



Expert information on medicine, behavior, and health in collaboration with a world leader in veterinary medicine

THIS JUST IN

Sharing Food Access

Dogs didn't reciprocate

Dogs do not reciprocate food-giving, according to a recent study. Researchers trained 37 dogs to operate a food dispenser by pressing a button before separating the button and dispenser in separate enclosures.

In the first stage, dogs were paired with two unfamiliar humans, one at a time. One human pressed the button to dispense food in the dog's enclosure; the other did not. The researchers also reversed the set-up, with a button in the dog's enclosure for a food dispenser in the human's enclosure. They found no differences in the dogs' tendency to press the button for helpful or unhelpful humans, and the human's behavior in the first stage did not affect the dog's behavior toward them after the trials.

Previous studies show that dogs help other dogs and they recognize cooperative behavior from humans. However, this study found no evidence that dogs can combine these capabilities to reciprocate help from humans. It is not clear why the dogs didn't reciprocate, but it's possible that they didn't understand the connection. ■

McGettrick, J., et al. Dogs fail to reciprocate the receipt of food from a human in a food-giving task. *PLOS ONE*, 2021; 16 (7): e0253277 DOI: 10.1371/journal.pone.0253277. *Science Daily*.



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Why Does My Dog Have a Callus?

A callus develops to protect an area on your dog's body

That lumpy, thickened spot of skin on your dog is probably a callus. "Calluses form as a result of persistent skin trauma to the area," says Leni K. Kaplan, DVM, MS, Senior Lecturer in the Community Practice Service at Cornell. "These occur commonly on bony pressure points, especially in larger breed dogs." Most dogs get calluses from lying down on hard surfaces, such as porches or floors.

Dr. Kaplan says, "Most calluses do not cause a problem. In some cases, the callus will develop an infection in which case it should be evaluated by a veterinarian."

When to Be Concerned

Repeated trauma to the area can cause the callus to crack, creating an ideal site for an infection. Signs of an infection include oozing, bleeding, redness, soreness in that limb, and the callus and surrounding skin feeling warm to the touch. Flaky, scaly skin is also a sign that something is amiss. Your veterinarian will likely prescribe an antibiotic and a topical ointment.

Chronically infected calluses can progress to callus pyoderma, characterized by ulceration and oozing of the skin. This may be an irritated callus or something more sinister such as a fungal infection, mite infection, impacted hair follicle, or cancer.

A hygroma is a fluid-filled pocket that may form under or near a callus. You can try treating a hygroma at home by alternating warm and cold compresses (five to 10 minutes each) several times a day. If the hygroma does not regress after a few days or feels warm to the touch before you applied a warm compress, your veterinarian may need to drain it.

Decubital ulcers or pressure sores are open wounds that form due to chronic pressure in one spot. Pressure sores are generally red in the center with pink around the edges and resist healing. They may ooze if an infection is present. Treatment may include bandages, laser therapy to stimulate healing, and



This 2-year-old dog preferred to rest on the metal fire escape than his soft bedding and developed a callus.

antibiotics. Dogs with pressure sores must be kept on thick, padded bedding and repositioned every two to four hours.

Treatment and Prevention

"The best course of action is to try to prevent callus formation by providing beds or blankets on hard surfaces," says Dr. Kaplan. "That being said, some dogs prefer to lie on the concrete or hard wood floors rather than use the beds provided by their owners." Confining your dog to an exercise pen with a cushy bed can help, or try different styles of beds to see what your dog prefers and place them in locations where she frequently lies.

If you can't get your dog to accept a softer spot to rest, use caution with topical softening products, says William H. Miller, VMD, Dipl ACVD, Emeritus, Professor, Clinical Sciences. "In all instances, topical softening products should not be used unless contact with hard surfaces is eliminated," says Dr. Miller. If you can eliminate contact with hard surfaces and there's no infection, some over-the-counter options like Bag Balm, plain aloe, and unscented butter balms can help soothe irritation. Apply the balm to your dog's callus two to three times a day, and don't let him lick it off (apply before a meal or walk to give the product time to soak in). ■

Is It the Peas? We Still Don't Know

Research on the DCM crisis is continuing with no answer

Dogs with dilated cardiomyopathy (DCM) have an enlarged heart due to disease or heredity, leading to heart failure and death. In 2019, the Food and Drug Administration (FDA) began investigating an unusually high number of DCM cases. Between January 1, 2014, and July 31, 2020, the FDA received over 1,100 reports of DCM in dogs (280 dogs died). Treating veterinarians noted that many dogs showed improvement when their diet was changed, especially if the condition was detected in its earliest stages (diet changes may not have any effect on dogs with genetic DCM).

