and the United Kingdom specifically target pit bulls and other bully-type breeds, and either ban ownership of the breeds outright or impose strict restrictions upon ownership. These laws are based upon two assumptions:

- Targeted breeds are inherently dangerous.
- Individuals of the breeds can be reliably identified.



There is much controversy (and no consensus) regarding the first assumption, which is a topic for another time.

In this article, we look at the second assumption regarding reliable breed identification. Is there supporting evidence?

It turns out that there is quite a bit of science on this topic – and the results are quite illuminating.

PIT BULL OR...?

Prior to the development of DNA testing, the only method available for identifying the breed of a dog whose heritage was unknown was visual assessment. A shelter worker, veterinarian, or animal control officer examines the dog and assigns a breed designation based upon physical

appearance and conformation. Even with widespread availability of DNA tests, most shelters and rescue groups continue to rely upon visual identification to assign breed labels to the dogs in their care. Given the life or death import of these decisions for some dogs, it is odd that the question of the reliability of these evaluations has not been questioned.

Until recently.

EXPERTS DON'T AGREE

In 2013, Victoria Voith and her co-researchers¹ asked more than 900 pet professionals to assign a breed (or mix of breeds) to 20 dogs that they viewed on one-minute video clips. A DNA test was conducted for each of the dogs prior to the study, which allowed the researchers to test both the accuracy of visual breed-identification and the degree of agreement among the dog experts.

■ **RESULTS:** Poor agreement was found between visual breed assignments and DNA results in 14 of the 20 dogs (70 percent). Moreover, there was low inter-rater reliability, meaning that the dog experts did not show a high level of agreement regarding breed assignments to the 20 dogs. More than half of the evaluators agreed on the predominant breed in only seven of the 20 dogs (35 percent). These results provide evidence that physical appearance is not a reliable method for breed identification.

YOU SAY PIT BULL, I SAY BOXER

The following year, researchers in the U.S. and the U.K. collaborated and examined the consistency with which shelter workers assigned breed labels to the dogs in their care.² A group of 416 shelter workers in the U.S. and 54 in the U.K. were asked to assign a breed or mix of breeds to photographs of 20 dogs. They also completed a questionnaire that asked them to list the specific features that they used in their determination. Of the 20 dogs that were used in this study, more than three-quarters had a bully-breed appearance.

Note: An important difference between the U.K. and the U.S. is that all U.K. shelters are subject to the country’s Dangerous Dog Act, a law that bans the

ownership of pit bulls. While such bans exist in the U.S., there is no universal law. Rather, select municipalities or states have various forms of BSL.

■ **RESULTS:** Perhaps not surprisingly, U.K. shelter workers were much less likely to identify a dog with a “bully appearance” as a pit bull than were U.S. shelter workers. Instead, the U.K. shelter workers tended to label these dogs as Staffordshire Bull Terriers, a breed that is allowed in the U.K., rather than as a pit bull, a “breed” that is universally banned.

Despite this difference, results corroborated Voith’s study in that the researchers found a great deal of variation among shelter workers in their assignments of breed, and there was a lack of consensus regarding which of the 20 dogs were identifiable as pit bulls.

DNA VS. SHELTER STAFF

A 2015 study surveyed experienced shelter staff members at several Florida animal shelters.³ At each of four sites, four staff members were asked to assign breed designations to 30 adoptable dogs who were housed at their shelter. Collectively, 120 dogs were evaluated by 16 staff members. DNA testing was conducted on all of the dogs. A primary objective of

this study was to examine the reliability of shelter staff’s ability to identify dogs with pit bull heritage and to compare their assessments with DNA results.

Note: The DNA signatures that are used to identify “pit bull terriers” are those of the American Staffordshire Terrier and the Staffordshire Bull Terrier, two breeds that are considered to be genetically identical. The companies that offer DNA tests for mixed-breed identification do not include American Pit Bull Terriers among the breeds they may identify.

■ **RESULTS:** About one-third of the dogs who were identified as a pit-bull type breed by one or more shelter staff lacked any DNA evidence of bully breeds in his/her heritage. When inter-rater reliability among the participants was examined, agreement among shelter staff was moderate, but still included a relatively large number of disagreements.

What this means in practical terms is that a substantial number of dogs in this study were labeled as pit bulls or pit bull types and yet had no such genetic background. Even if the shelter staff agreed on a particular dog’s identification, this would be rather a moot point (for the dog) if they both happened to be wrong.

BUT SHE DOESN’T LOOK LIKE A CHOW CHOW

How is it possible that a dog who appears to have the characteristic “pittie-type” head shape, muscular body, and other distinctive features, tests negative for pit-bull heritage? The conclusion that many people make from these discrepancies is that DNA testing must be unreliable, inaccurate, or just plain wrong.

However, the fact is that it is not uncommon for the results of DNA tests of dogs who have mixed heritage to identify a set of primary ancestor breeds that look nothing like the dog in question. This occurs because purebred crosses, particularly after the first generation, can result in unique combinations of genes that produce a wide range of features. When several different breeds are involved, some of these features may not be apparent in any of the ancestral breeds.

This occurs for two reasons. First, many of the breeds that we know today were originally created by crossing two or more existing breeds and then selecting for a small set of physically unique traits in subsequent generations. However, the dogs of these breeds still carry genes for a much wider variety of traits, even though the genes are not being “expressed” in the dog’s appearance. When these dogs are then bred to dogs of other breeds the hidden traits may become evident in their puppies.

A second reason is that less than one percent of the canine genome encodes for breed-specific traits such as ear shape, coat type and color, and head shape. So, a dog could be a large part (genetically) of a certain breed, while not showing all of the breed’s physical traits, which may have been rapidly lost during cross-breeding with other breeds.

These three studies provide valuable evidence that the use of visual assessments to assign breed or breed-mixes to dogs is inaccurate and unreliable.

Not to put too fine a point on it, but this information is of more than just casual interest for dogs like Colbie because pit bulls and other “bully breeds” are most frequently stigmatized by breed stereotypes and impacted by BSL and shelter policies that require automatic euthanasia. It is not an exaggeration to suggest that identifying an individual dog as a pit bull may be a matter of life or death for that dog.

WHAT IS A “PIT BULL,” ANYWAY?

Would it surprise you to learn that there is no such breed as the pit bull? This is why it’s not capitalized in WDJ; we do capitalize breed names. There are *lots* of dogs that are *called* “pit bulls,” however. Some of them might actually be one of these: The American Kennel Club (AKC) recognizes a breed called the American Staffordshire Terrier, and another called the Staffordshire Bull Terrier. The United Kennel Club (UKC), established in 1898, recognized its first breed, the American Pit Bull Terrier, in 1898. The UKC also recognizes the Staffordshire Bull Terrier. Pedigrees be damned, an individual of any one of these dogs would likely be labeled as a “pit bull” if he or she were found in an animal shelter.

As the studies discussed here show, the above-mentioned purebreds, as well as other breeds developed over the years (including the American Bulldog) – and the countless mixed-breed dogs that result from matings with them – are largely indistinguishable to most humans, and even to many dog training or veterinary professionals. If the dog has a blocky head, a muscular body (whether it’s short and squatty, or taller and chiselled), a short coat, and a whippy tail, he will likely be called a pit bull at some point – almost certainly if he ends up in a shelter. If he’s lucky enough to make it onto the adoption row and gets adopted, his savior finds she has also adopted a quandary: Most breed specific legislation, housing regulations, and insurance companies discriminate against any dog with a “pit bull” label – possibly the reason why those mixed-breed DNA testing companies don’t designate any of the dogs they test as American Pit Bull Terriers.

– Nancy Kerns

RESEARCHERS ASK, "WHAT'S IN A NAME"?

A recent paper published by researchers in Clive Wynne's dog lab at the University of Arizona describes an ambitious series of experiments in which they examined the impact of breed labels on the perceptions of potential adopters and on the eventual outcome for the dog.⁴ The studies were carried out online and at animal shelters in Florida and Arizona. Participants were asked to rate photographs, videotapes, or live dogs in their kennels. In some conditions the dogs were provided with a breed label and in others they were not.

■ **RESULTS:** Two major findings came out of these studies. The first showed that stereotypes about pit bulls are alive and well, and the second showed how this stigmatization ultimately affects dogs:

1 People rated an image of a "pit-bull type" dog as less approachable, friendly, and intelligent, and more aggressive when compared to an image of either a Labrador Retriever or a Border Collie. In another experiment, labeling a dog as a pit bull negatively influenced the perceptions that people had about the dog. When visitors rated a dog who was labeled as a pit bull, the dogs were found to be less attractive in terms of perceived approachability, friendliness, intelligence, aggressiveness, and adoptability compared with when the same dog was not so labeled.

2 Dogs who had been labeled as pit bulls had length of stays in the Florida shelter prior to adoption that were more than three times as long as the stays of dogs who were matched in appearance, but had been labeled as another breed or breed-mix.

When breed labels were removed from the profile cards of dogs offered for adoption, adoption rates for pit bulls increased significantly, length of stays prior to adoption in the shelter decreased, as did euthanasia rates.

Interestingly, not only pit bull-type dogs benefited from removing breed labels from the kennel cards. Dogs from working breeds who were available for adoption, in particular Boxers, Dobermans, and Mastiffs also showed an increase in adoption rate.

TAKE AWAY POINTS

There is a lot to ponder here. We have learned that breed identification using a dog's physical appearance, even when conducted by experienced dog experts, is flawed in two distinctive ways. First, experts cannot agree consistently about how to label an individual dog. One person's Boxer-mix is another's pit bull and is yet another's Bulldog/Lab mix.

Colbie's mixed-breed DNA test said her heritage includes American Staffordshire Terrier, English Bulldog, Bull Terrier, and Italian Greyhound!



Second, DNA tests do not consistently confirm breed assignments that were based upon physical appearance. Labeling breeds for purposes of shelter retention, adoption, and euthanasia is a highly dubious process, and one that is most critical for pit bulls, American Pit Bull Terriers, Staffordshire Bull Terriers, and every other so-called "bully" breed and breed-mix.

We have also learned that potential adopters react to a pit bull label in ways that may adversely affect the outcome for the dog. Labeling a dog as a pit bull may increase her length of stay in the shelter, reduce her chances of adoption and increase her risk of being killed, simply because she was assigned a (possibly incorrect) label that changed the perceptions of potential adopters.

