USES OF LAMENESS LOCATOR™

Lameness Locator™ is an aid to the practicing equine veterinarian for evaluating lameness in horses. It is not meant to replace the skills and experience developed by the practitioner. It offers an objective, precise and accurate assessment of body movement specifically related to lameness in the horse.

Current users of Lameness Locator™ find that it is most helpful for:

- Horses with mild lameness
- Horses with apparent multiple-limb lameness
- Horses with apparent compensatory lameness
- Quantifying the effectiveness of nerve and joint blocks
- Confirming soundness
- Developing a further diagnostic plan based on type of lameness (impact, pushoff) exhibited

Fig 2

FOR MORE INFORMATION

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LAMENESS LOCATOR™
Objective lameness evaluation

EQUINOSIS™

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LAMENESS LOCATOR™

by EQUINOSIS™

Equinosis' mission is to assist and equip the equine practitioner by developing and providing wireless sensor solutions for collection of biological data useful in the diagnosis of equine disease.

THE PROBLEM:

Subjective Lameness Evaluation

In the past, veterinarians could only perform lameness evaluations subjectively. However, subjective evaluation of horses with mild or multiple-limb lameness is difficult and subject to error. Agreement between veterinarians in these cases is poor. This is not a reflection of lack of experience or poor ability but a limitation of the human eye.

Fig 1

OUR PATENTED SOLUTION:

Lameness Locator™ by Equinosis™

Wireless, high-frequency (200 times per second) capturing of movement from body-mounted inertial sensors can improve the veterinarian's ability to more accurately detect and quantify lameness in horses.

More certain detection and objective quantification of mild and multiple-limb lameness can assist equine practitioners and more efficiently leverage a practitioner's limb palpation, nerve and joint block, and diagnostic imaging techniques to better serve clients.

Lameness Locator™ is an equine lameness detection and evaluation system for use in the field. Lameness Locator™ objectively detects and quantifies body movement asymmetry in a horse using small, body-mounted inertial sensors and a hand-held tablet PC.

Instrumentation is quick and easy and completely non-invasive. The horse's normal movement is not restricted or altered. Movement data is collected from multiple, contiguous strides in real time and data is analyzed right then and there.

WHAT IS LAMENESS LOCATOR™?

- Three (3) rechargeable wireless sensors (Fig 2)
  - Size (1" x 1 ½" x 1 ¼"), weight (38 grams)
  - Head and pelvic-mounted accelerometers (Fig 1, "1" and "2")
  - Right forelimb-mounted gyroscope (Fig 1, "3")
- Sensor battery charger
  - Simultaneous 3-port smart battery charger
  - AC and 12-volt DC (car battery) charging capability
- Motion Computing® Motion J3400 Tablet PC (Fig 3)
  - Intel®Core™ 2 Duo processor, Windows® Vista®
  - High resolution WXGA, Motion View Anywhere® display
  - Additional battery
- USB, Class I Bluetooth® receiver
  - Up to 150 meters transmission range
- Lameness Locator™ software
  - Algorithms designed specifically for lameness evaluation
  - Intuitive graphical user interface and report generation
  - Database for archiving data and reports
- Accessories for attaching Lameness Locator™ sensors to horse

Fig 3

HISTORY OF LAMENESS LOCATOR™ AND EQUINOSIS™

Lameness Locator™ is the result of more than 18 years of research on gait analysis of lame horses at the University of Missouri's Colleges of Veterinary Medicine and Engineering and the E. Paige Laurie Endowed Program in Equine Lameness. It evolved from motion analysis algorithms developed in a collaborative effort between practicing equine veterinarians and engineers for the specific purpose of lameness evaluation in horses. The motion variables most likely to detect and quantify lameness were first found using sophisticated data mining search techniques and then tested and validated with robust neural network classification schemes. The result was an objective method to evaluate lameness in horses but a method limited to research centers with high-speed cameras and an equine treadmill.

Later collaboration between the University of Missouri and the Hiroshima Institute of Technology in Japan adopted this analysis approach to a system of wirelessly-transmitted, body-mounted inertial sensors. An additional nine years of research and development has whittled the size, weight and number of sensors needed for the specific purpose of lameness evaluation down to a practical minimum.

Fig 4

Equinosis™ was founded in 2007 in Columbia, Missouri with its first objective to make the Lameness Locator™ available to equine veterinarians and to elevate the quality of care, health, and well being of horses.