OBJECTIVE GAIT ANALYSIS (OGA)

Our veterinarians may recommend a gait analysis in your dog for many different reasons. This simple, easy, non-invasive diagnostic tool can help in the various different situations described below, and is one of our specialized tests we can offer to you as part of your visit to the Orthopedic Medicine and Mobility service.

WHAT IS OBJECTIVE GAIT ANALYSIS?

Identifying asymmetry in gait or limping will often require more than a visual evaluation of the animal walking. Objective gait analysis, or OGA, is a non-invasive diagnostic test that involves walking across a state-of-the-art pressure sensitive mat. This mat collects data such as the amount of pressure applied by each paw, length of the stride, and the force generated when walking or trotting. This allows us to precisely determine which paw or limb(s) is/are causing the abnormal gait.

This image shows an example of all paw placements during gait analysis of a dog.

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By performing objective gait analysis we can accurately determine whether your dog has gait abnormalities and determine the affected limb(s). The first gait analysis may support findings from our examination, or uncover abnormalities not noted before. Once a baseline gait analysis is performed, we can use this data to monitor how your dog is doing by performing gait analysis during each recheck exam.

**WHAT ARE SOME EXAMPLES OF OGA BEING USED?**

**Baseline profile** - When used together with our physical and orthopedic examination, a gait analysis can allow us to see just how much of an effect the lameness may have on the patient, and identify a problem that is not obvious with visual examination. It can help us differentiate which limb is more affected in cases where multiple limbs may have pain or discomfort, such as hip dysplasia where both hips are affected.

**Early detection of orthopedic problems** - Early detection of orthopedic problems is important; it is much better to treat orthopedic problems before they progress into a major problem. The pressure sensitive mat (the device that collects gait data, pictured to the right) is more sensitive than our visual (subjective) lameness examination. OGA can pick up even the most subtle factors affecting your dog’s gait, which might have otherwise gone unnoticed. By showing us how much body weight is placed on limbs, we can create a pressure profile and determine if discrepancies exist between the front and hind paws, or left and right paws. Detecting these changes in gait patterns can guide us on what is needed for further evaluation and work-up.

**Monitoring the effect of treatment** – When performed at follow up visits, OGA can allow us to monitor a patient’s progress and response to therapy. This helps us to determine if our treatment is working or if we should pursue other treatment options; for example, if treating a dog for chronic osteoarthritis we may determine that another pain medication or joint injections are needed.

**Orthopedic or neurologic?** Finally, OGA can also help differentiate between gait abnormalities being due to an underlying neurologic disease, as it can detect changes in stride length, paw placement, and variation of each foot strike. Certain neurologic disorders will cause large variations in these values, whereas orthopedic conditions do not.

The graph above is an example from a patient who presented for evaluation of a forelimb lameness. However, gait analysis also revealed a discrepancy in the left hind leg, which was previously not noted. The patient was diagnosed with cruciate disease in the left knee.

Normal body weight distribution is approximately 60% in the front (30% each limb), and 40% in the back (20% each limb). From left to right, this image shows the body weight distribution of a dog before surgery for the left knee, 2 weeks after surgery, and 8 weeks after surgery. In the back end, the dog started out with a very significant lameness in the left back leg, and as recovery from surgery progressed, the body weight distribution returned to a more normal range.