And last, we have evidence that removing breed labels from the cage cards of adoptable pit-bull-type dogs (and many other dogs) increases their chance of adoption, reduces the length of their stay in the shelter, and increases their chance of simply staying alive.

Colbie is pretty in pink, for sure. But it's time that wearing pink becomes a simple fashion statement for Colbie, just as it is for her pal Ally. 🐾

Linda P. Case, MS, owns AutumnGold Consulting and Dog Training Center in Mahomet, Illinois. She is the author, most recently, of *Beware the Straw Man* (2015) and *Dog Food Logic* (2014), and many other books about dogs. See "Resources," page 24, for Linda's contact information, and her blog at thesciencedog.wordpress.com.

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K9 PFDs

Results of our tests of the best-selling canine life jackets (personal flotation devices for dogs).

BY STEPHANIE COLMAN

With summer well underway, many of us are sharing water-based activities with our dogs, at the shore or in the family pool, or on boats, kayaks, or paddleboards. If you include your dog in water activities, it's important to take steps to ensure his safety on or near the water. The easiest way to do this is with a well-fitted, good-quality personal flotation device (PFD) for your dog.

Many people think all dogs are natural swimmers; they are *not!* Even though all dogs instinctively “dog paddle” when they find themselves in water, that alone won't always keep them safe off-shore. Some dogs dislike the water and are prone to panic when they suddenly find themselves away from dry land. Dogs with significant muscle mass or very little body fat are less buoyant and have a harder time staying afloat – as do older dogs who tire easily, or arthritic dogs. Some are just poor swimmers, bobbing vertically in the water, splashing so much with their front paws that they can't see where they are going! What about in the case of a watercraft accident, where the dog might be injured? Even athletic, accomplished swimmers can struggle in

the water when fatigue unexpectedly sets in after a full day of water play.

In each of these examples, a well-fitting dog life jacket can potentially mean the difference between a day full of happy memories or a tragic ending. Fortunately, there are many dog life jackets to choose from.

A proper life jacket should be bright, making it easy to see, and should have a snug fit. If it's too loose, it can entangle the dog or come off, or it will float above the dog while the dog bobs along in the water. If it's too tight, it can chafe and become uncomfortable, making it unlikely the dog will enjoy wearing it. A properly fitting life jacket should not restrict the dog's movement in or out of the water.

And, of course, a life jacket should be

well made, with strong materials and an adequate amount of buoyant material. Some are more buoyant than others – an annoying variable that is not quantified by the pet life jacket makers (see “These PFDs Are Not Yet Rated,” page 8). But more buoyancy isn't necessarily better; one of the most buoyant jackets we tested is also the least stable!

Dog owners also need to consider fit and other functions and features on the vest. Do you need maximum flotation ability for a poor swimmer? A vest that won't get too hot for a dog who will be onboard a sailboat and needs it for safety, but who won't actually be swimming much? Are you going to go paddleboarding with your water-loving dog, and need a sturdy handle to help him climb onto the board many times in the course of a boarding/swimming trip? Think about your planned water adventures, and buy accordingly.

We gathered an assortment of canine life jackets, some made by popular manufacturers of dog gear and some made by lesser-known companies with expertise in marine activities, and put them to the test with the help of three “test dogs”: Saber, a 60-pound Golden Retriever; Linus, a 63-pound Labrador Retriever; and Hope, a 28-pound Border Collie.

TOP PICKS

Two of the canine life jackets we tried on our dogs rose to the top of the test pool, but displayed different strengths. That's why we are naming *two* products as our “top picks.” One is best for athletic, accomplished swimmers; the other is best for beginning swimmers and dogs who need more help in the water.

Our top pick for athletic, accomplished swimmers is the **West Marine Neoprene Pet Vest** (next page, top). We included this vest in our review due to its sleek design and its maker's good reputation as a purveyor of boating-related products. A medium vest fit all three of our three athletic models, though it did need to be adjusted to its smallest dimensions to correctly fit the Border Collie.

The vest is lightweight, flexible, and very form fitting, more like a wetsuit than a life vest. It features a covered zipper closure along the dog's back and a quick-release buckle at the chest, with a neoprene band reinforced with nylon

A good canine life jacket should fit the dog snugly, be well made of quality materials, and help, not hinder, the dog's ability to swim well.





she wore this vest, compared to when she swam without a PFD. It was more difficult to observe with the harder-charging Lab and Golden, but we suspect it's a bit like using counterbalance weights to assist with pull-ups at the gym: you're doing most of the work, but your effort is boosted just enough to increase your endurance.

For dogs who are novice or weak swimmers, our top pick is **Ruffwear's K9 Float Coat** (pictured below). We tested the medium size, which easily fit Saber and Linus; however, it had to be adjusted to its smallest size to fit Hope snugly; truthfully, a small might have fit her better.

The Float Coat features an adjustable, telescoping chest piece

and an overlapping belly panel secured by two quick-release buckles. The excess length on the straps can be folded and held in place with an attached hook-and-loop (Velcro-like) closure, eliminating the need to cut the straps to size to prevent the excess length from dangling and potentially getting caught on something. The telescoping nature of the chest piece makes it less bulky than models where the chest piece overlaps.

straps under the dog's belly. The wide band successfully kept the life vest in place, even as our dogs ran, swam, and repeatedly leaped into the pool.

On top of the vest is a handle with a reflective stripe and a plastic leash clip. While the handle seems to be well sewn into the jacket, I wouldn't trust the neoprene material to not tear under the stress of repeatedly using the handle to haul a dog out of the water – especially a larger dog. This would not be our pick for a product that was going to be used repeatedly to lift a dog out of the water.

West Marine's website doesn't mention how to properly care for the life vest, but, since it's made of neoprene, we'd expect care considerations to be similar to that of a wetsuit: to keep the neoprene from fading or drying out, rinse well after use in saltwater or chlorine, and avoid exposing to heat or direct sunlight for extended periods of time. Also, keep in mind that neoprene holds heat, which is great for keeping a dog from getting hypothermic in cold water, but could also help a dog overheat if he were to wear the vest out of the water for too long.

The interior foam layer feels thinner and covers less surface area than the other PFDs we reviewed. This is largely what makes the vest fit so nicely, but

also means it doesn't offer as much buoyancy as some of the other products we tested. West Marine says this vest is designed to "help provide swimming endurance," meaning that it would not be the best choice for a dog who needs significant support in the water.

That said, we were easily able to observe an increase in our slowest swimmer's in-water body elevation when



The handle on top of the Float Coat feels significantly sturdier than the handles on other vests. There's also a plastic leash clip (though we're not sure we'd trust as a sole attachment point for restraining a strong-pulling dog), and an attachment point for The Beacon, Ruffwear's watertight LED light (sole separately). The jacket is trimmed with reflective piping.

The internal foam feels slightly thicker than the foam in most of the other models we tried. According to Ruffwear, the placement of the inner foam panels is designed to support the dog's natural swimming position, and all three dogs appeared to maintain a natural swim stroke while wearing the vest. The floatation benefit was most visible when the dogs jumped into the water, as they clearly didn't submerge as deeply as they did when jumping in the pool with other PFDs.

Ruffwear's K9 Float Coat looks and feels more durable than the other life vests we tested; it's a good choice for rugged outdoor adventures.



THREE-WAY TIE FOR SECOND PLACE

We'll call another tie for the products that we like a bit less than our top picks.

Kurgo's Surf-n-Turf Coat looks similar to the Ruffwear K9 Float Coat but there are many differences between the two products. The top of the jacket features two sturdy handles, sewn at right angles to each other, so a person who was at any angle to the dog she was trying

to fish out of the water is assured to be able to grab at least one of the handles – a thoughtful feature. There is a metal ring for attaching a leash (better than the plastic ring on the Ruffwear vest). There's also a metal bottle opener – a fun touch that adds a whole new layer to the always enjoyable trick of teaching the dog to fetch a beer!

The Surf-n-Turf Coat is secured by two straps with quick-release buckles under the dog's belly, and the adjustable chest piece overlaps at the dog's chest, secured with hook-and-loop and buckled straps. It's longer than Ruffwear's Float Coat, so we thought it would be more buoyant. Instead, the added length caused the end of the jacket to float up in the water, away from the swimmer's body. When the Lab swam with this jacket, his stroke seemed awkward, and he didn't appear to ride any higher in the water.

Kurgo markets the Surf-n-Turf Coat as a life jacket and three-season shell in one. A zipper along the base of the jacket allows the removal of the inner flotation layer, turning the outer layer into a waterproof coat. Upon closer examination, the flotation layer seemed flimsy, and it suddenly made sense why, even though the Surf-n-Turf Coat is larger, overall, than the K9 Float Coat, it didn't appear to offer improved buoyancy. The inner layer of the product we tested had several loose threads and a seam that was partially undone.

It was easier than expected to zip the flotation layer back into the jacket, but,



Kurgo's Surf-n-Turf Coat has more than one function; the flotation unit can be removed from the coat so the shell can be used as a rain coat instead.

THESE PFDs ARE NOT YET RATED

Human life jackets are rated by the U.S. Coast Guard based on how much buoyancy they provide. For example, "Type I" PFDs are required to provide at least 22 pounds of buoyancy – meaning, the device is capable of supporting up to 22 pounds of dense material. This is what a human would need to survive an extended period of time in rough, open water. The minimum amount of buoyancy for "Type II" PFDs is 15 pounds – enough buoyancy to keep an adult human's face above calm water when a fast rescue would be expected. And so on.

We were surprised to learn that there is no such rating system for canine PFDs! And *none* of the manufacturers of the products we found share the amount of buoyancy provided by their canine PFDs.

This seems like an obvious gap in the information that dog owners need if they want to buy the most buoyant product on the market. The Center for Pet Safety (CPS), best known for its independent crash tests of canine car safety harnesses, is currently accepting donations to help fund a study of canine flotation devices, and has even signed the Western University of Health Sciences, College of Veterinary Medicine, as a research partner for this effort. According to the CPS, a pilot study conducted by Western University in 2012 identified some serious concerns about the canine PFDs on the market, and even indicating that some of them might actually *increase* the risk of drowning of the dog wearing them! A link for contributing to the funds needed for this study can be found here: centerforpetsafety.org/upcoming-projects/flotation-devices/.