Initially, experts began to question the new grain-free trend in dog food, although the FDA reports involved both grain and grain-free fed dogs. Further research looked at the ingredients used to replace grains in these diets, which included potatoes, sweet potatoes, and legumes such as peas and lentils, but no connection was found.

A study from Tufts University looked at metabolites, compounds, and vitamins that differed between diets that were being considered as related to the DCM and diets that were not. For example, various B vitamins—pyridoxine (vitamin B6), thiamine (vitamin B1), folate (vitamin B9), pantothenate (vitamin B5), and riboflavin (vitamin B2)—were lower in the suspect diets. Older diets tended to have turkey, chicken, or rice as ingredients while the diets in question tended to have peas or lentils, placing peas in the defendant's chair.

While peas may look like villainous ingredients, causing people to bypass dog foods that list them in their ingredients, the problem is undoubtedly much more complicated. Perhaps metabolites from peas and/or other legumes interfere with absorption or utilization of other nutrients. Perhaps it is a certain combination of ingredients that leads to trouble. Nothing has been scientifically proven yet.

To further complicate matters, many dogs have eaten the diets associated with dietary DCM for years with no problems, which makes one suspect that maybe an individual dog had a genetic susceptibility to DCM to begin with and the diet simply nudged that along. We don't know. All we have is another clue, a dietary correlation for some dogs, but no direct cause.

Therefore, until there is scientific evidence to the contrary, our advice remains the same: Avoid grain-free diets, boutique (small manufacturer) foods, and exotic ingredients. Remember that DCM weakens the heart so it can't contract properly. If your dog shows any DCM symptoms—fatigue, decreased appetite, difficulty breathing, coughing, fainting, pale gums, or a rapid heartbeat—go to your veterinarian. Direct any questions you have about your dog's food to your veterinarian or a board-certified veterinary nutritionist. ■

Smith, C.E., et al. Investigation of diets associated with dilated cardiomyopathy in dogs using foodomics analysis. *Sci Rep* 11, 15881 (2021). <https://doi.org/10.1038/s41598-021-94464-2>



Shelter Dogs Need At Least Two Days

Smaller dogs may need even more time

Researchers compared the night activity of 29 shelter dogs and 29 pet dogs similar in breed, age, and sex. Using night cameras and activity trackers, they found shelter dogs rest much less at night than pet dogs, especially the first two nights. This restlessness decreased over time, but even after 12 days, shelter dogs rested less. The shelter dogs had more cortisol in their urine than pet dogs, even after 12 days. Smaller shelter dogs were more restless during the first two nights than larger dogs and had higher cortisol values. The researchers concluded that dogs need at least two days to get used to a new environment. ■

Van der Laan, J.E., et al. Restless nights? Nocturnal activity as a useful indicator of adaptability of shelter housed dogs. *Applied Animal Behaviour Science*, 2021; 241: 105377 DOI: 10.1016/j.applanim.2021.105377.



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Taming the Reactive Barker

"Please hush!"—or something stronger—won't work

If you have ever had a reactive barker, you know how stressful it is. You're out trying to enjoy a nice walk with your dog, a dog inside a house starts barking, and your dog flips out. And she won't stop barking, even after you've gotten past the initial stimulus. As well as being flat-out annoying, many onlookers assume that a reactive barker is aggressive, which causes additional stress. Why does this happen, and what can you do to calm your dog and prevent further outbursts?

1 Recognize triggers. "Many dogs bark when they see another dog or a person, whether it is due to being fearful, territorial, or excited," says Pamela J. Perry, DVM, PhD, Behavior Resident at Cornell. These strong emotions come out as sound, just like how your dog barks when she is playing or as an alert when someone knocks on the door.

There can be other triggers for reactive barkers, too. "If dogs are frustrated because they cannot get to the other dog or person, they may respond by barking," says Dr. Perry. "In addition, some dogs bark at any stimulus that alerts them, such as the sound of the neighbor closing the car door or the sight of a squirrel running across the patio."

Some dogs may just bark a couple times, while others will continue to bark excessively once they get started.

