

Big Problems

Start Out Small!

Really See With APG!

The APG Scanner uses Surface Electromyography (SEMG) and Thermography - to detect early stages of serious problems including muscular strain, tendonitis and joint imbalances. These can lead to cartilage and tendon damage preventing the animal achieving its maximum performance potential.

It allows a user to see inside a horse in ways never before possible.



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Really see with
APG!

The APG EQUINE SCANNER



A unique portable SEMG scanner
Non-invasive and user-friendly
No needles, no sedation, no clipping
No need to move the horse from its yard!

What is Surface Electromyography?

SEMG is a system of functional analysis and physiologic assessment. Through the use of surface electromyography we are able to detect minute electrical activity in the musculature.

The electrical potential of muscle can be assessed and is indicative of muscle activity.

These electrical signals are measured through the skin with the use of sensors and an array of electrodes which are designed specifically to penetrate the coat of the animal.

Sensors are placed on the animal symmetrically in corresponding locations bilaterally. A live time reading is detected in the tissue that underlies the active electrodes. The electrodes sense activity in a muscular area that is just slightly larger than the electrode itself and the SEMG signal quality is proportionate to the amount of tissue being sampled. Signal intensity is minute and is measured in micro voltage. The electrical signal is captured and then analysed to indicate specific muscle function in any area of the body.

We can compare and contrast the intensity of muscle activity and thereby are able to analyse muscular integrity and balance in the body. We can then examine systemic muscular activity to give us further insight into the overall tensegrity or tone of the nerve system which is the master controlling system of the body giving us a picture of the physiology of the animal.

Currently no other physiology testing equipment is available let alone anything that can be easily used.

Electromyography has been the gold standard in muscle assessment in human studies for over a quarter century. Maximising human performance is completely focused on physiology testing.

The equine industry continues to place all of its emphasis on anatomy and structure, while physiology and function remain largely ignored.

The equine performance industry is trailing the human performance industry by decades!

Product Comparison

Invasive (needle) EMG - Needle electromyography can be used to assess a specific nerve or nerve root. It has very limited capability and cannot be used outside of specific nerve conduction testing. It cannot be used accurately for muscular assessment. Reproducibility is poor due to the fact that in order to have accuracy from test to test the needle must be inserted in the exact same location.

Nerve Blocking – SEMG can be used in many cases to replace nerve block studies in the detection of musculoskeletal injuries. Nerve blocking must be performed only one joint at a time, is a rather prolonged process and it can be highly inaccurate. The combination of SEMG and Thermo-

graphy can detect subtle imbalances in minutes that otherwise could require days or even weeks. All the while it is completely non-invasive and does not expose the horse to the risks of allergic reactions to the anesthesia and possible further injury while sedated. Using SEMG, the equine practitioner can detect imbalance in the musculature and determine which extremity may be affected. A thermographic evaluation can then allow for quick analysis and detection of inflammation in the problem area.

X-rays, Ultrasound and MRI – Diagnostic imaging is critical in the examination process but it also has significant restrictions. Imaging studies can analyse structure but in the end cannot even detect whether the animal is dead or alive! Research tells us that 30 to 40% bone destruction must be present to see pathology on an x-ray. Many of the musculoskeletal injuries that occur in the body are that of functional aberration and a very small percentage will ever show up on any type of imaging studies. X-ray is not the only imaging system that has flaws. *Ultrasound* has resolution difficulties and again significant structural change must be present to be seen. *MRI* requires prolonged immobilisation, is largely unavailable and is very cost restrictive. However, imaging studies can be an asset when used in conjunction with function assessments like SEMG and Thermography.

SEMG and Thermography provide a wealth of information that cannot be detected with diagnostic imaging.