A controlled laboratory study of these products would be welcome. Our own tests of these products consisted of simple observation of the dogs wearing the jackets in and around a pool; we did not attempt to scientifically measure the buoyancy provided by the products.



Of Outward Hound's two vests, the H2Go Neoprene Life Vest is a good choice for dogs who would benefit from more flotation.



The Pupsaver Ripstop Life Jacket's two strong handles make it a good choice for dogs who must be repeatedly lifted from the water.

overall, we're not thrilled with the idea of being able to remove the potentially life-saving layer. It feels like this product is trying to be too many things at once.

We tried two different products made by budget-friendly **Outward Hound: the H2Go Neoprene Life Vest and the Pupsaver Ripstop Life Jacket**. Each product had strengths and weaknesses and features that may be more valuable to some users than others.

The foam in the **H2Go Neoprene Life Vest** is very thick. There are five foam cells in the vest: two on each side of the dog, and one that sits at the dog's chest.

While the Ruffwear and Kurgo vests are designed with flaps that extend down the sides and cover the dog's belly, the H2Go vest has only a small patch of neoprene attached to the belly straps. This little patch is important because, when properly fit, it helps anchor the vest on the dog to prevent slipping.

To properly fit this vest, one adjusts the belly straps on both sides to make sure the belly patch is centered under the dog – not coming up the side of the dog. We suspect this design element has to do with making sure the dog doesn't get too hot – a definite consideration with any life vest, but especially one made out of neoprene, which holds heat like a wetsuit. The vest has a similar design at the dog's chest; rather than extend the vest as a wraparound piece, the H2Go vest has 1-inch nylon straps that connect to an adjustable foam bar that is positioned in the center of the dog's chest.

Here, again, we have concerns about the durability of a handle sewn into neoprene, when it must have the potential to hoist 85-plus pounds of wet dog out of the water. Pulling the handle on dry land just once or twice exposed stitching between the handle and the jacket. We'd

like to think it would hold up in an emergency, but we suspect it would likely be a "one and done" situation. Not the end of the world, so long as the handle holds up when you really need it, but we wouldn't select this jacket for applications where we'd need the handle to repeatedly lift a dog, as one might do when paddleboarding with a dog who likes to swim.

Buoyancy-wise, the H2Go offered a lot of visible "lift" in the water. It was almost too much for my strong-swimming dog, Saber, who naturally swims very high and horizontal in the water. At times, it almost looked like the excess lift along his body was tipping his head and chest toward the water line. This might not have been the case if the vest had more flotation material at the chest, rather than just the single bar. Dogs who tend to use their front legs more than their back legs when swimming, with their back ends more under water, might benefit from this vest the most. Seeing how well this vest lifted the bulk of my dog's body, I can imagine it working well to help level dogs who haven't yet developed a more efficient swim stroke.

Outward Hound's Pupsaver Ripstop Life Jacket is similar in design to the Kurgo and Ruffwear vests, but offers a less-contoured fit, especially along the dog's back. The Pupsaver has neoprene flaps that fully wrap around the underside of the dog, secured by both hook-and-loop fasteners and quick-release buckles. The vest's interior foam continues in the overlapping chest piece, which is also secured with a hook-and-loop fastener and a buckle. Unique to the Pupsaver is an additional "flap" of foam that lies over the chest closure. The website describes this as a "front float," which is designed to "keep your pup's head above water." This "front float," plus the foam inserts

in the chest piece, definitely gives this vest a lot of flotation material at the front end of the dog.

This vest also has two handles, a thoughtful detail to help better distribute the dog's weight while being lifted, and to make it possible for two people to work together to lift a heavy dog, if needed. While I would question the long-term durability of the handles if used often, the ripstop nylon seemed stronger than the neoprene handles on other products.

Even when properly sized, this vest looks boxy compared to the higher-end models. It reminded us of the PFDs that are given to a person when renting a boat for a day as opposed to the type you might buy for yourself if you were a regular participant in water sports. Appearances aside, it offers nice buoyancy without appearing to over-lift the dog's back as compared to the chest/head and seems like a fair choice if your dog needs a life jacket for occasional use.

NOT RECOMMENDED

We wouldn't recommend buying either of the final two products we tested.

The overall design of the **Kong Sport Aqua Float Dog Flotation Vest** is almost identical to the Outward Hound Pupsaver Ripstop vest. However, on closer examination, its features appear to be of lesser quality. For example, the quick-release buckles that secure the belly flap are unnecessarily large in size, yet feel somewhat flimsy when in use. The buckle securing the chest piece was smaller, but the nylon strap kept slipping (negating the correct fit) when very little pressure was applied.



Kong Sport's Aqua Float Vest disappointed us. The buckles feel flimsy, the straps slipped loose, and it seemed to provide little extra buoyancy.

RANK	PRODUCT, PRICE, CONTACT INFO	AVAILABLE SIZES; HOW MEASURED
1 (tie): Ranked first for dogs with strong swimming skills.	West Marine Neoprene Pet Vest \$40-43; (800) 262-8464; westmarine.com	Available in S-XL. Size using combination of chest, length and body weight measurements.
1 (tie): Ranked first for novice or poor swimmers.	Ruffwear K-9 Float Coat \$79; (888) 783-3932; ruffwear.com	Available in XXS-XL. Size using chest measurement.
2 (tie)	Kurgo Surf-n-Turf Coat \$35-\$60; (877) 847-3868; kurgo.com	Available in XS-XL. Size using combination of chest, length and neck measurements.
	Outward Hound H2Go Neoprene Life Vest \$21-\$30; (800) 477-5735; outwardhound.com	Available in XS-XL. Size using combination chest, length, and neck measurements and body weight.
	Outward Hound PupSaver Ripstop Life Jacket \$17-\$26; (800) 477-5735; outwardhound.com	Available in XS-XL. Size based on body weight.
Not recommended	Kong Sport Aqua Float Dog Flotation Vest \$29-\$50; (818) 717-1116; kong-sports.com	Available in XXS-XL. Size based on chest measurement.
Not recommended	MTI UnderDog Pet Life Jacket \$42-\$60; (800) 783-4684; mtiadventurewear.com	Available in XS-XL. Size based on body weight.

The Kong Sport Aqua Float vest covered the most surface area on the dog of any of the vests, and it has the widest belly flap. The extra width of the belly flap meant we really had to cinch it in on the narrow waist of our athletic Lab. Our model, Linus, was at the bottom of size range for the large vest; it's possible a medium vest might have fit better. Still, it seems like the design of this vest would better accommodate an overall wider dog with a less-defined waist.

The bigger issue is this vest's lack of flotation support. Even though the product itself is bigger and covers more surface area on the dog, the interior foam feels thinner, and we didn't notice any obvious support from the jacket as our dog moved through the water.

But the performance of the last vest we tested was potentially far worse. We were actually really excited about trying the **MTI UnderDog Pet Life Jacket**, because, unlike just about every other pet life jacket, with flotation support located on the top of the jacket, the UnderDog is designed with the flotation material *underneath* the dog. According to the company's website, "by moving 90 percent of the effective buoyancy under the chest and neck, the vest is designed to allow a more natural swim angle with the hind legs lower than the front."

While this might be a common swim angle among dogs who aren't as comfortable in the water, or who aren't as skilled in their natural swim technique, I disagree that it's more "natural" for dogs to swim with their hind legs lower than the front. In my experience, the ideal, efficient swim technique is one that keeps

the dog's body fairly horizontal in the water. Still, a jacket designed to focus on lifting the dog's front end *seems* to make sense from a safety perspective.

And so, the design of this vest is opposite that of the other products we've described. A mesh panel stretches across the dog's back, securing the flotation cells *underneath* the dog, and is secured with hook-and-loop fasteners and plastic quick-release buckles. Another mesh piece extends from under the dog toward his neck, where a thick foam-filled "collar" snaps into place. This vest has, by far, the thickest foam of any of the vest we tried. The foam on the body portion of the vest is 1½", and the foam in the neck piece is ¾". With this much sturdy foam, we expected our experienced swimmers to practically walk on water!

Unfortunately, that amount of flotation material makes the vest extremely boxy, and challenging to achieve and maintain a snug fit. We were surprised



Saber is a good swimmer, but he struggled when fitted with the MTI UnderDog Pet Life Jacket – not a desirable result. It slipped backward and sideways on his body and made it difficult for him to turn.

by how tight we had to adjust the vest to keep it in place underneath the dog's chest. It's hard to imagine such a fit being comfortable, even though the under-body flotation did cause Saber to swim noticeably higher in the water.

The real problems started after a short amount of calm swim time. Despite the tight fit at the start, the vest still managed to slide toward Saber's waist. A difference of only a couple of inches appeared to cause Saber to float almost uncontrollably! In that position, the body of the vest seemed to dramatically counteract his natural movements. If his weight shifted to the left (for example, when turning to go after a toy), the buoyancy threw him to the right; he'd try to counter the shift, which instantly left him fish-tailing like a big rig truck about to jackknife on the highway!

We're perfectly willing to accept that we might not have achieved the perfect fit with this jacket. It felt snug and looked correct on dry land, but maybe the fit was still off? Also, we wonder if this jacket would do better to support a wider dog? Our test dog is lean and narrow, which meant the vest fit underneath him at a more pronounced angle. On a heavier, more log-shaped dog, the angle would open up, potentially creating greater stability/less overall shift in the water. We're still intrigued by the design, but, having seen better results with other products, we would not recommend the UnderDog at this time. 🐾

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Essential Knowledge

The 10 most important things to teach your puppy.

BY PAT MILLER, CBCC-KA, CPDT-KA

I don't care what breed or mix of breeds you're talking about, puppies are inarguably, impossibly and adorably cute. You have to be pretty hardhearted and cold or otherwise emotionally damaged not to get gushy over baby dogs, with their innocent faces, sweet puppy breath, satiny ears, and soft pink paw pads. It's no wonder that people adopt or purchase them, take them home, and then all too often don't know how to properly care for them.

It shouldn't surprise me but it does, still, that there are far too many people out there who don't seem to have a clue about how to properly raise a puppy. Whole Dog Journal readers are not likely to fall into the "completely clueless" category, but in case you haven't had a puppy for a while – or ever – and recently adopted or are thinking of adopting, here's a refresher course for you on the topic of the 10 most important things you should teach your puppy.