2 Don't inadvertently reinforce it. "If barking makes the scary person go away or the friendly person give them attention, then the behavior will be reinforced, i.e., more likely to occur again," says Dr. Perry. This can make managing a reactive barker challenging, because many passersby aren't willing to stand still while you calm your dog. For training purposes, enlist the help of a friend or family member who will calmly ignore your dog when she barks. If your dog overreacts to the presence of other dogs and is fueled on by their barking, find a nonreactive dog to practice around so that your dog doesn't get the reinforcement of the other dog barking back or running away.

3 Remove your dog from the situation. "To get a reactive barker back

to 'neutral,' the owner should remove the dog from the situation," says Dr. Perry. When your dog starts barking at something, calmly get him out of there. He is overstimulated and is not going to be able to focus until he is removed from the pressure of the situation. In most cases, this means physically moving him away. If he is on a leash, gently but firmly pull him away from the person/animal/object he is barking at until he is far enough away to calm down. If not on a leash, grab his collar gently but firmly and get him out of there. Don't yell at your dog. Yelling only adds more energy to the incident, which will make your dog bark more.

4 Redirect with basic commands. Some dogs can be distracted with treats. Once your dog is far enough away to disengage and start thinking again, ask him to do something easy that he knows well, such as sit or a nose touch to your hand. If he even tries to respond to your cue, praise and reward immediately. You are not so much rewarding his performance of the behavior as the fact that he has disengaged from whatever set off his barking. As soon as you give the reward and praise, repeat your cue or ask for something else.

Giving your dog something to do will focus his mind on the task at hand, calming him and directing his attention toward you instead of the exciting things out in the neighborhood. This is also something you can do proactively to prevent barking fits. "On walks, owners

should periodically practice having their dog look at them so that they have a better chance of getting their dog's attention when there are distractions," says Dr. Perry.

When your dog looks at you, reward him with a treat. Dogs are creatures of habit, so if your dog is used to looking at you to get a treat, he will be more likely to do it when asked in a tough situation, or you can use cues and tricks to distract him before he sees someone he would normally bark at.

5 Anticipate triggers. Most dogs are fairly consistent about what or who they bark at. Plan your walks according to your dog's needs. If she is too reactive to handle a new place without a meltdown of excitement and noise, stick to more familiar paths until you have developed some solid coping strategies for her reactions.

If she reacts to strange dogs, periodically scan the area around you so that you know if another person and dog are approaching and can either detour to avoid them or get your dog's attention to focus her on you and prevent barking. Try to avoid situations that your dog can't handle, as each barking fit solidifies that bad habit.

Work with a friend or family member who you can direct to walk just outside of your dog's comfort zone and not react if your dog starts to bark.

For dog issues, find a nonreactive dog to practice with until your dog is comfortable around her, then try walking somewhere that she can see other dogs in the distance but won't be up close. As you become a better team and more calm and confident, gradually start introducing high-pressure situations. ■



Reactive barking isn't the normal "woof and carry on" bark at something the dog noticed. It's when the dog escalates to frenzy, over-reacting to things he should be familiar with.

Routine Neuters and Spays

Are these procedures the best choice for your dog?

Spaying and neutering dogs not intended for breeding is a practice that has been in place in our society for decades. The benefits of this practice are many and widely known. The most obvious, of course, is pet population control. Sadly, despite this practice, millions of unwanted pets enter shelters every year, many of which never find permanent homes.

The health benefits associated with spay/neuter are generally associated with disease avoidance. The obvious preventable diseases are ovarian, uterine, and testicular cancer because the organs are removed. For male dogs, other diseases potentially avoided are prostatic hyperplasia, perianal tumors, and perineal hernias. For female dogs, the list includes mammary cancer and pyometra.

Other potential benefits of spay/neuter include:

- ▶ longer life expectancy, which studies have shown
- ▶ some unwanted behaviors are considered less likely in a neutered male dog
- ▶ owners of spayed female dogs enjoy the benefits of not having to manage messy heat cycles
- ▶ no concern for unwanted pregnancies

As with most things, we gain knowledge and experience with time, and questions arise. We know what the benefits of spay/neuter are. But could there be negative effects as well? If so, what are they? Can they be avoided? This has become a hot topic in veterinary medicine and has sparked considerable research in this area.

Things That Can Go Wrong

The acceleration of cognitive decline as neutered pets age devoid of sex hormones has become a concern, based on studies in humans looking at the association between Alzheimer's disease and declining sex hormones in aging people, and Dr. Benjamin Hart showed some years ago that castrated male dogs had a higher incidence of cognitive dysfunction than intact dogs. Dogs are living longer, with cognitive dysfunction becoming a significant quality-of-life issue, both for the dogs and those who love them.

