



## Vestibular Disease in Dogs and Cats

By Vestibular Disorders Association

Vestibular disorders are not unique to humans. All higher animals that have a vestibular system—from fish to mammals—can be afflicted, including cats and dogs.

The vestibular (inner ear) organs provide the brain with vital information about body position with respect to gravity. Sensory information from the vestibular system tells dogs and cats if they are upside down, right-side up, tumbling, turning, falling, or accelerating. Information from the vestibular system also coordinates with sensory information from vision and proprioception (touch sensors in the paws and other parts of the body) to help your pet maintain balance and have clear vision while moving. When vestibular dysfunction occurs in dogs or cats it is most often associated with the peripheral system (inner ear) rather than with the central system (brain).

### How do I know if my pet has a vestibular problem?

Signs of vestibular disease in pets can include:

- Circling (spinning or walking in circles)
- Standing with an exaggerated wide stance
- Head tilting
- Falling or rolling to one side
- Nystagmus (involuntary drifting eye movements)
- Squint or strabismus (abnormal position of the eyeballs)

- Ataxia (stumbling, staggering, or lack of coordination without weakness or involuntary spasms)
- Head shaking
- Vomiting
- Motion sickness—perhaps evident when your dog is no longer an enthusiastic backseat companion on car rides

Other behavioral changes may be apparent. For example, a cat's swift and graceful movements may become hesitant and awkward. A dog that is disoriented when looking down may rest on his belly in front of the water bowl to drink rather than stand to slurp from it as usual.

In addition, your pet may opt to sleep on the floor rather than on his pillow or a sofa because the hard unyielding surface will help him to reduce being awakened by the vestibular signals triggered with subtle head movements and position changes in sleep. This is because the vestibular system sends information to a part of the brain called the *reticular formation*, which is involved with self-regulation of wakefulness—in part, a monitor for survival. For example, if you or your pet were to start falling off of a bed while asleep, sensory signals sent from the vestibular system to the reticular formation would stimulate arousal.

The activity in the reticular formation with specific head and body movements is why veterinarians will hasten an animal's recovery from anesthesia by rolling the animal from side to side. Similarly, your

pet may not sleep soundly if his brain receives false or exaggerated sensory information from his malfunctioning vestibular system about movement and spatial orientation.



**(left) Bolivar at the onset of vestibular disease.**

*In January 2011, Bolivar suddenly couldn't walk straight. His owners reported that he was "not his ridiculous, bouncy puppy-like seven-year-old self." But*

*after four weeks, he'd significantly improved. Happily, his owners now tell us "He is mostly better. He has a few trace symptoms still, perhaps the most significant being that he can't keep track of a thrown ball any more. So we just roll it gently, and he loves playing chase as much as he ever did."*

*Read the complete story at:*

*<http://erinandchristopher.us/bolivar/our-crooked-dog/>*

## **Causes**

Peripheral vestibular dysfunction in dogs and cats is usually of unknown (idiopathic) origin. Less common causes are middle ear infection (e.g., from a severe ear mite infestation), ototoxicity from certain types of antibiotics (e.g., streptomycin or gentamicin), genetic sources, and head trauma. An underactive thyroid gland or central problems (brain lesion) can also create vestibular dysfunction in pets.

The term *old dog vestibular syndrome* has been used to describe a disturbance of unknown (idiopathic) origin in the inner ear balance system in dogs. However, such inner ear disturbance can

occur in dogs of any age, so the term *canine idiopathic vestibular disease* is more accurate. The equivalent term in cats is *feline idiopathic vestibular disease*.

## **How can I help my pet?**

As in humans, treatment for a vestibular disorder in dogs and cats depends on the specific diagnosis. It is important to have your pet examined by a veterinarian to rule out conditions such as stroke or hyperthyroidism. The examination may also reveal an underlying and treatable condition affecting the inner ear. For example, if an ear infection is inflaming the tissues and nerves of the vestibular system, an important part of treatment will be to eliminate the infection.

If the problem is diagnosed as the more common condition of canine- or feline idiopathic vestibular disease, a veterinarian may prescribe some medication to reduce your pet's nausea in the short term but will often adopt a "wait and see" approach to treatment. During this period, you can help your pet's recovery in several ways:

- **Give your pet time.** The sudden onset of symptoms is disconcerting to owners, often resulting in an understandable sense of urgency. However, feline- and canine idiopathic vestibular disease are not life threatening. Most pets with good general health will naturally adapt and compensate such that symptoms begin improving within about three days and almost completely resolve in two weeks, although a head tilt may remain.
- **Comfort your pet by managing your own stress.** Pets are very sensitive to the mood of their companions. The less agitated you are

about your pet's illness, the calmer he will be.

- **Provide a quiet resting spot.** Make sure that your pet has a place to rest away from the bustling activities of the household. For example, minimize your pet's exposure to enthusiastic toddlers and loud televisions. Encourage your pet to avoid settling in the middle of a traffic pattern. Even though you may be attentive to cautiously stepping around or over him, your pet's heightened motion sensitivity may make him startle easily.
- **Provide lighting and proprioceptive support.** Good lighting is essential so that your pet can use visual cues to confirm or adjust to the signals about head position sent from his vestibular system. Also consider providing a proprioceptive "surround" for your pet to nestle against. To do this, take a long thick blanket, roll it up like a jelly-roll, and then snuggle it around your pet in a C-shape.
- **Avoid carrying your pet.** In the same way that a human with a vestibular disorder needs to move about to help recalibrate sensory information, your pet needs to retrain his system by navigating on his own. The touch sensors in a pet's paws provide useful sensory information about balance when he walks or runs but they won't be activated if his paws are dangling in air. For this reason, avoid carrying your pet. Instead, help him to walk on his own by placing your hands on both sides of his body.

If he starts tilting, he will feel increased pressure of his body against your hand, and these proprioceptive cues will help him know to adjust his balance. An alternative way to assist your pet in walking is to support him with a sling or towel looped under his belly. If carrying your pet is unavoidable, lift him slowly and hold the pads of his paws while you are moving.

### **The importance of a healthy vestibular system**

The vestibular system is fundamental to the well-being of humans, dogs, and cats. It allows us to recognize where we exist in space and how we are moving. It helps us to make adjustments that preserve and maintain our balance and clear vision—which is why the vestibular system is vital to survival for animals in the wild. In domesticated pets, peripheral vestibular dysfunction often results in severe and disconcerting behavior changes. However, with a proper diagnosis, the safety of your home, and your care, your pet's condition can often resolve.

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