

EQUINE THERMOGRAPHY

Thermography is a technology that detects infrared radiation (IR). IR is electromagnetic radiation of a wavelength longer than visible light. The amount of IR emitted by an object or animal increases with temperature. Thermography is a technology that actually allows us to see IR using a specifically designed infrared camera. Infrared cameras have sensors that convert the IR which is emitted from the surface of skin into electrical impulses that are shown on an image as areas of colour. Usually blue/black indicates cold temperature and red/white indicates hot temperatures, with a scale of colours in between to show the varying temperatures.

Thermography is widely known in electrical, building or mechanical fields and since the late 1970's has been used in human and veterinary medical areas as a form of diagnosis. In the 1996 Atlanta Olympics Thermography entered mainstream sports medicine in the detection of tendon, ligament and musculoskeletal inflammation. And since then equine Thermography has gone from strength to strength.

Most experienced horse owners/trainers are able to identify heat in a leg or foot by using their hands, but there are often symptoms of discomfort or poor performance where the horse is showing no physical signs of injury. A human touch cannot identify changes in temperature of less than 2 degrees, however, a thermal camera can "see" and detect changes of less than 0.5 degree, making it easy to identify problem areas, where heat is not obvious to the touch.

In the equine athlete there is normally a high degree of thermal symmetry in the body, therefore abnormal or asymmetrical patterns are usually indicative of a problem. Thermal images do not act as a diagnostic modality alone but is widely used to localize the area for which further investigations such as x-rays or ultrasounds can be used to confirm a diagnosis.

Farriers are also joining the ranks of professionals who realize the many advantages Thermography is offering. Hoof problems and hoof changes can be diagnosed with the help of Thermography, thus helping the farrier to realize the early formation of a deep abscess, laminitis, and also wall bruises that require specialized shoeing.

Preventative imaging

These can be performed at regular intervals on competition or racehorses to “track” their progress or training regime. Images can be compared and slight changes in symmetry noted and discussed with the trainer, rider, owner and vet.

Thermography can detect signs of inflammation before problems become apparent in all areas of the horse, joint, tendon, splints, hoof and muscle injuries can all be identified anywhere from **2 to 13 weeks prior to clinical lameness**¹.

The early detection of an injury can save a horses’ career and even their life.

Diagnostic imaging

Thermography is a valuable diagnostic tool to use in cases of non-specific lameness or poor performance. Thermography can pick up on secondary inflammation areas which may have been masking where the initial primary injury was, and because you are looking at images of the whole horse there might be a complex situation where the problem is not just in one area but multiple areas on the horse. It is important to note that hot areas are easy to pick up on but it is also the cold areas that can give the most information as to muscle wastage and just as useful for detecting injury as the hot areas. For Thermography to be used for diagnostic purposes it is important to have a vet that is experienced at looking at thermal images and the heat patterns.

Pre-purchase imaging

Re-purchase imaging can be performed either by the seller or the buyer of a horse in conjunction with a veterinarian report can be of immense value to either parties.

Monitoring rehabilitation

The ease of use and safety of Thermography has a role in the treatment of injuries as well. Not every horse responds identically to the same treatment, whether it is a drug, a physical treatment, or simply a change in their training routine. Thermography can enable you to monitor a treatment on a weekly basis to determine if the treatment is effective or needs to be changed.²

¹ 1. Lameness in the Athletic Horse; Thermographic Assessment of Racing Thoroughbreds. Turner TA, Pansch J, Wilson, JH, AAEP Proceedings. 2001 Vol. 47: 344-346

² Thermography in the diagnosis of inflammatory processes in the horse. Purohit RC, McCoy MD, American Journal of Veterinary Research, 1980, Aug 41 (8): 1167-74

Saddle fitting

Imaging of the horses back and the saddle can confirm an ill-fitting saddle as the cause of training or performance problems. Regular imaging will detect any changes and corrections can be made before the problem becomes chronic. Chronic conditions that are associated with poor saddle fitting are back problems, muscular tightness, bridle lameness, rearing or bucking and muscle wastage.

Horsewell Equine Rehab has recently purchased a Thermography camera to add to its expanding business. Not only can horses be rehabilitated from injury but their progress “tracked” by the use of thermal images.

The role of the Thermographer is to take images at the best angles and under the most stringent condition, Heidi Billing (nee Richardson) is a qualified Medical imaging technologist, who attended an intensive international Veterinary Thermography course in Roswell, New Mexico, USA with Dr Donna L Harper (DVM) in July of 2007. Horsewell Equine Rehab is privileged to be associated with Dr Harper who is well known in the international veterinary community for her work with thermography and we are extremely excited to have Dr Harper reporting on the thermal images taken at Horsewell Equine Rehab as she is one of only four DVMs in North America certified by the American Academy of Thermography.

It is a great pleasure to have this exciting technology now available for the NZ equine industry.