The effect of spay/neuter before bone growth-plate closure in larger dogs has



With a little dog, like this 6-month-old Papillon, the decision to spay was easy. And the puppy was quite proud of her surgical suit, which protected the incision.

come into question. Studies show an increase in bone length when these dogs are spayed/neutered early. This increased bone length is thought to potentially alter natural joint angles, thereby adding to the increased likelihood of joint disorders in these dogs.

The biggest evidence-based concern that has been identified is the connection between spay/neuter and increased incidence of joint disorders and cancers. Studies have confirmed this connection. The next question, which is still being studied, is why this happens.

One theory is based on the principles of physiological hormone feedback systems. The gonads (ovaries and testes) produce the sex hormones (estrogen and testosterone). These hormones are controlled by hormones, which are the follicle-stimulating hormone (FSH) and the luteinizing hormone (LH). These hormones are produced in the pituitary gland and controlled by the gonadotropin-releasing hormone (GnRH), which is produced in the hypothalamus of the brain. In intact animals, this continuous feedback loop keeps hormones at normal, natural levels.

Removing the gonads by spay/neuter removes the sex hormones. With no negative feedback from the sex hormones, levels of pituitary and hypothalamic hormones rise and remain

high. Could this change be the reason for the negative effects of spay/neuter?

One study¹ that delved into this theory looked at the potential role of elevated levels of LH negatively impacting the spayed/neutered dog. LH receptors have been found in many of the non-gonadal tissues involved in diseases that are found more commonly in spayed/neutered dogs than in intact dogs. Examples include:

- ▶ the urinary tract (incontinence in spayed females, bladder tumors)
- ▶ the hip and knee ligaments (hip dysplasia, cranial cruciate ligament or CCL injury)
- ▶ blood-vessel walls (hemangiosarcoma)
- ▶ skin (mast cell tumors)
- ▶ lymphoid tissue (lymphoma)

Is there a link? Consider that LH receptors are found in all these tissues and LH levels are markedly higher in spayed/neutered dogs. And, the diseases noted above are found at higher rates in spayed/neutered dogs. It's compelling and needs further investigation.

Another question is whether the gonads and their hormones might have a protective effect on cell growth, given that there are receptors in non-gonadal tissue. Could their removal trigger metastatic cancer cells?

It's Not That Simple

While these issues are compelling—and may seem like reasons not to spay/neuter—we can't forget the many benefits of spay/neuter both to the individual dog's health (longer life expectancy, avoidance of several diseases) and to society in the form of pet-population control. Given that we still want the benefits of spay/neuter, is there a way to manage or avoid the detriments?

Enter the question of when to spay/neuter. Perhaps later spay/neuter would help minimize the negative impact of sex hormone elimination. Does it help or not? And at what age is the benefit maximized?

There is no cookie-cutter answer for this. The numbers show that it varies widely based on breed and size of dog.

Two studies by the same researchers looked at large numbers of popular breeds, age at spay/neuter, and incidence of some specific joint disorders (hip dysplasia, CCL injury, elbow dysplasia) and some specific cancers (lymphoma, MCTs, hemangiosarcoma, and osteosarcoma); they also looked at mixed breed dogs^{2,3}.

The results show that if you have a small breed dog (unless it happens to be a Boston Terrier or Shih Tzu, more on that below), or a mixed breed dog weighing less than 42 pounds, age at spay/neuter has no impact on the incidence of any of the joint disorders or cancers. Therefore, these pet owners can choose when they want to spay/neuter. In addition, small-breed female dogs don't tend to suffer from spay incontinence like the larger breeds do, so spaying before the first heat at 6 months of age is still looking good for these little ones. This would also help you cash in on the possible protective benefit of early spay against mammary cancer, that has long been touted, although recently called into question.

In the breed-specific study, Boston Terrier males (not females) had a higher incidence of cancer when neutered before a year of age. So, waiting until after 12 months is recommended for these guys.

In the Shih Tzu breed, it is the females who showed a much higher risk of cancer if spayed before a year of age. The authors suggest waiting until 2 years of age for spaying the female Shih Tzu.

To summarize for the larger breeds, waiting until at least 12 months of age to spay/neuter is a fair generalization. The incidence of the specific joint disorders and cancers looked at in the aforementioned study were significantly lower in this group than in dogs spayed/neutered earlier.