1 THE WORLD IS A SAFE AND HAPPY PLACE. If you teach her *nothing* else, teach your puppy this. The formal name for this process is "socialization," and it means taking your puppy lots of places, exposing her to different sights, sounds, surfaces, humans and other animals, *and making sure she's having a good time while doing so.* You want to give her a *positive* classical association with the world and all things she's likely to encounter in her dog life. Lots of people understand the part about taking their puppy lots of different places for socialization. They sometimes miss

Ideally, whoever owns or cares for your puppy's mom starts a positive socialization process, and you continue it immediately upon adoption! It's much more effective to socialize a pup early on than try to provide remedial socialization.

the critically important part: making sure the puppy has a good time.

The primary socialization window is alarmingly small – from three to four weeks to about 13 to 14 weeks. If you get your pup at age eight weeks, half that period is already gone – so hopefully the owner of the pup's mother has already laid a good socialization foundation. Now it's your turn.

Take your puppy to safe places where you can control the environment to a reasonable degree. Loud parties and

crowded street fairs are *not* a good idea. Small social gatherings, controlled groups of children, and well-run force-free puppy classes are. Find businesses that welcome pets (many hardware stores and outdoor cafes are pet-friendly) and take her shopping with you (but don't leave her in a hot car!).

If she seems fearful at any time, move her away from the fear-causing stimulus, let her observe from a safe distance, and feed high-value treats to help her have a good association with the thing, whatever it is. Then make a mental note (or keep a written list!) of things you want to help her become more comfortable with by doing focused counter-conditioning sessions.

For more information, see "Social Engineering," WDJ December 2013.

2 BEING ALONE SOMETIMES IS FINE. Dogs are social animals. In a world not controlled by humans, our dogs would spend most of their time in the company of others. Feral dog populations show us that, while not a true pack in the "wolf" sense of the world, wild dogs tend to exist in loose-knit social groups and do choose to be in the company of others of their own kind. In contrast, in our world, a significant population of canines are "only dogs" and are left home alone for eight to 10 hours or even longer. The incidence of separation and isolation anxiety behaviors (SA and IA) in our canine companions is sad testimony to this.



To avoid inducing SA or IA in your pup, introduce her to “aloneness” gradually. Include crate or exercise-pen training during this process so she can be left safely confined while you are away. Plan to take at least a few days off work after your pup arrives so you can help her get accustomed to longer and longer periods alone. Play with her first so she’s tired, then put her in her crate or pen, give her a food-stuffed Kong or other yummy chew, and sit nearby, reading or working on your computer. Slowly increase your distance from her and the length of time you leave her alone, until she is calm and relaxed on her own.

See “*Separation Anxiety Myths*,” August 2013, and “*Scared to be Home Alone*,” July 2008.

3 GO TO THE BATHROOM IN DESIGNATED PLACES AND/OR TIMES. Once known as “housebreaking” – “houstraining” is a better term; what were we “breaking” anyway?! – the process of teaching your pup to eliminate where you want her to go is critically important. The process is very simple – but not always easy. Successful houstraining requires ultra-management: You simply *never* give your pup the opportunity to go to the bathroom anywhere other than the desired place(s).

Leashes, tethers, crates, baby gates, exercise pens, and eagle-eye supervision all come into play as your pup learns that “outdoors = bathroom” (or, for those who choose to teach their dogs to eliminate indoors, bathroom = pee pads or a sod box). The key is to take your pup to her potty spot *more often than she has to go*, and reinforce her when she “does her business.” At first take her out every hour on the hour, then gradually increase the length of time between bathroom trips.

It’s also a good idea to encourage her to go on different surfaces. Dogs develop “substrate preferences.” If you have her go only on grass you may find that she *won’t* go on gravel or dirt on those occasions when grass isn’t available.

After she goes, play with her for a bit; if she discovers that elimination makes the outdoor fun stop, she may learn to “hold it” as long as possible to prolong her outside time or interaction with you.

When you are sure she is empty, and after a bit of play, you can bring her back inside and give her some relative house freedom for 15-20 minutes, then put her

Powerful knowledge: The moment that a puppy learns that volunteering a “sit” can reliably cause her person to deliver a treat, she is on her way to learning everything she’ll need to live with humans.

back under your direct supervision or confinement until the next scheduled potty trip. As she comes to understand the concept of pottying outside, you can increase the length of time she gets post-potty house freedom.

In addition to her regular bathroom breaks, keep in mind that puppies usually need to eliminate not long after eating, and after any strenuous play sessions.

If you do catch her making a mistake, give her a cheerful, “Oops! Outside!” and escort her out to finish there. If you react strongly with a loud “No, bad dog!” you may teach her that it’s not safe to go where you can see her, and she’ll learn to go to the back bedroom or behind the couch to poop and pee. Punishing accidents may also result in a dog who is reluctant to eliminate for you on leash, for fear that you will punish her. Just *don’t*.

See “*Potty Time*,” June 2013.

4 CHEW ONLY ON DESIGNATED CHEW OBJECTS. Just as dogs develop substrate preferences, they also develop preferences for certain things to chew on. If you manage your pup’s environment (with tethers, leashes, baby gates, exercise pens, and direct supervision) so she has opportunity to chew on only “legal” chew objects, you will be able to give her house freedom much sooner, with much more confidence that your valuables are safe.

Different dogs like different kinds of chews, so provide her with a wide variety of chewable items until you find what she likes. Remember that a dog’s need to chew goes far beyond puppyhood, so keep those chew objects handy throughout her life.

My general rule of thumb is that my dogs don’t get house freedom until they are at least a year old, and then only for short periods of time until I know that I can trust them not to chew.

See “*Eschew Chewed Shoes*,” May 2009.

5 DOGS GET LOTS OF TREATS WHEN THEY DO WHAT THEIR HUMANS WANT THEM TO DO.

When force-free training was new to the dog world, 20 years or so ago, positive



trainers had to endure a little (or a lot) of criticism about using treats for training. Now that positive training has come into its own, bolstered by studies that indicate that force-free training is faster and more effective than old-fashioned force-based methods, there is no need to be stingy with or defensive about food rewards.

I always have cookies in my pockets so I can always use treats to reinforce my dogs when the opportunity presents itself. Remember that all living creatures repeat behaviors that are reinforced. We all want to make good stuff happen! If you are good at reinforcing the behaviors you want, and making sure your pup doesn’t get reinforced for behaviors you *don’t* want (there’s that “management” thing again), your pup will spend lots of time trying to figure out what she needs to do to get you to give her treats. That’s a *good* thing.

See “*Strong Foundations*,” December 2010; “*Keep Training Playful*,” August 2008; and “*We’re Positive*,” January 2007.

6 IT’S FUN TO LEARN NEW THINGS. Today’s skilled trainer knows that it’s important to make the whole training process fun for your pup. Along with treats, we want to incorporate happy voices, toys, and play as part of the training process. When you are selecting a training professional to work with you and your pup, either in private training or group classes, make sure you find one who is on board with the force-free, fun approach to training. Your pup’s eyes should light up with joy when you tell her it’s training time!

See “*Dogs Just Wanna Have Fun*,” June 2008.

7 IT'S SUPER REWARDING TO COME RUNNING FAST WHEN YOUR HUMAN CALLS YOU.

Recalls (coming when called) may just be the single most important behavior you can teach your dog. A dog who has a solid recall can be given more freedom to run and play in areas where dogs are allowed off leash. Dogs who get to run and play are generally much healthier, both physically and mentally, and much easier to live with, as they can burn off excess energy by running around. A tired dog is a happy owner!

Use a recall cue that always means “good stuff” – such as a chance to play with a highly coveted toy or high-value treats – and *never* call your dog to you to do something she doesn't love, like giving a pill, treating ears, or putting her in her crate. Certainly *never* call her to you and then punish or even just scold her. You never know; a solid recall might just save your dog's life someday.

Unlike old-fashioned training, where you face your dog, command her to come, and jerk on the leash if she doesn't, today's positive trainer teaches the recall as another fun game to play with humans. I teach a “Run Away Come” by calling the dog and then running away fast, so the dog comes galloping and romping after her human, and gets to party with treats and/or toys when she catches up. The dog learns that “Come!” is an irresistible invitation to play the chase game.

See “*Rocket Recalls*,” September 2015, and “*Rocket Recall*,” September 2012.

8 HUMAN TOUCH, ALL OVER, IS REALLY GREAT.

Our dogs have to put up with a lot of human touching throughout their lives, and they don't always like it so much. You can hardly blame them; a lot of the touch is unpleasant, and combined with forced restraint and pain.

You can make life a lot easier for your dog if you teach her as a pup that human touch makes good stuff happen (basic classical conditioning), and minimizing restraint to that which is only absolutely necessary. There is a new movement in the veterinary world to use low-stress handling techniques, so dogs don't have to be forcibly restrained for routine exams, blood draws, and vaccinations.

Begin by pairing non-invasive touches to your puppy with tasty treats; start somewhere non-threatening, perhaps with a touch to the side of her neck. Touch-

treat. Touch-treat. Look for her eyes to light up when you touch her, and her head to swivel toward your treat hand. This is a “conditioned emotional response” (CER); it tells you she understands that the touch makes treats happen.

When this happens consistently, move your touch to other parts of her body that she might be less comfortable with: her ears, paws, or under her chest or belly. Make sure you get the CER at each new spot before proceeding any further. If she actively pulls away from you, you have proceeded too quickly; back up and go more slowly.

This process is invaluable, and will help you with everything from nail trimming to grooming to treating injuries.

See “*Fear-Free Vet Visits*,” December 2015; and “*Positive Pedi-Pedi's*,” August 2012.

9 RIDING IN THE CAR IS FUN!

It's very sad when a dog doesn't ride well in cars. It limits our ability and willingness to take her places, and makes it very not-fun when we do! Fortunately, you can teach your pup that the car is a wonderful place, and set her up to *love* going places with you for the rest of her life.

