Field testing

Laboratory tests of gait analysis can provide vital basic information and the possibility of in-depth analysis. However, for day to day use, a practical, sensitive in-field test is highly desirable.

Studies on high-speed treadmills are extremely valuable and have provided a great deal of information about many aspects of equine exercise physiology. However, locomotion on treadmills and in the field do show significant differences (Barrey et al., 1993), so findings from the exercise laboratory frequently require validation in the field.

Kinematic studies of equine locomotion in the field have been used for some time. A number of workers have addressed the issue of in-field gait analysis by using accelerometer and gyroscope-based systems.

In a treadmill study, Keegan et al. (2004) reported that an accelerometer-gyroscope-sensing system showed excellent agreement with a video-based motion analysis system for the detection of lameness, and the former gave a higher quantification for hindlimb lameness.

Lelu et al. (2004) described an in-field test for trotting horses that was found to have good short-term reproducibility. It was proposed for assessment of the performance quality of gait and the quantification of lameness.


These are just a few of a burgeoning number of studies bringing that potentially extremely valuable technique for equine gait analysis into the field.

While tremendous progress in the application of gait analysis to equine medicine has taken place, there is still much work to be done. Colborne (2004) suggested that the study of gait mechanics in the horse is at least 10 years behind the state of the art in human medicine.

The investigation of some of the basics of equine locomotion in specific circumstances is ongoing. For example, while horses are commonly exercised and assessed for lameness on relatively small circles on the lunge, it was only as recently as 2006 that Clayton and Sha reported a method of three-dimensional kinematic analysis of horses moving on a circular path, which they described as “a first step toward understanding the mechanisms of locomotion during turning”.

Nevertheless, the impressive developments in gait analysis that have been made in a number of centres around the world bode well for our future improved understanding of equine locomotion and orthopaedics.

References


Reference for keep them on the track with Irap

IRAP: a revolutionary bio-engineering joint injection, harnesses the restorative capabilities of the horse’s own blood proteins by producing ACS (autologous conditioned serum).

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In a mouse ileal pouch model, DANILON Equidos and phenylbutazone treatments were equally efficacious in attenuating ulceration.

In the mouse jejunum model, DANILON Equidos was able to reduce ulceration scored as 0.11 at day 21 compared to the control group scored as 0.38 indicating a 72% reduction (p < 0.01).

In the comparison with phenylbutazone, the area under the curve (AUC) was 0.8 and 0.6 respectively indicating a 33% reduction in ulceration. ANOVA F = 9.719 p < 0.01. (96.6%).

In the mouse jejunum model, 150 mg/kg inhibition of neutrophil infiltration was found in the DANILON Equidos group compared to 70 mg/kg in the phenylbutazone group. The relative fold change was 1.14 (0.8) and 2.61 (0.6) respectively indicating a 57% reduction (p < 0.001).

The use of high-speed treadmills has facilitated gait analysis, although clinicians should remember that there are some differences between gait on the treadmill and that in the field. The use of high-speed treadmills has facilitated gait analysis, although clinicians should remember that there are some differences between gait on the treadmill and that in the field.