The study showed a couple of interesting breed-specific findings as well. First, the occurrence of cancers in spayed female Golden Retrievers, regardless of age at spay, was so much higher than in intact female Goldens that the authors recommend not spaying Golden Retrievers at all whenever possible. This was not the same for male Goldens, so the after 12 months generalized recommendation still fits for them.

Surprisingly, a couple of giant-breed dogs showed no increased incidence of joint disorders or cancers with spay/neuter at any age. These were the Great Dane and the Irish Wolfhound. Delaying spay/neuter is still a good recommendation for these big dogs, however, due to the potential influence of the sex hormones on more natural bone growth rates.

In Practice

We spoke with board-certified veterinary theriogenologist, Bruce W. Christensen, DVM, Cornell 2002 and founder of

Kokopelli Assisted Reproductive Services in California. He believes we should consider not neutering male dogs.

"The current recommendations are different for different breeds," says Dr. Christensen. "As a general rule, the benefits of waiting to spay or neuter a dog until after 1 or 2 years of age have not been demonstrated in smaller breeds (less than 43 pounds). For larger dogs, there does seem to be a benefit to lessening the chances of developing orthopedic conditions (hip and elbow dysplasia, cruciate disease) if you wait until after 2 years of age to neuter or spay.

"With regard to cancer, the risks are much more breed-specific and more work needs to be done in each breed to determine their risk factors. So far, studies in Golden Retrievers, Vizslas, and Rottweilers indicate a benefit to reducing the risks of lymphoma, mast-cell tumors, hemangiosarcoma, and osteosarcoma by delaying the age of neutering/spaying or even never removing the gonads (keeping males intact and performing ovary-sparing spays on females). These risks are not the same for both males and females. In Golden Retrievers, for example, the risks are much greater for females that are spayed than males which are neutered.

"Having said that, there are no great health benefits to neutering any male, regardless of breed or size. The risks of testicular cancer will be eliminated, but these cancers in dogs are almost always benign and can be cured, if they occur, by neutering at that time. The risks of benign prostatic hyperplasia and prostatitis are also eliminated by neutering, but these also are not life-threatening and can be treated if they occur and cause problems," says Dr. Christensen.

"The risk of prostatic cancer actually increases with neutering," he says. "Although the increase is not much, it is a statistically significant increase, and prostatic cancer is an aggressive, malignant cancer in dogs. Neutering males too young also increases the occurrence of orthopedic conditions in large breed dogs and changes the growth patterns in all dogs. Behavioral changes are not closely related to neutered status, despite our tendency to think that intact males are more unpredictable or aggressive. The data simply doesn't support this assumption," he says.

"For females, the risks of not spaying need to be weighed against the risks of keeping the bitch intact, which include pyometra (25% of intact females can develop pyometra in their lifetime) and accidental breeding," he says.

Bottom Line

Clearly, there are no easy answers to the spay/neuter conundrum. If, why, when, and how to spay/neuter dogs is a work in progress. Right now, the best advice seems to be gather as much reputable, evidence-based information from scientific studies as you can, and partner with your veterinarian to make the best decision for you and your dog. ■

1 Hart, L.A., et al. "An Ancient Practice but a New Paradigm: Personal Choice for the Age to Spay or Neuter a Dog." *Front Vet Sci.* 2021; 8: 603257

2 Hart, B.L., et al. "Assisting Decision-Making on Age of Neutering for 35 Breeds of dogs: Associated Joint Disorders, Cancers, and Urinary Incontinence." *Front Vet Sci.* July 2020; Volume 7: Article 388

3 Hart, B.L., et al. "Assisting Decision-Making on Age of Neutering for Mixed Breed Dogs of Five Weight Categories: Associated Joint Disorders and Cancers." *Front Vet Sci.* 2020; 7: 472

Should You Leave the Ovaries?

In an ovary-sparing spay, only the uterus is removed, thereby ending the possibility of pregnancy and uterine cancer, but retaining the benefits of the sex hormones. Is this the way to go, especially for the female Golden Retriever? Again, it's a highly debated subject in veterinary medicine at this time.

If you are considering ovary-sparing spay for your dog, discuss the pros and cons with the surgeon who is doing the procedure, and specifically ask what to expect after the uterus is removed. Your dog will still have heat cycles and may still bleed. In addition, she will still be attractive to male dogs, and she will still be at risk of pyometra if the uterine stump is left behind, which is often the case.