Part of the problem is that for many pups, that first car ride is very traumatic. It may be the first time she's separated from her mom and littermates, and the stress of the separation and movement of the car can cause her to get carsick. Bingo! She now associates the car with stress and vomiting. If possible, ask your pup's breeder to give her some short car rides with some of her siblings so she has a better association with the event. You can also request that the breeder, shelter, or rescue group not feed your pup for a few hours prior to your scheduled pick-up, to reduce the likelihood of carsickness.

If it's too late for all that, your next best bet is to work to change your pup's already negative association with the car. Start by sitting in the car with her; don't even turn on the engine. Give her yummy chew toys, play some training games with her – make the car a *fun* place to be.

When she's happy about just being in the car (this may take several sessions; take your time!), turn the engine on and repeat the fun-and-games process, without driving anywhere. Then, with a helper doing the driving for you, continue to play car games while the car moves a *very* short distance. At the end of the ride, take her out of the car

and do fun stuff with her, then put her back in the car and travel another short distance. Gradually have your driver take you longer distances, with fun stuff happening at every destination. In time, your “Want to go for a ride?” query will be met with happy wags and a dog who voluntarily hops in the car in anticipation of fun stuff.

If you have a dog who gets carsick even after all that, try giving her a ginger snap or two before the ride, and/or ask your vet for medication that will help calm her stomach.

See “*Car Trouble*,” June 2015; and “*Easy Riding*,” November 2009.

10 YOUR HUMAN WILL ALWAYS PROTECT YOU.

After her puppy socialization, this could be the most important thing you teach and affirm to your dog throughout her life. You have an obligation to be your dog's advocate, and not allow anyone, no matter who they are, to do things to her that go against your gut instincts about how she should be treated.

If you are committed to force-free, fear-free, and pain-free handling and training, don't ever let anyone talk you into treating her badly. No leash jerks, no collar shocks, no alpha rolls. Ever. Stick to your guns; there is *always* another way. If your animal care and/or training professional insists that the use of pain or force is necessary, find another one. There are plenty of professionals out there who will support and respect your wishes when it comes to handling your dog. She cannot speak for herself; she is counting on you to speak for her.

See “*Training Titles*,” February 2015; “*Trainer Name Game*,” September 2010; and “*Low Stress Vet Visits*,” March 2010.

IT'S WORTH IT

These lessons sound like a lot of work. Well, puppies *are* a lot of work. Fortunately, because they are so dang cute, there are plenty of humans who are willing to do the puppy stuff. If you are one of them, make sure you do it right, so your pup will grow up to be the dog you hope for and keep for the rest of her life in your loving home. 🐾

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Once author/trainer Nancy Tucker stopped trying to improve her dog's behavior each and every day, their relationship deepened – and Tucker began to appreciate Chili's sweet, humorous, expressive self even more.

🐾 RELATIONSHIP 🐾

A Good Enough Dog

*How much training does your dog really need?
Only you can answer that question!*

BY NANCY TUCKER, CPDT-KA

Raise your hand if your dog is perfect. Anyone? Anyone? If you raised your hand, good for you! – both of you! For the rest of us whose hands didn't budge, the reality is a little different. Many of us have a long laundry list of behaviors we'd like to work on, eventually.

The list of training goals may be quirky little things, ranging from stealing tissues out of the bathroom garbage bin to barking at the sound of a doorbell on TV, digging up the vegetable garden, and snacking from the cat's litter box.

Or, the list might also include more serious issues, like behaving aggressively toward strangers, slipping through any door left open and making a run for it, or displaying fearful behaviors when left at home alone. These types of behavior problems absolutely deserve our

attention and should be addressed sooner rather than later for the safety of others, as well as for the safety and well being of the dog.

But what about those other issues? Is it okay to ignore them? I mean, if it's not a problem for you, then is it a problem at all?

GOALS ARE GOOD . . .

Recently I celebrated the fifth anniversary of my dog Chili's adoption. I originally brought her into my home as a foster,

because she had been a resident of the local shelter for a while; I planned to work on some of her behavior issues in order to increase her chances of adoption. Chili exhibited a host of behaviors that would be problematic for most families: she knew how to perform *zero* behaviors on cue, had never learned to walk on a leash, she guarded her food and bones, barked and lunged against the windows when riding in the car, and barked and lunged at the TV when a dog barked on screen – to name just a few.

After a couple of weeks, and once I realized the scope of her behavior problems, I went ahead and signed the adoption papers just to avoid sending Chili back to the shelter when my previously agreed-upon two weeks of fostering were up. I was still going to try to find her a suitable home while we worked on her behavior, however; she wasn't actually going to stay with us forever.

Weeks turned into months, and by then, my family had grown so attached to Chili that we had no intention of letting her go live elsewhere. She had become a member of our family, as imperfect as she was. And despite nearly nonstop training for more than a year, she really was imperfect. Every day had been, in my eyes, an opportunity to work on at least

one of her issues, a chance to improve her behavior, an obligation to turn her into a “good family dog.” Even though I aim to make training as much fun as possible for any dog I’m working with, the fact remains that for Chili, school was always in session. There had been no holidays, no summer break.

After 15 months of this, and during a time of mourning as we dealt with the unexpected loss of our other very special family dog to a sudden illness, it finally dawned on me that a dog’s life is much too short for me to be worrying about achieving perfect behavior. Why was I so concerned? What was I trying to prove, exactly, by constantly evaluating, managing, and tweaking Chili’s behavior?

I thought about it long and hard and came to the conclusion that my motivation to keep training Chili was rooted in pressure – pressure I put on myself, and pressure I imagined coming from other sources. Expectations had grown from the fact that I was a professional trainer, and yet my dog was not perfect. The social pressure – whether real or imagined – that I felt when I was out and about with my imperfect dog was weighing heavily on me.

LETTING GO OF “PERFECT”

At that very moment, I stopped the daily training and the endless micromanagement of Chili’s every move and social contact. I pledged to her that I would instead focus on making what’s left of her unfairly short canine life the most fabulous time she had ever known. Expectations and judgment from others be damned, I was going to let Chili be Chili.

This approach has allowed us to relax and grow even closer. By taking a step back and getting to know her true personality, I have also come to realize there are a *lot* of things that Chili does well. I had spent so much time focusing on what was wrong, that I hadn’t really noticed what was *right*: She has never gone shopping in any garbage bins. She doesn’t bark when someone rings the

doorbell or knocks at the door. She greets visitors with charm and class. She has always done her business in a far corner of the yard, without any coaching from me. . . . It turns out she’s a pretty awesome family dog, just the way she is!

This was such a defining moment for me that I now spend a lot of time helping clients to also see the good in their dog at a time when they might feel frustrated about a particular behavior problem.

Teaching a dog new behaviors can be lots of fun, and there are tons of people and dogs who thoroughly enjoy daily training and engaging in various canine sports or activities. However, it’s equally important to give yourself permission to take the pressure off of yourself and your dog if frequent training isn’t your thing.

If there are behavior issues that you simply can’t live with, then of course you should teach your dog to behave differently, or find a trainer who can show you how to make training fun for both you and your dog.

But if you feel you need to work on a behavior just because you think that’s what is expected of your dog, when really

you could just as happily leave it alone, then by all means let it be and carry on as you were! It’s far more important that you and your dog enjoy the time you spend together.

The truth is, there is no such thing as a perfect dog, and there is no official rule book that states exactly how every dog should behave. We get to make up most of those rules based

on what works for us and our own dogs. Outside of competitive dog sports or dog shows, there is no prize for perfect dog behavior. If your dog is good enough for you, and you’re able to make the most out of those dog years, then you’re already winners. 🐾

Nancy Tucker, CPDT-KA, is a full-time trainer, behavior consultant, and seminar presenter in Quebec, Canada. She has written numerous articles on dog behavior focusing on life with the imperfect family dog. See page 24 for contact info.



By most dog owners’ standards, Chili’s behavior is not perfect. But Chili is perfect at being herself! And her behavior is good enough.

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“D” Is for Dogs

Learn what a vitamin D supplement can do for your dog, and the best way to provide it.

BY CJ PUOTINEN

We all need vitamin D – and so do our dogs. Without it, we suffer from bone diseases and a host of other problems. But vitamin D is controversial and not well understood. When it comes to deciding how much is required, which sources are best, and how to supplement safely, experts disagree. Learning about vitamin D can help you make informed choices for your best friend.

Vitamin D research began long before it was identified and named. Between 1880 and 1930, the bone disease rickets affected children in industrialized areas where infections, crowding, and a lack of sunlight were common. Rickets causes soft, fragile bones. Cod liver oil, which contains vitamin D, was shown to prevent and cure the disease, and studies conducted on dogs and other animals proved that a nutritional deficiency of vitamin D caused rickets.

A steroid vitamin which is also classified as a hormone, Vitamin D aids in the absorption of calcium and phosphate, increases bone cell activity, influences the formation and growth of long bones, and speeds the healing of fractures. But vitamin D does far more than build a strong skeleton. Adequate D levels may help prevent heart disease, joint inflammation, skin and coat problems, cancer, vision problems, depression, mental illness, infections, inflammatory bowel disease, dental problems, hyperparathyroidism, and kidney disease.

It is called the sunshine vitamin because sunlight on human skin produces vitamin D, which our bodies convert to a substance known as 25(OH)D, 25-hydroxycholecalciferol, 25-hydroxy, or vitamin D3. Sunlight is not considered a significant source of vitamin D for dogs. We can help prevent canine vitamin D deficiencies with specific foods and supplements.

TOO MUCH IS TOXIC

Vitamin D deficiencies in dogs can cause health problems over time, but so can an oversupply. Because vitamin D is fat soluble, it accumulates in body fat. Overdoses can be toxic and even fatal.

Most canine fatalities related to vitamin D stem from the accidental ingestion of prescription drugs that contain vitamin D, such as topical medications for human skin conditions like psoriasis, and from the ingestion of rodenticides, which are poisons designed to control rats, mice, and other rodents.

Cholecalciferol (synthetic vitamin D3) was registered as a rodenticide in the United States in 1984. Toxic doses lead to too much calcium in the blood, which

can affect the central nervous system, muscles, gastrointestinal tract, cardiovascular system, and kidneys.

Although less common, overdoses of vitamin D from foods and supplements *can* occur. Excessive vitamin D causes hypercalcemia (elevated calcium levels); anorexia (loss of appetite and extreme weight loss); excessive thirst, urination, drooling, and vomiting; muscle weakness; soft tissue mineralization; and lameness. In growing dogs, excessive vitamin D can disrupt normal skeletal development as a result of increased calcium and phosphate absorption.