One of the more worrisome dangers associated with a spay that leaves the ovaries is that if a male dog gains access to your dog and breeds her, there is no room for the semen to disseminate inside. What can then happen is a rupture of the uterine stump, with a release of the semen into the abdomen, which can result in severe, life-threatening peritonitis.

Arthritis Therapies Pros and Cons

Individual dogs may thrive with different treatments

Many senior dogs experience discomfort from osteoarthritis, but the right treatment for your individual dog can provide relief. “Osteoarthritis most typically results over time from normal loading on an abnormal joint or abnormal loading on a normal joint,” says Christopher W. Frye DVM, DACVSMR, CVA, assistant clinical professor and Section Chief of Sports Medicine and Rehabilitation at the Cornell University Hospital for Animals. “The recommended treatment may differ depending on the inciting cause. For example, dogs with cranial cruciate disease will fare best with surgical stabilization of the

joint as the unstable joint is creating the osteoarthritic environment. On the other hand, dogs with hip dysplasia can be treated with a variety of non-surgical options prior to considering surgery like a total hip,” says Dr. Frye. “In general, we manage osteoarthritis medically with pain management, weight control, joint supplementation, exercise modification, and targeted physiotherapy. “Modalities are physical agents that help promote healing and/or reduce pain and can include forms of heat, cold, light, electricity, and sound waves, among others,” says Dr. Frye. “Here at Cornell, we lean toward choosing options with more scientific support; however, we



The therapy you choose should be safe and effective for your dog. are also often developing and providing cutting edge therapies that require scientific trials.” Most dogs do best with a treatment plan that combines multiple different treatments and modalities. ■

Recommended Arthritis Therapies for Your Dog

Therapy	What It Is	Pros	Cons
Platelet Rich Plasma (PRP)	A blood sample is drawn from the dog and then spun down to separate the blood cells from the platelets and protein-rich fluid (plasma). The platelets and plasma are then injected into the joint to promote healing and combat inflammation.	Sourced directly from your dog Can be done in-house at your veterinarian's	Injection requires sedation and shaving of the area to create a sterile field Small risk of infection Multiple injections often needed over time
Stem Cell Therapy	Stem cells develop into different tissues wherever they are needed. Adult stem cells can be harvested from fat deposits in your dog's body, sent out to a lab to be isolated and concentrated, and then injected into the joint that requires treatment.	Sourced directly from your dog Able to help rebuild cartilage, bone, and ligaments	Small risk of infection Dog will need to go under anesthesia twice—once to harvest the stem cells and once for the injection
Extracorporeal Shockwave	High pressure sound waves travel through tissue and release energy when they hit the target area, reducing pain and stimulating healing.	Well documented benefits Noninvasive Can provide relief up to six months	Some machines require sedation May cause bruising Not yet widely available Area must be shaved
Therapeutic Laser	Laser light penetrates the tissues to target the cells, stimulating energy production, blood flow, and regeneration, as well as mediating inflammation.	Quick treatments Anecdotal reports of pain relief	Little scientific evidence that it is effective for osteoarthritis May need to shave the treatment area for optimal penetration
Therapeutic Ultrasound	Sound waves go through and heat the tissues, making movement more comfortable and stimulating circulation.	Quick treatments	Can't be used over surgical implants Treatment area must be shaved
Underwater Treadmill	The viscosity and buoyancy of water gives your dog a high-quality workout while supporting his weight, making movement easier and less painful.	Extremely safe exercise with no risk of falling	Requires specialized equipment Some dogs simply refuse to do the treadmill
Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)	Medications that help to relieve pain and inflammation, such as carprofen (Rimadyl), meloxicam (Metacam), grapiprant (Galliprant), and deracoxib (Deramaxx)	Several options if one drug is not well tolerated Easy to give at home	Risk of kidney, liver, and GI side effects Dosage may need to be increased over time Bloodwork required to monitor health
Joint Supplements	Supplements that help to combat inflammation and support joint health; includes glucosamine, chondroitin, methylsulfonylmethane (MSM), omega-3s, hyaluronic acid, cetyl meristoleate, CBD, boswellia, avocado/soybean unsaponifiables (ASU)	Available over the counter Easy to give at home Strong anecdotal reports of success	Supplements are not regulated, so buy from a reputable retailer or your vet Some supplements may interact with medications Fish oil may cause weight gain

Recognizing Rabies In Stray Dogs

Always consider the possibility before you grab the dog

Rabies is always a concern with stray dogs. Most municipalities have quarantine periods for strays that come into animal control or shelters.