In 1999, DVM Nutri-Balance High Protein Dog Food and Golden Sun Feeds Hi-Pro Hunter Dog Food were recalled because of excessive vitamin D3 due to a feed-mixing error. This caused the illness and death of at least 25 dogs.

Seven years later, Royal Canin Veterinary Diet recalled four products due to a misformulation in the vitamin premix. Six dogs and five cats were reported to have clinical signs consistent with vitamin D3 toxicity.

In 2010, Blue Buffalo recalled packages of its Wilderness Chicken, Basics Salmon, and Large Breed Adult Chicken dry dog foods because of a sequencing error at the dry-ingredients supplier, which allowed a more potent vitamin D used in chicken feeds to contaminate the dog formulas and increase their vitamin D to unacceptable levels. Vitamin D3 toxicity from the error affected at least 36 dogs.

In March 2016, four varieties of canned Fromm Family Pet Food were voluntarily recalled because the company’s analysis showed that these diets may contain excessive levels of Vitamin D3.



Unlike humans, dogs don't manufacture sufficient vitamin D from exposure to sunlight.

COMMERCIAL PET FOODS

Dog owners often believe that as long as they feed a commercial diet labeled as “complete and balanced,” their dogs will receive all the nutrients they need, in ideal amounts. But we can’t necessarily count on commercial diets for this!

“It is widely assumed that properly formulated commercial pet foods contain adequate D levels for canine health, but that isn’t true,” says Susan Howell, DVM, who provides veterinary technical support for Standard Process, Inc., a nutritional supplement manufacturer. “Foods are formulated to meet minimum nutrient requirements established by the Association of American Feed Control Officials (AAFCO),” she says. “They are *not* formulated to meet *optimal* requirements.”

Dr. Howell cites a 2015 Tufts University study funded by VDI Laboratories that examined the effects of diet on the serum vitamin D levels of Golden Retrievers, German Shepherds, and White Shepherds. Most of the study’s 320 dogs were fed commercial diets from 40 different manufacturers, and some were fed homemade diets or a combination of commercial and homemade diets.

As the report concluded, “Serum 25(OH)D concentrations in dogs vary widely, which likely reflects varying dietary vitamin D content. Notable differences exist among manufacturers and brands and may reflect differences in proprietary formulations. Given the variability of measured serum 25(OH)D concentrations in dogs and the importance vitamin D appears to have on health status, dietary vitamin D content should be optimized.”

The study found that dogs on home-prepared diets had some of the most deficient vitamin D levels.

“In addition,” says Dr. Howell, “I spoke to a representative from VDI who said they had recently tested three Golden Retrievers, all having the same body weight and all eating the same diet. Each dog had a different serum vitamin D level. This shows that every animal is unique. They are dealing with their own variances, particularly in their ability to absorb and utilize vitamin D. Vitamin D absorption depends on good digestion. In my opinion, if D levels are deficient or insufficient, it may be as much a matter of addressing digestion as an issue of providing more vitamin D.”

MEASURING D LEVELS

Vitamin D levels in humans and pets can be measured with a blood test. Depending on the testing laboratory, results are measured in nanograms of 25-hydroxyvitamin D (Calcifediol) per milliliter of blood (abbreviated as ng/mL) or as nanomoles per liter (abbreviated as nmol/L). To convert ng/mL to nmol/L, multiply by 2.5; to convert nmol/L to ng/mL, divide by 2.5.

Michigan State University’s College of Veterinary Medicine began offering canine vitamin D tests to veterinarians in the late 1980s. “That’s when we established a reference range based on the D levels of healthy dogs,” says Professor Kent Refsal, DVM. “The test became a diagnostic tool that helped veterinarians identify dogs with rickets, gastrointestinal disease, or other symptoms of vitamin D malabsorption or insufficiency as well as dogs with excessive vitamin D levels.”

Professor Refsal and his colleagues consult with veterinarians about their patients’ test results. The MSU laboratory’s vitamin D radioimmunoassay reference range for dogs is 60 to 215 nmol/L, or 24 to 86 ng/mL. “We consider this range to be a general indication of adequate to normal vitamin D levels for healthy dogs of all ages,” he says.

Veterinary Diagnostic Institute (VDI), which uses chemiluminescence immunoassay, reports its canine vitamin D blood test results as deficient (less than 25 ng/mL), insufficient (25 to <100 ng/mL), or sufficient (100 to 120 ng/mL). These measurements convert to less than 62.5 nmol/L (deficient), 62.5 to 249 nmol/L (insufficient), and 250 nmol/L (sufficient). However, because chemiluminescence immunoassay (CIA) and radioimmunoassay (RIA) have been shown to produce different results, a direct comparison of their reference ranges can be misleading and is not recommended.

In the May 2016 issue of *Critical Reviews in Food Science and Nutrition*, veterinarians N. Weidner and A. Verbrugghe at the University of Guelph in Ontario, Canada, reviewed the current knowledge of vitamin D in dogs. After discussing vitamin D tests for health screening, research on D levels and canine illnesses, and target D levels for optimum health, they concluded, “Further work is necessary before any consensus statements on blood 25(OH)D concentrations that define sufficiency in dogs can be made.”

In May 2016, researchers at Edinburgh University’s Royal School of Veterinary Studies in Scotland announced a series of research projects on pet dogs and vitamin D. Dr. Richard Mellanby, the university’s head of small animal medicine, explains, “Our research aims to understand whether dogs’ vitamin D levels fluctuate throughout the year, which is important for making sure we’re feeding our pets the right diet. We’re also interested in how vitamin D affects recovery after surgery and whether having less vitamin D is a cause or consequence of inflammation. Untangling this complex relationship will help us to devise new approaches to improve the welfare of animals after surgery.” Dr. Mellanby’s review article “Beyond the skeleton: The role of vitamin D in companion animal health” appeared in the April 2016 issue of *Journal of Small Animal Practice*.

Pennsylvania veterinarian Linda Stern, DVM, began screening feline and canine patients with the VDI test last fall. “Of the 24 dogs we have tested so far,” she says, “only 29 percent had adequate vitamin D levels.”

Dr. Stern checks her patients’ D levels, supplements as necessary, and retests after 10 to 12 weeks. “Dogs with arthritis tend to have significantly low vitamin D levels,” she says, “and when their levels improve, so does their range of motion. My general observation is that dogs feel better, have more energy, and look happier and healthier when their D levels are adequate. Some show dramatic improvement right away, which happened with one of our patients with liver disease. Monitoring patients with follow-up tests ensures that they maintain safe, optimum D levels.”

INCREASING D LEVELS BY IMPROVING DIGESTION

Dr. Howell recommends feeding dogs a variety of meat-based diets that are free from corn, wheat, soy, rice, white potatoes, tapioca, and peas. “Those foods are alkalizing to the stomach, and dogs need an acidic stomach for food to be digested and nutrients like vitamin D to be absorbed. The other problem with these ingredients is that they cause inflammation, which decreases nutrient absorption. As animals age, their stomachs become more alkaline, which explains why older animals may have a harder time breaking down and absorbing Vitamin D from their food.”

For dogs fed dry food, she suggests adding bone broth or warm water before feeding. “Adding raw organic apple cider vinegar to food helps acidify the stomach,” she adds, “and it provides prebiotics, which feed gut microbes. Add ¼ teaspoon to each meal for small dogs; ½ teaspoon for dogs weighing 21 to 50 pounds; and 1 teaspoon for dogs more than 50 pounds.”

WDJ contributor Mary Straus, whose dogaware.com website offers nutrition and feeding tips, recommends supplementing the diet with probiotics (active beneficial bacteria), prebiotics (foods that feed beneficial bacteria), and digestive enzymes to improve digestion and the assimilation of nutrients.

Like other fat-soluble vitamins, vitamin D requires dietary fat for assimilation. In the September 2006 *Journal of the American Veterinary Medical Association*, John E. Bauer, DVM, compared facilitative and functional fats in the canine diet. Saturated fats are facilitative, he wrote, because they enhance palatability, provide fuel for energy, can be stored in the body for future use, do not pose a health threat unless fed in excessive amounts, and assist in the digestion and assimilation of fat-soluble vitamins.

Coconut oil and butter contain saturated fats and are often listed as good companions to fat-soluble vitamins. Consider adding 1 teaspoon per 25 pounds of body weight to your dog's dinner to help improve his or her vitamin D levels.

VITAMIN D IN HOME-PREPARED DIETS

While home-prepared diets may show the greatest variation in canine vitamin D levels, Dr. Howell notes that not every home-prepared diet has to be supple-

mented with vitamin D. “I’ll refer you back to the Tufts study,” she says. “Animals on balanced home-prepared diets *may* have sufficient D levels. It’s a matter of feeding foods that contain vitamin D, fostering healthy digestion, and possibly supplementing Vitamin D in a whole-food form or in a synthetic form if necessary. I worry that people may over-supplement unknowingly and cause a toxicity in their pet.”

For this reason, she recommends that owners ask their veterinarians for help with homemade diets or turn to Balance IT (balanceit.com), a pet diet-planning website developed by a veterinary nutritionist at the University of California, Davis. Dogaware.com is another source of diet-planning information.

“I’m a big believer in animals getting their nutrients from real food,” Dr. Howell says. “Instead of supplementing with a synthetic form of vitamin D3, I think it’s worth getting some fresh foods into the diet that are good sources of D, such as salmon, liver, and eggs. It’s less likely that you will over-supplement if you give a food source of vitamin D rather than cholecalciferol, which is a high-dose synthetic form of vitamin D.

“If an animal with insufficient D levels doesn’t have adequate levels after trying food sources of D, I think it’s worth looking at digestion and then at a synthetic D supplement,” she says. “A conservative amount of synthetic D can bring an animal into the sufficient range. Some popular synthetic vitamin D supplements are from Rx Vitamins and Thorne Research. These products are liquid and easy to dose and administer to your pet. Both are available by prescription and should be monitored by your veterinarian in conjunction with the diet in order to avoid over-supplementation.”