"The overarching lesson is how important it is that shelter intake protocols, which include the recognition of risk factors for rabies and enact isolation and handling protocols, protect staff. Personnel handling stray animals should be given pre-exposure rabies vaccinations to mitigate risk," says Elizabeth Berliner, DVM, DABVP, Swanson Endowed Director of Maddie's Shelter Medicine Program, Associate Clinical Professor at Cornell University's College of Veterinary Medicine. "However, there are many other more common and treatable diseases that can cause neurological signs in dogs. Clinical history, physical



A stray dog needs to be handled with care.

exam findings, additional diagnostics, and clinical reasoning all help inform the veterinarian's course in handling these cases in a safe and humane fashion."

Generally, 10 days is recommended for a minimum rabies hold of a stray dog that has bitten someone or another

pet, although the incubation period for rabies in dogs can vary from weeks to months. Once clinical signs are apparent, most dogs will die in seven to 10 days. During that time is the greatest risk of transmission to humans.

Rabies has three stages in dogs:

1. Prodromal. During this stage, the main sign is a change in behavior. If your normally shy dog suddenly becomes outgoing or your outgoing dog backs away with shyness, something is wrong. While it may not be rabies (especially in a vaccinated dog), there is a problem.

2. Excitation. This is the "furious rabies" stage that is the classic rabid-animal picture. These dogs are very aggressive, eat almost anything that comes their way including stones, and will bite.

3. Paralytic. In this stage, also known as "dumb rabies," dogs develop progressive paralysis that includes difficulty swallowing. Copious amounts of drool may be noted. Astute observers may note a change in the dog's voice. Since rabies can be passed by infectious saliva getting into any break in your skin, it is important to take care if you open your dog's mouth to look for anything stuck. These dogs tend to die in a coma.

All dogs who seem abnormal should be avoided, but you should always contact an animal-control officer so the dog can be captured.

While most stray dogs are not rabid, it is best to assume that they might be and take precautions. If you or your dog gets bitten by a stray or any dog with unknown vaccination history, flush and clean the bite as soon as possible and seek medical attention. ■

Rabies in the United States

As we reported in September (see "CDC Ban on Importing Dogs") concerns about rabid dogs has led the Centers for Disease Control and Prevention (CDC) to temporarily ban the importation of dogs from high-risk rabies areas with few exceptions allowed. Included in the ban are South America, Asia, Africa, the Middle East, and parts of eastern Europe.

In an interview with NPR, Dr. Emily Pieracci of the CDC said more than 450 dogs arrived with falsified or fraudulent rabies certificates last year, a rise of over 52% in the last two years. One notorious case involved a dog imported from Azerbaijan that flew into Chicago with 32 other dogs and a cat in June. The dog was placed with a family in Pennsylvania. When he showed unusual behavior, he was found positive for rabies. At least 12 people were exposed. Now, the other animals from that shipment need to be traced and evaluated for any potential signs of rabies.

We are lucky that most states have strict guidelines for rabies vaccination for dogs. Still, there are dogs that miss even an initial rabies vaccination. Rabies is endemic in North America and a problem worldwide. The CDC receives documentation of over 5,000 rabies cases each year and 90% are from wildlife. About 55,000 people receive rabies postexposure prophylaxis each year, according to the CDC. In the United States, the primary domestic rabid animal is the cat, although about 70% of the infections are from exposure to rabid bats.

Rabies In Wildlife

Rabies is endemic in North America. Rabid animals are found in cities as well as rural areas. The most common species are skunks, bats, raccoons, and foxes. Except for bats, these animals usually show signs of illness, in particular unusual behavior and abnormal movement. Wildlife that appear during unusual times for their species, such as bats out in daylight, or that move with an abnormal gait or approach humans should be treated as rabies suspects. If a wild animal attacks you or your pets, you should try to confine the animal and contact animal control. Unfortunately, but understandably, the animal usually will be killed and then examined for rabies.

You Should Know

Signs of Rabies

- ▶ Behavior changes (including shyness), inappetence, hyperactivity, bad temper, hiding
- ▶ Dilated pupils, anxiety
- ▶ Sudden, unprovoked attacks
- ▶ Abnormal gait, loss of coordination
- ▶ Excessive drooling, foaming at the mouth, worsened by difficulty swallowing
- ▶ Progressive paralysis

Aggression Against Intact Dogs

Sweet boy turns into "Cujo" when near male dogs

Q I own a 2-year-old neutered male Black and Tan Coonhound rescue who I adopted eight months ago. He was a lost hunting dog, and was emaciated, with an ear infection, worms, and a urinary tract infection.