D-INSUFFICIENCY RISKS

Any dog can be D-deficient if his or her diet doesn’t supply the vitamin, but older dogs, dogs with compromised digestive health, spayed and neutered dogs, and dogs on corticosteroids, antacids, or anti-seizure medications are at added risk.

Dogs with illnesses like cancer, chronic inflammatory conditions, heart disease, renal disease, hyperparathyroidism, or inflammatory bowel disease are likely to have low vitamin D levels.

A 2014 study published in the *Journal of Veterinary Internal Medicine* exam-

ined the vitamin D status of 31 dogs with congestive heart failure (CHF) and 51 unaffected dogs. The dogs with CHF had significantly lower serum D levels than the unaffected dogs even though their vitamin D intake per kilogram of metabolic weight was the same. The study concluded that low concentrations of 25(OH)D may be a risk factor for CHF in dogs, that low levels were associated with poor outcomes in dogs with CHF, and that strategies to improve vitamin D status in some dogs with CHF may prove beneficial without causing toxicity.

In human heart disease, vitamin D deficiency is associated with disease progression and a poor prognosis. A 2015 cross-sectional study of dogs at different stages of chronic valvular heart disease (CVHD) found a similar correlation. As reported in the *Journal of Veterinary Internal Medicine*, the affected dogs’ vitamin D status declined prior to the onset of heart failure.

In the previously mentioned Tufts study, German Shepherd Dogs were found to have a 26 percent higher median amount of serum vitamin D than Golden Retrievers. “This means that intestinal absorption of vitamin D differed according to breed,” says Dr. Howell. “Spayed and neutered animals were found to have lower D levels than sexually intact dogs, and intact males had significantly higher serum D levels than intact females.”

SYNTHETIC VITAMIN D

In the wild, canines obtain vitamin D from the fat of prey animals. In the supplement aisle, D can come from natural sources but it’s more often synthetic.

The pharmaceutical drug cholecalciferol (synthetic vitamin D3) is produced by the ultraviolet irradiation of 7-dehydrocholesterol extracted from lanolin in sheep’s wool. Unwanted isomers formed during irradiation are removed in a purification process, leaving a concentrated resin that melts at room temperature.

Ergosterol, also called provitamin D2, is found in fungi such as *Saccharomyces* and other yeasts, mushrooms, and *Claviceps purpurea*, which causes the fungal disease ergot, for which ergosterol is named. Ergot affects rye, barley, wheat, and other cereal grasses. Ergosterol is converted by ultraviolet irradiation into ergocalciferol, or synthetic vitamin D2.

In 2006, the *Journal of the American Academy of Dermatology* reviewed vitamin D studies in order to answer the

question, “How much vitamin D do you need, and how should you get it?” Although synthetic vitamin D2 is widely used as a prescription drug and is added to some processed foods, the study’s authors concluded that vitamin D3 is superior to vitamin D2 because it is less toxic at higher concentrations, is more potent, has a more stable shelf life, and is more effective than vitamin D2 at raising and maintaining vitamin D blood levels.

FOOD SOURCES

If you’re interested in supplying natural vitamin D, it makes sense to look for foods that provide it, but finding them may not be easy.

Salmon is widely described as a significant source of vitamin D, but in 2007 the *Journal of Steroid Biochemistry and Molecular Biology* published an evaluation of the vitamin D content in fish. It found that salmon flesh does contain vitamin D, but farmed salmon – which is far more common and less expensive than wild salmon – had only 25 percent of the vitamin D of wild salmon.

The report explained, “It has been assumed that fish, especially oily fish such as salmon, mackerel, and blue fish are excellent sources of vitamin D3. However, our analysis of the vitamin D content in a variety of fish species that were thought to contain an adequate amount of vitamin D did not have an amount of vitamin D that is listed in food charts. There needs to be a re-evaluation of the vitamin D content in foods that have been traditionally recommended as good sources of naturally occurring vitamin D.”

Salmon oil may provide some vitamin D along with the fatty acids for which it is famous. In the Tufts study mentioned above, dogs receiving salmon oil as a supplement had higher serum 25(OH)D (on average a 19.6 ng/mL increase) than those not receiving a supplement, but other forms of fish oil surprisingly had no effect.

Dairy products are not naturally high in vitamin D, but milk and yogurt are often fortified with synthetic vitamin D. Check labels to be sure.

Cod liver oil is the traditional food source of vitamin D. A hundred years ago, fermented cod liver oil, which can have a powerfully fishy smell, was the world’s most widely prescribed nutritional supplement. Perhaps your grandparents remember being coerced

into swallowing a spoonful daily. Cod liver oil contains vitamins D and A, both of which are essential for human and canine health. But cod liver oil’s manufacturing methods have changed, and so has its vitamin content.

Fully cleaned and deodorized (e.g., molecularly distilled) cod liver oil to which nothing has been added contains very low levels of vitamin A and little or no vitamin D. Some manufacturers add synthetic or natural vitamins A and D to their cleaned and deodorized oil.

To compare brands, read labels – especially their vitamin A and D content – and check product literature or websites for information about manufacturing methods and the source of any added vitamins A and D. Vitamins A and D are measured in International Units (IUs). The vitamin A content of natural (unprocessed) cod liver oil is usually two to 10 times that of its vitamin D.

To make cod liver oil more palatable to humans, some brands are available in lemon, orange, cinnamon, mint, or other flavors. Most dogs enjoy the plain, unflavored oil.

Carlson Labs Cod Liver Oil, which is molecularly distilled and bottled in Norway, provides 850 IU vitamin A and 400 IU vitamin D per teaspoon. According to the label, its vitamins A and D, which are added after distillation, are derived from cod liver oil (500 ml or 16.9 fluid ounces, \$55).

Garden of Life Olde World Cod Liver Oil, made in Iceland, is molecularly distilled and contains vitamins A (4,500 IU per teaspoon) and D (450 IU per teaspoon). According to the label, these added vitamins are naturally occurring (8 fluid ounces, \$17).

Green Pasture’s Blue Ice Fermented Cod Liver Oil is made from fermented fish livers; the same process was used to make a health tonic widely used and valued in ancient Rome. Because nutrients vary in fermented foods, the manufacturer labels this product a food without listing its vitamin D content, but current values are available on request. Based on the past four years of test data, one teaspoon of fermented cod liver oil contains approximately 8,500 IU vitamin A and 3,400 IU vitamin D (8 fluid ounces, \$44).

Nordic Naturals Arctic Cod Liver Oil is molecularly distilled and no vitamins are added after distillation. Each teaspoon provides 1,580 IU vitamin A and 6 IU vitamin D. While this cod liver

oil contains natural rather than synthetic vitamin D, 6 IU is an extremely small amount (8 fluid ounces, \$25).

Nordic Naturals Pet Cod Liver Oil and Nordic Naturals Pet Cod Liver Oil for Medium to Large Breed Dogs contain omega-3 fatty acids and vitamin A (550 IU per teaspoon) but do not contain vitamin D; this brand will not correct vitamin D deficiencies.

Nutra Pro Virgin Cod Liver Oil from Norway is separated from fresh cod fish livers using cold-pressing and advanced purifying technologies without the use of chemicals. One teaspoon contains 5,000 IU vitamin A and 500 IU vitamin D (8 fluid ounces, \$33).

Rosita Extra Virgin Cod Liver Oil, or EVCLO, is manufactured in Norway from wild cod livers using an ancient extraction method that does not utilize heat, chemicals, fermentation, solvents, or mechanical devices. One teaspoon contains 3,000 to 5,000 IU vitamin A and 400 to 500 IU vitamin D (150 ml or 5 fluid ounces, \$49).

Unlike “virgin” and “extra virgin” olive oils, whose labels reflect legally defined manufacturing and grading methods, the terms “virgin” and “extra virgin” have no specific meaning when applied to cod liver oil. They imply that the product is minimally processed.

The chemistry of naturally occurring cod liver oil is complicated. According to Christopher Masterjohn, Ph.D., assistant professor of health and nutrition sciences at Brooklyn College in New York, “Research in the 1930s suggested that there were at least four if not six forms of vitamin D in cod liver oil, and recent research has shown that fish metabolize vitamin D into at least three other compounds and probably more.” As conventional tests measure only vitamins D2 and D3, unrefined cod liver oil may provide significant health benefits that are not reflected by its D2 and D3 content.

VITAMIN A SAFETY

Vitamin A is essential to human and canine bone growth, reproduction, immune system health, and vision. Like vitamin D, it is fat soluble. Synthetic vitamin A (retinyl acetate, retinol acetate, vitamin A acetate, vitamin A palmitate, retinyl palmitate, retinoids, or 13-cis-retinoic acid) should be used with care to avoid accidental overdoses, which can cause bone loss, hair loss, liver damage, and confusion.



The author's dog, Chloe, is 12 years old. She loves her daily 1½ teaspoons of fermented cod liver oil.

Is natural vitamin A dangerous? According to some scientists and health experts, cod liver oil's vitamin A content makes it potentially toxic. In 2008, Dr. John Cannell of the Vitamin D Council (vitamindcouncil.org) warned against using cod liver oil because of its vitamin A.

Other scientists and health experts disagreed, noting that vitamin A by itself (such as in molecularly distilled cod liver oil or cod liver oil containing synthetic vitamins) can be dangerous but that traditional cod liver oil contains a safe and effective ratio of naturally occurring vitamins A and D.

In reply to the warnings against cod liver oil, Sally Fallon Morell, founder of the Weston A. Price Foundation, reviewed cod liver oil's history and safety. "We at the Weston A. Price Foundation have continually pointed out that vitamins A and D work together and that without vitamin D, vitamin A can be ineffective or even toxic," she explained. "We do not recommend Nordic Naturals or any brand of cod liver oil that is low in vitamin D. But it is completely inappropriate to conclude that cod liver oil is toxic because of its vitamin A content. Similar reviews could be put together showing the benefits of vitamin A and cod liver oil in numerous studies, including studies from the 1930s. Obviously the solution is to use the type of cod liver oil that does not have most of its vitamin D removed by modern processing techniques."

COD LIVER OIL QUARREL

Last summer fans of fermented cod liver oil were rocked by the online report "Hook, Line, and Stinker" by nutritionist Kaayla Daniel, PhD, in which she claimed

that Green Pasture's Fermented Cod Liver Oil is not a cod liver oil at all but rather rancid pollock oil (drkaayladaniel.com).

Health researcher Craig Elding at the British site Health Cloud (healthcloud.co.uk), American health writer Chris Kresser (chriskresser.com/important-update-on-cod-liver-oil), and others examined these accusations in detail. See the Weston A. Price Foundation's review of the controversy, including Morell's November 2015 report titled "Hook, Line, and Thinker." Years of independent tests have never shown Green Pasture's Fermented Cod Liver Oil to have oxidative rancidity, and its source fish, Alaskan pollock (*Gadus chalcogrammus*), is not a member of the pollock fish family but rather a cod (*Gadidae* family) fish.

COD LIVER OIL IN HOME-PREPARED DIETS

One of the pioneers of home-prepared dog diets is Wendy Volhard, whose book *Holistic Guide for a Healthy Dog* describes years of research she conducted with Kerry Brown, DVM, as they documented the effects of raw, home-prepared diets on hundreds of dogs.

"Since 1984, when I first published my recipes, it's no exaggeration to say that thousands of dogs have been fed the Volhard way," she says. "My diet recommends 1 teaspoon cod liver oil daily for a 50-pound dog. This dose was established in 1973, when I started feeding my own dogs a raw, home-prepared diet, and the amount was based on guidelines from the National Science Foundation."

Volhard's cod liver oil dose depends on the dog's weight (½ teaspoon per 25 pounds). She says, "We have found no

need to adjust the diet to a dog's age or lifestyle. Puppies grow beautifully and old dogs thrive." She does not recommend a specific brand but prefers minimally processed, high-quality cod liver oil containing natural vitamins A and D.

VITAMIN K CONNECTION

Vitamin K, another fat-soluble vitamin, influences proper blood clotting, healthy bone growth, the conversion of glucose into glycogen for energy storage in the liver, and healthy liver function. Vitamin K is thought to promote longevity and protect against cancers that involve the inner lining of body organs.

Vitamin K exists as vitamin K1 (phylloquinone), which is abundant in many vegetables; vitamin K2 (menaquinone), which the body produces in the digestive tract and which is provided by some animal products; and vitamin K3, the synthetic form known as menadione.

Vitamin K deficiencies can cause internal or external bleeding, most commonly resulting from the ingestion of rodent poisons containing warfarin or similar chemicals, and it is used as a first-aid treatment or antidote for dogs poisoned by blood-thinning rodenticides.

Vitamin K toxicity is unusual in pets, though excessive menadione (synthetic vitamin K3) can cause fatal anemia and jaundice. Menadione, which has been banned by the FDA for use in human supplements, is an ingredient in commercial pet foods, where it is labelled Vitamin K supplement, dimethylprimidinol sulphite or bisulfate, or menadione sodium bisulfite or bisulfate.

Supporters of K3's use argue that natural vitamin K may lose its potency during processing, intestinal disease can prevent gut bacteria from making the vitamin, and not all pet foods contain green leafy vegetables. Opponents argue that synthetic vitamin K can promote allergic reactions, weaken the immune system, cause toxic reactions in liver cells, and induce red blood cell toxicity.

The leading food sources of vitamin K1 are green tea and dark green leafy vegetables such as kale, turnip greens, spinach, broccoli, lettuce, and cabbage.

Sources of natural vitamin K2 include meat, eggs, and dairy from grass-fed animals; high-vitamin butter oil, extracted by centrifusion from the raw milk of grass-fed cows; and natto (a traditional Japanese food) or MK-7 supplements made from fermented organic soybeans.

Because vitamin D works best in combination with vitamins A and K, some vets recommend supplementing dog diets, especially home-prepared diets, with natural sources of all three vitamins combined with an appropriate fat. Look for whole foods or supplements derived from whole foods. If a vitamin K supplement is used, adjust the recommended human adult dose for your dog's weight.

IN REVIEW

Vitamin D is an essential nutrient for canine bone, heart, joint, skin, coat, vision, dental, kidney, and immune

system health. Low vitamin D risk factors include advanced age, spaying/neutering, digestive problems, illness, and some commonly prescribed medications.

Commercial pet foods vary in their vitamin D content and sources, and produce different D levels in dogs. Some home-prepared diets contain insufficient vitamin D. Although many dogs are deficient in D, the levels can be safely increased by improving digestion, feeding whole foods that contain D, using vitamin D supplements if needed, and monitoring vitamin D blood levels through testing.

Because vitamin D is fat soluble, it

needs dietary fat for digestion and assimilation. Vitamin D combines well with saturated fats such as coconut oil and butter. Its nutritional partners are the fat-soluble vitamins A and K. Maintaining adequate vitamin D, A, and K levels is a simple but effective canine health strategy. Natural, unprocessed cod liver oil is a food source of vitamins D and A. Supplements containing synthetic vitamin D or vitamin A are more concentrated and require more careful monitoring. 🐾

CJ Puotinen is author of The Encyclopedia of Natural Pet Care and other books. See page 24 for purchasing information.

RESOURCES

VITAMIN D BLOOD TESTS FOR DOGS:

Michigan State University College of Veterinary Medicine Diagnostic Center for Population and Animal Health, Lansing, MI. (517) 353-1683; animalhealth.msu.edu

Veterinary Diagnostics Institute, Simi Valley, CA. (805) 577-6742; vdilab.com

VITAMIN D BLOOD TESTS FOR HUMANS:

Grassroots Health, Encinitas, CA. Information and affordable at-home vitamin D blood tests for humans. (760) 579-8141; grassrootshealth.net

SOURCES OF COD LIVER OIL

Carlson Labs Cod Liver Oil is sold in natural food stores and online. carlsonlabs.com

Garden of Life Olde World Cod Liver Oil is sold in natural food stores and online. gardenoflife.com

Green Pasture's Blue Ice Fermented Cod Liver Oil and X-Factor Gold High-Vitamin Butter Oil are sold online. greenpasture.org

Nutra Pro International Virgin Cod Liver Oil and Grass-Fed High-Vitamin Butter Oil are sold online. nutraprointl.com

Rosita Extra Virgin Cod Liver Oil is sold online. evclo.com or rositarealfoods.com

SOURCES OF VITAMIN D SUPPLEMENTS

Rx Vitamins's Liqui-D3 supplement provides 2,000 IU synthetic vitamin D per drop. Sold to veterinarians. rxvitamins.com

Thorne Research's liquid synthetic vitamin D3, or D3 combined with vitamin K-2, provides 500 IU vitamin D per drop. thorne.com

SOURCES FOR FURTHER INFORMATION

Weston A. Price Foundation. Information about vitamin D and cod liver oil. westonaprice.org

Linda Stern, DVM, Healing Creatures Animal Hospital, Camp Hill, PA. (717) 730-3755; healingcreatures.com

Susan Howell, DVM. Standard Process, Inc. Technical support for veterinarians. standardprocess.com

CITED REFERENCES

"Beyond the skeleton: The role of vitamin D in companion animal health," by R.J. Mellanby. *Journal of Small Animal Practice*, April 2016

"Current knowledge of vitamin D in dogs," by N. Weidner and A. Verbrugghe. *Critical Reviews in Food Science and Nutrition*, May 2016

"The effect of diet on serum 25-hydroxyvitamin D concentrations in dogs," by Claire R. Sharp, Kim A. Selting, and Randy Ringold. *BMC Research Notes*, 2015

"An evaluation of the vitamin D3 content in fish: Is the vitamin D content adequate to satisfy the dietary requirement for vitamin D?" by Z. Lu, et al. *Journal of Steroid Biochemistry and Molecular Biology*, March 2007

"Relation of vitamin D status to congestive heart failure and cardiovascular events in dogs," by MS Kraus, et al. *Journal of Veterinary Internal Medicine*, Jan-Feb 2014

"Vitamin D status in different stages of disease severity in dogs with chronic valvular heart disease," by T. Osuga, et al. *Journal of Veterinary Internal Medicine*, Nov-Dec 2015

"The vitamin D questions: How much do you need and how should you get it?" by D. Wolpowitz and B. Gilcrest, *Journal of the American Academy of Dermatology*, Feb 2006

"Facilitative and functional fats in diets of dogs and cats," by John E. Bauer, DVM, PhD, DACVN. *Journal of the American Veterinary Medical Association*, Sept 1, 2006

Holistic Guide for the Healthy Dog, by Wendy Volhard. Howell Reference Books, 2nd Edition, 2000. Paperback, 336 pages, \$17

 RESOURCES 

TRAINING AND INSTRUCTION

- ❖ **Linda P. Case, MS**, AutumnGold Consulting and Dog Training Center, Mahomet, IL. Linda Case is a canine nutritionist, science writer, and companion animal consultant who uses positive reinforcement and shaping techniques to modify behavior in dogs in basic level through advanced classes. (217) 586-4864; autumngoldconsulting.com
- ❖ **Stephanie Colman**, CanineStein Dog Training, Los Angeles, CA. Offering training for basic through advanced obedience, competition dog sports, problem-solving, and more! Private lessons and group classes. (818) 414-8559; caninesteintraining.com
- ❖ **Pat Miller**, CBCG-KA, CPDT-KA, Peaceable Paws Dog and Puppy Training, Fairplay, MD. Group and private training, rally, behavior modification, workshops, intern and apprentice programs. Miller also offers a variety of dog training academies and instructors' courses. (301) 582-9420; peaceablepaws.com

BOOKS AND DVDS

- ❖ Linda P. Case, MS, is author of *The Dog: Its Behavior, Nutrition, and Health*; *Canine and Feline Nutrition*; *Canine and Feline Behavior: A Complete Guide to Understanding Our Two Best Friends*, and the very recently published *Dog Food Logic: Making Smart Decisions for Your Dog in an Age of Too Many Choices*. Her blog can be read at thesciencedog.wordpress.com. You can find all of her books at Dogwise, (800) 776-2665; dogwise.com
- ❖ WDJ Training Editor Pat Miller is author of *Positive Perspectives*; *Positive Perspectives 2*; *Power of Positive Dog Training*; *Play With Your Dog*; *Do Over Dogs: Give Your Dog a Second Chance at a First Class Life*; and her newest book, *How to Foster Dogs: From Homeless to Homeward Bound*. Available from dogwise.com and wholedogjournal.com

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