He is a loving, smart, well-behaved social dog and is great with children and adults. He loves his doggy daycare and is welcomed there by the staff because he is so good with other dogs. There is one exception, however. He hates unneutered male dogs. (Our daycare does not allow them, thankfully.) This sweet boy turns into "Cujo" in their company.

I have been told this is common. My concern is I live in a residential community that has many dogs and a few are not castrated. It can be an issue when walking him (leashes required in the community) and an unknown dog approaches. Is this normal? Is there anything I can do?

A Nero is a handsome boy, and I am sorry that castration has resulted in his targeting intact male dogs. It may be that he would have become aggressive anyway because most dogs begin to exhibit serious aggression between 18 months and 2 years of age when they reach social maturity. Most people neuter their dogs to be socially responsible by preventing the conception



Owner wants to know if Nero's seemingly odd behavior is normal.

of unwanted puppies, and most shelters and rescues have the dogs castrated before they are given to an adopter. Some breeders insist that puppies from their kennel be neutered if they are not show quality. Other owners may decide to have their dog castrated to calm him down.

The one misbehavior that castration appears to stop is mounting (humping—a term I hate) people. Statistically, dogs are much less apt to wander (presumably in search of a mate) and a little less likely to fight with

other dogs after castration. Apparently, Nero did not read that article. Intact (unneutered)—males react differently—usually less aggressively—to castrated males because the neutered male does not smell like a threat or a challenge. This may work in reverse, too. Nero may be challenged or threatened by intact male dogs either by their behavior, by their odor, or both, and he reacts aggressively.

In the past few years, it has become clear that castration, especially early castration has negative effects on canine health, as you will read on pgs 4-5 in this issue. Dogs are more likely to have orthopedic problems and are more likely to get cancer. The risk varies with the breed; large breed dogs are more affected than small ones. My guess is that we will see more aggression among dogs, if owners no longer neuter their pets.

You have been handling Nero's problem well by sending him to a daycare facility without intact males. Avoidance is the best solution, but you should be prepared for encountering intact males on walks or at dog parks. Nero (aka Cujo) should wear a muzzle or, at least, a Gentle Leader so you can control his behavior in situations in which an intact male may appear. A technique that works well is to say "Look at that nice dog" and give him a treat when you see any dog nearby so that he associates the approach of any dog—male or female, castrated or not—with good things. You can also try this trick: Put some odiferous ointment on Nero's muzzle to try to mask the scent of intact males. ■

Do You Have a Behavior Concern?

Send your behavior questions to Cornell's renowned behavior expert Katherine Houpt, VMD, Ph.D., shown here with Yuki, her West Highland White Terrier. Email to dogwatcheditor@cornell.edu or send by regular mail to DogWatch, 535 Connecticut Ave., Norwalk, CT 06854-1713.



Coming Up ...

- ▶ Canine Bladder and Urinary Issues
- ▶ Heartworm in Dogs Remains a Threat
- ▶ Handling Diseased Spinal Discs
- ▶ When Your Dog Hates Prescription Food

© HAPPENING NOW ...

Behind a Wall—A dog that was missing for five days is back safe with its owner after being rescued from inside a wall of a home, reports WLWT5 in Cincinnati. The dog had apparently fallen down a crevice and was trapped between two concrete walls the entire time.

Watch for Lyme Cases—According to WSAZ, Animal Care Associates veterinary clinic in South Charleston, W. Va., has seen an unusually high 81 cases of Lyme disease in dogs this year. Experts had predicted that 2021 would be a big year for ticks. Signs of Lyme in dogs include lack of appetite, fever, lethargy, a shifting lameness, and joint swelling.



Alamy (iStock photo)

Pet Poison Hotline Help—A Wausau, Wis., dog is lucky to be alive after she ingested 500 ibuprofen caplets, says Penn Live Patriot News. Her owner called the local emergency clinic, which told her to call the Pet Poison Helpline (PPH) and bring the dog in.

The initial PPH recommendation of an oral charcoal treatment and IV fluids didn't work. They then tried two doses of naloxone, used for opioid overdoses. It didn't work. As the dog's organs began to fail, PPH suggested using an intravenous intralipid emulsion treatment, a treatment for fat-soluble drug intoxications that was obtained from a human hospital. That non-traditional treatment worked. ■